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Factors Influencing Brazilian Value Investing Portfolios

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ABSTRACT

This study contributes to research on value investing in Brazil, analyzing the Brazilian funds that adopt this philosophy. The goal is to identify some of the factors that influence the decisions of value investing managers to maintain an asset in their portfolios. The results point out that the variables that influence portfolio managers to maintain a stock in their assets under management are greater stability in earnings per share, high ROA (Return on Assets), high gross margin, company size, and liquidity of the shares.

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Factores que influyen las carteras de valores de inversión de Brasil

RESUMEN

Este estudio contribuye a la investigación sobre inversión de valor en Brasil, analizando los fondos que adoptan esta filosofía. El objetivo es identificar algunos de los factores que influyen en las decisiones de los gerentes de inversiones de valor para conservar un activo en sus carteras. Los resultados evidencian que las variables que influyen en los gestores de carteras para conservar una acción de los activos que gestionan son la mayor estabilidad en las ganancias por acción, el alto rendimiento de los activos (ROA, por sus siglas en inglés), el margen bruto elevado, el tamaño de la empresa y la liquidez de las acciones.

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1. Introduction

An investment fund is an organization formed by the union of several investors who gather for an investment in common. In Brazil, mutual funds are required to have an administrator and a manager who takes care of assembling the portfolio assets of the fund (CVM, 2012).

Over time, managers of mutual funds have been developing, testing, and improving their investment philosophies. One of these philosophies is called Value Investing, which combines fundamental analysis with some typical concepts such as Price-To-Book ratio,

margin of safety, competitive advantage, dividend yields, and Price-Earnings ratio. Several academic papers such as those by Oppenheimer (1984), Piotroski (2000), Beukes (2011), and Sareewiwatthana (2011) have tested the performance of this investment philosophy, screenings companies with certain financial indicators, as a proxy for value investing. Typically, these strategies give better results than the market average and with less risk.

The aim of this study is to identify some significant factors that Brazilian portfolio managers are interested to keep a stock in their Value Investing portfolio.

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2. Related literature

It is possible to say that value investing started with the publication of "Security Analysis" by Benjamin Graham and David Dodd in 1934 (Greenwald et al., 2004). The authors, throughout the book, described the approach and their investment techniques to achieve the success on investing, regardless of the market cycle.

Another book by Graham that later complemented the dissemination of his investment techniques was "The Intelligent Investor" (in 1949). Graham often gets credit as the creator of the profession of equity analyst and is one of the founders of the Chartered Financial Analyst (CFA).

In addition to his academic contribution, with publications and as a professor at Columbia, Graham was also known for being the mentor of Warren Buffett. Buffett, who, early in his career, opted for portfolios with large diversification and kept focus on quantitative aspects (P / E ratios and Price-to-Book ratio), over the years and under the influence of their partner in Berkshire Hathaway, Charlie Munger, started focusing on qualitative aspects (identifying competitive advantages and its sustainability) and thus diverged from the original style of Graham.

Value investors have been improving the technique, and several other elements were included in the criteria for selection of assets.

According to Oppenheimer (1984), the dividend yield and stability of growth in earnings per share are two of the criteria in the Graham's selection of undervalued or mispriced securities. In their tests to simulate the performance of a portfolio that uses Graham's qualitative filters, the author included the variables "dividend yield of at least two-thirds of the AAA Bond" and "Stability of growth in earnings of more than two declines of 5 per cent or more in year-end earnings in the prior 10 years are permissible".

Salgueiro (2007) compared the investment philosophy of Benjamin Graham and Warren Buffett applied to the Brazilian stock market and obtained better results than the market average. The author's philosophy resulted in some financial and economic filters, such as Debt / Total Assets, Operating Margin, and ROE (Return on Equity).

Buffett and Clark (2008), analyzing the Warren Buffett approach on investing, tried to establish a criterion to identify companies with competitive advantages. According to the authors, as a general rule, companies with gross profit margins greater than 40% tend to have some kind of competitive advantage. A gross profit margin of 20% or less would indicate a highly competitive industry.

For them, a company with competitive advantage must have low costs of SG&A (Selling, General, and Administrative Expense) with respect to Gross Profit. This would mean that the cost of overhead is not burdening the company.

Depreciation, ultimately, should represent an expense of business (even a provision), because at some point, the productive assets must be replaced. In the same book, they argued that companies with competitive advantage tend to have lower depreciation costs in relation to gross profit, as assets continue to produce well even after being fully depreciated.

