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Does Industry Volatility Matter? A Cross Comparison of Earnings Roundup in Financial Services and Real Sector Companies in Nigeria

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Abstract

The study set out to examine cross-sectorial differences in earnings roundup, using a sample of 103 listed firms. In particular, the study investigated corporate tendencies to roundup earnings number (net income). Despite international market pressure and regulatory requirements for qualitative disclosure, the results reveal that earnings roundup varies systematically across financial and real sector companies. In addition, financial firms show a greater tendency to round up the second digit of quarterly earnings, as well as annual earnings, than do real sector companies. The current study provides support for formal (e.g., legal, corporate governance, regulation) and informal (e.g., business culture, stakeholder pressure and social norms) institutional differences as an influencing factor in earnings management. This paper has important policy implications and contributes to ongoing debate on financial reporting quality by showing that companies in financial services have a greater tendency to manage earnings.

Keywords: *Earnings roundup, qualitative disclosure, earnings management, institutional differences, regulation.*

1. Introduction

Yang & Dong (2015) suggest that in the absence of estimation models public bank holding companies (BHCs) have a greater tendency to round up the second digit of quarterly earnings, as well as annual earnings than do private bank holding companies (BHCs). Using a sample selection of all quarterly earnings data of BHCs available from the Chicago Federal Reserve Bank website between 1987 to 2013, the authors found that public BHCs have a greater tendency to manage earnings, thus supporting the "opportunistic behaviour" hypothesis. Based on the theories adapted in the study as underlying companies reporting of 0s or 9s on the second-from-left-most digit of earnings and comparing them with the frequencies underlying Benford's law, we posit that the cognitive processing effects observed across private and public BHCs may also differ between financial and real sector companies in an emerging market. Although earnings roundup technique is prevalent in practice (Carslaw, 1988; Thomas, 1989), we investigate whether market behaviour, which leads to earnings roundup, targeted at beating analysts' forecasts, is peculiar to the financial sector. Prior studies do not only report how quarterly earnings information is communicated to the market influence analysts' forecast of future forecasts of future earnings (Libby & Tan, 1999) but also the order (Miller, 2006) in which they receive the various earnings news. Taken together, prior research provides compelling evidence of significant differences in order effect, industries, differing sets of regulations and jurisdictions.

In contrast to prior literature, our investigation does not address the same industry. Rather our focus is on how accountants in real sector process sequential roundup earnings in comparison with the financial sector. Specifically, we focus on a cross comparison of these industries and whether cognitive processing affects this differential. This

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study is motivated by the recent developments in the financial sector, particularly the banking industry, due to the Basel accord compliance requirements. This paper examines whether the Basel accord compliance requirements -- risk-weighted capital, contingent capital, countercyclical buffer, capital maintenance and changes to regulatory capital -- extend to differentiate the various attributes of earnings quality in the banking industry from the real sector. We add to the current literature by studying earnings roundup in Nigerian real and service sector firms. Our findings supplement previous literature on earnings management, given that within this jurisdiction, financial data of real sector companies differ significantly from the financial sector and extend considerably to all composition of assets and liabilities. While financial companies are under strict regulation regarding risk management practices, major players in both industries share from amongst the Big-4 audit firms. There is documentary evidence between these sectors with significant policy implications as provided by Yuncu, Akdenis, & Aydogan (2006) from the credit view hypothesis. Nonetheless, the relationship between the sectors differ between industrialized and developing economies. These are the reasons the current study focuses on a cross comparison.

The remainder of this paper is organized as follows. Section 2 reviews the related literature and develops the hypothesis. Section 3 presents the research design. Section 4 reports on the data findings and empirical results. Section 5 concludes.

2. Literature Review

Extant researches (Yang & Dong, 2015; Carslaw, 1988; Thomas, 1989; Libby & Tan, 1999; Miller, 2006) examine and document variations in earnings quality. However, most of these studies have considered individual firms and industries. Yang and Dong (2015) and Cupertino, Martinez, & da Costa Jr. (2015) are more recent studies. The study by Cupertino, Martinez, et al. (2015) is based on results manipulation through "real activities," using content analysis of 1989 and 2012 annual reports. Given that the sample excludes banks, investment firms and telecommunications which are highly regulated, there is a strong likelihood that the results reveal earnings quality in the real sector only, in contrast to our cross comparison. Yago and Dong (2015) use a very large sample, comprising 158,829 bank-quarter observations for public and private bank holding companies. As a result, their sample includes banks only (from both domestic and multinational banks of different sizes). They fail to include companies in the real sector, but instead use the issuance of quarterly earnings data available from the Chicago Federal Reserve Bank website.

