Abstract

This research investigates the Post-Earnings Announcement Drift (PEAD) anomaly in the Latin American stock markets. We evaluate the cumulative abnormal returns around the annual reports announcement dates of firms with good news (higher positive earnings surprises) and bad news (higher negative earnings surprises) from Argentina, Brazil, Colombia, Chile, Mexico and Peru from 1998 to 2017. Using both the market model and the constant mean model for estimating abnormal returns and calculating earnings surprises both using analysts' estimates and comparable earnings we were not able to find evidences on the PEAD anomaly in the Latin American countries. We also evaluate each country separately as well as the pre and post IFRS adoption periods. These results contradict the PEAD anomaly literature, which is mainly based on US firms. To investigate whether the difference is due to Latin American firms' inherent characteristics or due to differences in the institutional environment, we compare our results with a sample of matched firms traded in the New York Stock Exchange. For both the full and matched NYSE sample we find the traditional pattern of the PEAD anomaly, leading us to consider that the absence of the anomaly in Latin American markets is due to differences in the institutional environment.

Commented [BEL1]: Which features of the institutior environment are most important? I think we need to determine if some are more important than others. These factors could be legal, cultural (Hofstede or Globe), obscurity (Transparency International), IFRS think we do a good job of this one, although all countries didn't change over at the same time), etc.

Keywords: Post-Earnings Announcement Drift; Latin America; Institutional environment; matched samples.

JEL Codes: G14; G15; M41.

1 Introduction

In this research paper we investigate the Post-Earnings Announcement Drift (PEAD) in Latin America. While the PEAD literature has been around for several decades, its focus has been on developed markets, especially the United States. However, market anomalies and specifically post-earnings announcement drift have not been lacking in emerging markets, and more particularly Latin American. With this in mind, we select a sample of firms from the primary market indices of the largest Latin American countries: Argentina, Brazil, Colombia, Chile, Mexico and Peru. We examine the PEAD anomaly estimating the cumulative abnormal returns around earnings announcements data of the firms from these countries. In addition, we also replicate the analysis using a sample of matched firms from the New York Stock Exchange (NYSE). By examining the NYSE, which has been extensively used in prior literature, we can analyze and compare the results found for Latin America. This comparison allows us to examine whether the results are driven by differences in the institutional and market environment or by Latin American inherent firm characteristics.

The origins of this line of research date from the 1960s and the 1970s, when the Market Efficiency Hypothesis (EMH) (Malkiel & Fama, 1970) were introduced in Finance and when the first studies relating accounting disclosures with stock prices' behavior were being produced, namely the seminal works of Beaver (1968), who analyzed the movement of stock prices and trade volume around earnings announcement, and Ball and Brown (1968), who investigated how stock prices reacted to earnings changes. Since then, this literature has continued with a large body of research dedicated to understanding the role of accounting in the capital markets, as one can see in the review of Dechow, Sloan, and Zha (2013).

Dechow et al. (2013) explore three main lines of this literature. First, they re-

view works which seek to investigate the usefulness of accounting numbers. Specifically, this line of research seeks to understand whether investors use accounting information in their decisions, and then it focuses on the process of incorporating accounting information in stock prices, modeling how investors use accounting announcements to update their expectations regarding their investments. The relative usefulness of accounting and non-accounting information is also of interest of this line of research. The second line of research explored by Dechow et al. (2013) is about the characteristics of earnings that make them useful for market prices. Here the authors explore accounting accruals, conservatism and fair value, that is, specific features of the accounting standards that aim to produce numbers with significant information content.

The third line of research asks whether stock prices correctly reflect information in earnings. While the studies from the first two lines assume the Efficient Market Hypothesis, some studies have presented results inconsistent with markets' information efficiency.

Dechow et al. (2013) cites works which document that prices take several months to fully incorporate accounting information, contradicting the premise of efficiency that prices in- stantly incorporate new information. The original work of Ball and Brown (1968) showed that the drift in stock prices starts several months before the announcement and that it continues throughout the year after the announcement. This is the Post-Earnings- Announcement Drift (PEAD) anomaly, which is the focus of this study. Besides this PEAD anomaly, other results in the accounting literature have been mixed in finding inconsistencies in market efficiency.

Our results point towards a different conclusion regarding the PEAD anomaly for the Latin American stock markets. Under different specifications we found no statistically

significant difference between the cumulative abnormal returns of firms with positive earnings surprises (good-news firms) and negative earnings surprises (bad-news firms) for the markets in Argentina, Brazil, Chile, Colombia, Mexico and Peru. Therefore, we found no evidence of the existence of the PEAD anomaly for the Latin America. In order to evaluate whether this result is due to the different legal and financial environment in Latin America (e.g. Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998), we replicate the analysis for a sample of matched firms listed in the New York Stock Exchange (NYSE). Although the good and bad news firms in NYSE also do not present drifts statistically different, the PEAD pattern is much more clear for them. This result suggests that the absence of the PEAD anomaly in Latin America is due to the macro environment of Latin American stock markets.

2 Latin America Characterization

The economics of Latin America is an important issue as many of these economies are large and are growing and seeking to join developed financial markets. Historical development and different colonization patterns have formed striking differences in the economic structure among regions of the world. Financial markets in such regions have, therefore, developed at a different pace and with different focus. Accounting, following this pat- tern, has also developed with different objectives and structures. According to Nobes and Parker (2008, p. 29), accounting is “clearly affected by its environment”, being influenced by culture, providers of finance, taxation, and legal systems.

A classic example is the difference between the regions of Continental Europe and the Anglo-Saxon countries. While the former developed an accounting model to inter- mediate firms and the Government, the latter developed a model to attend the

demands arising after the industrial revolution, focused in means to monitor and inform the activities of big companies to their shareholders, in a capital markets model. With colonization and commercial transactions, these blocks of common accounting systems were spread throughout different regions of the world. For example, Nobes and Parker (2008) cite the case of China and Japan, whose commercial legal systems were based on translation versions of the German commercial code, due to the transactions between them and Germany in the nineteenth century.