Also, according to Buffett and Clark (2008), Warren Buffet prefers securities with a steady and predictable gross profit growth. Santos (2010), testing value portfolios for the Brazilian market, indicated that high gross profit growth should be a characteristic of "growth" or "glamour" securities, opposed to value securities.

Piotroski (2000) defined nine fundamental indicators to classify North-American companies. Equities were classified with dummy variables for each indicator and to receive a final F-score. Among the criteria, the author included the variables ROA, Net Margin, and Total Assets. After this selection, the author assembled different portfolios to test the results. Portfolio strategies with a high score (value investing portfolios) produced results 7.4% higher than the market average. Portfolios that bought companies with higher

scores and sold companies with low score (growth portfolio) had results 23% above the market for the period 1976-1996.

Sareewiwatthana (2011) conducted a test to evaluate whether the investment strategy based on PEG (Price-Earnings to Growth) ratio could be applied to the investments in the Stock Exchange of Thailand. The results showed that the PEG ratio was effective in generating higher returns than the stock exchange's total return index throughout the analysis of 12-year research data.

According to Beukes (2011), the value premium has not been tested with the same vigor in emerging countries as that in the central economies. In her paper, Beukes compared the size of the value premium among countries and concluded that the phenomenon can also be demonstrated in South Africa, a developing country.

Yan and Zhao (2010) innovated in creating a value investing model for countries. In their study, they compared emerging equity markets delta weight, the difference in a country's weight based on their hypothetical fundamental value (influenced by Gross Domestic Product, Earning-Price ratio, and Dividend Yield), and its capitalization weight. The market neutral delta strategies generated annualized returns of 14.25-16.89% even in the presence of over-weighting constraints.

Studies in finance (De Souza, 2012; Romaro, 2000) have shown that the stocks of small capitalization companies (small caps) tend to outperform large firms in the same period analyzed. The influence on the returns was initially tested by Banz (1981) and Fama and French (1992).

In 2011, the Value Investing Institute published an article entitled "Banks: Expensive at Every Price", emphasizing that value investors should drop banks from their portfolios. According to them, banks do not generate value and are subject to deep crises and, ultimately, depend on government assistance.

3. Methodology

This study aims to answer the significant characteristics of the stocks in a value investing portfolio.

To answer this question, we selected Brazilian funds that follow Value Investing philosophy. A selection of all investment funds that participated on the Value Investing Congress and the Value Investing Forum was chosen. It was possible to confirm adherence to the value philosophy on the websites of the managers.

From 39 managers, a more detailed analysis of the institutional material reduced the sample to 20 funds, which seemed to follow the principles of value investing. It was necessary to find out the stocks in the portfolios of these managers. This was carried out with quarterly data of the statement of Composition and Diversification of Investments from the CVM¹ data. The period chosen was the first quarter of 2008 until the third quarter of 2011 (latest quarterly data available). Although the data was available on a monthly basis, it was decided to collect on quarterly basis to coincide with the disclosure of corporate results.

4. Presence on portfolio model

The criterion chosen was that the asset had to be present in more than 10% of the sample funds.

In this way, each stock was classified as zero (0) or one (1): one (1) when it was a value asset and zero (0) otherwise. This was done for all 15 quarters of the sample. With the binary classification of stocks, it was possible to make the regression with several independent

1. CVM (Comissão de Valores Mobiliários) is the Brazilian equivalent of SEC (Securities and Exchange Commission).

variables and thus to test the factors that are correlated with the value investing assets. The factors selected for the test, which could influence the presence in the portfolio, summed in Table 1, were:

- Dividend Yield (1 year): Expected to find a positive correlation, showing that managers prefer to keep assets that pay high dividends in their portfolios.
- Standard deviation of earnings per share for the last 3 years: Value Investors are interested in companies that do not show large fluctuations in their earnings per share. It is expected that value stocks show a smaller variance, and therefore, the parameter should be negative.
- Growth in Gross Profit: The ideal value for managers is that the company is growing, when compared with the previous year. However, the parameter must be positive, and we would not be surprised if the parameter was negative, showing that managers do not maintain “growth” or “glamour” assets in their portfolios.
- Debt / Total Assets ratio: It is expected that these value companies do not have a large debt, when compared with its assets; hence, the parameter should be negative.
- ROA and ROE: It is expected that the Returns on Assets and Return on Equity of value stocks are high, because, theoretically, the companies are generating cash flows and have a competitive advantage that does not require high reinvestments in assets.
- Gross Margin, EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortization) Margin, and Net Margin: In general, companies with high margins, regardless of its sector, tend to have some kind of sustainable competitive advantage; otherwise, other firms would enter the market and its margins would fall. It is expected that the variable coefficient is positive.
- Selling, General and Administrative Expenses / Gross Profit ratio: The lower the SG&A Expenses, the more attractive is the company, indicating that the cost of overhead is not burdening the company.
- Depreciation / Gross Profit ratio: Companies with competitive advantage tend to have lower depreciation costs than those with intense competition, because investments in assets are low cost and no depreciation burdens the company over the years.
- Size of the company and more liquid stocks (represented by participation in Bovespa Index): In theory, the return of the so-called small caps outperforms larger companies.

