

FINANCIAL RATIO ANALYSIS – A COMPARATIVE SETTING ON ACCOUNTING DATA AND DISTORTIONS CAUSED BY THE IFRS CONVERGENCE PROCESS

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Abstract

The ongoing convergence process from national standards to the IFRS unfolds presenting a number of comparability issues that impact the investors' decision making process. One such aspect is the comparability of financial ratio results in a cross cultural environment. Starting from a preset model of income statement and balance sheet ratios, the current paper aims to highlight how regulation differences affect financial performance and position interpretation. The conceptual framework is set against economic figures, testing its validity under real business circumstances. While the result of the comparison is expected to be inconclusive, this approach points out towards a statistical solution.

Keywords: financial ratios, analysis, IFRS, US GAAP, Romanian accounting

JEL classification: M41

1. Introduction

The rationale behind the private sector demand for a singular, harmonized, system of financial reporting desires the improvement of accounting information quality and its comparability in cross cultural environments. While the completion of such a broad international project would undoubtedly create added value, especially for information users active in stock exchange activities, devising and enforcing various details have proven to be rather difficult in practice. In retrospect, the status quo of the present accounting world is divided between the parallel practices of the *International Financial Reporting Standards (IFRS)*, a European Union catered IFRS, various national laws and regulations, and a controversial

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attitude of the Anglo-Saxon world under the form of partial IFRS accommodation. In fact, for a number of countries, the process of IFRS adoption to the extent of various degrees has been in motion since 2005. Ever since this land mark date, a number of accounting information distortions have been recorded (Leug et al, 2014). Admittedly, while some regulation framework modifications have occurred without direct input or output from accounting users, the capital markets have proven to react both positively and negatively to various IFRS implementation efforts – the extent of the reaction being dependent upon the alteration of the previously existing accounting standards (Byard et al. 2011). In other words, the transitional related distortions of the accounting information take the form of direct and indirect factors that explain the change in investor behavior. While investors may not be sensitive to regulation amendments, they do base their decisions on key figures reported in the annual statements and stock exchange performance. Focusing on the annual balance sheet and statement of income, and correlated to the fact that the above mentioned distortion issue heavily influences the comparability aspect of ratio analysis results, the aim of this paper is the disambiguation of the IFRS adoption impact on the decision making process from a user evaluation stand point.

To this end, the field of study is narrowed down to a particular set of position and performance financial ratios, which elements are picked on the consensus criteria settled in previous academic research. Examining the IFRS standards and regulations influencing ratio outcome for the particular set, and comparing them to the United States and Romanian regulations for the same set, reveals possible differences in end result that lead to various expectations and interpretations of a given corporation's financial performance. Thus, the IFRS impact on ratio results is highlighted in contrast with two representative financial reporting standards of the currently adapted anglo saxon and continental accounting families. The US GAAP, formerly the most used accounting standard on an international level and a current runner up to the IFRS (Seay, 2014), has undergone recent revision mending a number of inconsistencies with the international practice. By adding the third term of comparison, the Romanian case, the paper is looking to offer insight for local investors toward better understanding how domestic corporations relate in value to IFRS adoptive and United States counterparts, as a result of financial reporting differences.

The regulation comparison process points out four major issues, which are causes for differences in ratios results from one accounting system to the next. While in reality the four topics are each moving variables independent of one another, setting a conceptual expectation framework can only be done in a *ceteris paribus* controlled environment. This limitation holds in question efforts of claiming that such a conceptual framework is anything more than a loose guideline. Therefore, a preliminary testing is imperative for gaining further insight upon how ratio analysis results turn in a real economic environment. Using a singular company's annual statements and afferent notes, a hypothetical three scenario test is desired to show flaws in the expectation framework and the need for a larger scale quantitative approach.

