MEDIDA DE DESEMPENHO DE EMPRESAS BRASILEIRAS COM AÇÕES NA BOLSA DE VALORES DE NOVA YORK[1]

MEASURE OF BRAZILIAN COMPANIES' PERFORMANCE IN NEW YORK STOCK EXCHANGE

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Resumo. Este trabalho visa averiguar a existência de uma correlação entre o Economic Value Added (EVA) e Market Value Added (MVA) por meio de uma análise do desempenho das empresas brasileiras listadas na Bolsa de Valores de Nova York, período de 2000-2007. Foram demonstradas as principais características dos dois indicadores e o comportamento das empresas em um mercado internacional de ações. Os indicadores de desempenho indicam a existência de criação ou de destruição de riqueza, mostrando o valor de mercado da empresa durante um determinado período. Estes indicadores estão relacionados com a dinâmica do mercado, um tema muito amplo e que tem uma grande importância para análise de desempenho das empresas. Os resultados obtidos mostram que existe uma correlação positiva relacionada com o EVA e o MVA e que a oscilação na economia brasileira influenciou o desempenho financeiro das referidas empresas.

Palavras Chave: EVA, MVA, Indicadores de Desempenho das Empresas Brasileiras

Abstract. This paper seeks to verify whether there is a correlation between the Economic Value Added (EVA) and Market Value Added (MVA) indicators by means of an analysis of the performance of Brazilian companies that were listed on the New York Stock Exchange from 2000 to 2007. The main characteristics of the two key indicators and the companies' behavior in a fluctuating international stock exchange market are demonstrated. The performance indicators indicate the existence of wealth creation or destruction, showing the company's market value over a given period. These indicators are related to market dynamic, a very wide-ranging subject that has great importance for performance analysis. The results show that there is a positive correlation related to the EVA and the MVA and that oscillation in the Brazilian economy have influenced the financial performance of the said companies.

Key words: EVA, MVA, Performance indicators, Brazilian companies' performance

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1 Introduction

The 90's were characterized by privatizations and state downsizing, reflecting the ascendancy of neoliberalism, which began to wane at the beginning of this decade. Most of the first decade of the 21st century was stable and prosperous for the world economy and Brazil was able to accumulate more reserves than the total amount of its external debt, even though its economic growth was below the average of emerging countries.

With the country' economic growth, Brazilian companies started to issue their stocks at the New York Stock Exchange (NYSE) as global investment funds, preferred to focus their operations in only one place, to make it easier to attract potential foreign investors.

In 1992, Aracruz Celulose S.A. was the first Brazilian company to issue American Depositary Receipts (ADRs) – bonds issued in the United States that represent stocks of foreign companies. In April 2008, there were 33 Brazilian corporations on the NYSE and their financial statements started to have a new, more attractive look for investors.

The study of the economic performance of Brazilian companies that have stocks listed on the NYSE, due to the market conditions and strategies, is interesting once that its value depends on the company's effort to profit in a competitive market, besides on the general economy performance.

In order to assess these companies' financial performance, some indicators are being intensified in the managerial environment, with a view to improving the interpretation of operational results and allowing the implementation of short- and long-term strategies. This occurs because some traditional performance assessment models, based only on accounting data, are already considered obsolete. Traditional models don't approach the requirement of minimum invested capital profitability, giving little or no relevance to the risk associated to the uncertainty of future outcomes, as they highlight concepts of managerial analysis, not showing actual value creation to stockholders (DAMODARAN, 2002; BASTOS, 1999).

The concept of value creation is relatively recent and takes in consideration important variables such as the opportunity cost of the invested capital, business risk, and the time value of money. In the context of such concept, the indicators Economic Value Added – EVA - and Market Value Added - MVA were introduced (BIDDLE et al. 1997). Both were trademarked by the consultant firm Stern & Stewart and have been widely discussed and applied to big corporations, such as the Coca-Cola Company, Eli Lilly, AMP and Quaker Oat (KIMURA et al. 1999).

The use of EVA and MVA has been increasing mainly in big companies, because they need to inform their investors how much value was created in a given fiscal year in order to collect more third parties resources. The use of such indexes is a way of measuring the company's behavior and performance, besides serving as benchmarks (COPELAND et al. 2002; PIRES et al. 2010). The creation of the indexes allows the verification of a

representative group of companies, giving a good picture of a specific sector or of market behavior as a whole.

The main question is to know if there was an improvement of the financial performance and if there is a correlation between the EVA and the MVA of Brazilian companies that have stocks listed on the NYSE. The indicators for the 2000-2007 periods were calculated and used to achieve a statistical correlation by using the Economatica database, which is a tool designed for the analysis of financial data of Latin American companies.

