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# The relationship between accruals, earnings, and cash flows: evidence from latin america

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# THE RELATIONSHIP BETWEEN ACCRUALS, EARNINGS, AND CASH FLOWS: EVIDENCE FROM LATIN AMERICA

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## ABSTRACT

*The relationships between earnings, accruals, and cash flows for selected Latin American countries (Mexico, Chile, and Argentina) are investigated in this study from 1990 to 2009. We find a negative relationship between accruals and cash flow across decile portfolios. More importantly, firms reporting the highest level of accruals, have the worst level of cash flows, but not the worst level of earnings. This relationship is of economic importance given that investors are very oriented towards firms yielding high earnings and might fail to realize that earnings are not always accompanied by strong levels of cash flows. Results are disaggregated by years and countries, and compared to previous results for U.S. firms.*

**JEL:** G3, M4.

**KEYWORDS:** Finance; Earnings and Cash; Financial Accounting; Latin American Public Firms.

## INTRODUCTION

The importance of the relationships among earnings, accruals, and cash flows was illustrated in a *Wall Street Journal* article by Laucirella (2008). In the WSJ article Matthew Rothman of Lehman Brothers talks about the company's investment strategy of screening stocks based on changes in accruals. In the same article Richard Sloan, of Barclays Global Investors, notes that investors should "expect to see more strains on companies with rising accrual." Sloan (1996) documented the so called accrual anomaly, another deviation from the market efficiency theory widely accepted in the academic literature. In this study we partially replicate Sloan's to shed light on the relationships among accruals, cash flows, and earnings for Latin America firms. International studies on accruals have not studied this sample yet.

The paper is organized as follows: In the next section we provide a review of relevant literature. A description of the sample and methods follows. We then present the empirical results and finally provide concluding remarks.

## LITERATURE REVIEW

In a seminal paper related to accruals and stock returns Sloan (1996) analyzes the U.S. market from 1962 to 1991, and documents a systematic relationship between current period's accruals and future period's stock returns. He further argues that few investors pay attention to this relationship, opening the possibility for arbitrage. In particular, he shows that by following an accruals trading rule, a 10.4% above expectation (abnormal) returns could have been obtained in that period of study. This possibility of arbitrage is termed the accrual anomaly in the financial and accounting economics literature. Several studies have replicated, extended, and challenged the accrual anomaly (Richardson, Sloan, Soliman and Tuna (2005), Chan, Chan, Jegadeesh and Lakonishok (2006), Kraft, Leone and Wasley (2006), Kothari, Loutskina and Nikolaev (2006); and most recently Shon and Zhou (2010) and Hafzalla, Lundholm and

Van Winkle (2011), to cite a few of them). Khan (2008) provides a survey of the streams of research on this anomaly. While it has been shown by Ali, Chen, Yao and Yu (2008) that actively managed equity mutual funds on average do not trade on this anomaly, a complete explanation of this problem has yet to be provided. Khan (2008), (pp72), illustrates the importance of this research problem:

*“[The accrual anomaly] is especially troubling because it implies that the market misunderstands a reported financial accounting number... It is hard to imagine how a number that is misunderstood could be very useful”*

We are interested in the stream of research that examines the accrual anomaly in countries other than in the U.S. LaFond (2005); Pincus, Rajgopal and Venkatachalam (2007); and Kaserer and Klingler (2008) have investigated the accrual anomaly in an international context but none of these studies have investigated the accrual anomaly in Latin American countries.

LaFond (2005) was the first to provide evidence that the accrual anomaly is present in non-U.S. markets. He also finds that the accrual anomaly is not related to differences in legal systems nor it is associated with the level of investor protection and it is present in countries with both high and low accrual intensive accounting systems. In contrast, Pincus, Rajgopal and Venkatachalam (2007) find that firms overweight more accruals in countries with a common law tradition relative to a code law tradition, where extensive use of accrual accounting is allowed, in the presence of weaker outside shareholder rights, and in countries where there is a low ownership concentration. Kaserer and Klingler (2008) focus their study on accounting standards and find that the overreaction to accrual based information is most likely related to firms complying with international accounting standards (that tend to be US-GAAP based) than for firms that follow a more conservative system like Germany-GAAP. Overall, the international evidence gives us with the opportunity to shed some light on results of accruals for Latin American firms.

The sample in LaFond (2005) includes Australia, Belgium, Canada, Denmark, France, Germany, Hong Kong, Italy, Japan, the Netherlands, Norway, Singapore, Spain, Sweden, Switzerland, and the U.S. Pincus, Rajgopal and Venkatachalam (2007) test the anomaly in the same countries as in LaFond (with the exception of Belgium and Norway) and add to their sample India, Indonesia, Malaysia, Taiwan, Thailand, and the U.K.; Kaserer and Klingler (2008) test the anomaly for Germany firms focusing their study on accounting standards. None of these studies have studied the accruals problem for Latin American countries. Although the study does not attempt to test the accrual anomaly, we investigate the relationships among accruals, cash flows, and earnings for Latin America firms, partially replicating the work by Sloan (1996). These relationships form the basis of the accrual anomaly problem.

