EARNINGS MANAGEMENT AS AN EXPLANATION OF THE EQUITY ISSUE PUZZLE

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ABSTRACT

The poor stock price performance of firms that raise capital through seasoned equity offerings is one of the recent puzzles in financial literature. In this study we investigate whether pre-issue earnings management can explain these results for rights issues in Spain. Consistent with this explanation, we notice that firms' issuing rights make use of discretionary accruals to report higher earnings prior to the offering. Most interestingly, the decrease in discretionary accruals the years following the offering explains the underperformance in stock returns.

JEL classification: G14; G32; M41.

Keywords: Corporate Finance, Seasoned Equity Offerings, Earnings Management, Accounting Accruals.

1. Introduction

One of the important anomalies in financial markets is the poor stock price performance following equity issues. Various studies have reported negative long-run abnormal returns up to five years after equity offerings. Loughran and Ritter (1995, 1997), Spiess and Affleck-Graves (1995), Lee (1997) and Jegadeesh (2000) document this pattern for firm commitments offerings in the US market. The evidence for rights issues also reveals long-run post-issue underperformance: Cai (1998) and Kang, Kim and Stulz (1999) in Japan; Jeanneret (2000) in the French market; Stehle, Ehrhardt and Przyborowsky (2000) in Germany; and Pastor and Martín (2004) in Spain.

One possible explanation is that directors of firms willing to issue equity manage earnings upward in order to increase the offering proceeds and the market fails to understand that the high earnings reported represent a transitory increase. In the years following the offering, negative abnormal returns would be due to a gradual correction of the initial overvaluation as earnings management reverses. In this line of investigation, Teoh, Welch and Wong (1998), Rangan (1998), Shivakumar (2000), Zhou and Elder (2003), and Heron and Lie (2004) verify that firm commitment offerings in the US market are preceded by significant increases in abnormal accruals. Moreover, Teoh et al. (1998) and Rangan (1998) report a negative relationship between pre-offering abnormal accruals and post-offering stock returns.

In relation to equity issues with rights, Heron and Lie (2004) find no evidence of earnings management prior to the offering in the US market. However, Ching, Firth and Rui (2002) in the Hong Kong market detect a negative relationship between pre-issue discretionary accruals and the abnormal return in the year following the issue of equity, although they do not analyse the time profile of earnings and accruals around the offering.

In spite of the increasing concern by capital market regulators regarding the reliability and transparency of financial information provided by security issuers, the reality is that information asymmetry between managers and investors does exist, allowing the former a certain amount of discretion when revealing this information to the market. Therefore, the study of equity offerings in which information asymmetry benefits the transfer of wealth through overstated earnings is a particularly relevant subject, which should be analysed in markets with different characteristics.

Most previous studies have analysed firm commitment offerings from U.S. market and there is a distinct lack of research in countries with other characteristics. In this context, the Spanish stock market, where Pastor and Martín (2004) observe the equity offering anomaly for rights issues, provides an excellent opportunity to extend scientific community knowledge on this matter which clearly needs additional research.

Thus, our research interest centres on whether managers display opportunistic behaviour when revealing earnings to potential equity subscribers around rights offerings. A priori, we would expect managers to have lower incentives in earnings management in rights issues since, in rights offerings, potential purchasers for new shares are basically current shareholders. Moreover, the degree of information asymmetry in the Spanish market should condition such manipulation.

Additionally, given that the equity issue puzzle has been the subject of considerable debate in recent years, we would like to contribute to the growing body of literature that aims to explain this anomaly, by analysing whether the use of discretionary accruals around equity offerings can explain the subsequent poor stock price performance.

Consistent with this earnings management hypothesis, we note that issuers have unusually high accounting adjustments in the year of the offering. Furthermore, the reversion in discretionary accruals in the post-issue period explains the long-run abnormal returns following the offering decision. This evidence implies that stock price underperformance is due, at least in part, to market inefficiency with respect to these accounting adjustments.

The next section discusses measurements of earnings management. Section 3 describes the sample selection procedure and data used. Section 4 analyses the accruals time profile from prior to post-issue date. Section 5 studies the relationship between earnings management and post-offering stock return underperformance. Finally, our conclusions are presented in section 6.

2. Measuring earnings management

Accounting accruals are the centre point of earnings management tests. They are defined as the difference between earnings before extraordinary items and discontinued operations, and cash-flow from operations. The accrual adjustments reflect business transactions that affect future cash-flows although cash has not currently changed hands. Under generally accepted accounting principles, firms have discretion to recognize these transactions so that reported earnings reflect the true underlying business conditions of the company. However, managerial flexibility in accruals also opens opportunities for earnings management.

Because there is no standardized cash-flow statement in Spain, we decide to compute current accruals, which are related to non-cash working capital accounts. In order to calculate them, we use the normalized balance sheet presented in the *Comisión Nacional del Mercado de Valores* (CNMV)[1]. Specifically, in this study we utilize the standard definition of current accruals:

$$ACC_{it} = \left(\Delta CA_{it} - \Delta CASH_{it}\right) - \left(\Delta CL_{it} - \Delta STD_{it}\right) \qquad (1)$$

where ACC_{it} are current accruals, DCA_{it} is the change in current assets, $DCASH_{it}$ is the change in cash and cash equivalents, DCL_{it} is the change in current liabilities, and $DSTD_{it}$ is the change in short-term debt. Subscripts *i* and *t* refers to company and period, respectively.

We should point out that we employ current accruals, leaving aside depreciations, owing to the aggregation of accounts in the CNMV database. In particular, the level of gross property, plant and equipment, which is required as a control variable in order to estimate normal depreciation, does not appear. Moreover, as we analyse the pattern of accruals around the offering, it is advisable to focus on processes with homogeneous reversion.

Observable current accruals, ACC_{it}, can theoretically be broken down into two unobservable components: the nondiscretionary or normal part, $NACC_{it}$, and the abnormal component, $AACC_{it}$, which can be used as a proxy for earnings management. Several theoretical models have attempted to obtain this break-down by estimating the pattern of accruals in the absence of accounting discretion. In particular, these models try to explain the part of accruals due to objective reasons such as accounting rules and the firm's economic conditions. Thus, the part of accruals not explained by the model is considered discretional and used as a proxy for earnings management, since a variation in this component will represent a manager's effort to manipulate earnings more than a change in exogenous economic conditions.

In order to check the robustness of results, we apply two different models to estimate abnormal current accruals: the modified Jones model, proposed by Dechow, Sloan y Sweeney (1995), which has been used in nearly all studies about earnings management; and the model developed by Poveda (2003), which, owing to the results achieved regarding specification and power in the Spanish context, along with the different methodology used in the estimation of abnormal accruals, make it an excellent alternative to confirm if results are due to model specification or the real existence of

[1] This Spanish institution is the equivalent of the American S.E.C.

earnings management. For the estimation of these two models, firstly we use a cross-sectional approach and secondly a panel-data estimation procedure.

2.1. Cross-sectional approach

Since current accruals are not homogeneous among different activity sectors, we estimate the coefficients of each model for each activity sector and year. The estimation sample in each cluster sector-year includes exclusively non-event firms requiring a minimum of 10 observations. With these estimated coefficients "clear" of earnings management for each cluster sector-year, we "predict" the normal current accrual for issuing firms. We now describe in detail the estimation procedure of the two models.

2.1.1.Modified Jones model in cross-section:

Dechow, Sloan and Sweeney (1995) propose a modified version of the Jones (1991) model. Firstly, coefficients for each cluster sector-year are estimated with the original Jones model as follows:

$$\frac{ACC_{jt}}{MTA_{jt}} = a_{st}\left(\frac{1}{MTA_{jt}}\right) + b_{st}\left(\frac{\Delta NSALES_{jt}}{MTA_{jt}}\right) + u_{jt} \qquad (2)$$

where j firms are non-event companies belonging to the same two digit activity sector of issuing firm i and the subscript s refers to the activity sector which the company i belongs to. ACC_{jt} and $DNSALES_{jt}$ are current accruals and the change in net sales in year t for firm j, respectively. MTA_{jt} is the mean total asset from year $t-1$ to year t for firm j. This intra-industry cross-sectional regression is estimated for each issuing firm i and year in the test period (from year -3 to +3 relative to year of the issue).

Once the coefficients are estimated, Dechow, Sloan and Sweeney (1995) suggest an adjustment in the original Jones model in order to avoid errors in the estimation of discretionary accruals when there is discretional behaviour through sales. With this modification, the abnormal current accruals are estimated for issuing firms as follows:

$$AACC_{it} = \left(\frac{ACC_{it}}{MTA_{it}}\right) - \left[\hat{a}_{st}\left(\frac{1}{MTA_{it}}\right) + \hat{b}_{st}\left(\frac{\Delta NSALES_{it} - \overbrace{\Delta TR_{it}}^{adjustment}}{MTA_{it}}\right)\right] \qquad (3)$$

where $AACC_{it}$ is the abnormal component of current accruals and DTR_{it} is the change in trade receivable for the issuing company *i* in year *t*. The subscript *s* refers to the activity sector which firm *i* belongs to.

