Economic Effects of IFRS Adoption in Brazil: an Empirical Analysis of Stock Price Synchronicity

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Abstract: This study aims to identify the impact of IFRS adoption in stock price synchronicity of Brazilian capital market through its influence on how much and in which way firm-specific information is incorporated by stock prices. There are divergences in the literature about how IFRS adoption (specially the mandatory adoption) affects synchronicity in countries with poorer institutions. Our results indicate that IFRS adoption in Brazil has reduced stock price synchronicity and, consequently, increased the efficiency of resource allocation and potential portfolio diversification. These findings support the view that IFRS adoption facilitates firm-specific information flows into the market, improving the informational environment. This findings show that investment conditions in Brazil have improved, opening better opportunities for foreign investments on the country, contributing to financial globalization and market integration.

1 Introduction

This paper addresses the question of whether IFRS adoption has improved the informational environment on Brazil and how stock prices have reacted to it. Specifically, the paper investigates the impact of IFRS adoption in stock price synchronicity through its influence on how much and in which way firm-specific information is incorporated by stock prices.

The stock price of a firm reflects both market-wide and firm-specific information. Stock price synchronicity capture the extent of firm-specific information that flows into

the market and is incorpored into stock prices relative to common information (market-wide) (Kim & Shi, 2012).

The level of synchronicity depends on a number of factors, such as the financial reporting system and the level of transparency. Countries with higher degree of transparency, through more developed financial reporting systems, leads to higher amount of available firm-specific information and, consequently, to lower synchronicity (Jin & Myers, 2006). But this is not the only perspective. Some argue that a better information environment increases the stock prices synchronicity because it improves market participants prediction's in a way that stock prices will not react to anticipated future firm-specific events (Dasgupta et al, 2010; Beuselinck et al, 2010). In addition, synchronicity might increase when there are more firm-specific information publicly availave because traders can be discouraged to collect and trade private information (Kim & Shi, 2012).

The effect on countries with different institutional environment is also not a consensus in the literature. If synchronicity is lower in countries with higher level of transparency, the adoption of IFRS, which produces information of higher quality, better representing the firm's economic and financial position, should increase the firm-specific information flow and, thus, reduce even more the synchronicity (Brüggemann et al, 2013; Veldkamp, 2006). However, some authors argue that the synchronicity-reducing effect of IFRS adoption is more pronounced on countries with poorer institutions, corporate governance and investor protection and less developed financial system (Gul et al, 2010; Kim & Shi, 2012; Jin & Myers, 2006).

In addition, Kim and Shi (2012) also belives that IFRS adoption might have a more pronounced effect on countries with poorer institutions due to the fact that a better firm-level governance can substitute the weaker country-level governance and then improve the informational environment in a more pronounced way. Nevertheless, other stream of thought argues that IFRS adoption might have no effect at all, considering that the mere adoption of a higher-quality acounting standards is not enough; it is also necessary a complete infrastructure involving training, independence from tax law and an efficient legal system for detecting and penalyzing fraud, as put by Ball (2001).

Studying stock price synchronicity is important because of its economic consequences, such as the efficiency of capital allocation. According to Wurgler (2000), the efficiency of capital allocation across countries is negatively correlated with synchronicity. Additionally, lower degree of synchronicity means less covariance among

stock prices in a market, which improves potential portfolio diversification, once forming a portfolio with assets that present negative or low covariance among themselves can maximize the total return of the investment for the same risk level (Markowitz, 1952). In line, Campbell et al (2001) mentions that declining correlations among stock prices and, thus, lower synchronicity, imply that benefits of portfolio diversification have increased.

Another important consequence of higher stock price synchronicity is that, in countries where firms are more opaque, where stock prices co-move, crashes are more common in comparison to countries where firms present a higher level of transparency and, consequently, lower degree of synchronicity (Jin & Myers, 2006).

According to Li et al (2003), changing stock price synchronicity might be economically important for some reasons: synchronicity in individual returns affects portfolio risk calculations; its implications regarding the real economy; the synchronicity may be symptomatic of market inefficiencies and have implications for corporate governance.

IFRS adoption around the world is expected to integrate financial markets, which would result ultimately in long-term economic benefits (Tweedie, 2013), as those mentioned before. In order to assess these integration effects, all countries that have adopted IFRS must be investigated. However, the literature concerning IFRS adoption effect has been focused mainly on developed countries, especially on the European Union.

Latin American countries have assumed the compromise to adopt IFRS but there is limited literature about the impact of this adoption. Latin American economy have been growing in importance since its recovery from the 2008 financial crisis and its participation on global economic activity has been growing (International Monetary Fund, 2013). Among Latin American countries, Brazilian economy is the most important one, considering that its GDP amounts 38.68% of the Latin American GDP (The World Bank, 2013).