## DATA AND METHODOLOGY

Data from Economatica, the largest subscription-based financial database for Latin American publicly traded firms, are used in this study. Economatica also includes information from a few firms that are privately held but that report their financial statements to a local regulatory agency. Private firms were excluded from the sample. Financial firms were also excluded since their financial statements differ from those of all other industries. Economatica includes firms from Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela in a standardized format, which allows comparison across firms, countries, and industries. Trailing twelve months (ttm) financial statements data in U.S. dollars as of the end of each quarter were used. All empirical variables as defined in equations (1) and (2) in the following section were calculated in the study. All variables were considered critical in the sense that firm-trailing twelve month (firm-ttm) observations with missing values on any of the variables defined in this study were eliminated from the sample. In addition, as the estimation of most variables required the estimation of changes from period  $t-1$  to period  $t$ , when data on the appropriate sequence was not available to estimate such change, the firm-ttm observation was eliminated from the sample.

After filtering the data following the criteria outlined above, firms from Venezuela, Peru, and Colombia were eliminated. The firm-ttm observations for those countries were far lower than the number of observations for the rest of the countries. Thus, the final sample includes firms from Mexico, Argentina, and Chile from 1990 to the third quarter of 2009. The final sample includes 14,039 firm-ttm observations as shown in the first row of Table 1.

### Empirical Measures of Accruals and Earnings

Earnings (*Ear*) represent the sum of a cash flow (*CF*) and an accrual (*Acc*) component. Cash flow is measured as,

$$CF = Ear - Acc, \quad (1)$$

where the variable earnings, *Ear*, is operating income. Some studies measure earnings differently. For example, Freeman, Ohlson and Penman (1982), use net income, while Dechow (1994); and Moehrlé, Reynolds-Moehrlé and Wallace (2003) use net income excluding extraordinary items and discontinued operations. We follow the literature related to accruals and use operating income. Operating income excludes non-recurring items such as extraordinary items, discontinued operations, special items and non-operating income, taxes, and interest expenses.

Accruals, *Acc*, is measured following Chan, Chan, Jegadeesh and Lakonishok (2006) as,

$$Acc = \Delta AR + \Delta INV + \Delta OCA - \Delta AP - \Delta OCL - DA, \quad (2)$$

where *AR* is accounts receivable, *INV* is inventories, *OCA* is other current assets, *AP* is accounts payable, *OCL* is other current liabilities; and *DA* is depreciation and amortization.

All variables are divided by total assets to control for scale differences. Alternative investment bases have been used in the literature including sales, beginning of period assets, ending of period assets, book value of net assets generating the accruals, and market capitalization. Accruals results have been reported to be insensitive to the choice of investment base.

Two issues related to the measurement of accruals must be mentioned. As defined in this study, variable accruals relates to *operating* cash flow as opposed to free cash flow to equity. This follows the implementation of accruals introduced by Healy (1985) and Sloan (1996) and used in most recent studies. Richardson, Sloan, Soliman and Tuna (2005) measure total accruals (related to free cash flow to equity), but their suggestion has not been repeated in the literature. Secondly, accruals are measured indirectly from the balance sheet instead of taking it directly from the statement of cash flow. This is common in research on the accrual anomaly with the notable exception of Kraft, Leone and Wasley (2006).

## RESULTS

Table 1 presents the means of selected financial characteristics by country and for Latin America as a group. Table 2 provides information on earnings and components for Latin America countries and as a group, and for the U.S. from a previous study. Panel A provides earnings, accruals and cash flow. On average, Latin American firms yield very low earnings compared to the U.S. (6% compared to 12.1%). The difference on reported earnings is consistent on both the accrual and cash flow component of earnings (i.e., accruals for Latin America are lower than the U.S., and cash flow for Latin America are lower than the U.S. as well).

Table 1: Descriptive Statistics for Selected Latin American Countries, 1990-2009

	ARGENTINA	CHILE	MEXICO	LATIN AMERICA
Observations	1,423	4,813	7,803	14,039
Assets	365,892	334,798	1,901,297	1,208,624
Accounts receivable	26,938	35,435	159,139	103,330
Inventories	21,417	30,706	146,325	94,027
Accounts payable	24,658	24,774	109,934	72,095
Leverage	0.3386	0.2272	0.3090	0.3016
EBIT	26,745	22,457	318,464	187,415

*Table 1* provides means of selected financial items. The sample, described in section “Data,” covers the 1990-2009 period, and 14,039 observations. Leverage is total debt with cost divided by the sum of total debt with cost and the book value of equity, EBIT is earnings before interest and taxes. With the exception of leverage and number of observations, values are expressed in thousands of US dollars (Converted by *Economica* using exchange rates as given as of the end of each month).

