

## Valuation of B3-Listed Brazilian IT Companies

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**Abstract:** This study presents valuation methods to compare market value and the present value of discounted cash flow, using companies listed on the Brazilian stock market B3, with data from 2009 to 2014. The research adopted a qualitative-quantitative approach and a hypothetical-deductive method to examine ten Brazilian IT companies. This study fills a gap in the literature, which shows few studies on future cash flow to be generated by Brazilian IT companies. The sample collected in Brazil was then compared to a sample of 25 NASDAQ-listed US IT companies, revealing that US companies have higher market value than discounted cash flow. Finally, the study suggests further research to identify the possible correlations of other relevant economic variables, such as the variation of the exchange rate, interest rate, or GDP, which are elements that may influence investors' decision-making.

**Key words:** valuation; market value; information technology

**JEL code:** G32

### 1. Introduction

Corporate finance and optimal capital structure are topics that have been discussed for a long time in the literature. The capital financing system based on funding from third parties can offer the company a way to maximize profits, which explains the need for optimal capital structure (Miller & Modigliani, 1958).

The new business environment poses the challenges of presenting positive results in quarterly financial statements, at the same time as increasing business value. For Damodaran (2005), company valuation is at the heart of investment decisions. It is crucial to find the best way to create value, using investment, funding, and decision-making regarding profit distribution.

The business value has been considered a criterion for assessing the performance of economic sectors. People have kept their expectations based on the future value of their investments, hoping to offset the risk taken. The combination of growth and return on invested capital has determined the business value (Koller et al., 2010). For Copeland, Koller, and Murrin (2002), the three main principles that drive a business valuation are (i) shareholder value creation; (ii) the measurement of operational and financial performance, and the management of the company's goals, and (iii) long-term growth.

Damodaran (2014) wrote a blog post on February 20, 2014, reflecting on the \$19 billion Facebook Co paid for WhatsApp. The transaction resumed the discussion around companies' market value and the price paid for them. In this particular case, was the price paid for WhatsApp based on the purchase price of the above company

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based on the present value of discounted cash flow, or was another method used to analyze the company's value before the negotiation?

Looking at this billion-dollar transaction, the fact that a company like WhatsApp, which has few fixed assets (computers, servers, software), is traded at such a higher price in comparison to other purchases in the market stands out. The report published in March 2015 by Pricewaterhouse Coopers listing the Global Top 100 Companies emphasizes the prominence of IT companies, ranking Appel Inc and Google Inc, respectively, as the first and second-largest market caps in the world.

In Brazil, the 2104 ranking of the 1000 largest national companies published by the journal *Valor Econômico* (2014) awarded first place to *Petróleo Brasileiro S.A. (Petrobrás)*, a company in the oil and gas industry, and second place to *Vale S.A.*, a company in the steel industry. The largest Brazilian companies listed on B3 — Brazilian stock market Brasil, Bolsa, Balcão, different from the US market where IT companies are at the top, operate in raw-material sectors. Therefore, it is worth to conduct specific studies for the country to understand the market cap of the top national companies.

Against this backdrop, this research calculates the present value of discounted cash flow for shareholders and B3-listed IT companies, comparing the present value with the market value and considering the period from 2009 to 2014. While in the US market, there were 154 IPOs of IT companies on the NASDAQ (National Association of Securities Dealers Automated Quotations) in 1994, and 250 IPOs in 2004, the Brazilian stock market B3 lists only ten IT companies. These figures prove how much the US capital market is ahead of Brazil's, especially in the information and technology sector. In the 1990s, the average price of startups in the US jumped from \$11 million to \$30 million over four years (Rogers, 2009, p. 263).

This research also seeks to fulfill a lack of studies on the valuation of Brazilian IT companies, which occur because Brazil is an emerging economy with little experience in IPOs of startups and IT companies in its stock market.

## **2. Theoretical Framework**

### **2.1 Present Value of Discounted Cash Flow**

Business valuation using the present value of discounted cash flow (PVDCF) model was first demonstrated in the study by Miller and Modigliani (1961). Several variations of the model were built later, maintaining the essential characteristics of the original work.

The PVDCF method requires three components that must be determined prior to the final calculations:

- 1) Cash flow projection, obtained from the simulation models applied to the company.
- 2) Discount rate, used to calculate the PVDCF and the perpetuity value
- 3) Perpetuity value, which will be the value of the company at the end of the analyzed period (in this research, ten years). It is the value shareholders can expect when selling their shares at the end of the period.

The PVDCF model is the only form of valuation that requires complete information about the valued company. It ascertains the company's value for all equity owners, both creditors, and shareholders. The real certainty of receiving a future economic benefit is different depending on the asset and on the entity. Risky assets or entities must be evaluated and measured using the discount rate, rate of return, or cost of capital (Copeland et al., 2002; Hitchner, 2003; Damodaran, 2007; Cunha, 2011; Martins, 2012).