Considering the lack of studies about the macroeconomic consequence of IFRS adoption and the divergence of previous researches, it is important to study the impact of IFRS adoption on stock price synchronicity in order to clarify these consequences. And this importance is higher when we consider studies about emerging countries, where the expected effects are even more obscure.

To achieve the main objective and answer the question we address in this research, we first construct a sample of firm-year observation from companies listed in the main

index of São Paulo Stock Exchange (IBovespa) over the eight years from 2005 to 2012. We use only companies from the index because these companies are the most traded ones. We analyze the transition period and the mandatory adoption. Thus, our sample was segregated into three periods: pre-adoption period (2005-2007), transition period (2008-2009) and post-adoption period (2010-2012).

We then compare the level of stock price synchronicity among the three periods, by means of univariate analysis, seeking to verify if IFRS adoption has reduced or increased synchronicity. After that, we build a regression model that relates a measure of stock price synchronicity against two dummy variables that represent the transition and the post-adoption period and a set of firm-level variables (control variables), in an attemptive to isolate the effect of IFRS adoption.

Our results suggest that IFRS adoption in Brazil have reduced stock price synchronicity and, consequently, increased resource allocation efficiency and potential portifolio diversification. Analyzing the three periods, we find that synchronicity have decreased in the transition period and in a more intense way in the post-adoption period. The results also show that bigger firms present more synchronicity and firms that have been presenting growing sales have, in general, less synchronicity. We also see that firms that are traded more frequently present more synchronicity.

Our findings support the view that IFRS adoption, through higher quality information, facilitates firm-specific information flows into the market, improving the information environment, and, thus, reduce stock price synchronicity. Our results apparently contradicts the perspective that a better information environment improves the predictions of the markets participants, reducing stock prices reactions to future firm-specific events and increasing synchronicity. However, we have only analyzed three years of the post-adoption period. Therefore, the results found in this paper can change in the future.

This study contributes to previous research by analyzing an emerging country (Brazil) and the effect of the mandatory adoption of IFRS. Kim and Shi (2012) analized only the voluntary adoption, justifing it could be viewed as a firm's strategy to enhance disclosure while mandatory adoption is a country-level regulatory event, leading to a lower impact of mandatory adoption on stock price synchronicity. However, our results demonstrate that mandatory adoption do decrease synchronicity and in a more intense way that the transition period; that is, IFRS can improve the information environment even when it is imposed by a regulatory act. This finding is really important to provide

empirical evidence that the mandatory adoption also reduce the stock price synchronicity, contradicting previous researches.

Finally, our results are important because they highlight the macroeconomic importance of the financial reporting system, demonstrating that the accounting system have become more important to the market, and show that investment conditions in Brazil have improved, opening better opportunities for foreign investments on the country, contributing to financial globalization and market integration.

The remainder of the paper is organized as follows. The next section presents the background and the research question and section 3 explains the research design. Section 4 describes the results and section 5 offers our concluding remarks.

2 Background and Research Question

A fundamental element to ensure the wealth development of an economy is the efficiency with which scarce capital is allocated to profitable investment opportunities (Habib, 2008; Wurgler, 2000). An example of this importance is provided by the agency theory, which postulates that pressures from external investors encourage managers to seek the maximization of investment projects.

Wurgler (2000) analyze whether and how financial markets improve the allocation of capital. The main finding is that financial markets appear to improve the allocation of capital, considering that developed financial markets are associated with better allocation of capital and, in addition, the efficiency of capital allocation is positively correlated with the amount of firm-specific information into domestic stock return.

According to Habib (2008) the financial reporting provides the primary source of independent information to shareholders about the performance of the company and facilitates efficient resource allocation decisions. The author analyzes the role of fhe financial reporting system in capital allocation efficiency and the results show that financial transparency is positively (and significantly) related to capital allocation efficiency.

In the same way, Bushman and Smith (2001) believe that financial accounting systems mitigate agency problems, facilitating the efficient flow of scarce human and financial capital to increase investment opportunities.

If the financial accounting system is efficient, there is a greater financial transparency, which, in turn, leads to a better allocation of capital. Higher levels of

financial transparency result in a production of a greater amount of firm-specific information.

The stock price of a firm reflects both market-wide and firm-specific information. If the stock prices of companies tend to move together (higher covariance), it indicates that prices reflect, mainly, market-wide information and, consequently, the synchronicity is higher. This situtation tends to happen when good quality firm-specific information is not readily available.

