

Aggregate Earnings and (Un)employment Rate: evidence from Nigeria

Abstract

The purpose of this study is to investigate the association between aggregate accounting earnings of quoted Nigerian firms and (un)employment changes. This study examined the influence of selected macroeconomic variables on the relationship between aggregate earnings and (un)employment change. This study analyzes aggregated earnings of 101 quoted firms and (un)employment rate data from the year 2006 to 2017. Aggregated earnings yearly observations were used in this study, with each yearly observation equal to the cross-sectional sum of sample firms' yearly earnings. Results show that corporate aggregate earnings growth is (negatively)positively and significantly associate with (un)employment changes. Selected macroeconomic indicators statistically and significantly influence the aggregate earnings growth association with (un)employment changes. Robustness of our analysis in this study allowed us to document in strong terms that in an emerging economy, corporate aggregate earnings significantly associated with (un)employment (i.e., as corporate earnings increases, more investment will be made, and job seekers will be employed thereby reducing the unemployment rate). One implication of our results is that aggregate accounting earnings contain information about (un)employment changes in Nigeria. Our results suggest that effective monetary policies aimed at reducing inflation and interest rate as well as enabling economic policies encouraging and efficient mobilizing of fund from surplus side to deficit side of the economy will reduce unemployment and lead to employment.

Key Words: Aggregate Earnings; (un)employment; Macroeconomic variables; Quoted Firm; Nigeria

1.Introduction

The literature on the symbiotic relationship between aggregate earnings and macroeconomic variables is gaining recognition in both economics and accounting in recent years. In response to the call to bridge the gap in the literature of the potentially significant role that accounting information content could play in the economic growth process (ICAEW, 2017; Leuz & Wysocki, 2016; Venter, Gordon, & Street, 2018) many studies have investigated the aggregate earnings informativeness at a macro level about gross domestic products (GDP) growth (e.g., Gaertner, Kausar, & Steele 2015; Konchitchki and Patatoukas, 2014a), inflation forecast (e.g., Kalay, Nallareddy, & Sadka, 2018), unemployment (e.g.,

39 Hann, Li, & Ogneva, 2016), Federal policy action (e.g., Gallo, Hann, & Li, 2016),
40 macroeconomic forecasters error (e.g., Kothari, Shivakumar, & Urcan 2012). In deciding to
41 employ job seekers and laying off employees, managers consider the earnings abilities of
42 their companies, and often investment decisions that may lead to employment, information
43 about the cash cow internally and externally available to finance projects (i.e., financial
44 deepening) is also considered as well as the inflationary trend and real interest rate. The
45 information about the calculations earnings of firms is generally incognizance of
46 macroeconomic variables such as interest and inflation rates. Since corporate earnings is a
47 result of microeconomic activities of an individual firm in the economy, by aggregating
48 earnings information of the firms, aggregate earnings can provide insights on aggregate
49 (un)employment activities. We investigate this conjecture and document that firms' aggregate
50 earnings are associated with national (un)employment. Importantly, the information
51 embedded in the inflationary trend, financial deepening, and real interest rate is influential to
52 the relationship that exists between aggregate earnings and (un)employment rate.

53 Firms are at the center of economic activities such as knowledge and skill spillovers,
54 linkages, dynamic economies of scales and labour pooling, the economic/financial outcome
55 of these companies' activities should have a multiplier effect on the economy. This study
56 draws on the general view of Ball and Sadka (2015) "that the design and evaluation of
57 financial reporting must adopt at least in part an aggregate perspective." There are a wealth
58 of theoretical arguments in support of the impact of accounting earnings on economic growth.
59 In one example, Ball and Sadka (2015) pointed out that accounting variables can be leading
60 indicators for some aspect of economic activity because they reflect real events in firms and
61 their product and factors markets. Also, aggregate after-tax earnings is a component of the
62 US Gross Domestic Product, which is a reasonably large percentage. Min, Kang, Lee, and
63 Roh (2018) showed return on investment as a predictor of macroeconomic variables.

64 In this study, we argued that given that accounting earnings are valued relevance at the
65 firm-specific level, to what extent has it contributed to the increase or decrease of the
66 (un)employment rate of a given country? As companies are at the center of economic
67 activities such as knowledge and skill spillovers, linkages, dynamic economies of scales and
68 labour pooling, the economic/financial outcome of these companies' activities should have a
69 multiplier effect on the economy. On the front of capital market growth in particular evidence
70 has shown that accounting earnings is value relevant (e.g., Gkougkousi, 2014 ; Ball & Sadka,
71 2015; Jour, Creedy and Gurum, 2010; Barth, Landsman, Lang, & Williams, 2012; Barth, Li,
72 & McClure, 2017; Elbakry et al., 2017; Givoly, Hayn, & Katz, 2017), aggregate earnings risk
73 related to return risk (Shroff, 2002; Ball, Sadka and Sadka, 2009).