Cupertino et al., (2015) identify the practice and investors' perception regarding real activities management in Brazil, using firm level data from Sao Paulo Stock Exchange (BOVESPA). They confirm the occurrence of manipulation through real activities in the Brazilian capital market, beyond the use of accounting decisions. The investigation did not pursue an exhaustive list of potential real activities management (RAM), such as delaying or cancelling new investment projects and hedging in derivatives. In addition, the authors controlled for extraneous factors, including institutional differences, legal and statutory compliance requirements, corporate governance, and the influence of sophisticated investors, which may influence RAM techniques. Yang and Dong (2015) argue that the demand hypothesis and opportunistic behaviour hypothesis is associated with earnings manipulation. They report that public BHCs have greater tendencies to manage earnings than private BHCs.

Contending paradigms on earnings management detection modelling have long existed in the literature. For example: graphical modelling of specific accruals (Gordon, 1964; Alchibald, 1967), mathematical modelling of specific accruals (Copeland, 1968; Beidleman, 1973), total discretionary accruals modelling with time series data ((Healey, 1985; Jones, 1991; Dechow, Sloan, & Sweeny, 1995), total discretionary accruals modelling, with cross sectional data (DeFond & Jiambalvo, 1994; Peasenell, Pope & Young, 2000); use of financial and proxy statements modelling (Beneish, 1997; 1999. Others include distribution of reported earnings and accrual modelling (Burgstahler & Dichev, 1997), and more recently, the use of neural networks (Hoglund, 2012). Evidently, robust models have been developed extensively to detect earnings management. Nonetheless, these models exist on academic shelves without practical research commercialisation and industrial utilisation. It can indeed be argued that, while documentary evidence on earnings management exists, it is not clear whether real and financial sector firms exhibit similar characteristics in this context. The financial sector in Nigeria, like in most jurisdictions, faces competing pressure from the local business culture, regulation and from multinational financial institutions.

Historically, the growth in the real sector plays a catalytic role in the successful transformation of most economies that have seen sustained increase in their per capita incomes. In most developed markets, the sector has been the leader in many respects; it is an avenue for increasing productivity in relation to import substitution and export expansion, creating foreign exchange earning capacity, raising employment, promoting the growth of investment at a faster rate than any other sector of the economy, as well as a wider and more efficient linkage among different sectors (Kayode & Teriba, 2007).

Additionally, both sectors typically face greater media exposure and public scrutiny in terms of financial performance expectations, thus the resultant level of disclosure and possible earnings manipulation may be high in order to remain competitive, appease stakeholders, and enhance their public image. A need therefore arises to compare earnings roundup in these sectors. Based on the findings in prior literature, it stands to reason that the financial sector will likely have a different earnings management agenda from the real sector. Given the contradicting predictions and lack of extant research, comparing earnings quality, whether or not earnings roundup will systematically differ across these businesses remain an open question. To explore this issue, we focus on the following research hypothesis:

H1: Real and financial companies are equally likely to round up earnings.

3. Research Methods

This study builds on extant literature, but in contrast to Yago and Dong (2015) and Cupertino et al. (2015), we adopt an exclusive dual-sector sample to examine whether there are cross-sectorial variations on earnings management. We focus on a dual-comparison of the real and service sectors because they exhibit differences in their contributions to overall economic growth and development. Leveraging on our cross-sectorial sample, we examine competing hypotheses on financial reporting quality. One view suggests that institutional differences incorporated in a business culture, influence and explains cross-sectorial differences in earnings quality. We examine whether formal (e.g., legal, corporate governance, regulation) and informal (e.g. business culture and social norms) institutional differences affect earnings management. Yago and Dong (2015) hypothesise and find earnings roundup in quarterly earnings reported by both public and private bank holding companies. The roundup pattern, nevertheless, is more pronounced in the public BHCs. This supports the "opportunistic behaviour" hypothesis.