Whether firm-specific information is available to all market participants or is only accessible to certain parts depends on the quality of the firm's information environment (financial accounting system). If the firms' information environment does not alter market information, then the amount of firm-specific information depend on the events reflected in prices over the period (Xing & Anderson, 2011).

In the same way, according to Kim and Shi (2012), the extent to which firm-specific information flow into the market and is incorped into stock prices relative to common information (market-wide) can be captured by a measure of stock price synchronicity, which is the co-moviment of stock prices in an economy.

A lower degree of transparency, through a financial reporting system less developed, leads to lower firm-specific information available for investors and, consequently, to higher synchronicity (Jin & Myers, 2006). Thus, the higher level of disclosure leads to higher flow of firm-specific information that will be incorporated into stock prices and, therefore, reduce synchronicity.

Jin and Mayers (2006) belive that synchronicity is higher in countries where firms are more opaque (less transparent) to outside investors and, consequently, crashes (large negative return outliers) is more common for companies in opaque countries, where the stock prices co-moves (higher covariance).

If the synchronicity is lower in countries with higher level of transparency, the adoption of IFRS, that produces information of higher quality, better representing the economic and financial position of companies, should increase firm-specific information flow and, thus, reduce synchronicity.

Considering this hypothesis, some studies have been perfomed analyzing the impact of IFRS adoption on stock price synchronicity (Kim & Shi, 2012; Beuselinck et al, 2010). However, there is not a consolidated conclusion about this impact, due to the lack of studies performed so far.

One stream of research believes that, the Internationl Financial Reporting Standards (IFRS), considered as a higher quality accounting standards, help to ensure a higher degree of transparency and comparability of financial statements, which, in consequence, improves the efficiency of capital market (Brüggemann et al, 2013).

In line, according to Veldkamp's (2006), when good quality firm-specific information is not readily available, investors rely more on commom information, which is cheaper and has a higher demand. However, the enhanced disclosures via IFRS adoption contributes to facilitate the flow of higher-quality firm-specific information into the market at no additional cost (compared to commom information) to investors that become more likely to rely more on firm-specific information than on market-wide information (Veldkamp, 2006). If higher-quality firm-specific information flows into the market and the investors rely more on it, than the amount of firm-specific information incorpored into stock prices is greater and, thus, the synchronicity is lower.

Kim and Shi (2012) provide evidence that synchronicity is significantly lower for IFRS adopters than non-adopters and that for IFRS adopter, the stock price synchronicity decreases from the pre-adoption period to the post-adoption period. These authors considers only the voluntary adoption.

However, like the process of IFRS adoption, the impact in synchronicity might not be the same in all countries. Kim and Shi (2012) mention the synchronicity-reducing effect of IFRS adoption is more pronounced on countries with a weaker institutional environment (Kim & Shi, 2012). This can be explained by the fact that countries with poor investor protection, less developed financial system and poorer corporate governance, discourage informed trading, which, in turn, leads to higher synchronicity (Gul et al, 2010; Jin & Myers; 2006) when compared to countries with strong institutional environments. Once synchronicity is higher for these countries, IFRS adoption effect might be more intense for them.

Based on these evidences, Morck et al (2000) find that stock prices in emerging economies, with low per capita gross domestic product (GPD), tend to move up or down together (higher covariance and, thus, higher synchronicity). The authors find three possible explanation: a) firms in low-income contries might have more correlated fundamentals and make their stock price move more synchronously; b) poor and uncertain protection of private property rights; and c) countries that provide poorer protection for public investors from corporate insiders.

In the same way, Chan and Hameed (2006) say that a possible explanation for higher synchronicity in emerging countries is the difficulty to collect firm-specific information and, thus, the information that security analysts collect might have more macroeconomic content that firm-specific details. This lack of firm-specific information in emerging markets is due to a number of factors: little enforcement; low degree of voluntary disclosure and many companies are family owned, which is more difficult to collect specific information about this kind of company. This idea is in line with the ones presented in Kim and Shi (2012), once emerging countries present less levels of enforcement (La Porta et al, 1998; Kaufmann et al, 2008). So, once the stock price synchronicity is higher in emerging countries, IFRS adoption might reduce it in a more accentuated way.

Nevertheless, despide this evidences, there is not a consolidated conclusion about the impact of IFRS adoption on synchronicity. Some authors believe that adopting a higher-quality accounting standards improves the information environment only if there is effective enforcement mechanisms strong enough to produce higher quality information. For Ball (2001), an economically efficient report system requires separation from corporate income taxation, well trained and independent auditors, and an independetn legal system for detecting and penalyzing fraud and manipulation. For the author, the accounting infrastructure cannot be separated from the overall economic, legal and political infrastructure. Thus, stock price synchronicity might not significantly decrease in countries like Brazil, considered an emerging country, with relative low enforcement environment, a rules-based system, with great influence of government and weak investor protection (La Porta et al, 1998).