Table 2: Earnings and Components for Selected Latin American Countries for the 1990-2009 Period and for the USA

Ítem	ARGENTINA	CHILE	MEXICO	LATIN AM	USA
<b>Panel A - Earnings and Components</b>					
	<b>Accruals</b>				
Mean	(0.0490)	(0.0332)	(0.0253)	(0.0304)	(0.0120)
$\sigma$	0.0651	0.2125	1.1497	0.8664	0.1020
	<b>Cash Flow</b>				
Mean	0.1063	0.0773	0.0957	0.0905	0.1330
$\sigma$	0.1053	0.2582	1.1911	0.9014	0.1410
	<b>Earnings</b>				
Mean	0.0573	0.0441	0.0704	0.0601	0.1210
$\sigma$	0.0880	0.1475	0.1059	0.1209	0.1260
<b>Panel B - Accruals Components</b>					
	<b><math>\Delta AR</math></b>				
Mean	(0.0021)	(0.0017)	0.0006	(0.0004)	0.0300
$\sigma$	0.0517	0.1617	0.0416	0.1010	0.0730
	<b><math>\Delta INV</math></b>				
Mean	(0.0010)	(0.0010)	0.0008	(0.0000)	0.0260
$\sigma$	0.0404	0.1007	0.0422	0.0681	0.0710
	<b><math>\Delta OCA</math></b>				
Mean	(0.0005)	(0.0006)	(0.0002)	(0.0003)	0.0040
$\sigma$	0.0168	0.0333	0.0409	0.0366	0.0230
	<b><math>\Delta AP</math></b>				
Mean	(0.0018)	(0.0007)	0.0010	0.0001	0.0140
$\sigma$	0.0414	0.1121	0.0376	0.0726	0.0450
	<b><math>\Delta OCL</math></b>				
Mean	(0.0002)	(0.0015)	(0.0105)	(0.0064)	0.0130
$\sigma$	0.0291	0.1044	1.1466	0.8571	0.0380
	<b>DA</b>				
Mean	0.0474	0.0322	0.0361	0.0359	0.0450
$\sigma$	0.0297	0.0992	0.0463	0.0683	0.0280

The Latin America sample, described in the “Data” section, covers the 1990-2009 period for a total of 14,039 observations. USA results are from a previous study by Chan, Chan, Jegadeesh and Lakonishok (2006) for the 1971-1995 period. Earnings is estimated as operating income, Accruals as defined in equation (2), and Cash Flow is a proxy for cash flow from operations as defined in equation (1).  $\Delta AR$  is change in account receivables,  $\Delta INV$  is change in inventories,  $\Delta OCA$  is change in other current assets,  $\Delta AP$  is change in accounts payable,  $\Delta OCL$  is change in other current liabilities, and DA is depreciation and amortization. All variables are divided by total assets to control for scale differences.  $\sigma$  is standard deviation.

For Latin American countries, Mexico reports the highest and most stable level of earnings (i.e., stability measured by the coefficient of variation). The average reported earnings (7%) for Mexico is statistically different to average earnings for Argentina and Chile at the 1% significance level (i.e., T-statistics of -4.995 and -10.810 respectively, untabulated). Mexico, however does not report the highest cash flow. The 9.6% level of cash flow reported for Mexico is not statistically different to cash flows of Chile and Argentina. In general, as expected given the level of sophistication of these capital markets, results for Latin America as a group, presented in panel A of Table 2, are less stable than the U.S. market.

Presented in Panel B of Table 2 are accruals decomposed according to equation (2). Depreciation and amortization ( $DA$ ) is the largest component of accruals across all countries, but it is the most stable component as well. This could be explained by the nature of this item related to *permanent* assets. Excluding depreciation and amortization, net operating working capital relative to total assets, defined as  $\Delta AR + \Delta INV - \Delta AP$ , is the main component of accruals. Net operating working capital for Latin America as a group is 0% relative to total assets, compared to 4.3% for the U.S. This difference could be of important since it represents, for Latin American firms, cash that does not need to be tied to operations compared to the average U.S. firm. This amount for the U.S. represents almost one third of average reported earnings. Results for Latin America are consistent across countries.

### Accruals Portfolios

To better understand the relationships among accruals, cash flow, and earnings across firms and countries, results are analyzed by portfolios of accruals as it has become standard in this line of research. Every year, all firms in the sample are ranked according to the magnitude of accruals and assigned to one of ten decile portfolios. Provided in Table 3 are the means of earnings, accruals, and cash flow along with a proxy for size by accrual portfolio for Latin America.