74 Under the emerging economy, aggregate earnings are presumed to support economic
75 growth, but the literature has yet to show direct evidence of relationships between aggregate
76 corporate profits and (un)employment change. Whereas, the predictive ability of aggregate
77 earnings on economic growth, few studies have been carried out. From, the U.S, aggregate
78 accounting earnings growth predicts GDP growth and professional macroeconomic forecaster
79 GDP growth error (Konchitchki and Patatoukas, 2014a), unemployment (Gallo, Hann, & Li,
80 2016). Min, Kang, Lee, and Roh (2018) showed return on investment as a predictor of
81 macroeconomic variables. Hann et al. (2016) demonstrate the macroeconomic information
82 content of aggregate earnings from the labour market's perspective. From the angle of
83 monetary policy Gallo, Hann, & Li, (2016) investigate whether the negative association
84 between aggregate earnings and returns is a function of the monetary policy news in
85 aggregate earnings. Kalay, Nallareddy, & Sadka (2018) study predicts and finds that the
86 interaction of firm-level and aggregate-level shocks explain a significant portion of shocks to
87 macroeconomic activity. The study assumed that the relationship between uncertainty and
88 economic growth is most pronounced when both firm-level and aggregate-level uncertainty

89 are high simultaneously. Ball, Gallo, and Ghysels (2019) examined whether the impact of
90 firm-level accounting earnings to the informativeness of the aggregate is moved towards
91 earnings with specific financial reporting characteristics. Gaertner, Kausar, & Steele (2015)
92 show that adverse changes in aggregate earnings predict future GDP growth, while positive
93 changes in earnings do not. Kothari, Shivakumar, & Urcan (2012) provided further evidence
94 about the ignorance of macroeconomic forecasters about the effect of the information content
95 of aggregate earnings surprises on future inflation hence they do not fully utilize this
96 information in generating their forecasts.

97 Most of the literature that studies on aggregate earnings are from a developed
98 economy and none from an emerging economy. Also, these studies did not consider the
99 possible influence of financial deepening, inflation, and real interest rate changes in
100 determining the relationship between aggregate earnings growth and (un)employment
101 changes. Because of the apparent variables bias and deficiency of literature on the
102 relationship between aggregate earnings and (un)employment, our study is aimed at first, to
103 investigate the association between aggregate earnings growth and (un)employment change.
104 Second, providing empirical evidence on whether the association between aggregate earnings
105 growth and (un)employment is influenced by financial deepening, inflation rate, and the real
106 interest rate.

107 Our study has provided several insights and contributions to the current literature on
108 aggregate earnings in fourfold. First, this paper revealed that the aggregate earnings (AAE)
109 of the sampled firms is negatively correlated with unemployment change (U) and positively
110 associated with employment (N). Second, the study shows a stable (negative) positive
111 influence of financial deepening on (un)employment changes. Third, we document that
112 inflation changes associate (positively) negatively with (un)employment. Fourth, we reported
113 that real interest rate associate (positively) negatively with (un)employment changes. Higher

114 inflation and real interest rate primarily discourage portfolio investments, whether private or
115 official sources of capital finance such expenditure. While financial deepening primarily
116 captures the movement of idle funds, implying mobilizing fund from the surplus side of the
117 economy to the deficit, which brings about the growth of earnings. On this note, we show an
118 association of aggregate earnings with employment after controlling for inflation, financial
119 deepening, and real interest rate.

120 The rest of the study is structured as follows: Section 2 presents the intuitional
121 Setting for the study. Second 3 conceptual underpinnings and hypothesis development.
122 Section 4 reviews the extant literature on aggregate earnings. The research design is
123 revealed in section 5. Section 6 presents the empirical results and discussion, while
124 section 7 concludes the paper.

125 **2 Intuitional Setting in Nigeria**

126 The Nigerian economy is one of the leading emerging economies in Africa.
127 Nigeria is generally classified as a civil law country, with a trade regime that remains
128 heavily protectionist that has limited development of several employment-intensive sectors of
129 the economy (Treichel, 2010). The Nigerian population is about 180 million people, having
130 7.3% gross domestic product (GDP) growth, 33.1% of the population below the poverty line
131 and 24% unemployed as at 2013 has had a truncated history about her economic growth. The
132 Nigerian economy is facing many problems (Uwakaeme, 2015). Falling oil prices,
133 inconsistency in policy, and insecurity have produced shocks which have compounded an
134 already challenging development environment inadequate infrastructure, high unemployment
135 (9.9 percent) and a high poverty rate (above 50 percent in the northern states) (International
136 Monetary Fund, 2016). According to Eberhardt & Teal (2010, p.99), "Nigeria has expanded
137 manufacturing employment in the low-, medium-, and high-tech sectors, while the resource-

138 based manufacturing sectors have contracted.” Eberhardt & Teal (2010) further stated that
139 Nigeria lags behind other LICs in terms of the importance of the services sector, implying
140 that contribution of this sector to growth is low. Also, lack of adequate infrastructure and poor
141 investment environment have hindered firm efficiency in Nigeria. In one example, inadequate
142 electricity supply. In most cases, macroeconomic policy, infrastructure, and the overall
143 investment climate have a more significant impact on the performance of firms.

144 Because we can observe the performance of these firms, measure by corporate
145 earnings at the aggregate level, we can aggregate firms’ earnings. This allows for the analyses
146 of the informational content of aggregate earnings on (un)employment changes, in
147 cognizance of the consequences of the government trade policies-macroeconomic poly. Thus,
148 the Nigeria setting provides an opportunity to investigate the association between firm
149 performance and (un)employment rates.

150 **3. Conceptual Underpinnings and Hypothesis development**

151 Within the past five years, accounting researchers have aimed at investigating the
152 macroeconomic content of aggregate earnings (see Gaertner, Kausar, & Steele 2015;
153 Konchitchki and Patatoukas, 2014a; Kalay, Nallareddy, & Sadka, 2018; Hann, Li, & Ogneva,
154 2016; Gallo, Hann, & Li, 2016; Kothari, Shivakumar, & Urcan 2012). Many of these papers
155 report predictive ability, especially in the US setting, and many did not control for other
156 macroeconomic indicators. Conceptually and considering our study setting and dataset,
157 (un)employment prediction by aggregate earnings is not our objective; instead, the
158 association between (un)employment rate and aggregate earnings. Next, that follows is how
159 this association concept is influenced by financial deepening, inflation, and real interest rate.

