

The Value-Relevance of Revaluation Reserves in Brazil: an Empirical Investigation

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Abstract: This work intends to investigate the value relevance of revaluation reserves in Brazil. Brazilian companies' law allows for such reserves as an alternative proxy for the measurement of the value of permanent assets. However, this instrument can be used to increase total assets and book value of equity in order to mislead investors. We use a cross-sectional specification to test the value relevance of the revaluation reserve, in addition to the Ohlson (1995) specification, to explain securities' prices. Our results show that these reserves are not perceived to contain any value by investors. Coefficients are significantly negative showing the bad signal transmitted to investors by the revaluation. This result confirms previous research showing the great discretionary power present in the Brazilian corporate financial reporting structure. Future research in this area could be designed to investigate other aspects of the current Brazilian GAAP. Deferment of currency devaluation expenses are an obvious candidate. Absence of leasing capitalization is another opportunity to further research.

1. Introduction

Asset revaluation is an instrument, which distinguishes Brazilian accounting rules from most of the international regulations specially the US FASB, and IASB. Fixed assets can have its value restated. This treatment creates a revaluation reserve in equity that must be amortized over the useful life of the asset revalued. In this work we investigate the value relevance of the revaluation reserves in Brazil. This work has several motivations. First it adds to our knowledge of the relation between accounting and economic variables under the so-called positive paradigm. The paper also contributes to the debate among regulators upon the desirability of the flexibility of Brazilian rules. Accounting and investment professionals can also benefit from a deeper understanding of the market's view of accounting measurements in Brazil.

Asset revaluation is designed to keep asset's values updated with economic reality. Most of the research upon this subject in the Brazilian literature is of a normative nature. Typically, researchers argue that revaluation is relevant to maintain assets in accordance with market values. In some sense it is an alternative to inflation adjustment. Arguments against this treatment say that there is no way to control managers and that manipulation is intrinsic in revaluation. In Brazil, it is possible to say that the second venue is gaining momentum and the project that reforms the companies' law is an example of this. The current project does not permit asset revaluation. However, this debate lacks a clear economic motivation and empirical support. How accounting users react to revaluation? This answer cannot be given from a normative point of view. It is necessary to have empirical data to document this relation. This work tries to, at least partially, fill this gap.

Our results show that revaluation reserves keep a negative relation to prices. This indicates that investors react as if the revaluation conveys bad news in accordance with the vision that manipulation is the *raison d'être* of this treatment. Given the methodological limitations of the study, it is possible to suggest that the market is not mistaken by accounting rules. It can also be the first thoughts on future works related to the efficiency of Brazilian capital markets in processing accounting information. A truly efficient market (in the semi-strong form) would not be mistaken by accounting treatments with no effect in cash flows. Accounting can have effects in cash flows due to two basic reasons: tax and information motivations. From a tax point of view, accounting rules can change tax basis and as so the amount of cash paid to the government. The information role is not so obvious. Managers have better access to information than investors. Accounting accruals are an important instrument by which executives and accountants can convey information about future cash flows. Depreciation rates are the clearest example. When depreciation rates are changed, even with no tax impact, investors have a piece of information about the future needs of cash to replace the asset being depreciated. In this sense, accounting has an information role. It does not change cash flows today but it changes the expected future cash flows of the firm.

In Brazil, the revaluation reserve can only have an information role once it does not have any tax implications. Investors can perceive an asset revaluation as being good information once it increases firms' net assets. Alternatively, they can take asset revaluation as being a manipulative device. In this framework, the value relevance study can provide evidence on the investor's perception of firms' asset revaluations.

The rest of the paper is organized as follows. Section 2 presents the Brazilian treatment of revaluation reserves. Section 3 discusses the previous literature and develops the major hypothesis. Section 4 presents the results and section 5 concludes the paper.

