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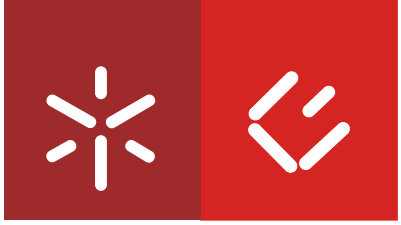

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Do managers mislead investors through earnings manipulation before SEOs?

Dissertação de Mestrado
Mestrado em Finanças

Trabalho efetuado sob a orientação do
Professor Doutor Gilberto Ramos Loureiro

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Do managers mislead investors through earnings manipulation before SEOs?

Abstract

In this study, I assess the discretion in financial reported earnings before seasoned equity offerings (SEOs). Using a sample of 344 European SEOs between 2000 and 2010, together with a propensity score matched control sample, I find evidence of statistically significant and economically relevant real earnings manipulation before these corporate events; in contrast, there is no evidence of accruals manipulation. The results also suggest that prior to the equity issue the amount of earnings management is higher in countries where the quality of the information environment is poor. Additionally, I do not find significant differences in post-issue long-term stock performance between issuers and comparable non-issuers. However, consistent with the literature, I find that post-issue market-adjusted performance is significantly lower for issuers. To some extent, the results suggest a negative relation between pre-issue earnings management and post-issue stock performance.

Keywords: Seasoned Equity Offerings, Earnings Management, Accruals, Real Activity Manipulation, Long-term Performance.

Será que os gestores manipulam os resultados antes da emissão de novo capital?

Resumo

Neste estudo, avalio se os gestores das empresas usam a sua discricionariedade para reportar resultados mais favoráveis antes da emissão de novo capital. Utilizando uma amostra de 344 emissões Europeias de novo capital decorridas entre 2000 e 2010, juntamente com uma amostra de controlo encontrada através do *propensity score matching* (PSM), os resultados revelam evidência estatisticamente significativa de manipulação através de atividades reais antes destes eventos. Por outro lado, não existe evidência de manipulação em termos de *accruals*. Adicionalmente, os resultados sugerem que antes da emissão de novo capital o montante de manipulação é mais acentuado em países onde a qualidade de informação é classificada como fraca. Relativamente à performance de longo prazo após a emissão de novo capital, quando avaliada em relação às empresas de controlo, não existe qualquer evidência de que esta seja negativamente afetada. No entanto, quando o desempenho das empresas que emitem novo capital é medido em relação ao índice de mercado, os resultados revelam que as empresas que apresentam elevados níveis de manipulação no período imediatamente anterior à emissão de novo capital apresentam uma performance pior.

Palavras-chave: Emissão de Novo Capital, Gestão de Resultados, *Accruals*, Manipulação de Atividades Reais, Performance de Longo-prazo.

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1. Introduction

More and more both academics and practitioners show an increasing interest in managers' behaviour around corporate events that affect the market value of the firm's equity. Seasoned equity offerings (SEOs) constitute a useful setting to assess some financial consequences of the alleged manipulation of the firm's financial information.

The fact that managerial actions are not fully observed by the market allows managers to engage in earnings management to overstate earnings prior to issuing equity and consequently reduce firms' cost of financing (Dechow, Sloan, and Sweeney, 1996). In other words, earnings management before SEOs is of particular interest to current shareholders because any overvaluation at the time of this well identified period would result in a wealth transfer from prospective to current shareholders (Kothari, Mizik, and Roychowdhury, 2012). Besides that, the deliberate increase of earnings will boost the offering proceeds, which leads to less dilution of ownership (Kim and Park, 2005).[1] In short, managers' primary incentive is to create overly optimistic expectations regarding issuers' market value. If investors fail to detect manipulation, they will end up paying too much for the issuers' shares. Unarguably, the advantages are immense and make earnings manipulation around SEOs a tempting activity.

Indeed, research in the United States has documented plenty of evidence of the practice of both accruals and real earnings management activities around SEOs (Cohen and Zarowin, 2010; Kim and Park, 2005; Kothari, Mizik, and Roychowdhury, 2012; Mizik and Jacobson, 2007; Rangan, 1998; Shivakumar, 2000; Teoh, Welch, and Wong, 1998a). Thereby, the purpose of this dissertation is to investigate whether managers from European firms also engage in these type of activities and observe the same consequences. For instance, this study tests whether managers make income-increasing adjustments prior to SEOs and subsequently experience long-term underperformance post-SEO announcements.

The first challenge in this matter arises with the definition of earnings management, where no clear consensus is found in the literature. The scope of earnings management that I consider is shaped by the purpose of studying its presence and effect around SEOs. Equity offerings are a typical corporate event, where managers have a greater incentive to use their discretion in financial reporting and in structuring transactions to mislead stakeholders about the economic performance

[1] If the company does not overstate the earnings the dilution of ownership will be higher, because it will have to offer more shares to raise the same amount of capital from the offering.

of the firm or to influence desired outcomes that depend on reported accounting numbers (Healy and Whalen, 1999). Although this definition seems to only capture the connotation of opportunistic manipulation, it is noteworthy to emphasize that earnings management extends beyond this misleading aspect, it also plays an informative[2] role, which is crucial in the reporting process. An additional challenge is to choose within the existing techniques to measure earnings management. According to Dechow, Sloan, and Sweeney (1995), the modified version of the Jones (1991) model is the one that exhibits results with more power to detect accrual-based earnings management, which leads me to opt for this approach. To capture evidence of the use of real earnings management activities, I follow Roychowdhury (2006). Whether firms only use one earnings management tool or the entire set of earnings management strategies available is not relevant for this analysis. What matters is to find if there is actually earnings manipulation, any kind of it.

Over the last few decades, seasoned equity offerings have been a topic of considerable research not only because of the potential earnings manipulation that precedes this corporate event but also due to the curious post-issue long-run underperformance. In fact, most of the studies that detect the existence of pre-issue earnings management also document a subsequent long-term poor stock performance – e.g., Rangan (1998) and Teoh, Welch, and Wong (1998a), among others. The intuition is that earnings management activities after a certain time become unsustainable, and thus earnings reversal together with the failure to detect earnings management through the reported information end up being reflected in the issuers' subsequent performance.

To implement my analysis, I use a sample of 344 European seasoned equity offerings conducted between 2000 and 2010, together with a propensity score matched control sample of firms that did not issue equity during that period. I find evidence that managers deliberately use real earnings management techniques to inflate pre-issue earnings. Surprisingly, in my sample managers do not attempt to manipulate earnings through accruals. The results also suggest that in countries with poor information environment a larger fraction of issuers tend to engage in earnings management prior to the equity issue. Finally, and equally important, I show that, three years following the announcement, issuers do not underperform comparable non-issuers. Notwithstanding, when issuers' performance is measured against the country market index – the

[2] For instance, the managerial flexibility in the accruals accounting system enables managers to manage earnings to smooth out fluctuations since investors see variability as risk and associate stability to growth. Moreover, this accounting system reflects more accurately the firm's financial condition.

standard procedure in this type of studies –, issuers experience poor long-term performance and financial markets strongly penalize firms that engage in pre-issue aggressive management.

To the best of my knowledge, a distinctive feature of this study is the use of the propensity score matching to find comparable non-issuers and then detect earnings manipulation using this group of non-issuers as control firms. The present study also differs from others in the use of those control firms to detect long-term abnormal performance in the context of SEOs.

The remainder of this study is composed of section 2, which reviews relevant prior studies and develops the hypotheses to be tested. Section 3 discusses the empirical methodology. Section 4 explains the sample selection and reports descriptive statistics. Empirical results are discussed in section 5. Lastly, section 6 provides concluding remarks and suggests ideas for future research.

2. Literature Review and Hypotheses Development

The existence of an information gap between firm insiders and public investors about the true value of the firm and its future prospects, allows managers to exploit temporary market misvaluation, when timing equity issues, or to intentionally try to deceive the market through earnings management.[3]

The former scenario is presented as the window of opportunity or the timing hypothesis. These expressions represent periods in which firms can raise capital at favourable terms because the market is overpricing their securities with respect to managers' private information. Bayless and Chaplinsky (1996)[4] find evidence that firms time their SEOs to take advantage of time-varying misvaluation. More precisely, firms issue equity when they are overvalued. Lucas and McDonald (1990) formulate a model that clearly explains this overvaluation. According to this model, there is a lag of information between today and the next period, thus some firms are undervalued and others are overvalued. Firms whose market value is below their intrinsic value will experience a share price increase upon the revelation of the accurate information, and the other firms will experience the contrary. With this in mind and supposing that firms need the offering proceeds to finance a project, the authors state that

[3] These two alternative interpretations are not mutually exclusive.

[4] These authors divided their analysis into hot and cold markets, being hot markets periods of high equity issue volume, and concluded that certain periods offer a window of opportunities to raise capital because they find that the average price reaction is significantly less negative in hot markets, when compared to cold markets.

> "If projects are long-lived and if waiting is not too costly, we would expect undervalued firms to delay issuing until the undervaluation is corrected. On the other hand, overvalued firms issue immediately since waiting may entail the loss of the project and a downward assessment in the valuation of the firm" (Lucas and McDonald, 1990, p. 1020).

It is precisely this reversal in valuation that many researchers claim to be the reason for the frequently documented post-issue underperformance. In other words, the long-term post-issue underperformance is just a correction of the pre-issue stock market overvaluation.

The evidence for misvaluation is huge and Loughran and Ritter (1995) actually present SEOs as an interesting pricing anomaly, challenging the efficient market hypothesis. These authors reiterate post-issue underperformance as being a pervasive phenomenon: "an investor would have had to invest 44 percent more money in the issuers than in nonissuers of the same size to have the same wealth five years after the offering date" (Loughran and Ritter, 1995, p. 23).