160

161 **3.1 (Un)employment Rate**

162 The growth of every developed and developing economy requires expansion of the
163 labour market as well as a labour force. For instance, Britain's economy grows by expanding
164 the labour market. When there is massive investment in the economy, the multiplier effect
165 will yield a decrease(increase) in (un)employment. Horvath and Zhong (2019) agreed that job
166 creation is a metric for economic development and that one of the strategies for creating these
167 jobs is by reducing the cost of doing business. On the other hand, Sikka (2015) is of the view
168 that "accounting calculations and discourses prioritise the interests of capital over labour and
169 the state and have systematically eroded labour's share of the gross domestic product." The
170 companies prefer using a smaller number of employees to maximise productivity. They see
171 wages and salaries to workers as a cost and claiming to embrace cost minimization principle.
172 In doing so, the rate of employment remains static while the unemployment rate increases
173 every year, especially in an emerging economy such as Nigeria.

174 As noted in Hann, Li, and Ogneva (2016), from a neoclassical economics perspective,
175 the demand for labour by firm's is determined by its product demand and shape of its
176 production function. Hann et al. (2016) and Roys (2016) further explained that the extent of
177 earnings news captures shocks to future profitability due to shift in product demand, that
178 positive earnings news should lead to additional investment and hiring, and vice versa can
179 cause downsizing and layoffs. This understanding agrees with the sectoral shift hypothesis by
180 Lilien (1982) that unemployment is driven in part by cross-sectional shifts across sectors. The
181 hypothesis links cross-sectional variation in firm-level and **industry-level** performance to
182 aggregate performance. The intuition is as the firms make adequate profits or earnings *ceteris*
183 *paribus* will invest part of the earnings, employment rate and production should increase, and
184 the corresponding decrease in the unemployment rate.

185 The reduction of the level of unemployment has been a vital macroeconomic
186 objective of various governments. According to Hann et al. (2016), "as a primary

187 macroeconomic indicator, the unemployment rate is followed by a broad range of 5 economic
188 agents and is embedded in various economic policy decisions, which brings it to the forefront
189 of macroeconomists' agenda." Voberner et al. (2017) are of the view that national
190 unemployment is a significant factor in an overall sense of labour market insecurity. Hence,
191 Kessler *et al.*, (2019) pointed out that "a decrease in national unemployment, and with the
192 associated rise in job security, would likely contribute to increases in mental health and well-
193 being." Achieving this economic goal helps to curb the social menace and to create a
194 conducive environment for other social, political, and economic activities to thrive. The
195 informativeness of the different earnings components to predict unemployment rates is of
196 practical importance only if accounting earnings contain information incremental to other
197 available macroeconomic indicators (Hann et al. 2016). Generally, unemployment is said to
198 be a situation in which qualified individuals that are willing to work at a prevailing wage rate
199 are unable to do so for lack of job opportunities.

200 Onodugo, Obi, Anowor, Nwonye, and Ofoegbu (2017) lamented that the rate at which
201 unemployment is increasing in Nigeria is worrisome despite the acclaimed economic growth
202 in GDP. This implies that there are specific fundamental issues that need to be addressed,
203 such as companies' activities around job creation. Looking inward at the activities of
204 corporate as it relates to unemployment. Porter and Kramer (2019) stated that it is so evident
205 that huge earnings been recorded in the financial statement of entities have done little to
206 reduce the high level of unemployment. Considering the view of Hann et al. (2016),
207 intuitively if the aggregate of profit after tax (PAT) has a piece of incremental information
208 about either or both gross national income (GNI) and gross domestic products (GDP),
209 earnings in the context of our study will have a significant association with the
210 (un)employment rate.

211 **3.2 Aggregate Earnings**

212 The accounting earnings information is said to be value relevant when it can alter the
213 economic choices of the users, and it is described as the usefulness of financial statement
214 information to outside parties in the firm. Konchitchki, (2016, p.29) observed “that corporate
215 profits are a component of GDP and are likely to be correlated with other GDP components, a
216 firm’s expected earnings downward pattern captured by earnings downside risk is linked to
217 an expected downward macroeconomic trend through its role in corporate profits, a driver of
218 economic activity.” In the long run, for instance, corporate profits, dividend, and share prices
219 move in the same direction (Kothari, Shivakumar and Urcan, 2012).

220 Corporate profits represent the value-added by a firm, which is capital. Corporate
221 earnings are because of corporate economic activities, and these economic activities of
222 corporate entity involve the production of goods and services, which is aggregated at the end
223 of the years to the gross domestic product. Again, out of these earnings workers are being
224 paid, the wages and salaries of the workforce of various entities form part of per capita
225 income. Also, firms finance their economic activities through retained earnings, which is part
226 of equity. Firms retained most of their profits to finance new investment and growth
227 (Kanodia and Sapra, 2016). While losses lead to lower owner's equity or even cynical owner's
228 equity, if firms have common owner’s equity, it can lead to the liquidation of all assets and an
229 option of shutting down the company which will trigger loss of jobs and reduction in the
230 production of goods and services.