2.1.2. Poveda model in cross-section:

Poveda (2003) proposes a new approach to estimate the abnormal component of current accruals. The main aim of his proposition is to avoid using potentially managed variables as regressors, such as sales, mitigating the simultaneity problems characteristic in accruals estimations. In addition, he suggests a desegregate estimation in order to control the possibility of a different reaction in inventory, sales or purchases to the level of activity. With this idea, coefficients for each cluster sector-year are estimated with the following specification:

$$\left.\begin{aligned} \frac{NSALES_{jt}}{MTA_{jt}} &= a_{st} + b_{1st}\frac{CFS_{jt}}{MTA_{jt}} + u_{jt} \\ \frac{NP_{jt}}{MTA_{jt}} &= g_{st} + b_{2st}\frac{CFP_{jt}}{MTA_{jt}} + w_{jt} \\ \frac{\Delta INVENT_{jt}}{MTA_{jt}} &= p_{st} + b_{3st}\frac{CFP_{jt}}{MTA_{jt}} + b_{4st}\frac{CFS_{jt}}{MTA_{jt}} + d_{jt} \end{aligned}\right\} \quad (4)$$

where *j* firms are non-event companies belonging to the same two digit activity sector of issuing firm *i* and the subscript *s* refers to the activity sector which the company *i* belongs to. $NSALES_{jt}$ is the value of net sales, MTA_{jt} is the mean total active from year *t*-1 to year *t*, CFS_{jt} is the cash-flow generated by sales and services, NP_{jt} is the value of net purchases, CFP_{jt} is the cash-flow generated by purchases and $DINVENT_{jt}$ is the inventory variation, for firm *j* in year *t*. Just like with the Jones model, this cross-sectional regression is estimated for each issuing firm *i* and year in the test period (from year -3 to +3 relative to year of the issue).

Then, the abnormal current accrual of offering firms is estimated as follows:

$$AACC_{it} = \left[\frac{NSALES_{it}}{MTA_{it}} + \frac{NP_{it}}{MTA_{it}} + \frac{\Delta INVENT_{it}}{MTA_{it}}\right] - \left[\hat{a}_{st} + \hat{g}_{st} + \hat{p}_{st} + \left(\hat{b}_{1st} + \hat{b}_{4st}\right)\frac{CFS_{it}}{MTA_{it}} + \left(\hat{b}_{2st} + \hat{b}_{3st}\right)\frac{CFP_{it}}{MTA_{it}}\right] \quad (5)$$

The Poveda (2003) model focuses on fundamental accruals related to accelerating the recognition of credit sales, and/or postponing the accounting of purchases, and/or the overvaluation of year-end inventory. Therefore, a risk of manipulation is assumed in other working capital accounts, which is not detected by the model (type II error). However, as the model pays attention to accounts specifically controlled by the accruals models, the probability of a type I error is minimized, that is, the probability of detecting manipulation when there is none. We consider this aspect of the model to be highly appropriate in our context of detecting earnings management around equity offerings.

2.2. Panel-data approach.

In order to check the robustness of results, we also include the estimation of the two models using panel data analysis, thus taking into account temporal patterns that can affect accrual components. In particular, we employ as estimation sample sector-panels with non-event firms requiring temporal series with a minimum of four observations.

In addition to the simultaneity problem that arises if regressors are not orthogonal, which has been mitigated by the Poveda (2003) model by including cash-flow explicative variables, we also had to bear in mind that, owing to the data employed in the area of earnings management, explicative variables would probably be correlated with regression residues. Thus, to avoid the endogeneity problem, we introduce an unobservable heterogeneity component into the panel-data models. This component enable us to control individual characteristics that are not observable, or not identified by investors, but which could be correlated with the residue employed as a proxy for discretion. So models are estimated with a fixed effects approach.

The modified Jones (1991) model in panel-data is estimated as follows:

$$\frac{ACC_{jt}}{MTA_{jt}} = h_j + \sum_{y=1991}^{2002} DY_y\, l_y + a_s\left(\frac{1}{MTA_{jt}}\right) + b_s\left(\frac{\Delta NSALES_{jt}}{MTA_{jt}}\right) + u_{jt} \qquad (6)$$

and the panel-data Poveda (2003) model:

$$\left.\begin{aligned}
\frac{NSALES_{jt}}{MTA_{jt}} &= m_j + \sum_{y=1991}^{2002} DY_y r_y + a_s + b_{1s}\frac{CFS_{jt}}{MTA_{jt}} + u_{jt} \\
\frac{NP_{jt}}{MTA_{jt}} &= h_j + \sum_{y=1991}^{2002} DY_y l_y + g_s + b_{2s}\frac{CFP_{jt}}{MTA_{jt}} + w_{jt} \\
\frac{\Delta INVENT_{jt}}{MTA_{jt}} &= t_j + \sum_{y=1991}^{2002} DY_y f_y + p_s + b_{3s}\frac{CFP_{jt}}{MTA_{jt}} + b_{4s}\frac{CFS_{jt}}{MTA_{jt}} + d_{jt}
\end{aligned}\right\} \qquad (7)$$

The variables are the same as in the cross-sectional approach, except for the introduction of the unobservable heterogeneity coefficients in each equation, and the year dummy variables $\left\{DY_y : y = 1991...2002\right\}$ to identify possible changes in mean current accruals based on the economic cycle. Once the model is estimated using samples of sector-panels "clear" of earnings management, coefficients are used to "predict" the abnormal component, as we explained in the cross-sectional approach.

3. Sample and data sources

In order to identify firms issuing equity, we use the CNMV register during the period from January 1991 to December 2002. As table 1 reports, 408 equity offerings of listed firms are located. From this initial sample an exhaustive revision of relevant events in the CNMV is made in order to filter exclusively rights offerings for cash. In particular, we exclude offerings charged to reserves, equity to compensate credits or to convert bonds, equity issues as payments for employees, managers or clients and public offerings without subscription rights. Moreover, we do not consider equity issues to exchange other companies' stocks due to acquisition or merger processes, or the offerings of firms involved in these acquisition processes in the analysis period. Following the application of these filters, we are left with 119 rights offerings. We then filter out financial companies, because the nature of the accruals of these firms is very different from that of industrial firms. Hence the total sample is narrowed down to 99 rights offerings.

For inclusion in the final sample, we require accounting data in CNMV for the year of the offering and the previous year, because in order to estimate issuing firms' accounting accruals we use variables in first differences. These exclusions further refine our sample down to 75 equity rights offerings during a period of 12 years, 1991-2002, and belonging to 10 sectors according to the two-digit sector classification in CNMV.

TABLE 1.
EVENT SAMPLE: SEASONED EQUITY OFFERINGS 1991-2002

Seasoned Equity Offerings registered in CNMV 1991-2002	408
Relevant events filter	(289)
Rights Offerings for cash	119
Financial companies	(20)
Objective sample	99
Non availability of accounting data	24
FINAL SAMPLE	**75**

The distribution of the event sample among sectors and years is illustrated in panel A of table 2. Five of the sample years (1991, 1993, 1994, 1998 and 1999) are more active and cover over 10% of the sample, with 1993 containing over 20% of the issues. As for the distribution among sectors, more than 50% of the rights issues correspond to three sectors: energy and water (14), estate agents (13) and other manufacturing industries (17).

TABLE 2.
SAMPLE DISTRIBUTION AMONG YEARS AND SECTORS

S3: cement, glass and construction materials; S4: trade and other services; S5: construction industry; S6: energy and water; S8: chemistry industry; S9: estate agents; S11: basic metals; S12: new technologies; S15: other manufacturing industries; S17: metal manufacture.