Table 1
Expected sign of coefficients

Explanatory variables	Expected sign of coefficient	References
Divident yield	+	Graham*
Standard deviation of EPS	-	Graham*
Growth in gross profit	+	Santos (2010), Buffett and Clark (2008)
Debt / Total assets	-	Salgueiro (2007)
ROA	+	Piotroski (2000)
ROE	+	Salgueiro (2007)
Gross margin	+	Buffett and Clark (2008)
EBITDA margin	+	Salgueiro (2007)
Net margin	+	Piotroski (2000)
SG&A expenses / gross profit ratio	-	Buffett and Clark (2008)
Depreciation / gross profit ratio	-	Buffett and Clark (2008)
Total assets	NS	Piotroski (2000)
Dummy for participation in Bovespa Index	NS	-
Dummy for financial sector	-	Value Investing Institute (2001)

EBITDA, Earnings Before Interest, Taxes, Depreciation and Amortization; EPS, Earnings per share; NS, not significant; ROA, Return on Assets; ROE, Return on Equity; SG&A, Selling, General, and Administrative.

*Apud. Oppenheimer (1984).

- Dummy for financial sector: A dummy financial sector (by the classification of Economática consultancy) was used as a proxy to capture the aversion to financial assets. If this is true, the coefficient should be negative.

The model was therefore as follows:

$Value\ Investing\ Security_i = \alpha + \beta_1\ Dividend\ Yield_i + \beta_2\ Standard\ Deviation\ of\ EPS_i\ (last\ 3\ years) + \beta_3\ Growth\ in\ Gross\ Profit_i\ (last\ 12\ months) + \beta_4\ Debt\ / Total\ Assets\ ratio_i + \beta_5\ ROA_i + \beta_6\ ROE_i + \beta_7\ Gross\ Margin_i + \beta_8\ EBITDA\ Margin_i + \beta_9\ Net\ Margin_i + \beta_{10}\ SG\&A\ Expenses\ / Gross\ Profit\ ratio_i + \beta_{11}\ Depreciation\ / Gross\ Profit\ ratio_i + \beta_{12}\ Total\ Assets_i + \beta_{13}\ Dummy\ for\ participation\ in\ Bovespa\ Index_i + \beta_{14}\ Dummy\ for\ financial\ sector_i + \delta_i$

5. Econometric models

The basic idea behind the econometric models used in this study is to understand the indicators that make a stock be in value investing portfolio. The dependent variable in the models is stocks of publicly traded companies in a given period, taking a value of one when they are present in the portfolios, and zero otherwise. The binary nature of the dependent variable thus led us to use a logistic regression model as the basis of our analyses. Still, the data format (same companies at different points of time) allowed us to carry out a logistic fixed-effect regression².

For example, if the ordinary shares of Gerdau (GGBR3 on Bovespa, GGB on NYSE) appear in the portfolio of two managers in June 2009, and there are 14 funds in activity deemed Value Investing, Gerdau is considered as a value asset in the quoted quarter, because 2 is greater than 1.4 (10% of 14 funds). Thus, in the quarter cited, Gerdau receives “1” in binary classification. However, in September 2010, if only one manager, among the 16 Value Investing managers, has Gerdau shares in his portfolio, Gerdau is not considered a value asset because 1 is less than 1.6 (10% of 16 funds), and Gerdau receives “0” in binary classification.

Thus, it is possible that the same asset is considered a value in a period of time and not at another period –always depending on the presence of the portfolio managers regarded as value investors.

For comparison between all the shares in Bovespa, we divided the assets that received “1” and all other assets of the Bovespa, which were not present in the portfolio managers of the sample (and received “0”) or present in less than 10% of the portfolio managers of value investing (which also received “0”).