Table 3: Accruals, Earnings, Cash Flow, and Sales for Latin American Firms by Decile Accrual Portfolios, 1990-2009

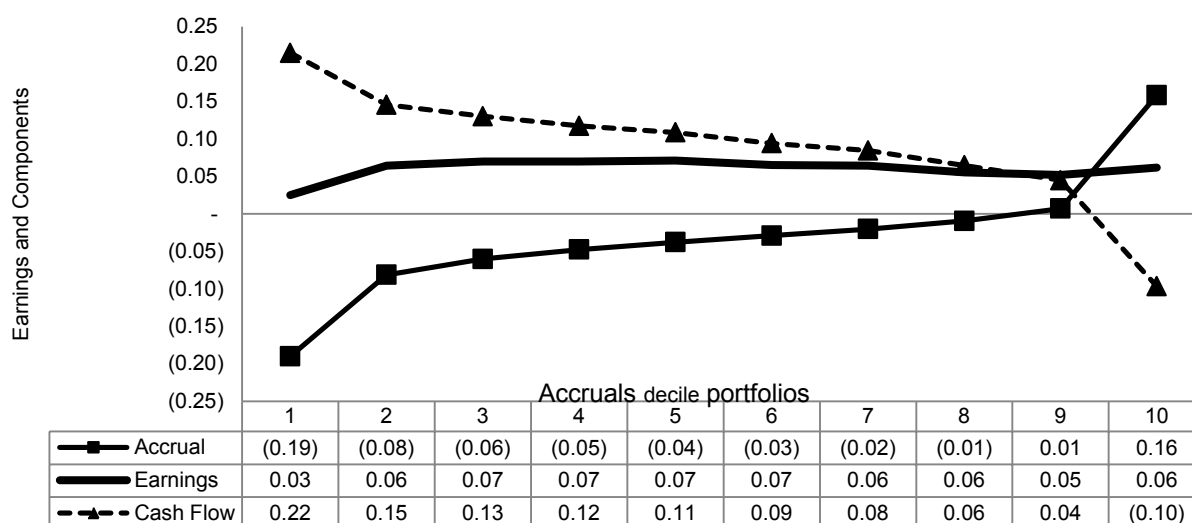
Decile Portfolio	Accruals	Earnings	Cash Flow	Sales
Portfolio 1	(0.1900)	0.0251	0.2151	8.013
Portfolio 2	(0.0814)	0.0644	0.1458	8.098
Portfolio 3	(0.0602)	0.0702	0.1304	8.065
Portfolio 4	(0.0476)	0.0700	0.1176	8.079
Portfolio 5	(0.0376)	0.0712	0.1088	8.064
Portfolio 6	(0.0291)	0.0653	0.0944	8.056
Portfolio 7	(0.0202)	0.0645	0.0847	8.055
Portfolio 8	(0.0093)	0.0555	0.0649	8.044
Portfolio 9	0.0071	0.0520	0.0448	7.870
Portfolio 10	0.1585	0.0619	(0.0967)	7.990

*Provided in Table 3 are the means of earnings, accruals, and cash flow (as defined in equations 1 and 2) along with a proxy for size (i.e., the natural logarithm of total assets) for Latin American publicly traded firms. The Latin America sample (Argentina, Chile, and Mexico), described in the "Data" section, covers the 1990-2009 period for a total of 14,039 observations. Every year, all firms in the sample are ranked according to the magnitude of accruals and assigned to one of ten decile portfolios. Decile portfolio one (portfolio 1) contains firms with the lowest level of accruals, portfolio 2 contains firms with the second lowest level of accruals, up to portfolio 10, which contains firms with the highest level of accruals.*

Decile portfolio one (portfolio 1) contains firms with the lowest level of accruals, portfolio 2 contains firms with the second lowest level of accruals, up to portfolio 10, which contains firms with the highest level of accruals. There is a negative relationship between accruals and cash flow across decile portfolios. As one moves from portfolio 1 with a mean of -0.1900 for accruals to portfolio ten with a mean of 0.1585, cash flow monotonically decreases from 0.2151 to -0.0967. With regards to earnings and accruals, although the relationship across portfolios tends to be positive (i.e., forcing the negative

relationship between accruals and cash flow), this is not always the case. The properties of earnings and its components was first shown in decile portfolios by Dechow (1994) and Sloan (1996) for the U.S. market. This has been replicated by Chan, Chan, Jegadeesh and Lakonishok (2006); Kothari, Loutskina and Nikolaev (2006); and Trejo-Pech, Weldon and House (2008) among others using different time periods or subsets (e.g., specific industries). Figure 1 illustrates these relationships. Table 3 also provides sales, defined as the natural logarithm of sales, as a control variable to proxy size. Consistent with previous studies cited before, sales across portfolios follow an inverted U shape. Decile portfolios in the extremes (portfolios 1, 9, and 10) contain the smallest firms across portfolios.