Panel A. Event Sample

sector	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total
S3	1	0	3	0	0	0	0	1	0	0	0	0	**5**
S4	0	1	1	0	1	1	0	1	1	1	0	0	**7**
S5	0	0	2	1	0	0	0	0	1	0	0	0	**4**
S6	1	1	1	3	1	1	1	1	1	1	1	1	**14**
S8	0	0	1	0	1	0	0	0	1	0	0	0	**3**
S9	2	0	3	2	0	0	1	2	2	0	0	1	**13**
S11	0	0	0	1	0	0	1	0	1	0	0	0	**3**
S12	0	0	0	0	0	0	0	1	1	1	0	1	**4**
S15	2	1	3	2	1	0	2	1	1	1	1	2	**17**
S17	2	0	2	0	0	0	0	1	0	0	0	0	**5**
Total	**8**	**3**	**16**	**9**	**4**	**2**	**5**	**8**	**9**	**4**	**2**	**5**	**75**

Panel B. Estimation sample

Sector	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total
S3	7	12	17	17	16	17	16	15	13	11	10	8	**159**
S4	5	5	27	24	23	20	21	20	21	18	18	17	**219**
S5	5	9	9	11	9	9	7	8	7	8	8	9	**99**
S6	17	17	28	22	27	26	23	23	16	15	17	14	**245**
S8	5	9	12	11	9	10	10	5	4	4	4	3	**86**
S9	6	13	46	49	52	46	44	40	38	33	36	34	**437**
S11	6	6	15	12	13	11	11	12	9	10	7	7	**119**
S12	3	4	5	5	5	5	6	4	6	4	9	10	**66**
S15	15	26	58	54	56	54	52	51	52	47	47	42	**554**
S17	12	18	45	48	45	35	32	29	26	24	26	21	**361**
Total	**81**	**119**	**262**	**253**	**255**	**233**	**222**	**207**	**192**	**174**	**182**	**165**	**2345**

As we explained in section two, in order to estimate the normal component of accruals we need an estimation sample made up of “non-event firms”. To achieve more robustness in results, we regard as “non-event firms” companies that do not issue equity even they are not in the final sample of 75 due to conversions, mergers etc., since they could contaminate the coefficients estimation. The estimation samples are taken from the panel illustrated in panel B of table 2 for the 10 sectors and 12 years covered in this study.

4. Accruals pattern around the time of the offering

In this section, firstly we analyse the time profile of current accruals in the years surrounding the equity issue. Secondly, we apply the models described in section two to extract the abnormal component of current accruals as a proxy for earnings management.

4.1. Current accruals around the issue of equity.

As a first approximation, here, we examine the pattern of current accruals without getting into the estimation of the normal component and regardless of the accruals models we employ subsequently. Table 3 displays the results of this first approximation.

TABLE 3.
CURRENT ACCRUALS AROUND EQUITY OFFERINGS

N: number of observations; acc: current mean accruals for event firms; pv acc: p-value in testing the null hypothesis of current accruals equal zero; e1acc: mean excess in current accruals of event firms in relation to non-event control firms selected by size for the same cluster sector-year; pv e1acc: p-value in testing the equality in means between event and size control firms; e2acc: mean excess in current accruals of event firms in relation to the median of non-event firms for the same cluster sector-year; pv e2acc: p-value in testing the equality between event firms and sector medians. All accruals measures are deflated by mean total active.

	N	acc	pv acc	e1acc	pv e1acc	e2acc	pv e2acc
year -3	32	-0.0593	0.8928	-0.0768	0.2534	-0.0554	0.3946
year -2	38	-0.0576	0.7185	-0.1132	0.0381	-0.0669	0.1817
year -1	47	0.0102	0.1025	0.0097	0.7812	0.0123	0.6284
event year	**75**	**0.0587**	**0.0103**	**0.0553**	**0.0633**	**0.0558**	**0.0136**
year +1	50	-0.0073	0.5890	0.0072	0.8259	0.0125	0.4277
year +2	49	0.0001	0.5452	-0.0263	0.2431	-0.0050	0.8296
year +3	48	-0.0398	0.2885	-0.0453	0.1254	-0.0340	0.1392

If we focus on event firms' current accruals (acc), we notice as they are monotonically increasing to a peak in the offering year and decreasing thereafter. Specifically, current accruals increase gradually from a negative value of -0.0593 in the three years prior to the offering to a positive value of 0.0587 in the event year. As for the statistical significance of this pattern, p-values decrease progressively from 89.28% in year -3 to 1.03% in the event year which allows the rejection of the null hypothesis of zero current accruals in the offering year nearly at a 1% statistical level. In the years following the offering, there is a sharp reversion in the first post-issue year with current accruals practically zero (-0.0073) with a high p-value (58.9%), indicating that they are not statistically different from zero.

In order to control temporal effects on this profile regarding the specific year in which the offering is made, or related to isolated sector patterns, we also analyse the performance of current accruals in relation to control non-event samples. With this aim in mind, and in order to ensure the robustness of results, control firms are selected following two alternative criteria.

Firstly, for each event firm we select as a control firm the non-event company in the same sector-year that is closest in size[2]. Thus, the variable "e1acc" measures the excess in the same sector-year of offerings firms' current accruals in relation to non-event firms of a similar size. The pattern of this adjusted variable starts with negative values (-0.0768 and -0.1132) indicating that event firms' current accruals are lower than those for non-event firms. However, in the year prior to the offering, the sign changes rising to a peak (0.0553) in the offering year. These adjusted current accruals decline in the post-issue years, and are once again negative in the second and third year following the offering. Thus, the time profile of adjusted accruals is very similar to results observed without adjustment.

Regarding the statistical significance, the only two years with reasonably low p-values are year -2 and year 0. Concretely, two years before the offering, event firms have a level of current accruals lower than control firms by 0.1132 with a p-value of 3.81%. However, in the issuing year the level of event firms' current accruals exceeds their control companies by 0.0553 with a statistical p-value of 6.3%. These results are consistent with an effort made by offering firms to improve their results in the issue year through accounting accruals.

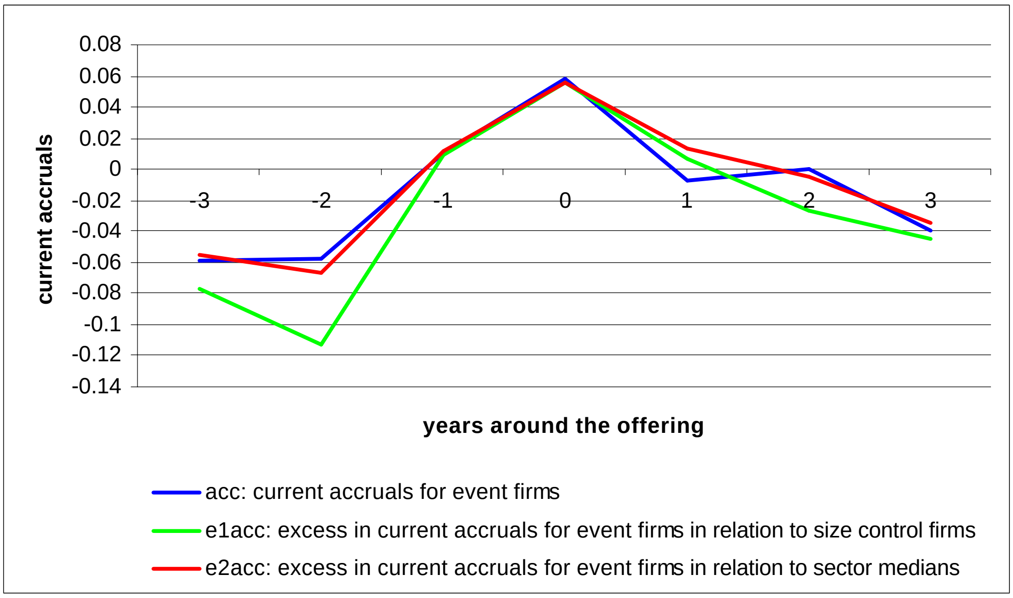
Secondly, adjusted accruals are computed by controlling the median of non-event firms in the same cluster sector-year. Thus, the variable "e2acc" measures the

[2] For this selection the firm size is measured as the mean total asset from year t-1 to year t.

excess in the same sector-year of offerings firms' current accruals in relation to the non-event sector medians. Observing the time profile of e2acc, the highest level is reached in the event year with an excess of 0.0558 statistically significant at a 1.36% level. If we focus on the years before or after the offering, the pattern of adjusted accruals reflects once again an increase up until the offering year, and a decline thereafter. Moreover, only in the years -1, 0 and +1 are event firms' current accruals higher than sector medians, the peak being in the offering year.

For a better understanding of the results in table 3, we have represented graphically the time profile of row current accruals and adjusted ones. In particular, figure 1 shows how the performance of accruals around the issue of equity matches the earnings management hypothesis perfectly. In the three years prior to the offering there is a clear and progressive rise reaching a peak in event year. Subsequently, there is a clear reversion with a sharp decrease in the first year after the event, and the decline continues, although gently, until the third post-offering year. Moreover, we can see the same pattern in adjusted accruals with the two procedures employed to select control firms.

FIGURE 1.
CURRENT ACCRUALS AROUND THE EQUITY OFFERING



4.2. Abnormal accruals analysis.

In previous section we identified that issuing firms' current accruals reach the highest level in the event year and, moreover, in this year they are higher than non-event companies. These results seem to indicate that accruals are being manipulated by issuing firms in order to increase reported results in the offering year. However, this begs the question: will this pattern hold if we apply formal models to break down accruals into their normal and abnormal components? We attempt to answer this question using the estimation of the models presented in section 2, both in a cross-section approach and via panel-data analysis. Table 4 shows the performance of abnormal accruals estimated with the different procedures proposed.

