• RAM, REV. ADM. MACKENZIE (*Mackenzie Management Review*), *17*(5) • SÃO PAULO, SP • SEPT./OCT. 2016 •
• ISSN 1518-6776 (printed version) • ISSN 1678-6971 (electronic version) • http://dx.doi.org/10.1590/1678-69712016/administracao.v17n5p85-109. •
Submission: Aug. 9, 2014. **Acceptance:** May 29, 2016. **Evaluation system:** *double blind review*. UNIVERSIDADE PRESBITERIANA MACKENZIE.
Silvio Popadiuk (Editor), Michele Nascimento Jucá (Associate Editor), p. 85-109.

CORPORATE GOVERNANCE AND CAPITAL STRUCTURE IN BRAZIL: STOCK, BONDS AND SUBSTITUTION

ALEXANDRE RIPAMONTI
Doctor in Business Administration from the Center of Applied Social Sciences at the Universidade Presbiteriana Mackenzie (UPM).
Post-doctor and Researcher for the School of Economics, Business Administration and Accounting at the Universidade de São Paulo (USP).
Rua Itapetininga, 34, Cidade Parquelandia, Mogi das Cruzes – SP – Brasil – CEP 08771-910
E-mail: *ripamonti@usp.br*

EDUARDO KAZUO KAYO
Doctor in Business Administration from the School of Economics, Business Administration and Accounting at the Universidade de São Paulo (USP).
Full professor for the School of Economics, Business Administration and Accounting at the Universidade de São Paulo (USP).
Avenida Luciano Gualberto, 908, Butantã, São Paulo – SP – Brasil – CEP 05508-010
E-mail: *kayo@usp.br*

ABSTRACT

Purpose: To study the Brazilian bond and stock markets for testing the stock market development theory of Demirgüc-Kunt and Maksimovic (1996).
Originality/gap/relevance/implications: This paper tests the substitution hypothesis of stock market development, from debt to stocks, in a context of improved corporate governance, by analyzing the data with cointegration techniques. The findings show that the rejection of substitution hypothesis, as the bond market has a positive and significant association with stock market improvements. The findings also show that improving the quality of corporate governance could lead equity capital and borrower capital sources to be complementary and not substitutes, suggesting that Brazilian stock market reform has created a virtuous development cycle.
Key methodological aspects: Positivist research using quantitative methodology. Data from a sample of 171 firms during 20 years, analyzed with cointegration. The null was a negative association between bond and stock markets.
Summary of key results: Null rejection, non-consistent to theoretical framework. The results have shown a positive and significant association between stock and debt in an improved corporate governance context.
Key considerations/conclusions: Improving the quality of corporate governance could lead equity capital and borrower capital sources to be complementary, and not substitutes, suggesting that Brazilian stock market reform has created a virtuous development cycle.

KEYWORDS

Stock market development. Bond market development. Capital structure. Corporate governance. Bond and stock complementarity hypothesis.

1 INTRODUCTION

As a company's growth leads to greater capital needs, managers can issue stocks. For this purpose, there is a dispersion of ownership and a consequent dilution of control among many agents. Managers or majority shareholders lose some control over the company's decisions, but maintain control through other means when compared to minority shareholders. This can affect the return for minority shareholders or investors. Several corporate governance mechanisms, including legal ones, have been developed in order to help minority shareholders avoid losses and to improve the disclosure of information and protection of investors, especially individuals. Corporate governance has the main goal of diminishing the asymmetric information between managers and investors, which can be accentuated with the dispersion of capital ownership as a natural consequence of stock market development (Jensen & Meckling, 1976).

However, stock market development could lead to the retraction of bank and bond markets. The more companies have access to a stock market, the more the bank and bond markets diminish their operations, considering the limits on investment projects. In general, the literature has shown an association between stock market and bond market development (Demirgüc-Kunt & Maksimovic, 1996). Such an association is negative for developed stock markets and positive for developing stock markets, but the positivity is only valid for bigger companies. This evidence appears to contradict other authors, such as Booth, Aivazian, Demirgüc-Kunt and Maksimovic (2001) who claim that the financial choices of companies in developed and developing stock markets are very similar. Thus, the empirical evidence is non-conclusive.

The rational expectations theory of Muth (1961), along with the capital structure irrelevance theory of Modigliani and Miller (1958), the trade-off theory of Modigliani and Miller (1963), and the pecking order theory of Myers (1984; Myers & Majluf, 1984) allow us to question whether there would actually be a substitution of bonds by stocks when a stock market develops. Under the rational expectations theory, only future interests determine the prices of stocks and bonds (Muth, 1961; Fisher, 1896; Fama, 1970), while the debt-equity relationship would be irrelevant or generated by other variables (Modigliani & Miller, 1958, 1963; Myers, 1984; Myers & Majluf, 1984), not necessarily depending on stock market development.

Although other theories contradict the association between financial choices and the level of stock market development, countries around the world adopted rules for developing stock markets. Improvements included increasing the quality of information, protecting minority shareholders, and creating different

• RAM, REV. ADM. MACKENZIE (*Mackenzie Management Review*), *17*(5), 85-109 •
SÃO PAULO, SP • SEPT./OCT. 2016 • ISSN 1518-6776 (printed version) • ISSN 1678-6971 (electronic version)

listing segments (Reed, 2002; Mallin & Ow-Yong, 2010). In Brazil, corporate governance reform created the listing segment *NovoMercado*, with significant improvements in information disclosure and shareholder protection (Rabelo & Vasconcelos, 2002). Consequently, the hypothesis is that the growth of the Brazilian stock market and corporate governance reform would reduce the size of the bond market.

The private and state-owned Brazilian banks possibly have a significant share of companies' long-term loans, whether as direct agents, business intermediaries, or bond issuance advisors or leadership dealers. Through the substitution hypothesis, the profitability of banks would be affected by the reduction of operations. In addition to to this scenario, banks would lobby in order to guarantee profits. By deduction, it is expected that Brazilian banks put up a tough opposition to stock market development and sponsor movements for impeding it.

Studying the consistency of stock market development in Brazil allows us to consider the effects of corporate governance reform, and theories of rational expectations and capital structure. For this reason, this study aims to examine the association between debt and equity in such a context. Using data from 1993 to 2013, 171 Brazilian public companies were analyzed with cointegration techniques (Johansen, 1988; Johansen & Juselius, 1990; Johansen, 1991). The results show that the Brazilian corporate governance reform has stimulated both stock and bond markets in a complimentary movement between debt and equity for companies that moved to or were created in the *NovoMercado* listing segment. The findings reject the substitution hypothesis in Brazil.

