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extensiones 2400, 2049, 3233
infocede@uniandes.edu.co
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Do institutional investors unbind firm financial constraints? Evidence from emerging markets

Roberto Álvarez *

Mauricio Jara-Bertín *

Carlos Pombo**

Abstract

Using firm-level information for 11 large emerging economies for the 2003-2014 period, this article analyses the impact of firm investment ratio depending on the presence of institutional ownership and the effects of institutional investor heterogeneity on firm financial constraints. Results show that the presence of institutional ownership reduces firm cash flow sensitivity for restricted samples using size and the Kaplan and Zingales index. Investor heterogeneity regressions show that independent and foreign institutional investors reduce firm financial constraints explained by direct investor activism, lower monitoring costs and better corporate governance in particular across small and medium-size firms.

Keywords: Institutional Investors, Corporate Governance, Financial Constraints, Emerging Markets,

JEL codes: C20, G00, G20 and G30

* School of Economics and Business, Universidad de Chile, Chile.

Emails: robalvar@fen.uchile.cl and mjarab@fen.uchile.cl

** School of Management, Department of Finance, Universidad de los Andes, Colombia. Email: cpombo@uniandes.edu.co

¿Reducen los inversionistas institucionales las restricciones financieras de las firmas? Evidencia de mercados emergentes

Roberto Álvarez *

Mauricio Jara-Bertín *

Carlos Pombo**

Resumen

Usando información a nivel de firma para 11 grandes economías emergentes durante el período 2003-2014, este artículo analiza el impacto que tiene la tasa de inversión de la firma en la presencia de propiedad institucional, y los efectos de la heterogeneidad de los inversionistas institucionales en las limitaciones financieras de las firmas. Los resultados muestran que la presencia de propiedad institucional reduce la sensibilidad de los flujos de caja para muestras restringidas, usando tamaño y los índices Kaplan y Zingales. Las regresiones acerca de la heterogeneidad de los inversionistas muestran que los inversionistas institucionales extranjeros e independientes reducen las limitaciones financieras a través de activismo inversionista directo, disminuyendo así los costos de monitoreo y mejorando la calidad del gobierno corporativo, en particular a través de firmas de pequeño y mediano tamaño.

Palabras Clave: Inversionistas Institucionales, Gobierno Corporativo, Restricciones Financieras, Mercados Emergentes.

Clasificación JEL: C20, G00, G20 & G30

* Facultad de Economía y Negocios, Universidad de Chile, Chile.

Emails: robalvar@fen.uchile.cl & mjarab@fen.uchile.cl

** Facultad de Administración, Área de Finanzas. Universidad de los Andes, Colombia.

Email: cpombo@uniandes.edu.co

1. Introduction

Institutional investors have become key players in financial markets over the last three decades. They have grown substantially in developed economies such as Canada, the United States and the United Kingdom to the point that they now control more than half of the corporate property (Aggarwal et. al., 2011) and, according to the International Monetary Fund, institutional investors from around the world manage financial assets in excess of US\$ 45 trillion (IMF, 2005). This pattern is also observed across emerging markets. According to the OECD (2011), the private pension fund industry in Latin America grew at an annual rate of 16% per year between 1999 and 2006 reaching a net asset value of US\$ 390 billion. These funds constitute the most dominant institutional investors in the regional markets with the exception of Brazil where the mutual fund industry is one of the largest internationally. The role of these investors may contribute to the development of capital markets by creating the need for efficient transactions, good risk evaluation, and a good corporate governance (CG) system. They can also exert a direct influence on management activities through their property (shares), and an indirect influence through their ability to sell their shares (Gillan and Starks 2003). As indicated by Ferreira and Matos (2008), a key factor in the global capital market is the increasing importance of institutional investors.

The relationship between institutional investors' holdings and financial constraints has not been closely analysed for the cases of developed and emerging markets. The literature suggests several advantages derived from the presence of institutional investors in the ownership structure of firms. First, their presence implies a premium of firm value (Tobin's Q) that ranges from 12% for non US companies (Ferreira and Matos 2008) or 8% in Latin America (De-La-Hoz and Pombo 2016), or up to 38% for New Zealand (Navissi and Naiker, 2006). One of the

explanatory factors behind these results is that institutional investors are blockholders that exercise direct monitoring—in the same way as any other shareholder—to reduce agency costs.

Second, the literature has highlighted that the existence of several shareholders and especially institutional investors reduces the cost of capital and improves firm efficiency (Elyasiani and Jia 2010). For instance, Cai et al. (2015) do not analyse institutional investors directly but include the distribution of the control within firms for a sample of Chinese publicly traded firms. Their results are consistent with previous studies (Maury and Pajuste 2005; Laeven and Levine 2008; Jara-Bertin et al., 2012) and suggest that more balanced ownership structures lead to lower capital costs. Elyasiani and Jia (2010) use a simultaneous equation model to show that institutional investors' stability positively influences corporate performance. Both arguments suggest that even shareholder ownership distribution has an important effect on monitoring effectiveness. Therefore, the monitoring role is a key aspect of our paper. We rely on the institutional investors' resources and skills to effectively monitor firm controllers (Chung et al., 2002). Thus, we expect the presence of institutional investors to reduce firm financial constraints in emerging markets, because the prevalence of large shareholder ownership implies the existence of private benefits of control, lower stock liquidity, and lower investor protection levels (La Porta et al., 2002; Leuz et al., 2003; Nenova, 2003).

At a macroeconomic level, Li et al. (2006) argue that there are many environmental factors that affect institutional investors' decision to become large shareholders. Using a sample of 19,883 firms across 45 countries, their results suggest that countries with strong shareholder rights, effective legal enforcement, and extensive financial disclosure tend to have a greater extent of large institutional shareholdings and hold more concentrated equity positions. This is because the authors believe that a strong macro governance environment influences institutional

ownership decisions by providing the necessary infrastructure to increase monitoring effectiveness and efficiency.

In this this article, we claim that the effect of institutional investors on financial constraints depends on the investors' orientation to engage in monitoring activities. In this sense, the literature has coined the terms Independent and grey investors to differentiate types of institutional investors. To some extent, the empirical evidence on the effect of the institutional investors is driven by the monitoring hypothesis and the results often suggest that the Independent investors are more prone to engage in monitoring activities and reduce informational asymmetries. Grey investors, in contrast, are more closely related to controllers and their effect, inconclusive. In this sense, we follow the definitions, assumptions, and rationale used in the existing literature on investor heterogeneity ([Ferreira and Matos 2008](#); [Elyasiani and Jia 2010](#)).

The contribution of this article to the institutional investor literature is twofold. First, the paper fills a research gap by looking at whether the monitoring of institutional ownership (presence) and investor heterogeneity (colours) reduces firm cash flow sensitivity as a proxy of firm financial constraints. The findings of this study differ from benchmark studies on institutional investor activism. For instance, within the literature on mutual and hedge funds, most studies focus on stock trade activism as an exit mechanism when institutional blockholders find non-satisfactory firm performance results and corporate governance practices ([Parrino et al., 2003](#); [Bushee and Goodman, 2007](#)). Studies on institutional investor monitoring (voice) show for instance that independent institutional investors who are large shareholders or that maintain large stakes within a firm tend to monitor firm investments (e.g. mergers and acquisition deals) because they do not find it profitable to undertake short term trades rather than rebalancing their

portfolios on a long-term basis (Chen et al., 2007). Studies based on particular institutional investors—*California Public Employees Retirement System (CalPERS)*—show that firms with poor financial performance and corporate governance have been targeted by this pension fund (Smith, 1996). Direct monitoring is measured by observing amendments and settlements to internal corporate governance practices (i.e., poison pills) after one year of the target date. Second, this study focuses on emerging markets where there is little evidence regarding the strategic role that institutional investors play in the dynamics of firm investment. Most of the existing empirical studies regarding blockholder voice (intervention) and exit (trading) activism are based either in the US or other developed capital markets as highlighted in recent reviews on blockholders and corporate governance (Edmans, 2014).

Using a traditional investment equation and after controlling for several firm-level characteristics such as ownership concentration, size, and capital structure, among others, our main results reveal that the relationship between institutional investor ownership and firm investment is nonlinear. This evidence suggests a monitoring effect in which overinvestment is reduced as institutional ownership increases. However, higher levels of institutional ownership can lead to overinvestment incentives for institutions. Regarding the effect on financial constraints, we found evidence that suggests that institutional investors reduce financial constraints in those firms that are supposed to be financially constrained. In addition, we explore heterogeneity in our results by examining different types of institutional investors. Our results are in line with the monitoring hypothesis for independent and foreign investors, which suggest that these types of investors play an active role in reducing the financial constraints of those firms that are supposed to present higher levels of asymmetric information (constrained firms).

We also found the opposite effect for grey investors, who tend to increase the cash flow dependence to invest in those firms that are supposed to be unconstrained.

The remainder of the document is structured as follows: Section 2 presents the theoretical framework and development of the working hypotheses, Section 3 analyses the data and variables included in the empirical model, Section 4 presents the econometric results, and Section 5 offers our conclusions.

2. Analytical framework and hypotheses

2.1 Institutional investors and firm investment

The relationship between financial constraints and institutional investor ownership for the cases of developed and emerging markets has not been closely analysed in the literature. Firms can obtain a number of benefits from having institutional investors. One is that the market values their presence especially if they have a direct influence on firms' internal corporate governance mechanisms. [Edmans and Manso \(2011\)](#), for example, argued that the presence of multiple blockholders creates two conflicting governance effects. The first, known as the voice mechanism or shareholder activism, considers that blockholders' monitoring becomes a disciplinary device to reward or punish managerial performance. By contesting control, blockholders can align their interest to implement either profitable projects or simply monitor the managers; however, contesting control can also reduce firm value. The second effect, known as the exit mechanism, occurs in firms with multiple blockholder structures and considers that dispersed (and small) blockholders punish the largest shareholder or management by exiting the firm (i.e., by trading their shares), thus affecting firm value. This approach to corporate governance highlights that by being more informed about firm value, smaller blockholders can use the exit strategy as a device to discipline the behaviour of the largest blockholder.

Empirical studies based on firm level panel models across countries show that institutional investment improves firm corporate governance. [Aggarwal et al. \(2011\)](#) find that positive changes to institutional ownership increase the firm level governance index but the opposite case does not necessarily hold.