2. Revaluation Reserves and the Brazilian Companies' Law

Asset revaluations and the consequent reserves are a feature of the Brazilian companies' law (BRASIL, 2001). The original text of the law states that permanent assets could be revalued after the independent assessment of three valuation professionals. Subsequently, the Brazilian Securities and Exchange Commission limited the flexibility of the law and only permitted revaluation of fixed assets. Brazilian accounting system allows some flexibility that most of the international rules did not. Exhibit 1 shows some of the major measurement differences among Brazilian rules, IASB and FASB rules. Capitalization of research and development expenses, asset revaluations, financial instruments and lease contracts are examples of the great flexibility that Brazilian managers have on accounting rules.

Exhibit 1 – Major Measurement Differences Among BR-GAAP, US-GAAP and IFRS

Item	Brazil	US-GAAP	IFRS
Research and Development Expenses	May be capitalised as a deferred asset. The amortization period should be determined on expected future economic benefits. Tax legislation requires a minimum amortization period of 5 years while the companies law allows for a maximum of 10 years	Only costs of materials and equipment and other facilities purchased from others and with alternative future uses can be capitalised. With the exception of some internally developed software, all other R&D	Research (new knowledge) is not capitalised. Development (application) can be capitalised only under very special circumstances when the project meets strict requirements

	amortization period	costs are not capitalised.	
Construction Contracts	Percentage-of-completion, completed contract and instalment methods can be used.	Percentage of completion method should be used.	Percentage of completion method should be used
Segment Reporting Leases	Is not required. All leases are considered to be operating leases.	Required for SEC registrants Are treated as capital or operating lease depending on certain criteria	Required for public companies are treated as capital or operating leases depending on certain criteria Goodwill amortised in less than 20 years
Financial Instruments	No specific guidance for public companies. The Central bank has its own rules for financial institutions	Fair Value as the basis for measurement after SFAS 133	Fair Value as the basis for measurement after IAS 39
Revaluation of Assets	Its is allowed and a revaluation reserve (equity) is created	Revaluation is not allowed	Revaluation is permitted under special circumstances

This scenario differs substantially from what is commonly reported in the literature regarding countries where the tax law has a strong influence on financial reporting. Harris *et al* (1994) report that German accounting numbers are very conservative and that ‘hidden reserves’ are a reason for investor concern. Brazilian financial reporting pursues the same link with tax legislation as German does. However, the accounting rules in Brazil allow for a much greater flexibility than the anglo-saxon approach; this is not the case in Germany. This situation arises because firms can present financial statements under accounting methods not allowed by the tax authority (SRF) in Brazil. These firms have to adjust their statements to form the basis for the calculations in a special book (LALUR) designed to conciliate the SRF and Companies’ Law regulations. However, tax rules have a major influence since most firms choose to report according to them avoiding costly adjustments on LALUR. It is the case with inventory methods. Most companies adopt FIFO due to tax limitations to report LIFO, for example. Dividends in Brazil are linked with net income like in Germany, increasing the conservative bias in financial reporting. This structure shows that Brazil poses a set of accounting rules that allow managers to use a greater degree of discretion than the so-called anglo-saxon approach. However the general structure of the profession and the governance uses of the accounting numbers (dividends for example) are not so investor-oriented. In this sense, Brazilian corporate financial reporting system can be considered as hybrid model: very liberal accounting rules coupled with a governance system oriented for providing information to the government and creditors.

Asset revaluation in the Brazilian environment needs to be considered on the context of the Brazilian corporate reporting environment. Accounting rules in Brazil are issued by the government and are not intended to inform investors. Accounting rules are designed primarily to provide information to government agencies and to tax authorities. In this scenario, asset revaluation, which could be used as an instrument to inform investors are most likely perform different roles.

3. Related Literature and Hypothesis Development

Brazilian companies operate under a very regulated financial reporting environment where the Companies' law dictates all accounting regulations for publicly held corporations. In addition to compliance with the law, all public companies have to adopt the regulations imposed by the Brazilian Securities and Exchange Commission (CVM). Companies in some sectors (banks, for example) have to adopt additional structures provided by governmental agencies (the Central Bank in this case). However, despite all these regulations, managers can decide, on their own, to pursue revaluation of some of the permanent assets as discussed in the previous section. This revaluation can be used to 'manipulate' assets and book value of equity, specially for firms facing financial constraints. Adopting a semi-strong efficient market hypothesis, it is expected that rational and well-informed investors would realize this manipulation and consequently they would react negatively to revaluation reserves. The opposite would be true if revaluation reserves are used to really inform investors about assets' future cash flows.

