Mind the GAAP? Market reaction to accounting principles: evidence from Brazilian cross-listed stocks.

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This paper has two main objectives: first, testing the hypothesis that the stock market may be surprised by the release of accounting earnings; second, verifying whether there are different reactions in the domestic and foreign stock markets for cross-listed stocks when the same firm discloses its earnings according to different accounting principles. All Brazilian firms whose level II and III ADRs (American Depositary Receipts) are cross-listed in the Sao Paulo Stock Exchange (BOVESPA) and in the New York Stock Exchange (NYSE) are analyzed. The literature usually identifies the market surprise as a break in the stock price series. Here, a combination of the Capital Assets Pricing Model (CAPM) and the Chow's structural break test is employed to such an end. The findings show that there are no surprises in the market during earnings releases independently of the accounting principles followed in order to generate the information.

Keywords: GAAP, Harmonization, Market Efficiency; Structural Break; Emerging Markets.

1. INTRODUCTION

In 2006 alone, dozens of papers have been published about harmonization of accounting principles. Despite notable exceptions--for instance, La Porta, Lopez-de-Silanes, Shleifer, Vishny (1998, 2000), Ding, Jeanjean e Stolowy (2005), Ball, Kothari e Robin (2000)--the almost totality of such studies are devoted to commenting on the differences between international and local standards in given countries and the challenges to their implementation. A possible explanation for such an abundant literary production on the challenges and needs of harmonization-- dismissing the associated costs and benefits--are the revenues generated by consulting services and book publishing businesses, i.e., the possibility of rent-seeking. A substantial part of this literature assumes harmonization as something to be pursued, irrespective of the relevance of such decision to the consumers of accounting information.

This paper investigates whether there is a need for accounting principles harmonization in light of the growing integration of capital markets; that is, whether the external consumers of accounting information consider such harmonization important. This is achieved by testing one of the key assumptions of accounting harmonization, namely that some standards may convey more relevant information to the external public that, in turn, would make harmonization desirable. Two basic questions are thus addressed: (a) stock markets anticipate accounting information and, therefore, stock prices do not react to its release; and, (b) the stock market cannot anticipate accounting information and may be surprised by earnings announcements. Such questions have been studied by several researchers as will be discussed in the next section. In addition, such phenomenon may be analyzed in more depth when the information is generated according to different accounting standards, as is the case for cross-listed stocks subject to dual accounting reporting rules. Testing such sets of hypotheses is exactly the main objective of this study.

The three initial hypotheses to be tested, henceforth referred to as the first set of hypotheses, are: 1) There is a structural break only in the period surrounding the release of accounting earnings. This hypothesis suggests that the stock market is surprised as long as there are no other structural breaks before and after the release date;

2) There is a structural break in the period surrounding the release of accounting earnings and there are other structural breaks before and after the release date. This hypothesis cannot corroborate that the stock market is surprised solely by the release of accounting information,

indicating instead a volatile stock;

3) There are no structural breaks in the earnings release period. Such a result suggests that the accounting information is fully anticipated by the stock market that is not surprised by it. These hypotheses are tested, separately, for information releases in the Brazilian and North American stock markets. Consequently, the method employed allows for the testing of an additional set of hypotheses that specifically investigate the effect of different accounting principles over the external consumers of accounting information (investors and analysts, among others). In other words, the first set of hypotheses is tested pair wisely for cross-listed firms:

1) There is a structural break in stock prices for the Brazilian market but not for the North American one. This suggests that the information released according to Brazilian principles (BR GAAP) surprised investors and analysts;

2) There is a structural break in stock prices for the North American market but not for the Brazilian one. This suggests that the information released according to North American principles (US GAAP) surprised external consumers of information;

3) There are no structural breaks in stock prices anywhere. This suggests that accounting information does not surprise external consumers independently of the accounting principles employed.