Figure 1: Earnings, Accruals, and Cash Flows for Latin American Countries by Accruals Portfolios: 1990-2009. Variable Accruals Was Forced to Change Monotonically Across Portfolio



Plotted with data from Table 3

Table 4 provides T-Statistics of mean equality tests across Table 3. Panel A of Table 4 shows results for cash flow across portfolios. The first row of the panel shows that the average cash flow of portfolio 1 is statistically different to the means of the other 9 portfolios. Similarly, the last column shows that the mean value of cash of portfolio 10 is statistically different to the rest of portfolios. There is also a tendency for portfolio 9 (column P9) to be different from the other portfolios. But the cash flow means of portfolios other than 1 and 10 do not differ statistically among themselves.

T-statistics in the diagonal of panel A show that the average cash flow of portfolio 1 is statically different to portfolio's 2 at the 5% level of significance, but the average cash flow of portfolio 2 is not statistically different to portfolio's 3, the average cash flow of portfolio 3 is not statistically different to portfolio's 4, and so on up to portfolios 8 and 9, which have different cash flow means. In summary, only decile portfolios 1, 9, and 10 are statistically different from the rest of portfolios in terms of cash flow averages, with high accrual portfolios 9 and 10 reporting the most deteriorated level of cash flows and low accrual portfolio 1 reporting the highest cash flow level. Results for the level of accruals across portfolios (Panel B of Table 4) follow a similar pattern. However, results for earnings are slightly different.

Panel C of Table 4 shows that average of earnings for portfolios 8, 9, and 10 are statistically different from the rest of portfolios (i.e., this does not happen with the other extreme, portfolios 2, and 3). Further, while portfolios 8, 9, and 10 have the highest level of accruals (i.e., it was forced to be that way because of the sorting process), those portfolios do not have the highest level of earnings (portfolio 8, 9, and 10 have earnings of 5.5%, 5.2%, and 6.2% and portfolios 3, 4, and 5 have 7.0%, 7.0%, and 7.1% respectively). This result differs from what have been reported before in empirical studies for US firms.

Thus, sorting firms by level of accruals provides new insights not shown when earnings are analyzed. Of economic importance is the fact that Latin American firms reporting the lowest level of earnings (0.0251) report the highest level of cash flow. More importantly, firms reporting the highest level of accruals, *but* not the highest level of earnings, have the worst cash flow (negative 0.0967, Table 3).

Table 4: T-Statistics of Mean Equality Tests Across Portfolios According to Level of Cash Flow, Accruals, and Earnings for Latin American Firms

CASH										
P2	P3	P4	P5	P6	P7	P8	P9	P10		
P1	-2.036**	-2.487**	-2.861***	-3.125***	-3.540***	-3.827***	-4.415***	-4.997***	-9.195***	
P2		-0.454	-0.828	-1.091	-1.513	-1.801*	-2.387**	-2.975***	-7.182***	
P3			-0.374	-0.637	-1.059	-1.347	-1.932*	-2.520**	-6.722***	
P4				-0.262	-0.686	-0.974	-1.558	-2.147**	-6.349***	
P5					-0.425	-0.712	-1.297	-1.887*	-6.091***	
P6						-0.286	-0.869	-1.458	-5.649***	
P7							-0.582	-1.172	-5.364***	
P8								-0.592	-4.789***	
P9									-4.187***	
ACCRUALS										
P2	P3	P4	P5	P6	P7	P8	P9	P10		
P1	3.324***	3.968***	4.357***	4.665***	4.915***	5.189***	5.530***	6.025***	10.704***	
P2		0.649	1.037	1.344	1.604	1.877*	2.214**	2.716***	7.399***	
P3			0.388	0.694	0.955	1.228	1.564	2.066**	6.743***	
P4				0.306	0.568	0.841	1.175	1.679*	6.356***	
P5					0.263	0.536	0.871	1.375	6.054***	
P6						0.272	0.605	1.109	5.775***	
P7							0.333	0.837	5.504***	
P8								0.506	5.179***	
P9									4.664***	
EARNINGS										
P2	P3	P4	P5	P6	P7	P8	P9	P10		
P1	8.632***	9.889***	9.883***	10.125***	8.819***	8.637***	6.695***	5.897***	8.101***	
P2		1.266	1.258	1.492	0.203	0.015	-1.950*	-2.738***	-0.568	
P3			-0.009	0.225	-1.061	-1.249	-3.216***	-4.001***	-1.840*	
P4				0.234	-1.053	-1.241	-3.208***	-3.994***	-1.831*	
P5					-1.287	-1.476	-3.445***	-4.231***	-2.067**	
P6						-0.187	-2.149**	-2.936***	-0.771	
P7							-1.963**	-2.749***	-0.583	
P8								-0.791	1.389	
P9									2.181**	