A variation of the mispricing explanation suggests that managers' purposeful intervention in the reporting process, in particular, income-increasing adjustments, can explain, at least in part, the long-term stock underperformance following SEOs – earnings management hypothesis[5]. Consistent with this view, Fauver, Loureiro, and Taboada (2015) show that issuers with high levels of earnings management, in the year prior to the SEO, experience an increase stock price crash risk in the subsequent year.

In more detail, Stein (1989) develops a theoretical model in which, in the presence of asymmetric information, managers behave myopically and boost current earnings at the expense of long-term performance. In equilibrium, investors are not fooled because they recognize managers' incentives and act accordingly. However, myopic behaviour persists and it ends up exacerbating the problem. Issuers cannot credibly signal the absence of manipulation and the market is not able to distinguish between firms that are interested in inflating current earnings and firms that are not. As a consequence, myopic managers have to manipulate even more their results if they aim to deceive the market, and firms that did not intend to overstate earnings will also have to, in order not to be harmed by a potential undervaluation before the issue.

Strategies of this nature are limited because publicly traded firms are followed by analysts and the investing community, and they must disclose public and audited information. A recent

[5] According to Teoh, Welch, and Wong (1998a, p. 64), this hypothesis predicts that "issuers have unusually high income increasing accounting adjustments pre-issue and unusually poor earnings management and stock return performance post issue".

study by Fauver, Loureiro, and Taboada (2015) brings more strength to the fact that information environment is determinant for the quality of the information released. More precisely, the authors test the impact of the enactment of the Market Abuse Directive (MAD) in the European Union and conclude that it brings transparency and compromises managers' ability to manipulate results. Needless to say, the quality of institutions and the level of market regulation limit incentives and opportunities to manage earnings. However, even in markets where there is a systematic fight for information transparency, there is a large volume of literature devoted to documenting the persistence of manipulation in firms' reporting process.

To "mask" the true economic performance (Dechow and Skinner, 2000), literature suggests that firms can engage in accruals management (hereafter referred to as AM) and real earnings management (REM). The accrual-based type of manipulation involves the adjustment of accounting methods or estimates to alter financial reports and, unlike real earnings management, it has no direct consequences on cash flows (Cohen and Zarowin, 2010). The REM strategy is accomplished by timing investment, financing decisions (Schipper, 1989), and/or structuring operating activities. Roychowdhury (2006, p. 36) simplifies this definition claiming that real activities manipulation are "management actions that deviate from normal business practices, undertaken with the primary objective of meeting certain earnings".

In a survey carried out by Graham, Harvey ,and Rajgopal (2005), statistical evidence is found that, under such scrutiny mentioned above, managers frequently choose real actions over accounting manipulations, even if this implies burning real cash flows. In 1990, Bruns Merchant made a similar inquiry and concluded that managers view earnings manipulation by accounting methods less acceptable than accomplishing the same ends manipulating operating decisions or procedures. The main advantage of this strategy is perhaps the opacity that it conveys to the manipulation. REM activities potentially have less probability of being detected, because in this context decisions are up to the managers, whereas the accounting choices are more likely to be scrutinized by auditors and regulators, once there are requirements that must be met (Gunny, 2010). Therefore, detecting REM constitutes a greater challenge for investors. On the contrary, Gunny (2010) argues that AM might be preferable due to its implicit sequential nature. While REM must occur throughout the fiscal year, AM can be made after the fiscal year end, being a far more flexible strategy. Besides opacity and timing, firms trade off these two strategies based on their relative costliness, and it is perhaps REM's major drawback. Cohen and Zarowin (2010) assert that

the post-SEO underperformance is worse when managers prefer REM over AM, ending up having real economic consequences in firm's long-term value (Zang, 2012).

Regardless the kind of strategy undertaken to reveal an unrealistically good performance, prior literature suggests that earnings management is frequently present before stock offerings. In support of this, Cohen and Zarowin (2010), Kim and Park (2005), Kothari, Mizik, and Roychowdhury (2012), Mizik and Jacobson (2007), Rangan (1998), Shivakumar (2000)[6] , and Teoh, Welch, and Wong (1998a)[7] argue that managers try to influence investors' perception of the firm value by overstating earnings before SEOs. What happens is that if the firm has a low value, a larger stake of the firm has to be given away to raise a certain amount of capital. If the manager tries to deceive the market and if the market fails to understand income-increasing accounting adjustments, investors will be overly optimistic about the issuers' prospects, the firm will be overvalued and the offering proceeds will be higher, i.e., the fraction of the firm given away is lower. Moreover, I expect that when the quality of the information environment is poor, investors cannot see through the managed earnings (Richardson, 2000) and thus manipulation should be more intense. All this reasoning leads to the following hypotheses:

H1: In the pre-issue period, issuers exhibit evidence of accruals management and/or real earnings management.

H1a: The poorer the information environment the higher is the amount of earnings management.

Proponents[8] of this argue that there should be a negative relation between earnings management and post-issue stock performance. The reasoning behind this is that issuers overstate their earnings and investors fail to perceive the earnings management signal associated with stock offerings or do not fully adjust for the potential manipulation, consequently the inflated earnings induce artificially high offer prices. This stock market overvaluation is temporary and even if managers try to keep firm's overvaluation, sooner or later earnings suffer an unexpected decline, and investors, being disappointed, lower the firm's assessed value, i.e., the stock price declines as

[6] A distinctive aspect of Shivakumar's (2000) study is the non-opportunistic motive for earnings manipulation. He advocates that manipulation may not be designed to mislead investors, it is indeed a rational response to anticipated market behaviour at offering announcements. Since issuers cannot distinguish opportunistic issuers from the others, investors treat all firms as manipulators. Expecting this market behaviour, issuers rationally overstate their earnings.

[7] While the three most recent studies examine both real and accrual-based earnings management, the others only consider the latter strategy to manipulate earnings.

[8] Mizik and Jacobson (2007), Rangan (1998), and Teoh, Welch, and Wong (1998a).

investors become disappointed by the lower than expected earnings. Dechow, Hutton, and Sloan (2000) go beyond this and show that stock prices are also boosted by affiliated analysts that promote overly optimistic growth prospects for the issuing firms. As a consequence, these authors demonstrate that the post-issue underperformance is more pronounced for the firms that were hyped by analysts affiliated with the investment banks that were underwriting those equity issues.

Against this stream of research, in which mispricing is the core explanation for underperformance, many researchers claim that there must be caution when inferring market inefficiency. The mismeasurement of the relative risk is the rational alternative explanation for SEO underperformance. According to Eckbo, Masulis, and Norli (2000), SEO events change the risk profile of the issuers, and thus they assert that despite having slightly higher exposure to market risk than their non-issuing control firms, the lower post-issue risk exposure more than offsets that systematic risk. Carlson, Fisher, and Giammarino (2010) explore risk dynamics around these corporate events from both a theoretical and empirical perspective and find robust evidence of an increase in issuers' betas prior to the announcement and a gradual decline subsequent to the issuance. Therefore, they claim that the pre-issue stock market overoptimism followed by a long-term underperformance is not anomalous, but explained by risk.

The long-term post-SEO poor performance frequently found in research represents a field where there is a huge lack of consensus as to whether the returns registered are due to market misvaluation or they actually represent the issuing firm intrinsic value, owing to its new risk characteristics. Undoubtedly, all these explanations are reasonable and relevant to understand the post-issue underperformance, however, my research is focused exclusively on the impact that the potential earnings manipulation might have on that performance. I thus formulate the following hypotheses:

H2: In the post-issue period, issuers underperform comparable non-issuers and the corresponding market index.

H2a: Issuers with higher pre-issue earnings management experience poorer stock performance.

3. Methodology

3.1. Earnings Management

Among the various means that can be used to estimate earnings management, this study focuses, firstly, on total accruals. Total accruals are given by the difference between the reported net income and cash flow from operations; they can also be decomposed into two components: discretionary and non-discretionary accruals. What differs between these two rubrics of accruals is that while non-discretionary (normal) accruals arise from transactions that are normal, given firm's performance level and business strategy, discretionary (abnormal) accruals correspond to departures from what would be expected the firm to report. In other words, abnormal accruals result from transactions made or accounting treatments chosen in order to manage earnings.

One of the fundamental features of corporate financial reports is that firms have discretion to recognize future cash flows even though cash has not changed hands yet, in order to reflect more accurately the true underlying business conditions. However, all the flexibility in reported earnings, allowed by the accrual system of accounting, opens opportunities for what is commonly known as earnings management. As stated earlier, pre-issue income-increasing accrual adjustments enable firms to raise more proceeds, compromising future reported earnings.

Even though investors perceive accruals, they cannot infer flawlessly what part is discretionary, i.e., managed. Therefore, one of the main purposes of this study is to isolate and measure this component of accruals. To decompose total accruals into the portion that is not related to managerial manipulation and the portion that is managed, I use the modified Jones (1991) model, as in Dechow, Sloan, and Sweeney (1995). Although not free of criticism, it is by far the most common methodology used to address this problem.

Jones (1991) model is based on previous works developed by Healy (1985) and DeAngelo (1986). However, unlike these approaches, Jones (1991) accruals model relaxes the assumption of constant non-discretionary accruals and estimates this variable using a regression of total accruals on sales growth and property, plant and equipment. Jones (1991) proposes the following model:

$$\frac{TA_{i,t}}{A_{i,t-1}} = \alpha_j \frac{1}{A_{i,t-1}} + \beta_{1j} \frac{\Delta S_{i,t}}{A_{i,t-1}} + \beta_{2j} \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \quad (1)$$

where $TA_{i,t}$ corresponds to total accruals in year t for firm i; $A_{i,t-1}$ stands for total assets in year $t-1$ for firm i; $\Delta S_{i,t}$ is the change in revenues in year t, obtained by the difference between revenues in year

t and revenues in year *t-1* for firm *i; $PPE_{i,t}$* represents gross property, plant, and equipment in year *t* for firm *i.* All variables and the intercept term are deflated by lagged total assets to reduce heteroscedasticity.