Aggarwal's findings are consistent with Gillan and Starks' (2003). They highlight the special role that foreign investors play in enhancing firm corporate governance through direct monitoring because they are credit rated. Related firm level studies consistently show that institutional investors enhance firm market value overall (Woidtke, 2002). This would indicate that these investors' monitoring optimises administrative performance. [Zeckhauser and Pound \(1990\)](#) found that when a firm has someone monitoring it, future earnings and the sum of expected profits increase. [Brav et al. \(2008\)](#) studied the case of investment funds reporting that for US firms, the operational and financial recommendations of these investors are successful in two out of three cases confirming an active investor activism.

Dynamic investment models with adjustment costs simulate optimal investment decisions over time. A simplified set up of an investment model considers a representative firm that maximises its profits over time subject to the restriction of capital stock accumulation. There is no uncertainty and capital markets are frictionless; that is, there are no financial constraints. A firm's investment demand intertemporal maximization program – discrete version – becomes

$$\text{Max}_{I_t, k_t} \sum_{t=0}^{\infty} \beta^t \pi_t \quad \text{s.t.} \quad k_t = I_t + k_{t-1}(1 - \delta) \quad (\text{I})$$

where

$$\pi_t = \pi(K_t)k_t - C(I_t) - I_t$$

$$\beta^t = \frac{1}{(1 + r)^t}; \quad \delta > 0$$

Program (I) states that a firm's profits at time t are proportional to its capital stock, $-k_t$ – and decreasing to industry-wide capital stock $-K_t$ –. The model assumes that firms face increasing adjustment costs to their level of capital stock; i.e., $C'(I) > 0$ and $C''(I) > 0$ – and δ counts for the economic depreciation rate. The first order conditions of program (I) are standard in investment literature. Changes to the restricted maxing profit function with respect to investment demand predict that any firm will invest optimally until the marginal adjustment cost of investment and the fixed cost of acquiring a unit of capital equals marginal Tobin's Q; that is,

$$q_t = C'(I_t) + 1 \quad (1)$$

Thus, q_t captures the shadow of firm value of an additional unit of capital at time t . The model assumes an investment adjustment cost following a convex quadratic function of the form:

$$C(I_t, K_t) = \frac{b}{2} \left(\frac{I_t}{K_t} - \bar{C} \right)^2 \cdot K_t \rightarrow q_t = 1 + b \left(\frac{I_t}{K_t} - \bar{C} \right) \quad (2)$$

Where $\bar{C}$ is a constant and usually represents the costless level of physical capital installation, and can take the value of zero. The condition in (2) implies an investment equation

$$\frac{I_t}{K_t} = \frac{1}{b} (q_t - 1) + \bar{C} \quad (3)$$

Ec.3 implies that the investment dynamics become an increasing function on firm Tobin's Q, as well as firm stock capital accumulation. That is

$$\frac{\Delta k_{t+1}}{k_t} = \frac{1}{b} (q_t - 1) + (\bar{C} - \delta) \quad (4)$$

The parameter q_t captures the value of one unit of capital and the present discounted value of firm profits will capture shareholders' expectation in terms of future firm dividend payout policy. The literature on corporate governance has shown empirically that firm value is jointly determined by firm ownership structure where the separation between ownership and control

might exert a diversion of funds by controlling owners (Claessens et al., 2002). Studies on blockholder activism and institutional investors stress that there is a premium of firm valuation since it is expected that those investors impact firm governance best practices. Joining these arguments with the baseline optimality condition of the intertemporal investment model without uncertainty, *heuristically*, we can assert that any positive driver of firms' Q has a second order positive effect on the firm investment ratio. Considering firms' Q as a concave function of institutional ownership (IO) given standard financial and firm idiosyncratic firm-specific controls $\mathbf{X}$, we can state that if

$$q_t = F(IO_{t-n}, \mathbf{X}) \quad \forall n \geq 1$$

then taking a partial derivate with respect to one lag of institutional ownership yields

$$\frac{\partial(I_t / K_t)}{\partial q_t} \frac{\partial q_t}{\partial IO_{t-1}} = \frac{1}{b} \cdot \frac{\partial q_t}{\partial IO_{t-1}} > 0 \quad (5)$$

Thus, the above analysis leads to the following hypothesis:

H1: The presence and entry of institutional investors as blockholders will improve firm value and therefore raise the firm investment ratio.

2.2 Investor colour, firm corporate governance and cash flow investment sensitivity

Traditionally, the literature that has focused on the institutional investors' influence on corporate finance decisions has forced us to deal with the problem related to institutional investors' undisclosed preferences. Thus, "Understanding the preferences and views of institutional investors is important for both companies trying to attract new investors and policymakers considering the regulation of governance mechanisms" (McCahery et al., 2015).

Empirical evidence suggests that institutional investors are less likely to invest in firms with poor corporate governance structures (Giannetti and Simonov, 2006; Leuz et al., 2009) and that

weaker investor protection is associated with lower stock returns. For instance, [Gompers and Metrick \(2001\)](#) found that institutional investors privilege companies with larger market capitalization, higher liquidity and higher book-to-market ratio, compared to individual investors. [Bushee et al. \(2014\)](#) found that around 10% per cent of institutional investors are governance-sensitive and exhibit strong correlations between institutional holdings or portfolio weighting and firms' governance mechanisms. They also find that firms with a high level of institutional ownership sensitive to shareholder rights exhibit significant future improvements in shareholder rights, implying some activism by these institutions.

[Aggarwal et al. \(2005\)](#) analyse the preferences of US mutual funds with investments in emerging markets. After controlling for the country's level of economic development, they found that firms in countries with stronger shareholder rights and legal frameworks attract more foreign capital. At firm level, they found that mutual funds invest in large firms and firms covered by a larger number of analysts as well as firms with high returns and leverage. They found that the quality of accounting disclosure was also crucial, while liquidity and float were not significant. Given the above, authors concluded that the accounting standards of a firm become very important in countries without strong shareholder rights. [Khorana et al. \(2005\)](#) also show that the legal enforcement of minority rights influences aggregate mutual fund investment in equity.

Institutional investor heterogeneity implies the existence of different interests and preferences over their investment portfolios. Institutional independent investors tend to monitor more actively because they have less natural potential for business relations with the corporations. [Almazán et al. \(2005\)](#) call them active investors while [Brickley et al. \(1988\)](#), call them "pressure-resistant" investors. [Ferreira and Matos \(2008\)](#), classified institutional investors into two distinct groups: independent investors (investment funds and banks) and grey investors (bank trusts,

insurance companies and pension funds). The results of this study are central in the literature on the preferences of institutional investors. This study works with an average sample of 4,116 large institutional investors from 24 OECD economies and 3 large emerging markets for 2000-2005. Around 65% of institutions in the sample are US-based investors. Their main findings are that: i) institutional investors invest more in large firms, and in firms with a good corporate governance reputation; ii) foreign investor institutions over-value cross listed firms, especially issuers of American Depositary Receipts (ADRs) in the US and members of the Morgan Stanley Capital International World Index; iv) firms that exhibit high foreign and independent institutional investor equity holdings show higher market valuations, better operational performance, and lower capital expenditure.

Based on these findings, they conclude: “Our findings suggest that some (but not all) institution groups are effective monitors of the firms they invest in. The presence of foreign and independent institutions enhances shareholder value. These institutions are able to exert pressure because they have fewer business relations with the firm to jeopardise, unlike domestic or grey institutions (Idem (2008), page 523)”.

Studies regarding the role of institutional investors in shaping firms’ corporate governance have focused on the case of the US and the role of mutual funds voting. According to [Claessens and Yurtoglu \(2013\)](#), studies on the role of institutional investors in discipline management in emerging markets are scarce and there is no solid evidence on their behaviour. One recent exception is the study by [De-La-Hoz and Pombo \(2016\)](#) who analyse the role of institutional investor heterogeneity and firm value for around 526 non Latin American real sector firms for the 1997 - 2011 period. They based their analysis on the effects of Shapley value coalitions on firms’ Tobin’s Q. The main findings complement those of [Ferreira and Matos \(2008\)](#) in the sense

that institutional blockholding coalitions enhance firm value by a premium of 22%. Their findings show that the presence of an independent investment fund has a significant positive effect on firm value. In contrast, they find that the presence of grey investors as blockholders is negative. The effect is statistically significant only when a pension fund or an insurance company is the largest blockholder. However, this finding is not general across countries. In particular, they report for the case of Chile, the presence of pension funds as the largest shareholder represents a premium of 0.32 units on firm value.

The expected activism of institutional investors as blockholders is an empirical issue. Theory regarding blockholder behaviour is supported by the model of rent extraction originally developed by [La Porta et al. \(2002\)](#), who modelled managerial rent extraction, and by [Maury and Pajuste \(2005\)](#) who extended the baseline model to reveal contestability behaviour more explicitly among multiple large shareholders. The presence of multiple blockholders and their effect on firm performance has been empirically documented in several international studies following the approach of Maury and Pajuste ([Laeven and Levine 2008](#); [Konjin et al., 2011](#)). These studies consistently showed that a less dispersed distribution of votes among large blockholders had a positive effect on firm value, that this value is enhanced when there are multiple blockholders, and that the presence of a second blockholder reduces rent extraction. The above results on institutional investor preferences and heterogeneity lead us to the next working hypotheses regarding firm financial constraints:

H2a. The presence of independent investors as blockholders improves overall firm governance standards, and therefore reduces firm financial constraints.

H2b. The presence of grey investors as blockholders does not affect firm corporate governance standards and therefore it either has no impact or it increases firm financial constraints.

The next section focuses on the construction of the data sample, its characteristics and the design of the empirical study.

3. Data and methodology

3.1 Sample construction

The dataset used in this study includes firm-level information from *Thomson Reuters Eikon* and *S&P Capital IQ*. Our raw data sample consists of 4,379 firms and 33,535 observations of annual financial information from 2003 to 2014. **Table 1** displays the sample construction that required several steps. First, the working sample excludes all firms that belong to Thomson Reuters Business Classification: Banking and Investment Services, Uranium, Insurance and Real State, since we focus only on nonfinancial firms. Second, we dropped firms with less than three years' coverage and firms with missing values for ownership features, capital expenditures, sales, assets, debt, cash flow, and stock prices. Third, following [Hadlock and Pierce \(2010\)](#), the sample excludes observations with investment to assets ratios of above 2.0 and sales to assets ratios above 4.5.