If we focus on abnormal current accruals (aacc) around the year of the offering, we notice that the highest level of this variable occurs in the event year regardless of the model used. Moreover, in every panel this maximum is supported by p-values, which allow us to reject the absence of earnings management.

Panel A shows results with the modified Jones model in cross-section. We observed a clear rise in manipulation proxy in the issue year reaching a value of 0.0436 with a statistical p-value around 5%. When this model is estimated using a sector panel-data, panel B, the abnormal component also rises to a peak in the event year with a value of 0.0887 and a statistical p-value below 2%. Thus, the results achieved when applying this model to estimate abnormal accruals indicate that issuing firms make use of discretion to overstate earnings in the offering year, and discretionary accruals around this date are significantly high.

The best way of checking the robustness of these results is by utilizing a different accruals break-down approach, so we can verify that the results are not due to model specification. The alternative model is proposed by Poveda (2003) and its results with cross-section estimation are shown in panel C. We notice the same pattern as the modified Jones model with a maximum in the event year of 0.0458 and a very low statistical p-value of 0.2%. Finally in panel D, applying the Poveda model with panel-data, the highest level of abnormal component again occurs in the event-year with a value of 0.0582 and a statistical p-value of 2%.

In short, the results confirm the existence of manipulation related to the equity offering decision. In particular, given that abnormal accruals are deflated by mean total assets, values are in terms of ROA (return on assets), implying that economic returns in the offering year can include an abnormal component around five points, ranging between 4.36% and 8.87% depending on the model employed.

TABLE 4.
ABNORMAL CURRENT ACCRUALS AROUND THE OFFERING

N: number of observations; aacc: mean abnormal current accruals for event firms; pv acc: p-value in testing the null hypothesis of abnormal current accruals equal zero; e1aacc: mean excess in abnormal current accruals of event firms in relation to non-event control firms selected by size for the same cluster sector-year; pv e1aacc: p-value in testing the equality in means between event and size control firms; e2aacc: mean excess in abnormal current accruals of event firms in relation to the median of non-event firms for the same sector-year; pv e2aacc: p-value in testing the equality between event firms and sector medians. All abnormal accruals measures are deflated by mean total active.

	N	**aacc**	**pv aacc**	**e1aacc**	**pv e1aacc**	**e2aacc**	**pv e2aacc**
Panel A. Modified Jones model in cross-section							
year -3	16	-0.1210	0.5485	-0.0058	0.9493	-0.1313	0.2165
year -2	16	-0.1437	0.2320	-0.0832	0.1183	-0.1525	0.1114
year -1	24	-0.0224	0.3374	-0.0262	0.6634	-0.0266	0.3610
event year	**48**	**0.0436**	**0.0552**	**0.0330**	**0.4528**	**0.0388**	**0.0945**
year +1	27	0.0241	0.1342	0.0548	0.2250	0.0180	0.3282
year +2	25	-0.0050	0.7424	-0.0349	0.3938	-0.0114	0.6152
year +3	26	-0.0275	0.5604	-0.0314	0.4135	-0.0345	0.1768
Panel B. Modified Jones model with panel-data							
year -3	24	-0.0455	0.9258	-0.0733	0.2501	-0.0538	0.3633
year -2	26	-0.0538	0.7034	-0.0965	0.1021	-0.0526	0.3058
year -1	33	-0.0189	0.2332	-0.0184	0.6023	-0.0239	0.2362
event year	**45**	**0.0887**	**0.0194**	**0.0591**	**0.1869**	**0.0862**	**0.0222**
year +1	38	0.0363	0.0037	0.0044	0.8810	0.0364	0.0849
year +2	37	0.0485	0.0132	0.0114	0.6517	0.0488	0.0387
year +3	37	0.0198	0.1467	0.0181	0.5264	0.0111	0.6447
Panel C. Poveda model in cross-section							
year -3	16	-0.0720	0.7579	-0.0327	0.6396	-0.0768	0.2667
year -2	16	-0.0658	0.7244	-0.0380	0.1674	-0.0677	0.2644
year -1	24	-0.0176	0.4179	-0.0342	0.3426	-0.0167	0.4851
event year	**48**	**0.0458**	**0.0022**	**0.0547**	**0.0382**	**0.0444**	**0.0023**
year +1	27	0.0138	0.1991	0.0017	0.9588	0.0143	0.3676
year +2	25	0.0134	0.1762	-0.0294	0.2578	0.0116	0.3661
year +3	26	-0.0049	0.8358	-0.0164	0.5412	-0.0026	0.8546
Panel D. Poveda model with panel-data							
year -3	24	-0.0139	0.6462	-0.0124	0.7987	-0.0209	0.5523
year -2	26	-0.0313	0.9484	-0.0860	0.0802	-0.0329	0.2842
year -1	33	-0.0098	0.1879	-0.0122	0.6899	-0.0065	0.6695
event year	**45**	**0.0582**	**0.0200**	**0.0465**	**0.1516**	**0.0565**	**0.0154**
year +1	38	0.0155	0.0318	-0.0110	0.6727	0.0077	0.5130
year +2	37	0.0191	0.0254	-0.0066	0.7857	0.0062	0.6066
year +3	37	0.0070	0.2496	0.0118	0.6129	-0.0075	0.6391

Next, we employ control firms to measure the excess in event firms' abnormal accruals in relation to companies of a similar size in the same sector-year. Again these adjusted abnormal accruals are highest in the event year, showing an excess in abnormal accruals for event firms in comparison to non-event companies in the year of the offering around 0.05. However, they are only statistically significant with the Poveda model in cross-section. With this model in particular, during the three years prior to the offering, event firms' abnormal accruals are lower than those for non-event companies. Nevertheless, in the event year there is an excess of 0.0547 with a p-value of 3.82%, confirming the difference between issuers and non-issuers. The excess in the first post-issue year is also positive, and then negative again for the second and third year following the offering.

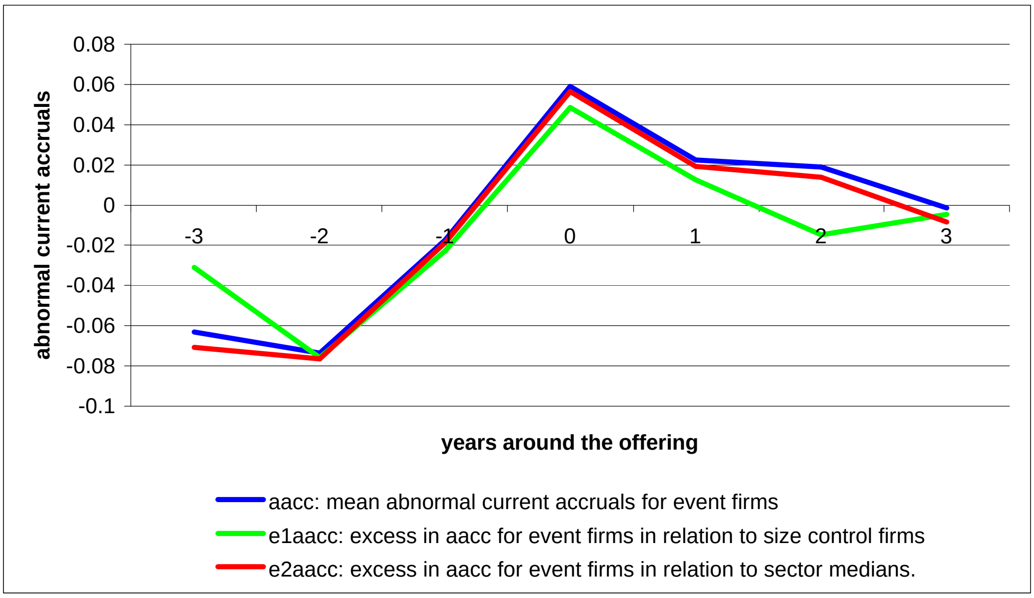
Finally, comparing event firms' abnormal accruals with the median for non-issuers in the same cluster sector-year, results once again display the same pattern. In all panels we observe how abnormal accruals for event-firms in the year of the offering are higher than sector medians; in all cases these differences are statistically significant.

In panel A, with the modified Jones model in cross-section, we observe how, in the year of the offering, there is an excess of 0.0388 statistically significant at a 10% level. In panel B, using a panel-data approach to estimate the same model, the difference reaches a value of 0.0862 with a p-value of 2.22%, thus rejecting the equality between issuers and their sector medians. The Poveda model provided similar conclusions. In panel C, with the model in cross-section, the excess in the event year is 0.0444 with a p-value of 2.4%, while with the panel-data methodology the excess in abnormal accruals reaches a value of 0.0565 with a p-value of 1.54%. Thus, in both cases there is clear evidence of issuing firms' presenting abnormal accruals that are significantly higher than non-issuers in the same sector-year.