Section 2 describes the contemporaneous indicators, including aspects of EVA and MVA - their concept, calculation methods, advantages and disadvantages –, providing an in-depth insight that sets a theoretical framework. Section 3 analyzes the performance of the 31 Brazilian companies that had stocks listed on the NYSE in the 2000-2007 timeframe. It also verifies if there is a statistical correlation between such indicators. The final considerations and perspectives are presented at the end of this paper.

2 Performance Indicators

"Economic Value Added" and EVA are trademarks of the consultancy firm Stern Stewart & Co. EVA is a tool for measuring wealth creation or destruction that estimates a firm's ability to remunerate a stockholder over and above his investment costs. In essence, according to Martins (2001) EVA is just another dressing for the old accounting concept of RIV – Residual Income Valuation, which results from deducting the cost of equity capital out of the accounting earnings. Putting that way there would no reason for EVA be recognized as a new concept in scientific grounds, so in its computation there is several reversal adjustments in the accepted rules for producing financial statements before charging the cost of equity to the new adjusted earnings. In practice, however, just a few adjustments are made, so EVA has almost the same meaning of RIV.

Stern Stewart & Co. defines EVA as an integrated structure of business and variable remuneration management, which sets a new orientation inside an organization. Its goal is to maximize the value created by the company through a change in the organizational culture. Stewart (1990) states that EVA is the net operating profit minus the opportunity cost of all the capital invested in an enterprise. The opportunity cost is the minimum acceptable return on invested capital. In other words, it is the value that the stockholder may get by choosing other types of investments (banks, financiers, suppliers). EVA's calculation method, according to Young and O'Byrne (2001) is:

$$EVA = ROI - i_d \quad (1)$$

Where i_d is the desired return rate on investment and ROI is the return on investment. The desired return rate (i_d) used in this study is the Brazilian SELIC interest rate. ROI is calculated by dividing Operational Profit EBIT (Earnings before Interest and Taxes) by the sum of bank loans, issued bonds and shareholder's equity (BLIB + SE)

As mentioned, EBIT are the earnings before interest and taxes. Therefore, it is the operational profit added to the Interest Revenue. It does not include Interest Expenses or the Equity Method Result. BLIB is the sum of all short- and long-term financing and loans.

The desired return rate is also known as the opportunity cost of the capital invested. This is the return rate that investors would expect if they had invested in other operations of similar risk.

SELIC, or "Sistema Especial de Liquidação e de Custódia (SELIC)", is the basic interest rate of the Brazilian economy. SELIC is the risk-free interest rate that the Brazilian government offers on bonds issued by the National Treasury and the Central Bank of Brazil. The SELIC system is in charge of all issue, rescue, interest payment and custody operations for such bonds, as well as of the liquidation of definitive operations.

The Country Risk is included in SELIC's calculation, making this interest rate ideal to assess the opportunity cost of the capital. As to EVA's results, some situations should be analyzed:

- **Positive EVA:** indicates returns have been higher than the opportunity cost over a given period. In case a **positive variation of EVA** has also occurred between two periods, it indicates that additional creation of wealth has occurred. The company's operational performance is, therefore, excellent;
- **Positive EVA**, but with a **negative variation** between two periods: shows that there's still creation of value, but at decreasing rates. It may mean that the company is going through a development and restructuration process;
- **Negative EVA:** indicates value destruction; in case there is a **positive evolution** from one year to the next, there's still destruction of value, but at lower levels. The company is acting in order to recover and create wealth;
- **Negative EVA,** with **negative evolution** from a fiscal year to the next means wealth destruction is occurring. The investor should analyze which strategies and actions are being made by the firm to reverse the situation.

EVA is a good tool for performance analysis, but it shows past information, because it is oriented to the assessment of management and to the communication of results already achieved. It configures an internal managerial instrument that analyzes the generation of value for partners (stockholders), for it is calculated from the accounting information & economic projections, adjusted in a way to minimize conceptual distortions.

Differently from this indicator, the MVA requires the previous knowledge about the market price of the investment be evaluated.

Considering, still, the focus and the understanding of the drivers of value creation, the Market Value Added - MVA - represents the market expectation in relation to the company. It is a cumulative measure of company performance, because it shows how much of the market value of the stocks has been adding value to the investors. It also enables to inform if there has been creation or destruction of wealth, showing, therefore,

the success level of decisions made in the past as reflected in the present (MALVESSI, 2001). The problem is that MVA does not take into consideration the opportunity cost of the invested capital.

