CORPORATE GOVERNANCE, STOCK MARKET AND ECONOMIC GROWTH IN BRAZIL

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Abstract

Literature points that the development of the stock market depends on the introduction of good practices of corporate governance, what in its own would make the country economic growth more dynamic. This work aims to investigate to which extent the institution of better practices of corporate governance is related to the economic growth. To reach the objective, it were performed comparative sensibilities analysis of the Index of Corporate Governance (IGC) and of the Ibovespa (São Paulo's Stock Exchange Index) in relation to the macroeconomic variables present in the literature that influence the most the national stock market, including one *proxy* of the real economic growth. In methodological terms, it was developed a quantitative descriptive research: it were estimated models in differences by the use of the Ordinary Least Squares Method (OLS) and models in quasi-differences by the use of the Feasible Generalized Least Squares Method (FGLS). By the methodology adopted there are evidences that companies who adopt better practices of corporate governance have better *performances* (collect more benefits) in the economic growth cycle than those companies that do not adopt them.

Keywords: corporate governance, stock markets, economical growth

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1. Introduction

Although the relative development, mainly in the 90's, the Brazilian stock market is little developed, presenting as main characteristics: a) low capitalization of the stock market; b) non significant business volume; c) few initial offerings; d) reduced number of public companies; e) transactions highly concentrated in few shares; and f) low liquidity.

In a macroeconomic perspective, Bacha (2005), Pinheiro (2005a), Gleizer (2005), Moura (2005), Nóbrega (2005) and Teixeira (2005) elaborate the argument that the lack of development of the Brazilian stock market can be due to the low predictability of the economic indexes, the quality of the macroeconomic adjustment, the legal uncertainty (forum risk) and the irrationality of the tributary system that, over all, stimulate the financing of the short term public debt.

In a microeconomic perspective, Carvalho (2002) emphasizes that the base of the atrophy of the national stock market is in the low level of protection of the minority stockholders and creditors in Brazil, being these the main agency conflicts in the country. The legal protection to the minority stockholders is justified in some international research. La Porta *et al.* (1998 and 1999) stand out that when large shareholders control a company, its policies can result in expropriation of the minority stockholders, reducing its value. The authors suggest that the uneven legal protection to the investors and the guarantee of its application among the diverse systems of corporate governance in the world cause differences in the property structure, dividends policy, availability of external resources and valorization of the companies shares in the stock market. La Porta *et al.* (1998) affirm, in study undertaken in 49 countries – including Brazil that the concentration of shareholding property is negatively related to the protection of the shareholders rights, and countries with better legal protections tend to present a wider dispersion of the companies' property and value.

Novaes (2005) turns her attention to the institutional aspects that had allowed the development of the stock market in five emerging countries: Chile, Mexico, South Africa, Poland and Thailand, and places elements that can serve as example for Brazil. The author, based on the experience of the studied countries recommends to Brazil, among other factors, to stimulate measures that protect minority stockholders and creditors. Comparing the macroeconomic performance of these emerging countries to Brazil and concluding for the worse performance of Brazil in at least four points, Novaes (2005) points out that these examples serve to show how much corporate governance is important in the maintenance of the economic growth.

According to the OECD (2003, p.3), "the good corporate governance is essential for the economic growth led by the private sector and for the promotion of the social welfare, that depends on increasing

investments, efficiency of the stock market and the company's performance ". In accordance with Andrade and Rossetti (2004, p.237), three factors detach for the leverage of the growth of the nations: trustworthy and stimulant institutions, good macroeconomic fundamentals and availability of competitive resources. However, essentially due to the occurrences that have shaken the corporative world in recent years, as accounting and financial frauds in the U.S.A. (Enron, Worldcom, Tyco, Adelphia etc), according to the authors, "it is consensual that one of the most important complements of this economic trilogy is a healthful business climate, generated by good practices of corporate governance" (Andrade and Rossetti, 2004, p.237).

Babic (2003, p.2) adds that the importance of the corporate governance in emerging countries can be explained by the following influences: 1) creation of key institutions that direct the success of the economy transformation based on the market; 2) efficient allocation of the capital and the development of the financial market; 3) attraction of foreign investments; and 4) contribution for the process of national development. De Paula (2003, p.7-8) summarizing Babic (2003), places two main mechanisms by which the corporate governance can stimulate the development of a country. First, corporate governance is directly related with financing and investment – the capacity of attraction of new shareholders and financial leverage is closely associated with the structure and the practices of corporate governance. Secondly, the impacts of the corporate governance on the efficiency of the economic system are proven – when pressuring the managers to be more disciplined, the corporate governance mechanisms induce to a more efficient allocation of resources (De Paula, 2003, p.7-8).

According to Monforte (2004, p.16), "(...) a good corporate governance certainly makes businesses safer and less exposed to external or management risks". The author emphasizes that:

> A good governance system helps to strengthen the companies, reinforces competences to face new levels of complexity, extends the strategical bases of value creation, is a factor of harmonization of interests and, while contributing to less volatile corporate results, it increases the confidence of the investors, strengthens the stock market and is a supporting factor of the economic growth (Monforte, 2004, p.16).

This work has as main objective to investigate the relationship between the stock returns from companies who adopt better practices of corporate governance in relation to the economic growth *vis-a-vis* those that do not adopt them. To reach the main objective, it was fulfilled a comparative analysis of the dynamics of the sensibilities of the Index of Corporate Governance (IGC) from the São Paulo Stock Exchange (BOVESPA) and of the São Paulo Stock Exchange Index (IBO) in relation to the exchange rate, Dow Jones Index, Brazilian country risk, one proxy of the Gross Domestic Product (PIB) and the interest rate - SELIC. In general, for the development of the study, it is considered that good practices of corporate governance are any organization's internal and external mechanisms that minimize the agency conflicts and increase the value of the companies and that participant companies of IGC index possess better practices of corporate governance than those participant of the IBO index.

This article is structured in four other sections beyond this introduction. In the next one it is developed the theoretical foundation that searches to relate stock and financial markets, economic growth and corporate governance. In section three, the study variables will be presented, as well as a discussion of the quantitative procedures adopted. In section four it will be presented the results and the implications of the results. In section five the work is concluded with its final considerations.

2. Theoretical foundation

2.1. Stock market and Economic Growth

History shows that there exists a direct relation between financial development and economic growth (Casagrande Neto, Cintra Neto and Magliano Filho, 2002, p.20). Among other aspects of this correlation, it is presented the banks role in financing the technological innovations and the verification that the financial system passively answers to the demands that come from the productive sector. As part of the financial system, Casagrande Neto, Cintra Neto and Magliano Filho (2002, p.20) point out that it was demonstrated that the stock market has bigger development in economies of higher *per capita* income. This market provides liquidity for the long term investment stimulates entrepreneurs and disciplines the companies' administration, promoting economic growth.

The economic growth is understood as being the expansion of the Gross Domestic Product of a country, that is, it is the expansion of its production capacity (Andrezo and Lima, 2002, p.12). Economic growth is one of the elements that characterize the economic development. Others can be cited: reduction of poverty levels, improvement of health, nutrition, education, housing and transport conditions. It is perceived, however, the possibility of a country to present economic growth without economic development, once it has not been followed by social growth – thus, conceptually, the economic growth becomes less including than the economic development.

It is unquestionable not only theoretically, but also in the empirical evidence, that for the economic growth to exist there is the need for investments. To invest, it is necessary that savings occurs previous or

simultaneously. According to Nóbrega *et al.* (2000, p.6) there are three ways to associate savings to investment: 1) self-financing, when companies generate its own resources internally; 2) government, when it finances certain activities using the collection of taxes or the imposition of obligatory saving mechanisms; and 3) financing through stock and financial markets. According to Pinheiro (2005b, p.155), "(...) the first one is the simplest, although not always the easiest to obtain. The second, due to limitations and distortions, is the most difficult. But the third is proven the most efficient".

In this context, the stock and financial markets can exert important functions as they optimize the use of financial resources, by transferring the resources from those who save them to those who borrow them, as well as the creation of liquidity and the management of risk. Levine and Zervos (1996a, p.7) and Levine (1997) state that the stock and financial markets possess the following basic functions: 1) it facilitates negotiation; 2) protection, diversification and risks spreading; 3) it monitors managers and controls companies; and 4) mobilizes the savings.Theory suggests a causal relation between financial development and economic growth. According to Andrezo and Lima (2002, p14), currently "it is generally accepted the positive impacts that a developed financial system provides to the economy, in terms of productivity, capital accumulation, increase of savings and investments and economic growth". Considerable empirical support, as presented in Exhibit 1 and obtained by Levine (1997), Levine and Zervos (1996a, 1996b and 1998) and Matos (2003) corroborates these impacts.