T-Statistics of mean equality tests across portfolios according to level of cash flow, accruals, and earnings (as defined in equations 1 and 2. Series aggregated in Table 3). The sample (Argentina, Chile, and Mexico), described in the "Data" section, covers the 1990-2009 period for a total of 14,039 number of observations. To implement the mean equality tests we run the following regression model:  $C = D\beta + U$  (3), where  $C$  is a vector of 14,039 components (e.g., cash flows for results in Panel A, accruals for Panel B, and earnings for Panel C),  $D$  is a 14,039 x 11 matrix with the first column of 1's and columns 2 to 11 with dummy variables  $D1$  to  $D10$  ( $D1$  is set to 1 if the observation belongs to accruals decile portfolio 1 and to zero otherwise,  $D2$  is 1 if observation is in accruals decile portfolio 2, up to  $D10$ ). The intercept is the mean of the variable set up as reference (to avoid the dummy variable trap) and the parameter estimates represent the deviations from the intercept. The T-Statistics of estimates show if the parameter is different to the intercept (for instance, -2.036 in the upper left part of the table means that the average cash flow for portfolios 1 and 2 are statistically different at the 5% level of significance).  $B$  is a matrix of estimated parameters, and  $U$  is a vector with errors.  $P1$  corresponds to accruals decile portfolio 1,  $P2$  to portfolio 2, and so on. \*\*\*, \*\*, and \* indicate 1%, 5%, and 10% statistical significance.



Table 5 shows that in general results are consistent when the data is disaggregated by country. Again, except for minor differences, results for Latin American firms are similar to those reported by previous studies for the U.S. market. These simple properties of earnings and its components form the basis for the hypothesis formulated by Sloan (1996) that earnings attributable to the accrual component of earnings are less persistent into the future than earnings attributable to the cash flow performance of earnings. With further development, this generates the so called fixation hypothesis by Sloan (1996), which states that investors are earnings-oriented and do not recognize the information on accruals when implementing their trading strategies. The fixation hypothesis then predicts that realized returns are systematically different from expected returns (i.e. expectations fixated on earnings), and that opens the possibility for arbitrage.

Table 5: Accruals, Earnings, Cash Flow, and Sales for Latin American Firms by Country, 1990-2009

	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
<b>Mexico</b>										
Accruals	(0.1931)	(0.0837)	(0.0615)	(0.0485)	(0.0385)	(0.0300)	(0.0211)	(0.0095)	0.0093	0.2193
Earnings	0.0269	0.0726	0.0806	0.0791	0.0815	0.0773	0.0748	0.0705	0.0646	0.0759
Cash Flows	0.2200	0.1562	0.1421	0.1276	0.1200	0.1073	0.0959	0.0800	0.0553	(0.1435)
Sales	12.077	12.735	12.910	12.956	12.990	12.601	12.569	12.226	11.953	12.015
<b>Chile</b>										
Accruals	(0.1935)	(0.0746)	(0.0542)	(0.0419)	(0.0321)	(0.0236)	(0.0146)	(0.0052)	0.0077	0.0956
Earnings	0.0122	0.0576	0.0597	0.0603	0.0572	0.0483	0.0494	0.0272	0.0305	0.0379
Cash Flows	0.2057	0.1321	0.1139	0.1022	0.0893	0.0718	0.0640	0.0324	0.0228	(0.0577)
Sales	10.092	11.037	11.026	10.923	11.043	10.464	9.997	9.681	10.086	10.484
<b>Argentina</b>										
Accruals	(0.1602)	(0.0916)	(0.0735)	(0.0613)	(0.0516)	(0.0426)	(0.0340)	(0.0224)	(0.0070)	0.0448
Earnings	0.0595	0.0426	0.0483	0.0546	0.0612	0.0571	0.0589	0.0690	0.0550	0.0666
Cash Flows	0.2197	0.1342	0.1218	0.1159	0.1128	0.0997	0.0929	0.0914	0.0620	0.0218
Sales	11.153	11.425	11.306	11.522	11.645	11.519	11.566	11.404	11.065	10.664

Table 5 provides the means of earnings, accruals, and cash flow (as defined in equations 1 and 2) along with a proxy for size (i.e., the natural logarithm of total assets) for Mexico, Chile, and Argentina. The sample, described in the "Data" section, covers the 1990-2009 period for a total of 14,039 number of observations. Every year, all firms in the sample are ranked according to the magnitude of accruals and assigned to one of ten decile portfolios. Decile portfolio one (P1) contains firms with the lowest level of accruals, P2 contains firms with the second lowest level of accruals, up to P10, which contains firms with the highest level of accruals.