Young and O'Byrne (2001) define MVA® as the difference between the value of a company in the period t and the value in the period t-1. This indicator may be easily visualized by the following equation:

$$MVA = VF_t - VF_{t-1} \quad (2)$$

Where company value is calculated by the proportion between EVA® and the opportunity cost of the capital, i_d, which will be represented by SELIC. Adopting the simplified proposition that the current accounting profit is stable, the value of the company at *t* is equal to the capitalization of the accounting operational profit (EBIT) divided by the opportunity cost. Therefore, the MVA can be obtained by:

$$MVA_t = \frac{EBIT_t}{SELIC_t} - \frac{EBIT_{t-1}}{SELIC_{t-1}} \quad (3)$$

What is shown in equation (3) is a very naive model of computing firm value. It assumes that the current EBIT would rest unchangeable for the remaining life of the firm. But applying such model for each company, in a ex post temporal sample, mitigates the shortfalls of the model, since accounting earnings is dynamically changing during the sample period and the resulting differences in firm value in each period can be taken as a proxy for value created or destroyed, i.e, another way of computing EVA.

As to the result of MVA, some situations should be analyzed:

- **Increasing MVA**: indicates that the company is producing (or guarantees to produce) return rates higher than its cost of capital - in other words, there is a positive relationship between the operational results and the quality of management;
- **Decreasing MVA:** represents decreasing investor expectations in relation to the company, showing returns were below the cost of capital.

Such indicators are related to the efficient exploration of the obtained resources. It may be said, thus, that while EVA informs about company financial results at a given moment, MVA presents the sum of past results in relation to the creation of value for stockholders. The first is considered a statistical indicator, since it's measured on the basis of information covering only one period (local income). The second one is a dynamic indicator, because it takes into consideration the market history of the company (global income). The immediate profits are shown by EVA and the accumulated gain (value-added) is related to MVA, because it is based on the market perception of the efforts made by managers to generate wealth. Thus, MVA corresponds to all the EVAs achieved in a given time, representing the current value of past EVAs.

It is worth to stress the pros and cons of EVA and MVA measures. EVA represents the financial earnings calculated by the company that exceeds the minimum compensation required by the owners of total capital, *i.e*, creditors and shareholders. Furthermore, this metric shows how much return on investment has exceeded the expectations of return on capital owners. However, by relying only on financial statements, reflects the company's past performance. If a company is able to compensate its owners only to the extent of their minimum expectations of return, its market value is limited to the amount that would be spent to build it, or the replacement value of its assets (SANTOS and WATANABE, 2005).

The shareholder value is created onlywhen the sales revenues exceed all expenditures incurred. Thus, the value would exceed the company's realization of its assets. This result indicates an additional aggregation of wealth by the market known as MVA or goodwill (HARANO , 2005). So, MVA incorporates the expected future earnings of the company, reflecting the view of the capital market and business success in ther financial decisions. MVA is used as a measure of the economic value and the maximization of aggregate wealth is the primary goal of any company in relation to the economic welfare of their shareholders (SANTOS and WATANABE, 2005).

To verify if there is correlation between such indicators, research results based on information of Brazilian companies will be presented in the following section. Relative values were used, conferring greater reliability to the correlation analyses.

3 Data and Methodology

3.1 Hypotheses

There are some studies that posit correlations between company EVA and MVA (e.g. YOUNG AND O'BYRNE, 2001; FREZATTI, 2004; KASSAI, 2005; LEHN AND MAKHIJA, 1996; BORSATO et al. 2009). Taking into consideration the nature of the performance indicators, the probable outcome in terms of expected returns among companies listed on the stock exchange market may be inferred. Thus, two hypotheses about possible, or expected, outcomes given by the indicators about the financial performance of Brazilian companies are proposed:

- If the immediate profits are linked to the EVA and the accumulated gain (value-added) is related to the MVA, there is a positive correlation between them;
- The financial performance measured by the indicators is a consequence of effects and economic facts derived from Brazilian public management.

3.2. Data

The deductive method was used, that is, universal premises were the starting point and, then, they were applied to the companies studied.

Why study Brazilian companies whose stocks are listed on the New York Stock Exchange? First of all, because, in order for its stocks to be listed a company is required to issue financial statements in accordance with standards and rules of the SEC (Securities and Exchange Commission). Brazilian companies are required to convert their stocks into ADR

(American Depositary Receipt) because there are differences in accounting standards between Brazil and the USA. ADR is the main stock certificate issued by North American banks for foreign enterprises that wish to access the U.S. capital market. Such certificates have existed for approximately 70 years, but only in the 90's did they experience a marked growth because national investors observed that it would be more profitable to negotiate at NYSE, as its currency risk is smaller. Furthermore, NYSE is a place where companies may raise resources through selling new bonds, and bond buyers can easily resell them when necessary. For Gitman (2001, p. 59) "the stock exchanges create efficient markets, which make the resources available to be used in more productive manners".