Several studies have addressed the value relevance question in the financial accounting literature. Generally speaking, an accounting item is said to be value relevant if it posses a statistically significant relation with some market variable (generally prices, returns or variances). It is important to distinguish between value relevance and decision relevance. A given item can be value relevant without being decision relevant. Decision relevance is associated with the timeliness of information and value relevance is concerned with the association of the accounting measurement with the market assesment of value. If accounting is intended to provided usefull information for investors and other users of financial reporting information (FASB, 1978) it has to posses a strong value relevance component. Beaver (1998) discusses the value relevance literature in detail and Kothari (2001) provides a very comprehensive survey of those studies. Beaver (1998) summarizes the value relevance literature as the interpretation of regressions of prices (dependent variables) against accounting variables (independent variables). A general model would be:

$$(1) P_{IT} = \gamma + \beta[X_{IT}] + \varepsilon$$

Where:

P_{IT} = vector of stock prices for companies i three months after the end of year t.

γ = regression intercept

β = vector of coefficients of the accounting variables on securities prices

X_{IT} = vector or matrix of accounting variables under investigation

ε = error term

Under this general structure it is possible to test several combination of accounting variables. However, generally what is under investigation is the incremental value of some accounting component. In this work, for example, we're testing if revaluation is value relevant to investors on an incremental basis. It is, if revaluation reserves provide additional information over the information normally presented in financial statements. To test this incremental component of accounting information it is necessary, however, to specify a model of the expected relation between accounting numbers and securities' prices. Otherwise, the above regression will be an *ad hoc* specification. The Ohlson (1995) is the benchmark for this type of specification. Collins *et all* (1997) and Harris *et all* (1994) used an approximation from the basic structure of the model as presented below:

$$(2) P_{jt} = w_{0t} + w_{1t}BV_{jt} + w_{2t}EARN_{jt} + \varepsilon_{jt}$$

Where:

P_{jt}	stock price at the year ending 4 months after year-end
BV_{jt}	book value per share for the period ended at time t
$EARN_{jt}$	earnings per share for the period ended at time t
ε_{jt}	error term at time t

This specification can be decomposed to test the relevance of book values and earnings isolated as suggested by Collins et al (1997).

$$(3) P_{jt} = w_{0t} + w_{1t}BV_{jt} + \varepsilon_{jt}$$

$$(4) P_{jt} = w_{0t} + w_{2t}EARN_{jt} + \varepsilon_{jt}$$

The regression 4 above will not be used in this work because we do not want to investigate the relevance of earnings as previous research has done (Lopes, 2002). To test the value relevance of the revaluation reserve we propose the following specification:

$$(5) P_{jt} = w_{0t} + w_{1t}BV_{jt} + w_{2t}REV_{jt} + w_{3t}REV_{jt-1} + \varepsilon_{jt}$$

Where:

REV_{jt} = revaluation reserve at the end of year t (2001)

REV_{jt-1} = revaluation reserve at the end of year t-1 (2000)

As the variables above are likely to be correlated, we use the decompositions outlined below:

$$(6) P_{jt} = w_{0t} + w_{1t}BV_{jt} + w_{3t}REV_{jt-1} + \varepsilon_{jt}$$

and

$$(7) P_{jt} = w_{0t} + w_{1t}BV_{jt} + w_{2t}REV_{jt} + \varepsilon_{jt}$$

Our hypothesis is that the coefficients on the variables REV_{jt} and REV_{jt-1} on the regression above will be negative and statistically significant. This result, if obtained, shows that revaluation reserves have a negative and relevant role to explain securities' behaviour in Brazil. This result is consistent if the hypothesis that those reserves are not used to really convey economic meaningful information to investors. The opposite is also true. One possible criticism is that the BV and REV variables above contain the same component causing autocollinearity to arise. To correct for this I also test the specification 8:

$$(8) P_{jt} = w_{0t} + w_{1t}(BV_{jt} - REV_{jt}) + w_{2t}REV_{jt} + \varepsilon_{jt}$$

In this specification we're testing book values net of revaluation reserves and reserves by itself.