The next section details studies on stock market development. The third section presents the methodology, including sampling and econometric models. In the fourth section, the results are compared with those of other studies and with the suppositions of the capital structure theory. The last section presents some concluding remarks.

2 THEORETICAL FRAMEWORK

From a macroeconomic perspective, these studies relate stock market development to economic growth, liberalization, corporate governance reform and financial choices of companies.

Jensen (1972) revised and discussed the models and theories that tried to explain stock market returns, and found that models with market factors explained returns more accurately.

At the company level, Demirgüc-Kunt and Maksimovic (1996) studied the financial choices and stock market development in 30 developed and developing

countries from 1980 to 1991. The results indicated that, in general, a company's leverage is positively associated with bond markets and negatively (although non-significantly) with stock market development. For this reason, the paper could be considered to be a seminal work in stock market development theory. However, when segregating the sample, the authors identified the substitution of bonds by stocks in developed countries and an increasing leverage for the biggest firms in developing countries as the stock market developed.

Otherwise, small companies in developing countries were not affected by the improvement of the stock market. From this observation, the authors hypothesized a substitution of bonds by stocks in developed countries, which became central in the stock market development theory.

Demirgüc-Kunt and Levine (1996) found a strong correlation between stock market development and the banking market in most of the 44 developed and developing countries of their sample, from 1986 to 1993. The authors also highlighted the relevance of corporate governance on liquidity and volatility in the stock markets. Thus, the stock market development theory was improved with the inclusion of effects of corporate governance mechanisms and the behavior of developing stock markets.

Levine and Zervos (1996) observed a positive association between stock market development and long-term economic growth in a sample of 41 countries from 1976 to 1993, using the stock market development measures of Demirgüc-Kunt and Levine (1996). In this study, institutional and macroeconomic characteristics also emerged as relevant variables in the behavior of bond and stock markets.

For Demetriades and Hussein (1996), the findings about an association between economic growth and stock market development are not consistent when analyzed with different analysis techniques. The economic growth and stock market development were found to be positively related, or at least the former would have a positive effect on the latter. The result was obtained through cointegration and causality techniques for a sample of 16 countries. Authors argued that inappropriate techniques were the main weaknesses of other studies. Although correct in challenging other findings, such a study nonetheless adheres to stock market development theory because it doesn't reject the inverse relationship between bonds and stocks.

De Santis and Imrohoroglu (1997) didn't observe any association between market liberalization, which includes stock market development, and stock price volatility in the developing stock markets of Europe, the Middle East, Asia, and Latin America from 1988 to 1996.

However, contrary evidence was gathered by Levine and Zervos (1998), who observed that stocks tended to increase in value while gaining liquidity,

volatility, and integration after liberalization. Beyond that, the authors found that increasing international integration is experienced by countries with better information disclosure. The results prove the relevance of corporate governance mechanisms, as did Bekaert, Harvey and Lundblad (2005), who found that liberalization of stock markets increases annual economic growth by 1%. Levine and Zervos (1998) later found resistance from Stiglitz (2000), who claimed that liberalization doesn't affect stock markets.

Rajan and Zingales (1998) assumed that a country's financial development would reduce the cost of capital, allowing financially constrained companies to grow faster in countries with more developed financial markets. For a sample of 41 countries from 1980 to 1990, authors found their hypotheses to be supported. Such evidence strengthens the idea that stock market development decreases the cost of capital.

Wurgler (2000) pointed out the positive association between the legal protection of minority shareholders and the efficient allocation of capital in companies. For Bekaert, Harvey and Lumsdaine (2002), however, the new rules only produced changes for stock market development if they allowed the entrance of foreign capital.

Rousseau and Wachtel (2000) examined stock market development and income of countries *per capita*, concluding stock market development requires such internal resources.

Beck, Levine and Loayza (2000) found a positive and significant association between financial intermediary development and economic growth, productivity, tangibility, and private savings rates. It is relevant to the analysis, considering that stock market development could be related to the increase in volume and liquidity of shares of financial intermediaries or banks, as in Kominek (2004).

Perotti and Van Oijen (2001) argue stock market development is determined by political risk that arose from selling state owned enterprises. The sample gathered 22 countries from 1988 to 1995. Institutional characteristics were identified as relevant variables for controlling the association between stocks and bonds.

Edison, Levine, Ricci and Slok (2002) weren't able to reject the null hypothesis that economic integration doesn't increase the speed of economic growth, analyzing data in a dynamic panel of 57 countries. Conversely, Beck and Levine (2004) reported that economic growth was influenced by the stock and bond market development, as did Tachiwou (2010) when analyzing the countries of the West African monetary union.

Chinn and Ito (2006) argue that increasing liberalization leading to increasing stock market development would only hold if legal development was also achieved. Therefore, the institutional variable is highlighted once again between stocks and bonds.

Mitton (2006) found higher stock return, investment, profitability, efficiency, and lower leverage rates in countries with foreign direct investments.

In Belgium, Van Nieuwerburgh, Buelens and Cuyvers (2006) found stock market development determined economic growth and such a relationship varies over time due to institutional changes, consistent with the findings of other studies.

De la Torre, Gozzi and Schmukler (2007) analyzed the impact of corporate governance reforms on stock market development in six countries and found the reforms also stimulated internationalization and increased share values and trading, but increased the risk of contagion from international financial crises.

Klein and Olivei (2008) found a significant and economically relevant association among liberalization, financial development, and economic growth from 1976 to 1995 in 95 countries.

Hasan, Wachtel and Zhou (2009) found that financial companies stimulated Chinese provinces' economic growth, showing a lack of other funding sources.

Croci and Petmezas (2010) found that stock market development is associated with the target minority shareholders' return in mergers and acquisitions operations for scale purposes.

Finally, the substitution hypothesis has been extended to developing countries in Demirgüc-Kunt, Feyen and Levine (2013). They observed 72 countries from 1980 to 2008 and found that stock and bond markets develop slowly with economic growth, but in different ways. The bond market shrinks whilst the stock market increases. The authors applied a quantilic regression for analyzing the data.

3 METHODOLOGY

In general, finance research could be classified as positivist or post-positivist, according to Creswell (2007, p. 36) because they

> [...] use surveys or experiments, with methods of numerical data analysis, testing and checking theories or explanations, identifying variables, which are reported in hypothesis, using standards of validity and reliability, through numerical measurement of information, with the application of unbiased methods and statistical procedures.