Fourth, the working sample excludes China from our analysis because the country's institutional framework, state ownership, and economic control makes this emerging economy different from other large emerging markets in terms of property rights, investor protection and firms' corporate governance. For instance, the 1990s witnessed partial privatization in China through IPOs of former SOEs whereby the government retained company control. Security pricing was subject to specific pricing regulations linked to past forecast accounting performance and not subject to underwriting valuation by market conditions. IPOs were also subject to economic penalties for firms that on the IPO year underperformed in terms of earnings per share to what had been forecast in the original prospectus. Pricing regulation based on accounting

earnings induced IPO firms to overestimate their earnings in order to increase IPO proceeds (Kao et. al., 2009). Another example is that China has shown important discounts – over 50% – of block shares transfers held by the government and institutional investors explained by trade restrictions in open market transactions (Huang and Zu, 2009). This finding contrasts the observed positive premiums in other countries usually associated with blockholders’ private benefits of control (Dyck and Zingales, 2004).¹ We also dropped records from Colombia and Hungary because these countries present few observations (56 and 84, respectively).

Fifth and last, we merge the financial data from Capital IQ with ownership data obtained from *Thomson Eikon* and drop outliers in the top and bottom 1% of each variable. The final resulting sample is an unbalanced panel of 16,595 observations from 3,185 quoted nonfinancial firms from emerging economies such as Brazil (829), Chile (572), Greece (772), Indonesia (1,201), Malaysia (3,033), Mexico (418), Peru (194), Poland (1,376), Republic of Korea (5,578), South Africa (1,061) and Thailand (1,561).

*** Table 1 here ***

3.2 Dependent, control and explanatory variables

Firm financial constraints are proxied using the investment-cash flow sensitivity relationship. **Table 2** shows the variables under analysis. The investment ratio is defined by capital expenditure at year t to total assets at the beginning of year $(t - 1)$. The operating cash flow ratio is a firm’s net income adjusted by depreciation, changes in inventories and changes in account receivables to total assets. The operating cash flow reflects whether a firm is able to generate

¹ There are other important factors that support the exclusion of China. One is that institutional investors face a fixed quota to invest in Chinese companies that are subject to *Qualified Foreign Institutional Investors* (QFII) schemes (Bredin and Liu, 2011). Other authors are still skeptical of the market disclosure and transparency standards within the Shanghai Stock Exchange despite the progress made towards economic liberalization over the last 25 years. Naughton (2007) highlights that insider control from SOEs managers and regulators’ manipulation is one of the characteristics at the Chinese stock market.

enough cash to maintain operations or whether it may require external financing. We used this measure of cash flow in contrast to the income based measures (e.g., Net Income plus Accruals) used in previous studies ([Pindado et al., 2011](#)), as these are susceptible to accounting adjustments that may hide or smooth true performance ([Leuz et. al., 2003](#)).

The set of control variables includes those commonly used in previous studies ([Almeida and Campello, 2007](#); [Kuo and Hung, 2012](#); [Claessens et al., 2014](#); [Andrén and Jankensgård, 2015](#)) such as firm Tobin's Q, firm size, debt ratio, debt maturity ratio, cash and short term investments scaled total assets, sales ratio, and ownership concentration indices. The dataset includes a set of industry and year-country dummies.

The set of explanatory variables are related to institutional investor heterogeneity since the main objective of this study is to analyse the marginal effect of institutional investors over investment and firm financial constraints. Several measures of institutional ownership are defined. First, total institutional investor ownership is the sum of all ownership participation held by any institutional investor. When institutional investors do not hold any stock, we compute the institutional variable to zero ([Gompers and Metrick, 2001](#)). Second, following [Ferreira and Matos \(2008\)](#), we explore investor heterogeneity in order to compute their business orientation and propensity to establish business ties with company managers or controllers. In this way, we define grey investor ownership as the sum of all equity holdings by institutions classified as grey (i.e., banking, insurance companies, pension funds, endowments). This type of ownership presents higher monitoring costs and so tends more towards making decisions in conjunction with managers (controlling shareholder) and not protecting shareholders (minority shareholders). On the other hand, we define independent investor ownership as the sum of all ownership participations held by mutual fund managers and investment firms. Such firms are likely to

spend more resources on monitoring activities or have fewer potential business relationships with the corporations they invest in. Investor geographical origin also captures investor heterogeneity. In this sense, we define domestic institutional ownership as the sum of holdings that belong to the institution in the same country as the firm, and foreign institutional ownership as the sum of the holdings stakes by foreign institutions.

The literature on financial constraints recognises that the effect of investment cash flow sensitivity could be more pronounced for restricted firms (Whited and Wu, 2006; Andrén and Jankensgård, 2015). We proxy financially constrained firms through two measures: i) firm size (Fazzari *et al.* 1988), and ii) KZ-Index (Kaplan and Zingales 1997; Hadlock and Pierce 2010). **Appendix A.1** lists the definitions of all variables included in the empirical analysis.

Table 2 displays the descriptive statistics by institutional investor presence and type. Four main factors are worth mentioning. First, institutional investors hold participations on one half of the sample and represent around 10% of equity holdings. Independent investors hold 8% of firm equity and the remaining 2% is allocated among grey investors. Second, firms with independent institutional investors show greater valuation than other cases. The mean of Tobin's Q is 1.32 for firms with independent investors, while the ratio is 1.23 for firms with grey investor presence and 1.08 within firms without institutional ownership. These statistics are consistent with that which is expected since independent investors tend to exert more direct monitoring and control. Third, consistent with the business relationship argument, we can observe that, on average, firms with independent investors have greater block shares (9.4%) than other institutional shareholders (1.6%). The same happens with the sample of firms with grey investors, who, on average, tend to have greater block shares (9.6%) than independent investors (5.1%). Forth, regarding other firm characteristics, we observe that firms with independent investors are, on average, bigger, invest

more and present high cash flow ratios. These firms are also less concentrated in terms of ownership structure and the debt structure is more long term oriented.

Descriptive statistics across countries (**Appendix A.2**) exhibit similar patterns. In particular, independent institutions are more relevant in countries that present more developed capital markets of the sample such as South Africa, Brazil and Chile.

***** Table 2 here*****

3.3 Method

This study uses [Fazzari et al.'s \(1988\)](#) cash flow sensitivity specification as a proxy for financial constraints. Under ideal conditions, the only determinant of investment is Tobin's Q as a proxy for investment opportunities. However, empirical literature has shown that cash flow is a good predictor of investment assuming the existence of a wedge in financing costs between internal and external sources of funds. Hence, the higher the funding costs wedge, the more financial constraint on the firms and the more investment decisions explained by internal cash flow. As such, dependence on internal funds can lead firms to invest sub-optimally.²

[Kaplan and Zingales \(1997\)](#) cast doubts about the usefulness of the investment-cash flow model. They use dividend payments to identify a financially constrained subsample. In contrast to the results found by [Fazzari et. al.](#), these authors find no monotonically positive relationship between investment and cash flow. Specifically, they find that the subsample of distressed firms has lower levels of investment–cash flow sensitivity and conclude that this coefficient is not a good proxy for financial constraints. This finding opened a strong and, as yet, unconcluded debate regarding the usefulness of some metrics for capturing financial constraints ([Fazzari et al., 2000; Kaplan and Zingales, 2000; Allayannis and Mozumdar, 2004](#)).

² For instance, firm overinvestment is associated with the excess of cash flow or the underinvestment problem due to agency costs of debt or debt overhang.

Despite the above, the investment–cash flow sensitivity specification has been widely used in corporate finance literature (Pindado et al., 2011). To capture the specific effect of institutional investor presence on the investment–cash flow sensitivity coefficient, the cash flow variable is interacted with institutional ownership heterogeneity by expected investor activism (independent versus grey), and by geographical origin (local versus foreign). This interaction term is the main variable of interest because it captures whether higher investor monitoring involvement relaxes or increases financial constraints.

Following Aguiar (2005) and Laeven (2003), the maximization conditions of the Euler investment equation is used to obtain the empirical investment ratio equation that includes its lag value to capture the model dynamics.

The empirical baseline regression equations follow a general two-way error component model with a matrix dimension of ($i \times t$):

$$Inv_{i,t} = \alpha_i + \beta_1 Inv_{i,t-1} + \beta_2 CF_{i,t} + \beta_3 CF_{i,t} \times IO_{i,t} + \beta_4 IO_{i,t} + \beta_5 IO_{i,t}^2 + \delta_k' \mathbf{X}_{i,t} + \phi_k' \mathbf{D}_{C,I} + \varepsilon_{i,t} \quad (6a)$$

$$Inv_{i,t} = \alpha_i + \beta_1 Inv_{i,t-1} + \beta_2 CF_{i,t} + \beta_3 CF_{i,t} \times GreIO_{i,t} + \beta_4 CF_{i,t} \times IndepIO_{i,t} + \beta_5 GreIO_{i,t} + \beta_6 GreyIO_{i,t}^2 + \beta_7 IndepIO_{i,t} + \beta_8 IndepIO_{i,t}^2 + \delta_k' \mathbf{X}_{i,t} + \phi_k' \mathbf{D}_{C,I} + \varepsilon_{i,t} \quad (6b)$$

$$Inv_{i,t} = \alpha_i + \beta_1 Inv_{i,t-1} + \beta_2 CF_{i,t} + \beta_3 CF_{i,t} \times ForIO_{i,t} + \beta_4 CF_{i,t} \times LocIO_{i,t} + \beta_5 ForIO_{i,t} + \beta_6 ForIO_{i,t}^2 + \beta_7 LocIO_{i,t} + \beta_8 LocIO_{i,t}^2 + \delta_k' \mathbf{X}_{i,t} + \phi_k' \mathbf{D}_{C,I} + \varepsilon_{i,t} \quad (6c)$$

Where subscripts i stand for firm I , I for industry, and C for country. Explanatory variable Inv_{it} is the capital investment ratio of firm i in year t ; CF_{it} is the cash flow ratio of firm i in year t ; $IO_{i,t}$ is the percentage of total institutional equity ownership; $GreyIO_{c,t}$ is the percentage of total institutional participations in the hands of grey investors; $IndepIO_{c,t}$ is the percentage of total institutional participations in the hands of independent investors; $ForIO_{c,t}$ is the percentage of

total institutional ownership participations in the hands of foreign investors, and $LocIO_{c,t}$ is the percentage of total institutional ownership participation holdings of local (domestic) institutional investors. Vector $\mathbf{X}$ includes the set of control variables. Vector $\mathbf{D}$ is the set of dummy variables that take into account different aggregation levels for control for unobservable and time-variant and time-invariant fixed effects, such as country, year, and industry fixed effects. Regression coefficient α_i stands for firm fixed-effects. **Appendix A1** displays all definitions of the control and explanatory variables included in the empirical model.