4) There are structural breaks in stock prices for both markets. This suggests that accounting information equally surprised investors and analysts independently of the accounting principles employed; In this way, we believe we are testing the assumptions of the literature on accounting harmonization. Indeed, the tests performed here address the first objective set forth by IASC, that is: "to develop, in the public interest, a single set of high quality, understandable and enforceable global accounting standards that require high quality, transparent and comparable information in financial statements and other financial reporting to help participants in the world's capital markets and other users make economic decisions;" (retrived from www.iasb.org/about/constitution.asp, bold added).

The remainder of the paper is structured as follows. The next section reviews the theoretical and empirical literature on the relation between accounting information and the stock market. Section 3 presents the research method. The test consists in verifying whether there is a structural break in the coefficient of systematic risk (beta) of the stock around the information release date. The test combines the CAPM with the Chow test for structural breaks. The fourth section presents the results. Overall, we document structural breaks for less than 1% of the events. The tests also indicate that none of the accounting information generating methods is capable of surprising the Brazilian and North American stock markets. Our conclusion suggests that external consumers of accounting information are not sensitive to the accounting principles employed in generating them.

2. THEORETICAL AND EMPIRICAL BACKGROUND ON THE STOCK MARKET REACTION TO THE RELEASE OF ACCOUNTING EARNINGS

The sensitivity of the stock market to the release of accounting information is by no means a settled score in academic research. Specifically, it is questionable whether the stock market is actually surprised by earnings announcements. In this respect, two streams of literature debate. On the one hand, one stream of the literature contends that the stock market fully anticipates firms' earnings. In this way, accounting information is not capable, by itself, of causing a statistically significant movement in the firm's stock prices--Ball & Brown (1968), Fama, Fisher, Jensen & Roll (1969), Goeltz (1991), Fama (1998). On the other hand, another stream of the literature states that the stock market is indeed surprised by earnings announcements. This might result due to a couple of possible reasons: (a) because the stock market cannot appreciate accounting statements properly; or, (b) because there are severe information asymmetries between insiders and outsiders. Specifically, there is additional useful information that cannot be obtained because of the associated transaction costs. This means that marginal additional information is increasingly costly, and consumers of information (e.g. investors and analysts) decide to stop their information search after some point--for instance, Grossman & Stiglitz (1980).

There is yet another line of research that asks whether the variation on world accounting principles, rooted in different legal systems, is capable of surprising the stock market--Ball, Kothari e Robin (2000). More precisely, this stream of the literature analyzes how a country's stock market reacts to a firm's earnings released according to international accounting principles. Are these differences between domestic and international accounting principles capable of surprising investors? Basically, findings from such research lead to two kinds of conclusions: one argues that there is no need to harmonize international accounting principles because they do not surprise investors. Moreover, accounting principles should respect the particularities of each country--McGregor (1999). The other suggests that there is a need for harmonization of accounting principles, at least partially, in order to avoid the deadweight cost associated with the generation and interpretation of accounting information--Chen, Gul, Xijia (1999). Next, we review some of the main studies in this field of research.

Richard Goeltz (1991) is one of the pioneers in the criticism of the harmonization of accounting principles. The author argues that a single standard is neither viable nor valid. He lists several points supporting his view, one among which is that stocks are more sensitive than debt to accounting principles variation. However, the international capital markets have grown at exceptionally high rates despite of the accounting principles adopted. The most important argument raised by Goeltz (1991) is that the correct use of the data available is relevant to forecast the firm's cash flows, and not the standard in which they have been presented. The author affirms that all available information is incorporated in the market value of stocks and that "investors are rational and will expend the necessary time and money to analyze investment opportunities correctly" (p. 88).

This assertion, by the way, contradicts Grossman and Stiglitz (1980) whose research suggests that the transaction costs associated with information search may impose limits to the effort--in terms of time and money--invested in the analysis and interpretation of firm's earnings. Therefore, stock prices may embed information asymmetries between providers and consumers of information.