2. Regulation differences and their impact on the chosen financial ratios

Upon examining the practice of ratio analysis in a general sense, a remarkable feat is comprised by the fact that a lack of consensus exists both on an academic level and a professional one. Using the mathematical relationship between figures from financial statements is a practice that has originated in the private sector, being conducted in a flexible fashion at the users' discretion and having the end goal of value and risk assessment. Given the fact that ratio analysis is a technique developed by users, for the purpose of a better decision making process, no past regulatory effort was successful towards standardizing the practice. While the academic world does use the concept on a large scale, research institutions and text books of various economic fields of study present differences of opinion, often times using different labels to refer to and different formulas related to a singular ratio (Mankin et al, 2014). The lack of a general consensus, therefore, burdens the investors' task of forming an objective opinion on financial performance in an international context, above and beyond the already existing legislative and cultural differences. For the purpose of the present research, in order to reduce the subjectivity effect on data comparability, we are using a ranking system that yields a number of financial position and performance ratios based on their level of popularity in academic writings sourcing from a sample of twelve North American and European countries (Gencia, 2015). The ratio names and their respective mathematical formulas can be found in table 1, representing the core on which accounting regulation differences will be demonstrated.

Going back to the *IFRS-FASB-RO Legislation* comparison, and in the light of the chosen ratios, the particular elements that cause a distortion in result comparison are narrowed down to a number of four topics. The first, and probably the factor with the largest impact is the inventory valuation methodology as allowed or prohibited (Jesswein, 2010) by regulation. More precisely, while the three systems define inventory in a similar fashion, the IFRS strictly prohibits the use of the LIFO method. This may prove a serious

Table 1: A collection of most commonly used financial ratios, based on data from a varied academic text book sample

Ration Name	Mathematical formula	Ration Name	Mathematical formula
Current Ratio	$\frac{\text{current assets}}{\text{current liabilities}}$	Profit margin ratio	$\frac{\text{net income}}{\text{net sales}}$
Quick Ratio	$\frac{\text{cash} + \text{s. t. invest.} + \text{receivables}}{\text{liabilities}}$	Times Interest Earned	$\frac{\text{EBIT}}{\text{interest earned}}$
Accounts Receivable Turnover	$\frac{\text{net sales}}{\text{average accounts receivable}}$	Interest Burden	$\frac{\text{EBIT} - \text{interest expens}}{\text{EBIT}}$
Inventory Turnover	$\frac{\text{cost of goods sold}}{\text{net inventory}}$	Total Asset Turnover	$\frac{\text{net sales}}{\text{average total assets}}$
Days Sales in Inventory	$\frac{\text{ending inventory}}{\text{cost of goods sold}} \times 365$	Return on Assets	$\frac{\text{net income}}{\text{average total assets}}$
Days sales Uncollected	$\frac{\text{cost of goods sold}}{\text{net inventory}}$	Debt to Equity Ratio	$\frac{\text{total liabilities}}{\text{total equity}}$
Debt Ratio	$\frac{\text{total liabilities}}{\text{total assets}}$	Equity Ratio	$\frac{\text{total equity}}{\text{total assets}}$

Source: Authors' considerations, based on own previous research

issue, as LIFO is allowed under the other two frameworks, better yet in the case of the US, roughly a third of private entities employ this method (Jeffers et al, 2010). When comparing the IFRS results, therefore, to the FASB and Romanian counterparts, the user must keep in mind that lack of LIFO means inventory is no longer over evaluated in periods of rising prices. This has further implications for the value of total assets, cost of goods sold, gross profit, EBIT, income tax and finally net profit.

A second dissident issue on the matter of ratio result comparison pertains to lease contract recognition between operational and financial. An examination of IAS 17, in contrast to the FASB ACS 840-20 and the

Romanian OMFP 1802/2014 sec. 4.4. art. 213 reveal that under IFRS the lease contract test is less rigid than the other two, leaving a lot of room for professional judgement. Due to this fact, under the IFRS some leases may be treated as operational, while under identical circumstances the anglo saxon and continental systems would both agree upon financial. According to Harris et al (2013), due to the conflict of asset acquisition vs. operational expense, IFRS may lead to more conservative ratio results.

The third and fourth topics, while having a lesser impact on the subject matter, are a cause for an unprecedented distortion, unique to the IFRS harmonization process. Firstly, it is duly noted that upward revaluation of property plant and equipment under the IFRS is allowed given that proper circumstances are met, as per IAS 16. Opposite, the FASB and Romanian regulations more or less prohibit the practice. Furthermore, upward revaluation of assets positively influences the comprehensive income – a term coined under the IFRS IAS 1, which lacks mandatory use under the US GAAP and recognition all together under Romanian law. This is relevant, as in practice comprehensive income may replace net income in ratio computation.