Jones (1991) formulation contains an implicit assumption in which revenues are all non-discretionary. This may remove an important part of earnings management from the discretionary accruals, causing the estimate of this variable to be biased toward zero. Jones (1991) highlights that she is mindful of the managers' attempts to manipulate earnings through revenues (see Jones 1991, footnote 31), but she does not suggest an alternative formulation.

Dechow, Sloan, and Sweeney (1995) relax this assumption formulating a modified version of the Jones (1991) model, which is the one I use to compute abnormal accruals. In this version total accruals are estimated as:

$$\frac{TA_{i,t}}{A_{i,t-1}} = \alpha_j \frac{1}{A_{i,t-1}} + \beta_{1j} \frac{\Delta S_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}} + \beta_{2j} \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \quad (2)$$

where *$\Delta REC_{i,t}$* is given by net receivables in year *t* minus net receivables in year *t-1* for firm *i.* Non-discretionary accruals are expressed by the explanatory component of the previous regression and discretionary accruals equal the difference between realized total accruals[9] and predicted total accruals. In other words, the error term of this regression is a proxy for accruals-based earnings management. Thus, finding abnormally high and statistically significant accruals is evidence of earnings manipulation.

To measure the extent of real earnings management, I rely on a combination of the three proxies proposed by Roychowdhury (2006): the abnormal level of cash flow from operations, the abnormal level of production costs[10], and the abnormal level of discretionary expenses. To verify if managers are biasing earnings upward or downward, Roychowdhury (2006) uses some regressions to estimate the expected (normal) levels of the variables mentioned. Then, the measure of real earnings management is given by the difference between the actual levels and the estimated normal levels of those variables.

The baseline reasoning in this literature is that prior to SEOs managers try to make the market believe that the firm is doing well, and it is actually having good results. According to what

[9] In this analysis, actual total accruals are given by the difference between reported earnings before extraordinary items and cash flows from operations, the most commonly used formulation.

[10] The terminology production costs does not apply literally to non-manufacturing firms. Note that both overproduction and price discounts generate abnormally high production costs given the sales level.

Roychowdhury (2006) establishes, earnings can be boosted by increasing the volume of sales through price discounts or more lenient credit terms. Assuming that profit margins are positive, the additional sales generated by these strategies lead to higher current-period earnings. However, since margins are lower, due to the price discounts[11], production costs are expected to be abnormally high and cash flow from operations abnormally low relative to sales level. Note that all of this is temporary and as firms revert to old prices the growth in sales registered is likely to disappear.

Another way to report higher earnings is through the reduction of discretionary expenses, which in Roychowdhury's (2006) analysis includes advertising expenses, R&D expenses, and selling, general and administrative (SG&A) expenses. Owing to the uncertainty of the future benefits associated with discretionary expenses, these must be charged to expense as incurred. Therefore, managers prefer to avoid these outflows to achieve the current-period earnings target, which leads to a pattern of unusually low discretionary expenses around the event, relative to sales. If outlays of such expenses are made in cash it is also expectable to observe higher cash flows from operations than what is normal given the sales level.

The last real earnings management technique that Roychowdhury (2006) describes consists in reducing the costs of goods sold via overproduction. Manufacturing firms can produce more goods than necessary which causes the inventory to build up, but at the same time reduces the fixed costs per unit. Hence, as long as the reduction in fixed costs per unit is not offset by an increase in marginal cost per unit, total cost per unit declines. Consequently, the reported cost of goods sold is lower and operating margins higher. Nevertheless, the excessive production leads the firm to incur in abnormally high production and holding costs that are not recovered in the same period, which affects negatively the variable cash flow from operations, given the sales level.

From this preceding reasoning, one extremely important aspect emerges. Without a doubt, the effect that the different real earnings management activities have on the pattern of discretionary expenses and production costs is clear: manipulators exhibit unusually low discretionary expenses and/or unusually high production costs, given sales level. However, the direction of cash flow from operations is ambiguous: sales manipulation and overproduction have a negative effect on it, whereas the reduction in discretionary expenses has a positive effect. Being its net effect quite

[11] The term price discounts includes the ordinary discounts, in which an item is discounted by a percent of the original price, but that is not all. Zero-percent financing, an example of a lenient credit term, can also be seen as a discount, considering the time value of money.

uncertain, I do not include in my study cash flows from operations as a proxy for real earnings management.

The estimating models that I use were developed by Dechow, Kothari, and Watts (1998) and implemented and improved by Roychowdhury (2006). Production costs correspond to the sum of the cost of goods sold and the change in inventory during the year. The model I use to estimate the normal level of production costs is:

$$\frac{Prod_{i,t}}{A_{i,t-1}} = \alpha_{0j} + \alpha_{1j}\frac{1}{A_{i,t-1}} + \beta_{1j}\frac{S_{i,t}}{A_{i,t-1}} + \beta_{2j}\frac{\Delta S_{i,t}}{A_{i,t-1}} + \beta_{3j}\frac{\Delta S_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t} \quad (3)$$

where $Prod_{i,t}$ stands for the production costs in year *t* for firm *i*; $S_{i,t}$ is net sales in year *t* for firm *i*; $\Delta S_{i,t}$ is the change in net sales in year *t* for firm *i*, obtained by the difference between net sales in year *t* and net sales in year *t-1* for firm *i*; and $\Delta S_{i,t-1}$ is given by net sales in year *t-1* minus net sales in year *t-2* for firm *i*.

I consider actual discretionary expenses as the sum of R&D and SG&A expenses. Advertising data is not available for the majority of European firms and R&D expenses are set to zero if missing. The normal level of discretionary expenses is expressed as a linear function of lagged sales:

$$\frac{DiscExp_{i,t}}{A_{i,t-1}} = \alpha_{0j} + \alpha_{1j}\frac{1}{A_{i,t-1}} + \beta_{1j}\frac{S_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t} \quad (4)$$

where $DiscExp_{i,t}$ represents discretionary expenses in year *t* for firm *i*; $A_{i,t-1}$ corresponds to total assets in year *t-1* for firm *i*; and $S_{i,t-1}$ is net sales in year *t-1* for firm *i*.

All the above regressions are estimated cross-sectionally for each subgroup of firms[12], *j*, which includes all firms in the same one-digit SIC code and the same year. Note that, as in Roychowdhury (2006), I allow for intercepts in all regressions and all the real earnings management proxies are scaled by lagged total assets. The residuals capture the abnormal levels of earnings management activities.

After estimating the proxies for accrual and real earnings manipulation, I estimate a model of binary response in order to verify whether the likelihood of a firm issuing equity is associated with more aggressive prior earnings management. The outcome variable is the dummy *Seo,* which takes the value one in the year of the announcement and zero otherwise. I run it against the estimated residuals of equations (2), (3) and (4). The expected sign of the coefficients is positive

[12] Issuing and comparable non-issuing firms are all included in the regressions.

for discretionary accruals and abnormal production costs, and negative for discretionary expenses. The remaining variables are firm individual characteristics, only used as control variables: book-to-market, leverage, return on assets, sales growth and the natural logarithm of total assets. The inclusion of these control variables is motivated by Cheng (2003), who develops a model of equity offering decision using these variables as determinants to issuing equity. All the independent variables are lagged by one year in relation to the dependent variable. The regression being estimated is of the form:

$$Seo_{i,t} = \alpha_0 + \beta_1 DiscAccruals_{i,t-1} + \beta_2 Abn_{ProdCosts}{}_{i,t-1} + \beta_3 Abn_{DiscExp}{}_{i,t-1} + \sum_{k=1}^{5} \gamma_k CtrlV_{k,t-1} + \varepsilon_{i,t} \quad (5)$$

Alternatively, in the same line of thought, I run another probit model with the same explained variable but with a different measure of earnings management. In order to facilitate the interpretation of the signs of the partial effects of each explanatory variable on the probability of issuing equity, I combine all the three measures of earnings manipulation into one variable, called *Manipulation*, that accounts for the manipulation through accruals and/or real activities. Similar to what Cohen and Zarowin (2010) do, this new variable is the sum of the abnormal accruals, abnormal production costs and discretionary expenses multiplied by negative one[13]. Per Hypothesis 1, I expect the coefficient on *Manipulation* to be positive and statistically significant. The control variables are the same as in the previous model.

Finally, to verify if the information environment sets boundaries to the severity of earnings management, I add to the previous model a variable that captures the effect of the quality of the information environment, *Good_InfoEnvironment,* which is a dummy that equals one whenever the *Info_Environment* is higher than its median, and the interaction term *Manipulation* x *Good_InfoEnvironment.* The coefficient of this interaction variable is expected to be negative and statistically significant. This formulation enables testing whether the information environment is determinant for the amount of earnings management before SEOs:

$$Seo_{i,t} = \alpha_0 + \beta_1 Manipulation_{i,t-1} + \beta_2 Good\_InfoEnvironment_{i,t-1} + \beta_3 \left(Manipulation_{i,t-1} * Good\_InfoEnvironment_{i,t-1}\right) + \sum_{k=1}^{5} \gamma_k CtrlV_{k,t-1} + \varepsilon_{i,t} \quad (6)$$

[13] Discretionary expenses are multiplied by negative one so that the higher this value is, the more likely it is that the firm is delaying discretionary expenses. Remember that abnormally low and statistically significant discretionary expenses are evidence of earnings manipulation.

3.2. Long-term Performance

Different methodologies may produce quite different conclusions in terms of long-term stock performance evaluation. However, I opt to use buy-and-hold abnormal returns (BHARs), because this measure is the one that better resembles the investor experience when compared to other approaches that entail periodic rebalancing (Kothari and Warner, 1997). Implicit to the buy-and-hold return methodology is a passive investment strategy in which an investor buys stocks and holds them for a *T* period of time, regardless of market fluctuations.