Author (s)	Year	Sample	Conclusions
Fry	1978	7 countries in Asia	Interest rates have positive effect in the economic growth
Fry	1980	61 developing countries	To restrain the financial market affects the economic growth negatively
Dornbusch and Reynoso	1989	84 developing countries	Evidences of the positive impact of the financial development in the economic growth are occasional
Roubini and Sala-i-Martin	1992	50 countries	To restrain the financial market affects the economic growth negatively
Levine and Renelt	1992	119 countries	Percentage of investments in stocks, in relation to the GDP, is an important variable related with the economic growth
Levine	1992	87 countries	Currency, importance of the financial market and credits to the private sector are positively correlated with the economic growth
Fry	1993	16 developing countries	High interest rates are negatively correlated with the economic growth
Berthelemy and Varoudakis	1995	91 countries	Inadequate financial development can inhibit economic growth

Exhibit 1. Evidences of the financial development and economic growth
Source: Andrezo and Lima (2002, p.16).

Levine and Zervos (1996a), analyzing 41 stock markets in the period of 1976-1993 in 24 different countries, had found strong correlations between development of the stock market and economic growth. In this exactly direction, Levine and Zervos (1996b and 1998), in a study enclosing the financial and stock markets (banks) of 49 countries, in the period of 1976-1993, had investigated if some measures of the stock market and the banks development predict future economic growth rates, capital accumulation, improvements in the productivity and increase of savings. They had discovered that the stock market liquidity, measured by the value of the shares traded relatively to the size of the stock market and of the economy, is positive and significantly correlated with the current and future rates of economic growth, capital accumulation and increase of productivity. The size of the stock market, volatileness and its integration with international stock markets had not been significantly related with the growth. The authors had still discovered that the banking development jointly with the liquidity of the stock market predicts future growth rates, capital accumulation and improvement of the productivity. With these results, Levine and Zervos (1996b and 1998) had concluded that the markets and the financial institutions supply important services for the long term economic growth.

Matos (2003) places that there is the predominance of favorable arguments that corroborates the hypothesis that the financial development stimulates the economic growth, but there are contrary proposals and of joint determination. Using quarterly data from the period 1980-2002 and the Granger Causality Test, Matos (2003) finds significant evidences of the bidirectional effect between financial development and economic growth in Brazil. On the other hand, Teixeira (2005) strengthens that the economic development is determinant of the development of the Brazilian stock market, and a developed stock market only occurs through the search for a sustainable standard of economic growth.

Thus, it is possible to evidence that there is a strong association between financial development and economic growth. However, according to Andrezo and Lima (2002, p.17), there is no consensus if the financial development occurs from the economic growth or if it is the opposite.

In relation to this first controversy, Patrick (1966), cited by Andrezo and Lima (2002, p.17-21), points the concepts: *demand following* and *supply leading*. In accordance with the first concept, financial institutions and services are created as it lacks resources to support investment. In this way, the financial system follows the economic growth

and, therefore, generates an additional new demand for services, what leads to the financial development. In accordance with Andrezo and Lima (2002, p.17), the creation of modern financial institutions and products is a reply to the investors' (and savers) demand for these services. The evolution of the financial system is a continuation of the process of economic development. Considering this concept, it is interpreted that the development of the financial and stock markets is a result of the economic growth.

> *Demand Following* implies that the financial system is essentially passive in relation to the economic growth. It has an extremely elastic relation: as consequence of the economic growth, the financial market develops and perfects itself, generating opportunities of bigger liquidity and minor risk, what, in turn, also stimulates a greater economic growth (Andrezo and Lima, 2002, p.18).

The second concept presents the inverse relation: the economic growth can be interpreted as a consequence of the development of the stock and financial markets. *Supply Leading* consists of the creation of financial institutions and the supply of financial services, previously to the sprouting of the demand, mainly in the modern sectors, in order to promote the economic growth. In this concept, the financial development is not a pre-condition to initiate a self-supported economy, but it represents a chance to promote the real growth by means of financial instruments.

However, Patrick (1966) *apud* Andrezo and Lima (2002, p.19) "defends that, in the reality an interaction between the two phenomena occurs". In accordance with the author, before occurring the supported growth of the modern sectors of the economy, *supply leading* must induce this growth; however, *demand following* must assume a gradual importance from real the economic growth.

> An industry can, initially, receive financings on the basis of *supply leading* and, after developing itself, move to the phase of *demand following*. However, another industry can continue in the phase of *supply leading*. Thus, the two phenomena occur simultaneously in the economy, therefore each sector has its *timing*, depending more on the governmental policies or on the private demand (Andrezo and Lima, 2002, p.19).

The discussions on the existing causality between financial and stock market and the economic growth are subjects of important recent studies (Levine, 1997). However, such studies had not totally decided the causality problem, remaining Patrick's problem (Andrezo and Lima, 2002, p.20).

2.2. Conditions to the development of the national stock market

In general, the macroeconomic variables most used in literature to explain the performance of a country stock market are the macroeconomic performance, the exchange rate, the country risk, the performance of the international stock markets, the inflation and the domestic and external interest rates (Medeiros and Ramos, 2004).

The GDP growth increases the added value of goods and services supplied by the companies who, therefore, can increase profits and the stock prices, consequently indicating better macroeconomic performance. According to Medeiros and Ramos (2004), the exchange rate can impact the stock market in two ways. First, it can affect the public debt, since part of it is directly related to the exchange variation. This impact worsens the macroeconomic fundamentals, discouraging investors to allocate resources into the stock market. Secondly, an increase of the exchange rate favors the exportations, being able to generate more jobs, profits and impact the economic growth that, therefore, would stimulate the national stock market.

Lanzana (2002, p.66) states that when a company searches for funding, issuing securities (such as shares), the degree of risk involved in this operation can be divided in two parts: the first one is relative to the company itself, that may not have resources to fund the obligations related to the operations (interests payment and principal amortization); and the second is the country risk component, once that although the company might have conditions to honor the payments, there are no possibilities of completing the payment transference in dollars (lack of reserves). The first component can be characterized as an internal risk to the company and the second as an external risk to the company.

The country risk (external) produces an unquestioned effect on the stock market. Increases in the country risk reflect the diffidence of the agents in relation to the social, economic and political situation. A higher country risk means the requirement of higher returns by the investors to allocate resources in the country – in case there is no perspective of higher returns, the investors would migrate to another *lócus*. Rogers and Ribeiro (2004) certify the existence of a strong negative correlation between the stock market indices (IGC and IBO) and the country risk of the Brazilian stock market.

With the globalization, the relation existing between the performance of the international and domestic markets became sufficiently sharp. Some studies certify the positive correlation between the performance of the diverse markets around the planet (Medeiros and Ramos, 2004). In Brazil, the domestic stock market variations tend to follow mainly the variations of the United States stock market.

Increases in the domestic interest rates increase the premium that the investors are willing to pay to allocate their resources into variable return securities. In case that the government increases the economy's basic interest rate, its securities automatically pay higher returns, concurring with the

returns paid by the stock market. Deleterious effect is also felt in the economic growth as the increases on the interest rate inhibit the consumption and the investment, thus discouraging the national stock market. The expected inflation has significantly negative impact on the economy's real activity, being that, by its turn, the real activity has positive correlation with the stock market. Thus, it is concluded that the stock market returns must be negative correlated with the expected inflation, that is frequently represented by the short term interest rate (Medeiros and Ramos, 2004).

2.3. Corporate governance

Another determinant factor of the development of the national stock market, and that in accordance with Carvalho (2000) lately has been guilty of its atrophy, is the low protection of the minority investors. According to Carvalho (2000, p.12), "(...) in the root of the stock market decline structural factors exist, for example, the weak protection to the minority investors". In accordance with Barros *et al.* (2000, p.10), "the main instrument of promotion of the [Brazilian] stock market will have to be the corporate governance that, in one side, is, among other things, who will give the investor the necessary security and, in another side, will value the companies who, thus, will be able to have a lower cost of funding". Nóbrega (2005), by its turn, supports that Brazil, submitted to the low protection to the investors, can not totally take advantage of unknown favorable conditions to the development of the stock market. La Port *et al.* (1998 and 1999) show that the countries that better protect the minority stockholders present more developed stock markets, lesser concentration of the companies' property, greater number of public companies, more initial public offerings and a greater valorization of the companies' shares by the market.