MacDonald (2001) reports the opinion of investors that question whether the market is indeed aware of the different accounting standards and their implication to a firm's earnings. The author mentions the example of Colt Telecom Group that reported a loss of US$ 29 million employing British accounting standards while its American Depositary Receipts (ADRs), traded at NASDAQ[R], reported a US$ 51 million loss under U.S. accounting standards. The author suggests that, indeed, there may be several costs and uncertainties associated with different accounting

standards.

Calegari and Fargher (1997) employ a technique called "experimental markets"--for a survey of the literature see Libby, Bloomfield, Nelson (2002)--in order to test the stock market response, instantaneous or delayed, to the announcements of accounting earnings; their findings show that market prices does not change significantly due to earnings surprises. Rees and Elgers (1997) analyze 67 companies (mainly British, Australian, and Canadian) that reconciled their original reports with those demanded by the Securities and Exchange Commission (SEC) in the U.S. Employing regression analysis, the authors conclude that prices already reflect the accounting standards adjustments by the time of earnings release. Chan and Seow (1996) analyze the perception of foreign and U.S. stock markets to the information generated by ADR-issuing countries and U.S. GAAP. Their basic approach is to run two separate regressions. The first one uses contemporary and lagged accounting earnings according to U.S. GAAP to explain stock returns. The second one explains returns employing earnings under country of origin principles. The authors add the expected results from one regression into the other and vice-versa. Consequently, they verify the additional explanatory power of each set of accounting principles for stock returns. Their findings indicate that country of origin accounting principles have more explanatory power than U.S. GAAP. Chan and Seow (1996) attribute such results to institutional factors typical of the firms' countries of origin.

Ball et. al. (2000) perform a comprehensive study regarding institutional differences between Common Law and Code Law countries. The demand for accounting information is directly associated to the legal tradition of the country of origin. Australia, Canada, New Zealand, the United Kingdom, and the Unites States are examples of Common Law countries. France, Germany, Italy, Japan, and Spain are examples of Code Law countries. For the purposes of our paper, it is important to underscore the authors' statement that the international accounting standards issued by the International Accounting Standards Board (IASB) follows more closely the legal tradition of Common Law, which affects firms differently from different countries.

Webster (1998) tests the market efficiency of ADRs markets. Of particular interest to our paper are the three case studies reported by the author. One of them focused the Brazilian company Telebras which, at the time, was listed as ADR level II. Employing the Chow test the author does not identify a structural break in the price series even after the stocks begin trading in the New York Stock Exchange (NYSE). Another case studied is reported by Radebaugh, Gebhardt e Gray (1995). The authors studied the listing of German automaker Daimler-Benz in NYSE. Among other approaches, the authors mention the differences in the accounting principles in Germany and in the U.S. and their consequences for Daimler-Benz's income statement. In this case study the market reacted differently after the company was listed under the U.S. GAAP.

Saudaragan and Meek (1997) offer a comprehensive literature review about the debate between harmonization and diversity in accounting standards, even though these authors do not perform any empirical investigation of their own. Ampofo and Sellani (2005) believe that the accounting differences between the two systems--U.S. GAAP and IAS--are not so extensive and thus accounting harmonization is a long term trend. However, the authors warn that harmonization must respect the timing and characteristics of the countries involved. Similarly, Ding, Jeajjean e Stolowy (2005) warn that harmonization is not solely a technical matter but also an issue that includes important cultural aspects-- even more important than the technical and legal aspects. La Porta et al. (1998, 2000) is perhaps one of the most often cited papers when discussing institutional aspects--not only economic but also legal and cultural aspects are raised regarding different accounting systems. Graham and Neu (2003) argue that globalization is multi-dimensional and the campaign for harmonization may neglect or even make more difficult the situation of less developed countries if other institutional aspects are disregarded.

Finally, anticipating the results of our study, two other studies test the statistical relevance of earnings produced by U.S. GAAP and IAS. Leuz (2003b)--using cross-sectional analysis--and Bartov, Goldberg and Kim (2005)--using cross-sectional and time series regression--cannot find significant statistical differences between accounting information generated by both methods. Moreover, both studies conclude that investors give little or no attention to the method of generation of accounting information and that the eventual transaction costs are not enough to widen existing information asymmetries. Our paper corroborates the findings of Leuz (2003b) and Bartov et. al. (2005).