However, even if the institutional environment is relatively weak, IFRS adoption can reduce stock price synchronicity, if we consider that country and firm-level governance mechanisms act as substitute for each other (Kim & Shi, 2012). Thus, if the firm-level environment improves, by a higher quality accounting standards adoption, for example, it will substitutes the weaker country-level environment. So, the stock price reduction will be actually more pronounced in countries with poor institutions than in countries with stroger institutions.

These two later possibilities diverge regarding the effect on countries with poorer institutional environment, but both agree that higher corporate transparency reduce stock price synchronicity. However, this is not a consensus in the literature. Some studies

demonstrate that stock price synchronicity can actually increase when transparency improves.

Kim and Shi (2012) argue that there is a lack of concluding evidence if stock price synchronicity should reduce or increase with an improvement in the informational environment. The authors then seggregated the impact of IFRS adoption on synchronicity into two approaches. The first approach is called "information encouragement role of IFRS adoption" which belives that it reduces synchronicity considering that IFRS reporting improves the quality of a firm's financial reporting, facilitating the flow of firm-specific information into market. The second approach is called "crowding-out role of IFRS adoption" by the authors and considers that an increase in the quantity and quality of public information associated with the IFRS adoption may lower the profitability of acquiring firm-specific information and thus discourage informed traders from collecting and trading on private information, making stock prices more synchronous with common information (higher synchronicity) (Kim & Shi, 2012, p.478).

Despite this crowding-out effect describet by Kim and Shi (2012), Dasgupta et al (2010) argue that the increase in stock price synchronicity when corporate transparency improves is a consequence of efficient markets. In efficient markets, stock prices only react to information that were not anticipated by the market. So, If the information environment around a firm improves and there are more firm-specific information available, market agents will be able to improve their predictions about the firm's events. So, when these events actually happen stock prices will not react to them once they will no longer be a surprise in such a way that future stock prices will present less firm-specific variation, that is, sychronicity will be higher (Dasgupta et al, 2010). Thus, when IFRS adoption provides more transparency, through a higher quality accounting standards, it might increases synchronicity.

Complementary to this approach, Beuselinck et al (2010) also examined whether the adoption of IFRS influences the flow of firm-specific information and contributes to stock prices informativess in 14 countries from Europe. The results shows a reduction of syncronicity at transition period, but an increase in the post-adoption period. The increase lead to a higher synchronicity in post-adoption period in comparison with the pre-adoption period. In line with Dasgupta et al (2010), these results suggest that the new information allows investors not only to improve their predictions about the occurrence of future fir-m specific events, but also to incorporate the likelihood of occurrence of these future events into stock prices. Consequently, when these events happen in the

future, investors react less to such news, making stock prices more synchronous (Beuselinck et al, 2010).

Considering this context and given the lack of consistent evidence about the effect of IFRS adoption on stock price synchronicity, specifically on emerging countries (with considerably poorer institutions), this paper aimed to respond the question if the IFRS adoption in Brazil have affected stock prices synchronicity and in which way.

3 Research Design

3.1 Measurement of Stock Price Synchronicity

In order to analyze the effect of IFRS adoption on stock synchronicity, we must first establish a measure of the extent to which each company's stock price follows the market-wide information. The market model (MacKinlay, 1997) on Equation (1) captures the relation between a firm's stock return and the market return.

$$R_i = \alpha + \beta R_m + \varepsilon_i \quad (1)$$

The R^2 of Equation (1) measures how much of the stock return can be explained by the market return, that is, how much they are related. According to Xing and Anderson (2011), when stock returns incorporate more firm-specific information, the R from the market model regression is lower, measuring the amount of firm-especific information incorporated into stock prices and, thus, it can be considered as a measure of how the stock prices of companies move together with the market.

As seen in Chan and Hameed (2006) and Morck et al (2000), we calculate stock synchronicity according to Equation (2).

$$Syn = \log\left(\frac{R^2}{1 - R^2}\right) \quad (2)$$

Where R^2 is the coefficient of determination of Equation (1).

3.2 Data and Variables

We analyzed the companies from Brazilian capital market, considering the importance of the country to the global economy and the lack of studies about the impact of IFRS adoption on Latin American countries, as previously mentioned.

The IFRS adoption process in Brazil has begun between 2006 and 2007 when the Central Bank and the Brazilian Security Exchange Commission, together with the

insurance supervisor SUSEP decided that all companies regulated by them would be required to prepare and make available full IFRS consolidates financial statements from December 31, 2010 (Carvalho & Salotti, 2013). The adoption process begun in 2008 and was completed by 2010 (mandatory adoption). Therefore, our post-adoption sample comprises three years, from 2010 to 2012, the last financial reporting period available. We then analyze three years before the adoption, from 2005 to 2007, and two years considered as a transition period (2008 and 2009).