This study is similarly focused on validity and reliability, as well as replication and generalization, when testing the stock market development theory and the respective substitution hypothesis.

The main purpose of this research is to examine the relationship between the stock market value and the debt of Brazilian companies. It takes into account the Brazilian corporate governance reform (Rabelo & Vasconcelos, 2002), and the possibility that stock market development has shrunk the bond market, as mentioned in other studies (Demirgüc-Kunt & Maksimovic, 1996; Booth *et al.*, 2001; Demirgüc-Kunt, Feyen, & Levine, 2013).

The hypothesis is that there is complementarity of funding sources between stock and bond markets and not substitution when considering corporate governance reform in Brazil.

The sample is made out of 171 Brazilian public companies from the 2nd quarter of 1994 to 1st quarter of 2013. The analysis was performed for the full sample and two subsamples, one of them for *NovoMercado* and another one for the other listing segments. The data was obtained from a local financial database named *Economática* and the models were estimated using *Stata*.

Since the Brazilian corporate governance reform in 2000 (Rabelo & Vasconcelos, 2002), there are four listing segments, with *NovoMercado* being the one that requires companies to provide full information disclosure and shareholder protection. The sample contains 91 companies from the traditional listing segment, 18 from the N1, 7 from the N2 and 55 from the *NovoMercado*. The companies combine 20 different activities, with utilities (28) and transportation (27) having the biggest part of the sample.

The sample excluded banks and financial institutions, as well as companies with less than 50 quarters of data or without debt data.

Data on debt, stock market value, debt on equity, return, size, tangibility, and growth of companies was gathered, as shown in Chart 1. From the sum of firm-level variables, full data was obtained for applying cointegration techniques.

The association between debt and stock market value was analyzed as was the relationship between leverage and return. In both cases, the coefficients were controlled in terms of sizing, tangibility, and growth, as they are traditional determinants of capital structure (Titman & Wessels, 1988).

Chart 1

VARIABLES DESCRIPTION

VARIABLE	DESCRIPTION	SOURCE	REASON
Debt on Equity (D/E)	Total debt scaled on stock market value	Economática	Leverage, representing bond and stock market development (Demirgüc-Kunt & Maksimovic, 1996)

(continue)

Chart 1 (Conclusion)

VARIABLES DESCRIPTION

VARIABLE	DESCRIPTION	SOURCE	REASON
Return (Ret)	Stock market value on lagged stock market value	Economática	Stock market development measure (Demirgüc-Kunt & Maksimovic, 1996)
Debt (D)	Total debt	Economatica	Bond market development measure (Demirgüc-Kunt & Maksimovic, 1996)
Market capitalization (Mcap)	Stock market value	Economatica	Stock market development measure
Size (S)	Logarithm of total sales	Economatica	Control variable (Titman & Wessels, 1988)
Tangibility (Tang)	Property, plant and equipment on total assets	Economatica	Control variable (Titman & Wessels, 1988)
Growth (G)	Market value of enterprise on total assets	Economatica	Control variable (Titman & Wessels, 1988)

Source: Elaborated by the authors, upon the premises of Demirgüc-Kunt and Maksimovic (1996) and Titman and Wessels (1988).

The mean of debt on equity in the full sample is 19.29 per cent, with 47.31 per cent for *NovoMercado* and 19.34 per cent for the rest of listing segments, as shown in Table 1. The aggregate data presents a more accurate relationship between debt and stock market value, as shown in Table 2, and allows the observation that leverage on the *NovoMercado* is significantly higher than other listing segments, as Chart 1 shows.

The *NovoMercado* also presented lower tangibility and higher growth than other segments, as shown in Table 1, which suggests that the higher leverage of the segment could be linked to growth opportunities.

Table 1

DESCRIPTIVE STATISTICS

VARIABLE	OBS	MEAN	STD. DEV.	MIN	MAX
COMPLETE SAMPLE					
D	80	27031,67	59752,81	0	199120,6
Mcap	80	305092,8	330401,1	125,0934	1030710
D/E	80	0,1929855	0,2660535	0	1,208206
Ret	79	10,34699	58,40298	0,0029442	406,3346
S	79	7,303214	3,813907	2,190773	12,82549
Tang	79	106,0721	195,1595	1,321277	544,8085
G	79	1,238983	0,5080306	0,0033429	2,34789
NOVOMERCADO					
D	80	42,76305	52,68383	0	179,8991
Mcap	80	104,1658	115,9877	1,781375	339,2237
D/E	80	0,4731749	0,392733	0	2,307404
Ret	79	1,098249	0,2637436	0,512116	2,077643
S	79	2,570925	1,904365	-1,85915	5,368668
Tang	79	0,3433495	0,0927787	0,1839566	0,5827093
G	79	2,195123	3,185442	0,3666426	14,10159
OTHER SEGMENTS					
D	80	26988,9	59708,33	0	199084
Mcap	80	304988,6	330289,4	123,2232	1030445
D/E	80	0,1934474	0,2691429	0	1,243467
Ret	79	11,116	63,17201	0,0026851	435,8956
S	79	7,254973	3,844536	2,173196	12,82492

(continue)

Table 1 (Conclusion)

DESCRIPTIVE STATISTICS

VARIABLE	OBS	MEAN	STD. DEV.	MIN	MAX
OTHER SEGMENTS					
Tang	79	0,4634454	0,2581408	0,001739	0,7608917
G	79	1,231889	0,5048354	0,0032033	2,348201

Note: Table 1 presents the mean, standard deviation, and the maximum and minimum figures of each variable analyzed in this study. The variables are presented on an aggregate level, which is the sum of firm-level figures. Variables details are presented in Chart 1.

Source: Elaborated by the authors.

The five possible models of Johansen's cointegration (Johansen, 1988; 1991) were developed in the sample data. The cointegration is observed among non-stationary variables that relate to one another through residuals in the long run and have a short-run mechanism for error correction.

In this sense, the difference among applied models refers to the existence of an intercept or trend and drift in the long and short-run relationship equations, as well as in the specification of linearity of the trend or even in both (Asteriou & Hall, 2011).

Therefore, the different models allow us to check whether relationship variables stay smooth over time or assume several different shapes, which would be translated into equation coefficients. In Table 2, the five model estimates for all the samples, and the long-run relationship equations, including coefficients and statistical significance are presented.

The simplest model, although improbable, suggests that there is neither an intercept nor a trend in the long-run or short-run relationship with the assumption that there are no deterministic components in the data.

The second model is an intercept only in the long-run relationship. Therefore, there are no linear trends in the data and the intercept is restricted to the long run, with first differences having a zero mean.