Figure 2 provides a graphic representation of the performance of the abnormal accruals analyzed in this section, showing the time profile for the mean of the four abnormal accruals estimations (Jones in cross-section, Jones with panel-data, Poveda in cross-section and Poveda with panel-data). In this figure we can see how raw and adjusted abnormal accruals experience a gradual increase before the offering, reaching a peak in the event year and declining afterwards, consistent with the reversion of previous manipulation.

In conclusion, we can say that results point out to the existence of manipulation accounting practices to overstate reported earnings around the issue of equity. In this context, the new question is if these practices have any relation with the stock price underperformance suffered by equity issuers in the years following this decision. In other words, do abnormal accruals lead to issuers' overvaluation, which is gradually corrected by the market in the post-offering period, thus causing underperformance?

FIGURE 2.
ABNORMAL CURRENT ACCRUALS AROUND THE EQUITY OFFERING



5. Predicting post-issue stock returns through pre-issue earnings management

In this section, firstly we examine the long-run performance of post-issue stock returns and next we try to discern if there is a relationship between the earnings management practices detected in previous section and post-offering stock price performance.

5.1. Post-issue stock returns performance.

We measure the long-run market reaction to equity rights issues, by applying two alternative procedures. Firstly, we compute abnormal returns in the years following the offering with an *event time* analysis and, secondly, we employ a *calendar time* methodology.

We need stock price information from the *Servicio de Interconexión de las Bolsas Españolas* (SIBE) in order to compute monthly returns in the three year post-issue period. Since stock prices are available till 2003, the sample used in the analysis of *event time* returns ends in the year 2000. Likewise, in order to avoid cross-section dependence, we do not allow the analysis periods of the same firm to overlap. Thus, the sample employed in the analysis of *event time* returns following the issue of equity included 57 rights issues.

In the *event-time analysis* to measure long-run performance following the equity offering, we use returns net of the returns to the market value-weighted portfolio[3]. In particular, we calculate the abnormal return of company *i* in the post-offering period t , $ACoR_{i,t}$, as the compound return of the issuing firm i minus the compound market return:

$$ACoR_{it} = \prod_{t=1}^{t}(1+R_{it}) - \prod_{t=1}^{t}(1+R_{Mt}) \tag{8}$$

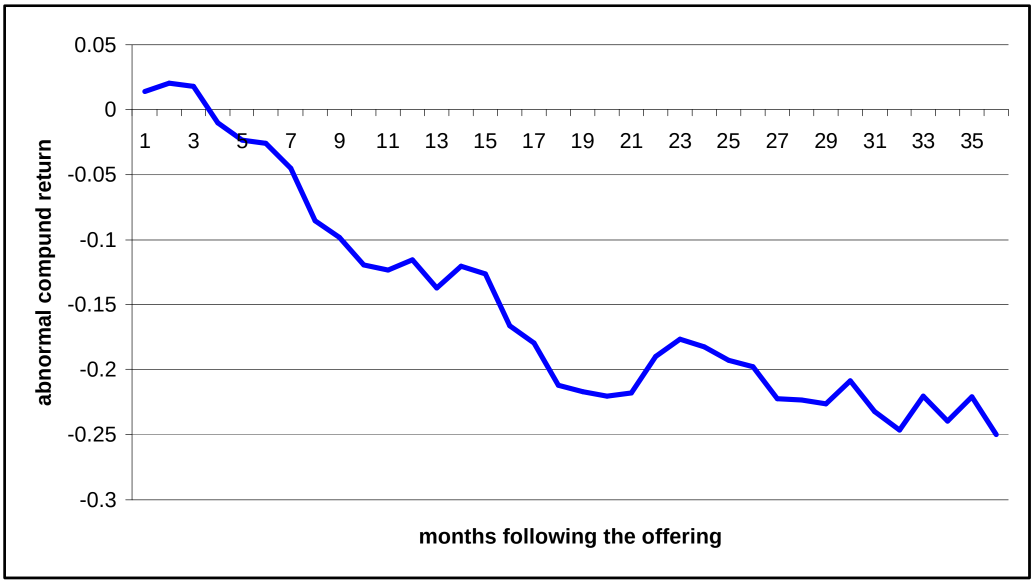
where R_{it} and R_{Mt} are the returns of firm *i* and the market portfolio in month *t*, respectively, and t is the number of months in the post-offering period analyzed.

The market index is the most widely-used reference portfolio when computing adjusted returns; however this alternative does not control the cross-section variability of mean returns. To address this question, regressions in the following section aiming to explain the long-run abnormal returns will include, as control variables, the firm's size and its book to market ratio[4].

Figure 3 shows the mean abnormal compound return for the event sample during the 36 months following the offering decision. We observe how adjusted returns are positive up until the third month following the equity issue. After that, abnormal returns experience a very sharp decrease until the two-year post-issue period. During the third post-offering year abnormal returns continue to decline but more gently.

[3] Results are very similar using equally weighted market portfolio returns.
[4] Empirical evidence has demonstrated that the size and book to market ratio explain the cross-section variability of stock returns.

FIGURE 3.
LONG-RUN ABNORMAL RETURNS FOLLOWING THE EQUITY ISSUE



Next we test the statistical significance of this abnormal returns performance. Addressing this topic involves the use of appropriate methodology to minimize the specification problems which arise when testing abnormal returns in long horizon periods. Kothari and Warner (1997) and Lyon, Barber and Tsai (1999) proved that the bootstrap procedure has fewer misspecification problems and they consider it to be an appropriate methodology to test the existence of long-run abnormal returns.

Thus, we compute traditional t statistic but we apply the bootstrap procedure to simulate its empirical distribution and we use this distribution to fix the acceptance and rejection regions. The t statistic of the event sample is computed as:

$$t = \sqrt{N}\,\frac{AACoR}{\hat{s}} \tag{9}$$

where N is the number of events in the sample (N = 57), $AACoR$ is the average abnormal compound return and $\hat{s}$ is the cross-sectional standard deviation.

In order to obtain the empirical distribution of statistic t we randomly select replacement B subsamples with N_b events from the original sample, and for each subsample we compute the following statistic:

$$t_b = \sqrt{N_b}\,\frac{AACoR_b - AACoR}{\hat{s}_b} \tag{10}$$

where $AACoR_b$ and $\hat{s}_b$ are the mean and standard deviation of the subsample *b*, $b = 1, 2, ... B$. Then, if B is high enough from the sample of bootstrap statistics $\{t_b : b = 1, 2, ... B\}$ we can obtain the empirical distribution of statistic *t* and use this distribution to fix the acceptance and rejection regions. This methodology is applied with $B = 10.000$ and $N_b = N$.

Table 5 reports average abnormal compound returns for the one, two and three-year post-issue period. As figure 1 illustrated, market adjusted returns are negative. For the first year following the issue of equity the mean abnormal return of offering firms is -13.19%, getting worse the larger the temporal horizon. In particular, adjusted returns have a mean of -19.25% and -24.70% for the two and three-year post-issue period. Table 5 also shows the results of traditional *t* test applying the bootstrap technique to compute statistical significance. Negative abnormal returns are highly significant whatever the horizon analyzed.

When reference portfolios are employed to estimate normal returns, in our case the market portfolio, the distribution of long-run abnormal returns is positively skewed. We can see in Table 5 that skewness coefficients are positive and they increase with the temporal horizon analyzed. This positive skewness could lead to misspecified *t* statistics, so, to avoid this problem we also calculate the skewness-adjusted *t* statistic originally developed by Johnson (1978).

$$t_a = \sqrt{N}\left[\frac{AACoR}{\hat{s}} + \frac{1}{3}\hat{g}\left(\frac{AACoR}{\hat{s}}\right)^2 + \frac{1}{6N}\hat{g}\right] \qquad (11)$$

where $\hat{g}$ is the coefficient of skewness estimated as $\frac{\sum_{i=1}^{N}(ACoR_i - AACoR)^3}{N\hat{s}^3}$.

To compute the statistical significance of the skewness-adjusted *t* we also apply the bootstrap procedure. In this case, for each subsamble *b*, $b = 1, 2, ... B$ we calculate the following statistic:

$$t_{a,b} = \sqrt{N_b}\left[\frac{AACoR_b - AACoR}{\hat{s}_b} + \frac{1}{3}\hat{g}_b\left(\frac{AACoR_b - AACoR}{\hat{s}_b}\right)^2 + \frac{1}{6N_b}\hat{g}_b\right] \qquad (12)$$

where $\hat{g}_b$ is the skewness coefficient of the subsample *b*, $B = 10.000$ and $N_b = N$.

TABLE 5.
STOCK RETURN PERFORMANCE FOLLOWING THE ISSUE

Panel A shows the mean abnormal compound return for issuing firms in the one, two and three-year post-issue period. This panel also reports results of traditional t test and skewness-adjusted t test using the bootstrap technique to evaluate statistical significance. Panel B shows the abnormal monthly mean return in the post-offering period estimated with the Fama-French model in calendar-time regressions.