Hitchner's formula is:

$$PV = \sum_{t=1}^n FC^t / (1+i)^t \quad (1)$$

where:

PV = value of the company

CF = projected cash flow

i = cash flow discount rate

n = number of periods projected

This method is mostly used in companies that present positive cash flow — as this increases the reliability of the estimated cash flow for future periods — and where there is a substitute for risk, used to obtain discount rates.

### 2.2 Present Value of Cash Flow to Shareholders

The present values of cash flow to shareholders are restricted to the cash flow of the company's partners. Martins (2012) argues that these cash flows represent the net flow after computing the effects of all debts taken to finance the company, i.e., cash flow related to interest, amortization, and new indebtedness.

According to Martins (2012, p. 280), because the liability of a commercial bank, for instance, is practically entirely operational, it is not appropriate to carry out a valuation of the company considering it does not have liquidity at the acquisition. In other words, to apply the concept of company value, in this case, has no effect, but applying the concept of shareholder value has.

For Copeland et al. (2002, p. 155), investors who have an asset and who receive a residual right on their cash flow are entitled to any exceeding cash flow, particularly after meeting all financial obligations, including payment of debts, and after supplying the company's reinvestment needs.

Pereira (2011) presents the following formula to calculate the present value of cash flow to the shareholder:

$$\text{Net Asset Value} = \sum_{t=1}^{t=\infty} \text{Cft to the shareholder} / (1+Ke)^t \quad (2)$$

where:

Cft = Expected cash flow to the shareholder in period t;

Ke = Cost of equity

Damodaran (2007, p. 123) stresses an aspect to be considered in this model. The present value of cash flow to shareholders is based on the assumption that the shareholder must withdraw not only dividends but also the surplus of operating cash flow. Investors will always have another investment option that will produce at least the cost of their equity. If the operating activity requires more capital, in this case, the shareholder will provide, ensuring the continuity of the company.

### 2.3 Present Value of Cash Flow of the Company

According to Martins (2012, p. 275), the present value of cash flow of the company represents the business' present values of operating cash flow regardless of who the suppliers of resources are, including resources from third parties. The business economic value, in this case, reflects its assets' potential (present and future) to create wealth, no matter the way these assets are financed.

Pereira (2011) presents the following formula for calculating the present value of cash flow of the company:

$$\text{Net Asset Value} = \sum_{t=1}^{t=\infty} \text{Cft of the company} / (1+WACC)^t \quad (3)$$

where:

Cft = Company's expected cash flow in period t

WACC: weighted average cost of capital

According to Damodaran (2007, p. 134), rights holders are part of a company as well as the equity investors and bondholders. The cash flow of the company is compared with the cash flow accumulated for the rights holders. In this case, the net operating cash flow produced by the operating assets is worked out by deducting the amounts necessary for new investments in working and fixed capital, added with possible resources from divestments. In the end, however, the calculation of the net operating cash flow includes the cash flow related to creditors. In the present value of the cash flow of the company, the cash flow is calculated to present value by the WACC. The discount rate applied to the free cash flow must reflect the opportunity cost of all providers of weighted capital due to their relative contribution to the capital that forms the total of the company.

### 3. Methodology

For Marconi and Lakatos (2003, p. 90), scientific methods are classified into only four types: hypothetical-deductive, deductive, inductive, and dialectical. The hypothetical-deductive method evolves from the deductive method, which is based on generalizations or scientifically correct assumptions and seeks evidence of cause-effect relationships to explain or validate the events that have common characteristics. The hypothetical-deductive method consists of first formulating, a problem, and an assumption, which will be tested by observation and experimentation. The inductive method observes the phenomena, discovering possible relationships among them, and generalizing such relationships. Finally, the dialectical method uses argumentation and analysis of contradictions to validate or invalidate scientific theories.

The models — and their applicability to assess the object of this study, according to the classification by Marconi and Lakatos (2003) — were produced using a qualitative-quantitative approach to perform the hypothetical-deductive method with the research universe of all ten Brazilian IT companies listed on the Brazilian stock market B3.

The companies were chosen because they are listed on B3, so their financial reports are available, and there is enough information to run the valuation calculations, following the theoretical framework, as well as proceed with the analysis to answer the hypotheses proposed.

The study adopted the market value calculation based on the value of shares of the analyzed companies as informed by the B3, comparing it with their present value of discounted cash flow. Table 1 lists the IT companies studied.

As for the particularities of the sample, three companies are listed in the sub-sector “computers and equipment”, and seven in “software and services”. The ten companies form one of the other nine sectors in the B3 and correspond to 100% of the research universe. The B3 sectors are basic materials; capital goods and services; communications; consumer cyclical; consumer non-cyclical; financial; health; information technology; oil, gas, and biofuels; and utilities.