Overall, taking into account the four topics that may cause distortions, table 2 summarises the expectation for ratio results should either regulation topic play into effect while the remainder three are held constant.

Table 2: Difference expectation of ratio results, based on the four dissident regulation aspects (1 variable, ceteris paribus)

Accounting regulation	Influenced ratio and expected inequality of results	
LIFO prohibition <i>#of influenced ratios:[9/14]</i>	Current Ratio	[FASB/OMFP] > [IFRS]
	Inventory Turnover	[FASB/OMFP] < [IFRS]
	Days Sales in Inventory	[FASB/OMFP] > [IFRS]
	Times Interest Earned	[FASB/OMFP] > [IFRS]
	Profit margin ratio	[FASB/OMFP] > [IFRS]
	Interest burden	[FASB/OMFP] > [IFRS]
	Debt ratio	[FASB/OMFP] < [IFRS]
	Equity Ration	[FASB/OMFP] < [IFRS]
	Total asset turnover	[FASB/OMFP] < [IFRS]
Lease contract recognition <i>#of influenced</i>	Inventory Turnover Ratio	[FASB/OMFP] ≥ [IFRS]
	Debt ratio	[FASB/OMFP] ≤ [IFRS]
	profit margin ratio	[FASB/OMFP] ≤ [IFRS]
	Times interest earned	[FASB/OMFP] ≤ [IFRS]

<i>ratios:[6/14]</i>	Interest burden	[FASB/OMFP] ? [IFRS]
	Debt to Equity ratio	[FASB/OMFP] ≤ [IFRS]
Upward revaluation <i>#of influenced ratios:[4/14]</i>	Debt Ratio	[FASB] ≠ [OMFP] > [IFRS]
	Total Asset Turnover	[FASB] ≠ [OMFP] > [IFRS]
	Return on assets	[FASB] ≠ [OMFP] > [IFRS]
	Equity Ratio	[FASB] ≠ [OMFP] > [IFRS]
Comprehensive income <i>#of influenced ratios:[2/14]</i>	Inventory Turnover Ratio	[FASB și OMFP] < [IFRS] < [FASB și OMFP] (IFRS result positions itself function of upward/downward revaluation)
	Total Asset Turnover	

Source: Authors' considerations

3. A practical approach towards testing the conceptual framework

Overall, the expectations set in table 2 represent a good starting point toward understating the impact of the IFRS adoption, by comparison to the existing alternative for national financial reporting standards. This may also prove a useful guideline for investors looking into figures for isolated calculations pertaining to one of the four topics of regulation examined. From a macro stand point, however, table 2 holds little weight as under real economic circumstances neither variable is controllable. In fact, the four topics are independent variables that simultaneously shift in value. Given the volatile nature of ratio analysis and the subjectivity of the topic in professional circles, this paper is an intermediate step that uses a case study toward determining further direction of research worth pursuing.

Berg Metallchem SRL is a privately owned, limited liability Romanian corporation, which conducts business in the non-iron metal recycling industry. The company is affiliated to *Berg Banat SA* – a larger publicly traded Romanian corporation and a subsidiary of *Berg Holding GMBH Koln*. Its chief occupation is zinc extraction, mostly sold to the mother company as raw materials for the galvanization process. Aiding the present research, with the exception of trade and professional secrets, the company's management has provided sufficient data that allows the adaptation of the 2015 Romanian OMFP compliant balance sheet and income statement to alternative scenario statements that abide to IFRS and FASB regulations. The mentioned data comprises and is not limited to: annual statements, notes to the annual statements, managerial accounting data, contract information, and limited employee interviews.

Firstly, using provided managerial accounting data, the impact of using LIFO for an alternative FASB scenario, instead of the chosen FIFO for the original Romanian scenario and imposed for the IFRS scenario, is recorded on each individual statement position. Basically, using the schedule of acquisition for each month of the exercise, and the sold quantity of zinc yeast in metric tons at secondary capital market prices, allows an exact recording of the LIFO vs. FIFO implications. Second and simultaneously, by means of interview and in reference to an existing lease contract, sufficient information is gathered toward shifting the recorded financial lease for equipment, to an operational one in the IFRS alternative scenario, also recording statement line alteration (the FASB scenario retains the financial lease, as its regulations hold more similarities to the Romanian legislation on topic). Thirdly, domestic real estate market information points out toward a mean 16% increase in property prices for the geographical location of the *Berg Metallchem SRL* plant, meaning that under the IFRS alternative scenario an upward valuation of property, plant and equipment is in order. The implicit impact of this revaluation on comprehensive income has also been recorded under the IFRS scenario.