### Firms with Extreme Magnitude of Accruals

The accrual anomaly problem referred to above has centered its attention on firms with extreme levels of accruals (i.e., decile portfolios 1 and 10 or quintile portfolios 1 and 5), which behave differently from the rest of firms. Based on this result, the study groups results by quintiles portfolios (we classified firms by quintiles guided by the results discussed above, mainly that smallest firms are concentrated in portfolios 1, 9 and 10 –Table 3-, and that portfolios 1,2,9, and 10 are in general statistically different to the rest of portfolios –Table 4). Table 6 provides results for quintile 1 (low-accruals portfolio), quintile 5 (high-accruals portfolio), and the average of quintiles 2, 3, and 4 (mid-accruals portfolio). To investigate if these results have changed over the period analyzed, results by year are provided as well.

Results presented in Table 6 show that consistently high-accruals portfolios report relative high levels of earnings but very low levels of cash flow, negative in the case of Mexico and Chile. Further, the gap between earnings and cash flow is higher after 2000. Results in Table 6 also show that in 15 out of the 19 years analyzed, the smallest firms are in the high-accruals portfolios. The relationships evidenced in this study for Latin American firms are important given that investors are very oriented towards firms yielding high earnings and might fail to realize that earnings are not always accompanied by a strong level of cash. Further, the relationship between accruals and earnings is not always positive.

Table 6: – Accruals, Earnings, Cash Flow, and Sales for Latin American Firms by Year for Low-Accrual, High-Accrual, and Mid-Accrual Portfolios

Panel A Low Accruals				
Year	Accruals	Earnings	Cash Flow	Sales
1990	(0.0902)	0.1038	0.1940	12.880
1991	(0.1072)	0.0905	0.1977	12.260
1992	(0.0898)	0.0895	0.1793	12.673
1993	(0.0926)	0.0671	0.1597	12.408
1994	(0.1418)	0.0538	0.1956	11.846
1995	(0.1835)	(0.0133)	0.1701	12.059
1996	(0.1012)	0.0702	0.1714	11.755
1997	(0.1087)	0.0483	0.1570	11.689
1998	(0.1164)	0.0620	0.1785	11.494
1999	(0.1244)	0.0425	0.1669	11.365
2000	(0.1354)	0.0379	0.1733	11.322
2001	(0.1348)	0.0096	0.1444	11.016
2002	(0.1456)	0.0139	0.1595	11.195
2003	(0.1321)	0.0240	0.1561	11.367
2004	(0.1381)	0.0244	0.1626	11.572
2005	(0.2073)	0.0486	0.2559	11.900
2006	(0.1072)	0.0682	0.1754	12.027
2007	(0.1623)	0.0670	0.2293	12.147
2008	(0.1296)	0.0812	0.2108	12.226
2009	(0.1373)	0.0319	0.1692	11.266
1990-2009	(0.1357)	0.0447	0.1804	11.667
Panel B Mid Accruals				
Year	Accruals	Earnings	Cash Flow	Sales
1996	(0.0322)	0.0817	0.1139	12.700
1997	(0.0301)	0.0731	0.1032	12.490
1992	(0.0269)	0.0641	0.0910	12.460
1993	(0.0256)	0.0672	0.0927	12.268
1994	(0.0262)	0.0669	0.0931	12.424
1995	(0.0397)	0.0717	0.1113	12.135
1996	(0.0288)	0.0770	0.1057	11.818
1997	(0.0265)	0.0731	0.0996	11.791
1998	(0.0337)	0.0731	0.1068	11.593
1999	(0.0334)	0.0665	0.0999	11.555
2000	(0.0357)	0.0666	0.1023	11.702
2001	(0.0390)	0.0558	0.0948	11.763
2002	(0.0408)	0.0528	0.0936	11.508
2003	(0.0353)	0.0580	0.0933	11.610
2004	(0.0334)	0.0698	0.1032	11.795
2005	(0.0345)	0.0701	0.1046	11.958
2006	(0.0335)	0.0733	0.1068	12.059
2007	(0.0297)	0.0609	0.0906	12.159
2008	(0.0359)	0.0652	0.1011	12.274
2009	(0.0385)	0.0669	0.1053	11.337
1990-2009	(0.0340)	0.0661	0.1001	11.857

Table 6 provides the means of earnings, accruals, and cash flow (as defined in equations 1 and 2) along with a proxy for size (i.e., the natural logarithm of total assets) for Latin American firms. The sample (Mexico, Chile, and Argentina), described in the “Data” section, covers the 1990-2009 period for a total of 14,039 number of observations. Every year, all firms in the sample are ranked according to the magnitude of accruals and assigned to one of five quintile portfolios. **Low Accruals** contains firms categorized in quintile 1, **High Accruals** contains firms categorized in quintile 5, and **Mid Accruals** contains the average of quintiles 2, 3, and 4.

Table 6: – Continued.