Panel A. Abnormal compound return in the post-offering period.

Year after the SEO	AACoR (%)	Traditional t statistic	Bootstrap p-value	Skewness coef.	Skewness adjusted t	Bootstrap p-value
+1	-13.19%	-2.94	(0.00)	0.00	-2.94	(0.01)
+2	-19.25%	-3.14	(0.00)	0.11	-3.09	(0.00)
+3	-24.70%	-3.01	(0.01)	0.43	-2.83	(0.00)

Panel B. Abnormal monthly mean return with Fama-French model in calendar-time regressions

$\hat{a}_p$ (%)	t statistic	p-value
-0.72 %	-2.15	(0.03)

Results in table 5 show that even controlling possible bias due to positive skewness, negative abnormal returns are highly significant. Thus, we can conclude that issuing firms experience negative abnormal returns in the three years following the issue of equity.

Given the different problems that arise when we accumulate returns over long periods[5], an alternative procedure to estimate and test post-offering long-run abnormal returns is to analyse the abnormal monthly mean return by applying a *calendar time* portfolio approach. This methodology analyses the monthly return of buying the stock on the event date and holding it for t months. In other words, this approach examines the strategy of holding a portfolio which is made up, in each calendar month, of the stocks affected by the event over the last t months. Therefore, by studying this portfolio's return indirectly we can analyse the return of the stocks affected by the event over the following t months. This *calendar time* methodology enables us to check the robustness of results, to avoid problems of accumulating returns over long periods and, what is more, we can use the sample of 75 events.

For the purpose of a clearer understanding of the calendar-time portfolio methodology, we have represented it in Figure 4. The first month where an equity issue occurs is February 1991, so the strategy consists of buying the issue stock in this month and holding it for t months. In our case, t will be 36 months since we want to study the issuing firm's return in the three year post-issue period.

[5] Barber and Lyon (1997), Kothari and Warner (1997), Lyon, Barber and Tsay (1999).

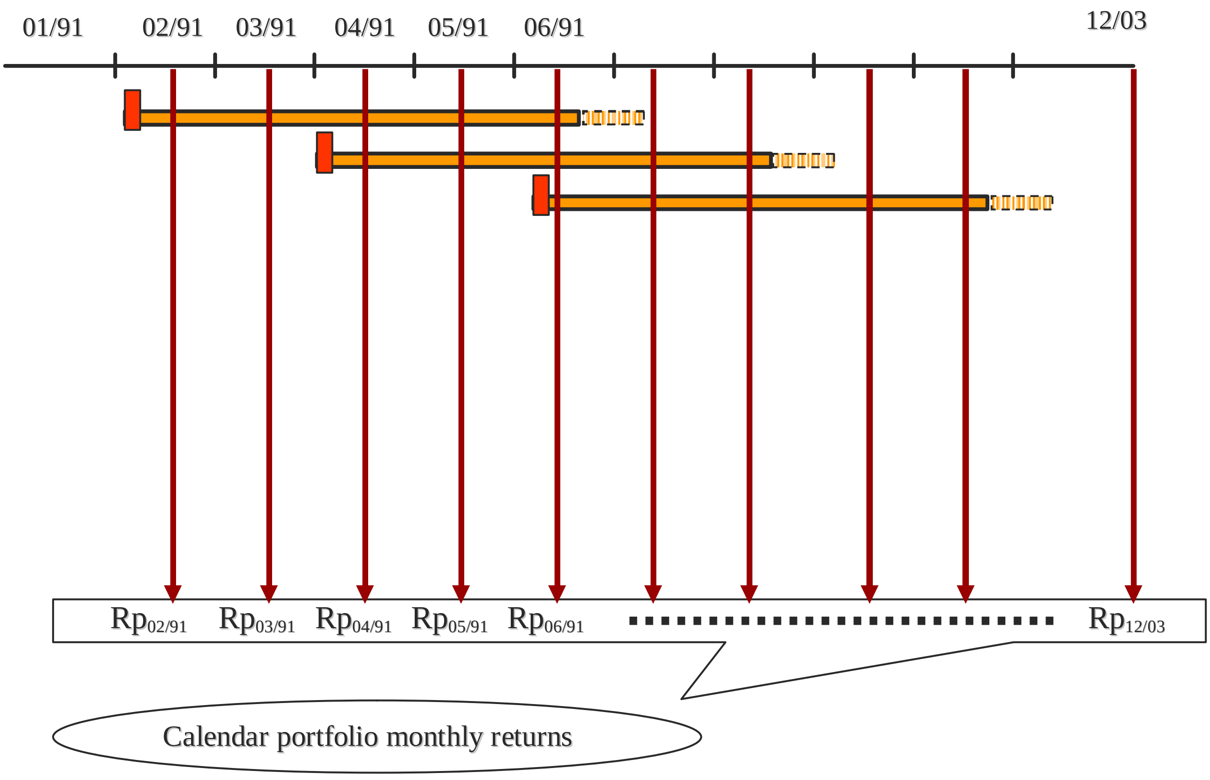
In the same way, if April 1991 is the next month where another equity offering occurs, we acquire a second issue stock that month and also hold it 36 months. Similarly, June 1991 is the next month with another equity issue, so we buy the third issue stock that month and hold it for 36 months. Therefore, in June 1991 the portfolio is made up of the three stocks of the firms that issued equity in February, April and June, respectively.

Thus, we can compute the monthly return of the calendar portfolio *p* in each month *t* as:

$$R_{pt} = \frac{\sum_{j=1}^{N_{pt}} R_{jt}}{N_{pt}} \qquad t = 02/91, ..., 12/03 \tag{13}$$

where R_{jt} is the return of firm *j* in month t, N_{pt} is the number of stocks that are in the portfolio that month *t*. Thus, we obtain the time series of the calendar portfolio monthly returns from February 1991 (the first equity issue in our sample) to December 2003 $\{R_{p02/91}...R_{p12/03}\}$.

FIGURE 4.
CALENDAR-TIME APPROACH



To measure and test the portfolio's abnormal monthly mean return we apply the Fama and Frech (1993) three factor model to the time series of the portfolio's monthly returns. Then, we run the following time series regression:

$$R_{pt} - R_{ft} = a_p + b_{1p} \cdot (R_{Mt} - R_{ft}) + b_{2p} HML_t + b_{3p} SMB_t + e_{pt} \qquad \text{t=02/91,...,12/03} \qquad (14)$$

where R_{ft} is the one-month Treasury bill (risk free) rate of return, HML_t is the difference in returns between portfolios made up of stocks with high and low book-to-market ratio and SMB_t is the difference in returns between portfolios made up of stocks with high and low trading volumes, both orthogonalized. The Jensen's alpha, a_p, measures the calendar-time portfolio's abnormal monthly mean return.

This calendar-time approach, advocated by Fama (1998), corrects for possible correlations of returns across events and minimizes the skewness problem since monthly returns of portfolios are used. Furthermore, the Fama and Frech (1993) model takes into account the explicative power of size and book-to-market ratio in the cross-sections of stock returns. However, this procedure is not free from possible biases; several prior studies have documented that the application of the Fama-French model to test the existence of abnormal returns presents specification problems[6]. In addition, Loughran and Ritter (2000) argued that this factor model is less powerful in detecting abnormal returns than abnormal compound return analysis. In spite of these possible biases, the calendar-time approach provides an alternative for analyzing the post-offering abnormal long-run returns which is useful to check the robustness of results obtained in panel A of table 5.

Panel B of table 5 reports the results of the Fama-French calendar-time regression. Given that the change in the composition of the portfolio each month could lead to heteroskedasticity problems, since the variance depends on the number of firms in the portfolio, we estimated the regression using White's covariance estimator, consistent with heteroskedasticity. The intercept from the Fama-Frech model, a_p, which measures the abnormal monthly mean return of the calendar portfolio is negative and significant with a p-value of 3%. Bearing in mind how we construct the calendar portfolio, its return measures the return of the stocks affected by the equity offering over the following 36 months. Thus, results indicate that the abnormal monthly mean return of offerings firms in the three year post-issue period is statistically negative which is consistent with the negative abnormal compound returns illustrated in panel A.

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[6] Lyon, Barber and Tsai (1999), Jegadeesh (2000) and Brav, Greczy and Gompers (2000).

5.2. Earnings management and post-offering stock underperformance.

We would now like to turn our attention to the question of whether the poor post-issue stock return performance can be explained by pre-issue earnings management. In order to do this, we first examine the relationship between abnormal compound returns and the change in earnings following the issue by regressing the following equation:

$$ACoR_{it} = b_o + b_1 \Delta EBXI_{it} + b_2 SIZE_i + b_3 BTM_i + m \qquad (15)$$

where $ACoR_{it}$ is the abnormal compound return of company i in period t, t being the one, two and three year-period following the offering. $\Delta EBXI_{it}$ is the change in earnings before extraordinary items and discontinued operations of firm i in period t and it is the explanatory variable of interest. Furthermore, we included as control variables the firms' size, $SIZE_i$ and the book-to-market ratio, BTM_i [7], owing to their explicative power in the cross-section variability of stock returns.