The cash flow sign (β_2) is expected to be positive in all the specifications according to the literature. In the presence of financial constraints, an increase in cash flow should increase investment. More importantly, institutional investors could shape financial constraints by alleviating or increasing asymmetric information through incentives to monitor controllers and managers. This effect is captured by introducing the interacting term of institutional ownership and firm cash flow in the empirical estimating regression.

There are two of competing hypotheses concerning the relationship between the type of institutional investor and financial constraints. The more traditional view argues that institutional investors are not oriented enough to engage in monitoring firms' financial policy decisions because they have preferences for liquidity, stock prices and returns, and due to the fact that monitoring costs are higher when institutions hold very diversified portfolios (Coffee, 1991; Gompers and Metrick, 2001). However, this point of view could be detrimental with regards financial constraints. On the one hand, lack of monitoring suggests that insiders could engage in decisions that destroy value (overinvestment or underinvestment), increasing financial constraints, so β_3 should be positive (β_3 in equation 6a and β_3 and β_4 in equation 6b and 6c). On the other hand, according to Ferreira and Matos (2008) in recent decades institutional investors

have provided large amounts of resources to the equity and bond markets, increasing overall liquidity and therefore, easing firm financial constraints. Thus, β_3 in Eq. 6a should be negative.

In contrast, studies that focus on the monitoring hypothesis have highlighted the beneficial influence of institutional investors on firm value (Gillan and Starks, 2003; Elyasiani et al., 2010; Hartzell et al., 2014). The beneficial effect depends exclusively on the orientation of the institutional investors in which they can attenuate asymmetrical information issues or successfully influence controllers or managers in order to make value creation decisions (Almazán et al., 2005). If institutional investors effectively engage in monitoring activities, we expect firms to present lower levels of financial constraints, making β_3 negative in Eq. 6b. Grey investors (banks, pension funds, among others) are less monitoring oriented because they try to keep long term relationship with managers and they could become controllers (Ferreira and Matos, 2008). For instance, Ruiz-Mallorquí and Santana-Martín (2011) found a negative relationship between institutional ownership and firm value when banks are the dominant shareholder based on a sample of 111 Spanish listed firms between 1996-2009. Similarly, De-la-Hoz and Pombo (2016), for a sample of Latin American listed firms, report a discount of 0.12 units on firms' Tobin's Q when grey institutional investors are the largest blockholder.³ These arguments suggest that for firms whose largest shareholder is a grey investor, firm management may take a non-value maximizing investments, indicating that β_3 in Eq. 6b, could be a positive or non-significant regression coefficient. In sum, in line with our Hypothesis, regression coefficients β_3 and β_4 in regression Eq. 6b and Eq. 6c is negative (positive) if institutional independent (grey), foreign (local) investors mitigate (increase) financial constraints.

³ Nonetheless, this effect is opposite in the sample of Chilean firms reporting a premium of 0.32 on Tobin's Q, explained by two main reasons. One is the fact that there is less restriction on stocks caps imposed by local financial regulation on pension fund portfolios. Second, is the relative development of the private capitalization of the pension funds industry and the degree of Chile's financial deepening in relation to other Latin American economies.

The baseline equations recognise the existence of non-linear effects of institutional ownership holdings. The literature on blockholder contestability has stressed that the type of second blockholder is central in understanding firm value ([Jara-Bertin et al., 2008](#); [Sacristan Navarro et al., 2011, 2015](#)). In this sense, whether institutional holdings surpass a certain given threshold and imply less blockholder diversity, this will offset the original effect that institutional ownership may have on firm investment ratios and financial constraints. Thus, if non-linear effects are important, then we expect that coefficient β_5 in Eq. 6a or coefficients β_7, β_8 in Equations. 6b and 6c to be statistically significant.

Due to endogeneity problems in dynamic panel data, ordinary least squares estimators can provide coefficients that are biased. Thus, we use the generalised method of moments (GMM) system estimator. The GMM system estimator deals with endogeneity issues in the relationship between investment and cash, among others. In general, all of the right-hand variables are potentially endogenous. As shown by the estimating equations, even though all these variables are exogenous, the introduction of a lagged explanatory variable introduces endogeneity. The GMM system estimator presents some advantages over other dynamic panel models that are regularly used in corporate finance research ([Ratti et al., 2008](#); [Pindado et al., 2011](#); [Flannery and Hankins 2013](#)).

The consistency of the estimates depends critically on the absence of second-order serial autocorrelation in the residuals and on the validity the instruments ([Arellano and Bond, 1991](#)). Accordingly, p -values of the first and second order autocorrelation test are reported. To test the validity of the instruments, the Hansen test of over-identifying constraints is used to test for the absence of correlation between the instruments and the error term and, therefore, check the validity of the selected instruments.

4. Econometric analysis

4.1 Total institutional ownership

The analysis begins by testing whether total institutional ownership participation influences firms' financial constraints and investment decisions for the entire sample and two splitting samples that define financially constrained and unconstrained firms. Traditionally, corporate finance literature has shown that some firms are more prone to be financially constrained than others (Fazzari et al., 1988; Almeida et al., 2004; Almeida and Campello, 2007; Hovakimian 2009; Lima-Crisóstomo et al., 2014). Recent evidence has shown that the most suitable proxy for financial constraints is given by using subsamples according to firm size (Kadapakkam et al., 1998; Arslan et al., 2006) and the size-age index suggested by Hadlock and Pierce (2010). We do not include the size-age index since information regarding firm age is not available for the entire sample in this study's dataset. However, given this condition, we use two criteria to split the sample and provide separate regressions: firm size and the Kaplan and Zingales (1997) Index.

Although relevant differences in financial constraints may exist across firm age because younger firms are more likely to be excluded from financial markets (Brown et al., 2009), information on firm age is not available in this study's data set. Therefore, to shed light on heterogeneity in financial constraints, two criteria are used to split the sample and provide separate regressions: firm size and industry asset tangibility.

The basic idea is that financial constraints are more relevant for small firms or for those that present higher levels of KZ-Index.⁴ We also introduce firm size in order to check the robustness of our results. In addition, the size criterion is related to the absence of collateral and greater

⁴ By construction, the KZ Index of constraints is calculated as $-1.002 (\text{Cash Flow}/K) + 0.283 (\text{Qtob}) + 3.139 (\text{Debt}/\text{Capital}) - 39.368 (\text{Dividends}/K) - 1.315 (\text{Cash}/K)$. where: Cash Flow is calculated on the basis of earnings; Cash refers to the cash and short term investment; Dividends are the current paid dividends; and K is firm property, plant and equipment at the beginning of the period.

opaqueness, which increase the information asymmetries in financial markets. Small firms are defined as those whose size (measured by assets) is less than the 50th percentile of firm size of the corresponding country-industry. KZ restricted firms are those for which the KZ index is over the median of the firm-average KZ index of the corresponding country-industry. In contrast to existing literature, we are unable to split the sample into more subsample criteria as the number of firms-industry-country in emerging markets is too small. The use of the firm-average criteria allows us to preserve firms within the defined subsamples.

Table 3 reports the estimates of the baseline regression Eq. 6a. Col. 1 shows the results of the basic estimations using only the variables of total institutional ownership. Regression in Col. 2 introduces the interacted term between cash flow and total institutional ownership in order to test whether institutional investors affect the internal funds' dependence on investment. To look at the existence of a heterogeneous response of cash flow and the interacted term, in Col. 3 and 5, we estimate the restricted subsample according to size and KZ index criteria, respectively. In the same way, in Col. 4 and 6, we estimate Eq.6a for the unrestricted subsample according to both criteria.⁵

Regression results show across specifications that cash flow is positively related to investment, in consistency with the existence of financial constraints. In particular, the marginal effect of cash flow to investment ratio is 0.17 (Col.1) meaning that a change in one standard deviation in the cash flow ratio [0.09] will increase the firm investment ratio by 1.53%. Corporate finance literature has shown that constrained firms depend more on internal funds when it comes to investing because it is more costly to raise funds externally, therefore the

⁵ As indicated by [Kaplan and Zingales \(1997\)](#), the cash flow–investment sensitivity may be less pronounced in financially distressed firms. We follow [Hadlock and Pierce \(2010\)](#) and incorporate the WW index ([Whited and Wu, 2006](#)) of financial distress as a control variable of our model. In general, our results also hold.

expected regression coefficient for the financial restricted firms must be higher than their counterpart, the sample of unrestricted firms. The regressions in Col. 3 and 4 show that size restricted firms present a higher *cash flow* coefficient (0.207 vs. 0.155, respectively), and therefore higher levels of cash flow sensitivity. Similar findings are associated if one contrasts the KZ restricted versus unrestricted samples [Col.5 and 6]. The cash flow sensitivity ratio is 0.05 units higher (0.168 vs. 0.115) for the unrestricted sample. Cash flow regression coefficients are in all cases significant at a size of 1%.

The influence of institutional ownership on firm investment ratio and cash flow sensitivity is a central question for our analysis. The regression estimates (Table 3) show three main results worth highlighting. The first concerns the fact that the presence of institutional investors affects firm investment decisions. Regression results in Col.1 and 2 show a non-linear relationship between the firm investment ratio and institutional ownership. For the total sample, the marginal effect evaluated means of institutional ownership [0.107] and cash flow ratio [0.076] is on average -0.02 . The marginal effect turns positive when institutional holdings are greater than 16.9% of firm equity.⁶

... Table 3 here....

This finding suggests that the institutional investor's incentives to engage in monitoring activities are moderated by their holdings. Specifically, this relation is saying that lower levels of institutional ownership negatively affect firm investment. This outcome is consistent with [Ferreira and Matos' \(2008\)](#) arguments regarding the fact that the negative relation could indicate a fairly good monitoring of overinvestment behaviour. In contrast, lower levels of total institutional investors' ownership could indicate lower incentives to engage in monitoring

⁶ For instance, the marginal effect of institutional ownership in regression Col.1 is:

$dInv_t / dIO = -0.076 + 0.448 \times \overline{IO} = -0.02$ where $\overline{IO} = 0.107$; and $dInv_t / dIO = 0 \rightarrow IO^* = 0.076 / 0.448 = 0.169$

activities. Lack of monitoring could lead to underinvestment problems. This result validates H1, which states that the presence of institutional ownership will increase the firm investment ratio.