## Valuation of B3-Listed Brazilian IT Companies

**Table 1 B3-listed IT Companies**

#	Company	Sector
1	BEMATECH S.A	Computers and Equipment
2	IDEIASNET S.A	Software and Services
3	LINX S.A	Software and Services
4	POSITIVO S.A	Computers and Equipment
5	TELEC BRASILEIRAS S.A	Software and Services
6	SENIOR SOLUTION S.A	Software and Services
7	TOTVS S.A	Software and Services
8	ITAUTEC	Computers and Equipment
9	QUALITY SOFTWARE S.A	Software and Services
10	GAMA PARTICIPAÇÕES	Software and Services

The study shows a comparison between the Brazilian and the US markets, calculating the companies value. The US IT companies listed on the NASDAQ that form the sample are named in Table 2.

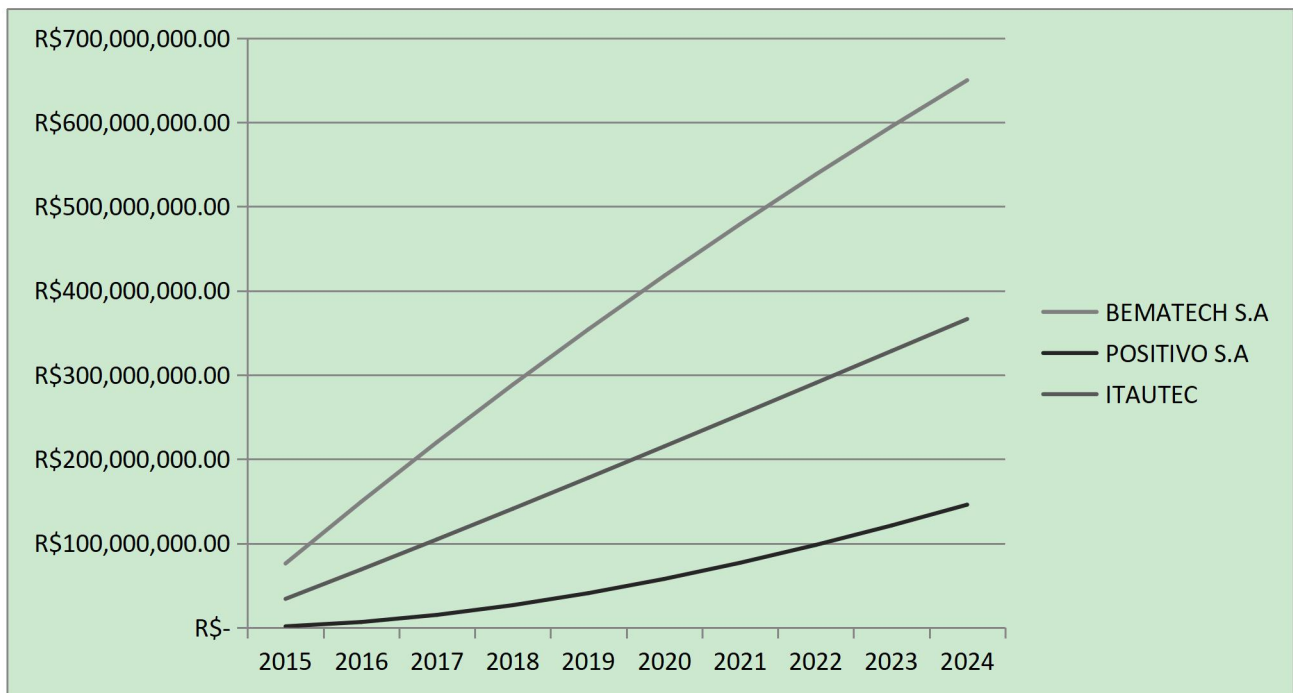
**Table 2 NASDAQ-listed IT Companies**

#	Company	Sector
1	Microsoft Incorporation	Computer Software: Prepackaged Software
2	Google Incorporation	Computer Software: Programming Data Processing
3	Apple Incorporation	Computer Manufacturing
4	Arista	Computer Software: Programming Data Processing
5	Allot Communication	Computer Communications Equipment
6	Ansys	Computer Software: Prepackaged Software
7	American Software	Computer Software: Prepackaged Software
8	Chicago Rivet & Machine Co	Industrial Machine Componentes
9	ChannelAdvisor Corporation	Computer Software: Prepackaged Software
10	Current Computer Corporation	Computer Manufacturing
11	EnerNOC Incorporation	Computer Software: Programming Data Processing
12	Fortinet Incorporation	Computer Peripheral Equipment
13	General Employment Enterprise	Diversified Commercial Services
14	Groupon Incorporation	Advertising
15	Imprivata Incorporation	Computer Software: Prepackaged Software
16	Ipass Incorporation	EDP Services
17	Jive Software	EDP Services
18	Linkedin	Computer Software: Programming Data Processing
19	Majesco Entertainment	Computer Software: Prepackaged Software
20	Omnicell Incorporation	Computer Manufacturing
21	QAD Incorporation	Computer Software: Prepackaged Software
22	Qlogic	Computer Communications Equipment
23	RCM Technologies Incorporation	Professional Services
24	TransAct Technologies Inc.	Computer Peripheral Equipment
25	VMWare	Computer Software: Prepackaged Software