Following Barber and Lyon (1997), buy-and-hold abnormal return for event firm *i* can be expressed as the difference between the compounded returns of the event firm *i* and the compounded returns of the matching firm over the same period:

$$BHAR_i = \prod_{t=1}^{T}(1 + r_{i,t}) - \prod_{t=1}^{T}(1 + r_{ctrl,t}) \quad (7)$$

where $r_{i,t}$ is the weekly raw return for firm *i* in week *t*; and $r_{ctrl,t}$ is the weekly raw return for the respective control firm[14] in week *t*. I calculate buy-and-hold returns for the 24, 30, and 36 months subsequent to the SEO announcement or until either the issuer or control firm delists, whichever is sooner. The buy-and-hold returns begin the month following the issue.

It is important to note that instead of a reference portfolio, this formulation includes a control firm for each event firm, which, according to Barber and Lyon (1997), eliminates three biases that may lead to misspecified test statistics. First, reference portfolios might include firms that have recently gone public (new listing bias), thus if these underperform, as Ritter (1991) shows, reference portfolios will be negatively biased, and as a result buy-and-hold abnormal returns will be positively biased. Second, the rebalancing bias exists when reference portfolios are included in the BHAR's formula because these portfolios are periodically rebalanced. Finally, the inclusion of a reference portfolio creates a skewness problem, as individual firm's returns are more volatile, i.e., more likely to experience extreme returns, when compared to benchmark returns. Specifically, Barber and Lyon (1997) point out that the control firm approach eliminates the new listing bias, the rebalancing bias, and the skewness problem.

Another problem, not associated with the benchmark portfolio used, but tied to the methodology, is that the cross overlapping event-firm stock returns in calendar time is likely to

[14] To find the adequate control firms I perform the propensity score matching, explained in Appendix B.

produce overstated test statistics of BHARs (Mitchell and Stafford, 2000). Precisely to avoid this problem, BHARs are calculated up to three years after the SEO announcement and events are, at least, three years apart.

Alternatively, besides the shortcomings mentioned above, I also include in the analysis the typical buy-and-hold abnormal returns using as benchmark the country market index. To mitigate some of the biases, in particular, those created by potential cross-sectional correlation of BHAR, I estimate regressions with standard errors clustered by country and year.

To examine if either accruals and/or real earnings management activities exhibit explanatory power for the post-issue long-term performance, I apply a model similar to what Shen, Coakley, and Instefjord (2014) implement. These authors follow the studies of both Teoh, Welch, and Wong (1998b) and Chan, Wang, and Wei (2004). The first establish the relation between accruals and some control variables, like market returns, offering proceeds, capital expenditures, and others. The second use as independent variables to determine post-issue performance several operating performance proxies. Based on this literature, I formulate the following model to test my second hypothesis:

$$BHAR_{i,t} = \alpha_0 + \beta_1 High\_Manipulation_{i,t-1} + \sum_{k=1}^{5} \gamma_k CtrlV_k + \varepsilon_i \quad (8)$$

where *BHAR* is the three-year post-issue buy-and-hold return calculated starting one month after the announcement; *High_Manipulation* corresponds to a dummy variable that takes the value one for firms above the median value of *Manipulation* and zero otherwise. Its corresponding coefficient is expected to be negative and statistically significant. Control variables include: a contemporaneous three-year buy-and-hold market return from the country where the firm is domiciled, *BHMktRet*; the natural logarithm of the asset-scaled issue size in monetary units (adjusted for inflation), *Proceeds;* the change in asset turnover, *ΔATO*, measured as the mean asset turnover in years 1,2, and 3 less the mean asset turnover in years -1 and 0 (being 0 the year of the announcement); the asset-scaled change in capital expenditure, *ΔCapExp,* measured as the mean asset-scaled capital expenditures in years 1,2, and 3 less the mean asset-scaled capital expenditures in years -1 and 0; and the change in operating cash flows on assets, *ΔCFOA,* measured as the mean operating cash flows on assets in years 1,2, and 3 less the mean operating cash flows on assets in years -1 and 0.

4. Data Selection and Descriptive Statistics

My initial events sample contains 2,722 European seasoned equity offerings conducted between January 2000 and December 2010, and is obtained from Securities Data Company (SDC) Platinum database. The sample criteria used requires the proceeds amount in all markets to be greater than one million dollars and excludes the following: (1) private placements, (2) initial public offerings, (3) mutual conversions, (4) unit issues, (5) rights issues, (6) closed-end funds, (7) unit investment trusts and, (8) real estate investment trusts (REITs). In addition to these restrictions, firms whose Standard Industry Classification (SIC) codes are between 4900-4949 and 6000-6999 are excluded as they refer to regulated utilities and financial firms. One reason to exclude firms from these highly regulated industries is that they are very likely to have a different ability and incentives to engage in earnings management, when compared to industrial firms. Another peculiarity of my sample is that if a firm has multiple issues, within a three-year window, during the period mentioned above, I consider the issue with the highest amount of proceeds in all markets. Thus, the total 2,722 SEOs of the initial sample were conducted by 2,243 different firms. Moreover, I use a control group of 10,303 European firms that have not issued any kind of equity over the same period. This group of non-issuers is particularly important to evaluate the issuers' future performance since it is not observable in the absence of the SEO. In order to find the non-issuers most closely resembled to each issuer, I apply the propensity score matching[15], i.e., matching on the probability of equity offering, and end up with 293 firms that issued 344 seasoned equity offerings and 250 non-issuers.

The accounting and financial data are obtained from Thomson's DataStream and WorldScope databases. All the date frequency is yearly except the returns, which are weekly. To measure the quality of the information environment I use data from the World Bank database, and it corresponds to the same period and frequency of the accounting and financial data. The variables measured in prices are adjusted for inflation, using the consumer price index (2010=100) obtained from the World Bank database, an adjustment that enables to uncover real growth or decline, if any. In order to avoid problems that outliers can bring to my analysis by causing noisy estimations, I winsorize firm-level variables at 1% and 99% of its distribution.

[15] Explained in Appendix B.

Further, I recognize that some firms may not have values for some variables, but they are not excluded from the analysis. As such, not having the required data to estimate some models, and consequently test the hypotheses, the actual sample size varies across my results.

Panel A of Table 1 shows how seasoned equity offerings are dispersed by country. It can be clearly seen that the amount of SEOs varies considerably across countries. The United Kingdom is the country with more SEOs (17.15%), straight afterwards is Germany (14.53%), and then is France (13.95%). The countries with fewer SEOs are Cyprus, Czech Republic, Luxembourg, and Ukraine with only one event each. In Panel B of the same table, seasoned equity offerings are distributed by industry. Although equity offerings occur in many different types of businesses, they were specifically frequent in manufacturing and transportation and public utilities industries, which account for an extremely large fraction of the issues, representing together more than 65% of the sample. Panel C reveals the distribution of SEOs over time. Two of the sample years (2009 and 2010) are very active and carried, together, approximately 30% of the issues. There is no particular pattern in the distribution of the events through time. However, 2008 stands out as being the year less representative in my sample (4.65%).

Table 1 - Description of the Seasoned Equity Offerings sample

The Table reports information on the Seasoned Equity Offerings conducted during 2000-2010 for my sample of 24 European countries. I exclude utilities and financial firms (SIC codes between 4900 and 4949 and between 6000 and 6999), and the 344 SEOs were conducted by 293 different firms. Data is obtained from Securities Data Company (SDC) Platinum database. Panel A presents the number of the SEOs by country. In Panel B, Seasoned equity offerings are grouped according to the two-digit SIC code, and Panel C shows the SEOs' distribution by year.

Panel A: Distribution of the Seasoned Equity Offerings by Country

Country	# SEOs	% SEOs	Country	# SEOs	% SEOs
Austria (AT)	8	2.33	Ireland (IE)	5	1.45
Belgium (BE)	7	2.03	Italy (IT)	12	3.49
Switzerland (CH)	20	5.81	Luxembourg (LU)	1	0.29
Cyprus (CY)	1	0.29	Netherlands (NL)	23	6.69
Czech Republic (CZ)	1	0.29	Norway (NO)	8	2.33
Germany (DE)	50	14.53	Poland (PL)	5	1.45
Denmark (DK)	10	2.91	Portugal (PT)	6	1.74
Spain (ES)	23	6.69	Russia Federation (RU)	9	2.62
Finland (FI)	15	4.36	Sweden (SE)	16	4.65
France (FR)	48	13.95	Turkey (TR)	6	1.74
Greece (GR)	8	2.33	Ukraine (UA)	1	0.29
Hungary (HU)	2	0.58	United Kingdom (UK)	59	17.15
			Total	**344**	**100.00**

Table 1 - Description of the Seasoned Equity Offerings sample (continued)

Panel B: Distribution of the Seasoned Equity Offerings by Industry			
Industry	**SIC**	**# SEOs**	**% SEOs**
Mining	10 - 14	21	6.10
Construction	15 - 17	31	9.01
Manufacturing	20 - 39	172	50.00
Transportation & Public Utilities	40 - 49	52	15.12
Wholesale Trade	50 - 51	4	1.16
Retail Trade	52 - 59	19	5.52
Services	70 - 89	45	13.08
Total		**344**	**100.00**
Panel C: Distribution of the Seasoned Equity Offerings by Year			
Year		**# SEOs**	**% SEOs**
2000		23	6.69
2001		26	7.56
2002		25	7.27
2003		25	7.27
2004		33	9.59
2005		31	9.01
2006		33	9.59
2007		28	8.14
2008		16	4.65
2009		66	19.19
2010		38	11.05
Total		**344**	**100.00**

Tables 2 and 3 present the same variables for different samples; these tables are included to confirm the quality of the matching. Note that the main sample used in the empirical analysis is composed only of the issuers and their corresponding matches (represented in Table 3). For instance, Table 2 shows summary statistics for the issuers (Panel A) and non-issuers (Panel B) before performing the propensity score matching procedure. Here, the majority of variables presented are statistically different, at a level of significance of 1%, between issuers and non-issuers. The gap between book value and the market value of equity is, on average, far more accentuated for non-issuers; issuers exhibit significantly lower book-to-market ratio, which is in line with the literature because firms tend to issue equity when the market overvalues them. On average, issuers and non-issuers have more debt than equity, but the formers are more levered. Under the pecking order theory this result is expected. As Myers (1984) argues, an equity issue is only used as a last resort, when the firm has depleted internally-generated funds and the leverage is already high enough. Issuers are also less profitable and larger, on average. Table 3 presents

the same variables, but after performing the propensity score matching[16], used to select the control sample of non-issuers. Here, the statistical significance changes and the majority of variables is not statistically different between issuers and non-issuers at the 10% significance level. Despite the quality of the matching being confirmed by finding no statistical significant differences in the mean and median propensity scores of both subsamples, there are some variables, namely the average of total assets and the median leverage, that are not statistically equal between issuers and non-issuers for the main levels of statistical significance. This happens because the match is only performed in the years prior to the seasoned equity offerings.