231 According to Hann et al., (2016), the negative average earnings component news
232 estimates are linked to a disproportionate share of adverse macro shocks. Our study period
233 covers financial crisis of 2007-2008 and subsequent Great Recession of 2008-2009, this
234 represents such shocks (Hann et al.,2016; Beaver, Joan, McNichols, Marriner, & Wang,
235 2015). Based on the above, we state the hypotheses thus:

236 *H1a: Aggregate earnings positively and significantly associated with the employment rate*

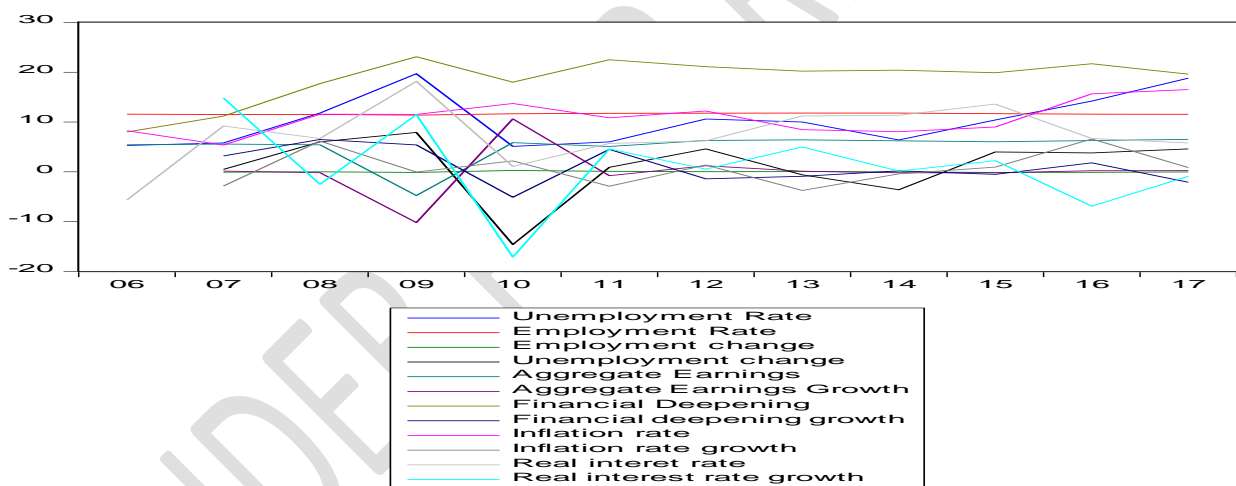
237 *H1b: Aggregate earnings negatively and significantly associated with the unemployment*
238 *rate*

239 **3.3. Control Variables**

240 In our analysis, we include control variables that have been hypothesized to be correlated
241 with (un)employment rate. The control variables are selected macroeconomic variables-
242 inflation, interest rate, and financial deepening to control the aggregate earnings-
243 (un)employment relationship. Inflation does not only affect (un)employment, but it also
244 affects the financial activities of a country by affecting the interest rates, which has a direct
245 effect on financial deepening, mobilizing fund from surplus to deficit side of the economy
246 (Bist, 2018). Hence, capital- aggregate earnings and labour are the two vital factors of every
247 theory of economic development. On the one hand, aggregate earnings positive growth has a
248 positive effect on economic growth, both in Cobb-Douglas production function and in other
249 various models (Bist, 2018; Hann et al. 2016). On the other hand, a country's overall
250 development depends on the labour force. These variables have also been used extensively in
251 the literature to control the finance-growth relationship (e.g., inflation (Bist, 2018;
252 Christopoulos & Tsionas, 2004) (e.g., aggregate earnings-GDP growth prediction (Saini and
253 White, 2015). For Badjun (2009), "financial deepening propels economic growth through
254 both a more rapid capital accumulation and productivity growth, with the latter channel being
255 the strongest." According to Klinefelter et al. (2019), inflation is defined "as a continuing
256 rise in the average level of prices for real goods and services." In consideration of what
257 defined inflation, aggregate demand, and aggregate supply side of the economy play a
258 significant role. Klinefelter et al. (2019), further explained that aggregate demand is
259 determined by macroeconomic policies while aggregate supply is influenced by the
260 availability of labour and capital services that government policies in the short run. Konchita

261 (2013) pointed out that inflation is considered by investors in making investment decisions,
262 while Bayer et al. (2019) are of the view that “aggressive monetary policy can stabilize the
263 economy by cutting interest rates on liquid assets.” High inflation and extremely **volatile**
264 interest rates affects financial performance of firms and influence annual decisions (Levi and
265 Maki 1978; Klinefelter et al. 2019).

266 Accordingly, first, we expect that the unemployment rate is positively associated with
267 inflation and real interest rate, while it is negatively associated with financial deepening.
268 Lastly, we expect that the employment rate is negatively associated with inflation and real
269 interest rate, while it is positively associated with financial deepening. Figure 1 is **a** graphical
270 correlation of (un)employment and aggregate earnings and selected macroeconomic
271 indicators.



272
273 Figure 1: Graphical correlation of (un)employment and aggregate earnings, and
274 selected macroeconomic indicators
275
276

277 **4 Related Empirical Studies**

278 The value relevance of accounting information at a micro level should translate to the
279 economic growth of any economy (MSCI Barra, 2010). Hann et al. (2016) examined the
280 macroeconomic information content of aggregate earnings from the labour market’s
281 perspective. The study anchored on the understanding of the labour economics literature to
282 differentiate macro value relevance in aggregate GAAP earnings and its components that **are**

283 statistically significant in predicting aggregate job creation and destruction, labour income,
284 and unemployment. Their results suggest that aggregate earnings information explains future
285 labour market aggregates as well as an incremental to other macroeconomic variables at near-
286 term horizons. Hann et al. (2016) pointed out that aggregate core earnings and unique items
287 are the primary sources of information. However, the study explained that the news contains
288 in the core earnings, and the individual item is of different degrees. Generally, Hann et al.
289 (2016) result suggest that aggregate earnings contain essential information about future
290 labour market conditions, with the nature of such information varying across earnings
291 components. According to Hann et al. (2016), “earnings growth dispersion contains
292 information about trends in labour reallocation, unemployment change, and, ultimately,
293 aggregate output.” The study found that government statistical agencies saddled with the
294 responsibility of macroeconomic forecast do not incorporate this important information about
295 earnings in their various estimates. Consequently, earnings growth dispersion significantly
296 predicts future restatements in nominal and real GDP growth (and unemployment change).