In economics, some lines of research have explored these differences. The law and finance view, one of the most popular ones, as promulgated by Porta et al. (1998), argues that legal systems classified into code-law (with French, German and Scandinavian origins) and common-law (with British origin) can explain why firms are financed and owned so differently across countries over the world. However, Rajan and Zingales (2003), for instance, suggest that this structural theory is incomplete, arguing that incumbents' incentives shape financial markets' activities through their stimuli or oppositions. The works of Roe (1996, 1997, 2000) form the basis for this Political perspective. Further, other perspectives have been developed, such as the Endowment theory discussed by Beck, Demirgüç-Kunt, and Levine (2003), who, also from a historical perspective, argue that the geographic environment influenced the types of institutions colonizers were willing to build in the new nations. Finally, cultural and religious factors are also important, as examined by Stulz and Williamson (2003), who compare the relative explanatory power of religion, language, legal origins, income per capita and openness to international trade on the quality of creditors' rights.

Another theory that can be useful to understand different patterns of financial structures are the Varieties of Capitalism theory Soskice and Hall (2001) and the Regula- tion theory Boyer and Saillard (2005). Soskice and Hall (2001) develop an

analysis oppos- ing the “liberal market economies”, where firms’ activities are primarily carried through the markets, and the “coordinated market economies”, where coordination exists mainly through non-market mechanisms. The authors then study countries whose economies lie in between these two categories and evaluate their relative advantage. Finally, sharing certain similarities with the Varieties of Capitalism theory, the Regulation Theory also brings important concepts for countries’ comparative financial markets’ development, but through emphasizing the “regulation mode” that can be a base to different institutional architectures.

Regardless of the theory, it is clear how Latin America differs from the (economic dominant) Anglo-Saxon economies. Latin America has inherited the French civil law tradition from its colonizers, as well as religion and language. Specifically regarding financial structure, capital markets are not the main source of finance for Latin American firms, which leads Chong (2007) to argue that even the largest capital markets in the region confront the challenge of extinction. Through the varieties of capitalism’s lens, the region can be classified as a “hierarchical market economy”, where the main corporation model are large private domestic firms family-owned and controlled forming a diversified business group (Schneider, 2009), similar to the Korean chaebols. This contrasts with the coordinated market economy model, such as the German case, and with the liberal market economy model, such as the United States.

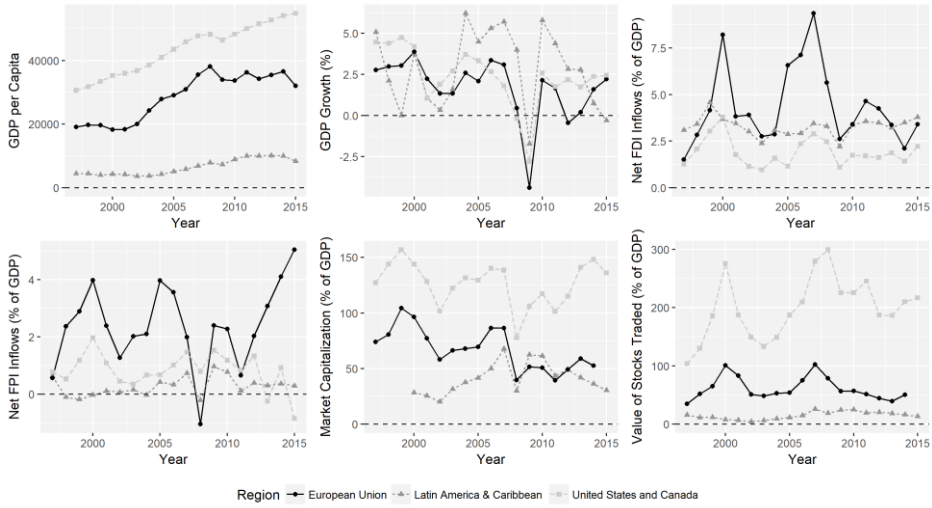

Figure 1: Economic Characteristics of Latin America, European Union and Canada and the United States

Figure 1 shows the evolution of some economic figures for Latin America in com- parison with the European Union and with Canada and the United States, according to data from the World Bank, highlighting the differences potentially explained by the theories mentioned above. From it, one can see that while the GDP per capita plot shows the striking income differences among the regions, the Latin America's GDP growth for the years around the global financial crisis showed a promising outlook. However, the last few years saw a downturn in the upward trend. When examining international capital flows, we see that foreign direct investments (FDI) inflows are relatively high for Latin America and it has also been more constant over the years. However, foreign inflows of investments through portfolios are low, evidencing the small proportion of Latin American capital markets.

The last two plots in Figure 1 make this clearer. The proportion of market capi- talization relatively to GDP barely reaches 70% right before the Global Financial Crisis, although it surpasses European Union in the couple of years following the crisis. If we compare Latin America with Canada and the U.S. the lower levels of market

capitalization are even more highlighted. The differences among the regions become even more striking when analyzing the value of stocks traded relatively to the GDP. While in Canada and in the U.S. the volume of stock trading reaches 300% of GDP, in Latin America it averages only 15%.

The World Bank classifies 29 countries as forming the region Latin America and the Caribbean. Figure 2 shows the population and GDP distribution in the region for the year of 2013, exposing a few large countries, such as Brazil and Mexico, and several small nations, especially in the Caribbean and Central America. Figure 3, on its turn, shows the distribution of Latin America's stock market capitalization (domestic) and the value of shares traded in 2015, which points out the differences of the Brazilian market. While the proportion of stock market capitalization is similar between Mexico and Brazil, the total value of shares traded in Brazil is more than 75% of the total trade in the region.

However, when analyzing each country separately in Figure 4 one can see that although the Chilean market is relatively smaller, it is the only one which has reached domestic market capitalization of more than 100% of GDP, while Brazil, Colombia, Mexico and Peru have an average of around 40% and Argentina less than 10%, according to data from the World Bank.