Table 2 - Descriptive Statistics: before the propensity score matching

The Table shows descriptive statistics for the firms in my initial sample, i.e., before applying the propensity score matching, for the variables used to match issuers and non-issuers. Accounting and financial data are obtained from Thomson's DataStream and WorldScope databases. I exclude utilities and financial firms (SIC codes between 4900 and 4949 and between 6000 and 6999). Panels A and B report statistics for the sample of equity issuers and non-issuers, respectively. In Panel C, I present the *p*-values for the tests of differences in means (*t*-test) and medians (Wilcoxon rank-sum test). Variables are winsorized at 1% and 99% of the distribution. All variables are defined in Appendix A.

Panel A: Equity Issuers			
	Mean	**Median**	**Std. Dev.**
Book-to-market	0.8929	0.6098	1.7596
Leverage	1.2740	0.6178	1.8781
ROA	0.1034	0.0978	0.0947
SalesGrowth	1.0025	0.0777	4.2590
Total Assets (in US$ million)	46.4660	5.7917	123.9616
Panel B: Non-Issuers			
	Mean	**Median**	**Std. Dev.**
Book-to-market	1.8781	0.6872	5.0222
Leverage	1.0676	0.5701	1.6569
ROA	0.1076	0.1064	0.0874
SalesGrowth	0.9898	0.0771	4.4263
Total Assets (in US$ million)	23.6257	4.6052	60.3963
Panel C: Test of Differences			
	Differences in Means (p-value)	**Differences in Medians (p-value)**	
Book-to-market	(0.0000)	(0.0000)	
Leverage	(0.0000)	(0.0000)	
ROA	(0.0011)	(0.0000)	
SalesGrowth	(0.8534)	(0.9092)	
Total Assets	(0.0000)	(0.0000)	

[16] Explained in Appendix B .

Table 3 - Descriptive Statistics: after the propensity score matching

The Table shows descriptive statistics for the firms in my sample after applying the propensity score matching, for the variables used to match issuers and non-issuers. Accounting and financial data are obtained from Thomson's DataStream and WorldScope database. I exclude utilities and financial firms (SIC codes between 4900 and 4949 and between 6000 and 6999). Panels A and B report statistics for the sample of equity issuers and non-issuers, respectively. In Panel C, I present the *p*-values for the tests of differences in means (*t*-test) and medians (Wilcoxon rank-sum test). Variables are winsorized at 1% and 99% of the distribution. All variables are defined in Appendix A.

Panel A: Equity Issuers			
	Mean	**Median**	**Std. Dev.**
Book-to-market	0.7791	0.5937	0.8978
Leverage	0.8787	0.5619	1.2244
ROA	0.1211	0.1160	0.0763
SalesGrowth	0.6131	0.0556	2.7146
Total Assets (in US$ million)	16.7856	5.2957	32.3779
Panel B: Non-Issuers			
	Mean	**Median**	**Std. Dev.**
Book-to-market	0.8088	0.6021	0.7901
Leverage	0.8327	0.5351	1.1009
ROA	0.1223	0.1152	0.0798
SalesGrowth	0.5081	0.0578	2.1679
Total Assets (in US$ million)	19.1152	4.7405	34.7570
Panel C: Test of Differences			
	Differences in Means (p-value)	**Differences in Medians (p-value)**	
Book-to-market	(0.2422)	(0.3812)	
Leverage	(0.1750)	(0.0096)	
ROA	(0.5844)	(0.9332)	
SalesGrowth	(0.1662)	(0.8818)	
Total Assets	(0.0173)	(0.2287)	

5. Empirical Results

5.1. Incidence of Earnings Management prior to Equity Issues

The preliminary statistical analysis involves estimating the models to detect evidence of earning manipulation. The modified Jones (1991) model, as in Dechow, Sloan, and Sweeney (1995), and the models that Roychowdhury (2006) suggests to detect real earnings management are estimated cross-sectionally for each subgroup of firms[17], *j*, which includes all firms in the same one-digit SIC code and the same year. Besides that, I require the estimation sample to have at least 10 observations. The abnormal values of these regressions are computed as the difference between reported values and expected values (accruals, production costs, and discretionary

[17] Issuing and comparable non-issuing firms are all included in the analysis.

expenses). The propensity score matching[18] is crucial at the very beginning of this analysis because with this procedure I associate to each non-issuing firm an issue date. Thereby, it is feasible to attribute a year -1 to each control firm. After that, the comparison between the two groups of firms becomes more accurate and credible.

In Table 4, Panel A reports the median estimated residuals of equations (2), (3) and (4), respectively. The last row corresponds to the combination of the three earnings management proxies presented right above. All the values are scaled by lagged total assets and correspond to the year -1, being 0 the year of the equity offering. I prefer to present medians over means because they are less affected by the existence of outliers. Thus, even if the distributions of the estimated values are skewed the interpretation of median values is more reasonable - median values represent exactly the centre of the distribution.

Not all the median deviations are in line with what would be expected to happen before a seasoned equity offering. In Panel A, the evidence of a negative and statistically significant difference in discretionary accruals between the two groups of firms is contrary to what would be expected to find. According to Kim and Park (2005), Rangan (1998), Teoh, Welch, and Wong (1998a), and Shivakumar (2000) issuers exhibit unusually high discretionary accruals around SEOs, and thus that difference would be expected to be positive. Nonetheless, the results support the idea that issuers rely on real activities to inflate their earnings, which is in accordance with what Cohen and Zarowin (2010), Kothari, Mizik, and Roychowdhury (2012), and Mizik and Jacobson (2007) conclude. Overall, evidence suggests that issuers manipulate earnings in the year preceding the equity offerings. When evaluating discretionary expenses, the difference in medians is negative and statistically significant at the 5% level. The amount of that difference is economically large and suggests that issuers reported discretionary expenses, in median terms, 2.16 percentage points lower when compared to control firms.

Panel B shows summary statistics of firm characteristics in the pre-issue year for issuers' *Manipulation* quartiles. The results reveal that for the first three quartiles of Manipulation there is no specific pattern for the firm size (in terms of total assets). Conversely, the issuers in the most aggressive earnings management quartile are the smallest. The book-to-market reveals an obvious decrease along the issuers' distribution by quartiles, being the most conservative firms the ones with the lowest book-to-market ratio. This makes sense because these firms are more valued by

[18] Explained in Appendix B.

the market than firms in quartile 4, assuming a constant book value of equity. Therefore, prior to the offering, they do not need to manipulate their results as much as the most aggressive manipulators do.

Table 4 - Discretionary accruals, abnormal production costs and abnormal discretionary expenses for issuers and non-issuers in the year prior to the SEO

The Table shows results from regressions of earnings management proxies' estimation. In Panel A, I report median discretionary accruals, median abnormal production costs, median abnormal discretionary expenses for issuers and non-issuers in the year prior to the equity offering, and the respective differences. Abnormal total accruals are estimated with the modified Jones (1991) model, as in Dechow, Sloan, and Sweeney (1995), abnormal production costs and abnormal discretionary expenses are estimated according to what Roychowdhury (2006) formulates. The variable *Manipulation* is equal to the sum of abnormal accruals, abnormal production costs and discretionary expenses multiplied by negative one. If this variable is statistically significant, the higher its amount the more likely it is that issuers are manipulating. All the values are scaled by lagged total assets. To test if the median values are statistically different between the two groups of firms I use the Wilcoxon rank-sum test. Panel B shows summary statistics of issuers characteristics in the pre-issue year (year -1 relative to the issue year, which is year 0) for *Manipulation* quartiles. In quartile 1 firms are more conservative and in quartile 4 firms are more aggressive in terms of the amount of *Manipulation*. The values for firm characteristics are median values, and total assets is measured in US$ million. ***Significant at the 1% level, **Significant at the 5% level, *Significant at the 10% level.

Panel A: Earnings Management Proxies in the year prior to the equity offering.

Year	Issuers	Non-Issuers	Differences in Medians
Discretionary accruals	-0.0298	-0.0360	-0.0062*
Abnormal production costs	-0.1878	-0.1854	-0.0024
Abnormal discretionary expenses	0.1211	0.1427	-0.0216**
Manipulation	-0.3122	-0.3229	0.0107

Panel B: Summary statistics of firm characteristics in the pre-issue year for *Manipulation* quartiles (Issuers)

	Total Assets	Book-to-market
Most conservative quartile (-1.3629 < *Manipulation* ≤ -0.4805)	3.8935	0.4278
Quartile 2 (-0.4805 < *Manipulation* ≤ -0.3122)	5.9724	0.5917
Quartile 3 (-0.3122 < *Manipulation* ≤ -0.1497)	5.1568	0.6248
Most aggressive quartile (-0.1497 < *Manipulation* ≤ 0.3507)	3.4231	0.8387

To evaluate whether the decision to issue equity is influenced by earnings management engaged in the year prior to the SEO, I model the equity issue decision with probit models for the SEO-choice. In this analysis, the variable *Seo* assumes the value zero for all the years in my sample except for the year of the seasoned equity offering, in which it takes the value one. The dummy *Seo* is regressed on the individual measures of earnings management in model (1), the combination of these measures in model (2), and a set of control variables, along with the corresponding statistical significance. Model (3) is an extension of model (2), allowing for the interaction effect between the amount of earnings manipulation and the dummy

Good_InfoEnvironment that equals one if *Info_Environment* is above its median and zero otherwise. Table 5 reports the average marginal effects of the probit SEO-choice model.