The sample was selected, aiming to obtain the maximum diversity of entities, looking for companies with different market values, and operating in different sub-sectors. There are currently 3,000 companies listed on the NASDAQ, and this sample corresponds to only 1% of the total universe. As shown in the introduction of this study, many IT companies are going public in the US. For this reason, it was not possible to collect the information of the entire universe to conduct the survey.

#### 4. Results

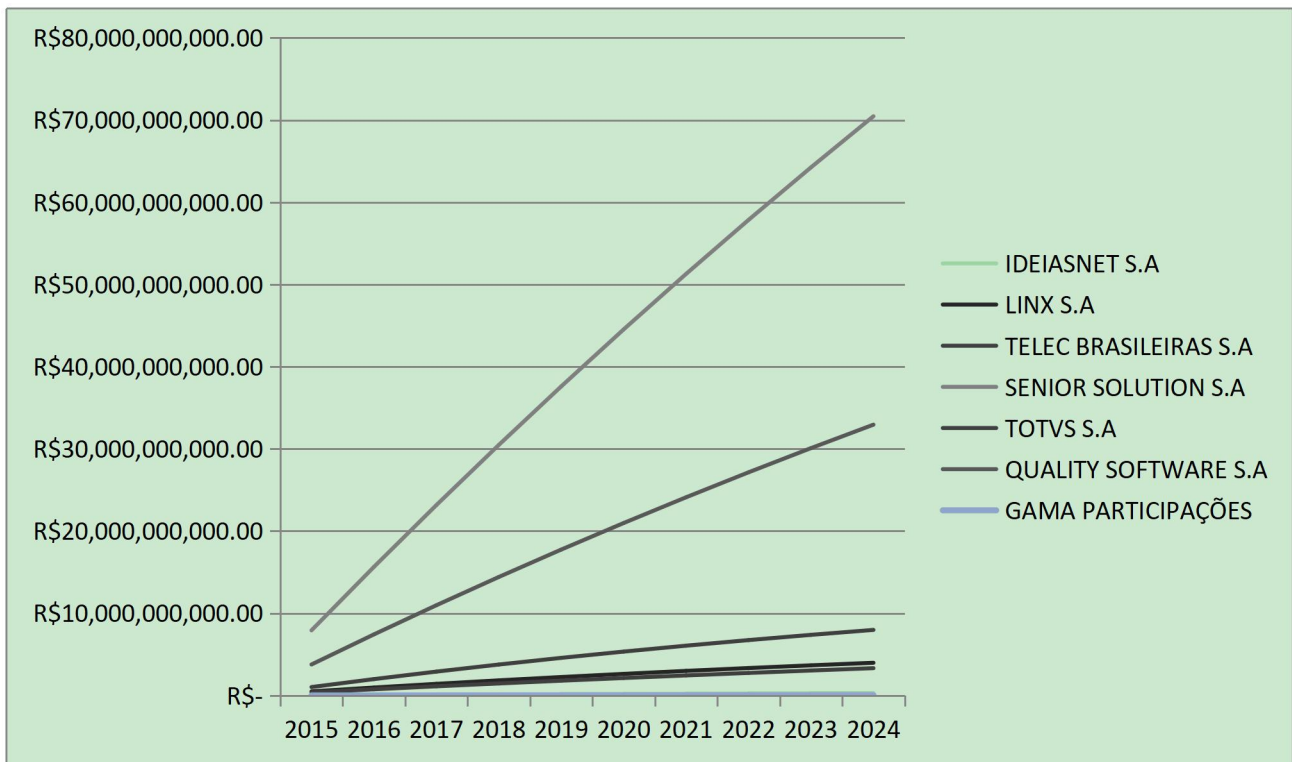
Figures 1 and 2 below present a descriptive data analysis, first of the sample of companies in the sub-sector of “computers and equipment”, and then of companies in the sub-sector “software and services”:



**Figure 1 Evolution of the Present Value of Cash Flow to Shareholders (Computers and Equipment)**  
Values in Brazilian Reals (R\$)

The calculated cash flow corresponds to the net cash flow for shareholders. The whole cash flow was discounted at the rate obtained by the CAPM, up to the date of December 31, 2014. In the case of Positivo S.A., the company presented a negative result in the five years before the year of analysis (2014). The losses reflected the company’s debts, which caused an increase in current liabilities, producing a loss for 2014, registered in the company’s financial statement.