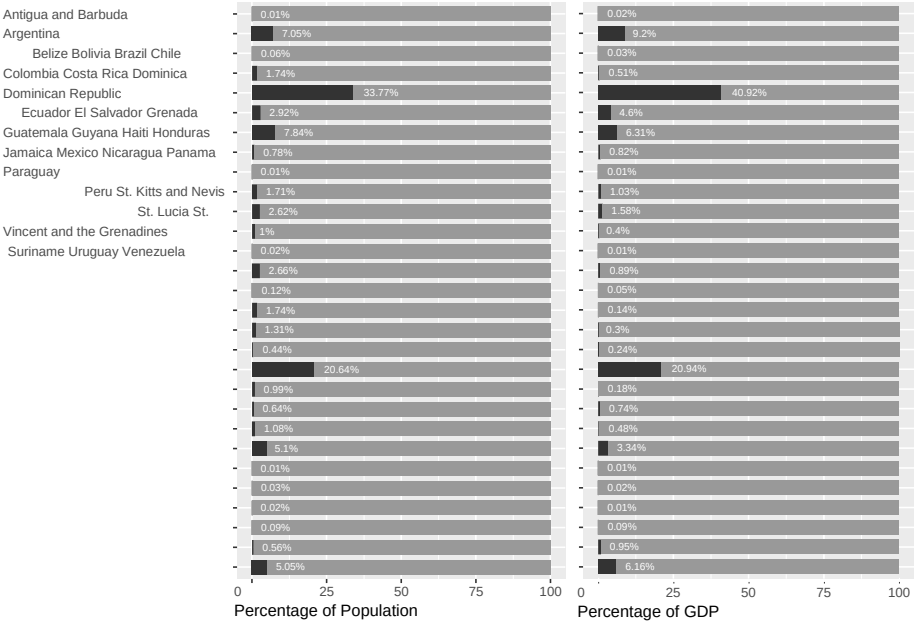

Figure 2: Latin America's Population and GDP by Country

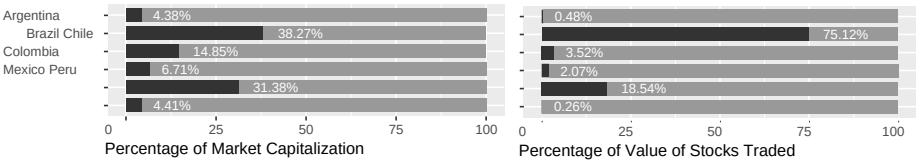

Figure 3: Latin America's Stock Market Capitalization and Value of Shares Traded by Country

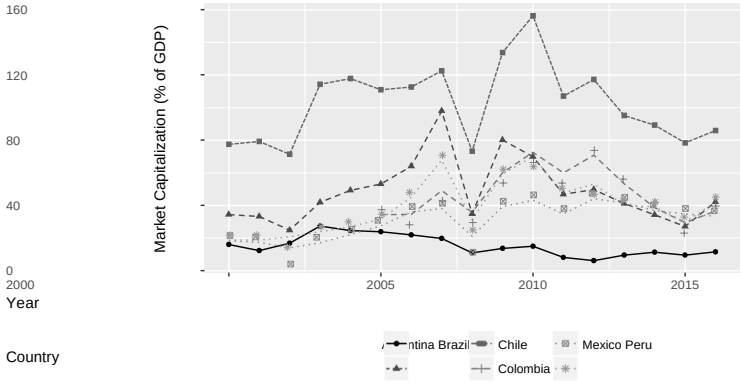

Figure 4: Stock Market Capitalization inside Countries

The movement towards financial globalization has turned the attention to emerging economies. Vegh (2015) highlights the macroeconomic policy challenges of such a financially globalized world economy, where international capital flows force emerging economies to look outside and remodel policies. For instance, business language must be global. Such a rationale explains the recent movement of several Latin American countries towards accounting harmonization through the adoption of the International Accounting Standards. Costa Rica adopted in 2002, Paraguay in 2005, Guatemala in 2007, Venezuela in 2008, Chile in 2009, Brazil and Ecuador in 2010, El Salvador and Nicaragua in 2011, and Argentina, Honduras, Mexico, Peru and Uruguay in 2012, and Colombia in 2015 (IFRS Foundation, 2016). Figure 8 illustrates the spread of IFRS in the region. Ac- cording to the IFRS Foundation (2016), in Paraguay, the IFRS are only permitted, not required, but few firms use it. Further, Bolivia is also planning the adoption, but there is no information about Haiti.

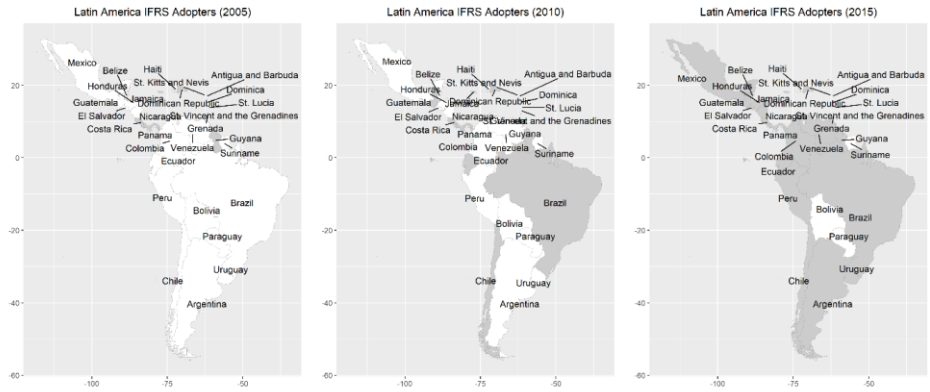

Figure 5: IFRS adoption in Latin America

3 The Post-Earnings Announcement Drift Literature

In the 1960s, new accounting knowledge was being formed (Hopwood, 2007). The works of Fama (1965), Fama, Fisher, Jensen, and Roll (1969) and Malkiel and Fama (1970) on the efficiency of capital markets have been forming grounds to a new perspective in accounting research, inaugurating the field of positive research that explores the empirical relationship between market prices and accounting numbers. The works of Beaver (1968) and Ball and Brown (1968) are cited as the seminal works of this line of research.