Panel C High Accruals				
Year	Accruals	Earnings	Cash Flow	Sales
2002	0.0389	0.1294	0.0904	12.304
2003	0.0518	0.0821	0.0303	12.178
1992	0.0352	0.0850	0.0498	12.348
1993	0.0664	0.0925	0.0261	12.238
1994	0.0686	0.0690	0.0004	12.035
1995	0.0546	0.0651	0.0105	11.283
1996	0.0423	0.1205	0.0782	11.369
1997	0.0558	0.0786	0.0228	11.217
1998	0.0781	0.0622	(0.0159)	10.951
1999	0.0310	0.0572	0.0262	11.123
2000	0.5383	0.0320	(0.5063)	10.794
2001	0.0390	0.0353	(0.0037)	10.806
2002	0.0476	0.0316	(0.0160)	10.852
2003	0.0457	0.0291	(0.0167)	10.750
2004	0.0396	0.0609	0.0213	11.330
2005	0.0408	0.0667	0.0259	11.511
2006	0.0425	0.0468	0.0043	11.762
2007	0.0438	0.0767	0.0329	11.834
2008	0.0425	0.0493	0.0068	12.025
2009	0.0254	0.0593	0.0339	11.134
1990-2009	0.0828	0.0569	(0.0259)	11.318

## CONCLUSIONS

This study investigates the nature of the relationships among earnings, accruals, and cash flows for Latin American firms. In particular, publicly traded firms from Mexico, Chile, and Argentina are examined. Results are compared to previous results for U.S. firms. We find that Latin American firms, on average, yield very low earnings relative to assets compared to the U.S. (6% compared to 12.1%). The difference on reported earnings is consistent on both the accrual and cash flow component of earnings. That is, accruals for Latin America are lower than the U.S., and cash flow for Latin America are lower than the U.S. as well. In general, as expected given the level of sophistication of these capital markets, results for Latin America as a group are less stable than the U.S. market. Among Latin American countries, Mexico reports the highest and most stable level of earnings. The average reported earnings (7%) for Mexico is statistically different to average earnings for Argentina and Chile at the 1% significance level. Mexico, however does not report the highest cash flow, but the 9.6% level of cash flow reported for Mexico is not statistically different from the cash flows of Chile and Argentina.

Depreciation and amortization (*DA*) is the largest component of accruals across all countries, and it is the most stable component as well. This could be explained by the nature of this item related to *permanent* assets. Excluding depreciation and amortization, net operating working capital relative to total assets, defined as  $\Delta AR + \Delta INV - \Delta AP$ , is the main component of accruals. Net operating working capital for Latin America as a group is 0% relative to total assets, compared to 4.3% for the U.S. This difference could be of economic importance since it represents, for Latin American firms, cash that does not need to be tied to operations compared to the average U.S. firm. This amount for the U.S. represents almost one third of average reported earnings. When firms are sorted by level of accruals and categorized in accruals decile portfolios, we find a tendency towards a negative monotonic relationship between accruals and cash flow across portfolios. When statistical tests are performed, we find that only accruals decile portfolios 1, 9, and 10 are statistically different from the rest of portfolios in terms of cash flow means, with high accrual

portfolios 9 and 10 reporting the most deteriorated level of cash flows and low accrual portfolio 1 reporting the highest cash flow level across all portfolios. Results for the level of accruals across portfolios follow a similar pattern. However, results for earnings are slightly different. We find that high accrual portfolios (decile portfolios 8, 9, and 10) do not report the highest level of earnings. This result differs from what have been reported before in empirical studies for US firms. Thus, sorting firms by level of accruals provides new insights not shown when earnings are analyzed. Of economic importance is the fact that Latin American firms reporting the lowest level of earnings (2.5%) report the highest level of cash flow relative to assets (21.5%). More importantly, firms reporting the highest level of accruals, but not the highest level of earnings, have the worst cash flow (negative 9.7%).

When we disaggregate results by years, it is found that that high accrual firms consistently report relative high earnings but low levels of cash flow. Further, the gap between earnings and cash flow is higher after the year 2000, making this problem more current. Finally, we find that high accrual firms (i.e., reporting the most deteriorated cash flows) in most of the cases are the smallest firms in the sample.

The simple relationships evidenced in this study for Latin American firms are of importance given that investors are very oriented towards firms yielding high earnings and might fail to realize that earnings are not always accompanied by a strong level of cash. Further, the relationship between accruals and earnings is not always positive. These relationships form the basis for the “accrual anomaly” hypothesis formulated by Sloan (1996) for US firms that investors are earnings-oriented and do not recognize the information on accruals when implementing their trading strategies (i.e., accruals and *expected* stock returns have a systematic relationship). A limitation of this study is that we are not testing that hypothesis, but we are rather limiting the scope of the study to tests the relationships among earnings, accruals, and cash flows for Latin America firms, not studied before. Thus, future research could focus on testing different asset pricing models for this problem. This may represent a challenge since the validity of asset pricing models such as Fama and French 3-Factors Model and the 4-Factors Momentum models have not been widely implemented and tested in Latin America.

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