Second, consistent with the first hypothesis, we consider whether total institutional ownership influences the dependence of internal cash flow to invest. Col.3 and 5 (Table 3) show that the parameter for the interaction Cash Flow $\times$ Institutional ownership is negative and statistically significant (-0.603 , $t = 2.35$ and -0.428 , $t = 1.77$, respectively) for both subsamples of restricted firms (Size and KZ criteria). This result suggests that the existence of institutional investors on restricted firms is beneficial in alleviating financial constraints. The quantitative relevance of the existence of institutional investors and of the total institutional ownership is large in the subsamples of restricted firms. Using the estimation in Col.3 for size-restricted firms, we observe that institutional holdings in ownership reduce the internal cash flow dependence from investing from 0.207 to 0.182.⁷ At firm level, an increase in total institutional ownership is especially relevant since only 35% of the size-restricted sample is free of any institutional investor participation, so the reduction in terms of financial constraints is especially important. For instance, percentile 90 of institutional ownership in a restricted sample is around 13%, hence an increment in the sample mean to percentile 90 means that the internal dependence on internal funds to invest decreases from 0.182 to 0.129 (t-stat 3.51).

These findings support the monitoring hypothesis, which argues that institutional investors have the skills and spend resources to engage in monitoring activities (Chung et al., 2002; Hartzell et al., 2014), alleviating asymmetric information problems and hence, financial constraints in smaller firms that are supposed to present greater opaqueness (Ratti et al., 2008). In addition, the alleviating effect of financial constraints is consistent with Boone and White's

⁷ More specific: $dInv_i / dCF = 0.207 - 0.603 \times \overline{IO} = 0.1823$ where $\overline{IO} = 0.041$

(2015) arguments that show that higher levels of institutional ownership (in this case for restricted firms) result in lower levels of information asymmetry.

Third, institutional ownership does not have a clear impact within the unrestricted firms using the KZ index splitting rule. For those firms, for instance, that are low dividend oriented, less leveraged and with high market valuations, the investment ratio is sensitive to the cash flow ratio but not significant in terms of institutional investor presence (Col. 6). On the other hand, within the sample large firms relative to country and industry means, the effect of institutional investment increases financial constraints. This relationship is non-linear (Col.4). The parameter for the interaction of cash flow multiplied by institutional ownership is positive and statistically significant (0.465, $t = 1.68$). This result, which contrasts previous cases (i.e., restricted samples), might be related with overinvestment problems. Large firms have greater access to corporate bonds and credit markets. This fact might ease investors' activism allowing top management to be more discretionary in terms of companies' investment policies. Building empire behaviour and investment opportunities from mergers of acquisitions deals can explain the observed increasing cash flow sensitivity associated with the presence of institutional investors.

4.2 Institutional investor heterogeneity

This section analyses the effect of institutional investor heterogeneity on firm investment and financial constraints and classifies institutional investors into two groups according to investor monitoring incentives. Specifically, regression Eq. 6b tests the difference between incentives for independent and grey investors (Ferreira and Matos, 2008).

Table 4 reports the core results of the investment equations and institutional investor heterogeneity. Regressions in Col. 1 to 6 replicate the estimations for the size restricted and

unrestricted subsamples of the previous section. Four main factors are worth mentioning. First, independent investor ownership reduces firm cash flow sensitivity for size restricted firms. The iterated parameter of *cash flow* multiplied by independent investors is negative and statistically significant (-0.563 , $t = 2.02$ and -0.550 , $t = 2.13$, respectively), while the parameter for the interaction of *cash flow* multiplied by *grey investors* is not significant for the size-restricted subsample. These findings support hypothesis H2a, which states that independent investors exert real activism and monitoring on firm investment projects, reducing firm financial constraints. In particular, independent institutional holdings reduce the internal cash flow dependence to invest from 0.203 to 0.184 (Col. 4). Marginal effects are evaluated at sample means.⁸ In the same vein as the analysis in the previous section, firm financial constraints are even more reduced for size restricted samples with equity holdings by independent investors. Cash flow sensitivity reduces to 0.146 (t-stat 3.96).

At country level, when the markets with a lower presence of independent institutional investors in the restricted sample (Thailand) increases to a higher presence of independent investors (Brazil and South Africa), the marginal effect decreases from 0.201 (t-stat 5.11) to 0.135 (t-stat 3.54).⁹ These results are consistent with Boone and White's (2015) monitoring arguments, and suggest that independent institutions are "active investors" that play an effective monitoring role in the firms they invest in, especially those firms called to be more opaque (restricted ones). Hence, these results support Hypothesis H2a, which states that independent investor activism reduces firms' financial constraints through better monitoring and corporate governance practices.

⁸ More specifically: $dInv_i / dCF = 0.203 - 0.55 \times \overline{IIO} = 0.1854$; where; $\overline{IIO} = 0.032$

⁹ The mean of institutional independent ownership for the size restricted samples in Thailand is 0.2% while in Brazil and South Africa, it is 12.1%.

The interacted coefficient for grey investors, although negative, is not statistically significant (-0.59 , $t = 0.6$) for size-restricted firms (Col. 4). For unrestricted firms' regression equations, Col. 5 and 6 show that the parameter for the interactions of cash flow multiplied by grey institutional ownership is positive and significant at a size of 5% (1.118 , $t = 2.26$ and 1.065 , $t = 2.16$, respectively). Using the estimation in Col. 6, grey investors increase investment cash flow sensitivity from 0.159 to 0.180 evaluated at sample (unrestricted) means.¹⁰ These results suggest that the presence of grey investors results in suboptimal investment policies since grey investors such as insurance companies and bank trusts establish long term relationships with the firms they invest in and tend to have less incentives to undertake direct monitoring.¹¹ Monitoring costs are higher for grey investors (Almazan et al., 2005). Hence the above results validate our Hypothesis H2b, which states that grey investor ownership does not have an expected sign and significant effect on firm financial constraints.

A second exercise in investor heterogeneity consisted in estimating regression Eq. 6c that captures the specific influence of the investor origin (local or foreign) on firm investment and financial constraints. The results coincide with investor colours in coefficient signs and size. In particular, foreign institutional ownership relaxes financial constraints for the size-restricted firms. The interacted terms of cash flow with foreign institutional investors is negative and statistically significant whether non-linear effects exist or not (-1.98 , $t = 1.74$; -1.94 , $t = 1.73$). In contrast, the marginal effects of the interacted term of cash multiplied by local institutional investors are smaller in size but they keep the sign and significance (-0.455 , $t = 1.77$; -0.475 , $t = 1.81$) for the cases of the presence or not of non-linear effects on this type of institutional

¹⁰ The estimation of the marginal effect is $dInv_t / dCF = 0.159 + 1.065 \times \overline{GreyIO} = 0.18$; where: $\overline{GreyIO} = 0.0197$

¹¹ Almazan et al. (2005) show that passive institutional investors (i.e., bank trusts and insurance companies) have a lower pay-for-performance sensitivity of managerial compensation.

ownership. These results, based on investor origin, reinforce the ones observed for investor colours heterogeneity. They are consistent with the institutional investor literature, in the sense that foreign institutional investors are more pressure sensitive to management policies than local ones (Brickley et. al., 1988). Regression results are displayed in Appendix A3.

*** Table 5 here ***

4.3 Robustness: Nearest Neighbour Matching

The literature has pointed out that matching methods are used to deal with endogeneity problems and selection bias (Heckman et al., 1997, 1998). In particular, we include NN-Match estimations in order to check the robustness of our results and control the endogeneity that arises from the ownership structure and other firms' features. In this section, we estimate three nearest-neighbour matching analyses. In the first analysis, the “treatment” involves the existence of institutional investors in the ownership structure of the firm. The second treatment involves the existence of grey institutional investors. Finally, the last treatment involves the existence of independent institutional investors in firms. We use *investment ratio* as a dependent variable and we control the match for cash flow, and all control variables included in the baseline regression equations. The matching also considers industry, country and year.

Table 6 shows the main statistics and mean difference test of the main variables included in the match.¹² The group of columns (1) shows the descriptive statistics of the first matching criteria while groups (2) and (3) show the statistics for the second and third treatment criteria, respectively. As we can see in the group of columns (1), the main results indicate that for two firms (one with the presence of institutional investors) similar in size, cash flow realizations, debt structure, and ownership concentration, that belong to the same country and industry, the total institutional ownership presents, on average, higher levels of investment (see Treatment 1). As

¹² We employ a bias treatment using the Rosenbaun and Rubin (1983) standardized bias method.

such, complementing this result with those observed in the regression analysis, our results indicate that total institutional ownership influences investment decisions and indicates the moderation effect of financial constraint. The group of columns (2) displays the mean difference test for matching variables according to the second treatment criteria. The results indicate that firms with grey institutional investors tend to invest less than their equivalents. One possible explanation is that such firms can engage in underinvestment, given that in the regression analysis we can see that the presence of grey investors in unrestricted firms increases financial constraints for larger firms (note that size for the grey investors group is higher than other groups). The last group of columns reports the descriptive statistics and mean difference test for the third treatment. The results observed show that firms with independent institutional investors tend to invest, on average, more than their equivalent matched firms. This is consistent with the intuition that some external blockholders demand for investment, alleviating financial constraints. This assumption is consistent with the monitoring hypothesis and efficient resource allocation.

***** Table 5 here *****

Figure 1 plots the kernel density and cumulative distributions for each one of the treatments to complement the analysis of the matching average effects. In column (a) (total institutional), we can see that for all three cases, the estimated effect of institutional investor presence is nearest to zero and investment ratio distribution ranges from -0.15 to 0.15 percentage points. The NN-matching results seem to suggest that the existence of a difference in investment intensity is nearest to zero but with a significant difference in some intervals of the accumulated distribution. In particular, we observe in the cumulative density function of firm investment ratios for the case of institutional investor presence, that there is a stochastic dominance in both

directions. That is, with a probability that 40% of firms with (without) institutional holdings would exhibit investment ratios of 4% (5%). This probability changes for investment ratios within the 10 - 20% range. Firms with (without) institutional ownership holdings would have an 80% probability of having an investment ratio of 12% (10%). This explains the non-linear effect of institutional ownership on the investment ratio reported in the GMM regressions.