297 From the angle of monetary policy, Gallo et al. (2016) investigated whether the
298 negative association between aggregate earnings and returns is a function of the monetary
299 policy news in aggregate earnings. The study used Federal funds futures data and constructed
300 a measure of policy news. They reported that aggregate earnings carry financial information
301 about the Federal's policy actions. Also documented in the study is that when policy surprises
302 are controlled, the negative aggregate earnings -returns association is not loud and majorly
303 noticed in periods with negative policy surprises, that tend to trigger a more significant
304 market reaction. According to Gallo et al. (2016), “aggregate earnings convey policy news,
305 and the market reacts negatively to policy surprises, which drives the negative aggregate
306 earnings-returns association.” Kalay, Nallareddy, & Sadka (2018) study predicts and finds
307 that the interaction of firm-level and aggregate-level shocks explain a significant portion of

308 shocks to macroeconomic activity. The study assumed that the relationship between
309 uncertainty and economic growth is most pronounced when both firm-level and aggregate-
310 level uncertainty are high simultaneously. The same vain, Kalay et al. (2018) hypothesize that
311 aggregate earnings affect unemployment most when both firm-level dispersions are high and
312 aggregate performance is low, based on the sectoral shift theory. The study concluded that
313 their assumptions and empirical results show that the interactive effect of firm-level and
314 aggregate-level shocks are more significant than the sum of the individual effects

315 In consideration of the possible effect of specific financial reporting characteristics on
316 the value relevance of aggregate accounting earnings at the macroeconomic level, Ball,
317 Gallo, and Ghysels (2019) examined whether the impact of firm-level accounting earnings to
318 the informativeness of the aggregate is moved towards earnings with specific financial
319 reporting characteristics. The study first aimed at investigating whether considering the
320 smoothness of firm-level earnings increases the informativeness of aggregate earnings for
321 future real GDP, and if so, whether macroeconomic forecasters use this information
322 efficiently. Ball et al. (2019) adopted a recently developed mixed data sampling methods and
323 revealed that the aggregate is moved towards firms with smoother earnings and that this
324 composition of aggregate earnings outperforms traditional weighting schemes. The study
325 further documented that this tilted aggregate has a stronger positive association with forecast
326 revisions and that analysts who utilize earnings the most in their forecasts appear to impound
327 the informativeness of earnings smoothness fully.

328 Gaertner et al (2015) based on results from previous literature that accounting
329 earnings convey negative economic news in a timelier manner than good news, anchored on
330 conditioning KP's GDP growth forecast model on the sign of earnings changes, Gaertner et
331 al. (2015) show that adverse changes in aggregate earnings predict future GDP growth, while

332 positive changes in earnings do not. Furthermore, Gaertner et al. (2015) found that
333 professional macro forecasters underreacted to the information contained in detrimental
334 changes in aggregate earnings about future GDP growth and provided additional evidence
335 implying that accounting conservatism drives the incremental usefulness of negative earnings
336 rather than other determinants of asymmetric timeliness in earnings.

337 Kothari et al. (2012) provided further evidence about the ignorance of macroeconomic
338 forecasters about the effect of the information content of aggregate earnings surprises on
339 future inflation hence they do not fully utilize this information in generating their forecasts.
340 Kothari et al. (2012) reported that earnings news, aggregated across firms releasing earnings
341 in three months, predicts forecast errors in Producer Price Index (PPI) released in the
342 subsequent two months. Whereas, aggregate earnings surprises do not predict forecast errors
343 for the Consumer Price Index (CPI). That investigating this predictive ability of aggregate
344 earnings is driven by a broad cross-section and not industry type. The study further
345 documented that the bond market's reaction to PPI news is predictable based on previously
346 released aggregate earnings news. Kothari et al. (2012) in conclusion, in strong terms,
347 pointed out that macroeconomic forecasters and bond market investors do not take full
348 cognizance of the information in aggregate earnings surprises for future PPI.

349 At the macro level, Konchitchki and Patatoukas, (2014a) stated that aggregate
350 accounting earnings had been used to predict capital market growth, emphasizing the need to
351 consider whether the same information can be used to predict economic growth. Saini and
352 White (2015) agreed with the evidence provided by Konchitchki and Patatoukas (2014) by
353 providing further evidence. Ball and Sadka (2015) stressed the point that the design and
354 investigation of accounting information content necessarily should involve addressing
355 aggregate effects. However, many researchers have not given adequate attention to this area.

356 The few studies on the effect of accounting information content on economic growth have
357 shown contradictory results. Konchitchki and Patatoukas (2014a) and Saini and White (2015)
358 are empirical studies on the effect of accounting information on economic growth, showing
359 much emphasis on earnings predictability power on Gross Domestic Product (GDP).