Figure 2 shows companies that work only with software and services, demonstrating a significant difference in the evolution of cash flow compared to the company Senior Solutions S.A. Also, it is possible to observe that the lower the cash flow, the lower the impact of the PVCF to shareholders.



**Figure 2 Evolution of the Present Value of Cash Flow to Shareholders (Software and Services)**  
 Values in Brazilian Reais (R\$)

Figures 1 and 2 show a linear reduction in the accumulated present value of cash flow to shareholders, with emphasis on the two companies Senior Solution S.A and Qualityys S.A, which have relatively high cash flow. Elements that can influence this behavior are the fact that these two companies develop software and count on high intangible assets (R\$ 22 million and R\$ 5 million respectively), as well as the most significant impact in the value when discounting the CAPM over the analyzed period.

All companies showed linear growth in the present values of cash flow, demonstrating that they seek continuity throughout their lifetime.

Figures 3 and 4 demonstrate that the companies’ cash flow follows the same trend as the numbers found for the cash flow to shareholders. The value is lower due to the weighted average cost of capital (WACC), which is higher since it considers the companies’ debts with third parties.

The same perception of the previous figures applies to Figure 4. The difference between the two scenarios is the cost of equity used for the present value of cash flows of the company. The scenario for the company Senior Solutions S.A. repeats and is well above the others.

As shown in the figures, all companies had linear growth for the present values of cash flow, demonstrating a quest for continuity throughout their lifetime.

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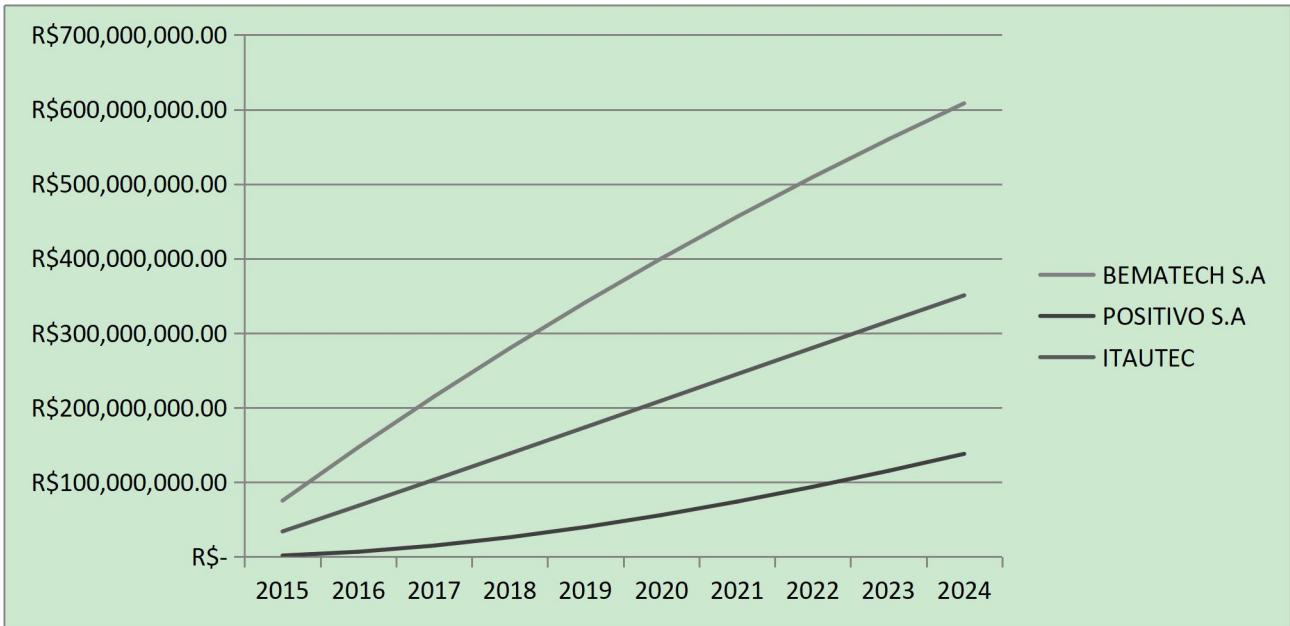


Figure 3 Evolution of the Present Value of Cash Flow to the Company (Computers and Equipment)  
Values in Brazilian Reais (R\$)