3. METHOD: CAPM AND CHOW'S STRUCTURAL STABILITY TEST

We employed the models described below with the purpose of verifying the hypotheses of structural breaks in stock price series.

The Capital Assets Pricing Model (CAPM) is given by:

$$r^j_t = r^f_t + \beta_j (r^{Mkt}_t - r^f_t) \quad (1)$$

where r^j_t stands for the rate of return of asset j in period t;

r^f_t is the rate of return of the risk free asset in period t;

β_j is the coefficient of systematic risk of asset j (beta);

r^{Mkt}_t is the rate of return on the market portfolio in period t.

For empirical implementations, the model is usually transformed in the so called market model:

$$r^j_t - r^f_t \quad \alpha_j + \beta_j (r^{Mkt}_t - r^f_t) + \epsilon^j_t \quad (2)$$

where $r^j_t - r^f_t$ is the risk premium of asset j;

α_j is the angular coefficient, that should be statistically insignificant;

$r^{Mkt}_t - r^f_t$ is the market premium risk;

[[epsilon].sup.j.sub.t] is the error on period t.

The market model of Portfolio Theory above illustrates that the rate of return on investment in asset j is related to the opportunity cost of foregoing the risk free investment. Consequently, the risk premium of asset j is linearly related to the market risk premium. One advantage of the CAPM is that it discounts the effect of market movements, i.e., it separates a break in the stock price of a given company from a possible break caused by external factors that affect all market, a break caused, for instance, by macroeconomic news.

The structural break of the model is usually verified with the Chow test. This test was originally formulated by Chow (1960); see Gius and Johnson (2000) and Mehdian and Perry (2002) for examples of applications for the Chow test. This test consists of splitting the sample in two sets of observations (n = [n.sub.1] + [n.sub.2]). Next, a regression is run for each set of observation and the respective sum of square errors is computed ([SSE.sub.1] and [SSE.sub.2]). The sum [SSE.sub.1] + [SSE.subm.2] is known as the unrestricted sum of squares. Also, a regression is run for the whole sample, obtaining again its sum of squares errors (SSER), known as the restricted sum of squares. A straightforward F-statistic is computed to test the null hypothesis that there is no structural break in the sample:

F = [[SSE.sub.R] - ([SSE.sub.1] + [SSE.sub.2])] / k/([SSE.sub.1] + [SSE.sub.2])/(n - 2k) (3)

where k is the number of regressors and (n - 2k) are the degrees of freedom. If [F.sub.Critical] > [F.sub.k, n - 2k] the null hypothesis of no structural break is rejected at the given probability level.

The combination of the CAPM with the Chow test is a convenient instrument to evaluate the impact of accounting earnings on the stock price of a firm, and that of the accounting principles over the consumers of information. The next section performs the tests described here and discusses the findings.

4. STRUCTURAL BREAKS IN RETURNS AND EARNINGS ANNOUNCEMENTS: EVIDENCE FROM BRAZILIAN LEVEL II AND III ADRS

The fact that the same firm releases accounting information referring to the same period of time but generated according to different accounting principles--the Brazilian (BR. GAAP) and the North American (U.S. GAAP)--presents a unique opportunity to perform tests that aim to shed light on the theoretical debate between those that minimize and exacerbate the importance of distinct accounting principles. The data was obtained from the ECONOMATICA[R] database. The sample consists of all public Brazilian companies listed in BOVESPA whose level II and III ADRs are also cross-listed in the NYSE. Firms with level I ADRs were excluded because these companies are not required to observe U.S. GAAP in their financial reporting to the SEC.