For the case of grey investors, there is no clear stochastic dominance different to what is observed for independent investors. The latter group shows a stochastic dominance in investment spending ratios within firms in which they are shareholders.

***** Figure 1 here *****

5. Conclusions

The purpose of this study was to determine how the presence and type of institutional investors affect firm investment cash flow sensitivity as a proxy for financial constraints. We conducted an analysis for the aggregate of institutional investors, and for the three typologies of investor heterogeneity: independent, grey, and foreign institutional investors. We found that relaxing firm financial constraints depends on how institutional investors engage in direct monitoring activities. In particular, when firms have institutional independent investors (i.e., trust and mutual funds, and investment firms) this reduces cash flow sensitivity from 0.20 to 0.18 evaluated at sample means, while the marginal effect firms with a presence of grey investors (i.e., pension funds and insurance companies) do not show a statistically significant effect on cash flow sensitivity in restricted size firms.

On the other hand, among unrestricted firms, the presence of grey investors increases firm cash flow sensitivity by 200 basis points (i.e., the marginal effect increases from 0.16 to 0.18), reflecting an overinvestment problem within this sample of firms. Investment regression

equations and propensity score matching analyses empirically support that the presence of independent institutional ownership will raise investment ratios, by improving internal corporate governance mechanisms in controlling the quality of investment projects for the sample of small and medium size firms. For large size firms, the effect of institutional ownership on cash flow sensitivity is not statistically significant using Kaplan-Zingales sample criteria. This result suggests that institutional investors cannot prevent suboptimal investment behaviour among financially unrestricted firms.

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Table 1
Sample construction

Description	Firms.	Obs.
Total Raw data Eikon database for 16 emerging economies	4,379	33,535
Removing firms from Banking and Investment Services, Uranium, Insurance and Real State	4,257	32,417
Removing Firms with missing values on ownership, capital expenditures, sales, assets, debt, cash flow, and stock prices	3,844	20,192
Removing observations with investment to assets ratios above 2.0 and sales to assets above 4.5	3,597	18,753
Removing firms with less than three years coverage	3,347	16,815
Dropping firms from small sample countries (Colombia, Hungary, Saudi Arabia, United Arab Emirates)	3,185	16,595
Final Sample	3,185	16,595

Notes: Data are from Thomson Eikon and S&P Capital IQ. Variables are defined in the appendix (Table A1).

Table 2 Descriptive statistics by institutional investor presence and colour

Variable	<i>Institutional ownership > 0</i>						<i>Institutional ownership = 0</i>					
	N	mean	p50	std	min	max	N	mean	p50	std	min	max
Investment ratio	8,469	0.071	0.050	0.068	0.000	0.425	8,239	0.059	0.038	0.064	0.000	0.426
Institutional ownership	10,234	0.107	0.080	0.107	0.010	0.880	10,139	...	...	...	...	...
Grey investor ownership	10,234	0.026	0.000	0.062	0.000	0.870	10,139	...	...	...	...	...
Independent investor ownership	10,234	0.081	0.050	0.097	0.000	0.880	10,139	...	...	...	...	...
Foreign institutional ownership	10,234	0.024	0.000	0.047	0.000	0.560	10,139	...	...	...	...	...
Local institutional ownership	10,234	0.083	0.050	0.106	0.000	0.880	10,139	...	...	...	...	...
Cash flow ratio	8,538	0.076	0.068	0.091	-0.258	0.444	8,277	0.054	0.047	0.085	-0.256	0.438
Tobin's Q	10,212	1.300	1.097	0.689	0.429	7.857	10,107	1.085	0.936	0.541	0.429	7.849
Size	10,234	19.9	19.8	1.7	16.1	26.5	10,139	18.6	18.4	1.3	16.2	24.7
Debt ratio	10,172	0.259	0.247	0.161	0.000	0.773	10,021	0.278	0.267	0.168	0.000	0.773
Long-term debt ratio	10,234	0.495	0.515	0.280	0.000	1.000	10,139	0.377	0.333	0.276	0.000	1.000
Sales ratio	10,045	0.942	0.842	0.553	0.061	3.333	9,977	0.926	0.852	0.515	0.061	3.333
Cash ratio	10,140	0.109	0.081	0.096	0.002	0.699	10,011	0.100	0.068	0.098	0.002	0.714
Ownership concentration	10,234	0.409	0.420	0.256	0.010	1.000	10,139	0.483	0.470	0.201	0.010	1.000
	<i>Independent institutional ownership > 0</i>						<i>Grey institutional ownership > 0</i>					
	N	mean	p50	std	min	max	N	mean	p50	std	min	max
Investment ratio	7,497	0.073	0.052	0.069	0.000	0.425	16,708	0.065	0.044	0.066	0.000	0.426
Institutional ownership	9,088	0.106	0.070	0.107	0.010	0.880	20,373	0.054	0.010	0.093	0.000	0.880
Grey investor ownership	9,088	0.015	0.000	0.041	0.000	0.560	20,373	0.013	0.000	0.046	0.000	0.870
Independent investor ownership	9,088	0.091	0.060	0.098	0.010	0.880	20,373	0.041	0.000	0.080	0.000	0.880
Foreign institutional ownership	9,088	0.025	0.000	0.048	0.000	0.560	20,373	0.012	0.000	0.035	0.000	0.560
Local institutional ownership	9,088	0.080	0.050	0.105	0.000	0.880	20,373	0.042	0.000	0.086	0.000	0.880
Cash flow ratio	7,565	0.076	0.069	0.092	-0.258	0.444	16,815	0.065	0.058	0.089	-0.258	0.444
Tobin's Q	9,067	1.317	1.105	0.706	0.429	7.857	20,319	1.193	1.007	0.629	0.429	7.857
Size	9,088	20.0	19.8	1.7	16.1	26.5	20,373	19.3	19.1	1.6	16.1	26.5
Debt ratio	9,034	0.258	0.246	0.160	0.000	0.773	20,193	0.269	0.257	0.165	0.000	0.773
Long-term debt ratio	9,088	0.500	0.520	0.280	0.000	1.000	20,373	0.436	0.425	0.284	0.000	1.000
Sales ratio	8,931	0.932	0.833	0.545	0.061	3.333	20,022	0.934	0.846	0.534	0.061	3.333
Cash ratio	9,001	0.110	0.081	0.097	0.002	0.699	20,151	0.104	0.075	0.097	0.002	0.714
Ownership concentration	9,088	0.396	0.410	0.259	0.010	1.000	20,373	0.446	0.450	0.233	0.010	1.000

Notes: Data are from Thomson Eikon and S&P Capital IQ. Variables are defined in the appendix (Table A1).

Table 3 - Institutional investor ownership and investment
Dependent variable: Investment ratio (Fixed Effects-GMM Regressions)

VARIABLES	(1) Total	(2) Total	(3) Size Restricted	(4) Size Unrestricted	(5) KZ-Index Restricted	(6) KZ-Index Unrestricted
Investment ratio (lagged)	0.322*** (14.018)	0.321*** (13.939)	0.315*** (9.740)	0.371*** (15.269)	0.291*** (8.066)	0.345*** (11.612)
Cash flow ratio	0.174*** (5.181)	0.162*** (4.358)	0.207*** (5.270)	0.155*** (4.440)	0.168*** (5.150)	0.115*** (2.680)
Institutional ownership x cash flow		0.151 (0.605)	-0.603** (-2.357)	0.465* (1.682)	-0.428* (-1.773)	0.397 (1.519)
Institutional ownership	-0.076* (-1.742)	-0.085* (-1.831)	0.049 (1.079)	-0.098** (-2.126)	0.002 (0.031)	0.061 (1.171)
Institutional ownership (squared)	0.229** (2.046)	0.227** (2.026)	-0.039 (-0.474)	0.175 (1.584)	0.119 (0.910)	-0.101 (-0.785)
Tobin's Q	0.012*** (3.823)	0.012*** (3.794)	0.017*** (3.723)	0.011*** (3.487)	0.021*** (3.579)	0.010*** (2.614)
Size	0.001 (0.921)	0.001 (1.006)	0.002 (0.661)	0.002* (1.743)	-0.000 (-0.065)	-0.001 (-0.459)
Debt/Assets	-0.020** (-2.012)	-0.021** (-2.083)	-0.009 (-0.635)	-0.008 (-0.705)	0.000 (0.023)	-0.023* (-1.663)
Long-term debt	0.012** (1.980)	0.012** (1.994)	0.021** (2.487)	0.003 (0.433)	0.015* (1.948)	0.009 (0.944)
Sales ratio	-0.004 (-1.243)	-0.004 (-1.247)	0.002 (0.459)	-0.005 (-1.601)	-0.004 (-0.982)	-0.001 (-0.164)
Cash ratio	-0.033* (-1.795)	-0.034* (-1.859)	-0.016 (-0.772)	-0.026 (-1.263)	-0.051** (-2.547)	0.016 (0.401)
Ownership concentration	-0.012 (-1.533)	-0.013 (-1.629)	-0.021* (-1.760)	-0.022** (-2.563)	-0.027** (-2.522)	0.003 (0.289)
Observations	11,848	11,848	5,244	6,604	6,202	5,646
Number of id	2,699	2,699	1,447	1,252	1,411	1,288
Country-Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
F-Test	26.3	24.69	12.72	29.87	11.56	27.7
Auto(1)	0	0	0	0	0	0
Auto(2)	0.474	0.441	0.749	0.485	0.449	0.718
Hansen p-value	0.265	0.249	0.287	0.598	0.312	0.359
<i>Marg. Effect</i> (<i>dInv/dCF</i>)	-	0.170*** (5.151)	0.183*** (5.228)	0.190*** (6.551)	0.142*** (4.99)	0.139*** (3.88)

Notes: The *Investment ratio* is the capital expenditure scaled by lagged total assets. The *Firm cash flow ratio* is the income based cash flow over lagged total assets. *Instown_{i,t}* represents the percentage ownership participation in the hands of institutional investors. $\mathbf{X}_{i,t}$ is a set of firm-level control variables defined in Table A1;. α_i is the firm-specific effect, d_t and d_c denotes the year and country dummies; and $u_{i,t}$ represents the individual error term. Auto(2) is a test of second order serial autocorrelation of the residuals under the null hypothesis of no serial correlation. The Hansen test is a test of overidentifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term. *t-statistics* from Robust Standard Errors are in parentheses. ***, **, and * represent a level of significance lower than 1%, 5%, and 10%, respectively.