Lastly, rewriting the two annual statements allows incorporating the accounting policies of each four aspects of regulation that create distortions in ratio results. This leads to three different statements that record identical transactions, but yield a different image of the company's financial position and performance. Computing the financial ratios based on these statements, (which are not displayed due to space limitation), are consigned in table 3; together with result inequality across the three scenarios governed by each system of reporting.

Table 3: Centralized ratio results for *Berg Metallchem SRL*, for each regulatory scenario

Ratio	Result – OMFP	Result – FASB	Result – IFRS	Actual result inequality
Current Ratio	0,54 (0,5355)	0,54 (0,5447)	0,54 (0,5356)	[OMFP] = [FASB] = [IFRS]
Inventory Turnover Ratio	109,47	87,99	1. v.g.: 84,35 2. p.n.:	Comprehensive income: [OMFP] > [FASB] > [IFRS]

			121,38	Net income: [IFRS] > [OMFP] = [FASB]
Days Sales in Inventory	38,99	40,04	38,99	[FASB] > [OMFP] = [IFRS]
Debt Ratio	0,74 (0,7378)	0,74 (0,7364)	0,73 (0,7348)	[OMFP] = [FASB] = [IFRS]
Interest Burden	0,09	0,26	0,40	[OMFP] < [FASB] < [IFRS]
Profit Margin Ratio	0,05 (0,0543)	0,07 (0,0665)	1. c.i.: 0,07 2. n.i.: 0,05	Comprehensive income: [OMFP] < [FASB] = [IFRS] Net income: [OMFP] = [IFRS] < [FASB]
Times Interest Earned	0,35	0,68	0,22	[IFRS] < [OMFP] < [FASB]
Debt Burden	0,26	0,40	0,18	[IFRS] < [OMFP] < [FASB]
Total Asset Turnover	0,01 (0,0101)	0,01 (0,0125)	1. c.i.: 0,01 2. n.i.: 0,01	[OMFP] = [FASB] = [IFRS]
Return on Assets	1,31 (1,3108)	1,31 (1,3089)	1,31 (1,3143)	[OMFP] = [FASB] = [IFRS]
Debt to Equity Ratio	2,82	2,80	2,77	[OMFP] > [FASB] > [IFRS]
Equity Ratio	0,26 (0,2620)	0,26 (0,2631)	0,26 (0,2651)	[OMFP] = [FASB] = [IFRS]

Source: Authors' considerations

The data in table 3 indicates that a total of twelve out of the fourteen initial ratios remain of interest with regards to the aspect result distortion. The *quick ratio* and *accounts receivables turnover ratio* are not in any means affected by the examined regulations, and their respective results remain unchanged regardless of any rule considerations. Out of the remainder, six ratios present differences only at four decimal points. While for this particular case the differences are considered below materiality, we point out that they may not retain the status of equality should the transactions recorded by the company would have been conducted differently. The final six ratios, indeed indicate an inequality of result, however the consolidated form is not entirely

comparable to table 2, as the later set of ratio result expectation are valid solely for each particular topic of regulation. *Inventory Turnover Ratio*, *Days Sales in Inventory*, *Times Interest Earned*, *Profit Margin* and *Interest Burden*, hold strong resemblance to the expectation set by the LIFO vs. FIFO dilemma, strengthening once again the statement that inventory valuation and its alteration of assets, is the regulation with the highest impact and potential of distortion among the four. The consolidated *Debt Ratio* inequality is in accord with the expectation set for the lease contract recognition section. As expected, the liability implication of the expense versus debt problem raised by leases has a larger impact on ratio result than inventory valuation, and its implicit effect on total assets. Table 3 shows results for *total asset turnover*, *inventory turnover and profit margin* should both comprehensive and net income be alternatively in play. Major result differences occur only when upward revaluation is applicable, and comprehensive income is used instead of net income. The same differences are not necessarily the case when downward revaluation may be applicable

Overall, comparing the case study results to the conceptual framework expectation model, we conclude that a number of similarities are carried over from theory to practice; however there is no sufficient evidence toward postulating a unanimously available rule for the selected ratios of interest. Further statistical research may reduce shortcomings for the six ratios that did not present material differences in result, as well as offer sufficient evidence to support or, otherwise, infer the insight drawn upon the fact that inventory valuation is the overwhelming influence of the four examined topics.