6. Results

As already noted earlier, all analyses were conducted with the main objective of understanding, among the explanatory variables selected, whose characteristics were significant for a manager to include or not a given stock in his portfolio. Thus, the goal was not to model a stocks picking equation, but to measure the magnitude of the impact of each variable in the manager’s choice.

Four models were estimated to capture the variables that influence the manager’s choices: a pooled logistic model and a fixed-effect panel logit with the full dataset, and the same models excluding the outliers (defined as the observations whose independent variables are outside a two standard-deviation intervals). The results of the four models can be found in Table 2 and the outcomes in Table 3.

² The choice of the fixed effects over the random effects was due to the former model being more robust. Further literature on panel estimations on binary outcomes can be found on Wooldridge (2002).

Table 2
Variables, coefficients, and p-values

Explanatory variables	Pooled	Pooled ex. outliers	Panel	Panel ex. outliers
	3,098 obs.	2,093 obs.	3,098 obs.	2,093 obs.
Dividend yield	-0,000875700 0,93	0,004679300 0,79	0,016748000 0,33	0,033690000 0,36
Standar deviation of EPS	-0,000031900*** 0,00	0,046117500 0,82	-0,000023100** 0,01	-1,879543000*** 0,00
Growth in gross profit	0,000001600 0,13	0,539392000* 0,06	0,000001770 0,29	0,870009100* 0,08
Debt / total assets ratio	-0,004315900 0,20	-0,009397400** 0,04	-0,000372900 0,97	-0,023138900* 0,08
ROA ^a	0,575603500*** 0,00	0,709325800*** 0,00	1,644991000*** 0,00	2,060013000*** 0,00
ROE ^a	-0,002133200 0,98	-0,023872200 0,86	-0,736909700** 0,02	-0,623569200 0,17
Gross margin ^a	0,503639000*** 0,00	0,543730200*** 0,00	1,724094000*** 0,00	3,002489000*** 0,00
EBITDA margin ^a	0,218577100** 0,04	0,322986800** 0,05	0,241251700 0,25	0,446555500 0,20
Net margin ^a	-0,420222100*** 0,00	-0,573947200*** 0,00	-0,841983600*** 0,00	-1,422965000*** 0,00
SG&A expenses / gross profit ratio ^a	-0,004825200 0,83	-0,014390400 0,66	0,024703900 0,60	-0,032967400 0,65
Depreciation / gross profit ratio ^a	-0,007682400 0,82	-0,049358300 0,49	0,084684600 0,17	0,370982400* 0,06
Total assets ^a	0,193757400*** 0,00	0,182221400*** 0,00	0,050132000 0,69	0,104045100 0,56
Dummy for participation in Bovespa Index	0,352426700*** 0,00	0,280405000** 0,05	1,966544000*** 0,00	1,949053000*** 0,01
Dummy for financial sector	0,510406200 0,34	0,226683800 0,74	-0,357270400 0,84	1,039559000 0,69
Intercept	-6,498941000*** 0,00	-6,725521000*** 0,00	-9,691901000*** 0,00	-14,124640000*** 0,00

EBITDA, Earnings Before Interest, Taxes, Depreciation and Amortization; EPS, Earnings per share; ROA, Return on Assets; ROE, Return on Equity; SG&A, Selling, General, and Administrative Expenses.

* Significance level of 10%.

** Significance level of 5%.

*** Significance level of 1%.

^a Log transformed variables.

Table 3
Outcomes

Explanatory variables	Expected sign of coefficient	Outcomes ^a			
		Pooled	Pooled ex. outliers	Panel	Panel ex. outliers
Dividend yield	+	NS	NS	NS	NS
Standard deviation of EPS	-	-	NS	-	-
Growth in gross profit	+	NS	+	NS	+
Debt / total assets	-	NS	-	-	NS
ROA	+	+	+	+	+
ROE	+	NS	NS	-	NS
Gross margin	+	+	+	+	+
EBITDA margin	+	-	-	-	-
Net margin	+	-	-	-	-
SG&A margin	+	-	-	-	-
Depreciation / gross profit ratio	-	NS	NS	NS	+
Total assets	NS	+	+	NS	NS
Dummy for participation in Bovespa Index	NS	+	+	+	+
Dummy for financial sector	-	NS	NS	NS	NS

EBITDA, Earnings Before Interest, Taxes, Depreciation and Amortization; EPS, Earnings per share; NS, not significant; ROA, Return on Assets; ROE, Return on Equity; SG&A, Selling, General, and Administrative.