Table 4 Colours of institutional investor ownership and investment
Dependent variable: Investment ratio (Fixed Effects-GMM Regressions)

VARIABLES	(1) Total	(2) Total	(3) Size Restricted	(4) Size Restricted	(5) KZ Index Restricted	(6) KZ Index Unrestricted
Investment (Lagged)	0.319*** (13.848)	0.320*** (13.793)	0.319*** (9.763)	0.318*** (9.728)	0.367*** (15.227)	0.370*** (15.334)
Cash flow	0.154*** (4.116)	0.156*** (4.092)	0.204*** (5.058)	0.203*** (5.109)	0.157*** (4.406)	0.159*** (4.413)
Cash flow x indep. investor ownership	-0.116 (-0.435)	-0.081 (-0.319)	-0.536** (-2.029)	-0.550** (-2.132)	0.295 (0.901)	0.182 (0.544)
Cash flow x grey investor ownership	1.042* (1.669)	1.088 (1.642)	-0.705 (-0.753)	-0.590 (-0.606)	1.118** (2.264)	1.065** (2.169)
Independent investor ownership	0.018 (0.678)	-0.043 (-0.798)	0.004 (0.156)	0.031 (0.530)	-0.020 (-0.597)	-0.085* (-1.676)
Independent investor own. (squared)		0.164 (1.308)		-0.048 (-0.527)		0.217* (1.719)
Grey investor ownership	-0.047 (-0.818)	-0.178* (-1.661)	0.135 (1.572)	0.083 (0.593)	-0.076 (-1.615)	-0.099 (-1.189)
Grey investor ownership (squared)		0.477 (1.375)		0.147 (0.363)		0.054 (0.207)
Tobin's Q	0.012*** (3.961)	0.012*** (3.858)	0.017*** (3.655)	0.017*** (3.675)	0.010*** (3.225)	0.011*** (3.364)
Size	0.000 (0.119)	0.001 (0.727)	0.002 (0.640)	0.002 (0.635)	0.002 (1.588)	0.003* (1.836)
Debt/Assets	-0.015 (-1.566)	-0.017* (-1.727)	-0.009 (-0.646)	-0.008 (-0.554)	-0.001 (-0.097)	-0.004 (-0.313)
Long-term debt	0.012** (1.971)	0.013** (2.074)	0.019** (2.187)	0.019** (2.218)	0.002 (0.292)	0.001 (0.189)
Sales ratio	-0.003 (-0.904)	-0.003 (-0.943)	0.001 (0.341)	0.002 (0.394)	-0.006* (-1.772)	-0.006* (-1.672)
Cash ratio	-0.035* (-1.922)	-0.036** (-1.978)	-0.021 (-1.021)	-0.020 (-0.937)	-0.025 (-1.190)	-0.022 (-1.020)
Ownership concentration	-0.011 (-1.381)	-0.011 (-1.363)	-0.021* (-1.916)	-0.020* (-1.706)	-0.020** (-2.333)	-0.021** (-2.466)
Observations	11,848	11,848	5,244	5,244	6,604	6,604
Number of id	2,699	2,699	1,447	1,447	1,252	1,252
Country-Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
F-Test	239.2	224.6	126.2	11.92	28.49	169.8
Auto(1)	0	0	0	0	0	0
Auto(2)	0.404	0.420	0.736	0.734	0.410	0.466
Hansen p-value	0.232	0.274	0.198	0.207	0.574	0.512
<i>Marginal Effect</i> (dInv/dCF)	0.164*** (4.88)	0.168*** (5.00)	0.180*** (5.03)	0.179*** (5.12)	0.196*** (6.42)	0.190*** (6.27)
(dInv/dCF) only IndepIO>0	0.148*** (4.24)	0.152*** (4.29)	0.186*** (4.99)	0.184*** (5.02)	0.173*** (5.48)	0.168*** (5.39)
(dInv/dCF) only GreyIO>0	0.169*** (4.74)	0.172*** (4.76)	0.198*** (5.09)	0.197*** (5.20)	0.180*** (5.26)	0.180*** (5.22)

Notes: The *Investment ratio* is the capital expenditure scaled by lagged total assets. *Cash Flow* is the income based cash flow over lagged total assets. *Indep IO* represents the percentage of ownership participation in the hands of independent institutional investors. *Grey IO*_(i,t) represents the percentage of ownership participation in the hands of grey institutional investors. $\mathbf{X}_{i,t}$ is a vector of firm-level control variables defined in Table 1 ; α_i is the firm-specific effect, d_t and d_c denotes the year and country and year dummies; and μ_{it} represents the individual error term. Auto(2) is a test of second order serial autocorrelation of the residuals under the null hypothesis of no serial correlation. The Hansen test is a test of over identifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term. t-statistics from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively.

Table 5: Descriptive statistics and mean's difference test of the NN Matching

Variables	(1) Treatment 1				(2) Treatment 2				(3) Treatment 3			
	Obs	Tinsti=1	Tinsti=0	mean diff. (t-stat)	Obs.	Tgrey=1	Tgrey=0	mean diff (t-stat)	Obs.	Tindep=1	Tindep=0	mean diff. (t-stat)
Investment ratio	4314	0.065 (0.064)	0.063 (0.057)	2.12**	1665	0.063 (0.061)	0.067 (0.062)	-1.91*	4013	0.068 (0.065)	0.063 (0.060)	3.47***
Cash flow	4314	0.063 (0.075)	0.063 (0.070)	-1.14	1665	0.068 (0.076)	0.069 (0.073)	-0.55	4013	0.065 (0.077)	0.066 (0.072)	-1.65
Cash ratio	4314	0.989 (0.080)	0.0983 (0.087)	0.35	1665	0.100 (0.084)	0.098 (0.082)	1.00	4013	0.101 (0.082)	0.104 (0.091)	-1.63
Tobin's Q	4314	1.078 (0.402)	1.081 (0.417)	-1.12	1665	1.129 (0.432)	1.128 (0.437)	0.23	4013	1.103 (0.431)	1.104 (0.447)	-0.44
Size	4314	19.844 (1.604)	19.845 (1.637)	-0.10	1665	20.249 (1.782)	20.237 (1.780)	1.24	4013	19.90 (1.624)	19.91 (1.645)	-1.18
Debt ratio	4314	0.269 (0.153)	0.269 (0.147)	-0.18	1665	0.267 (0.153)	0.266 (0.148)	0.38	4013	0.266 (0.154)	0.265 (0.149)	0.597
Long-term debt	4314	0.466 (0.272)	0.464 (0.273)	1.49	1665	0.486 (0.267)	0.484 (0.264)	0.94	4013	0.476 (0.274)	0.476 (0.274)	-0.507
Ownership Concentration	4314	0.467 (0.218)	0.469 (0.196)	-1.13	1665	0.481 (0.199)	0.478 (0.200)	1.38	4013	0.471 (0.217)	0.471 (0.197)	-0.175

Notes: Treatment 1 = the existence of institutional investors in the ownership structure; Treatment 2 = the existence of grey institutional investors; Treatment 3 = the existence of independent institutional investors in firms.

Figure 1. Kernel density estimate for differential Investment ratios between firms with institutional investors and equivalent matched firms

Notes: After performing the nearest-neighbour matching between the treatment criteria controlled by the model controls (exact matching in year, country and industry), the matched samples were restricted to an investment ratio differential of between -0.15 and 0.15 range, resulting in a paired sample of 4314, 1665 and 4013 for total institutional investors, grey institutional investors and independent institutional investors, respectively. Epanechnikov kernel function was used to estimate the density function. Two-sample Kolmogorov-Smirnov test for equality of distribution functions was performed for each treatment; the result for total institutional investors indicates that the biggest difference between the firms with institutional investors (c.d.f Inst=1) and without institutional investors (c.d.f inst=0) is 0.0326 (p-value 0.010), the biggest difference between the Inst=0 c.d.f and the Inst=1 c.d.f is -0.0322 (p-value 0.011) and the combined test have a p-value of 0.02. The results for grey institutional ownership treatment indicates that the biggest difference between the firms with grey investors (c.d.f dgrey=1) and without grey investors (c.d.f dgrey=0) is 0.0138 (p-value 0.728), the biggest difference between the dindep=0 c.d.f and the dindep=1 c.d.f is -0.0553 (p-value 0.006) and the combined test have a p-value of 0.012. Finally, the results for independent institutional ownership treatment indicates that the biggest difference between the firms with independent investors (c.d.f dindep=1) and without independent investors (c.d.f dindep=0) is 0.0344 (p-value 0.009), the biggest difference between the dindep=0 c.d.f and the dindep=1 c.d.f is -0.0083 (p-value 0.761) and the combined test have a p-value of 0.018.