Table 5 - Probit model estimation for the SEO-choice

The Table shows probit regression analysis of the SEO-choice. These regressions use the sample of issuers and comparable non-issuers from 2000 to 2010. The dependent variable is the dummy *Seo* that assumes the value one when the firm issues equity and zero otherwise. Earnings management is measured by discretionary accruals, abnormal production costs and abnormal discretionary expenses in model (1), and it is also measured by the combination of these three proxies, *Manipulation*, in models (2) and (3). Model (3) differs from model (2) because it includes the variable *Good_InfoEnvironment*, which accounts for the quality of the information environment and the interaction of this variable with the proxy for accrual and/or real earnings management, *Manipulation*. To control for country-related time-invariant characteristics, models (1) and (2) include country dummies, while in model (3) the country effect is partially captured by the variable *Good_InfoEnvironment*. The table reports average marginal effects. Presented in parentheses are heteroskedasticity robust *z*-statistics with standard errors clustered by country. All variables are defined in Appendix A. ***Significant at the 1% level, **Significant at the 5% level, *Significant at the 10% level.

VARIABLES	(1) *Seo*	(2) *Seo*	(3) *Seo*
$DiscAccruals_{t-1}$	-0.1601*		
	(-1.71)		
$Abn\_ProdCosts_{t-1}$	0.0486**		
	(2.16)		
$Abn\_DiscExp_{t-1}$	-0.0012		
	(-0.05)		
$Manipulation_{t-1}$		0.0215***	0.0258***
		(2.66)	(2.89)
$Good\_InfoEnvironment_{t-1}$			-0.0040
			(-0.28)
$Manipulation_{t-1}$ *x* $Good\_InfoEnvironment_{t-1}$			-0.0390**
			(4.75)[19]
$TotAssets_{t-1}$	-0.0152***	-0.0158***	-0.0148***
	(-3.12)	(-3.43)	(-2.67)
$SalesGrowth_{t-1}$	-0.0026	-0.0025	-0.0022
	(-0.83)	(-0.80)	(-0.67)
$Leverage_{t-1}$	0.0073*	0.0088**	0.0078
	(1.77)	(2.44)	(1.60)
ROA_{t-1}	0.0315	-0.1074**	-0.0619
	(0.29)	(-2.04)	(-1.12)
$Book\text{-}to\text{-}Market_{t-1}$	-0.0004	-0.0003	0.0037
	(-0.06)	(-0.05)	(0.56)
Country Dummies	Yes	Yes	No
Observations	2,629	2,629	2,659
Pseudo R-squared	0.0365	0.0342	0.0119

[19] The interaction term, *Manipulation x Good_InfoEnvironment,* is included in the model. However, its average marginal effect is computed in separate and the procedure is explained further in the analysis. To test its statistical significance I use the Wald test.

Surprisingly, in model (1) discretionary accruals affect the likelihood of issuing equity in a different direction than what would be expected, but that relation is marginally significant. Conversely, the estimated residuals of production costs represent evidence of earnings management prior to SEOs, being its average marginal effect positive and statistically significant at the 5% level, which suggests that firms that report more production costs than normal are more likely to issue equity.

The lack of proof for abnormally high discretionary accruals, both in the univariate and multivariate analyses, and the clear evidence of real earnings management activities might be explained by the European Union's adoption of International Financial Reporting Standards (IFRS), effective in 2005, whose aim is the accounting harmonization and increase market transparency. Cohen, Dey, and Lys (2008) investigate the prevalence of accruals and real earnings management around the enactment of an also significant regulatory reform in the United States, the Sarbanes-Oxley (SOX). The authors analyse pre- and post-SOX periods, and conclude that these two earnings management techniques present different trends in the periods analysed. The authors claim that after the passage of SOX there was a substitution effect. Managers switched to earnings management techniques harder to detect, i.e., while the level of accrual-based earnings management decreased, firms intensified the use of real earnings management methods. This suggests that the increasing scrutiny and constraints do not eliminate earnings management activities, it only changes the type of strategies used.

Despite the huge costs that this strategy entails, the explicit preference for real earnings manipulation over accruals, find in this sample, can be due to the fact that accruals manipulation is more likely to draw auditor and regulatory scrutiny. To this, Roychowdhury (2006) adds the evidence found by Dechow, Sloan, and Sweeney (1996), whose study investigates SEC enforcement actions to alleged earnings overstatements: there are no actions being initiated due to pricing, production, or discretionary expenses decisions.

Consistent with the first hypothesis, I find that firms that issue equity are more likely to engage in more earnings manipulation prior to the issue, i.e., *Manipulation*, when included, is positive and highly statistically significant in the two model specifications at the 1% level. The marginal effect associated to *Manipulation*, in model (3), implies that, on average, when the amount of earnings manipulation goes up by one unit it causes an increase in the probability of issuing equity of, approximately, 2.58 percentage points, ceteris paribus. The positive combination of the earnings management proxies is consistent with hypothesis 1, under which managers have

tendency to engage in accruals and/or real earnings management activities in order to overstate earnings before SEOs.

Among the other variables that are likely to influence the probability of an equity issue, total assets is the only that turns out to be statistically relevant at the 1% level of significance in all model specifications, but its average marginal effect is economically negligible[20]. In model (2), the estimated average marginal effect of leverage is positive and statistically significant at the 5% level, meaning that firms more levered are more likely to issue equity. Another interesting result is that this model specification also captures a negative and both economically and statistically significant relation between the return on assets and the probability of issuing equity. The inability to generate internal funding, given by low return on assets, as well as large sums of debt, represented by high leverage, increase the likelihood of issuing equity.

In addition, it is also believed that firm's information environment is crucial to determine the limits of earnings manipulation, and it is rational to think that in countries with poor quality of the information environment managers have more latitude to inflate earnings. So firms from these countries are expected to have evidence of earnings management more pronounced. Specifically, in model (3), I examine whether the quality of the information environment influences the effect that pre-issue earnings management has on the probability of issuing equity, as hypothesised. Here the variable of interest is the interaction between *Manipulation* and *Good_InfoEnvironment*. As expected, the coefficient, in the probit model, of this interaction variable is negative and both economically and statistically significant at 5% significance level, suggesting that issuers from countries with good information environment are less likely to engage in earnings management prior to an equity issue. However, the average marginal effect of this interaction term cannot be interpreted straightforward because the standard probit regression output with marginal effects does not consider the interdependencies between the interaction term itself and the isolated variables *Manipulation* and *Good_InfoEnvironment* (Williams, 2012). For that purpose, I compute the average marginal effect of *Manipulation* for both when the quality of the information environment is good and poor. The results indicate that an additional unit in the amount of *Manipulation* has a much larger impact on the probability of issuing equity in countries with poor quality of the information environment. More precisely, when *Good_InfoEnvironement* equals one, the increase in the likelihood of issuing equity, when *Manipulation* increases by one unit, is, on

[20] In these probit regressions, the variable referring to total assets is the natural logarithm of the total assets.

average, of, approximately, 0.84 percentage points, ceteris paribus. Conversely, when *Good_InfoEnvironement* equals zero the average increase is of, approximately, 4.74 percentage points, ceteris paribus. This suggests that an increase of one unit in *Manipulation* results in an average increase in the probability of issuing equity of, approximately, 3.90 percentage points lower in countries with good quality of the information environment, ceteris paribus. The result of Wald test confirms that this difference is statistically significant at the 5% level of significance. A reasonable interpretation is that investors perceive part of the earnings manipulation and do not react to the information that firms release as managers were expecting, i.e., the market does not overprice their securities, at least in the amount that would be expected, and that affects negatively the decision to issue equity. In other words, earnings manipulation does not pass unnoticed, at least partially. Therefore, issuers from countries with an information environment classified as poor have engaged in more earnings management prior to the equity offering. This lends credence to what is hypothesized in H1a.

5.2. Long-term Performance Post-SEO

If evidence indicates that before issuing equity firms make opportunistic decisions to inflate share prices, it is reasonable to think that manipulation cannot continue indefinitely. Thus, the inability to perpetuate artificially high earnings is expected to be reflected in an adverse capital market reaction, as investors get disappointed with the unexpected firms' results.

I explore this market reaction in the long-run using buy-and-hold abnormal returns. For my sample, the median three-year BHAR in the post-issue period differs substantially depending on the benchmark used. In Panel A, from Table 6, the abnormal return is the difference in the buy-and-hold returns between the SEO firms and the corresponding matches. To compute this measure every event firm is matched to the most resembled non-issuing firm in the year prior to the issue using the propensity score matching, which accounts for the resemblance of many individual firm characteristics, ensuring the most appropriate match.

In Panel B, the abnormal return is relative to the country market index, i.e., to each issuing firm I associate the return on the market in which the firm is domiciled, and then, after computing the compounded returns, I take the difference between each issuer buy-and-hold return and the corresponding market buy-and-hold return.

Table 6 - Post-issue buy-and-hold abnormal returns

The Table presents post-offering median buy-and-hold abnormal returns of the equity issuers, measured over 24-, 30-, and 36-months starting the holding period one month after the SEO announcement. In Panel A, buy-and-hold abnormal returns is the difference in buy-and-hold returns between SEO firm and its match – the matching firm is the non-issuer with the closest propensity score. In Panel B, to the issuers buy-and-hold returns I subtract the corresponding country market index buy-and-hold returns. The numbers in parentheses are *p*-values, obtained using a Wilcoxon signed-rank test.