The existing conflicts of agency minority *versus* majority stockholders, as well as the existing conflicts between creditors and shareholders, are dealt with by the corporate governance thematic. In what refers to this aspect is enunciated, in accordance with Shleifer and Vishny (1997), that the corporate governance deals with the mechanisms through which the capital suppliers assure themselves to obtain an adequate return for its investments. To this sense, the protection to the minority stockholders and creditors is a central issue of the corporate governance and in this disposal it is justified the adoption of better practices of corporate governance that aim at minimizing the agency conflicts among the capital suppliers of the organizations.

Jensen and Meckling (1976, p.310) define an agency relation "as a contract where one or more people – the principal – uses another person – the agent – to carry through some service or work in its favor, involving the delegation of some decision authority for the agent". From this relation, conflicts originate, in essence, due to separation between control and property, and to the inexistence of complete contract and perfect agent.

Berle and Means (1932) emphasize the separation between property and control in companies, as central paradigm of the economic theory, when enunciating the divergence of interests between managers and proprietors with possible deviation from the objective of maximizing the profits. They point out that the technological level made the companies become so large that, consequently, they could not be held into the hands of an only proprietor. On the other hand, due to scarcity of resources, the property of companies would be spread and, thus, there would have a strengthening of the managers' power to act in its own interests and not in the interest of the shareholders – would thus be declared the "divorce" between property and control in the companies (Okimura, 2003, p.11).

The inexistence of a complete contract was originally exposed by Klein (1983), according to which its fundamentals are justified by the business environment own characteristics, increasingly unexpected, exposed to turbulences and contagious effect, that can be results compromising (Andrade and Rossetti, 2004, p.101-102). Considering, therefore, this uncertainties environment, Klein (1983) affirm that the perfect and complete contracts, enclosing all the contingencies and the answers to the changes and the business environment challenges, simply do not exist, for three essential reasons: a) the great number of possible contingencies; b) the multiplicity of reactions to the contingencies; and c) the increasing frequency with which the unexpected contingencies had begun to occur. To this sense, according to Andrade and Rossetti (2004, p.102), managers are granted, more than the execution of predicable actions, the residual right of the company's control, resultant of the free will for taking not foreseen decisions. This *managemental judgment* can favor more the manager's objectives than those of the shareholders, generating agency conflicts.

The inexistence of perfect agent, the second reason of the agency conflicts, can be defined as a human being nature hypothesis. The human being nature is utilitarian and rational, leading the individuals to maximize a utility function more for its own preferences and its own objectives.

In accordance with Andrade and Rossetti (2004, p.108), the existence of asymmetry of rights allows the controlling shareholders to define strategies and lines of direction for the corporation that benefit their own interests, opposing the rights of the remaining shareholders that are separated from the control of the firm. The management of the dominant group can lead to different forms of expropriation, being detached the following: a) the overlapping of control and management, aiming at giving privilege to someone's own interests; b) excessive payments of wages or other benefits, direct or indirect, to the leading controllers; c) self nominations or nepotism for positions at the board of directors and other

corporate agencies, disrespecting required qualifications and merits; d) transactions at privileged prices (high for acquisitions and low for sales) with other companies pertaining to the controlling group; e) closed use of privileged information; f) access to loans from the corporation, at privileged conditions; g) access to benefits in personal transactions, with the use of a high bargaining power or the prestige of the corporation in the business environment (Andrade and Rossetti, 2004, p.108).

In accordance with Andrade and Rossetti (2004, p.103), the inexistence of the complete contracts and perfect agent opens a room for the disagreement between the shareholders and the managers (and among shareholders) interests, leading to the occurrence of two different categories of agency costs: 1) costs attributed to the managers opportunism; and 2) costs incurred by the shareholders to control the management.

With the existence of costs derived from the agency conflicts, it is necessary to establish control mechanisms *ex-ante* so that the corporate governance process is instituted in a way to line up the interests of the involved parts and to minimize the *ex-post* costs. The established mechanisms of control synthesize the results of all the acting forms of good practices of governance and are results of the reaction of agents who consider themselves "betrayed in its rights by conflicts of interests, by perverse opportunism, by management judgments guided by the objectives of the managers themselves, by the various forms of expropriation and by the inexistence of efficient monitoring" (Andrade and Rossetti, 2004, p.114).

The control mechanisms can be classified in two categories: external and internal. The internal mechanisms are those instituted in the internal environment of the company, and the external ones instituted by the market as a whole (external environment). In synthesis, the following control mechanisms are cited: *Internal mechanisms:* a) Property structure, b) Capital structure, c) Boards of administration, d) System of executives remuneration, e) Shared Monitoring, f) Multidivisional business structure; *External mechanisms:* a) Legal and regulatory environment, b) Demanded accounting standards, c) Control by the stock market, d) Pressures from competitive markets, e) Institutional investors activity, f) Shareholders activity.

Specifically in relation to the external mechanisms of control by the stock market in Brazil and due to the importance of the subject, some efforts have been undertaken in the Brazilian society aiming at improving the practices of corporate governance adopted by the companies. In 2001, Law 10,303 was established, and it searches for a reform at Lei das Sociedades Anônimas, (corporate law) whose essential objective was a higher protection of the minority stockholders. Some codes of better governance practices have been issued by important stock market agents, such as: codes of good practices of corporate governance by the IBGC (Brazilian Institute for Corporate Governance), ANBID (National Association of Investment Banks) and Banco do Brasil's pension fund - PREVI, beyond the recommendations from CVM (Brazilian Securities Exchange Commission) on corporate governance.

The main proceeding in the search for better practices of corporate governance was the institution, by the São Paulo Stock Exchange (BOVESPA), in the end of 2000, of the New Market and the Differentiated Levels of Corporate Governance (auto-regulation). The companies that had compromised, voluntarily, through this private contract, to adopt higher standards of corporate governance, had been added to the São Paulo Stock Exchange Index of Corporate Governance (IGC), that started to be calculated since June of 2001. In synthesis, such index holds a portfolio of companies that voluntarily compromised to adopt better standards of corporate governance.

3. Research Methodology

Exhibit 2 summarizes the variables considered in the study and the respective data sources. From time series multiple regressions two models have been built, considering the IGC and the IBO as dependent variables, and the macroeconomic variables that most influence the Brazilian stock market, in accordance with revised literature, as independent variables. All the variables are logarithmic transformations so that the coefficients (β_k) express the marginal (constant) elasticities (sensitivity) of the dependent variable in relation to the independent variable and thus, improve the interpretation of the comparative analysis.

For the majority of the time series statistical analysis procedures it is assumed that the series are stationary, that is, they are developed randomly in time around a constant average, reflecting some form of steady balance. However, as Morettin and Toloi (2004, p.4) state, "most of the series that we find in practice presents some form of nonsteadiness", needing, by this, of a transformation so that they become stationary. The most common transformation consists of taking successive differences of the original series, until getting a stationary series. The first difference of X (t) is defined by

$$\Delta X(t) = X(t) - X(t-1) \quad [1]$$

The second difference is

$$\Delta^2 X(t) = \Delta\left[\Delta X(t)\right] = \Delta\left[X(t) - X(t-1)\right] \quad [2]$$

In normal situations, it will be enough to take one or two differences so that the series becomes stationary (Morettin and Toloi, 2004, p.5). However, when a X(t) series shows a seasonal behavior, as it is the case of the series of Industrial Physical Production, as in Morettin and Toloi (2004, p.265) findings, it becomes necessary the application of a

seasonal difference operator. Considering a monthly series with annual seasonality (12 months), the difference operator is defined by

$$\Delta_{12}^{D} X(t) = \left[X(t) - X(t-12) \right]^{D} \quad [3]$$

D indicating the number of "seasonal differences".

Variable	Description	Source
LIBO	Natural logarithms of the monthly average of the Ibovespa index	BOVESPA
LIGC	Natural logarithms of the monthly average of the Index of Corporate Governance	BOVESPA
LRB	Natural logarithms of Brazil country risk, measured by *spread* of the *C-Bond* in relation to the *T-Bond*	IPEA
LE	Natural logarithms of the average rate of commercial exchange (R$/US$) at purchase price.	IPEA
LDJ	Natural logarithms of the Dow Jones Index – monthly average of the daily closing	IPEA
LPPIB	Natural logarithms of the GDP's *proxy*, measured by the Industrial Physical Production – fixed base index without sazonal adjustment (base: 07/2001 = 100) ex-inflation through the IPC	IBGE
LSELIC	Natural logarithms of the short term basic interest rate, measured by the average of the SELIC rate	IPEA

Exhibit 2. Summary of the study's variables (July/2001 until July/2005)

Before moving to the series differentiation, a graphical analysis and unit root tests, such as Dickey-Fuller (DF), Augmented Dickey-Fuller (ADF), Phillips-Perron (PP) and Kwiatkowski-Phillips-Schimdt-Shin (KPSS), must be applied to the original series and in differences to test the stationary hypothesis. If a series is stationary, it is said that it is zero order integrated – I(0) and, in case that it is necessary one (two) differentiation(s) for it to become stationary, it is said that the series is I(1) [I(2)].