360 Konchitchki and Patatoukas (2014a) study centered on the US economy to consider
361 the relationship between data on subsequent real GDP growth and earnings from quarterly
362 returns of the largest US firms. The study documented that ‘accounting profitability data
363 aggregated across the 100 largest firms have predictive content for subsequent real Gross
364 Domestic Product’. Thus, demonstrating the potential usefulness of accounting information
365 content to improve macroeconomic forecasting. Precisely, the study reported as follows: (i)
366 aggregate accounting earnings growth is a significant leading indicator of GDP growth and
367 (ii) professional macro forecasters do not fully impound the predictive content embedded in
368 publicly available accounting earnings data. They contributed to macroeconomics research by
369 identifying aggregate accounting earnings growth as an incrementally significant predictor of
370 GDP growth.

371 Sanin and White (2015) in supporting Konchitchki and Patatoukas (2014a)
372 contributed further in the knowledge of the predictive ability of corporate earnings on the
373 gross domestic product (GDP) by introducing volatility (fear index) and the debt-to-equity
374 ratio (firm leverage) on the relationship between aggregate earnings and GDP growth. Saini
375 and White (2015) study sought to examine the effects of macroeconomic conditions of (i)
376 market volatility and (ii) firm leverage on the relationship between aggregate earnings and
377 GDP growth. The study sample is made up of 94 quarterly observations spanning from
378 Q1:1988 to Q2:2011 data obtained from the Compustat Quarterly US dataset. Earnings
379 growth (Δ Earnings) is measured as the year-to-year change in scaled quarterly income and

380 was scaled by sales. They aggregated quarterly time series of earnings by constructing and
381 using value-weighted cross-sectional averages with weights based on market capitalization as
382 of the beginning of the quarter. The study sample is restricted to firms with December fiscal
383 year-ends. Also, they delete firm-quarter observations that fall in the top and bottom one
384 percentile of each quarterly cross-section of Earnings and Δ Earnings. The study found that
385 the predictive power of aggregate earnings on future GDP growth is influenced significantly
386 by changes in market volatility and average firm leverage. They reported that increasing
387 levels of market volatility are associated with earnings being more predictive of future GDP
388 growth. They believed the constraining influence of volatility on the discount rate signaling
389 effect of earnings. Furthermore, they found aggregate earnings predict GDP growth less when
390 debt-to-equity levels have peaked, and that this result in the inability of earnings to predict
391 GDP growth when capital is constrained. These findings buttress the point that the
392 importance of controlling for macroeconomic factors such as the level of market volatility
393 and substantial leverage when assessing the ability of aggregate earnings to forecast growth
394 in GDP.

395 **5. Research Design**

396 **5.1. Data and sample considerations**

397 We selected 101 companies from 173 companies quoted on the floor of the Nigerian
398 Stock Exchange (NSE) based on an elimination process undertaken incognizance of four
399 criteria. A total of 72 firms were excluded: those that were listed after 2006; that are not in
400 operation up to 2017 and those that do not have complete data. Finally, the sample is made of
401 at least 2 companies from each sector (i.e. Agriculture 2, conglomerates 3, construction/real
402 estate 3, consumer goods 18, healthcare 5, ICT 4, Industrial goods 14, natural resources 3, oil
403 & gas 9, services 16 and financials 24) that have consistently submitted their annual reports
404 to the NSE from 2006 to 2017. Hence, twelve years of data from the sample companies
405 covered a period from 2006 to 2017 and are transformed into specific attributes of our

406 variables for the number of years for the research. Yearly reports are considered by
407 stakeholders to be the most important and influential source of corporate information
408 (Bozzolan, Trombetta and Beretta, 2009).

409 **5.2. Variables and measures**

410 **Aggregate accounting Earnings_t** (AAE_t): Our concern is with documenting associations
411 between aggregate earnings and retrospective (un)employment changes and not predicting
412 future (un)employment rate, therefore, after generating yearly firm-level earnings, the sum
413 across all the firms in the sample is computed to derive a measure of aggregate earnings for
414 each year as follows.

$$415 \quad AgE_t = \sum_{i=1}^N (Earnings_{i,t}) \quad (1)$$

416
417
418
419 Where,

420 Earnings_{i,t} is year t profit after tax (PAT; financial statement item PATY) and N is the
421 number of firms with earnings information available in the financial statement or annual
422 report (see Appendix A).

423 **(Un) Employment Rate** is the dependent variables (criterion variables), as noted in Hann,
424 Li, and Ogneva (2017), from a neoclassical economics perspective, the demand for labour by
425 firm's is determined by its product demand and shape of its production function. Hann et al.
426 (2017) and Roys (2016) further explained that the extent of earnings news captures shocks to
427 future profitability due to shift in product demand, that positive earnings news should lead to
428 additional investment and hiring, and vice versa can cause downsizing and layoffs. This
429 understanding agrees with the sectoral shift hypothesis by Lilie (1982) that unemployment is
430 driven in part by cross-sectional shifts across sectors. The hypothesis links cross-sectional
431 variation in firm-level and industry-level performance to aggregate performance. The
432 intuition is as the firms make adequate profits or earnings *ceteris paribus* will invest part of

433 the earnings, employment rate and production should increase, and the corresponding
 434 decrease in the unemployment rate. The (un)employment rate is measured by total
 435 (un)employment, as a percent of the total labor force

436
 437 Table 1 shows the measurement and explanation of variables

DEPENDENT	ABBR.		Source	Expected Sign
Unemployment Rate	U	Total unemployment, as a percent of the total labor force	World Bank	-
Employment Rate	N	Employment in industry (% of total employment) (modeled ILO estimate)	World Bank	+
INDEPENDENT				
Aggregate Earnings	AAE	Profit After Tax: the sum across all the firms in the sample is computed to derive a measure of aggregate earnings for each year	Annual Reports	+
CONTROL/MODERATING VARIABLES				
Inflation	Inf	the year-on-year CPI inflation rate	CBN Annual Report	-
Financial Deepening	FD	Financial deepening as % of GDP	CBN	+
Real Interest Rate	RIR			-