We analyzed the companies included in the São Paulo Stock Exchange Index (Ibovespa) in 2012, excluding the ones from the financial sector, amounting 51 firms. We used these firms because their stocks are the most traded ones, it would not make sense to analyze stock synchronicity of firms that are traded only occasionally. However, it is important to note that some of these companies were not included in the index in the first years of our sample; some of them did not even existed. So, not even all companies had available data for all the periods. Table 1 shows the amount of firms and total observations sample segregated by sector.

[TABLE 1 HERE]

The stock price synchronicity were calculated for each firm for each year, using daily returns for each firm and for the market. As a proxy for the market return, we used the returns of the São Paulo Stock Exchange Index, which comprises stocks that amount 80% of the total trading. Besides that, a stock need to amount 0.1% of the total trading volume, and to be present in at least 80% of the trading sessions of the period to be part of the index (BM&FBovespa, 2013). We obtained the daily stock prices from January 2005 to December 2012 on Datastream, and thus calculated the daily log-returns in order to obtain stock synchronicity according to Equation 1 and Equation 2.

Stock synchronicity could evolve during the analyzed period because of other reasons than IFRS adoption. Stock synchronicity is related to financial transparency (Jin & Myers, 2006), and financial transparency is related to manager incentives, that are firm-level variables. Many studies (Barth et al, 2008; Chen et al, 2010; Lang et al, 2003) have identified a set of variables that represent managers' incentives to present transparent financial statements. In this paper, we use the firm's size (*SIZE*), its growth (*GROWTH*), its leverage (*LEV*), its profitability (*ROA*) and its ownership structure (*OWN*) as control variables, in an attempt to isolate the effect of IFRS adoption on stock price

synchronicity. We also consider if one of the Big Fours audits the firm (AUD) and if it is cross-listed in the United States (ADR). This set of control variables is important because stock synchronicity could change just because of a change in these variables, not because IFRS adoption.

It is also important to consider the firms' sectors, as also seen in previous studies. The distribution of the companies by sectors is according the Industry Classification Benchmark (ICB), which segregates them into nine sectors: (0) Oil & Gas; (1) Basic Materials; (2) Industrials; (3) Consumer Goods; (4) Health Care; (5) Consumer Services; (6) Telecommunications; (7) Utilities; (8) Financials and (9) Technology.

Besides these variables, we also include one that captures the trading volume of each firm's stock during each year (*Trading*). This variable is important because, as commented before, not all the firms were included in the market index in the early years because they were less traded or did not existed before. Therefore, stock price synchronicity could arise because of the inclusion of these firms in the index, which are the proxy for the market. Additionally, even the firms that were in the index in the early years could grow in trading volume and, consequently, increase their weight in the index, which would increase their synchronicity with the index returns.

3.3 Empirical Model

In order to capture the effect of IFRS adoption on stock price synchronicity for Brazilian firms we build the empirical model on Equation (3).

$$
\begin{aligned}
Syn_{i,t} = {} & \alpha_0 + \alpha_1 Post_t + \alpha_2 Trans_t + \\
& + \beta_1 SIZE_{i,t} + \beta_2 GROWTH_{i,t} + \beta_3 LEV_{i,t} + \beta_4 ROA_{i,t} + \beta_5 OWN_{i,t} + \\
& + \beta_6 AUD_{i,t} + \beta_7 ADR_{i,t} + \beta_8 Trading_{i,t} + \\
& + \gamma_1 IND1_i + \gamma_2 IND2_i + \gamma_3 IND3_i + \varepsilon_{i,t}
\end{aligned}
\tag{3}
$$

Where:

$Syn_{i,t}$: stock price synchronicity calculated by Equations (1) and (2) for the firm i in the year t;

$Post_t$: dummy variable that equals one if the observations refer to the post-adoption period (2010, 2011 and 2012);

$Trans_t$: dummy variable that equals one if the observations refer to the transition period (2008 and 2009);

$SIZE_{i,t}$: size of the firm i in the year t, measured by the natural logarithm of the total assets;

$GROWTH_{i,t}$: percentage variation on sales for the firm i in the year t;

$LEV_{i,t}$: ratio between short-term and long-term debts to total assets for the firm i in the year t;

$ROA_{i,t}$: ratio between net income and total assets for the firm i in the year t;

$OWN_{i,t}$: the percentage of stocks hold by the largest shareholder for the firm i in the year t;

$AUD_{i,t}$: dummy variable that equals to one if a firm is audited by one of the Big 4 auditors and zero otherwise for the firm i in the year t;

$ADR_{i,t}$: dummy variable that equals to one if a firm is cross-listed in the United States via an American Depositary Receipt (ADR) and zero otherwise for the firm i in the year t;

$Trading_{i,t}$: natural logarithm of the average weekly trading volume of the firm i in the year t;

$IND1_i$: dummy variable that equals to one if the firm i is from the sector of Consumer Goods or Consumer Services;

$IND2_i$: dummy variable that equals to one if the firm i is from the sector of Health Care or Telecommunications;

$IND3_i$: dummy variable that equals to one if the firm i is from the sector of Utilities.