A disadvantage of the differentiation methods is that they result in a loss of valuable log term information about the series (Maddala, 2003, p.139). Truly, the transformation of the series in first difference is a particular case of the general case, represented in the equation below:

$$\Delta^{*} X(t) = X(t) - \rho X(t-1) \quad [4]$$

Where ρ represents the coefficient of first-order self-correlation. In the case of the first difference ρ =1 is assumed.

In the context of the regression analysis, a generic equation of the series in quasi-differences can be represented as:

$$\begin{aligned} (Y_t - \rho Y_{t-1}) &= \beta_1(1-\rho) + \beta_2 X_t - \rho\beta_2 X_{t-1} + (u_t - u_{t-1}) \\ &= \beta_1(1-\rho) + \beta_2 (X_t - \rho X_{t-1}) + e_t \end{aligned}$$

$$\Delta^{*} Y_t = \beta_1 + \Delta^{*} X_t + e_t \quad [5]$$

Where Y_t it is the dependent variable; X_t is independent variable; β_1 and β_2 are real coefficients; and $u_t = \rho u_{t-1} + e_t$ with $e_t \sim N(0, \sigma^2)$. In equation n. 5 it was used the Ordinary Least Squares Method (OLS) to estimate, such procedure is called Generalized Least Squares Method (GLS). The GLS Method is an expanded version of the OLS method, used mainly in the presence of self-correlation or heteroskedasticity. Thus, when coming across with one of these situations, some problems arise to the use of the OLS method, being necessary the use of the GLS method to skirt the problem.

As it is assumed that the positive self-correlation occurs frequently in time series studies, it becomes necessary to use GLS method for integrated series of orders higher than one (non stationary), not to incur into the phenomenon of the spurious regression. However, regression analysis with non stationary series only makes sense if the series are cointegrated and of the same order.

Recently, the concept of cointegrated series was suggested by Engle and Granger (1987) and it becomes necessary to consider in regressions analysis if, in general, Y is I(d) and X also is I(d), where *d* is the same value, and the regression on the levels of the two variables produce stationary residues I(0). In another way, two series are cointegrated if the linear combination of these two variables (residues) is stationary, so to speak "they are in the same wave (...) and the trends in Y and X annul themselves" (Gujarati, 2000, p.732). If the series are cointegrated, the regression on the variables levels makes sense (that is, it is not spurious) and it does not lose any long term valuable information, what would happen if, instead of this, it were used its first differences. A series of methods to test the cointegration has been proposed; two of these methods are: 1) test DF or ADF on the estimated residues of the cointegrating regression, as considered by Engle and Granger (1987); and the cointegration test of Johansen and Juselius.

Returning to equation n. 5, it becomes necessary to emphasize that one of the main problems is to estimate ρ, since most of the time it is not known. One of the methods to estimate ρ is based on the *d* statistics of Durbin-Watson, so that

$$\rho = 1 - \frac{d}{2} \quad [6]$$

and

$$d = \frac{\sum_{t=2}^{t=n} (u_t - u_{t-1})^2}{\sum_{t=2}^{t=n} u_t^2} \quad [7]$$

Where u_t represents the estimated residues based on such a regression as $Y_t = \beta_1 + \beta_2 X_t + u_t$, without transformation of the series. As $\hat{\rho}$ estimated is used instead of the true one ρ, all these estimate methods are known in the specialized literature as methods of Feasible Generalized Least Squares Method (FGLS) or Estimated GLS (EGLS).

4. Results Analysis

In Figure 1 the series graphs in level are presented. The graphs clearly indicate that the series are non stationary, adding the fact that the series LPPIB present certain seasonality: an increasing trend with decreases in the first semesters and additions in the second semester, suggesting an annual seasonality. Tables 1 and 2 present the results of the ADF unit root tests (in accordance with the methodology from the general to the specific) for the series in level and in first difference, with LPPIB series being differentiated with a seasonal component of 12 months of the type $\Delta_{12} LPPIB$ (this series was used from the period of 06/2000 to 07/2005 so that it did not lose 12 observations in the differentiation). The ADF Tests confirm the suspicion of steadiness of the series in level, being them in all the unit root models. Moreover, as Table 2 presents, it becomes enough to take the first difference of the series so that they become stationary: in all the models it was rejected hypothesis of unit root for s series in first difference, except in the models with intercepts and with intercepts and trend for the LSELIC variable, that, however, had not been significant to explain the process of the series.

4.1. Models in Differences

The models in differences estimated for the IBO and the IGC (MOD1 and MOD2) are presented as the equations below.

$$\text{MOD 1: } \Delta LIBO_t = \beta_1 \Delta LDJ_t + \beta_2 \Delta LRB_t + \beta_3 \Delta LE_t + \beta_4 \Delta_{12} LPPIB_{t-3} + \beta_5 \Delta LSELIC_t + u_t \quad [8]$$

$$\text{MOD 2: } \Delta LIGC_t = \beta_1 \Delta LDJ_t + \beta_2 \Delta LRB_t + \beta_3 \Delta LE_t + \beta_4 \Delta_{12} LPPIB_{t-3} + \beta_5 \Delta LSELIC_t + u_t \quad [9]$$

Table 1. ADF unit root test of the series in level (p-value τ calculated)

	Series						
	LIBO	LIGC	LE	LRB	LDJ	LPPIB	LSELIC
Without intercept	0,8903 (1)	0,9739 (1)	0,5622 (1)	0,3194 (1)	0,6463 (0)	0,9676 (0)	0,5210 (1)
With intercept	0,8550 (1)	0,9341 (1)	0,3385 (2)	0,7268 (1)	0,4205 (0)	0,9473 (0)	0,0497 (1)
Intercept and Trend	0,3785 (1)	0,3225 (1)	0,9181 (0)	0,3855 (1)	0,3306 (0)	0,1063 (1)	0,1941 (1)

Note: ADF test with the model's numbers of *lags* in parentheses

Table 2. ADF unit root test of the series in 1st. difference (p-value τ calculated)

	Series						
	LIBO	LIGC	LE	LRB	LDJ	LPPIB	LSELIC
Without intercept	0,0000 (0)	0,0000 (0)	0,0000 (0)	0,0002 (0)	0,0000 (0)	0,0000 (0)	0,0121 (0)
With intercept	0,0001 (0)	0,0001 (0)	0,0002 (0)	0,0026 (0)	0,0000 (0)	0,0001 (0)	0,1242 (0) *
Intercept and Trend	0,0006 (0)	0,0005 (0)	0,0008 (0)	0,0159 (0)	0,0000 (0)	0,0004 (1)	0,3612 (0) *

* Not significant coefficients of intercept and/or trend

Note: ADF test with the model's numbers of *lags* in parentheses.

In equations n. 8 and n. 9 it is assumed that the financial and stock markets variables are determined simultaneously (connected) and the real market variable (PPIB) influences the stock exchange indices with a three-period lag. The number of lags is justified, therefore in the financial and stock markets the information (expectations) is formed and moved relatively faster than in the economy's real market. In addition, the Brazilian GDP data is obtained from IBGE only in a quarterly basis, being available, in this way, with a maximum retroactive period of three months to the market agents so that these can form an opinion on the economic growth.

In Table 3 the models estimated by OLS method are presented, and in Table 4 some adjustment statistics of the models are revealed. In all the models it was accepted the hypothesis of residues normality by the Jarque-Bera Test, as well as it was also accepted the absence of self-correlation until the 12th order through the analysis of the correlogram (Appendix), although the statistics of Durbin-Watson for model 2 are in the indetermination zone. The high adjusted coefficients of determination (*Adjusted* R^2)

and the high significance of statistics *F* show the good adjustments of the models.

4.2. Models in quasi-differences

As observed, the models in differences (MOD1 and MOD2) had presented some non significant coefficients (on the contrary to the expected by the economic theory), although that as a set the coefficients are highly significant (*F* test). In this sense, in this section the aim is to shape the research variables without losing long term "valuable" information and, thus, to search for better results of long term sensibility of the IBO and the IGC in relation to the macroeconomic variables – individually and in a set.

Coming from the hypothesis that the variable present first-order serial self-correlation, the ρ coefficient is estimated based on the *d* statistics of Durbin-Watson obtained through equations n. 10 and n. 11.