The third model has a long-run intercept that is cancelled out by the intercept in the short-run relationship, without linear trends in the level variables, while the specifications are allowed to drift around an intercept.

The fourth includes a trend in the long run with an intercept, which is also allowed in the short run without trends.

The last model allows for linear trends in the short-run model and quadratic trends in the long-run relationship (Asteriou & Hall, 2011).

An estimation of the five alternative models was conducted to determine the best specification and to check whether the changes would have more impact on

the sense and significance of association among stock market values and debt. Relevant differences could indicate bias in the model specification.

Cointegration techniques have been chosen for their many advantages: their ability to measure the correction from disequilibrium of the previous period; the solution they provide to the problem of spurious regression as the error correction mechanisms are formulated in terms of first differences; the ease in econometric modeling and the prevention of increases in long-run relationship errors (Asteriou & Hall, 2011, p. 359). The cointegration techniques are also based on an attempt to validate other findings acquired through time series methods.

The variables' stationarity was tested, along with the appropriate lag length of the relationship among the variables, the best specification among the five possible models, the rank of cointegration, and the long-run and short-run relationship equations. The next section presents the coefficients of long-run relationship, which serves for testing the null hypothesis.

One could consider the omission of the maximum likelihood specification used in the research, and the demonstration of normal distribution of data, as restrictions for this paper. However, such an eventual restriction is likely to be mitigated through the rigorous application of all cointegration techniques' procedures preconized by Johansen (1988; 1991), in a way that the identification of the parameters shown in Table 2 were not misstated. This identification required that the debt variable was normalized to 1. Additionally, Table 1 shows the description of all variables.

4 RESULTS AND DISCUSSION

As presented in Table 1, the mean leverage of *NovoMercado* was higher (47.31 per cent) than the full sample (19.29 per cent) and the rest of segments (19.34 per cent).

The *NovoMercado* was marked by higher growth and lower tangibility, as highlighted in Table 1, reinforcing the growth opportunities set as capital structure determinants.

Most specifications of the cointegration models were made using the stationarity checking and information criteria of Akaike (1974) and Schwartz (1978), except for the rank of cointegration, which was determined using the maximum likelihood and trace tests.

The findings were compared with those of the reviewed literature, which was directly related to stock market development theory. In addition, Table 2 shows only the long-run relationship equations, the respective statistical significance, and the maximum likelihood and trace test's results. Time series causality tests weren't developed due to the focus on the long-run and short-run relationship estimates and not on the positioning of variables in a single vector autoregressive. The possibility of spurious regression is solved by the stationarity of the error correction mechanism term, as already noted.

The null substitution hypothesis was rejected for the *NovoMercado*. Table 2 shows that all the models which considered debt presented a positive association between debt and stock market value, with strong significance in most of them and with the tests pointing out the correct specification of the models that were controlled by traditional determinants of capital structure.

Such a finding is contrary to those of Demirgüc-Kunt and Maksimovic (1996), Booth *et al.* (2001), and Demirgüc-Kunt *et al.* (2013), which found a retraction of bond markets with the expansion of the stock market. These authors argue that the bigger companies would benefit from stock market development in developing countries and that the economic growth would generate a retraction of bond markets in developed and developing countries.

The rejection of the hypothesis becomes more clear when the coefficients of different samples are matched. The observed association for the full sample and the rest of the segments' samples is negative and significant, except for the restricted model, which should be taken cautiously (Asteriou & Hall, 2011).

Whilst all the models point out complementarity between debt and stock market value for the companies belonging to the *NovoMercado*, the opposite (substitution) is observed in the segments where there would be less disclosure and shareholder protection.

Analyzing the size effect, the argument that bigger companies would have benefits from stock market development in the presence of developing stock markets (Demirgüc-Kunt & Maksimovic, 1996) was not fully validated, because the size variable presented negative impacts in the *NovoMercado* compared to most models. The negative impact appears not only to reject the suggestion of a supposed benefit, but also to suggest an advantage of smaller companies within *NovoMercado*.

The findings are not consistent with the observation of Titman and Wessels (1988) that smaller companies would have higher bond and stock issuing costs and would use mainly short-term debt.

The comparison of the findings for *NovoMercado* with those of other samples amplifies their relevance. In other samples, the positive and significant association between size is strongly observed, confirming the results of other studies (Demirgüc-Kunt & Maksimovic, 1996; Booth *et al.*, 2001; Demirgüc-Kunt *et al.*, 2013; Titman & Wessels, 1988), which have indicated the importance of size for obtaining benefits from stock market development.

The positive association between bond and stock markets also is consistent with the irrelevance of capital structure theory (Modigliani & Miller, 1958), as the simultaneous issuance of debt and stocks would be irrelevant for the stock market value. On the other hand, the positive association is not consistent with the trade-off (Modigliani & Miller, 1963) and pecking-order (Myers, 1984; Myers & Majluf, 1984) theories, which hold the expansion of bond markets against stock market development, in the presence of tax shields and asymmetric information.

Asymmetric information appears to be relevant in the findings. The different sense for the variables in the *NovoMercado* and other samples could indicate that the corporate governance reform allowed better information disclosure and shareholder protection, as observed in studies where the relevance of shareholder protection acts were relevant for stock market development (Demirgüc-Kunt & Levine, 1996; Wurgler, 2000; De la Torre, Gozzi, & Schmukler, 2007; Levine & Zervos, 1998).

The tangibility variable doesn't show any association, for the full sample or the other segments' samples. The argument of Titman and Wessels (1988), that more tangibility leads to more favorable conditions for borrowers, leading companies to issue stocks, was not found to be significant, although a positive and marginally significant direction had been observed in those samples. The opposite, however, was observed for *NovoMercado*, were less tangible companies were related positively and significantly to stock market development, which confirms their argument (Titman & Wessels, 1988).

The growth variable presented a negative and significant association in most models of *NovoMercado,* but non-significant for the full sample and other segments. Such a result lends consistency to the argument of Titman and Wessels (1988) that growth would be negatively related to capital structure, even it seems contradictory to the result of the tangibility variable, which could also represent existing growth opportunities.

Additionally, such a result is not consistent with the studies that observed positive association between stock market development and economic growth (Levine & Zervos, 1996; Rousseau & Wachtel, 2000; Beck, Levine & Loayza, 2000; Tachiwou, 2010; Demirgüc-Kunt *et al*., 2013). However, they are consistent with the findings of Demetriades and Hussein (1996), although they refute the argument that inadequate chosen techniques by the cointegration.