The events of interest are quarterly earnings releases, as they are filed simultaneously with the respective market authorities (CVM in Brazil and SEC in the U.S.). The data covers the period of September 1993 to February of 2006. In this period 1924 events were tested. The proxy for the risk free rate is the yield of the 3-month Treasury Bill for the U.S. and that of the Selicrate for Brazil. The Selic rate is the weighted average of yields on short-term government securities in Brazil. It is the instrument for inflation targeting by the Brazilian Central Bank. The proxies for market returns are respectively the Standard & Poor's 500 (S&P500) and the IBOVESPA stock market indices.

The choice of data frequency for the tests is subject to substantial controversy, and a consensus is yet to emerge from the literature. There is a trade-off between precision and noise: shorter periods of time--for instance, daily data--are more precise but are also noisier. On the other hand, monthly frequency that is less precise but also subject to less noise, is usually employed in both academic--for instance, Campbell and Vuolteenaho (2003) and Bartholdy and Peare (2005)--and practitioner applications, according to Graham and Harvey (2001). Given the purposes of this paper, we choose weekly data as a compromise. Initially the data is tested for unit root. The data did not present unit root cases, most likely because we adopted the natural logs for the geometric return rates that register just percentage changes. After estimating the CAPM by ordinary least squares, all regressions are subjected to the usual specification tests--autocorrelation and heteroskedasticity. Cases that displayed heteroskedasticity are re-estimated by weighted least squares (WLS). Some regressions also presented strong autocorrelation and are then re-estimated by generalized least squares (GLS). Afterwards, all events whose regression betas are not significant at least at the 5% level are excluded from the analysis. Finally, only events whose regression adjusted coefficients of determination (Adj. R2) are superior than 0.10 are kept in the study. Such preliminary selection reduced the number of events to be studied from 1,924 to 1,145.

The results of the Chow structural break tests are presented in the following way: Table 1 presents the results for the cross-listed firms in their domestic market, i.e., BOVESPA. Table 2 presents the results for ADRs in the foreign market, i.e., the NYSE.

Results from Table I document that a structural break occurred in only one event (out of 541) during the earnings announcement window. In 173 events, 31.86% of the sample, structural breaks happened during the event window but also in the preceding and/or following week. In this case, it is difficult to claim a direct relationship with the earnings announcement. In 369 events, 67.96% of the sample, no structural break whatsoever is identified by our tests. Thus, in the Brazilian case, there is no evidence that earnings releases impact the consumers of information.

Table II displays results similar to those for the Brazilian market. Only three out of 602 events present a structural break solely during the earnings release week. Notwithstanding, a reasonable reallocation of numbers happened between hypotheses 2 and 3. In the NYSE, 21.76% of the events presented structural breaks before, during, and after the event window, while in the Brazilian case such a finding is observed in 31.86% of the events. These ten percentage points in hypothesis 2 are transferred almost entirely to the third hypothesis of no structural break, 77.75% in the NYSE compared to 67.96% in BOVESPA. These numbers suggest that the North American market is relatively more stable than the emerging Brazilian one. Nonetheless, both soundly reject the hypothesis that information asymmetry, because of high transaction costs, might foster surprises in the market during the release of earnings information.

The second set of hypotheses consists in comparing only those cases in which the firm presented a structural break during the earnings release week. The aim is to verify if the stock market, BOVESPA or NYSE, could have been surprised because of the accounting principles employed. For instance, if U.S. GAAP earnings surprise investors and analysts in the North American market, i.e., a structural break is found in

the CAPM regression, but the release of BR. GAAP earnings in the same event does not surprise--i.e., no structural break--investors and analysts in Brazil, then there is evidence that supports the hypothesis that accounting harmonization is relevant because U.S. GAAP conveys unanticipated information deemed useful to the market. Therefore, we investigate whether the structural break happens (a) only in the Brazilian market, the first hypothesis; (b) only in the North American market, second hypothesis; (c) in no market at all, the third hypothesis; and (d) in both markets simultaneously, the fourth hypothesis. From the outset, we can rule out the latter hypothesis (d) since we fail to observe simultaneous structural breaks for the same firm in both markets.