Beaver (1968) analyzed how investors perceive the information content of earnings, by evaluating stock prices and trading volume movements in the weeks surrounding the earnings announcement. The author finds significant abnormal movements of both prices and volume around the week of earnings announcement for a sample of firms traded in the New York Stock Exchange (NYSE) during the years of 1961 to 1965. Ball and Brown (1968), on their turn, specifically assess the utility of the income numbers, through the analysis of stock prices' behavior under the announcement

of unexpected earnings changes, arguing that, under capital markets efficiency, changes in the security prices reflects the flow of information in the market. The authors analyzed firms traded at NYSE during the years of 1957 to 1966 and, as predicted, they found that when accounting income differs from its predicted values, the market tend to react in the same direction. However, Ball and Brown (1968) also finds that the drift starts several months before the announcement and that it continues throughout the year after the announcement.

Later work has been examined this result forming the now well documented Post- Earnings-Announcement Drift anomaly. While the Efficient Markets Hypothesis predicts that prices instantly adjust to new information, the documented PEAD constitutes an anomaly, since it shows that stock prices take too much time to incorporate accounting information. Ball (1978) argue that publicly available accounting information can be, at least approximately, considered a public good to be acquired at no private cost and, consequently, should not provide private benefits. However, the literature has been providing evidence that securities are yielding systematic excess returns over earnings announcements.

In the subsequent years after Ball and Brown (1968), several studies were published documenting the PEAD anomaly. As a few examples, one can see the works dating from the 1970s, such as Jones and Litzenberger (1970) who argue, according the evidence they provide, that the information available to the public (quarterly financial statements) is not properly (fully and timely) discounted by the market. This conclusion is shared with Joy, Litzenberger, and McEnally (1977), who argues that the price adjustment to earnings reports is gradual rather than instantaneous, and with Brown (1978), who, analyzing the Cumulative Abnormal Returns (CAR) around new Earnings per Share (EPS) information, found that the adjustment of stock prices to

earnings takes some time, once the CAR continues their trend until about 45 days after the earnings announcement, where the authors conclude with an implication for the EMH, arguing that there is opportunity to obtain abnormal gains in the market.

In the following decades, some works dedicated to finding explanations for the Post- Earnings-Announcement drift anomaly. Foster, Olsen, and Shevlin (1984), for example, discuss in their paper two different categories of explanations for the drift. The first category, seen in papers from the 1970s, lies on market inefficiencies. However, the authors recapitulate the premises of the EMH models and points that if any of these premises is violated in the empirical analysis, conclusions that markets are not efficiency due to the existence of the drift are premature. For Bernard and Thomas (1989), according to this view, the delayed response of prices to earnings announcement indicates either that traders fail to assimilate the new information, or that transaction costs, including the costs of identifying the opportunity and monitoring the strategy exceed the potential gains from immediately exploiting the new information.

The second category explored by Foster et al. (1984) includes several explanations that do not imply in market inefficiency. First, analogously to the “joint hypothesis problem” for testing market efficiency (Fama, 1991), Foster et al. (1984) argue that the asset pricing models may not be correctly specified. Further, even if the model is correct, its parameters may be biased. Another problem brought by Foster et al. (1984) is the possibility that the models are using hindsight information or that the fact is specific for a certain period of time. Discussing the potential issues in estimating Capital Asset Pricing Model (CAPM) to calculate abnormal returns associated with the drift, Bernard and Thomas (1989) explain that researchers fail to fully adjust the returns to risk. Therefore, the documented abnormal results may be simply a fair compensation for bearing priced risk that was not captured by the CAPM, in such a

way that firms with higher (lower) surprises are simply more (less) risky.

Bernard and Thomas (1989) then develop their paper in order to disentangle the explanations for the Post-Earnings-Announcement drift into either a delayed price re- sponse or a lack of risk adjustment. The authors bring the results from Foster et al. (1984), who found that only when analyzing the returns according to a earnings-based model, contrasted with a security-based model, the drift is evidenced, and point that this result was interpreted as an evidence that the drift is due to problems in risk measure- ment; however, the authors point that this result is also consistent with the delayed price response. After a battery of tests, Bernard and Thomas (1989) fail to support the CAPM mispecification hypothesis for explaining the Post-Earnings-Announcement drift and find evidences supporting the delayed price responses hypothesis. These evidences are also supported by further works of the authors (Bernard & Thomas, 1990).

Some decades after the works of Bernard and Thomas (1989) and Bernard and Thomas (1990), the roles of different kinds of risk is emphasized. Mendenhall (2004), for instance, find evidence supporting the idea that part of the PEAD anomaly can be explained by liquidity risk, and Sadka (2006) finds that arbitrage risk is also influencing the drift supporting the view that the anomaly can be seen as an underreaction to earnings announcement, as argued by Bernard and Thomas (1989, 1990). Also converging to the information inefficiency perspective, Bhushan (1994) shows that direct and indirect transaction costs are positively related to the magnitude of the drift.

A common feature of these works dating from the 1960s to the 2000s is that they are basically evaluating the United States stock market. The works cited in this section focused on firms traded in the New York Stock Exchange (NYSE)

and/or NASDAQ. Although in the last decades a number of papers have studied different markets, such as Hew, Skerratt, Strong, and Walker (1996) in the United Kingdom and Ariff, Loh, and Chew (1997) in Singapore, the evidence outside the U.S. is still modest. Most recently some papers started focusing on other markets.

The work of Griffin, Kelly, and Nardari (2010) shows that the Post-Earnings-Announcement drift and its associated abnormal returns are similar between emerging and developed countries. However, differences between the U.S. and other markets are also documented. Forner and Sanabria (2010), for example, analyses the drift in Spain adding behavioral theories in order to explain the anomaly, and find different results from those presented in the United States. The authors argue that these differences may be due to structural differences in the markets, such as the level of investor protection and the underlying legal system.

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Another recent example is the work of Chen and Huang (2014), who, when comparing the U.S. and China markets, show that both markets present consistent evidence of the post-earnings-announcement drift; however, the authors find that differences emerge. Namely, the Chinese market tend to respond much strongly to good news and less strongly to bad news, which suggests that non-accounting factors play an important role in China; and stock markets reactions are associated with firms' size in both markets, however while in the U.S. larger firms present less drift, in China is the opposite, that is, smaller firms present less drift.