To identify a sample of companies from the real sector, we chose representatives of firms selected from the website of the Nigerian Stock Exchange (NSE) periodic earnings database. This sample was selected from the Manufacturing, Telecommunications, Building Materials, Information Technology, Construction/Real Estate, Consumer Goods, Healthcare, Industrial Goods, Oil and Gas, Agriculture, and Conglomerates sectors, based on quarterly earnings data availability. For the financial sector, we include a sample of firms from Banking, Insurance, Mortgage carriers, Brokers and Services, Real estate investment trusts (REITs), Micro-finance banks, and other financial institutions. This selection covers the period 1998 to 2014. We exclude all multinational companies in both sectors to avoid any potential confounding effects arising from parent companies' control. Studies investigating quoted companies use this criterion to select their samples (e.g., Hermanson, Houston, & Rice, 2007; DeFond & Lennox, 2011). Thus, to make our results comparable with those of previous studies, we use the same criteria to select our sample. The original sample contained 173,208 firm year observations from all the sectors. We then exclude observations that do not have complete data for the analysis. Subsequently, the final sample is made up of 83 companies in both sectors in 149,782 quarterly observations. Of this, 68,904 are from the real sector while the rest are representatives of the banking industry. Furthermore, we require, at least, 15 observations from each NSE grouping per quarterly earnings release to estimate the earnings roundup proxies. We conduct test for net income after tax (NI) and examine income before extra-ordinary items (IBEIs). We further omit observations with single digit and negative earnings when analysing frequency distribution of the second digit from the earnings reported by the survey companies. This leaves the final observations at 136,357 as a basis for the analysis of quarterly earnings. As Bendford's law applies only to natural numbers, we further eliminate sample of negative earnings, representing less than 4% of the full sample.

In the original sample selection, we find that, on average, financial sector firms are larger than real sector companies (considering average balance sheet size proxied by networth values). Thus, to mitigate concern on size differences between the two categories, we match specifically a real sector quarterly observation to one financial company observation, based on reporting quarter and total assets. To validate this matching quality we allow the absolute difference in total assets for each matched pair to be not exceeding 6% of the real sector's total assets. The matching process leaves 80,026 observations in the analysis of quarterly earnings. For the annual earnings analysis, we have a total of 30,629 observations.

4. Results And Discussion

Quarterly earnings roundup

The foregoing discussion suggests that timely loss recognition is likely to be more prevalent in the banking and insurance subsectors, due to high regulatory requirement, for instance, in loan loss provisioning. However, this does not necessarily lead to the conclusion that real sector companies are less conservative, because an alternative explanation is that the composition of assets in the real sector differ significantly from their counterparts in the financial sector. A tangible proportion of assets in the real sector is made up of tangible non -current assets, while loans and advances and other intangibles form a larger part of assets in the services sector. In order to overcome

these discrepancies, we employ a methodology deployed in earlier studies (e.g. Yang & Dong, 2015) by benchmarking the distribution of firms' earnings to a universal law applicable to natural numbers – Bendford's Law (BL). The frequency distributions of the second-from-left-most digit of quarterly net income reported by financial and real sector companies, respectively, is reported in Table 1.