Brazilian companies joined NYSE to raise resources on the international market, increasing their stock value and their goodwill (image, brand name, intellectual capital etc.), and raising their liquidity. Because of the market conditions and strategies used by those enterprises, they have become an excellent sample for the making of a study as to the existence or not of correlation between the performance indicators.

Besides the deductive method, bibliographic research on published material related to EVA e o MVA, comprising publications, books, papers, magazines and the internet was conducted; and a documental analysis was done based on financial information of researched companies. As a scientific research technique, field research was made, using the websites of NYSE, of the Central Bank of Brazil and of the Sao Paulo Stock Exchange.

The methodology also included a comparative analysis of the financial performance of the companies with stocks at NYSE from 2000 to 2007. As the research analyzes the performance indicators of such companies, showing the degree of relation between EVA and MVA, and, for such, uses a statistical tool of correlation, it can be defined, also, as of quantitative character.

All the companies that had valid stocks listed on NYSE from 2000 to 2007 were included in the universe to be researched, and listed according to the Economatica database – this database contains information on the largest 1000 Latin American public companies, on the 200 largest U.S. companies, and their summarized balance sheets.

Out of the 33 Brazilian companies that had listed stocks on the NYSE at that time, financial information on 31 (93.9 percent) can be found on Economatica. This database was used to investigate the existence of a correlation between the EVA and the MVA. Of the 31, 51.6 percent are located in the state of Sao Paulo, 19.35 percent in Rio de Janeiro and 29 percent are spread across seven Brazilian states. They represented 14 economic sectors of the country.

Considering the data collected, it is clear that Economatica provides a good sample for the study and its proposed goals, as the sample is composed by almost 100 percent of the universe and all the financial statements follow SEC standards.

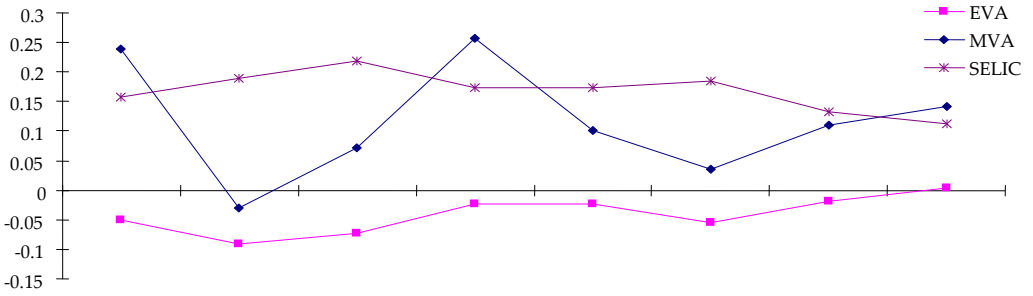
4 Analyses of Results

4.1 Behavior of company EVA and MVA

To understand the possible effects of historical facts on the financial performance of the companies, picture 1 shows the evolution of the aggregated results of the three variables, EVA, MVA and the SELIC rate, considering the following:

- In 2000, Brazil sanctioned the Fiscal Responsibility Law, with the goal of balancing government public accounts, limiting fiscal expenses and debt levels. The value of the aggregated value of the EVA of the 31 companies was -0.05, showing a destruction of value; the MVA was above 0.25;
- With the terrorist attacks of September 11th in USA and the period before Brazilian presidential elections, the companies' MVA decreased to a value below zero;
- To handle financial speculation in 2002, due to the election of a leftist president in Brazil, there was a slight increase in the SELIC rate, as well as a significant increase of MVA and a slight increase of EVA;
- In 2003, the Brazilian economy kept balanced and the companies' MVA increased;
- In 2004 and 2005, there were corruption scandals involving the federal government (president Luis Inácio Lula da Silva) – thus, MVA and EVA had a significant decrease;
- In 2006, the president was reelected and the country's economy kept growing at a good rate. Both EVA and MVA did not generate negative results;
- Despite the real estate market crisis in USA, MVA and EVA growth were significant in 2007. It was also noted that the SELIC rate decreased (2005-2007).