4 Data and Models

To analyze abnormal returns reactions to earnings surprises we must first define what are "normal" returns and earnings, so we can evaluate the unexpected components. Ball and Brown (1968) use the market model logic for both (log)

prices and earnings, assuming that the expected price and earnings of a specific firm is the average of the market. A similar approach is followed by Brown (1978). Foster et al. (1984) also uses the CAPM for calculating abnormal returns, including criticism to the model, as briefly discussed in section 3. However, for estimating quarterly earnings surprises, the authors use a univariate seasonal time-series model.

Bernard and Thomas (1989, 1990) follow Foster et al. (1984), but the earnings surprises are standardized. Mendenhall (2004) also use standardized earnings surprises, but the forecasts come from analysts' forecasts instead of time-series model, while the abnormal returns are gauged as the difference between the firm's returns and the market return; therefore, assuming zero alpha and beta equal to one for CAPM. Sadka (2006) uses a seasonal random walk model for calculating earnings surprises, including a trend term. In most recent years, Forner and Sanabria (2010) also used a seasonal random walk to model earnings, along with the difference regarding analysts' forecasts, which is also used by Hung, Li, and Wang (2014). Chen and Huang (2014) use a random walk model for earnings surprise and abnormal returns are defined as the difference between firms' and the market return.

Based on this range of work, we calculate earnings surprises as the variation be- tween actual earnings (earnings per share, specifically) and analysts' estimations for earn- ings at each year and also as the variation between actual and previous (comparable) earnings, that is, according to a random walk model. To calculate abnormal returns, we assume returns follow the market model

$$r_{it} = \alpha_i + \beta_i r_{mt} + \varepsilon_{it}, \qquad (1)$$

where the "normal" returns are calculated as $\alpha_{ic} + \beta_{icm} r_{cmt}$, where the parameters α

and β are calculated using data from the estimation windows. We estimate the model via generalized method of moments (GMM) to gauge parameters robust to autocorrelation and heteroskedasticity. The model is estimated using data from the estimation window, which we defined as the last six months of the previous year, period when we assume no information about the annual earnings released is affecting prices. Following, the estimated parameters are applied to the data in the event window, which we define as 20 days before and 20 days after the announcement day, to calculate the abnormal returns.

The data are from firms from Argentina, Brazil, Chile, Colombia, Mexico and Peru who have the last 5 years trading value different from zero and have earnings announcements data available at Bloomberg. The data sums a total of 443 announcements, from which 37 are from Argentina, 197 from Brazil, 69 from Chile, 19 from Colombia, 71 from Mexico and 50 from Peru, which sums a total of 5,557 announcements. We have annual earnings announcements data ranging from 1998 (relative to the 1997 fiscal year) to 2017 (relative to the 2016 fiscal year). However, the availability of data on analysts' estimates decreases our sample to about its half. Later in the analysis we also require firms to have at least 5 consecutive days with available returns around the announcement date to be included in the event study analysis, which also considerably decreases the number of firms in each analysis as is detailed in section 5.

To compare the Latin American firms with the United States firms, in order to avoid that the differences between the behavior of firms from NYSE and from Latin American Stock Exchanges are due to inherently different characteristics of the firms in each group, we select a group of NYSE firms matched with the Latin American ones based on firms' characteristics. Using Propensity Score Matching (PSM), we define a

function that evaluates the probability of a specific firm to be part of a specific group according to this set of observable variables. Therefore, we define the probability of a firm to be listed on a Latin American Stock Exchange as:

$$P\left(T_i = 1 \mid X_i = x_i\right) = \frac{\exp\left(X\beta\right)}{1+\exp\left(X\beta\right)}, \qquad (2)$$

where $T_i = 1$ for firms listed on Latin American Stock Exchanges and $T_i = 0$ for firms listed on NYSE, so that the propensity score is estimated as:

$$\hat{P}(x_i) = \frac{\exp\left(X\hat{\beta}\right)}{1+\exp\left(X\hat{\beta}\right)}, \qquad (3)$$

The matrix of firms' characteristics **X** includes firms' size, book-to-market index (BTM), debt/equity ratio (DE), industries and the magnitude of earnings surprises. The matching is then based on the proximity of the propensity scores of firms in each group according to the nearest neighbor method, which looks for the firm in the "control" group (NYSE firms) with the nearest propensity score of each firm in the "treated" group (Latin American firms). We, then, the NYSE firms matched with the Latin American firms.

Table 1 shows some descriptive statistics from the sample firms from Latin America and for both the full sample of NYSE firms and for the matched sample, separately for good news and bad news firms. There are 1,359 good news earnings announcements and 932 bad news earnings announcements for the Latin American firms. On average, the good news amount to an increase in 96% of reported earnings per share over the analysts estimates, while the bad news amount to an average of earnings per share 105% lower than the analyst's estimates. However, the variability in the good surprises is much higher than in the bad surprises. These two groups of firms are very similar in size. The bad news

firms tend to be slightly less profitable on average, but the profitability of good news firms is much more homogeneous, as well as the book-to-market index, which tend to be smaller for the good news firms. Finally, the bad news firms are much more financed by debt than the good news ones.

The Brazilian firms amounts to more than half of the Latin American sample, followed by the Mexican firms which comprises around of one quarter of the sample. The remaining quarter is composed by the other four countries. The firms' size is homogeneous across countries, but the Colombian firms are the least profitable and the least financed by debt. The greater good surprises come from the Chilean firms, followed by the Peruvian ones. The greater bad surprises come from Brazil, followed by Mexico.

On average, the effects of good news in the NYSE sample, as well as in the matched sample, are smaller than in the Latin American sample, while the bad news effects are greater. The bad news NYSE firms are also much more profitable than the Latin American firms, while the good news are similarly profitable in the two groups. The NYSE firms also tend to be more financed by debt and to have a smaller book-to-market ratio.

5 Results

To separate firms into Good and Bad News firms, we selected the 30% with higher positive earnings surprises (Good News) and the 30% with higher negative earnings surprises (Bad News). Figure 6 shows the plot of cumulative abnormal returns (CAR) around the earnings announcements dates of the two groups of firms, both considering analysts' estimates (first plot) and the comparable earnings per share (second plot). In the first plot, 31 announcements are included in the Good

News portfolio and 29 are included in the Bad News portfolio, while for the second plot these numbers are 53 and 31.