Table 1: Sector type and 2nd digit of quarterly net income

Panel A: Full sample

2nd digit	Financial services					Real sector			
	Expected percent (1)	Actual freq. (2)	Actual percent (3)	Actual-expected (4)	Z-stat (5)	Actual freq. (6)	Actual percent (7)	Actual-expected (8)	Z-stat (9)
0	14.02%	6785	14.86%	0.84%	5.90***	9161	12.96%	0.52%	4.32***
1	13.23%	6214	11.42%	0.33%	2.39**	9928	12.50%	0.26%	2.20**
2	12.13%	5943	11.16%	0.33%	2.42**	8807	11.20%	-0.08%	0.70
3	11.21%	5540	10.45%	-0.07%	0.12*	8573	10.55%	0.05%	0.41
4	10.01%	5290	9.98%	-1.23%	0.38	8131	10.07%	-0.17%	1.52
5	9.11%	5012	9.19%	-0.24%	1.69	7889	9.60%	-0.14%	1.25
6	8.00%	4879	9.20%	-0.22%	1.08	7674	8.66%	-0.11%	0.98
7	7.73%	4610	9.69%	-0.38%	2.76***	7309	9.41%	-0.04%	0.32
8	7.44%	4510	9.60%	-0.17%	2.00**	6946	7.60%	-0.26%	2.44**
9	7.12%	4236	6.50%	-0.62%	4.20***	6811	7.45%	-0.05%	0.48
Total	100.00%	53,019	100.00%			81,229	100.00%		

Panel B: Size-matched sample

2nd digit	Financial services					Real sector			
	Expected percent (1)	Actual freq. (2)	Actual percent (3)	Actual-expected (4)	Z-stat (5)	Actual freq. (6)	Actual percent (7)	Actual-expected (8)	Z-stat (9)
0	10.85%	4685	12.96%	0.99%	5.80***	4483	12.38%	0.41%	2.41***
1	11.75%	4281	11.84%	0.45%	2.69**	4291	11.85%	0.46%	2.75**
2	11.49%	4075	11.27%	0.39%	2.36**	3889	10.74%	-0.14%	0.86
3	10.38%	3787	10.48%	0.05%	0.28*	3798	10.49%	0.06%	0.35
4	11.21%	3573	9.88%	-0.15%	0.95	3611	9.97%	-0.06%	0.38
5	9.67%	3422	9.47%	-0.20%	1.26	3462	9.56%	-0.11%	0.69
6	9.34%	3338	9.23%	-0.11%	0.69	3331	9.20%	-0.14%	0.89
7	9.04%	3100	8.58%	-0.46%	3.01***	3286	9.08%	0.05%	0.29
8	8.76%	3044	8.42%	-0.34%	2.26**	3029	8.37%	-0.39%	2.60**
9	8.50%	2842	7.86%	-0.64%	4.35***	3024	8.35%	-0.15%	1.01
Total	100.00%	36,147	100.00%			36,204	100.00%		

This table presents the expected and actual distribution of the second digit of financial services and real sector companies' quarterly net income for the full sample (Panel A) and the size-matched sample (Panel B), respectively.
* indicates significance at a level of 10%
** indicates significance at a level of 5%
*** indicates significance at a level of 1%

Panel A presents the distribution for the full sample. From column 4, it is observed that the proportion of 0s of companies, listed under the financial sector is higher than expected by 0.84%, while the proportion of 9s under this category is lower than expected by 0.62%. These deviations from Benford's Law (BL) are significant at p<1% level. Further, the proportion of 1s and 2s are higher while those of 7s and 8s appear higher than expectations. Overall, the higher-than-expected frequency of 0s, 1s and 2s, and the lower-than-expected frequency of 7s, 8s and 9s on the second-digit of net income are consistent with the findings in Carslaw (1988) and Thomas ((1989). This indicates existence of the tendency to roundup net income numbers when the pre-managed second-digit appears to be a 7, 8 or

9. Regarding the deviations in the real sector, displayed in column 8, the roundup pattern is not as remarkable when compared to the public sample: the deviations are positive and significant for 0s and 1s and negative for 8s and 9s; except that for 9s, it is insignificant. Comparing the magnitude of the deviations on 0s, 1s, 8s and 9s, it is observed that the roundup tendency is greater in the financial sector. Panel B reports the distribution of the net income second digit for the size-matched sample. The results are consistent with the full sample. Observing the distribution of the second digit of income before extraordinary items (IBEI) for financial and real sector firms, respectively, the tabulated results share similarity to that reported under the net income test, i.e., a second pronounced roundup pattern on the second digit of IBIE, reported by financial services, are similar. This shows that earnings roundup is less pronounced for real sector companies.