If the decline in stock prices following the offering is due to a gradual correction of market expectations as earnings reverse, a positive relationship between adjusted returns in the post-offering period and the change in earnings would be expected. Panel A of table 6 shows coefficients estimations of this first regression as well as their p-values in brackets. The lack of accounting information in some years entailed the reduction of the event sample. We estimate the regression for each temporal horizon with the number of events, *N*, with information available to compute the change in earnings.

For the one-year post-issue period, the coefficient on $\Delta EBXI$ is 2.017, with a statistical p-value of 3.6%. Therefore, a decrease in earnings implies a decline in abnormal returns of more than double. When we focus on adjusted returns during the two-year post-offering period, the coefficient of $\Delta EBXI$ is also positive with a value of 2.305 and in this case significant at 1% level. Thus, results for the two-year post-offering period also confirm the significant positive relationship between the decline in earnings and the decrease in returns. Finally, the results obtained when analysing abnormal compound returns for the three-year period following the issue are also consistent with this positive relationship, although it seems that with this longer

[7] The firm size was measured as market capitalization in millions of euros and the book to market ratio was the book value of stocks relative to the firm size. Both variables were computed for each firm at the beginning of the offering year.

temporal horizon the positive relationship is less pronounced. The level of statistical significance in this particular case is 10%.

In general, the results of regression (15) indicate that there is a significant relationship between poor post-issue stock return performance and the decrease in earnings during the one, two and three-year period following the offering, which is consistent with investors correcting expectations as earnings reverse.

TABLE 6.
PREDICTING POST-ISSUE STOCK RETURNS WITH CHANGE IN EARNINGS

Panel A shows results of the regression analysis to study the relationship between the return underperformance and the decrease in earnings in the post-offering period. The dependent variable is the abnormal compound return, $ACoR$, in the one, two and three-year period following the issue. The independent variable, $\Delta EBXI$, is the change in earnings in the analysis period. We also included as explicative control variables the SIZE of the firm and its BTM ratio. In panel B, the explicative variable $\Delta EBXI$ is broken down into: change in cash-flow from operations, ? CF, and change in current accruals, ? ACC.

Dependent variable	One-year AcoR		Two-year AcoR		Three-year AcoR	
Panel A. Regression of AcoR on change in earnings.						
INTERCEPT	-0.207	(0.009)	-0.312	(0.002)	-0.204	(0.128)
ΔEBXI	2.017	(0.036)	2.305	(0.005)	1.552	(0.088)
SIZE	1.97E-5	(0.155)	6.06E-5	(0.001)	4.44E-5	(0.057)
BTM	0.075	(0.236)	0.060	(0.449)	-0.123	(0.247)
N	54		52		48	
R^2	0.149		0.298		0.146	
adj R^2	0.098		0.254		0.088	
Panel B Regression of AcoR on change in cash-flow and current accruals.						
INTERCEPT	-0.194	(0.015)	-0.294	(0.004)	-0.149	(0.284)
? CF	2.061	(0.032)	2.363	(0.004)	1.537	(0.090)
? ACC	2.316	(0.021)	2.636	(0.003)	1.930	(0.045)
SIZE	2.03E-5	(0.141)	6.03E-5	(0.001)	4.42E-5	(0.056)
BTM	0.073	(0.250)	0.054	(0.493)	-0.154	(0.160)
N	54		52		48	
R^2	0.169		0.319		0.175	
adj R^2	0.102		0.261		0.098	

We know that earnings before extraordinary items and discontinued operations can be broken down into cash-flow from operations and current accruals, which are accounting adjustments that do not imply a movement of cash. With this idea in mind, our next step is to estimate the following regression:

$$ACoR_{it} = b_o + \underbrace{b_1 \Delta CF_{it} + b_2 \Delta ACC_{it}}_{\Delta EBXI_{it}} + b_3 SIZE_i + b_4 BTM_i + m \quad (16)$$

where ΔCF_{it} and ΔACC_{it} are the changes in cash-flow and accounting accruals for firm i in period t , respectively.

Panel B of table 6 reports the results of regression (14). For the one-year period following the offering both the coefficient on cash-flow and total accruals are statistically positive at 5% level. Thus, it seems that the decline in returns in the year following the issue is explained not only by the change in cash-flow but also by the decrease in accounting accruals. In relation to abnormal returns during the two-year post-offering period, this positive relationship between adjusted returns and change in accounting accruals is even more pronounced, with a coefficient of 2.636 statistically positive at 1% level. Finally, when the analysis horizon is the three-year period, results also confirm the positive relationship between the decrease in returns and the decline in total accounting adjustments, which is significant at 5%. Therefore, we can conclude that negative abnormal returns in the years following the offering are due, at least in part, to the reversion in accounting accruals.

As we explain previously, current accruals can be divided into nondiscretionary adjustments and discretionary or abnormal accruals, which can be used as a proxy for earnings management. Since the main objective of this study is to detect if the overvaluation and subsequent underperformance of equity issuers is due to previous earnings management, our major interest is to discover if abnormal returns are predicted by reversion in the part of accounting accruals that are "managed".

In order to do this, in regression (16) we broke down the explanatory variable accruals into discretionary and nondiscretionary adjustments. For this process, we applied the estimation procedures described above, firstly the modified Jones (1991) model and secondly the model developed by Poveda (2003). Thus, we run the following regression:

$$ACoR_{it} = b_o + \underbrace{b_1 \Delta CF_{it} + \overbrace{b_2 \Delta AACC_{it} + b_3 \Delta NACC_{it}}^{\Delta ACC_{it}}}_{\Delta EBXI_{it}} + b_3 SIZE_i + b_4 BTM_i + m \quad (17)$$

where $\Delta AACC_{it}$ is the change in discretionary or abnormal accruals and $\Delta NACC_{it}$ is the variation in the nondiscretionary or normal component of accruals, for firm i in period t , respectively.

As we have already explained, the abnormal accrual component is the key explanatory variable, since it is a proxy for managerial manipulation. If the market understands the implications of these discretionary adjustments, the coefficient on $\Delta AACC_{it}$ will be zero. However, if investors misinterpret these accounting practices, believing that high earnings due to discretionary accruals reflect good expectations, they overvalue equity issuers and gradually correct this overvaluation as discretionary accruals reverse in the post-offering period. So, according to this argument a positive relationship would be expected between abnormal returns and the decrease in discretionary accruals. We must point out that this earnings management hypothesis does not predict any relationship between the decrease in returns and nondiscretionary accruals, since they are dictated by firm conditions and are outside the control of managerial manipulation.

Table 7 displays the results of regression (17) with the four models employed to estimate discretionary accounting adjustments. The lack of certain information to estimate these variables entailed the reduction of the event sample. We run each regression with the number of events, *N*, with enough information to estimate abnormal accruals. When we focus on the one-year post-issue period, the coefficient of the change in abnormal accruals, ? AACC, is statistically positive whatever the procedure used to estimated discretionary adjustments. Specifically, the value of this coefficient is about 2.6, confirming that the reversion in discretionary accruals implies a decline in returns, in particular, of more than double.

With regards the nondiscretionary accruals, this variable is only significant in explaining abnormal returns when the Poveda model in cross-section is used as an estimation procedure. Given that the nondiscretionary part of accruals does not reflect manipulation, the earnings management hypothesis does not predict any relationship; however, the fact that one of the estimation procedures produced a significant relationship does not go against the manipulation hypothesis. This could be down to the fact that this model does not distinguish properly between the discretionary and nondiscretionary part of accounting accruals, or even because the market also reacts to reversion in nondiscretionary accruals.

TABLE 7.
PREDICTING POST-ISSUE STOCK RETURNS WITH DISCRETIONARY ACCRUALS

With the regression analysis in this table, we studied the relationship between post-offering returns and abnormal accruals, ? AACC . To estimate these accounting adjustments we used the modified Jones model and the Poveda model in cross-section and with panel-data, respectively.