If α_1 is negative and statistically significant, it means that in the post-adoption period the stock price synchronicity is lower, in general. In order to capture the effect on the transition period (2008 and 2009) we also add a variable that refer to this period. α_2 has the same interpretation as α_1.

4 Empirical Results

4.1 Descriptive Statistics and Univariate Results

Table 2 presents descriptive statistics (mean, median and standard deviation) of the variables included in our analysis for all firms together, segregated by period (pre-adoption period, transition period and post-adoption period).

[TABLE 2 HERE]

Analyzing Table 2 is possible to notice that the mean of synchronicity have increased from the pre-adoption period to the transition period and then have decreased in the post-adoption period. Analyzing just these descriptive statistics, we could conclude that synchronicity has increased (pre-adoption mean = -0.55 and post-adoption mean = -0.51). However, in the same way, other variables, as *ROA*, *SIZE*, *GROWTH* and *Trading* have also changed and, these changes may have influenced the mean of synchronicity. Thus, the mean of synchronicity may have increased (comparison of the pre and post-adoption period), just because of an increase in the trading volume, for example.

Seeking to verify if the difference in these variables is statistically significant we have performed a test for mean differences (ANOVA one factor, performed with 5% of significance). Table 3 shows the results for the univariate tests for mean differences among the three periods (pre-adoption, transition and post-adoption period).

[TABLE 3 HERE]

In spite of the mean of synchronicity have apparently increased, from the pre-adoption to post-adoption period (from -0.55 to -0,51), as mentioned above, the difference of synchronicity among the three periods is insignificant. Considering the control variables, the variables *SIZE*, *ROA* and *Trading* have, at least one mean different between the periods.

The mean of *SIZE* have increased when we compare the pre-adoption period with the post-adoption period. The mean of the return on assets (*ROA*) have also increased from the pre-adoption period to the transition period and to the post-adoption period too.

In the same way, the variable *Trading* has presented a significant increase during the period. The increase seen on synchronicity may be just because the increase on these factors, not because less amount of firm-specific information incorporated on the stock price. It demonstrates the importance to consider these control variables in our analysis. All the other variables do not present significant variation.

Table 4 presents the Pearson correlations between the pair of variables included in our regression. This analysis demonstrates several key relations. First, synchronicity is positively and significantly, associated with the firms' size and the trading volume. It demonstrates that synchronicity may increase just because of the volume of trading during the period. The literature shows that bigger firms have more incentives to be transparent. However, in Brazil, bigger firms are the most traded ones and, consequently, have bigger weight on the Stock Exchange Index (on Table 4 we see that these two variables are positively and significantly correlated). Therefore, their returns tend to be more correlated with the index returns. On the other hand, synchronicity is negatively, and significantly, correlated with *GROWTH* and *LEV*. Firms with greater leverage have a greater dependence of external financial (debts) and thus, need to be more transparent to get the fund. In the same way, firms that are growing also have incentives to be transparent.

[TABLE 4 HERE]

Table 5 shows the percentage of firms that are audited by one of the Big Fours and that issue ADR, separated by sectors. Almost all firms are audited by Big Four and a significant number have issued ADR, which may be considered as an incentive to these companies be transparent.

[TABLE 5 HERE]

4.2 Regression Results

Table 6 presents the regression results. Despite the univariate analysis has showed that the mean of synchronicity has not presented a significant change by itself, the joint analysis of all variables shows that synchronicity have decreased in the transition period and in a more intense way in the post-adoption period. Regarding the control variables,

we see that bigger firms present more synchronicity and firms that have been presenting growing sales have, in general, less synchronicity. We also see that firms that are more traded present more synchronicity. It is important to notice that if this variable is left out of the regression both dummies of the transition and the post-adoption are no longer significant. The univariate analyses have showed that the trading volume has significantly increased, so it is a very important variable to be considered on the analysis.