Picture 1: Comparison of the Variables during historic events



2000	2001	2002	2003	2004	2005	2006	2007
FRL	Attacks of 09/11	Brazilian Presidential Election	Economic **Growth**	Brazilian Corruption Scandals	Dismissal of the Chief of Staff	Dismissal of the Finance Minister	Real Estate Crisis

From information in Tables 1 and 2, it is possible to analyze company financial performance:

- In 2001, the average of EVA peaked bottom (092), maybe as a consequence of the 2001 terrorist attacks. By the end of that year, a good parcel of the companies also had the MVA reduced by half in relation to the first semester and negative when compared to the previous year;
- Still in 2001, the average MVA registered a negative value (the only time that occurred in the temporal series of the analysis);
- In 2002, a year of currency crisis in Brazil due to the victory of the PT leftist party in the presidential election, companies' EVA remained negative, but above 2001 levels. Only three companies had a positive EVA: Companhia Brasileira de Distribuição, Companhia Vale do Rio Doce and Embraer. Petrobrás had negative results (the only time this happened);
- The exchange rate and the country risk increased significantly, in the context of international doubts raised about Brazil, which justify the negative results of 2002. In the first semester of 2003, no company had a positive EVA. By the end of that year, only eight of them were able to recover;
- In 2003, Companhia Vale do Rio Doce, CPFL and TAM registered a MVA of over 100 percent. That valorization was due to the recovery from the 2002 exchange crisis;
- From 2003 to 2005, Brazil went through a crisis in the aerospace sector and many companies were shut down. Vasp and Varig went bankrupt. Tam and Gol registered good EVAs, however, Embraer, one of the biggest national companies, had value destructions of up to 10 percent;
- Between 2000 and 2006, Companhia Brasileira de Distribuição, Petrobrás and Vale do Rio Doce had a distinguished performance, showing a positive EVA in most years;
- As to the MVA, companies of the telecommunications sector Telemar, Telesp and TIM had a good performance, having few decreases of their values in the period. TIM was the only company that didn't lose value;
- In 2007, the Companhia Brasileira de Distribuição presented its first negative EVA. This was due to management problems faced by the company;
- From 2006 to 2007, AmBev, CPFL, Gerdau, Votorantim, Telesp and Telemar stood out in value creation. In this same period, ten other companies showed creation of value for the first time. Embraer recovered from the crisis (a two percent value creation);
- In 2006, Telenorte registered the worst EVA among the studied companies, with a destruction value of 30 percent. In the following year, it recovered, creating 1.2 percent of value, thus evidencing company efforts at value creation and/or conservation;

- In 2007, the average EVA was 0.004 due to the higher economic growth of Brazil;
- Between 2005 and 2007, companies had been recovering from great devaluations suffered. At the same time, corruption scandals, the dismissal of the minister of finance, a crisis in China and the U.S. real estate crisis happened. In relation to 2001, companies, in general, recovered part of their lost value, with an average MVA of 0.095.

Table 1 – EVA of Brazilian companies with ADRs at NYSE – from 2000 to 2007

COMPANY	2000	2001	2002	2003	2004	2005	2006	2007
AMBEV	-0.039	-0.060	0.110	-0.027	-0.088	-0.069	0.012	0.048
ARACRUZ	-0.022	-0.114	-0.043	-0.063	-0.085	-0.101	-0.033	-0.044
BRADESCO	-0.077	-0.103	-0.155	-0.134	-0.027	-0.033	-0.074	-0.006
ITAUBANCO	-0.066	-0.074	-0.095	-0.072	0.004	-0.028	-0.097	0.001
BRASIL TELECOM	-0.083	-0.112	-0.122	-0.061	-0.085	-0.115	-0.006	0.063
BRASKEM	-0.016	-0.060	-0.101	-0.062	-0.037	-0.088	-0.026	-0.038
PÃO DE AÇÚCAR (CBD)	0.024	0.087	0.115	0.042	0.053	0.043	0.045	-0.001
CEMIG	-0.063	-0.095	-0.142	-0.055	-0.034	-0.041	0.033	0.049
COPEL	-0.045	-0.076	-0.187	-0.166	-0.090	-0.072	0.062	0.043
SID. NACIONAL	-0.050	-0.136	-0.038	-0.099	-0.023	-0.051	-0.036	0.057
VALE	0.036	0.003	0.091	0.044	0.159	0.043	0.035	0.066
EMBRATEL	-0.086	-0.211	-0.181	-0.119	-0.103	-0.136	-0.049	-0.072
CPFL	-0.161	-0.170	-0.063	0.064	-0.053	-0.011	0.070	0.087
EMBRAER	0.212	0.084	0.294	-0.076	-0.111	-0.127	0.019	0.002
GAFISA	-0.123	-0.149	-0.084	0.002	-0.071	-0.110	-0.037	-0.042
GERDAU	-0.028	-0.166	-0.097	0.012	0.150	-0.040	0.013	0.027
GOL	-	-	-	0.818	0.162	0.062	0.065	-0.049
PERDIGÃO	-0.069	-0.051	-0.072	-0.049	-0.029	-0.083	-0.071	-0.052
PETROBRÁS	0.113	0.028	-0.004	0.029	0.009	0.016	0.050	0.075
SABESP	-0.114	-0.143	-0.168	-0.103	-0.126	-0.130	-0.084	-0.036
SADIA	-0.069	-0.097	-0.170	-0.080	-0.032	-0.066	-0.083	-0.057
TAM	-0.025	-0.216	-0.209	0.083	0.189	0.146	0.208	-0.045
TELENORTE	-0.115	-0.138	-0.122	-0.094	-0.179	-0.160	-0.305	0.012
TELEMAR	-0.087	-0.133	-0.172	-0.076	-0.038	-0.031	0.014	0.045
TELESP	-0.081	-0.097	-0.094	-0.066	-0.008	0.045	0.059	0.051
TELEMIG	-0.080	-0.101	-0.063	-0.060	-0.086	-0.065	-0.044	-0.010
TIM	-0.101	-0.078	-0.049	-0.020	0.056	-0.040	-0.077	-0.056
ULTRAPAR	-0.007	-0.008	-0.008	-0.086	-0.006	-0.120	-0.047	-0.056
UNIBANCO	-0.128	-0.133	-0.188	-0.090	-0.073	-0.064	-0.044	0.025