Table 2: Sector type and 2nd digit of annual earnings

Panel A: Full sample

2nd digit		Financial services				Real sector			
	Expected percent (1)	Actual freq. (2)	Actual percent (3)	Actual-expected (4)	Z-stat (5)	Actual freq. (6)	Actual percent (7)	Actual-expected (8)	Z-stat (9)
0	11.97%	1549	13.18%	1.27%	4.03***	1860	12.13%	0.16%	0.61
1	11.39%	1363	11.60%	0.21%	0.71	1654	10.79%	-0.61%	2.32**
2	10.88%	1286	10.94%	0.06%	0.19	1649	10.75%	-0.13%	0.51
3	10.43%	1224	10.42%	-0.01%	0.03	1551	10.12%	-0.31%	1.25
4	10.03%	1124	9.56%	-0.47%	1.68*	1535	10.01%	-0.02%	0.07
5	9.67%	1125	9.57%	-0.10%	0.34	1595	10.40%	0.73%	3.05***
6	9.34%	1098	9.34&	0.00%	0.00	1397	9.11%	-0.23%	0.95
7	9.04%	1074	9.14%	0.11%	0.38	1386	9.04%	0.00%	0.01
8	8.76%	1004	8.54%	-0.22%	0.82	1411	9.20%	0.43%	1.93*
9	8.50%	905	7.70%	-0.79%	3.09***	1295	8.45%	-0.05%	0.21
Total	100.00%	11,752	100.00%			15,333	100.00%		

This table presents the expected and actual distribution of the second digit of financial services and real sector companies' annual net income.

Annual earnings roundup

In this section, we reveal the result of investigation on the relative tendencies of financial and real sector companies to roundup annual earnings. This roundup tendency discovered in quarterly earnings may not necessarily extend to annual earnings. Whether the roundup activity exists depends on the extent to which stakeholders of financial services and real sector companies rely on annual earnings. Extant studies have shown that, from a contracting point of view, managers may benefit from exceeding most contractual benchmarks and this encourages earnings roundup activity (Yang & Dong, 2015). Nonetheless, for some other contracts, based on annual earnings, firms are more likely to benefit from reporting lower earnings, a pattern which discourages earnings roundup activity. The frequency distribution of the second-from-leftmost digit of reported annual income is displayed in Table 2. For financial services sector, the probability of reporting 0s (9s) on the second digit of net income is higher (lower) than expected by 1.27% (0.79%), an indication of obvious earninsg roundup pattern. For real sector companies, the frequencies of reporting 0s and 9s do not significantly deviate from Benford's Law (BL). Unpredictably, reporting frequency of 1s (8s) is 0.61% (0.43%) lower (higher) than expcted, suggesting a reverse roundup pattern, albeit not significant. Unreported results for IBEI echo the net income results. The discrepancies observed in the roundup tendencies between financial and the real sector companies could be the result of less reliance of real sector stakeholders' on reported earnings and the compensations of real sector company managers are less tied to annual income compared to those of the service sector. This is evident in the discrepancies observed in executive compensation in practice amongst these firms. These features are probably responsible for real sector companies having less incentive to round up annual earnings. The reverse round up pattern observed in real sector may also suggest that their incentive to round down earnings exceed the incentive to round up earnings, particularly for tax considerations.

5. Conclusion And Implications

There is a growing awareness that formal (e.g., legal, corporate governance, regulation) and informal (e.g., business culture and social norms) institutional differences play an important role in influencing corporate earnings management. At the same time, there is some evidence to suggest that stakeholders' pressure on managers differs by industry and/or sector. This study investigated these questions by exmaining cross-industrial differences in Nigeria, using a sample of quoted companies from the real and service sectors. The results of the study generally support the prediction that industry and institutional differences are good predictors in the disclousre of earnings information. The results suggest that, in spite of the global call for qualitative reporting, stakeholders' pressure still plays an important role in corporate earnings management. The study compared the tendencies to roundup earnings numbers (net income) between financial and real sector companies and observed that financial services firms showed a greater tendency to round up the second digit of quarterly and annual earnings, than real sector companies. The study contributes to the ongoing debate on financial reporting quality of financial services and real sector firms by showing that companies in financial services have a greater tendency to manage earnings. The study also has important policy implications for regulatory agencies such as Securities and Exchange Commission and the Central Bank of Nigeria in monitoring the financial reports prepared by companies in the financial services sector.

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