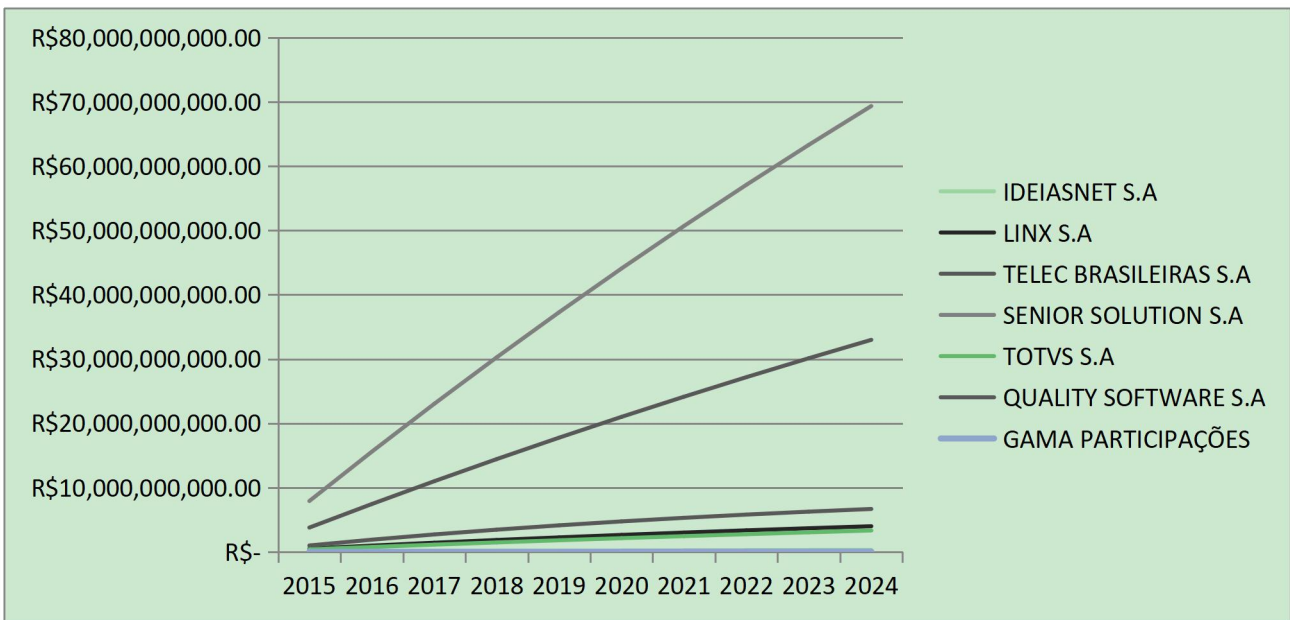


Figure 4 Evolution of the Present Value of Cash Flow Value for the Company in the Service and Programs Sector  
Values in Brazilian Reais (R\$)

5. Discussion

Table 7 below shows the results of the comparison between the results of the valuation methods of the present value of cash flow to shareholders, the present value of cash flow of the Company and the market value, obtained based on the share prices for the 10 Brazilian IT companies:



## Valuation of B3-Listed Brazilian IT Companies

**Table 7 Comparison of the Calculations**

	<b>PVCF Shareholder</b>	<b>%</b>	<b>PVCF Company</b>	<b>%</b>	<b>Market Value</b>
BEMATECH S.A	R\$ 650.021.124,56	66.32%	R\$ 608.291.853,78	55.65%	R\$390.815.395,88
IDEIASNET S.A	R\$ 327.272.333,49	52.52%	R\$ 325.931.935,15	51.90%	R\$214.573.260,70
LINX S.A	R\$ 3.981.616.906,02	145.31%	R\$ 3.985.445.372,94	145.54%	R\$ 1.623.121.813,00
POSITIVO S.A	R\$ 145.969.913,45	194.82%	R\$ 137.905.913,64	178.53%	R\$ 49.511.677,72
TELEC BRAS. S.A	R\$ 7.980.004.481,84	67659.72%	R\$ 6.669.171.974,41	56529.19%	R\$ 11.776.915,35
SENIOR SOLUTION S.A	R\$ 70.466.220.668,05	280178.27%	R\$ 69.353.018.442,99	275750.52%	R\$ 25.141.521,60
TOTVS S.A	R\$ 3.325.304.392,35	3590.38%	R\$ 3.322.018.779,59	3586.74%	R\$ 90.107.325,12
ITAUTEC	R\$ 366.417.195,36	-92.21%	R\$ 350.624.429,91	-92.54%	R\$ 4.700.976.385,00
QUALITY SOFT. S.A	R\$ 32.947.412.491,95	940360.45%	R\$ 32.980.143.352,15	941294.73%	R\$ 3.503.327,80
GAMA PARTICIPAÇÕES	R\$ 51.083.652,40	0.00%	R\$ 51.083.652,40	0.00%	R\$ -

Values in Brazilian Reais (R\$)

Except for the company Telec Brasileiras S.A, Table 7 shows that the amounts of the PVCF and the market value were utterly different. In addition, there was a pattern where the PVCF is higher than the market value. This behavior could be explained due to the lack of reliability in the capital market in Brazil, in addition to expectations of economic recession, which drives investors away from trading these stocks.