The two plots gauge the same result. The two groups of firms, that is, both good news and bad news firms generates negative abnormal returns, although the good news firms generate lower negative returns. However, the confidence intervals calculated via bootstrap (Davison, Hinkley, & Schechtman, 1986), represented by the shaded area, show that the two series of CAR are statistically indistinguishable from each other, since the confidence intervals overlap. Nevertheless, while the confidence intervals for the good news firms includes the zero, the bad news firms are statistically below zero. Therefore, Figure 6 shows the Post-Earnings Announcement Drift anomaly finds very weak evidence in the Latin American capital markets.

Further, Figure 7 shows the analysis separated by country. Since there is not enough data on analysts' estimates for firms in Argentina and Colombia, we present only the separate analysis for earnings surprises calculated as the difference between current and comparable earnings. Even so, in the good and bad news portfolios, respectively, we have a very limited number of announcements for each country, so inference is very weak and must be very cautious. Namely, we have the following number of announcements in the good and bad news portfolios, respectively, for each country: Argentina, 2 and 1; Brazil, 24 and 10; Colombia, 3 and 1; Chile, 7 and 5; Mexico, 14 and 14; Peru, 5 and 1. When only one announcement is available, no confidence intervals can be calculated.

The first thing worth mentioning in Figure 7 is that the amount of cumulative abnormal returns in the 41 days window around the announcements varies among countries, but they all remain small. As one can cautiously see in Figure 7, the

Peruvian subsample is the one which most resembles the PEAD pattern, where the good news firms start to drift upward a few days after the announcement and the bad news firms continue their downward trend. However, the CAR are very small, reaching only about 0.1 and −0.1. In Colombia, we actually see the bad new firm drift upward. Nevertheless, this is only one event, so that specific firm has likely faced other events around its earnings announcement. Since the Brazilian firms are the majority (53%) in the sample, the whole Latin American analysis is very similar to the Brazilian subsample. This is also seen for the Mexican firms, which are 23% of the Latin American sample. Finally, Chilean firms are the ones where both good and bad news generate returns most close to zero. Further, for Brazil, Chile, Mexico and Peru, the results using analysts' estimates (unreported) are very similar to Figure 7. The conclusions also remain the same (unreported) if we classify the firms as good and bad news at 50-50% instead of selecting the 30% with higher positive and the 30% with higher negative earnings surprises.

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Table 1: Descriptive Statistics

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Group	News	Stat.	Earnings Surprise	Size	ROA	BTM	DE
Latin America	Good News	Mean	96.510	15.030	7.000	0.750	0.870
N: 2,291	N: 1,359	Std. Dev.	1, 221.930	1.550	6.890	0.980	0.970
	Bad News	Mean	−105.940	14.790	6.560	0.910	1.200
	N: 932	Std. Dev.	538.180	1.460	12.910	2.140	2.460
Argentina	Good News	Mean	37.270	14.980	5.240	0.880	0.690
0.680 N: 87	N: 50	Std. Dev.	64.180	1.020	3.760	0.710	
	Bad News	Mean	−47.780	14.850	6.780	0.870	0.870
	N: 37	Std. Dev.	63.830	0.990	4.900	0.620	1.240
Brazil	Good News	Mean	72.680	15.240	6.960	0.860	0.970
1.120 N: 1,204	N: 745	Std. Dev.	265.760	1.690	6.240	1.280	
	Bad News	Mean	−138.530	14.690	6.920	1.070	1.340
	N: 459	Std. Dev.	692.890	1.590	15.110	2.650	2.660
Colombia	Good News	Mean	58.130	15.720	2.700	0.840	0.560
0.480 N: 57	N: 34	Std. Dev.	68.280	0.950	1.740	0.240	
	Bad News	Mean	−19.420	15.690	2.700	0.710	0.590
	N: 23	Std. Dev.	17.550	0.770	1.370	0.210	0.460
Chile	Good News	Mean	338.160	14.730	7.610	0.740	0.920
1.090 N: 280	N: 160	Std. Dev.	3, 356.870	1.520	11.260	0.620	
	Bad News	Mean	−53.350	15.280	4.520	0.750	0.850
	N: 120	Std. Dev.	185.000	1.280	4.120	0.750	0.510
Mexico	Good News	Mean	28.680	14.950	6.680	0.560	0.730
0.700 N: 518	N: 293	Std. Dev.	52.130	1.340	4.350	0.380	
	Bad News	Mean	−83.770	14.860	6.860	0.710	1.170
	N: 225	Std. Dev.	299.160	1.320	12.590	1.660	2.860
Peru	Good News	Mean	100.630	14.200	9.330	0.590	0.650
0.450 N: 145	N: 77	Std. Dev.	333.210	1.190	9.030	0.610	
	Bad News	Mean	−60.140	14.060	7.400	0.660	0.880
	N: 68	Std. Dev.	177.190	0.950	7.620	0.460	0.590
NYSE	Good News	Mean	53.550	15.310	7.160	0.480	1.910
12.150 N: 9,574	N: 4,340	Std. Dev.	293.270	1.440	7.480	0.340	
	Bad News	Mean	−136.990	15.250	10.400	0.550	2.490
	N: 5,234	Std. Dev.	1,313.310	1.460	247.130	0.540	21.780
NYSE Matched	Good News	Mean	62.440	14.740	7.580	0.590	0.970
1.410 N: 1,959	N: 892	Std. Dev.	297.120	1.340	10.610	0.440	
	Bad News	Mean	−158.940	14.750	24.300	0.740	1.090
	N: 1067	Std. Dev.	894.080	1.460	502.720	0.880	1.520

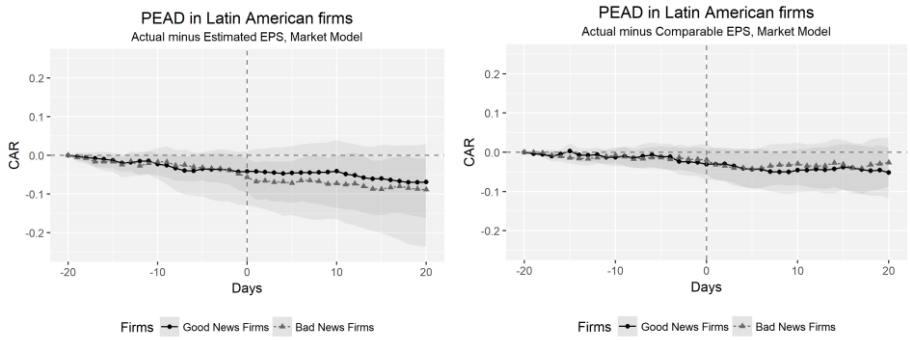

Figure 6: CAR around Earnings Announcements in Latin America

The number of events included in each plot as good or bad news depends on the availability of returns data in the events' windows. In the first plot, the good news series comprises 31 events and the bad news, 29. In the second plot there are 53 and 31 events, respectively.