The models' analysis of cointegration between leverage and return has relevant aspects, such as the fact that the debt and stock market value, directly measured, seem to better reflect the bond and stock market development.

According to the rank of cointegration that was found through maximum likelihood and trace statistics, neither of the models where leverage and return are have only one cointegration vector, instead of the quantity used in the estimates.

Otherwise, the perfect specifications were obtained for debt and stock market value where the trace and max statistics presented only one rank of cointegration, once the results indicated the existence of a rank (Asteriou & Hall, 2011).

In all samples, the return presented a negative and significant association with the leverage of companies, consistent with Demirgüc-Kunt and Masimovic (1996) and Demirgüc-Kunt *et al.* (2013). Size and growth presented positive and significant associations for the full sample and other segments' samples, just as tangibility, where only the impact was different for other segments. In the *NovoMercado,* the control variables presented several impacts and associations.

TABLE 2

COINTEGRATION EQUATIONS BETWEEN BOND AND STOCK MARKET DEVELOPMENT

	CONSTANT			RCONSTANT			TREND			RTREND			NONE		
	COEF.	p		COEF.	p		COEF.	p		COEF.	p		COEF.	p	
FULL SAMPLE															
D	1,0000			1,0000			1,0000			1,0000			1,0000		
Mcap	-2,2201	0,000	**	-2,2382	0,000	***	-0,0697	0,773		-0,0694	0,775		0,6293	0,000	***
S	246622,10	0,000	**	248962,30	0,000	***	127643,50	0,000	***	127890,70	0,000	***	-92295,19	0,000	***
Tang	-599,7284	0,177		-608,9677	0,175		-16,5888	0,929		-17,0652	0,927		729,0380	0,000	***
G	123799,90	0,469		122846,60	0,477		-36004,86	0,611		-36401,53	0,608		288939,90	0,000	***
_trend							-5804,78	–		-16313,91	0,000	***			
_cons	-792634,50	–		-1239649,00	0,000	***	37178,61	–		429585,10	–				
	STATISTIC	RANK		STATISTIC	RANK		STATISTIC	RANK		STATISTIC	RANK		STATISTIC	RANK	
Trace	46,3003	1		50,1584	1		50,2560	1		55,8819	1		18,2358	1	
Max	6,2987	2		8,0447	2		9,9364	2		9,9395	2		8,7988	1	
NOVOMERCADO															
D	1,0000			1,0000			1,0000			1,0000			1,0000		
Mcap	2,1042	0,000	**	2,1201	0,000	***	0,0497	0,935		0,0461	0,940		2,0388	0,000	***

(continue)

• RAM, REV. ADM. MACKENZIE (*Mackenzie Management Review*), *17*(5), 85-109 •
SÃO PAULO, SP • SEPT./OCT. 2016 • ISSN 1518-6776 (printed version) • ISSN 1678-6971 (electronic version)

Table 2 (Continuation)

COINTEGRATION EQUATIONS BETWEEN BOND AND STOCK MARKET DEVELOPMENT

	CONSTANT			RCONSTANT			TREND			RTREND			NONE		
	COEF.	p		COEF.	p		COEF.	p		COEF.	p		COEF.	p	
NOVOMERCADO															
S	-194,1758	0,000	**	-195,4871	0,000	***	372,5698	0,000	***	369,8991	0,000	***	-184,9566	0,000	***
Tang	820,4475	0,003	**	824,9173	0,004	**	-915,2639	0,005	**	-909,8051	0,005	**	866,8196	0,000	***
G	-37,6202	0,000	**	-37,9664	0,000	***	1,8773	0,880		1,7508	0,887		-33,6166	0,000	***
_trend							-34,8432	–		-30,6814	0,000	***			
_cons	-159,7648	–		43,2287	0,699		387,9523	–		217,0951	–				
	STATISTIC	RANK		STATISTIC	RANK		STATISTIC	RANK		STATISTIC	RANK		STATISTIC	RANK	
Trace	40,9219	1		45,0826	1		47,6738	1		50,5311	1		35,8452	1	
Max	26,8461	1		26,9489	1		29,2260	1		29,4478	1		7,8723	2	
OTHER SEGMENTS															
D	1,0000			1,0000			1,0000			1,0000			1,0000		
Mcap	-5,4130	0,000	**	-5,5810	0,000	***	-0,0689	0,816		-0,0688	0,817		0,1605	0,006	**
S	630131,50	0,000	**	651062,80	0,000	***	151206,80	0,000	***	151662,80	0,000	***	-41720,29	0,000	***
Tang	1687359,00	0,057	t	1753318,00	0,055	t	95782,55	0,584		96757,06	0,581		-281773,30	0,003	**

(continue)

TABLE 2 (CONTINUATION)

COINTEGRATION EQUATIONS BETWEEN BOND AND STOCK MARKET DEVELOPMENT

	CONSTANT			RCONSTANT			TREND			RTREND			NONE		
	COEF.	p		COEF.	p		COEF.	p		COEF.	p		COEF.	p	
OTHER SEGMENTS															
G	-44652,27	0,921		-53554,67	0,908		-86027,47	0,328		-86730,80	0,326		273780,10	0,000	***
_trend							-7986,91	–		-19155,90	0,000	***			
_cons	-2576019,00	–		-3744784,00	0,000	***	11002,48	–		426161,00	–				
	STATISTIC	RANK		STATISTIC	RANK		STATISTIC	RANK		STATISTIC	RANK		STATISTIC	RANK	
Trace	42,1898	1		46,0006	1		46,8958	1		52,1793	1		22,5979	1	
Max	6,3163	2		8,2656	2		10,6161	2		10,8142	2		11,8273	1	
FULL SAMPLE															
D/E	1,0000			1,0000			1,0000			1,0000			1,0000		
Ret	-0,0110	0,000	***	-0,0110	0,000	***	-0,0107	0,000	***	-0,0107	0,000	***	-0,0202	0,000	***
S	0,0248	0,000	***	0,0248	0,000	***	0,0534	0,039	*	0,0537	0,038	*	0,0202	0,042	*
Tang	0,0008	0,000	***	0,0008	0,000	***	0,0007	0,000	***	0,0007	0,000	***	0,0006	0,000	***
G	0,2109	0,000	***	0,2109	0,000	***	0,1749	0,002	**	0,1739	0,002	**	-0,1568	0,006	**
_trend							-0,0031	–		-0,0037	0,259				
_cons	-0,5985	–		-0,5999	0,000	***	-0,6425	–		-0,6220	–				

(continue)

Table 2 (Continuation)