438

439

440

441 **4.3 Model Specification**

442

443 The dependent variable (criterion variable), (un)employment rate ((U)N) in both
 444 economic, finance, and accounting literature (e.g., Hann et al., 2016). The choice of this
 445 variable anchored on Gabe, (2017) that uses job creation as a metric for economic
 446 development growth. Models of Konchitchki and Patatoukas (2014) and Hann et al. (2016)
 447 are foundations for our model for this study. Therefore, to suit our study setting due to

448 peculiar nature of the data and none availability of quarterly data, we tend to use modified
449 combination of models of Konchitchki and Patatoukas (2014) and Hann et al., (2016) for
450 investigating the extent of the association of aggregate earnings of quoted Nigerian firms on
451 the (un)employment rate. Then our model is assumed first that there is no control or
452 mediating variable.

453 (Un)employment Rate = f (Aggregate Earnings)

454 The model is specified in an implicit form:

$$455 \quad U_t/N_t = f(AAE_t) \quad (2)$$

456 Where,

457 U_t/N_t = is the (un)employment rate, and a subscript t indicates the year

458 AAE_t = the sum of accounting earnings of total sample firms and subscript t indicates the
459 year. In our context, yearly observations were used in this study, which is the most common
460 measure used by researchers (e.g., Barth, Beaver & Landsman, 1998; Barth et al. 2000), with
461 each yearly observation equal to the cross-sectional sum of sample firms' yearly earnings.

462 As opined by Kotsoyannis (2003:287) data on variables with different units of
463 measurement results into the problem of heteroskedasticity, and the problem can be solved by
464 taking the logarithm of the variables. It is also another way of how to deal with the scale
465 issue. Foster (1986) believes that logarithmic transformation also mitigates possible
466 violations from normality and reduces possible positively skewed distribution. Hence
467 dependent variable, U/N is in the percentage rate; to mitigate the problem of possible
468 heteroskedasticity because aggregate earnings (AgE) is in the different units of measurement.
469 We take natural log "ln" of AAE and specifying equations (3) in dynamic econometric form;
470 we transform it to:

$$471 \quad U_t/N_t = \beta_0 + \beta_1 \ln AAE_t + \varepsilon_t \quad (3)$$

472 Where: U_t/N_t (U/N is (un)employment rate, and a subscript t indicates year) is the dependent
 473 variables; \ln is natural logarithm; β_0, β_1 are regression coefficients with unknown values;
 474 AAE_t is the independent variable; and ε is a random error component. **APriori Expectation is**
 475 **such that $\beta > 0$.** If accounting information content is informative, it is expected that $\beta > 0$ in
 476 equation (3).

477 We included other potential economic variables that could influence the relationship
 478 between aggregate earnings and (un)employment to obviate variable bias. Hence, equation 4
 479 in implicit form thus:

$$480 \quad U_t/N_t = f \left[\begin{array}{l} N \\ 481 \quad \sum_{i=1}^N (Earnings_{i,t}), Inflation_t, Financial Deepening_t, Real Interest Rate_t \\ 482 \\ 483 \end{array} \right] \quad (4)$$

484
 485 Taking natural log “ln” of AAE_t , specifying equation (4) in dynamic econometric forms, we
 486 transform it to Simplified in equation form,

$$487 \quad U_t/N_t = \beta_0 + \beta_1 \ln AAE_t + \beta_2 \ln Inf_t + \beta_3 FD_t + \beta_4 RIR_t + \varepsilon_t \quad (5)$$

488 Where: U_t/N_t (U/N is (un)employment rate, and a subscript t indicates year) is the
 489 dependent variables; \ln is natural log; β_0, β_1 are regression coefficients with unknown values;
 490 AAE_t is the independent variable. **APriori Expectation is such that $\beta > 0$.** If aggregate
 491 earnings are informative, it is expected that $\beta > 0$ in equation (4). \ln = Inflation; FD = Financial
 492 Deepening; RIR = Real interest rate; ε_{jt} = error term (is the error term capturing other
 493 explanatory variables not explicitly included in the model); β_0 = constant term (is the intercept
 494 of the regression) and $\beta_1, \beta_2, \beta_3$ & β_4 = regression coefficients for all the explanatory variables.

495 **6 Empirical Results and Discussion**

513 Note: This table provides summary statistics. U is the unemployment rate; N is the
 514 employment rate; InAAE is the natural log of aggregate earnings, the sum across all the firms
 515 in the sample is computed to derive a measure of aggregate earnings; FD is the financial
 516 deepening; Infr is the inflation rate; RIR is the real interest rate.

517

518 **6.2 Pearson Correlations**

519

520 Table 3 reports the correlation matrix for the variables of this study. Table 3 results

521 (for Pearson coefficients) show that only two control variables (financial deepening and the

522 real rate of interest) are correlated with each other at the 5% significance level, which

523 indicates that they are necessary measures. However, the variables of interest,

524 (un)employment significantly correlated with the key independent variable (aggregate

525 earnings) (at the 10% and 5% significance level respectively) and inflation rate (at the 5%

526 significance level). More importantly, the result of the Pearson coefficients shows that

527 (un)employment have a significantly (negative)positive correlation with aggregate accounting

528 earnings at the 10% and 5% significance level respectively, which suggests that the higher

529 the aggregate earnings, the (lower)higher the (un)employment.