VIVO	-0.126	-0.142	-0.160	-0.120	-0.050	-0.122	-0.112	-0.046
VOTORANTIM	-0.009	-0.101	-0.022	-0.071	-0.086	-0.134	-0.035	0.069
AVERAGE	-0.050	-0.092	-0.073	-0.024	-0.024	-0.054	-0.019	0.004
Values refer to 2nd semester of each year								

Such indicators allowed a simple communication about the economic reality of the businesses, as no refined calculations had to be done. It is useful for external analyst, both for establishing comparisons among companies and for benchmarking.

Table 2 – MVA® of Brazilian companies with ADRs at NYSE – from 2000 to 2007

COMPANY	2000	2001	2002	2003	2004	2005	2006	2007
AMBEV	0.103	0.037	0.423	0.308	-0.491	0.133	0.426	0.391
ARACRUZ	0.178	-0.090	0.452	0.285	-0.148	-0.009	0.149	-0.095
BRADESCO	0.106	0.044	0.040	-0.040	0.661	0.036	-0.676	-0.284
ITAUBANCO	-0.162	0.004	-0.002	-0.076	0.312	-0.051	-0.921	-0.133
BRASIL TELECOM	0.224	0.098	-0.003	0.260	-0.121	-0.110	0.413	0.521
BRASKEM	0.685	0.626	0.241	0.325	-0.155	-0.071	0.463	0.060
PÃO DE AÇÚCAR (CBD)	-0.044	0.067	0.077	-0.292	-0.028	-0.121	0.085	-0.263
CEMIG	0.537	0.145	-0.192	0.182	-0.029	-0.183	0.399	0.155
COPEL	0.557	0.451	-0.260	-0.181	-0.014	0.179	0.130	0.265
SID. NACIONAL	0.562	-0.151	0.281	0.083	0.092	-0.025	0.374	0.475
VALE	0.903	0.713	0.983	1.023	1.495	0.086	0.106	-0.176
EMBRATEL	0.047	-0.308	-0.028	0.238	0.184	-0.020	0.233	-0.111
CPFL	-0.148	-0.046	0.549	1.228	-0.148	0.115	0.226	0.154
EMBRAER	0.700	-0.998	0.191	0.060	-0.987	-0.056	0.831	0.900
GAFISA	0.018	-0.203	-0.167	0.171	-0.109	-0.142	0.232	0.128
GERDAU	0.587	-0.301	0.003	0.647	0.535	-0.212	0.094	0.105
GOL	-	-	-	-	1.328	0.371	0.321	0.216
PERDIGÃO	0.255	-0.106	0.009	0.632	-0.117	-0.131	0.435	0.151
PETROBRÁS	0.382	-0.178	-0.033	0.243	-0.175	0.098	-0.028	0.133
SABESP	-0.018	0.024	-0.045	0.222	-0.034	0.031	-0.027	0.199
SADIA	0.342	-0.260	-0.043	0.264	0.258	0.175	0.279	-0.006
TAM	0.678	-0.314	0.069	1.129	0.771	1.030	0.552	-0.356
TELENORTE	0.022	-0.211	-0.061	0.268	-0.431	0.054	-1.135	0.887
TELEMAR	0.173	-0.011	-0.110	0.277	0.128	0.111	0.233	0.114
TELESP	-0.009	0.020	0.016	0.045	0.219	0.306	0.034	0.057
TELEMIG	0.346	-0.048	-0.054	0.127	-0.415	0.059	-0.071	-0.207
TIM	0.055	0.041	0.070	0.260	0.638	0.220	0.258	0.159
ULTRAPAR	0.109	0.245	-0.070	0.170	0.169	-0.265	0.168	-0.147
UNIBANCO	-0.149	0.028	-0.193	0.138	0.119	0.038	-0.199	0.095

VIVO	-0.095	0.056	-0.194	-0.554	-0.116	-0.344	-0.170	0.111
VOTORANTIM	0.231	-0.293	0.198	0.267	-0.223	-0.206	0.171	0.865
AVERAGE	0.239	-0.031	0.072	0.257	0.102	0.035	0.109	0.141

Values refer to 2nd semester of each year

4.2. Analysis of Correlation

In carrying out the study, the main statistical variables were used (average, median, maximum and minimum values and standard deviation) for the attainment of more accurate results as to the existence of correlation between the indicators.