COINTEGRATION EQUATIONS BETWEEN BOND AND STOCK MARKET DEVELOPMENT

	CONSTANT		RCONSTANT		TREND		RTREND		NONE	
	COEF.	p	COEF.	p	COEF.	p	COEF.	p	COEF.	p
	STATISTIC	RANK	STATISTIC	RANK	STATISTIC	RANK	STATISTIC	RANK	STATISTIC	RANK
Trace	18,3403	2	27,8549	2	25,6296	2	26,8658	2	18,2010	2
Max	9,8495	2	12,9349	2	17,7355	2	17,7356	2	10,8531	2
NOVOMERCADO										
D/E	1,0000		1,0000		1,0000		1,0000		1,0000	
Ret	-12,7972	0,000 ***	-11,9708	0,000 ***	-11,8652	0,000 ***	-11,7944	0,000	-1,0851	0,000 ***
S	-0,3444	0,001 ***	-0,2786	0,003 **	-1,8604	0,004 **	-1,6903	0,009 **	0,0533	0,034 *
Tang	-1,4062	0,287	-1,1490	0,340	3,5465	0,098 t	2,9265	0,179	0,2845	0,452
G	0,1057	0,201	0,0739	0,327	-0,0438	0,564	-0,0043	0,956	0,1690	0,000 ***
_trend					0,0503	–	0,1074	0,030 *		
_cons	15,2534	–	12,8816	0,000 ***	14,7064	–	12,4050	.		
	STATISTIC	RANK	STATISTIC	RANK	STATISTIC	RANK	STATISTIC	RANK	STATISTIC	RANK
Trace	17,9173	2	26,2040	2	7,9380	3	12,1196	3	11,7242	2
Max	8,3084	2	15,1584	2	6,9017	3	6,9665	3	7,2698	2

(continue)

TABLE 2 (CONCLUSION)

COINTEGRATION EQUATIONS BETWEEN BOND AND STOCK MARKET DEVELOPMENT

	CONSTANT			RCONSTANT			TREND			RTREND			NONE		
	COEF.	p		COEF.	p		COEF.	p		COEF.	p		COEF.	p	
OTHER SEGMENTS															
D/E	1,0000			1,0000			1,0000			1,0000			1,0000		
Ret	-0,0112	0,000	**	-0,0112	0,000	***	-0,0111	0,000	***	-0,0111	0,000	***	-0,0144	0,000	***
S	0,0206	0,000	**	0,0206	0,000	***	0,0337	0,210		0,0341	0,206		0,0183	0,003	**
Tang	-0,4988	0,000	***	-0,4987	0,000	***	-0,4708	0,000	***	-0,4700	0,000	***	-0,5473	0,000	***
G	0,1686	0,001	**	0,1685	0,001	***	0,1488	0,011	**	0,1478	0,012	**	0,0665	0,218	
_trend							-0,0016	–		-0,0017	0,619				
_cons	-0,1983	–		-0,2015	0,001	***	-0,2226	–		-0,2221	–				
	STATISTIC	RANK		STATISTIC	RANK		STATISTIC	RANK		STATISTIC	RANK		STATISTIC	RANK	
Trace	21,2084	2		28,6754	2		31,6413	2		32,2123	2		19,4473	2	
Max	13,4496	2		14,6784	2		22,5154	2		22,5154	2		12,8706	2	

Note: Table 2 presents the cointegration equations corresponding to long-run relationships between the variables of: debt and stock market value, e; debt on equity and return, both of them controlled for size, tangibility and growth. The relationship was estimated through the techniques of Johansen (1988; 1991) and Johansen and Juselius (1990), in the models which contain intercept (constant); restrict intercept (rconstant); trend (trend); restrict trend (rtrend), e; without intercept and trend (none). Max and tr refers to the maximum likelihood and trace statistics, for computing the quantity of cointegration ranks, which result in specification of models' analysis (Pantula's principle). All the models were applied to full sample, to the companies of *NovoMercado* and for the set of other segments. In the models with debt, a lagged period was applied and 1 rank of cointegration, and in the model with debt on equity 4 lagged periods were applied and 1 rank of cointegration. Variables' details are presented in Chart 1. Statistical significance: t p.10; * p.05; ** p.01; *** p.001.

Source: Elaborated by the authors.

5 CONCLUDING REMARKS

The findings of this research show that corporate governance reform in Brazil simultaneously stimulated the stock bond market, confirming the stock and bond complementarity hypothesis in the Brazilian companies that moved to or were created in the *NovoMercado*.

Such results are contrary to those observed in other studies, but are consistent with the theoretical framework of capital structure irrelevance for *NovoMercado*. The bond market size increased in the same way as that of the stock market for this listing segment, making plausible the supposition that a company's stock value does not depend on its capital structure, but only on its projects' risks.

The substitution hypothesis, standard for developed countries, was not validated for the Brazilian stock market. A possible explanation for such an observation is that developing countries have more projects, such as infrastructure, housing, and real estate, to be explored than developed ones.

Even if capital structure determinants were the same in developing and developed countries, theories with assumptions of symmetric information, such as capital structure irrelevance (Modigliani & Miller, 1958) could offer consistency to the findings due to the reduction of asymmetric information that comes from the corporate governance reforms. Such reduction would stimulate the complementarity between stock and debt, which is reinforced by the findings for the *NovoMercado*. The direct measures of stock market value and debt showed better specification than debt on equity and return for capturing the level of stock and bond market development. Therefore, corporate governance reform could, with institutional characteristics, result in a virtuous cycle between stock and debt, making these sources complementary and not substitutes.

The data was analyzed with cointegration techniques, which could imply an improvement on the traditional tools applied in prior studies about stock market development and a stimulus of the understanding of dynamic econometric models. Several advantages found for techniques that estimate the relationship between variables apparently not associated, show that the subject of capital structure could be explored in ways beyond panel data techniques.

However, making aggregate variables from the weighting of firm-level variables, by theoretical portfolio linked to the liquidity issues could become a restriction. Such a restriction should be addressed with a cointegration panel in future research, which combines the advances in panel data with long-run and short-run relationships.

Future research could also specify models with variables for institutional characteristics and even for industries.

The direct measures of asymmetric information could be used in the model specification in order to assess the stock market development theory. Of course, the *NovoMercado* would represent better information access to investors. Using the asymmetric information measure in this context, the association between stock and debt will be even more accurate.