* Significance level of 10% or less.

Three variables behaved as expected in most of the models: Standard Deviation of earnings per share for the last 3 years, Return on Assets, and Gross Margins.

The negative coefficient of the standard deviation of earnings per share indicates that value managers prefer assets with smaller variance in earnings per share, which is probably an indicative of the choice for more mature companies.

Return on Assets is an important measure of how much the company is effective in using its assets. According to the theory, value investing companies possess a competitive advantage due

to their relatively low requirement of investments in assets, thus allowing the distribution of larger dividends to shareholders. In our sample, managers seem to prefer companies with larger ROAs.

We also noted that while ROA coefficients were significant in most of the models, the same was not true for the Return on Equity. A possible explanation is that the ROA is more akin to a measure of value creation for shareholders –such as Economic Value Added (EVA)– than the ROE. As funds are focused on value, managers probably pay more attention to the economic value created, rather than accounting measures.

Another variable that seems to influence manager's choices is the Gross Margin. Calculated by the division of gross profit by net revenue, it measures the profitability of sales after subtracting its costs. In the four models, the coefficient is positive and significant at a 1% level: the higher the gross margin, the more appealing is the company to value investors. High Gross Margins companies show that if they properly manage administrative costs, spending on research and development and the payment of interest, they should have a good operational performance.

According to Buffett and Clark (2008), a high gross margin is also a sign that the company has a competitive advantage that inhibits new entrants in their market, setting the price of their products and services without much competition. The authors warned that the best analysis would be to investigate the margins of the last 10 years of business to prove the consistency of the advantage. Some examples listed by the authors are Coca-Cola (60% level), Moody's (73% level), Burlington Northern Santa Fe Railway (61% level), and Wrigley Co. (51% level).

The Net Margin does not behave according to the literature, and presents a negative and significant coefficient. A possible explanation could be that value managers are more interested in the Cash Flow (a measure of value creation) than in net income (which is an accounting measure). On comparing the results of the Net Margin and Gross Margin, it seems that value managers give more emphasis on analyzing costs related to production than the expenditures on management, sales, or general. This could be related to the fact that some of them may influence the management of expenditures – usually more controllable than the costs–. The other two variables present unexpected signs in the models, also in contrast to the literature, but this behavior seems more justified in our context: Participation in the Bovespa Index (all models) and Total Assets (only in the pooled regression models).

The proxy variable of company size (Total Assets) has significant results in the pooled models. Unlike the suggestion made in the literature, Brazilian managers of value portfolios prefer larger companies. It should be noted that in panel models, the variable is not significant at 10% level.

This outcome is consistent with the result showing that managers also seem to give importance to the liquidity of the shares, because the variable participation in Bovespa Index shows that stocks that compose the Index are also likely to be present in the portfolio value. Positions in more liquid stocks are easier to close. For value investors, in theory, this would not be a problem, because the positions taken should be focused on the long term.

Other variables showed significant coefficients, but it was not possible to consider whether they are consistent with the theory, because they presented different results according to each model considered: Growth in Gross Profit, Gross Debt / Total Assets, and EBITDA Margin.

Four variables were not significant and therefore it was not possible to draw clear conclusions about their effect on the manager's decisions: Dividend Yield, SG&A Expenses / Gross Profit, Depreciation and Amortization / Gross Profit, and the Financial Sector dummy. Here, it is interesting to infer that value managers apparently have no restriction regarding stocks from companies of the financial

sector. Although the literature is scarce, it is hypothesized that value investing managers do not invest in those stocks.

7. Conclusions

This study contributes to the research on value investing in Brazil, identifying factors that influence the choices of value managers' decisions. It can also help managers and investors who follow this philosophy to consider some relevant indicators in their investment decisions.

The regression results presented in this study suggest that for a security to be part of a value investing portfolio, managers take into account the standard deviation of earnings per share, Return on Assets (ROA), Gross Margin, company size (represented by Total Assets), and liquidity (represented by the presence in Bovespa index).

Three variables showed interesting results in some models, but it was not possible to determine the actual influencing factors: Growth in Gross Profit, Debt / Total Assets, and EBITDA margin.

Finally, four variables were not significant and therefore it was not possible to draw clear conclusions about their effect on the portfolio value: Dividend Yield, SG&A Expenses / Gross Profit ratio, Depreciation and Amortization / Gross Profit ratio, and Dummy Financial Sector.

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