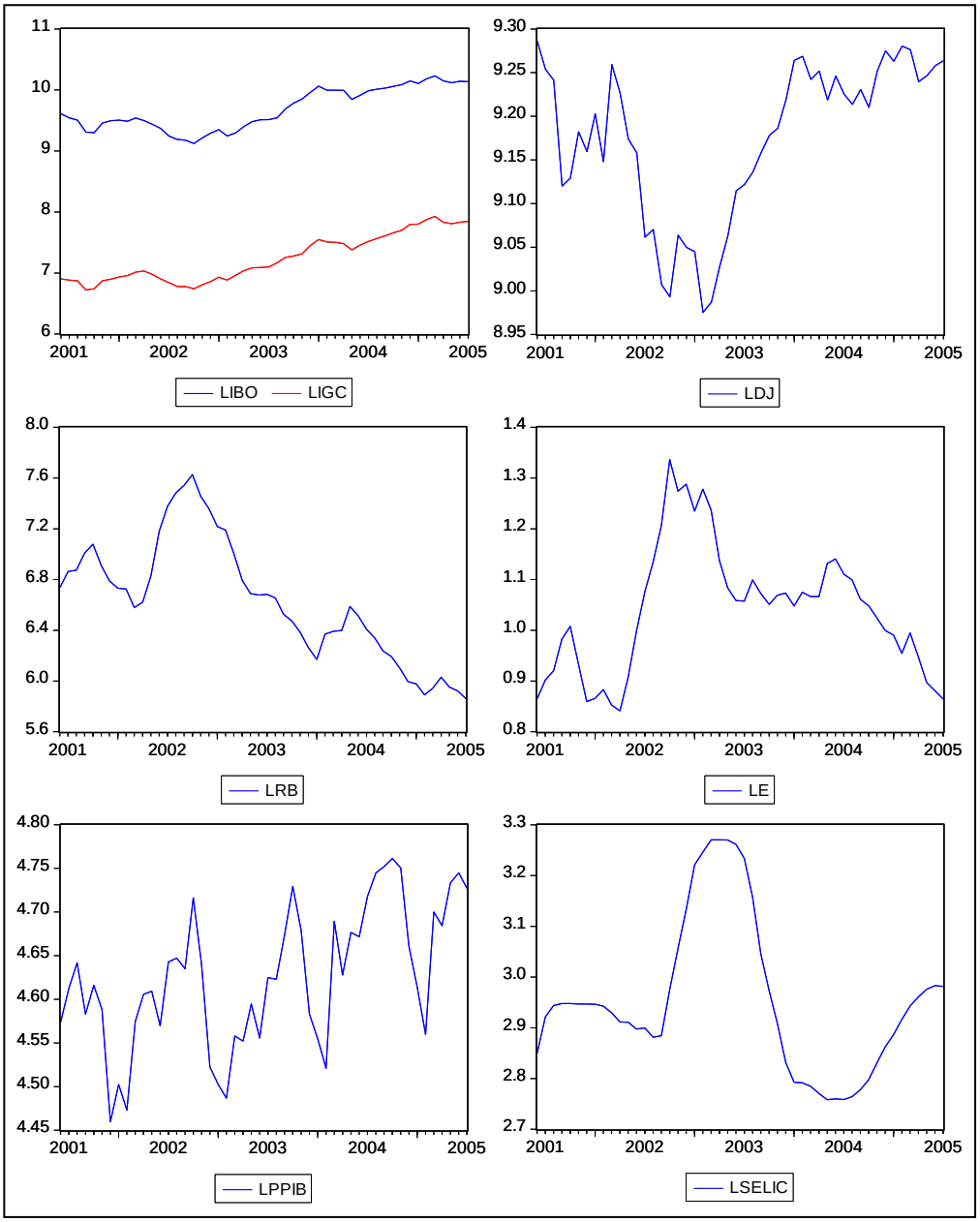

Figure 1. Graphics of the research series in level

$$LIBO_t = \beta_1 + \beta_2 LE_t + \beta_3 LDJ_t + \beta_4 LRB_t + \beta_5 LPPIB_t + \beta_6 LSELIC_t + u_t \quad [10]$$

$$LIGC_t = b_1 + b_2 LE_t + b_3 LDJ_t + b_4 LRB_t + b_5 LPPIB_t + b_6 LSELIC_t + u_t \quad [11]$$

The estimated $\hat{\rho}$ s, based on the residues and through the *d* statistics of Durbin-Watson, are 0,5903 and 0,8923 in equations n. 10 and n. 11, respectively (estimated by OLS). In such a way, the transformations in quasi-differences for the research variable become:

Table 3. Preliminary Models for IBO and IGC

Model	Variable	Coefficient	Standard Error	t-statistic	Probability
MOD1	Δ LE$_t$	0.017857	0.193138	0.092458	0.9268
	Δ LRB$_t$	- 0.387673	0.079297	- 4.888867	0.0000
	Δ LDJ$_t$	0.543223	0.187771	2.893007	0.0061
	Δ_{12} LPPIB$_{t-3}$	0.188300	0.150109	1.254424	0.2168
	Δ LSELICt	- 0.311557	0.143216	- 2.175426	0.0354
MOD2	Δ LE$_t$	0.222543	0.166266	1.338482	0.1881
	Δ LRB$_t$	- 0.428651	0.068264	- 6.279318	0.0000
	Δ LDJ$_t$	0.327069	0.161645	2.023376	0.0496
	Δ_{12} LPPIB$_{t-3}$	0.307049	0.129223	2.376114	0.0222
	Δ LSELIC$_t$	- 0.182121	0.123290	- 1.477176	0.1473

Table 4. Adjustment statistics of the preliminary models

Model	Jarque-Bera test	Durbin-Watson	*Adjusted R-squared*	*F-statistic*	AIC	SIC
MOD1	0,5777 *	1,8031 *	0,6971	23,75 *	- 3,6038	- 3,4050
MOD2	1,3262 *	1,5348§	0,6639	23,57 *	- 3,9034	- 3,7047

Significance: * 1%. Available critical values of the Durbin-Watson statistics in Gujarati (2000, p.824-827). ♣ With 1% of significance statistics *d* of Durbin-Watson is in the indetermination zone.

$$\Delta^* X(t) = X(t) - 0,5903X(t-1) \quad [12]$$

Where X = LE, LDJ, LRB, LPPIB, LSELIC or LIBO, and

$$\Delta^* Z(t) = Z(t) - 0,8923Z(t-1) \quad [13]$$

With Z = LE, LDJ, LRB, LPPIB, LSELIC or LIGC.

With the variables transformed into quasi-difference for the IBO model (equation n. 12) and for the IGC model (equation n. 13), the models are estimated.

$$\Delta^* LIBO_t = \beta_0 + \beta_1 \Delta^* LDJ_t + \beta_2 \Delta^* LRB_t + \beta_3 \Delta^* LE_t + \beta_4 \Delta^* LPPIB_{t-3} + \beta_5 \Delta^* LSELIC_t + \beta_6 \Delta^* LIBO_{t-1} + u_t \quad [14]$$

$$\Delta^* LIGC_t = \beta_0 + \beta_1 \Delta^* LDJ_t + \beta_2 \Delta^* LRB_t + \beta_3 \Delta^* LE_t + \beta_4 \Delta^* LPPIB_{t-3} + \beta_5 \Delta^* LSELIC_t + \beta_6 \Delta^* LIGC_{t-1} + u_t \quad [15]$$

The autoregressive term of first order AR(1) in the models has as objective to eliminate the self-correlation of higher orders and, if luckily, to improve the parameters estimative (β_i). However, the long term elasticities (ε_{XY}) of the dependent variables in relation to the independent variable are not given by its own coefficients (β_i , i>0), as it deserves the log-linear functional form (or log-log), needing an adjustment after the models are estimated. The estimate of ε_{XY} , according to Maddala (2003, p.320), is

$$\varepsilon_{XY} = \frac{\beta_i}{(1 - \beta_6)} \quad [16]$$

with β_i $(1 \leq i \leq 5)$ representing the coefficient of the independent variable X = LE, LDJ, LRB, LPPIB or LSELIC; Y = LIBO or LIGC; and β_6 the coefficient of the autoregressive term AR(1), however the problem is to obtain the standard error of ε_{XY} .

There are various methods available, like that of Fieller, Taylor's series expansion and regression of the variables through resampling process. Maddala (2003, p.320) argues that the resampling methods generate better estimates not only in relation to the Fieller's method, but also in relation to the expansion of Taylor's series. There are two main methods of resampling: *bootstrap* and *jackknife*. Considering this, to estimate the confidence interval for the long term elasticities in MOD3 and MOD4, it is used the *bootstrap* resampling process. According to Hair *et al.*

(2005, p.551), with the resampling it is not necessary to trust the assumed distribution (normal, for example) nor to be careful in which regard the violation of one of the inherent assumptions, being able to calculate the sample's real parameters distribution and verify where the 95,0 or the 99,0 percentile really is (or even, to estimate the standard deviation of the sample and to use as estimator the average standard error, and thus to make hypotheses based on the *t* test).