4. Sample Selection and Results

Our sample was selected from companies traded at the São Paulo Stock Exchange (BOVESPA) during the 2001 fiscal year, which presented revaluation reserves in its accountants in 2001 and 2000. The database used was the Economatica. Table 1 presents the sample selection criteria for the sample. As it is usual in works with Brazilian data, the sample exhibits high variance as Table 2 shows where all the relevant descriptive statistics are presented on a per share basis to correct for scale differences among firms.

Table 1 – Sample Selection

Initial sample from Bovespa firm	632	
Less firms:		
Without revaluation reserves in 2000	300	
Without revaluation reserves in 2001	17	
Negative book value of equity in 2001	19	
Missing information	186	
Outliers ⁱ		12
Final sample	98	

Table 2 – Descriptive Statistics and Correlation Matrix
Descriptive Statistics

Variables	Mean	Stand. Dev.	Median	Max	Min
P_{jt}	0.3769	0.7674	0.0505	4.5300	0.0001
BV_{jt}	0.4947	1.0835	0.0714	8.1202	0.0001
$EARN_{jt}$	0.0417	0.1647	0.0012	0.7750	-0.2769
REV_{jt}	0.0676	0.1452	0.0044	0.6749	0.0001
REV_{jt-1}	0.0839	0.1876	0.0049	0.8904	0.0001

Table 2 (cont) – Descriptive Statistics and Correlation Matrix
Correlation Matrix

	P_{jt}	BV_{jt}	$EARN_{jt}$	REV_{jt}	REV_{jt-1}
P_{jt}	1.00	0.80	0.69	0.25	0.29
BV_{jt}	0.80	1.00	0.78	0.51	0.58

EARN_{jt}	0.69	0.78	1.00	0.20	0.28
REV_{jt}	0.25	0.51	0.20	1.00	0.92
REV_{jt-1}	0.29	0.58	0.28	0.92	1.00

Table 3 presents the results for regressions 2 to 8. Regressions 2 and 3 confirm results presented in earlier work (Lopes, 2002) showing that earnings and book values are quite informative regarding Brazilian data and that book values concentrate most of this relevance and statistical significance. No news on this result. This regression was performed to check if the sample used in this work would keep the same characteristics of past investigations performed upon large samples. Regressions 5, 6 and 7 test the value relevance of revaluation reserves in 2001 and 2000. Results on regressions 6 and 7 show that revaluation reserves present negative and statistically significant coefficients for both years. However, revaluation reserves for 2001 present a greater coefficient and are statistically more significant. Regression 8 tests the value relevance of the net book value and revaluation reserves in 2001. This specification is designed to separate the common component in BV and REV. The results confirm that revaluation reserves, despite being a part of equity, present negative significant statistical coefficients.

Table 3 - Tests of Relations between Prices and Accounting Variablesⁱⁱ

$(2) P_{jt} = w_{0t} + w_{1t}BV_{jt} + w_{2t}EARN_{jt} + \varepsilon_{jt}$					
	w_{0t}	w_{1t}	w_{2t}	R^2	
2001	0.11 (2.13)**	0.47 (6.87)*	0.81 (1.80)***	0.64	
$(3) P_{jt} = w_{0t} + w_{1t}BV_{jt} + \varepsilon_{jt}$					
	w_{0t}	w_{1t}		R^2	
2001	0.10 (1.86)***	0.57 (13.00)*		0.64	
$(5) P_{jt} = w_{0t} + w_{1t}BV_{jt} + w_{2t}REV_{jt} + w_{3t}REV_{jt-1} + \varepsilon_{jt}$					
	w_{0t}	w_{1t}	w_{2t}	w_3	R^2