Furthermore, we evaluate whether the adoption of IFRS adoption by the countries we studied are interfering with our results, we rerun our analysis for the previous and post-adoption period. In the pre-adoption sample there is 18 announcements in the good news portfolio and 16 in the bad news portfolio, while in the post-adoption period, these numbers are 29 and 30, respectively. The results are presented in Figure 8, which shows there is no evidence of the PEAD anomaly either before or after the adoption of the international accounting standards.

These results contradict the established literature on PEAD for developed markets, namely the U.S., which suggests that differences in the environments, that is, differences in the legal and financial systems between the two regions are the responsible for the differences in the PEAD patterns.

To investigate this, we repeat the analysis for the sample of NYSE firms. First, we estimate the drift for the whole sample and then we reestimate it for a sample of NYSE firms matched (by industry, size, BTM, debt/equity ratio and earnings surprises), to investigate whether the differences are due to firms' characteristics or to

the environment as a whole.

Commented [BEL5]: What factors of the environmen might we want to examine specifically? I think we ne to think about this before sending in to a journal.

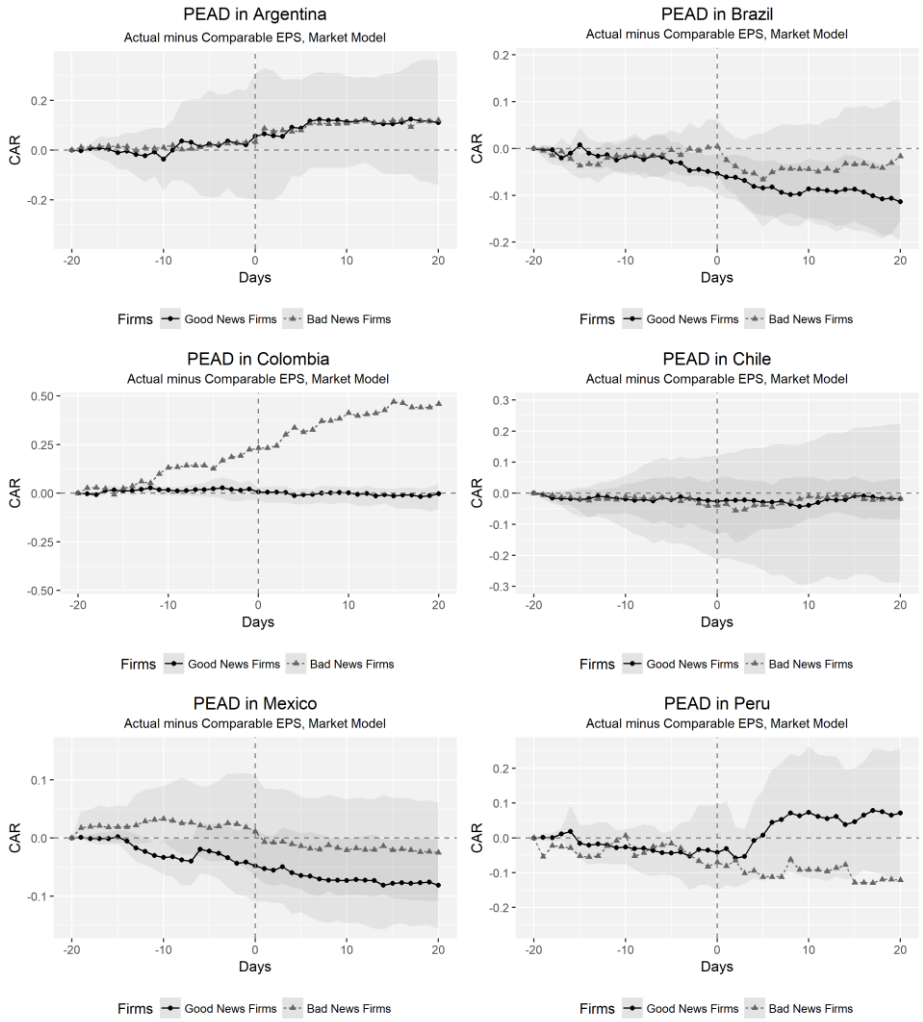

Figure 7: CAR around Earnings Announcements in Latin American Countries

The number of events included in each plot as good or bad news depends on the availability of returns data in the events' windows. Each plot includes the following number of events. Argentina: two (good news) and one (bad news); Brazil: 24 (good news) and 10 (bad news); Colombia: three (good news) and one (bad news); Chile: seven (good news) and five (bad news); Mexico: 14 (good news) and 14 (bad news); Peru: five (good news) and one (bad news).

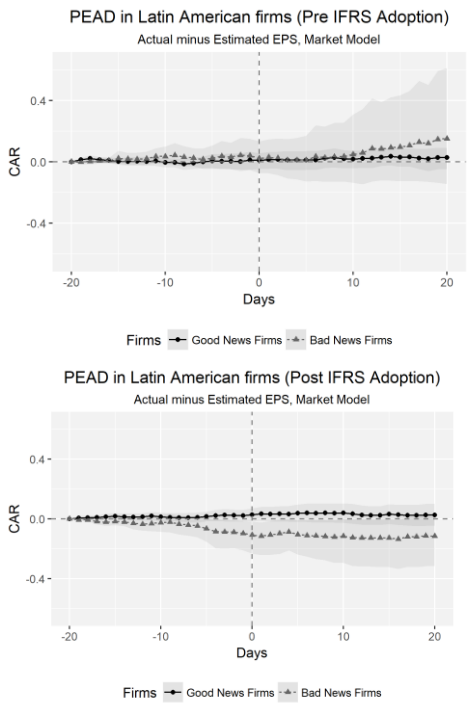

Figure 8: CAR around Earnings Announcements in Latin America

The number of events included in each plot as good or bad news depends on the availability of returns data in the events' windows. In the first plot, the good news series comprises 18 events and the bad news, 16. In the second plot there are 29 and 30 events, respectively.