[TABLE 6 HERE]

The regression results support the view that IFRS adoption has provided a better informational environment, more transparent and with higher quality, which have allowed more firm-specific information to be incorporated on stock prices, reducing stock price synchronicity. That is, under IFRS, the firm-specific information have gained importance when compared to market-wide information.

Thus, our findings supports the first stream of research mentioned and are in line with Kim and Shi (2012), Gul et al (2010), Jin and Myers (2006), Brüggemann et al (2013) and Veldkamp's (2006), which believe that the enhanced disclosures via IFRS adoption contributes to facilitates the flow of higher quality firm-specific information into the market at no additional cost to investors that become to rely more on this kind of specific information than on market-wide information, reducing stock price synchronicity. Our results apparently contradicts what Dasgupta et al (2010) and Beuselinck et al (2010) argue about the improvement of market participants' predictions that would increase synchronicity. This may be due to a failure on market efficiency or to the fact that we have analyzed only three period after the mandatory-adoption.

It is important to notice that we have analyzed mandatory adoption, a period considered by only few studies. Kim and Shi (2012) have mentioned that voluntary adoption could be viewed as a firm's strategy to enhance disclosure while mandatory adoption is a country-level regulatory event. This thought could lead to a less impact (or even no impact at all) of mandatory adoption on stock price synchronicity. In addition, although Beuselinck et al (2010) study the impact of mandatory adoption, these authors find that the synchronicity reduces only in the transition period, and increase during the mandatory adoption. However, our results show that mandatory adoption do decrease synchronicity and in a more intense way that transition period; that is, IFRS can improve the information environment even when it is imposed by a regulatory act. However, as

mentioned before, the post-adoption period have only comprised three years, so the reduction may persist, according to the view of Jin and Myers (2006), or not last and in fact turn into a increase, according to the view of Dasgupta et al (2010).

5 Concluding Remarks

This paper aimed to verify whether IFRS adoption has improved the informational environment on Brazil and how stock prices have reacted to it. Our results indicate that IFRS adoption in Brazil has reduced stock price synchronicity and, consequently, increased resource allocation and potential portfolio diversification efficiency. Our findings support the view that IFRS adoption, through higher quality information, facilitates firm-specific information flows into the market, improving the information environment, and, thus, reducing stock price synchronicity.

There are divergences in the literature about how IFRS adoption affects synchronicity in countries with poorer institutions. Our results are in line with what Kim and Shi (2012) have pointed. Brazil present a relative low enforcement environment and investor protection comparing to developed countries, as well as other emerging countries (La Porta et al, 1998) and, even then, the stock price synhcronicity reduces with IFRS adoption. We have only analyzed Brazil but the results might be similar for other emerging countries. However, futures researches should analyze other countries.

We have analyzed three periods: pre-adoption period (2005 to 2007), transition period (2008 and 2009) and post-adoption period (2010 to 2012). Thus, this analysis provided information about the impact on the stock price synchronicity both at transition period and mandatory adoption. The results demonstrated that synchronicity have reduced and in a more intense way in the post-adoption period than in the transition period. This finding may be due to the fact that a greater number of companies are using IFRS, considering that it is mandatory in the post-adoption period and, in addition, those companies that had anticipated de IFRS adoption on transition period have improved the practice of the new standard over the time.

It is also important to mention that Brazilian companies have adopted full IFRS since 2010 and, therefore, these results may change in the future, after a potential learning process. However, we see that reduction of synchronicity is more pronounced in the post adoption period than it is in the transition period.

In addition, although we have included a set of control variables in order to isolate the effect of IFRS adoption, it is not guaranteed that the decrease on stock synchronicity is due to the change in the reporting system. There might be other factors that we have not included in our analysis.

Our results are important because they highlight the macroeconomic importance of the financial reporting system and show that investment conditions in Brazil have improved, opening better opportunities for foreign investments on the country, contributing to financial globalization and market integration.

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Table 1: Number of Firms and Observations by sectors

Sector	Number of firms	Number of observations
Oil & Gas	2	13
Basic Materials	10	72
Industrial	6	39
Consumer Goods	11	74
Health Care	1	6
Consumer Services	7	45
Telecommunications	3	22
Utilities	11	71
Total	51	342