The use of the *bootstrap* method in detriment of *jackknife* method in the present analysis inhabits in the fact that, according to Hair *et al.* (2005, p.552), "the true power of resampling comes from sampling with replacement". Taking the series in quasi-differences, a standard error of the coefficients (β_i) is obtained and, in consequence of ε_{XY}, through the standard deviation of 10.000 samples (m) of size 46 (n). The procedures are computed in the following stages: 1) it is obtained 1 sample of 46 observations with replacement of the 46 available observations for each variable; 2) MOD3 and MOD4 are estimated by means of the OLS; 3) ε_{XY} is calculated; 4) β_i and ε_{XY} are kept; 5) steps 1) to 4) are repeated 10,000 times; 6) the average and the standard deviation of the sample of 10,000 coefficients (β_i) and the long term elasticities (ε_{XY}) are calculated – the average will be the estimative parameter and the standard deviation its standard error; and 7) finally the value of the *t* statistics and the probability associated with *t*-value (significance of β_i and ε_{XY} being different of zero) is calculated.

The coefficients, as well as its standard errors, for the models MOD3 and MOD4, estimated through FGLS via *bootstrap*, are in Table 5. In Table 6 are presented some models' adjustment statistics: 1) *F* test indicates high joint significance of the variables in explaining both the IBO and the IGC (equation significance test); 2) adjusted coefficient of determination highly confirms the models' good adjustment, being the same highly clarifying of the IBO as much as of the IGC variance; and 3) the AIC and SIC criteria are smaller than those of the models in differences (MOD1 and MOD2), evidencing, by this, the optimum adjustment of MOD3 and MOD4 (moreover, the *Q* statistics of Ljung-Box – Appendix – indicates that MOD3 and MOD4 do not suffer with the presence of serial self-correlation of any order).

The Johansen and Juselius test of cointegration (Appendix) confirms to the 5% level, as much by the Trace test as by the Eigenvalue test, the presence of at least one cointegration vector in MOD3 and MOD4 variables. This fact corroborates that the regressions of MOD3 and MOD4 are not spurious, describing, these models, the long term relations among the variables (Maddala, 2003, p.297-299).

In Table 7 the long term elasticities of the IBO and the IGC are presented in relation to the selected macroeconomic variables, as the above-mentioned methods. In general it is noticed that, as much the IBO as the IGC, are inelastic ($|\varepsilon_{XY}|$ <1) in relation to all the macroeconomic variables, and that the elasticities: $\varepsilon_{PPIB,IBO}$, $\varepsilon_{E,IGC}$, $\varepsilon_{DJ,IGC}$ and $\varepsilon_{SELIC,IGC}$ are not significant.

Table 5. Models in quasi-differences for IBO and IGC

Model	Variable	Coefficient	standard error	t-statistics	Probability
MOD3	β_0	2,4408	1,1257	2,1683	0,0353
	Δ^* LE$_t$	0,4138	0,1285	3,2214	0,0023
	Δ^* LRB$_t$	- 0,4854	0,0593	- 8,1792	0,0000
	Δ^* LDJ$_t$	0,5089	0,2559	1,9893	0,0526
	Δ^* LPPIB$_{t-3}$	0,1495	0,1156	1,2937	0,2022
	Δ^* LSELIC$_t$	- 0,2561	0,0928	- 2,7593	0,0083
	Δ^* LIBO$_{t-1}$	0,1982	0,0730	2,7153	0,0093
MOD4	β_0	0,7345	0,2571	2,8574	0,0064
	Δ^* LE$_t$	0,3134	0,2055	1,5255	0,1340
	Δ^* LRB$_t$	- 0,4724	0,0740	- 6,3825	0,0000
	Δ^* LDJ$_t$	0,1832	0,1957	0,9365	0,3539
	Δ^* LPPIB$_{t-3}$	0,1864	0,0898	2,0771	0,0434
	Δ^* LSELIC$_t$	- 0,1542	0,1248	- 1,2362	0,2227
	Δ^* LIGC$_{t-1}$	0,1692	0,0862	1,9644	0,0555

Table 6. Adjustment statistics of the quasi-difference models

Model	Jarque-Bera test	*Adjusted R-squared*	*F-statistic*	AIC	SIC
MOD3	1,5439 *	0,9384	147,85 *	- 6,3201	- 6,0419
MOD4	0,4414 *	0,7329	30,33 *	- 6,3430	- 6,0647

Significance: * 1%.

Table 7. Long term elasticities for the IBO and the IGC in relation to the macroeconomic variables

Elasticity	X	Estimate	Standard Error	t-statistics	Probability
$\varepsilon_{X,IBO}$	E	0,5214	0,1734	3,0061	0,0043
	RB	- 0,6062	0,0573	- 10,5700	0,0000
	DJ	0,6402	0,3244	1,9734	0,0545
	PPIB	0,1877	0,1454	1,2908	0,2032
	SELIC	- 0,3169	0,1050	- 3,0192	0,0041
$\varepsilon_{X,IGC}$	E	0,3910	0,2742	1,4258	0,1607
	RB	- 0,5730	0,0977	- 5,8636	0,0000
	DJ	0,2299	0,2455	0,9365	0,3539
	PPIB	0,2230	0,1050	2,1245	0,0390
	SELIC	- 0,1809	0,1480	- 1,2217	0,2280

4.3. Final models and Analysis of the Results

Models MOD3 and MOD4, comparatively to models MOD1 and MOD2, were the ones better adjusted to the data, according to AIC and SIC criteria and then to the statistics *Adjusted* R^2, thus describing MOD3 and MOD4, the long term relation among the variables. As all the variables were included in MOD3 and MOD4 with logarithmic transformation, the variables' coefficients, after being adjusted by equation n. 16, represent the long term marginal (constant) elasticity between the stock market indices and the macroeconomic variables.

The coefficients (elasticities) of the models' variables present the expected signals. The relations between the stock market indices, IBO and IGC, with the RB and the SELIC, are revealed to be negative, indicating that, in case of an increase of the Brazilian country risk and of the economy's basic interest rate, the investments in the country become riskier and, therefore, remaining all constant, they suffer a depreciation due in part to the capital flights from the Brazilian stock market. In addition, SELIC rate represents the cost of opportunity of the less risky investments in Brazil; any other investments, even those in the stock market, must produce higher returns than this cost of opportunity. In addition the government securities are competitors to the stock market investments and as higher is the return of the government securities the lower will be the demand of investments in stocks, with the consequent depreciation of these stocks.

The positive relation of IBO and IGC with LE, DJ and PPIB indicates that the Brazilian stock market valorization, measured by such indices, is a direct function of the real economic growth of the country and of the international stock market (U.S.A.) growth. The explanation of the positive coefficients of variable LE shows that the national stock market valorization, since June of 2001, has been presenting an ascending cointegrating movement with the increase of the exchange rate, as findings from Medeiros and Ramos (2004).

Comparing the long term elasticities of the IBO against those of the IGC, on average an increase of 10% in the RB provides a reduction of 6.06% in the IBO. Whereas the same increase in the RB is followed by a reduction of the IGC in 5.73%. In relation to the PPIB, if it is increased by 10% it provokes on average an increase of 1.87% and 2.23% in the IBO and the IGC, respectively. The same interpretation is valid for the other elasticities. In short, the main conclusions when analyzing the estimates of the long term elasticities of the IBO and the IGC are: **1) there are evidences that IBO is more sensitive than the IGC (**$\left|\varepsilon_{X,IBO}\right| > \left|\varepsilon_{X,IGC}\right|$**) in relation to all the macroeconomic variables, except in relation to the PPIB that the IGC is more sensitive than the IBO** (it is also observed that $\varepsilon_{PPIB,IBO}$ is statistically equal to zero and that $\varepsilon_{PPIB,IBO}$ is statistically different from zero to the 5% level); 2) in MOD3 (IBO), four of the five elasticities are significant, and in MOD4 (IGC), only two of the five elasticities are significant; 3) the non significance of the variable SELIC in the model of the IGC does not show that the interests do not affect this index, once the Brazilian country risk is formulated by the premium of the external interests, and variable RB is highly significant to explain both of the stock

market indices; and 4) variable DJ can not be significant to explain the IGC, therefore this has high colinearity with variable RB, thus affecting its standard error; and 5) the non significance of the exchange rate should be interpreted that this does not affect the IGC only simultaneously – with another intertemporal dynamics it could be found significance of this variable.