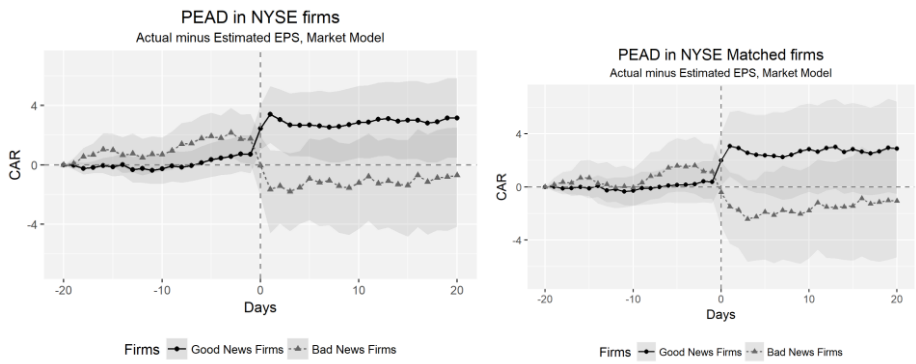

Figure 9: CAR around Earnings Announcements for NYSE and NYSE matched firms

The number of events included in each plot as good or bad news depends on the availability of returns data in the events' windows.

In the first plot, the good news series comprises 106 events and the bad news, 110. In the second plot there are 74 and 77 events, respectively.

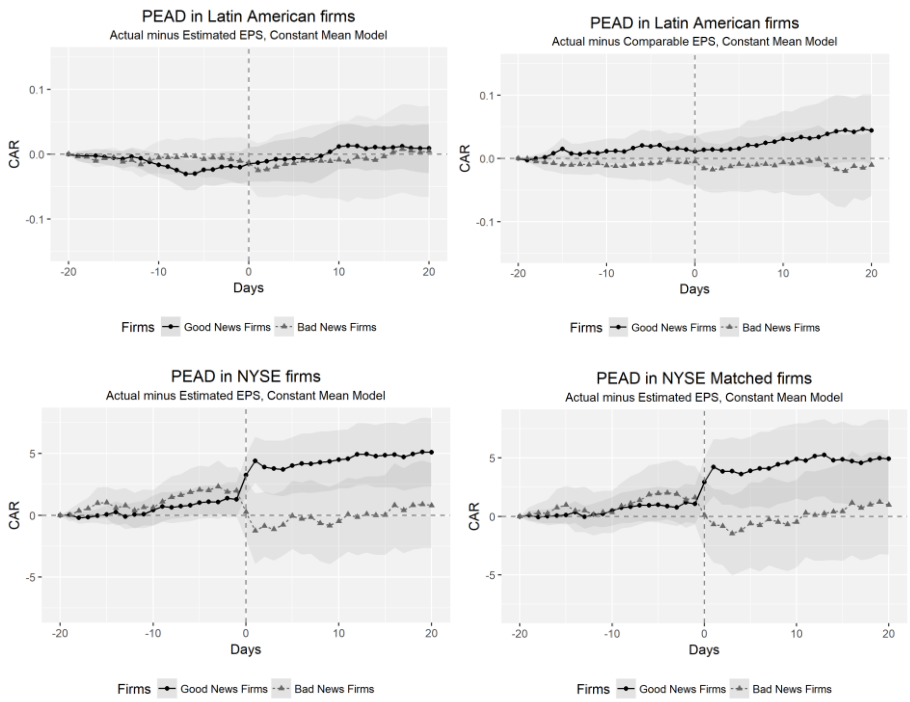

Figure 10: Alternative Specifications

The number of events included in each plot as good or bad news depends on the availability of returns data in the events' windows. For Latin America, in the first plot, the good news series comprises 49 events and the bad news, 46, while in the second plot there are 71 and 44 events, respectively. For the NYSE plot there are 106 events in the good news series and 110 in the bad news series. For the NYSE Matched plot there are 74 and 77 events, respectively.

Figure 9 shows the well-known PEAD pattern for the NYSE firms, even for the matched subsample. The CAR are also much higher than in the Latin American analysis, amounting around 3% after 20 days. However, since the confidence intervals overlap, the difference between the two CAR series cannot be considered statistically different. So, while the NYSE pattern is much consistent than for the Latin American firms, the PEAD evidence is also weak for our US sample. Nevertheless, since the difference between the whole and the matched NYSE sample is very little, the results suggest the absence of the PEAD anomaly for Latin America are mostly

due to the differences in the legal, institutional and financial environment of Latin American and the United States.

Commented [BEL6]: Any way to look at these individually to see which of these factors is most impactful?

Finally, in order to avoid that the pattern found in the results is due to models' mispecifications, we repeated the analysis calculating abnormal returns according to the constant mean model, where abnormal returns are calculated as the difference between the observed returns in the event windows and the mean returns of the estimation windows. As Figure 10 shows, the results remain the same.

6 Concluding Remarks

In this research we evaluated the Post-Earnings-Announcement Drift for the Latin American stock markets. Using a sample of firms from of the stock markets of Argentina, Brazil, Chile, Colombia, Mexico and Peru, we found very weak evidence of the existence of this anomaly, since there is no statistical difference between the cumulative abnormal returns of firms with positive and negative earnings surprises around the earnings announcement date.

To investigate whether this Latin American result, which contradicts with the literature in the U.S. market, is due to Latin America institutional environment factors due to Latin American firms' inherent characteristics, we replicate the analysis for a matched sample of firms listed in the NYSE. Although the NYSE firms also present statistically indistinguishable CARs for good and bad news firms, the PEAD pattern is very clear for them. Therefore, we conclude that the macro environment in Latin American stock markets is the most likely reason for the absence of the PEAD anomaly.

Commented [BEL7]: Let's see if we can look at som of these institutional environmental factors. Otherwis l

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