From all events investigated, less than 1% presented structural breaks during the earnings release week. We observe only four cases in total. All firms are from the telecommunications industry: TELESP Operadora, Tele Nordeste Celular (twice: in Brazil and in the U.S.), and Tele Centro Oeste Celular. However, these structural breaks happen in different dates for Brazil and for the U.S. and therefore referred to different disclosures. The fact that the only industry in which these breaks happen is the telecommunications may be related to a peculiar characteristic of the industry, perhaps the regulation of this particular business.

As it can be seen, structural breaks attributable to the release of earnings happen in less than 1% of the events. These tests corroborate, therefore, the third hypothesis of the first set of hypotheses, namely that the stock market is not surprised by earnings disclosures. Or at least, it is not surprised enough to disrupt the trajectory of market stock prices. The cross-tabulation of Tables 1 and 2, used to verify the second set of hypotheses, also suggests that the information consumer is not sensitive enough to the accounting principles employed in the generation of information, that is, Brazilian (BR. GAAP) or North American (U.S. GAAP).

5. CONCLUDING REMARKS

Initially, we verified whether the information consumer is surprised when earnings information was released. The competing hypotheses are based on whether the market anticipates accounting information or not. If not, it may be because of its difficulty in processing accounting information or because of the costs associated with a complete information search, giving rise to asymmetric information. A second set of hypotheses were tested to compare the effects of simultaneous earnings releases in the Brazilian and North American stock markets: (a) there are structural breaks in the Brazilian market but not in the North American one, which suggests that the U.S. GAAP is more adequate to generate useful information for investors and analysts; (b) there are structural breaks in the North American market but not in the Brazilian one, which suggests the opposite, that is, the BR. GAAP is more adequate to generate useful information for investors and analysts; (c) there are no structural breaks, which suggests that earnings releases are surprising independently of the accounting principles employed, and (d) there are structural breaks in both markets, which suggests that both accounting principles convey new information to the market.

Our findings reveal that, in the period of study, only one case in Brazil and three cases in the U.S. support the hypothesis that earnings releases are associated with structural breaks in the systematic risk coefficient of the stocks. This suggests that the market was surprised by the disclosure of accounting information. In such a case, the information asymmetry and the transaction costs in the information gathering process may respond for the market surprise. However, all four cases are from firms belonging to the telecommunications sector, which might suggest a particularity of this industry.

The second hypothesis, that structural breaks during earnings announcements weeks are accompanied by structural breaks in the weeks surrounding the accounting disclosure, is observed in 173 events in Brazil (31.86%) and 131 events in the U.S. (21.76%). These results, however, are more due to the volatility of betas that may be caused by other international, national, or industry specific factors than due to the effects of earnings releases. Finally, the third hypothesis, the one in which markets anticipate accounting information, is corroborated in 369 events (67.96%) in the Brazilian market and 468 events (77.74%) in the North American market. In these cases, there are no structural breaks in earnings announcements weeks.

The fact that Brazilian firms are simultaneously cross-listed in BOVESPA (BR. GAAP) and in the NYSE (ADRs, U.S. GAAP) allows for a unique opportunity for the investigation. Employing a CAPM model and the Chow structural break test, it is documented that earnings releases are not capable of affecting the trajectory of the stock prices of these firms, independent of the accounting principles used in the generation of the information.

The tests performed in this study investigated one of the assumptions of advocates of accounting harmonization in a global scale, that is, the consumers of accounting information, mainly analysts and investors, need the knowledge of the idiosyncrasies of different accounting methods. Such a need would lead to increasing transaction costs in the information search process. Consequently, it is possible that information consumers stop gathering information at a given point, leading to sharper information asymmetries. In such a scenario, the release of accounting statements, especially under distinct methods, may cause surprises to the market that would have been captured by a structural break test of the CAPM. This assumption has been widely refuted by the empirical tests reported here.