Panel A: Buy-and-hold abnormal returns, relative to control firms			
	24 months	30 months	36 months
Median	-0.0070	0.0123	0.0226
	(0.6896)	(0.3337)	(0.2686)
Panel B: Buy-and-hold abnormal returns, relative to the market			
	24 months	30 months	36 months
Median	-0.0545	-0.1066	-0.1091
	(0.0951)	(0.0342)	(0.0151)

On one hand, using the control firms as benchmark, the median of the three-year buy-and-hold abnormal returns is 2.26%, but it is not statistically different from zero at any conventional level of significance, which suggests that financial markets might have properly valued issuing firms, being this in range with what Cheng (2003)[21] concluded. She states that finding adequate matching firms can explain away the underperformance that has been widely claimed. In Appendix B, the test to the propensity scores proves that firms are, in fact, fairly similar, so the lack of evidence of issuers' underperformance is not surprising. On the other hand, when the country market index is used as benchmark, the long-term underperformance is persistent and statistically significant, at the 10% level, 24, 30, and 36 months after the issue, which is in accordance with what was reviewed in the literature. Not surprisingly, as time passes abnormal performance becomes more negative, which can be explained by investors' systematic firms' revaluation as additional information becomes available.

To relate this puzzling underperformance with firms' characteristics, I regress the abnormal long-term performance against a dummy variable, *High_Manipulation*, that assumes the value one for firms with values of *Manipulation* above the median in year -1 and zero otherwise, being 0 the year of the equity offering. Alongside with this earnings management measure, I include a group of control variables motivated by the previous literature. The three-year market buy-and-hold return, only in model (1), controls for market fluctuations that might explain issuers

[21] Cheng (2003) studies the post-SEO long-term performance using a univariate analysis of abnormal returns.

theoretical abnormal performance, and common to both models are controls for changes in some firm-specific variables.

Table 7 displays the results from ordinary least squares regressions of issuers' post-issue performance on pre-issue earnings management. Here, the main difference between the two models is that while the dependent variable of the first one is the three-year buy-and-hold abnormal return relative to the comparable firms, the explained variable of the second model is the BHAR using the country market index as benchmark. In both models, the key explanatory variable of interest is *High_Manipulation*, as it allows to verify whether aggressive manipulators are more penalized by the market.

Table 7 - Three-year BHAR and earnings management

The Table shows results from regressions of multivariate analysis for issuers' post-issue performance. The dependent variable is the three-year buy-and-hold abnormal return having as benchmark the control firms, model (1), and the country market index, model (2). Model (1) is run using country–industry (one-digit SIC code) and year fixed effects. Presented in parentheses are heteroskedasticity robust *t*-statistics with standard errors clustered by year. Model (2) is run using industry (one-digit SIC code) and year fixed effects, and *t*-statistics are also heteroskedasticity robust with standard errors clustered at the country and year level. All variables are defined in Appendix A. ***Significant at the 1% level, **Significant at the 5% level, *Significant at the 10% level.

	(1)	(2)
VARIABLES	*3year_BHAR_Ctrl_firm*	*3year_BHAR_market*
High_Manipulation$_{t-1}$	-0.168	-0.186*
	(-0.740)	(-1.732)
3year_BHMktRet	0.0190	
	(0.0355)	
Proceeds	-0.0671	-0.120**
	(-0.660)	(-2.528)
ΔATO	-0.270	-0.151
	(-0.372)	(-0.425)
ΔCapExp	-0.538	3.893***
	(-0.264)	(2.640)
ΔCFOA	3.867***	1.915**
	(3.988)	(2.176)
Constant	-0.742	-1.104**
	(-0.800)	(-2.464)
Country-Industry Dummies	Yes	No
Industry Dummies	No	Yes
Year Dummies	Yes	Yes
Observations	215	215
Adj. R-squared	0.0632	0.0919

Results are sensitive to the model specification. More precisely, results strongly depend on the explained variable used. When abnormal performance is measured against control firms it seems that there is no difference between the two groups of issuing firms[22], and pre-issue earnings management is statistically insignificant to determine post-issue performance, even at the 10% level. This suggests that the market completely undoes the effects of earnings management engaged in the year before the announcement of the offering.

By contrast, issuers' anomalous performance, when computed using the country market index, is negatively affected by the amount of pre-issue earnings manipulation. The differential between aggressive and conservative manipulators is statistically significant at 10% significance level, and the magnitude of that difference is substantial. This implies that issuers classified as aggressive manipulators in the pre-issue year perform significantly worse. In other words, issuers with *High_Manipulation* equal to one have a penalty in performance of 0.186, when compared to conservative manipulators.

The fact that long-term performance is more unfavourable for firms with greater earnings management than for those with less earnings management is evidence consistent with the opportunistic earnings management hypothesis. In theory, this suggests that at the time of the equity offering investors naively extrapolated pre-issue earnings and only over time, when the consequences of earnings inflation strategies become manifest, does the market impounds that information into issuers' stock prices. In other words, managers were successful in misleading investors before seasoned equity offerings and their disappointment is reflected in the long-term abnormal underperformance.

Additionally, the abnormal performance, measured against the country market index, is negatively associated with the size of the equity offering, and positively related to the variation in capital expenditures and the change in operating cash flows on assets. Therefore, besides the amount of manipulation, these variables are also important in adjusting issuers' stock prices.

After finding evidence of the preference for real earnings manipulation over accruals before SEOs, I was hoping that the underperformance would be far more explicit, once this technique is appointed as more detrimental for future competitiveness and profitability (Kothari, Mizik, and Roychowdhury 2012). However, long-term underperformance is not robust to the different

[22]Throughout this analysis of post-issue performance, firms are divided into two group: conservative and aggressive manipulators. Firms are classified as conservative manipulators when *High_Manipulation* equals zero and aggressive manipulators when *High_Manipulation* equals one.

specifications used, and thus I am unable to accept or reject H2 and H2a due to mixed evidence. The conflicting results indicate that conclusions of market inefficiency need to be made cautiously.

5.3. Additional Analysis - announcement returns and one-year post-performance

To get a more clear picture of the impact of earnings management on the issuers' performance after seasoned equity offerings it would also be interesting to explore investors' reaction in the short-term.

To examine the market's assessment of the equity offering I use cumulative abnormal returns (CARs). Firstly, I estimate the expected return over the announcement period using the market model described by Mackinlay (1997), which assumes a linear relation between the return of a market index and the security return. The market model removes the portion of the security return that is related to the variation in the market return, increasing the ability to detect the event effects (Mackinlay, 1997). After estimating what the normal stock return would be around the SEO, given the event had not taken place, I deduct it from the actual stock return. The abnormal return is given by that difference, and the sum of each issuer's abnormal returns corresponds to the cumulative abnormal return. The estimation window is of 231 days (-250 to -20) and the event window includes up to 11 days surrounding the event.

Table 8 reports the mean CARs surrounding the announcement day. For the full sample, the immediate announcement effect of SEOs is negative and statistically different from zero. These statistically significant and abnormally negative market reactions reveal that investors view these corporate events as value destroying. The mean CAR for a 5-day event window is of -2.12%, and -2.36% for a 11-day event window.

Table 8 - Cumulative Abnormal Returns

The Table presents the mean cumulative abnormal returns around the SEO filing date for the full sample and subsamples, considering two event windows. The subsamples are determined by the level of manipulation the firm has incurred in the year prior to the announcement, the aggressive firms are the ones with a level of *Manipulation* above the median. The estimation window is of 231 days (-250 to -20). To test if the mean CARs are statistically different between the two groups of firms I use the Wilcoxon rank-sum test. ***Significant at the 1% level, **Significant at the 5% level, *Significant at the 10% level.

	[-2, +2]	[-5, +5]
CARs	-0.0212***	–0.0236***
CARs (Aggressive)	-0.0222	-0.0214
CARs (Conservative)	-0.0201	-0.0260
Difference in medians (*p*-value)	(0.8592)	(0.7687)

The short-term market reaction to SEOs seems to let little room for disagreement. However, this negative market reaction is undifferentiated between aggressive and conservative manipulators. This implies a no optimal degree of market efficiency, because the market is not able to incorporate the effect of manipulation in firms' stock prices, and the announcement is followed by a lot of unknowns. Investors' response after offering announcements supports the notion that investors are naive and fail to recognize earnings manipulation. This delay in market's response provides evidence against the market efficiency theory.

Regarding the three-year post-performance, the surprising lack of strong evidence to support the detrimental impact of earnings management on issuers' performance might be justified by the fact that the period in analysis is too long and the effect of manipulation might be residual, due to market adjustments that might have occurred as new information was released around, or shortly after, the equity issue. This motivates further analysis in order to verify how this relation between earnings management and stock performance expresses in a shorter period. For that, I follow a quite similar procedure used previously, but with the one-year buy-and-hold abnormal return as dependent variable, and adapting the control variables for a post-offering period of just one year.

Table 9 reports results that lead to somewhat different conclusions. In this analysis, when the abnormal performance is measured against control firms, the coefficient on the variable of interest, *High_Manipulation,* still has not the expected sign. In model (2) specification, I find evidence that one year after the announcement, investors are not yet able to distinguish between aggressive and conservative manipulators, i.e., the coefficient on *High_Manipulation* is not statistically different from zero.

Overall, what may be happening is that the almost exclusive use of real activities to manipulate earnings, documented previously, might be obfuscating the economic reality of firms, and thus investors do not have enough information to detect who has manipulated more around the SEOs. Note that, even one year after the event, the level of pre-issue earnings management is not statistically significant in determining underperformance. Indeed, it still takes some time for investors to detect and punish firms engaging in more earnings management, and this may be explained by the preference for real earnings management.