It is noted that in most years, EVA average is negative, probably meaning that most companies in the study were not generating wealth for their partners and stockholders; this may be due to a maturation process, given that they had only recently joined the U.S. market. The EVA median is also negative, indicating that there are difficulties for these companies to have profitability higher than the cost of the invested capital, due to competitiveness (see Table 3).

The standard deviation of EVA is positive and less than 10 percent. In other words, the dispersion degree of variables is low, which may be signaling competitiveness among both companies and their sectors of activity.

Table 3 – Descriptive Statistics of EVA® and MVA®

	Average	Median	Maximum	Minimum	Standard Deviation
EVA®	-0.054	-0.065	0.818	-0.305	0.090
MVA®	-0.008	0.026	1.533	-5.114	0.471

Data refers to the 2nd semester of each year.

EVA maximum value was 0.818; registered in 2003 by GOL. This was the first year the company operated on the stock exchange market. The minimum registered was in 2006 by Telenorte – a 30 percent destruction of value.

The median MVA is positive, showing that the market value of most companies is higher than the invested capital. Implicitly, there is an indication of potential future growth of these entities. MVA average is negative, showing that the companies' market value, in general, suffered slight reductions.

The maximum value of MVA was 1.533 (in 2007). The minimum was of -5.114 (GOL in 2004). However, thus value wouldn't be ideal for the analysis, as 2004 was the first year of the company on the stock market. Embraer registered an MVA of -1.84 in 2003. The standard deviation was 47 percent, a significant dispersion. Petrobrás and Companhia Vale do Rio Doce are responsible for such a high dispersion.

The correlation has the goal of demonstrating the degree of relation between the EVA and the MVA in the period under study. According to Stevenson (1981), the closer to +1 or -1 the coefficients are, the stronger the relation between the performance indicators is. The result is 0.4161 of the studies made on the 31 Brazilian companies of NYSE.

The degree of correlation, considering as variables the changes in EVA and in MVA, was medium for the analyzed years, indicating a reasonable correlation between both instruments of analysis.

However, it must be taken into consideration that the updating of accounting data (non-current assets and shareholder equity) alters the enterprise's operational results and, consequently, changes EVA value, as there are accounts that should be monetarily adjusted (WARR, 2005) in order to be properly assessed. It is known that, although inflation was high, since January 1st 1996, the Brazilian government extinguished the monetary correction of balance sheets, because it understood that the corrected values would affect the control of the economy. Therefore, the results obtained out of financial statements are not adjusted, causing distortions in the basis of the indicators' calculation.

Thus, the study of correlation between both indicators must be seen with some reservations, because it is clear that, depending on the calculation basis, on the circumstances and methodologies, different results may be achieved.

5. Conclusions and discussion

Having the main goal of identifying if there is correlation between the indicators EVA and MVA, it was possible to deepen the knowledge about the financial performance of Brazilian companies that have stocks listed on the NYSE, including a historical analysis (from 2000 to 2007).

With the results, it may be inferred that there is a reasonable correlation between the indicators of the 31 companies in our sample. It was emphasized, as well, that the occurrence of political turbulences, mainly in the period before presidential elections, had an impact on the financial performance of the enterprises, generating a below-zero MVA. That means that there was a decrease in investor expectations. This result may help companies to establish internal and external, short- and long-term goals, allowing management's strategic decisions to focus on the creation of value for stockholders, mainly in times of economic stability.

This study serves as a guide for those who want to install an/or use the EVA and the MVA, both of which are tools to measure the performance related to the creation of wealth for stockholders, for decision makers need useful and effective techniques of financial and economic performance measurement of the companies. Such indicators have the capacity of indicating the risk opportunities associated to the invested capital. Therefore, they perform the business management process by informing if a specific unity of the entity is – or isn't – adding value to the stockholders.

A comparative study with foreign companies of countries with economies similar to the Brazilian economy that also have stocks listed on the NYSE would reveal the financial performance and behavior of Brazilian companies, as the participation of foreign players in this stock exchange market is increasing.

Companies whose stocks are listed on the NYSE have characteristics and strategies that set them apart from other Brazilian companies because they have better financial resources. They serve as models for others who wish to reach their performance level and, thus, need to show their risks and financial performances in a much more detailed way.