GOVERNANÇA CORPORATIVA E ESTRUTURA DE CAPITAL NO BRASIL: AÇÕES, DÍVIDAS E SUBSTITUIÇÃO

RESUMO

Objetivo: Examinar os mercados de ações e de dívidas no Brasil, por meio do teste da teoria de desenvolvimento do mercado de ações de Demirgüc-Kunt e Maksimovic (1996).
Originalidade/lacuna/relevância/implicações: Teste da hipótese de substituição do mercado de dívidas pelo de ações no Brasil, com melhor governança corporativa e cointegração. Os resultados indicam a rejeição da hipótese de substituição, com associação positiva entre ações e dívidas em situação em segmento de melhor governança corporativa. É aprimorada a teoria de desenvolvimento do mercado de ações em desenvolvimento com técnicas de cointegração com variáveis em nível e a prática é a de que o estímulo aos mecanismos de governança corporativa pode ampliar simultaneamente os mercados de ações e de dívidas.
Principais aspectos metodológicos: Pesquisa positivista com metodologia quantitativa e análise de dados de 171 empresas brasileiras de capital aberto durante 20 anos por meio de cointegração. A hipótese nula foi a de associação negativa entre os mercados de ações e de dívidas.
Síntese dos principais resultados: Rejeição da hipótese nula, de forma inconsistente ao referencial teórico.
Principais considerações/conclusões: Um melhor nível de governança corporativa pode fazer com que capital próprio e de terceiros sejam fontes complementares e não substituto de recursos, sugerindo que as reformas de governança corporativa promovidas no País formam um ciclo virtuoso entre ações e dívidas.

PALAVRAS-CHAVE

Desenvolvimento do mercado de ações. Desenvolvimento do mercado de dívidas. Estrutura de capital. Governança corporativa. Hipótese de complementariedade entre dívidas e ações.

GOBIERNO CORPORATIVO Y ESTRUCTURA DE CAPITAL EN BRASIL: ACCIONES, DEUDAS Y REEMPLAZO

RESUMEN

Objetivo: Examinar los mercados de acciones y de deudas en Brasil, a través de la prueba de la teoría de desarrollo del mercado de acciones de Demirgüc-Kunt & Maksimovic (1996).
Originalidad/laguna/relevancia/implicaciones: Prueba de la hipótesis de sustitución del mercado de deudas pelo de acciones en Brasil, en mejor gobierno corporativo y cointegração. Los resultados indican el rechazo de la hipótesis de sustitución en segmento de mejor gobierno corporativo. Mejora de la teoría de desarrollo del mercado de acciones para mercados en desarrollo con reforma de gobierno corporativo y cointegração con variables en nivel y la práctica es a de que el estímulo a los mecanismos de gobierno corporativo puede ampliar simultáneamente los mercados de acciones e de deudas.
Principales aspectos metodológicos: Investigación positivista con metodología cuantitativa y análisis de datos de 171 empresas brasileñas de capital abierto durante 20 años a través de cointegração. La hipótesis nula fue a de asociación negativa entre los mercados de acciones y de deudas.
Síntesis de los principales resultados: Rechazo de la hipótesis nula, de forma inconsistente al referencial teórico.
Principales consideraciones/conclusiones: Un mejor nivel de gobierno corporativo puede hacer con que capital propio y de terceros sean fuentes complementarias y no sustitutas de recursos, sugiriendo que las reformas de gobierno corporativo promovidas en el País, forman un ciclo virtuoso entre acciones y deudas.

PALABRAS CLAVE

Desarrollo del mercado de acciones. Desarrollo del mercado de deudas. Estructura de capital. Gobierno corporativo. Hipótesis de complementariedad entre deudas y acciones.

REFERENCES

Asteriou, D., & Hall, S. (2011). *Applied Econometrics*. Hampshire: Palgrave Macmillan.
Beck, T., & Levine, R. (2004). Stock markets, banks, and growth: panel evidence. *Journal of Banking & Finance, 28*(3), 423-442. DOI: 10.1016/S0378-4266(02)00408-9.

Akaike, H. (1974). A new look at statistical model identification. IEEE Transactions on Automatic Control. 19, 716-723. Retrieved September, 2008, from http://ieeexplore.ieee.org/document/1100705. DOI: 10.1109/TAC.1974.1100705.

Beck, T., Levine, R., & Loayza, N. (2000). Finance and the sources of growth. *Journal of Financial Economics, 58*(1-2), 261-300. Retrieved April 20, 2014, from www.elsevier.com/locate/econbase.

Bekaert, G., Harvey, C., & Lumsdaine, R. (2002). Dating the integration of world equity markets. *Journal of Financial Economics, 65*(2), 203-247. Retrieved April 20, 2014, from http://www.sciencedirect.com/science/article/pii/S0304405X02001393.

Bekaert, G., Harvey, C., & Lundblad, C. (2005). Does financial liberalization spur growth? *Journal of Financial Economics, 77*(1), 3-55. DOI: 10.1016/j.jfineco.2004.05.007.

Booth, L., Aivazian, V., Demirgüc-Kunt, A., & Maksimovic, V. (2001). Capital structures in developing countries. *The Journal of Finance, 56*(1), 87-130. DOI: 10.1111/0022-1082.00320.

Chinn, M., & Ito, H. (2006). What matters for financial development? Capital controls, institutions, and interactions. *Journal of Development Economics, 81*(1), 163-192. DOI: 10.1016/j.jdeveco.2005.05.010.

Creswell, J. (2007). *Projeto de pesquisa: métodos qualitativo, quantitativo e misto* (2a ed.). Porto Alegre: Artmed.

Croci, E., & Petmezas, D. (2010). Minority shareholders' wealth effects and stock market development: evidence from increase-in-ownership M&As. *Journal of Banking and Finance, 34*(3), 681-694. DOI: 10.1016/j.jbankfin.2009.09.003.

De la Torre, A., Gozzi, J., & Schmukler, S. (2007). Stock market development under globalization: whiter the gains from reforms? *Journal of Banking & Finance, 31*(6), 1731-1754. DOI: 10.1016/j.jbankfin.2006.11.008.

De Santis, G., & Imrohoroglu, S. (1997). Stock returns and volatility in emerging financial markets. *Journal of International Money and Finance, 16*(4), 561-579. Retrieved April 20, 2014, from www.sciencedirect.com/science/pii/S026156069700020X.

Demetriades, P., & Hussein, K. (1996). Does financial development cause economic growth? Time-series evidence from 16 countries. *Journal of Development Economics, 51*(2), 387-411. Retrieved April 20, 2014, from www.sciencedirect/science/pii/s030438789600421x.