Table 9 - One-year BHAR and earnings management

The Table shows results from regressions of multivariate analysis for issuers' post-issue performance. The dependent variable is the one-year buy-and-hold abnormal return having as benchmark the control firms, model (1), and the country market index, model (2). Model (1) is run using country–industry (one-digit SIC code) and year fixed effects. Presented in parentheses are heteroskedasticity robust *t*-statistics with standard errors clustered by year. Model (2) is run using industry (one-digit SIC code) and year fixed effects, and *t*-statistics are also heteroskedasticity robust with standard errors clustered at the country and year level. All variables are defined in Appendix A. ***Significant at the 1% level, **Significant at the 5% level, *Significant at the 10% level.

VARIABLES	(1) *1year_BHAR_Ctrl_firm*	(2) *1year_BHAR_market*
$High\_Manipulation_{t-1}$	-0.177	-0.0713
	(-1.693)	(-1.346)
1year_BHMktRet	0.306	
	(1.237)	
Proceeds	-0.0577	-0.0609***
	(-1.029)	(-2.755)
ΔATO_{1_year}	-0.583	-0.111
	(-1.654)	(-0.629)
$\Delta CapExp_{1\_year}$	0.142	1.544***
	(0.0979)	(3.000)
$\Delta CFOA_{1\_year}$	2.076*	0.417
	(1.924)	(0.916)
Constant	-0.688	-0.441**
	(-1.559)	(-2.086)
Country-Industry Dummies	Yes	No
Industry Dummies	No	Yes
Year Dummies	Yes	Yes
Observations	215	215
Adj. R-squared	0.0803	0.0749

6. Conclusion

Most of prior literature provides evidence on the existence of accruals-based earnings management before seasoned equity offerings. I extend the extant literature by including the analysis of managing earnings also through real activities. Using a sample of 344 European seasoned equity offerings together with a propensity score matched control sample, the results of this study support the earnings management hypothesis, suggesting that prior to announcing seasoned equity offerings managers engage in income-increasing adjustments. In contrast to prior findings, I do not find evidence of abnormally high discretionary accruals. However, the presence of real earnings manipulation before SEOs leaves no room for doubt. This preference might be explained not only by the fact that SEOs are increasingly associated to periods of enhanced scrutiny

of the issuers and their financial information, but also by the enactment of IFRS in 2005, in the European Union. In such circumstances, operational, investing and financing decisions can be seen as the most discrete way to achieve the targeted earnings while avoiding detection.

In addition to the evidence that issuers tend to engage in more earnings management prior to the equity offering, my results also suggest that the manipulation is more accentuated in countries where the level of transparency is lower. Thus, besides being a fundamental condition for earnings management, the higher the lag of information between firm insiders and public investors about the true value of the firm and its future prospects the higher the amount of earnings management.

To evaluate post-issue long-term performance, I compute BHARs using two alternative benchmarks: (1) the matched control sample obtained from PSM, and (2) the country market index. Overall, the conclusion of underperformance in the long-term depends on the benchmark. For instance, when issuers' performance is evaluated against their matched counterparts, three years after the equity offering, the results indicate no evidence of underperformance, as one might expect should firms revert to their normal earnings post-SEO. In contrast, when the performance is abnormal in relation to the country market index, issuers experience poor long-term performance and financial markets strongly penalize aggressive manipulators. This demonstrates that investors were misled when they invested in the offerings. Their investment decisions ended up as disappointing, once they were based on manipulated information. A feasible explanation for finding this negative relation might be that earnings decline associated to pre-issue manipulation are detected three years following the SEO, and investors' revaluations reflect that unexpected decline.

Post-SEO performance is far from being free of controversies because any evaluation of the abnormal returns depends on the multivariate procedures used. I recognize that even using a more demanding method, non-issuing control firms may not capture the true risk characteristics of SEO firms.

Finally, whether investors are deceived by earnings management and consequently the allocation of resources in the economy will be affected is questionable. However, if that actually happens it would be interesting to investigate why does the market never learns and one wonders why investors keep buying these overstated issues. Further research could also investigate if the absence of accruals-based manipulation and the clear evidence of real earnings management activities are, in fact, due to the implementation of IFRS in the European Union, in 2005.

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Appendix A – Variable Definitions with respective DataStream and WorldScope Mnemonics

Variable	Definition and DataStream/Wordscope Mnemonic
1year_BHMktRet	Contemporaneous one-year buy-and-hold market return from the country where the firm is domiciled.
3year_BHMktRet	Contemporaneous three-year buy-and-hold market return from the country where the firm is domiciled.
A	Total assets (WC02999).
Abn_DiscExp	Abnormal discretionary expenses equal the estimated residuals from equation (4).
Abn_ProdCosts	Abnormal production costs equal the estimated residuals from equation (3).
ATO	Assets turnover is revenues (WC01001) divided by total assets (WC02999).
Book-to-Market	The book value of equity (WC03501) divided by the market value of equity (MV).
COGS	Cost of goods sold (WC01051).
DiscAccruals	Discretionary accruals equal the estimated residuals from equation (2).
DiscExp	Discretionary expenses are given by the sum of *R&D* and *SG&A.*
Good_InfoEnvironment	Dummy variable that equals one whenever the *Info_Environment* is higher than its median and zero otherwise.
High_Manipulation	Dummy variable that assumes the value one for firms above the median value of *Manipulation* and zero otherwise.
Info_Environment	The average of three aggregate indicators that summarize the views on the quality of information environment: voice and accountability, regulatory quality, and control of corruption. Ranges from approximately -2.5 (bad) to 2.5 (good). Source: The World Bank.
Inv	Inventories (WC02101).
Leverage	Long-term debt (WC03251) divided by the sum of preferred stock (WC03451) and common equity (WC03501).
Manipulation	The sum of *DiscAccuals*, *Abn_ProdCosts* and *Abn_DiscExp* multiplied by negative one.
PPE	Gross property, plant, and equipment (WC02301).
Proceeds	The natural logarithm of the asset-scaled issue size.
R&D	Research and development expenses (WC01201).
REC	Net Receivables (WC02051).
ROA	Earnings before interest, taxes, depreciation and amortization (WC18198) divided by total assets (WC02999).
S	Net sales or revenues (WC01001).
SalesGrowth	Percent change in net sales.
Seo	Dummy variable that assumes the value one in the year of the announcement and zero otherwise.
SG&A	Selling, general, and administrative expenses (WC01101)

Appendix A (continued)

Variable	Definition and DataStream/Wordscope Mnemonic
TA	Total accruals is given by the difference between net income (WC01551) and net cash flow from operating activities (WC04860).
TotAssets	The natural logarithm of the total assets (WC02999).
ΔATO	The change in asset turnover, measured as the mean asset turnover in years 1,2, and 3 less the mean asset turnover in years -1 and 0 (being 0 the year of the announcement).
ΔATO_{1_year}	The change in asset turnover, measured as the asset turnover in year 1 less the mean asset turnover in years -1 and 0.
ΔCapExp	The asset-scaled change in capital expenditure, measured as the mean asset-scaled capital expenditures in years 1,2, and 3 less the mean asset-scaled capital expenditures in years -1 and 0.
$\Delta CapExp_{1\_year}$	The asset-scaled change in capital expenditure, measured as asset-scaled capital expenditures in year 1 less the mean asset-scaled capital expenditures in years -1 and 0.
ΔCFOA	The change in operating cash flows on assets, measured as the mean operating cash flows on assets in years 1,2, and 3 less the mean operating cash flows on assets in years -1 and 0.
$\Delta CFOA_{1\_year}$	The change in operating cash flows on assets, measured as the operating cash flows on assets in year 1 less the mean operating cash flows on assets in years -1 and 0.

Appendix B – The Propensity Score Matching

The purpose of traditional matching and propensity score matching is the same: selecting a comparable non-issuer to each issuer from the non-SEO sample. However, these two matching methods differ on the quality of the matching. Propensity score matching is superior because it allows to easily incorporate all relevant characteristics in just one model, and consequently maximizes the comparability between issuers and their matches.

According to Cheng (2003), whose study uses the propensity score matching as developed by Rosenbaum and Rubin (1983), the equity offering decision can be viewed as a treatment that firms decide to go through, and equity issuers post-offering performance can be viewed as an evaluation of the treatment effect. He states that when non-issuers perfectly match the issuers is like having an experiment in which firms are randomly assigned to a treatment (SEO), and it is this randomization that enables to correctly identify the treatment effect (post-issue performance).

Having in the same sample issuers and non-issuers mixed, but duly identified, the propensity score matching consists of computing the probability of equity offering conditional on a vector of independent variables. Heckman and Navarro-Lozano (2004) warn for the extreme importance of choosing these independent variables because this matching method does not provide any guidance as to which variables should be included or excluded in conditioning sets.

Additionally, they advocate that these should affect both the propensity to issue equity and the ex-post performance. Due to this, I use some of the variables that Cheng (2003) incorporates in his logit analysis of the equity offering decision: book-to-market, leverage, return on assets, sales growth, and total assets. The dependent variable of the regression is the dummy *Seo* that takes the value one for firms that issued equity and zero otherwise.

After choosing the controlling variables, I divide my sample by years and within each year by industry (one-digit SIC code), and the match is performed in the year prior to the offering.Then, I derive the predicted probability of issuing equity for both issuers and non-issuers, and consider only the nearest-neighbour. In this matching, a control firm can be the best match for more than one treated firm.

The matching reduces my sample from 2,243 issuers and 10,303 non-issuers to 293 firms that issued 344 seasoned equity offerings, and 250 non-issuers. To check the quality of this match I test if the difference of both mean and median propensity scores between non-issuers and

issuers is different from zero. The results reveal that neither mean nor median propensity scores are statistically different between the two groups of firms, so non-issuers are quite similar to issuers.

The propensity score matching approach is really important because having the adequate control firms reduces the bias in the estimation of treatment effects and therefore increases the robustness of the study.