Table 2: Descriptive Statistics

	SYN	SIZE	GROWTH	LEV	ROA	OWN	ADR	AUD	Trading
PRE-ADOPTION PERIOD									
Mean	-0.55	15.94	605.55%	2.06	6.94%	34.90%	0.43	0.96	7.39
Median	-0.41	16.00	11.57%	1.85	5.20%	31.89%	0.00	1.00	7.75
Standard Deviation	0.81	1.41	5448.85%	1.00	6.81%	18.90%	0.50	0.20	1.73
TRANSITION PERIOD									
Mean	-0.38	16.13	32.84%	2.22	4.00%	36.68%	0.42	0.96	8.47
Median	-0.32	16.21	10.86%	1.79	4.19%	31.62%	0.00	1.00	8.77
Standard Deviation	0.66	1.33	122.75%	2.10	10.99%	18.73%	0.50	0.21	1.71
POST-ADOPTION PERIOD									
Mean	-0.51	16.52	22.14%	1.98	4.05%	31.50%	0.43	0.96	9.60
Median	-0.49	16.44	13.18%	1.80	3.29%	29.92%	0.00	1.00	9.68
Standard Deviation	0.50	1.22	37.69%	1.12	6.95%	16.8%	0.50	0.20	1.18

Table 3: Results for univariate test for mean differences among the three periods

Variables	P-value	Conclusion	Analysis
SYN	0.185	There is no mean differences among the periods	-
SIZE	0.002	At least one mean is different	Mean between pre and post is different
GROWTH	0.256	There is no mean differences among the periods	-
LEV	0.420	There is no mean differences among the periods	-
ROA	0.012	At least one mean is different	Mean from pre adoption is different in comparison to the mean from transition and post period
OWN	0.077	There is no mean differences among the periods	-
ADR	0.990	There is no mean differences among the periods	-
AUD	0.990	There is no mean differences among the periods	-
Trading	0.000	At least one mean is different	There is difference of the mean value among the three periods

Table 4: Pearson Correlation Matrix

	SYN	SIZE	GROWTH	LEV	ROA	OWN	ADR	AUD	Trading
SYN	1	0.337	-0.153	-0.054	0.089	0.040	0.072	0.012	0.597
P-value		0.000**	0.005**	0.322	0.099	0.463	0.184	0.831	0.000**
SIZE	0.337	1	-0.138	-0.082	0.066	0.131	0.523	0.044	0.407
P-value	0.000**		0.011**	0.129	0.226	0.016*	0.000**	0.421	0.000**
GROWTH	-0.150	-0.138	1	0.070	-0.085	-0.036	-0.052	0.012	-0.031
P-value	0.005**	0.011*		0.196	0.115	0.505	0.340	0.831	0.571
LEV	-0.054	-0.082	0.070	1	0.007	0.170	-0.067	0.011	-0.061
P-value	0.322	0.129	0.196		0.890	0.002**	0.217	0.838	0.262
ROA	0.089	0.066	-0.085	0.007	1	0.101	0.082	-0.111	-0.030
P-value	0.099	0.226	0.115	0.890		0.062	0.131	0.040*	0.579
OWN	0.040	0.131	-0.036	0.170	0.101	1	0.179	-0.006	-0.057
P-value	0.463	0.016*	0.505	0.002**	0.062		0.001**	0.918	0.297
ADR	0.072	0.523	-0.052	-0.067	0.082	0.179	1	-0.059	0.112
P-value	0.184	0.000*	0.340	0.217	0.131	0.001**		0.276	0.038*
AUD	0.012	0.044	0.012	0.011	-0.111	-0.006	-0.059	1	-0.033
P-value	0.831	0.421	0.831	0.838	0.040*	0.918	0.276		0.544
Trading	0.597	0.407	-0.031	-0.061	-0.030	-0.057	0.112	-0.033	1
P-value	0.000**	0.000**	0.571	0.262	0.579	0.297	0.038*	0.544	

Table 5: Percentage of Firms that are audited by Big 4 and issue ADR

	AUD	ADR
Oil & Gas	100%	62%
Basic Materials	100%	50%
Industrials	100%	18%
Consumer Goods	92%	30%
Health Care	100%	0%
Consumer Services	100%	31%
Telecommunications	100%	100%
Utilities	89%	54%

Table 6: Regression Results

Dependent Variable: SYN	Coeficient	P-Value
Intercept	-3,4225	0.0000 ***
Post	-0.5466	0.0000 ***
Trans	-0.1253	0.0439 **
SIZE	0.0619	0.0815 *
GROWTH	-0.0028	0.0002 ***
LEV	-0.0096	0.6098
ROA	0.5674	0.1064
OWN	0.0027	0.1525
AUD	0.0148	0.9381
ADR	-0.1038	0.2159
Trading	0.2572	0.0000 ***
IND1	-0.0523	0.5817
IND2	-0.1161	0.4426
IND3	-0.3075	0.0033 ***

N: 342

Adj. R Squared: 0.44193

F Statistics: 21.5604; P-Value: 0.0000 ***

*** Significant at 0.01 level; ** significant at 0.05 level; * significant at 0.10 level
Obs: The results are from a random effects panel model (according to Chow Test, Hausman Test and Breusch-Pagan LM Test).