Appendix A1: Variable definition

Abbreviation	Variable	Definition
Investment variable		
$Inv_{i,t}$	Investment	Capital expenditures of the year t over total assets at the beginning of the period ($t-1$).
Hypothesis explanatory variables		
$CF_{i,t}$	Cash flow	Operating Cash Flow of year t over total assets at the beginning of period ($t-1$)
$Instown$	Institutional ownership	Proportion of shares owned by institutional investors
$ForIO$	Foreign institutional ownership	Proportion of shares owned by foreign institutional investors
$LocIO$	Local institutional ownership	Proportion of shares owned by local institutional investors
$IndepIO$	Independent investor ownership	Proportion of shares owned by investors classified as Independent.
$GreyIO$	Grey investor ownership	Proportion of shares owned by investors classified as Grey.
$Inst$	Dummy institutional investor	Takes value 1 if institutional ownership is greater than zero, and zero otherwise
$dindep$	Dummy independent investor	Takes value 1 if independent institutional ownership is greater than zero, and zero otherwise
$dgrey$	Dummy grey investor	Takes value 1 if grey institutional ownership is greater than zero, and zero otherwise
NN-Matching dummy variables		
$Inst$	Institutional ownership dummy	Takes value 1 if institutional ownership is greater than zero, and zero otherwise.
$dgrey$	Grey institutional ownership dummy	Takes value 1 if the grey institutional ownership is greater than zero, and zero otherwise.
$dindep$	Independent institutional ownership dummy	Takes value 1 if the independent institutional ownership is greater than zero, and zero otherwise.
Moderating variables		
$Size\ Restricted$	$Sub-sample\ Low\ Size$	Belong to this group when average firm size is under the country-industry median of size.
$Size\ Unrestricted$	$Sub-sample\ High\ Size$	Belong to this group when average firm size is over the country-industry median of size.
$KZ-Index\ Restricted$	$Sub-sample\ High\ level\ of\ KZ-Index$	Belong to this group when average KZ-Index is over the country-industry median of KZ-Index.
$KZ-Index\ Unrestricted$	$Sub-sample\ Low\ level\ of\ KZ-Index$	Belong to this group when average KZ-Index is under the country-industry median of KZ-Index.
Firm-level control variables		
$Qtob$	Tobin's Q	(Market capitalization + Total debt)/Total asset's replacement value
$Ln(Assets)$	Size	Natural logarithm of total assets
$Debt$	Debt ratio	Total debt to total assets
$LT\ Debt$	Long-term debt	Long-term debt to total debt
$Cash$	Cash ratio	Cash and equivalents over total assets
$Sales$	Sales ratio	Net Sales to total assets
$C3$	Ownership concentration	Ownership participation of the three largest shareholders
Country, Industry, and Year		
$Year-country$	Year-country fixed effects	Set of year-country dummies
$Industry$	Industrial code	Set of Thomson Reuters TRBC Business classification industrial code

Appendix A2 – Descriptive statistics by country

Variable	Brazil Mean	Std.	Chile Mean	Std.	Greece Mean	Std.	Indonesia Mean	Std.	Malaysia Mean	Std.	Mexico Mean	Std.
Investmet ratio	0.069	0.065	0.066	0.058	0.047	0.063	0.076	0.073	0.053	0.060	0.060	0.052
Institutional Ownership	0.130	0.152	0.066	0.079	0.036	0.053	0.024	0.049	0.027	0.053	0.072	0.080
Grey Investors Ownership	0.025	0.074	0.010	0.025	0.001	0.011	0.007	0.035	0.004	0.017	0.000	0.003
Independent Investors Ownership	0.105	0.137	0.056	0.075	0.035	0.051	0.017	0.036	0.023	0.049	0.071	0.080
Local Institutional Ownership	0.097	0.142	0.061	0.074	0.013	0.027	0.004	0.022	0.020	0.047	0.047	0.079
Foreign Institutional Ownership	0.033	0.057	0.005	0.028	0.022	0.048	0.020	0.046	0.007	0.024	0.025	0.040
Cash flow	0.077	0.091	0.075	0.089	0.039	0.074	0.076	0.094	0.060	0.081	0.091	0.085
Tobin's Q	1.357	0.636	1.292	0.583	1.032	0.453	1.466	0.855	1.048	0.565	1.407	0.550
Size	20.993	1.692	20.228	1.599	19.555	1.273	19.456	1.502	18.669	1.441	21.182	1.473
Debt Ratio	0.316	0.160	0.258	0.126	0.369	0.172	0.302	0.169	0.228	0.155	0.261	0.151
Long Term Debt ratio	0.608	0.237	0.653	0.256	0.485	0.275	0.504	0.303	0.421	0.283	0.724	0.250
Sales ratio	0.806	0.480	0.787	0.476	0.670	0.429	0.939	0.598	0.775	0.480	0.755	0.375
Cash ratio	0.136	0.100	0.081	0.086	0.074	0.074	0.104	0.098	0.114	0.097	0.082	0.066
Ownership Concentration	0.489	0.238	0.638	0.200	0.431	0.291	0.619	0.229	0.432	0.223	0.408	0.297
Obs.	829		572		772		1,201		3,033		418	

Variable	Peru Mean	Std.	Poland Mean	Std.	Rep. of Korea Mean	Std.	South Africa Mean	Std.	Thailand Mean	Std.
Investmet ratio	0.078	0.066	0.059	0.063	0.070	0.068	0.081	0.068	0.068	0.070
Institutional Ownership	0.058	0.105	0.122	0.111	0.042	0.070	0.162	0.157	0.016	0.037
Grey Investors Ownership	0.030	0.065	0.058	0.083	0.015	0.047	0.001	0.007	0.005	0.019
Independent Investors Ownership	0.028	0.053	0.064	0.084	0.027	0.049	0.161	0.157	0.011	0.032
Local Institutional Ownership	0.048	0.099	0.115	0.109	0.031	0.063	0.147	0.153	0.010	0.031
Foreign Institutional Ownership	0.010	0.029	0.006	0.028	0.011	0.033	0.015	0.043	0.006	0.022
Cash flow	0.106	0.106	0.067	0.088	0.052	0.083	0.088	0.095	0.085	0.102
Tobin's Q	1.344	0.974	1.214	0.596	1.033	0.429	1.584	0.864	1.332	0.597
Size	19.985	1.210	18.667	1.436	19.528	1.516	19.783	1.730	18.866	1.559
Debt Ratio	0.231	0.142	0.200	0.132	0.291	0.162	0.192	0.135	0.288	0.183
Long Term Debt	0.546	0.259	0.427	0.271	0.340	0.240	0.549	0.273	0.410	0.300
Sales ratio	0.732	0.425	1.119	0.592	0.996	0.477	1.198	0.626	1.032	0.583
Cash ratio	0.065	0.066	0.076	0.081	0.113	0.098	0.113	0.104	0.088	0.093
Ownership Concentration	0.601	0.284	0.554	0.204	0.406	0.166	0.420	0.210	0.409	0.231
Obs.	194		1,376		5,578		1,061		1,561	

Notes: Data are from Thomson Eikon and S&P Capital IQ. Variables are defined in the appendix (Table A1).

Appendix – A3 Foreign and local institutional investor ownership and investment

Dependent variable: Investment ratio (Fixed Effects-GMM Regressions)

VARIABLES	(1) Total	(2) Total	(3) Size Restricted	(4) Size Restricted	(5) Size Unrestricted	(6) Size Unrestricted
Investment ratio (Lagged)	0.324*** (14.044)	0.324*** (13.875)	0.324*** (10.116)	0.322*** (9.933)	0.372*** (15.086)	0.373*** (15.236)
Cash flow	0.164*** (4.259)	0.164*** (4.292)	0.220*** (5.505)	0.218*** (5.375)	0.157*** (4.682)	0.162*** (4.663)
Cash flow x foreign institutional Inv.	-0.279 (-0.357)	-0.318 (-0.415)	-1.978* (-1.743)	-1.941* (-1.736)	-0.245 (-0.364)	-0.316 (-0.463)
Cash Flow x local institutional investor	0.227 (0.874)	0.251 (0.972)	-0.455* (-1.776)	-0.475* (-1.818)	0.636** (2.262)	0.540* (1.947)
Foreign institutional investor	-0.043 (-0.550)	-0.014 (-0.142)	0.205* (1.793)	0.248* (1.841)	-0.088 (-1.465)	-0.088 (-1.158)
Foreign institutional investor (squared)		-0.078 (-0.479)		-0.146 (-0.739)		0.023 (0.185)
Local institutional investor	0.005 (0.200)	0.032 (0.738)	0.021 (0.843)	-0.008 (-0.207)	-0.031 (-1.014)	-0.023 (-0.447)
Local institutional investor (squared)		-0.051 (-0.858)		0.055 (1.084)		-0.003 (-0.052)
Tobin's Q	0.012*** (3.736)	0.012*** (3.584)	0.016*** (3.481)	0.016*** (3.357)	0.011*** (3.433)	0.011*** (3.541)
Size	0.001 (0.622)	0.001 (0.977)	0.002 (0.846)	0.002 (0.903)	0.003* (1.758)	0.002* (1.731)
Debt/Assets	-0.019* (-1.946)	-0.022** (-2.161)	-0.008 (-0.589)	-0.007 (-0.485)	-0.007 (-0.693)	-0.007 (-0.659)
Long-term debt	0.011* (1.780)	0.011* (1.823)	0.020** (2.395)	0.019** (2.350)	0.001 (0.132)	0.001 (0.124)
Sales rate	-0.004 (-1.175)	-0.004 (-1.125)	0.001 (0.140)	0.001 (0.115)	-0.007* (-1.937)	-0.007* (-1.854)
Cash rate	-0.029 (-1.537)	-0.029 (-1.564)	-0.011 (-0.547)	-0.015 (-0.721)	-0.020 (-0.940)	-0.020 (-0.932)
Ownership concentration	-0.015* (-1.776)	-0.014* (-1.728)	-0.020* (-1.807)	-0.019* (-1.791)	-0.025*** (-2.789)	-0.024*** (-2.691)
Observations	11,848	11,835	5,244	5,236	6,604	6,599
Number of id	2,699	2,697	1,447	1,445	1,252	1,252
Country-Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
F-Test	23.13	21.92	12.83	132.4	176.9	172.2
Auto(1)	0	0	0	0	0	0
Auto(2)	0.458	0.472	0.813	0.816	0.511	0.550
Hansen p-value	0.273	0.244	0.387	0.341	0.658	0.651
<i>Marginal Effect</i> (dInv/dCF)	0.171*** (5.03)	0.173*** (5.14)	0.191*** (5.35)	0.192*** (5.33)	0.189*** (6.71)	0.188*** (6.64)
(dInv/dCF) only Infor>0	0.160*** (4.52)	0.162*** (4.60)	0.207*** (5.29)	0.210*** (5.32)	0.152*** (4.95)	0.152*** (5.00)
(dInv/dCF) only Inloc>0	0.174*** (4.74)	0.178*** (4.86)	0.204*** (5.55)	0.206*** (5.59)	0.194*** (6.36)	0.193*** (6.33)

Notes: The *Investment ratio* is capital expenditure scaled by lagged total assets. *Cash Flow* is the income based cash flow over lagged total assets. *Foreign IO* represents the percentage ownership participation in the hands of foreign institutional investors. *Local IO* represents the percentage ownership participation in the hands of local institutional investors. $\mathbf{X}_{i,t}$ is a vector of firm-level control variables defined in Table 1; α_i is the firm-specific effect, d_t and d_c denotes the year and country and year dummies; and μ_{it} represents the individual error term. Auto(2) is a test of second order serial autocorrelation of the residuals under the null hypothesis of no serial correlation. The Hansen test is a test of over-identifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term. t-statistics from Robust Standard Errors are in parentheses. ***, **, and * represents a level of significance lower than 1%, 5%, and 10%, respectively.

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