As for the stocks of Telec Brasileiras S.A, it is possible to estimate the influence of speculation as this company is the only state-owned company in the sample of Brazilian firms, operating through long-term contracts — a context that could stimulate investors.

The value of the shares traded in B3 may incorporate goodwill, but speculation should not be ruled out.

The PVCF of the Brazilian companies were compared to the market value of 25 US IT companies, where the largest (Apple Inc, Google Inc, and Microsoft Inc) have a much higher value compared to the others (Table 8):

**Table 8 Comparison of PVCF Shareholder and PVCF Company VS. Market Value**

	<b>PVCF Shareholder</b>	<b>%</b>	<b>PVCF Company</b>	<b>%</b>	<b>Market Value</b>
1 Microsoft Incorporation	R\$ 284.302.064.046,58	-27.23%	R\$ 266.352.778.292,12	-46.68%	R\$ 390.686.038.003,00
2 Google Incorporation	R\$ 207.184.409.303,73	-44.52%	R\$ 207.184.409.303,73	-80.25%	R\$ 373.442.471.442,00
3 Apple Incorporation	R\$ 162.762.482.664,22	-78.06%	R\$ 162.169.920.269,53	-357.45%	R\$ 741.847.833.100,00
4 Arista	R\$ 599.565.437,25	-86.29%	R\$ 596.694.746,42	-632.69%	R\$ 4.371.908.670,00
5 Allot Communication	R\$ 216.010.335,04	-16.13%	R\$ 216.593.967,28	-18.91%	R\$ 257.552.548,00
6 Ansys	R\$ 1.880.861.939,98	-75.75%	R\$ 1.885.139.452,83	-311.35%	R\$ 7.754.537.061,00
7 American Software	R\$ 182.309.375,03	-29.45%	R\$ 182.799.235,82	-41.37%	R\$ 258.429.105,00
8 Chicago Rivet & Machine Co	R\$ 7.750.532,90	-73.27%	R\$ 7.751.758,66	-274.03%	R\$ 28.993.621,00
9 ChannelAdvisor Corporation	R\$ 101.868.436,65	-62.76%	R\$ 102.288.036,64	-167.45%	R\$ 273.571.537,00
10 Current Computer Corporation	R\$ 22.305.470,20	-62.50%	R\$ 22.355.740,60	-166.09%	R\$ 59.486.768,00
11 EnerNOC Incorporation	R\$ 150.547.092,39	-50.87%	R\$ 151.250.280,05	-102.59%	R\$ 306.422.222,00
12 Fortinet Incorporation	R\$ 2.513.684.345,00	-61.60%	R\$ 2.521.384.877,56	-159.65%	R\$ 6.546.827.893,00
13 General Employment Enterprise	R\$ 17.898.741,15	-21.90%	R\$ 17.974.372,17	-27.50%	R\$ 22.916.869,00
14 Groupon Incorporation	R\$ 1.718.627.538,82	-62.48%	R\$1.730.513.432,48	-164.73%	R\$ 4.581.147.742,00
15 Imprivata Incorporation	R\$ 62.861.735,85	-81.87%	R\$ 62.991.811,44	-450.54%	R\$ 346.794.581,00
16 Ipass Incorporation	R\$ 58.446.186,00	-19.69%	R\$ 58.680.526,63	-24.02%	R\$ 72.776.158,00

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**Table 8 Comparison of PVCF Shareholder and PVCF Company VS. Market Value (Continuous)**

17	Jive Software	R\$ 328.507.577,66	-24.82%	R\$ 329.725.125,87	-32.52%	R\$ 436.937.377,00
18	Linkedin	R\$ 6.108.638.398,56	-74.98%	R\$ 6.132.611.668,93	-298.07%	R\$ 24.411.924.751,00
19	Majesco Entertainment	R\$ 106.655.141,15	937.05%	R\$ 107.040.655,71	90.39%	R\$ 10.284.488,00
20	Omnicell Incorporation	R\$ 132.207.555,53	-89.79%	R\$ 132.354.138,69	-878.51%	R\$ 1.295.103.309,00
21	QAD Incorporation	R\$ 272.855.915,84	-41.58%	R\$ 274.100.118,15	-70.39%	R\$ 467.026.044,00
22	Qlogic	R\$ 376.642.017,52	-71.35%	R\$ 378.146.694,63	-247.63%	R\$ 1.314.557.300,00
23	RCM Tecnologias Incorporation	R\$ 36.488.233,10	-48.92%	R\$ 36.365.610,32	-96.45%	R\$ 71.439.529,00
24	TransAct Technologies Inc.	R\$ 49.240.057,56	-5.28%	R\$ 49.412.712,29	-5.21%	R\$ 51.987.013,00
25	VMWare	R\$ 20.899.167.941,67	-43.65%	R\$ 20.988.099.960,71	-76.71%	R\$ 37.087.998.850,00

Values in Brazilian Reais (R\$)

It is possible to observe that the values of cash flow to shareholders and of the companies are closer to the market value and the fact that in all three cases the variation is negative stands out, that is, the market value was higher than the PVCF of the companies.