Dependent variable	One-year ACoR	Two-year ACoR	Three-year ACoR
Panel A. Modified Jones model in cross-section			
INTERCEPT	-0.242 (0.039)	-0.245 (0.131)	-0.080 (0.775)
? CF	1.992 (0.087)	3.100 (0.029)	0.366 (0.885)
? AACC	2.593 (0.036)	3.735 (0.018)	1.267 (0.671)
? NACC	2.181 (0.123)	2.613 (0.124)	0.754 (0.778)
SIZE	1.54E-5 (0.295)	6.22E-5 (0.004)	3.90E-5 (0.222)
BTM	0.133 (0.199)	-0.015 (0.911)	-0.259 (0.292)
N	29	28	26
R^2	0.339	0.445	0.173
adj R^2	0.196	0.318	-0.033
Panel B. Modified Jones model with panel data			
INTERCEPT	-0.254 (0.015)	-0.353 (0.013)	-0.266 (0.198)
? CF	2.085 (0.068)	2.773 (0.038)	-1.729 (0.449)
? AACC	2.565 (0.039)	3.225 (0.036)	-1.533 (0.560)
? NACC	1.909 (0.123)	2.491 (0.109)	-0.382 (0.862)
SIZE	1.58E-5 (0.301)	6.47E-5 (0.003)	3.37E-5 (0.256)
BTM	0.088 (0.299)	0.071 (0.532)	-0.037 (0.835)
N	36	36	34
R^2	0.227	0.344	0.138
adj R^2	0.098	0.235	-0.016
Panel C. Poveda model in cross-section			
INTERCEPT	-0.254 (0.033)	-0.305 (0.065)	-0.168 (0.485)
? CF	2.233 (0.052)	3.827 (0.012)	0.680 (0.758)
? AACC	2.869 (0.028)	3.398 (0.028)	0.182 (0.940)
? NACC	2.715 (0.040)	4.781 (0.009)	2.558 (0.325)
SIZE	1.45E-5 (0.329)	6.52E-5 (0.002)	3.97E-5 (0.168)
BTM	0.158 (0.118)	0.034 (0.795)	-0.183 (0.365)
N	29	28	26
R^2	0.321	0.458	0.321
adj R^2	0.173	0.334	0.152
Panel D. Poveda model with panel data			
INTERCEPT	-0.239 (0.023)	-0.351 (0.011)	-0.205 (0.288)
? CF	1.709 (0.160)	3.175 (0.021)	0.513 (0.789)
? AACC	2.295 (0.063)	3.005 (0.041)	0.216 (0.916)
? NACC	1.846 (0.200)	4.003 (0.017)	2.579 (0.283)
SIZE	1.29E-5 (0.403)	6.47E-5 (0.002)	4.22E-5 (0.125)
BTM	0.107 (0.210)	0.097 (0.385)	-0.089 (0.575)
N	36	36	34
R^2	0.197	0.370	0.243
adj R^2	0.063	0.265	0.107

The results obtained when we analyse the two-year post-offering period are also consistent with the positive relationship between the reversion in discretionary accruals and underperformance in returns. In fact, similar to previous regressions in table 6, this positive relationship is even more pronounced when we focus on the two-year temporal horizon. In this case, the coefficient on ? AACC is about 3.3, depending on the model used to estimate discretionary accruals, statistically significant at 5% level.

Finally, for the three-year period following the offering, the relationship between the reversion in discretionary accruals and abnormal returns is weak. Although the coefficient on discretionary accruals is positive, with three of the four estimation procedures it lacks statistical significance. Thus, it would appear that pre-offering earnings management explains subsequent returns during the one and two-year period, but then loses explicative power with regards returns over the three-year period. However, these results must be interpreted with caution due to the limited sample size. In fact, in panel B of table 6, when we estimated regression (16) with a bigger sample, we noted how total current accruals were statistically significant in explaining long-run returns for the three-year post-issue period.

As an alternative to these event-time regressions, we can investigate the relationship between pre-offering earnings management and stock returns in the three year post-issue period by applying the calendar-time approach. As we explained in previous section, this procedure analyses the offering firms' return over the three-year post-issue period by examining the strategy of holding a portfolio which is made up, in each calendar month, of the stocks of firms that have issued equity over the last 36 months.

Panel B of table 5 shows that the abnormal monthly mean return of the calendar portfolio is statistically negative. The idea is then to detect if there is any relationship between earnings management and this negative post-offering abnormal monthly mean returns. For that, terciles are formed by sorting sample firms based on the change in discretionary accruals in the three-year post-issue period and then, we apply the calendar-time approach to each tercile. If earnings management explains the post-offering negative abnormal returns, we would expect the tercile with greater decline in post-issue discretionary accruals to experience more negative abnormal returns.

Table 8 reports the results of the calendar-time analysis by terciles. We apply the four alternative models explained earlier to estimate discretionary accounting adjustments. Panel A of table 8 displays the results obtained when the modified Jones model in cross-section is used to estimate abnormal accruals. The first tercile is made up of those issuing firms with greater declines in discretionary accruals in the three-year post-issue period. The abnormal monthly mean return of the calendar portfolio for this first tercile is -1.59%, statistically significant with a p-value of 4.9%. As for the second and third terciles, the abnormal monthly mean return is also negative but it lacks statistical significance. Thus, the results in panel A indicate that the decline in accounting accruals explains the abnormal returns in the post-offering years. When the modified Jones model is estimated with panel data, results are qualitatively similar. For the first tercile, the intercept from the Fama-French model is statistically negative with a p-value of 5.3%, whereas for the second and third terciles, the abnormal monthly mean return is negative but not significant.

TABLE 8.
ABNORMAL MONTHLY MEAN RETURN IN CALENDAR TIME REGRESSIONS

This table reports the relationship between the abnormal monthly mean return for issuing firms and the abnormal accruals reversion. For this purpose, terciles were formed on the basis of this reversion and we applied the calendar-time regression to each tercile.

	TERCILE 1	TERCILE 2	TERCILE 3
Panel A. Modified Jones model in cross-section			
$\hat{a}_p$ from FF model	-1.59%	-0.70%	-0.60%
t statistic	-1.972	-1.145	-1.198
p-value	(0.049)	(0.252)	(0.231)
Panel B. Modified Jones model with panel data			
$\hat{a}_p$ from FF model	-0.83%	-0.52%	-0.60%
t statistic	-1.937	-0.923	-1.223
p-value	(0.053)	(0.356)	(0.221)
Panel C. Poveda model in cross-section			
$\hat{a}_p$ from FF model	-1.84%	-0.36%	-0.46%
t statistic	-2.979	-0.727	-0.930
p-value	(0.003)	(0.467)	(0.353)
Panel D. Poveda model with panel data			
$\hat{a}_p$ from FF model	-1.19%	-0.41%	-0.21%
t statistic	-2.061	-0.763	-0.502
p-value	(0.039)	(0.445)	(0.616)

Next, in panel C, we repeat the analysis using the Poveda model in cross-section to estimate discretionary accruals. The abnormal monthly mean return for the first tercile is -1.84%, highly significant with a p-value of 0.3%. With regards the second and third terciles, the intercept from the Fama-French model is negative but not statistically significant. So the results obtained are robust to a different procedure to estimate abnormal accruals and confirm that earnings management does seem to explain the negative abnormal returns in the three-year post-offering period. Finally, panel D shows the results obtained when the Poveda model is estimated with panel data. Again, the abnormal monthly mean return for the first tercile is negative and highly significant, whereas for the second and third terciles, it is negative but not significant.

In summary, the results in this section show that long-run abnormal returns following the decision of issue equity are explained, at least in part, by the reversion of accounting practices to overstate earnings prior to the offering.

6. Conclusions

An interesting puzzle in financial literature is stock price underperformance following equity issues. For Spanish rights issues, Pastor and Martin (2004) reported negative abnormal returns in the three-year post-issue period. In this study we analyse if rights issuing firms in Spain manipulate earnings in order to influence market perceptions of the firm's value around the offering. We explore whether discretionary accruals are used to boost reported earnings before the issue and if these earnings management practices are associated with the post-offering abnormal stock returns.

We verify that discretionary accruals grow before the issue, peak in the offering year and decline thereafter. This accruals' pattern around the offering is sustained when we adjust event firms' accruals using control firms or sector medians. Moreover, these results are consistent even when using alternative methodologies to estimate the abnormal component of accruals, thus confirming that the results are not due to model specification.

We then attempt to discern if these accounting practices explain the underperformance in stock returns. We discover a positive relationship between the reversion in discretionary accruals and abnormal returns during the years following the equity issue. Moreover, these results are robust not only to the four different procedures to estimate managerial discretion, but also to the two alternatives to measure post-offering abnormal returns, the event-time and calendar time approaches.

Therefore, the results obtained in this study appear to confirm that managers exploit the discretion allowed in accounting rules to overstate earnings before the offering. Furthermore, it seems that investors cannot see through these accounting practices, overvaluing issuing firms. When, in the subsequent periods, these accounting adjustments reverse and high pre-issue earnings are not maintained, the market subsequently revalues the firm downwards.

These conclusions are relevant not only for the academic community but also those who use accounting information, enabling them to take earnings management into consideration in their decision process. In addition, from the viewpoint of market regulators, they should examine the management of earnings closely around equity offerings to guarantee capital resources were properly allocated.

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