Finally, it is necessary to highlight that this research should be deepened. More data and more periods of analysis will allow the attainment of more robust results. Since ADRs also serve as oscillation parameter for the stocks negotiated in Brazil, fluctuations of ADRs' price quotations may accelerate stock dispersions and vice-versa. Therefore, the results of these companies' MVAs will also change. This is the continuity perspective in which it is intended to improve the knowledge about companies and to better understand a set of performance indicators.

5 References

BASTOS, N.T. Avaliação de desempenho de bancos brasileiros baseados em criação de valor econômico. **Revista de Administração.** (34) 3: 1-14, 1999.

BIDDLE, G.C.; BOWEN, R.M.; WALLACE, J.S**.** ***Does EVA beat earnings? Evidence on stock returns and firm value.*** Journal of Accounting & Economics. (24): 301-336, 1997.

BORSATO, J. M. L. S.; PIMENTA, D. P. and RIBEIRO, K. C. S. Um estudo comparativo do desempenho econômico-financeiro em BR GAAP, US GAAP e IFRS na Gerdau S.A. **E&G – Revista Economia e Gestão**, v. 19 n. 19, p. 85-101, jan/abril 2009.

COPELAND, T., KOLLER, T. and MURRIN, J. ***Valuation: measuring and managing the value of companies.*** (3ª. ed.). New York: John Wiley & Sons Inc, 2002.

DAMODARAN, A. **A face oculta da avaliação:** avaliação de empresas da velha tecnologia, da nova tecnologia e da nova economia. (1a. ed.). São Paulo: Makron Books, 2002.

FREZATTI, F. ***Market value computation for MVA analysis in Brazil***. Master of Business Administration (Warszawa), Varsóvia, v. 1, p. 22-27, 2004.

GITMAN, L.J. **Princípios da administração financeira – essencial**. (2a ed.). Porto Alegre: Bookman, 2001.

HARANO, F. Discussão sobre a importância da demonstração do valor econômico agregado (EVA). **Revista Brasileira de Contabilidade.** Brasília, v. 3, n. 151, p. 12-15, jan.fev. 2005.

KASSAI, J. R. Conciliação entre o VPL e o EVA: abordagem matemática e contábil do Lucro Econômico. **Revista Brasileira de Contabilidade**, Nun. 156, p. 23-35, 2005.

KIMURA, H. et al. Metodologia para avaliação do EVA (*Economic Value Added*) através dos demonstrativos financeiros e dados de cotação de preço. **IV Seminário em Administração (SEMEAD)**, FEA-USP, 1999.

LEHN, K. and MAKHIJA, A.K. ***EVA & MVA as performance measures and signals for strategic change***, Journal Strategy & Leadership, 24: 4-38, 1996.

MALVESSI, O. Criar valor é criar riqueza; criação de valor ao acionista. **Revista da Escola Superior de Propaganda e Marketing,** (8), 7, 2001.

MARTINS, E. **Avaliação de Empresas: Da Mensuração Contábil à Econômica**. São Paulo: Atlas, 2001.

O'BYRNE, S. F. ***EVA and Market Value.*** Journal of Applied Corporate Finance, Spring. 9(1): 116-125, 1996.

PIRES, E. A.; PANHOCA, L and BANDEIRA, G. L. R. Análise da influência do modelo dinâmico na geração de valor econômico agregado nas empresas calçadistas listadas na Bovespa nos anos de 2005, 2006 e 2007**. Revista Gestão Organizacional,** v. 3, n. 2, p. 225-237, jul./dez. 2010.

ROSS, S.A., WESTERFIELD, R.W., JAFFE, J.F. **Administração financeira:** *corporate finance.* São Paulo: Atlas, 2002.

SANTOS, J. O. and WATANABE, R. Uma análise da correlação entre o EVA® e o MVA® no contexto das empresas brasileiras de capital aberto. **Caderno de Pesquisas em Administração**, São Paulo, v. 12, n. 1, p. 19-32, janeiro/março 2005.

STEVENSON, W. J. **Estatística aplicada à administração**. São Paulo: Habra Ltda, 1981.

STEWART, G. B., III. ***The quest for value:*** *the EVATM management guide.* New York: Harper Business, 1991.

_____ ***EVATM: fact and fantasy.*** Journal of Applied Corporate Finance, (7) 2: 71-84.

WARR, R. S. ***An empirical study of inflation distortions to EVA.*** Journal of Economics and Business. (57): 119-137, 2005.

YOUNG, S.D. and O'BYRNE, S.F. ***EVA and value management: a practical guide to implementation.*** United States of America: McGraw-Hill Book, 2001.

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