Despite that, the issue deserves more in depth investigation because several possibilities remain open. The adoption of a higher frequency data, daily for instance, might produce alternative findings by giving a short-run perspective. Another possibility is that, although the firms are cross-listed, their ADRs level II and III may not follow U.S. GAAP to the letter, because firms' executives do not believe in harsh punishment in case they are discovered. Recent relevant research has been published to that end, for instance Leuz (2003a) and Siegel (2005). Finally, the arguments for accounting harmonization may focus on the cost reduction by the firms--which in itself is a topic open to discussion--and not because of asymmetry reduction arguments. Other possibilities are also open to investigation Our findings are bounded by the data and method limitations; thus, results should be assessed with caution.

In this sense, it is not our intent to close the fertile debate between streams of academic thought. However, the findings presented here are insightful to this discussion and, in particular, contribute to enrich the debate on the need of international harmonization of accounting principles by focusing the case of Brazilian cross-listed firms. In this study, the market is indifferent to the generation method of accounting information, corroborating the results of Goeltz (1991), Rees and Elgers (1997), Leuz (2003b), and Bartov et. al. (2005), among others.

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TABLE I: STRUCTURAL BREAK TEST FOR FIRMS LISTED IN BOVESPA

Name	Beta	t-Stat.	Adj. [R.sup.2]	F-Stat.
Ambev	0.615	18.415	0.341	118.754
Aracruz	0.410	9.378	0.126	50.069
Cemig	1.302	3.627	0.153	10.823
Eletrobras	1.232	30.071	0.647	627.826
Embratel	1.208	13.245	0.303	56.610
Braskem	0.741	17.215	0.302	296.368
Telemig Celular	1.195	32.134	0.713	238.773
Net	1.063	10.286	0.188	105.792
Petrobras	2.137	3.512	0.211	12.332
Sabesp	1.073	18.806	0.414	171.128
Tele Sudeste Celular	0.756	10.129	0.209	102.606
Brasil Telecom	1.662	2.078	0.461	4.318
Tele Centroeste Celular	1.236	15.475	0.402	129.864
Tele Nordeste Celular	1.210	13.192	0.387	66.557
Tele Leste Celular	1.330	13.956	0.335	194.769
Telebras	1.106	5.541	0.415	30.704
Tele Norte Celular	0.976	10.217	0.251	43.729
Telesp Celular Participacoes	1.307	14.661	0.446	214.937
Tim Participacoes	1.235	16.747	0.421	280.451

Total

Name	D.W.	H1	H2	H3	Total
Ambev	2.011	0	7	31	38
Aracruz	2.001	0	0	40	40
Cemig	2.049	0	3	35	38
Eletrobras	2.019	0	11	28	39
Embratel	1.981	0	1	23	24
Braskem	2.023	0	26	13	39
Telemig Celular	2.009	0	17	0	17
Net	1.847	0	16	12	28
Petrobras	2.004	0	5	35	40
Sabesp	2.008	0	11	19	30
Tele Sudeste Celular	1.782	0	16	9	25
Brasil Telecom	1.998	0	4	35	39
Tele Centroeste Celular	2.031	0	19	4	23
Tele Nordeste Celular	2.035	1	3	16	20
Tele Leste Celular	2.092	0	0	26	26

Name				
Telebras	2.030	0	9	4	13
Tele Norte Celular	2.050	0	15	10	25
Telesp Celular Participacoes	2.107	0	0	16	16
Tim Participacoes	2.207	0	10	13	23
		1	173	369	543
Total					
		0.18%	31.86%	67.96%	100%

Beta: Coefficient of systematic risk (β_j); t-Stat.: Beta's t-statistic; Adj. R^2: Adjusted coefficient of determination; F-Stat.: Chow's test F-statistic; D.W.: Durbin Watson statistic; H1: Number of structural breaks in the week of the event; H2: Number of structural breaks in the week of the event, and in the previous and following weeks as well; H3: Number of events without any structural breaks