4.4. Summary of the Results

In accordance with the elasticities calculated after the quasi-difference models, it is noticed that not only the IBO, but also the IGC are inelastic ($|\varepsilon_{XY}| < 1$) in relation to all the macroeconomic variables of the research and that the IBO is more sensitive (elastic) than the IGC in relation to all the variables, except in relation to the PPIB – **there are evidences that IGC is more sensitive than the IBO to the real economic growth**. Additionally, it is proven that 93.84% (*Adjusted* R^2) of the variation of the IBO can be explained by the exchange rate, international stock market, Brazilian country risk, real economic growth and the interest rate, while these variables explain only 73.29% of the variation of the IGC.

In general, the results evidence that the estimates of the sensibilities (elasticities) of the IGC and the IBO, in relation to the macroeconomic variables individually, are relatively similar. However, the exchange rate, the Brazilian country risk, the international stock market, the real economic growth – measured by the industrial physical production, and interest rates are, together, better to explain the IBO than the IGC. Moreover, the IGC was more elastic (sensitive) in the long term in relation to real the economic growth than the IBO.

Considering the concept of *demand following*, as presented in the literature review, the evidences found in the research leads to the acceptance of the hypothesis of that companies who adopt singular practices of corporate governance are more elastic (sensitive) to the economic growth than companies who do not adopt such practices. In general terms, companies who practice high level rules of corporate governance can present better performance in the return of its shares in a cycle of economic growth, than companies who do not practice them. The logic of these proposals indicates that in a cycle of economic growth, companies with better practices of governance can collect more benefits from the expansion than its pairs that do not adopt better practices of corporate governance.

5. Final Considerations

All developed countries or countries in accelerated process of development exhibit high rates of savings, high efficiency in its intermediation or a combination of these two virtues. In this way, the economic growth is associated to the elements that incentive savings and its efficient intermediation that makes it accessible for those who wants to invest. The already proven most efficient way of intermediation of associating savings to the investment is through the financial and stock markets. In Brazil, the stock market has always been at the edge of the national financial arrangement, remaining as characteristic of this market:) low capitalization of the stock market; b) non significant business volume; c) few initial offerings; d) reduced number of public companies; e) transactions highly concentrated in few shares; and f) low liquidity.

One of the diagnoses of the national stock market atrophy, and that in the last decade has been reinforced at the media, business and academic environments – endorsed by diverse international research – is the low level of corporate governance present in this market. It indicates that the institution of better practices of corporate governance can increase the liquidity, the volume of negotiation, the valorization and reduce the volatileness of the companies shares, what, by the way, contributes for the development of the Brazilian stock market.

Allied to this perspective, some efforts have been undertaken in Brazil with the intention to improve the corporate governance standards, such as: Law 10,303/2001 – the reform of the Lei das Sociedades Anônimas (corporate law) and, the dissemination of codes of good practices of corporate governance and the creation of the New Market and of Differentiated Levels of Corporate Governance by the São Paulo Stock Exchange.

This work had for objective to test the sensitivity of the companies who adopt practices of corporate governance, measured by the Index of Corporate Governance (IGC) of the São Paulo Stock Exchange, in relation to the economic growth, comparatively to the sensitivity of those companies who do not adopt them (Index of the São Paulo Stock Exchange-IBOVESPA).

However, in relation to the association between development of the stock market and economic growth there is no consensus on the direction of the causality. The financial institutions and services can be created along with the lack of resources to support the investment, in such a way that the financial system follows the economic growth, and, therefore, generates a new additional demand for financial services, what leads to the financial development. That is, the creation of modern financial institutions and products is a reply to the demand of the investors (and savers) for these services, and the evolution of the financial system is a continuation of the economic development process (*demand following*). However, the creation of financial institutions and the supply of financial services, previously to the sprouting of the demand, mainly in the modern sectors, induce the economic growth. In this sense, the development of the stock market is not a pre-condition to initiate a self-supported economy, representing an opportunity to induce the real growth by means of financial instruments (*supply leading*). In Brazil, there are

evidences of bicausality between the development of the stock market and economic growth.

The comparative analysis of the IGC and the IBO in relation to the real the economic growth – taking the stock market indices as dependents variables and the GDP *proxy* as the independent variable (*demand following*) – has presented evidences indicating higher sensitivity of the portfolio of companies with better practices of corporate governance (IGC) in relation to the real economic growth (PPIB), than the portfolio of companies who do not adopt such practices (IBO).

In general, the study found evidences on the inter-relationship between economic growth, stock market and corporate governance in Brazil. In the Brazilian stock market, companies who adopt better practices of governance can collect more benefit from the economic growth than companies who do not adopt good practices of corporate governance.

6. References

1. ANDRADE, A.;ROSSETTI, J. P. (2004) *Governança Corporativa.* São Paulo: Atlas.
2. ANDREZO, A. F.; LIMA, I. S. (2002) *Mercado financeiro: aspectos históricos e conceituais.* 2 ed. São Paulo: Thompson Learning.
3. BABIC, V. (2003) *Corporate governance problems in transition economies.* Winston-Salem: Wake Forest University, Social Science Research Seminar.
4. BACHA, E. L. (2005) Incerteza jurisdicional e crédito de longo prazo. In: BACHA, E. L.; OLIVEIRA FILHO (org). *Mercado de capitais e crescimento econômico: lições internacionais, desafios brasileiros.* Rio de Janeiro | São Paulo: Contra Capa Livraria | ANBID.
5. BARROS, J. R. M. *et al*. (2000) Desafios e oportunidades para o mercado de capitais brasileiro. São Paulo: Bovespa. Available in: <http://www.bovespa.com.br> Access on Nov/11/2003.
6. BERLE, A.; MEANS, G. (1932) *The modern corporation and private property.* New York: Macmillan.
7. CARVALHO, A. G. (2000) Ascensão e Declínio do Mercado de Capitais no Brasil: A Experiência dos Anos 90. FIPE/USP Working Paper, São Paulo.
8. _____. (2002). Governança Corporativa no Brasil em Perspectiva. *Revista de Administração da USP*, São Paulo, v. 37 , n.3, p.19-32, july/september.
9. CASAGRANDE NETO, H.; CINTRA NETO, M. F.; MAGLIANO FILHO, R. (2002) *Mercado de capitais – a saída para o crescimento*. São Paulo: Lazuli.
10. DE PAULA, G. M. (2003) Governança Corporativa no Brasil e México: Estrutura Patrimonial, Práticas e Políticas Públicas. Santiago do Chile: CEPAL.
11. ENGLE, R. F.; GRANGER, C. W.J. (1987) Co-integration and error correction: representation, estimation, and testing. *Econometrica*, vol.55, n.2, pp.251-76. In: ENGLE, R. F.; GRANGER, C.W.J. *Long-run economic relationships: readings in cointegration.* New York: Oxford University Press, 1991.
12. JENSEN, M. C.; MECKLING, W. H. (1976) Theory of the firm: managerial behavior, agency costs and ownership structure. *Jornal of Financial Economics*, v.3, p.305-360.
13. GLEIZER, D. L. (2005) O mercado de capitais: lições da experiência internacional. In: BACHA, E. L.; OLIVEIRA FILHO (org). *Mercado de capitais e crescimento econômico: lições internacionais, desafios brasileiros.* Rio de Janeiro | São Paulo: Contra Capa Livraria | ANBID.
14. GUJARATI, D. N. (2000) *Econometria Básica.* São Paulo: Makron Books Ltda.
15. HAIR, J. F.; ANDERSON, R. E.; TATHAM, R. L.; BLACK, W. C. (2005) *Análise Multivariada de Dados.* 5º Ed, Porto Alegre: Bookman.
16. KLEIN, B. (1983) Contracting costs and residual claims: the separation of ownership and control. *Journal of Law & Economics*, v.26, p.367-373.
17. LA PORTA, R.; LOPEZ-DE-SILANES, F.; SHLEIFER, A.; VISHNY, R. (1998) Law and finance. *Journal of Political Economy*, Chicago, v.106, n.6, p.1113-1155.
18. _____. (1999) Corporate ownership around the world. *Journal of Finance*, Malden, v.54, n.2, p.471-518.
19. LANZANA, A. E. T. (2002) Economia brasileira: fundamentos e atualidades. São Paulo: Atlas.
20. LEVINE, R. (1997) Financial development and economic growth: views and agenda. *Journal of Economic Literature*, v.35, n.2, p.688-726, June 1997.
21. LEVINE, R.; ZERVOS, S. (1996a) Stock market, banks e economic growth. The World Bank, Policy Research Departament, World Bank Policy Research Paper, n.1690, Washington.
22. _____. (1996b) Stock market development and long-run growth. The World Bank, Policy Research Departament, World Bank Policy Research Paper, n. 1582, Washington.
23. _____. (1998) Stock market, banks e economic growth. *The American Economic Review*, v.88, n.3,p.537-558.
24. MADDALA, G. S. (2003) *Introdução a Econometria.* 3º Ed, Rio de Janeiro: LTC Editora S.A.
25. MATOS, O. C. (2003) Inter-relações entre desenvolvimento financeiro, exportações e crescimento econômico: Análise da experiência brasileira. *Notas técnicas do Banco Central do Brasil,* n.40, Brasília.
26. MEDEIROS, O. R.; RAMOS, F. C. (2004) Determinantes do desempenho e volatilidade da Bovespa: um estudo empírico. In: 4º Congresso de Controladoria e Contabilidade, São Paulo. *Anais* ... São Paulo: FEA/USP (CD-ROM).
27. MONFORTE, J. G. (2004) Introdução. In: ANDRADE, A.;ROSSETTI, J. P. *Governança Corporativa.* São Paulo: Atlas.
28. MORETTIN, P. A; TOLOI, C. M. C. (2004) *Análise de series temporais.* São Paulo: Edgard Blücher.
29. MOURA, A. R. (2005) Desenvolvimento financeiro e qualidade dos ajustes macroeconômicos: notas sobre o caso brasileiro. In: BACHA, E. L.; OLIVEIRA FILHO (org). *Mercado de capitais e crescimento econômico: lições internacionais, desafios brasileiros.* Rio de Janeiro | São Paulo: Contra Capa Livraria | ANBID.
30. NOBREGA, M. A. (2005) Importância de um regime especial de tributação para o mercado de capitais. In: BACHA, E. L.; OLIVEIRA FILHO (org). *Mercado de capitais e crescimento econômico: lições internacionais, desafios brasileiros.* Rio de Janeiro | São Paulo: Contra Capa Livraria | ANBID.
31. NOBREGA, M.; LOYOLA, G.; GUEDES FILHO, E. M.; PASQUAL, D.O. (2000) Mercado de capitais: sua importância para o desenvolvimento e os entraves com que se defronta no Brasil. São Paulo: Bovespa, Jul.