4. Conclusions

The IFRS end goal is the creation a singular accounting language, which transcends barriers such as linguistic nuance and cultural differences. While the final stage of the harmonization process is beneficiary for all market participants, the process itself proves to raise problems of various natures. In as far as financial ratio result comparability, the IFRS adds another layer of difficulties to an already controversial issue. Explicitly the IFRS represents a third distinct term of comparison – as at least its four dissident regulation aspects highlighted above prove the system to be fundamentally different from two arbitrarily chosen anglo saxon and continental reporting standards.

The attempt of narrowing down the signalled differences to a set of expectations, and testing them against a singular case study that exhaustively

allows adaptation to the three accounting systems was inconclusive. While this exercise is sufficient for understanding the phenomena, it is unable to sketch a general statement of how the four regulation differences may independently interact in real economic situations, and thus what should be the expectation of ratio result behaviour in a cross cultural environment. The reason behind the model vs. study incompatibility is the consequence of the ceteris paribus limitation, as in real scenarios the four variables are independent of each other and simultaneously change values. Thus, it is our opinion that the only possibility of a better ratio result expectation model may be proven in a statistical significant fashion, by relating to a large sample of annual statements for publicly traded companies equally ranging from the three regulation examples employed.

5. References

1. *Accounting Study Guide* (2016), *US GAAP Codification of Accounting Standards Guide*, available at <http://accountinginfo.com/financial-accounting-standards/>
2. Bauren, I.; Hein, N.; Klann, R. (2008) *Impact of the IFRS and US GAAP on economic financial indicators*, *Managerial Auditing Journal*, vol. 23, no. 7, p. 632-649.
3. Byard, D.; Ying, L.; Yong, Y. (2011), *The Effects of mandatory IFRS adoption on financial analysts' information environment*, *Journal of Accounting Research*, no. 49.
4. Gencia, A. (2015), *A Consensus on commonly used Financial Ratios*, *Proceedings of Fikusz Symposium for Young Researchers*, p. 45-55.
5. Leug, R.; Punda, P.; Burkert, M. (2014) *Does Transition to IFRS substantially affect key financial ratios in shareholder-oriented common law regimes?*, *Advances in Accounting*, no. 30.
6. Harris, P.; Stahlin, W.; Liz, W.; Kinkela, K. (2013), *GAAP vs. IFRS treatment on Leases and the impact on Financial Ratios*, *Global Conference on Business and Finance Proceedings*, vol. 8, p. 42-50
7. Jefferson, A.; Askew, S. (2010), *Analysing Financial Statements under IFRS Opportunities Sand Challenges*, *Journal of Leadership, Accountability, and Ethics*, vol. 1, no 8.
8. Jesswein, K. (2010), *The Changing LIFO-FIFO Dilema and its Importance tot he Analysis of the Financial Statements*, *Academy of Accounting and Financial Studies Journal*, vol. 13, no. 1, p. 53-62.
9. *International Accounting Standards Board* (2016), *Conceptual Framework for Financial Reporting: The Reporting Entity*, available at www.ifrs.org/
10. Mankin, J.; Jewel, J. (2014), *A sorry state of affairs: The problems with financial ratio education*, *Academy of educational Leadership Journal*, vol. 18, no. 4.
11. *National Agency for Public Finance Administration* (2015), *Ghid Privind Aokucarea Reglementarilor Contabile, Privind Situatiile Financiare Anuale si Situatiile Financiare Anuale Consolidate, aprobate prin ordinal ministerului finantelor publice nr. 1802/2014*,
12. Seay, S. (2014), *The economic impact of IFRS – A Financial Analysis Perspective*, *Academy of Accounting and Financial Studies Journal*, vol. 18, no. 2, p. 119-139.