Smaller US companies had a market value higher than the present value of cash flow, both to shareholders and of the company. This shows that even if the company is not global in size, it counts on the investor's trust, no matter the company's sector of activity. Many of the researched companies count on little inventories and high intangible value and goodwill, as observed in the financial reports examined to perform the calculations. Another critical point is that the companies are not highly funded by third parties, and their debts are concentrated with shareholders and the company's partners.

Many US IT companies have a large part of their assets invested in an account called marketable securities and restricted cash, i.e., part of their current assets are invested in a real estate securities account.

As for the US companies studied in this research, Arista Inc, Ansys Inc, Chicago River & Machine Co, Imprivata Incorporation, Linkedin Inc, Omnicell Inc, and Qlogic Inc, stand out, for having a market value of at least two times the present value discounted cash flow, both for shareholders and the company. The business focus of these companies is different from the others analyzed, and they present the same behavior toward their investors.

In the case of Apple Inc, the company's market cap is the equivalent of approximately twice its PVCF. This means that investors trust in the company even if future gains are not equivalent to the firm's market value.

Finally, another interesting company to analyze in this comparison is Microsoft Inc, which showed a very close percentage between the market value and the PVCF. A possible explanation would be the fact that investors are familiar with the company's data, and carry out the negotiations with prices closer to the real prices the company presents based on its future gains.

## 6. Final Considerations

This work presented several methods of company valuation, adopting classical models and those introduced in the modern literature, and offered a comparison between publicly-traded Brazilian and US IT companies, achieving its objective. The findings point to a scenario of the Brazilian capital market based on the lack of trust in IT companies' stocks, which may be explained by the fact that the companies stress the future and perpetual cash

flow. The first scenario presented is marked by the fact that there are only ten IT companies listed in the Brazilian stock market. The second scenario that draws attention is that nine of them show a present value of cash flow higher than their market value (based on the value of shares traded in B3). The American market, in comparison, shows many NASDAQ-listed companies, and many of them with a market value much higher than their PVCF.

As mentioned above, the PVCF of most Brazilian IT companies was higher than their market value. A possible cause could be the lack of knowledge of the investors in this sector since the companies have accumulated profits during the period from 2009 to 2014. Also, they have increased assets, except Gama Participações. This is a holding company, trading investment for shares, and, therefore, has no operating income, only financial income.

The relationship between the market value and the PVCF, where the second presented higher values in the Brazilian case, had the exception of the company Itautec, which showed to count on the investors' trust. This specific situation could be explained by the existence of a well-reputed bank (Banco Itaú) behind the company, providing investors with a sensation of lower risk. The company revealed a sharp drop in revenue after the 2008 subprime crisis. In 2013 it closed its personal computer sales activities and sold 70% of its participation in its banking and commercial automation activities. The company provides services to Oki Electric Industry, a Japanese company.

The company Telec Brasileiras S.A also has a market value lower than the PVCF but presented unexpectedly different behavior in comparison to other Brazilian companies. This situation may be explained by the fact that it is a state-owned company, which possibly inspires the investors' trust. In addition, this company has preferred stock assets, leading the investor to focus on these stocks to obtain dividends.

The comparison with US companies helped to identify a trend of trust, where investors trust in the IT sector as a whole, not only in a few firms as happens in the Brazilian market. In Brazil, the example of Itautec stands out as the only company that had a market value higher than the present value of discounted cash flow.

The extended scope of the subject and the results obtained in this study revealed its importance to increase the knowledge on the Brazilian capital market and on the evaluation of economic and financial strategies that companies adopt in the different national scenarios. When analyzing the year 2015, it is possible to point out cases of the use of inside information, which resulted in a sharp drop in B3 after the elections. Also, there was a risk of deficit in public accounts, resulting in the exit of investors and worsening the financial crises throughout the year, reaching worrisome indicators such as an imbalance in the exchange rate with a high price of the US dollar, and increase in the unemployment rate. In this case, it appears that market efficiency does not reflect the theoretical model where everyone has the same information.

It is expected that accounting sciences and finance researchers find in this study a set of unprecedented and relevant information that will allow understanding better the behavior of the companies examined here and the Brazilian capital market.

Several opportunities for further studies may emerge from this work, identifying possible correlations among the IT publicly-traded companies and other relevant economic variables such as exchange rate variation, interest rates, or GDP. The stock market efficiency and the rationality of investors can also be an object of research, seeking to understand better the valuation and prices in the stock market.

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