2000. Available in: <http://www.bovespa.com.br> Access on: Nov/11/2003.
32. NOVAES, A. (2005) Mercado de capitais: lições da experiência internacional. In: BACHA, E. L.; OLIVEIRA FILHO (org). *Mercado de capitais e crescimento econômico: lições internacionais, desafios brasileiros.* Rio de Janeiro | São Paulo: Contra Capa Livraria | ANBID.
33. OKIMURA, R. T. (2003) Estrutura de propriedade, governança corporativa, valor e desempenho das empresas no Brasil. São Paulo. Msc. dissertation presented to FEA/USP
34. ORGANIZAÇÃO PARA COOPERAÇÃO E DESENVOLVIMENTO ECONÔMICO – OCDE (2003). *Relatório oficial sobre governança corporativa na América Latina.*Translation by Pinheiro Neto Advogados, Danvers – USA: OCDE. Available in: www.oecd.org/daf/corporate-affairs/>. Access on May 2004.
35. PINHEIRO, A. C. (2005) Em direção a uma agenda de reformas. In: BACHA, E. L.; OLIVEIRA FILHO (org). *Mercado de capitais e crescimento econômico: lições internacionais, desafios brasileiros.* Rio de Janeiro | São Paulo: Contra Capa Livraria | ANBID.
36. PINHEIRO, J. L. (2005) *Mercado de capitais: fundamentos e técnicas*. 3º Ed. São Paulo: Atlas.
37. ROGERS, P.; RIBEIRO, K.C.S. (2004) Governança corporativa e limites para o desenvolvimento do mercado de capitais nacional: análise do Risco Brasil. In: XXVIII Encontro da Associação Nacional de Pós-Graduação em Administração (ENANAP), Curitiba. *Anais* ... Rio de Janeiro: ANPAD (CD-ROM).
38. SHLEIFER, A.; VISHNY, R. W. (1997) A survey of corporate governance. *Journal of Finance*, v.52.
39. TEIXEIRA, N. (2005) Mercado de capitais brasileiro à luz de seus avanços e desafios. In: BACHA, E. L.; OLIVEIRA FILHO (org). *Mercado de capitais e crescimento econômico: lições internacionais, desafios brasileiros.* Rio de Janeiro | São Paulo: Contra Capa Livraria | ANBID.

7. Appendix

Table 8. Correlogram of the residues of MOD1 (IBO)

Lag	Auto-correlation	Partial Auto-correlation	Q-Stat *	Prob
1	0.045	0.045	0.1015	0.750
2	- 0.336	- 0.338	5.7522	0.056
3	- 0.042	- 0.007	5.8423	0.120
4	- 0.052	- 0.184	5.9831	0.200
5	- 0.124	- 0.150	6.8085	0.235
6	0.120	0.059	7.6080	0.268
7	0.006	- 0.132	7.6100	0.368
8	- 0.103	- 0.064	8.2233	0.412
9	- 0.124	- 0.219	9.1433	0.424
10	- 0.025	- 0.113	9.1821	0.515
11	0.021	- 0.123	9.2103	0.602
12	0.078	- 0.062	9.6068	0.650

* Statistics Q (*lag*) of Ljung-Box

Table 9. Correlogram of the residues of MOD2 (IGC)

Lag	Auto-correlation	Partial Auto-correlation	Q-Stat *	Prob
1	0.042	0.042	0.0854	0.770
2	- 0.065	- 0.067	0.2999	0.861
3	- 0.053	- 0.048	0.4457	0.931
4	- 0.224	- 0.226	3.0723	0.546
5	- 0.002	0.008	3.0725	0.689
6	0.043	0.009	3.1759	0.786
7	0.104	0.088	3.7934	0.803
8	- 0.008	- 0.064	3.7972	0.875
9	- 0.195	- 0.188	6.0626	0.734
10	- 0.093	- 0.078	6.5976	0.763
11	0.012	0.034	6.6063	0.830
12	0.045	0.012	6.7407	0.874

* Statistics Q (*lag*) of Ljung-Box

Table 10. Correlogram of the residues of MOD3 (IBO)

Lag	Auto-correlation	Partial Auto-correlation	Q-Stat *	Prob
1	0.097	0.097	0.4805	0.488
2	- 0.222	- 0.233	3.0414	0.219
3	- 0.173	- 0.132	4.6388	0.200
4	0.033	0.014	4.6968	0.320
5	- 0.130	- 0.218	5.6355	0.343
6	0.253	0.309	9.2912	0.158
7	0.100	- 0.045	9.8753	0.196
8	- 0.148	- 0.110	11.183	0.192
9	- 0.175	- 0.015	13.078	0.159
10	- 0.050	- 0.179	13.235	0.211
11	- 0.015	0.037	13.250	0.277
12	0.039	- 0.082	13.352	0.344

* Statistics Q (*lag*) of Ljung-Box

Table 11. Correlogram of the residues of MOD4 (IGC)

Lag	Auto-correlation	Partial Auto-correlation	Q-Stat *	Prob
1	0.049	0.049	0.1237	0.725
2	- 0.044	- 0.047	0.2258	0.893
3	- 0.113	- 0.109	0.9020	0.825
4	0.094	0.104	1.3800	0.848
5	- 0.051	- 0.073	1.5261	0.910
6	0.262	0.274	5.4451	0.488
7	0.120	0.110	6.2948	0.506
8	0.000	- 0.011	6.2948	0.614
9	- 0.167	- 0.096	8.0212	0.532
10	- 0.208	- 0.266	10.743	0.378
11	0.038	0.061	10.837	0.457
12	0.049	- 0.064	10.996	0.529

* Statistics Q (*lag*) of Ljung-Box

Table12. Summary of the Johansen and Juselius cointegration test for the MOD3

Date: 01/09/06 Time: 23:17
Sample: 2001:06 2005:07
Included observations: 49
Series: LIBO
Exogenous series: LE LDJ LRB LSELIC LPPIB(-3)
Lags interval: No lags

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Selected (5% level) Number of Cointegrating Relations by Model (columns)					
Trace	1	1	1	1	1
Max-Eig	1	1	1	1	1

Table 13. Summary of the Johansen and Juselius cointegration test for the MOD4

Date: 01/09/06 Time: 23:14
Sample: 2001:06 2005:07
Included observations: 49
Series: LIBO
Exogenous series: LE LDJ LRB LSELIC LPPIB(-3)
Lags interval: No lags

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Selected (5% level) Number of Cointegrating Relations by Model (columns)					
Trace	1	1	1	1	1
Max-Eig	1	1	1	1	1