TABLE II: STRUCTURAL BREAK TEST FOR FIRMS LISTED IN THE NYSE, ADRS LEVELS II AND III

Name	Beta	t-Stat.	Adj. [R.sup.2]	F-Stat.
Ambev	0.986	13.111	0.263	81.586
Aracruz	0.964	12.952	0.224	78.993
Bradesco	1.023	9.006	0.276	17.486
Brasil Telecom	1.121	9.247	0.270	41.116
Tele Centroeste Celular	1.277	11.040	0.246	31.562
Cemig	1.074	8.459	0.184	34.667
Copel	1.121	9.521	0.168	90.656
Eletrobras	0.985	5.839	0.176	14.888
Embratel Participacoes	1.211	7.851	0.139	61.646
Telesp Celular	1.447	11.470	0.257	131.561
Gerdau	1.070	11.120	0.254	123.647
Braskem	0.867	7.393	0.127	54.657
Tele Leste Celular	1.139	8.252	0.155	35.535
Telemar Telecomunicacoes	1.121	12.186	0.273	71.661
Telemig Celular	1.301	10.525	0.226	110.779
Tele Norte Celular	1.042	9.863	0.206	25.284
Telesp Operacional	1.056	11.900	0.272	141.610
Pao de Acucar	1.063	11.213	0.216	125.739
Perdigao	0.959	9.308	0.246	40.708
Petrobras	1.182	11.186	0.337	58.573
Sabesp	1.057	8.124	0.236	31.157
Sadia	1.007	10.235	0.302	104.755
Siderurgica Nacional	0.961	8.851	0.147	37.598
Tele Sudeste Celular	0.997	8.762	0.175	40.011
Tele Nordeste Celular	1.351	8.708	0.199	75.832
Ultrapar	0.773	9.797	0.223	95.973
Unibanco	1.162	10.273	0.187	105.532
Vale do Rio Doce	0.940	9.693	0.318	93.960
Votorantim	0.943	11.946	0.318	142.699

Total

Name	D.W.	H1	H2	H3	Total
Ambev	2.005	0	2	26	28
Aracruz	1.984	0	7	28	35
Bradesco	2.040	0	9	3	12
Brasil Telecom	2.011	0	0	12	12
Tele Centroeste Celular	1.991	1	0	23	24
Cemig	1.996	0	18	10	28
Copel	2.161	0	11	16	27
Eletrobras	2.010	0	9	6	15
Embratel Participacoes	2.132	0	0	22	22
Telesp Celular	2.180	0	1	24	25
Gerdau	2.096	0	2	20	22
Braskem	1.932	0	8	14	22
Tele Leste Celular	1.899	0	1	24	25
Telemar Telecomunicacoes	1.982	0	2	15	17
Telemig Celular	2.104	0	2	22	24

Tele Norte Celular	1.961	0	6	15	21
Telesp Operacional	2.143	1	1	23	25
Pao de Acucar	1.990	0	5	17	22
Perdigao	1.927	0	0	17	17
Petrobras	2.057	0	5	7	12
Sabesp	2.024	0	2	9	11
Sadia	2.019	0	3	12	15
Siderurgica Nacional	1.991	0	6	20	26
Tele Sudeste Celular	1.992	0	0	24	24
Tele Nordeste Celular	2.021	1	2	18	21
Ultrapar	2.101	0	13	8	21
Unibanco	2.132	0	8	20	28
Vale do Rio Doce	2.242	0	8	2	10
Votorantim	2.232	0	0	11	11
		3	131	468	602
Total		0.50%	21.76%	77.74%	100%

Beta: Coefficient of systematic risk ($[\beta]_{sub.j}$); t-Stat.: Beta's
t-statistic; Adj. [R.sup.2]: Adjusted coefficient of determination;
F-Stat.: Chow's test F-statistic; D.W.: Durbin Watson statistic;
H1: Number of structural breaks in the week of the event; H2: Number
of structural breaks in the week of the event, and in the previous
and following weeks as well; H3: Number of events without any
structural breaks.