2001	0.14 (2.69)*	0.67 (13.21)*	-1.31 (-1.54)	-0.02 (-0.03)	0.67
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$$(6) P_{jt} = w_{0t} + w_{1t}BV_{jt} + w_3REV_{jt-1} + \varepsilon_{jt}$$

	w_{0t}	w_{1t}	w_{2t}	R^2
2001	0.13 (2.60)*	0.65 (13.29)*	-0.88 (3.15)**	0.67

$$(7) P_{jt} = w_{0t} + w_{1t}BV_{jt} + w_2REV_{jt} + \varepsilon_{jt}$$

	w_{0t}	w_{1t}	w_{2t}	R^2
2001	0.14 (2.71)*	0.70 (13.31)*	-1.33 (-3.55)*	0.68

$$(8) P_{jt} = w_{0t} + w_1(BV_{jt} - REV_{jt}) + w_2REV_{jt} + \varepsilon_{jt}$$

	w_{0t}	w_{1t}	w_{2t}	R^2
2001	0.14 (2.71)*	0.70 (13.31)*	-0.66 (-1.90)***	0.68

The economic interpretation of those results is quite straightforward. Book value of equity is expected to keep a strong and positive relation to prices as the results show in equations 2 and 3. Asset revaluation under the Brazilian law is accounted as an increase in net asset with the corresponding credit entry in revaluation reserves. This account is a component of book value of equity. As so, one can expect the revaluation reserve to keep the same relation to prices that book value of equity posses. However what is observed is quite different. Revaluation reserves have a statistically significant negative relation to prices. The meaning of this result is that prices react negatively to revaluation reserves. It is like as if

investors react to reserves as bad news as opposed to a 'real' increase in net assets, which would be treated as good news. This result is consistent with the idea that revaluation reserves are used to improve the balance sheet position without any real economic value.

This result has several implications. First it adds to the argument that revaluation reserves are not used to really represent economic value in Brazil. It seems that those reserves are used to represent an economic situation that, at minimum, the market disagrees with. It is consistent with the project to revise the Companies' Law, which did not allow revaluation reserves to be accounted for. Second it improves our understanding of the relation between accounting and market variables in Brazil. Our results suggest that the market is able to capture revaluation reserves without economic meaning. Investors in Brazil can distinguish between real representations and accounting designed only to 'cook the books'. Finally, accounting researchers have a clear signal that positive accounting research can improve the debate relating to the use of alternative accounting methods.

5. Conclusions and Implications for Future Research

Revaluation reserves are a special feature of the Brazilian corporate financial reporting model that departs from most of the international accounting rules (most notably US-GAAP and IFRS rules). In this work the value relevance of revaluation reserves are investigated. Our results show that revaluation reserves keep a negative and economically and statistically significant relation to prices. This indicates that investors do not consider asset revaluation to be a real increase in firm's net assets. Investors are sophisticated enough to distinguish between accounting treatment that are designed only to improve the balance sheet position. This result is relevant to professionals, regulators as well as to accounting researchers. Accounting professionals, especially those involved with equity research and asset management, must be careful to interpret firms' accounts in Brazil, which possess revaluation reserves once these measurements keep a negative relation to securities. Regulators have another argument to oppose the flexibility of Brazilian GAAP. This is exactly what is happening with the project to revise the companies' law. Accounting researchers can visualise an alternative venue of research in order to improve the current debate about alternative accounting rules in Brazil. Obviously, investors are not the unique users of accounting information and other aspects must be taken into consideration before a given normative is accepted. However, investors are a very important kind of users due to their role as capital providers to firms. Future research in this area could be designed to investigate other aspects of the current Brazilian GAAP. Deferment of currency devaluation expenses are an obvious candidate. Absence of leasing capitalization is another opportunity to further research.

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ⁱ Outliers were selected from any observation that is three standard deviations away from its respective mean.

ⁱⁱ Notes:

P_{jt}	<i>stock price at the year ending 4 months after year-end</i>
BV_{jt}	<i>book value per share for the period ended at time t</i>
$EARN_{jt}$	<i>earnings per share for the period ended at time t</i>
REV_{jt}	<i>revaluation reserve at the end of year t (2001)</i>
REV_{jt-1}	<i>revaluation reserve at the end of year $t-1$ (2000)</i>
ε_{jt}	<i>error term at time t</i>
*, **, ***	<i>Significant at 0,01 level, 0,05 level and 0,10 level respectively</i>
t	<i>statistics in parentheses</i>