Demirgüc-Kunt, A., & Levine, R. (1996). Stock market development and financial intermediaries: stylized facts. *The World Bank Economic Review, 10*(2), 291-321.

Demirgüc-Kunt, A., & Maksimovic, V. (1996). Stock market development and financing choices of firms. *The World Bank Economic Review, 10*(2), 341-369.

Demirgüc-Kunt, A., Feyen, E., & Levine, R. (2013). The evolving importance of banks and securities markets. *The World Bank Economic Review, 27*(3), 476-490. DOI: 10.1093/wber/lhs022.

Edison, H., Levine, R., Ricci, L., & Slok, T. (2002). International financial integration and economic growth. *Journal of International Money and Finance, 21*(6), 749-776. Retrieved April 20, 2014, from www.sciencedirect/science/pii/S0261560602000219.

Fama, E. (1970). Efficient capital markets: a review of theory and empirical work. *The Journal of Finance, 25*(2), 383-417. Retrieved April 20, 2014, from http://www.jstor.org/stable/2325486?origin=JSTOR-pdf.

Fisher, I. (1896). Appreciation and interest. *Publications of American Economic Association. 11*(4), 1-98. Retrieved April 20, 2014, from http://www.jstor.org/stable/2485877.

Hasan, I., Wachtel, P., & Zhou, M. (2009). Institutional development, financial deepening and economic growth: Evidence from China. *Journal of Banking and Finance, 33*(1), 157-170. Retrieved April 20, 2014, from http://www.sciencedirect.com/science/article/pii/S0378426607003871.

Jensen, M. (1972). Capital markets: theory and evidence. *The Bell Journal of Economics and Management Science, 3*(2), 357-398. DOI: http://dx.doi.org/10.2139/ssrn.350429.

Jensen, M., & Meckling, W. (1976). Theory of firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305-360. Retrieved April 20, 2014, from http://www.sciencedirect.com/science/article/pii/0304405X7690026X.

Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of Economics Dynamics and Control, 12*(2-3), 231-254. DOI: http://dx.doi.org/10.1016/0165-1889(88)90041-3.

Johansen, S. (1991). Estimation and hypothesis testing of cointegration. *Econometrica, 59*(6), 1551-1580. Retrieved April 20, 2014, from http://www.jstor.org/stable/2938278.

Johansen, S., & Juselius, K. (1990). The maximum likelihood estimation and inference on cointegration – with application to demand for money. *Oxford Bulletin of Economics and Statistics, 52*(2), 169-210.

Klein, M., & Olivei, G. (2008). Capital account liberalization, financial depth, and economic growth. *Journal of International Money and Finance, 27*(6), 861-875. DOI: 10.1016/j.jimonfin.2008.05.002.

Kominek, Z. (2004). Stock markets and industry growth: an Eastern European perspective. *Applied Economics, 36*(10), 1025-1030.

Levine, R., & Zervos, S. (1996). Stock market development and long-run growth. *The World Bank Economic Review, 10*(2), 323-339.

Levine, R., & Zervos, S. (1998). Capital control liberalization and stock market development. *World Development, 26*(7), 1169-1183. Retrieved June 20, 2014, from www.sciencedirect.com/science/pii/S0305750X98000461.

Mallin, C., & Ow-Yong, K. (2010). The UK Alternative investment market – ethical dimensions. *Journal of Business Ethics, 95*(2), 223-239. Retrieved December 16, 2013, from http://link.springer.com/article/10.1007/s10551-011-0855-4.

Mitton, T. (2006). Stock market liberalization and operating performance at the firm level. *Journal of Financial Economics, 81*(3), 625-647. DOI: 10.1016/j.jfineco.2005.09.001.

Modigliani, F., & Miller, M. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review, 48*(3), 261-297.

Modigliani, F., & Miller, M. (1963). Corporate income taxes and cost of capital: a correction. *American Economic Review, 53*(3), 433-443.

Muth, J. (1961). Rational expectations and the theory of price movements. *Econometrica, 29*(3), 315-335. DOI: 10.2307/1909635.

Myers, S. (1984). The capital structure puzzle. *The Journal of Finance, 39*(3), 575-592. Retrieved October 27, 2010, from http://links.jstor.org/sici?sici=0022-1082%28198407%2939%3A3%3C575%3ATCSP%3E2.0.CO%3B2-%23.

Myers, S., & Majluf, N. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics, 13*(2), 187-221.

Perotti, E., & Van Oijen, P. (2001). Privatization, political risk and stock market development in emerging economies. *Journal of International Money and Finance, 20*(1), 43-69. Retrieved April 20, 2014, from www.sciencedirect.com/science/pii/S0261560600000322.

Rabelo, F., & Vasconcelos, F. (2002). Corporate governance in Brazil. *Journal of Business Ethics, 37*(3), 321-335.

Rajan, R., & Zingales, L. (1998). Financial dependence and growth. *The American Economic Review, 88*(3), 559-586.

Reed, D. (2002). Corporate governance reforms in developing countries. *Journal of Business Ethics, 37*(3), 223-247.

Rousseau, P., & Wachtel, P. (2000). Equity markets and growth: cross-country evidence on timing and outcomes, 1980-1995. *Journal of Banking and Finance, 24*(12), 1933-1957.

Schwarz, G. (1978). Estimating the dimension of a model. The Annals of Statistics, *6*(2). 461-464. Retrieved September, 2008, from http://www.jstor.org/stable/2958889.

Stiglitz, J. (2000). Capital market liberalization, economic growth, and instability. *World Development, 28*(6), 1075-1086. Retrieved April 20, 2014, from www.sciencedirect.com/science/pii/S0305750X00000061.

Tachiwou, A. M. (2010). Stock market development and economic growth: the case of West African Monetary Union. *International Journal of Economics and Finance, 2*(3), 97-103. DOI: http://dx.doi.org/10.5539/ijef.v2n3p97.

Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. *The Journal of Finance, 43*(1), 1-19. Retrieved May 2, 2014, from http://links.jstor.org/sici?sici=0022-1082%28198803%2943%3A1%3C1%3ATDOCSC%3E2.0.CO%3B2-A.

Van Nieuwerburgh, S., Buelens, F., & Cuyvers, L. (2006). Stock market development and economic growth in Belgium. *Explorations in Economic History, 43*(1), 13-38. DOI: 10.1016/j.eeh.2005.06.002.

Wurgler, J. (2000). Financial markets and the allocation of capital. *Journal of Financial Economics, 58*(1-2), 187-214. Retrieved April 20, 2014, from www.sciencedirect.com/science/piiS0304405X00000702.