530

531 Table 3

Correlation Matrix for key variables

	U\N	AAE	FD	Infr	r
UU	1.0000	0.609* (0.036)	0.2780 (0.382)	-0.1580 (0.624)	-0.0670 (0.836)
InAAE	-0.502 (0.096)	1.0000	-0.2480 (0.437)	-0.00300 (0.992)	-0.499 (0.099)
FD	0.5010 (0.097)	-0.2480 (0.437)	1.0000	0.493 (0.103)	0.610* (0.035)
Infr	0.591* (0.043)	-0.003 (0.992)	0.493 (0.103)	1.0000	-0.149 (0.645)
RIR	0.486 (0.110)	-0.499 (0.099)	0.610* (0.035)	-0.149 (0.645)	1.0000
N	12	12	12	12	12

532 This table presents the Pearson correlation matrices. The upper-right diagonal reports for
 533 employment -Pearson correlation coefficients, and the lower-left diagonal- unemployment-
 534 Pearson correlation coefficients in bold. The numbers reported in parentheses are p values. *.
 535 Correlation is significant at the 0.05 level (2-tailed). U is the unemployment rate; N is the
 536 employment rate; lnAAE is the natural log of aggregate earnings, the sum across all the firms
 537 in the sample is computed to derive a measure of aggregate earnings; FD is the financial
 538 deepening; Infr is the inflation rate; RIR is the real interest rate.
 539

540 6.3 Regression Result

541 Simple regression results are reported in Table 4. Concerning model 3, first, findings
 542 show that unemployment is negatively significantly associated with aggregate earnings at the
 543 10% significance level (-0.819; t-statistics -1.836 and p-value= 0.096). Also, the intercept of
 544 the regression is negative, correctly signed by the prior expectation, indicating that aggregate
 545 accounting earnings are contributing to a reduction in the unemployment rate. The result
 546 agrees with Hann et al. (2016). Furthermore, only 25% of variations in unemployment are
 547 explained by variations in the aggregate earnings. Second, results show that aggregate
 548 earnings have a significant positive impact on employment changes at 5% significance level
 549 (0.025; t-statistics 2.425 and p-value= 0.036), explaining about 37% variations in
 550 employment changes. When comparing the results for the two dependent variables-
 551 (un)employment, we notice essential differences regarding the intercept of the regression, R²,
 552 and F-prob results. However, the results of the simple regression analysis support *H1a* which
 553 posits aggregate earnings positively associated with changes in the employment rate

554 **Table 4**
 555

556 Summary of OLS Regression Results of (un)employment Reaction to aggregate Earnings
 557 (AgE):

	$U_t = \beta_0 + \beta_1 \ln AgE_t + \varepsilon_t$			$N_t = \beta_0 + \beta_1 \ln AgE_t + \varepsilon_t$		
	Coeff.	t-value	P-Value	Coeff.	t-value	P-Value
lnAgE	-0.819	-1.836	0.096	0.025	2.425	0.036
Constant	14.464	5.542	.000	11.504	188.150	0.000

R ²	0.252	0.370
Adj. R ²	0.177	0.307
F-Statistics	3.372	5.878
Prob. F	0.096	0.036
n	12	

559

560 **Table description**

561 . Table 4 describes the relationship between aggregate earnings for a sample of Nigerian
562 firms quoted on the Nigerian Stock Exchange and (un)employment in the period 2006 to
563 2017. The table shows the regression coefficients (Coeff.) t-values, total explanatory power
564 (adj. R²), F-statistics, the probability of F, number of observation (n) for the total sample. U is
565 the unemployment rate; N is the employment rate; InAAE is the natural log of aggregate
566 earnings, the sum across all the firms in the sample is computed to derive a measure of
567 aggregate earnings; FD is the financial deepening; Infr is the inflation rate; RIR is the real
568 interest rate.

569

570 Table 5 shows the multiple regression analysis on (un)employment reactions to the
571 combination of aggregate earnings and control variables. Considering first, the employment
572 reaction to the combination of aggregate earnings and selected macroeconomic variables, our
573 results in Table 5 revealed that both the independent and control variables of the model are
574 significant with an 89% reliability, with which we prove all the hypotheses at the 1%
575 significance level (p<0.01). More importantly, the intercept of the regression is, correctly
576 signed per the prior expectation, implying first that aggregate earnings are contributing
577 significantly to economic growth in Nigeria through employment. The finding of aggregate
578 earnings association in the context of our study is in tandem with the reports of Hann et al.
579 (2017); Gallo et al. (2016) that aggregate earnings contain information about macroeconomic
580 variables.

581 Table 5

582 Summary of OLS Regression Results of (un)employment Reaction to aggregate Earnings and
583 control variables

Variable	Symbol	Unemployment (U)			Employment (N)		
		Coef	T value	P-value	Coef	T value	P-value

Intercept	<i>Cons</i>	1.613	0.413	0.692	11.324	140.616	0.000
Aggregate Earnings	<i>AAE</i>	-0.316	-1.090	0.312	0.024	4.011	0.005
Financial Deepening	<i>FD</i>	-0.687	-3.228	0.072	0.037	5.504	0.001
Inflation	<i>Infr</i>	1.586	4.420	0.003	-0.035	-4.773	0.002
Real Interest Rate	<i>RIR</i>	0.768	3.228	0.014	-0.015	-3.060	0.018
R ²		0.843			0.898		
Adj. R ²		0.754			0.840		
F-Statistics		9.429			15.414		
Prob. F		0.006			0.001		
Durbin- Watson		2.028			2.011		
Mean VIF		2.8092			2.8092		
n		12			12		

584 **Table description**

585 Table 5 describes the relationship between aggregate earnings for a sample of Nigerian firms
586 quoted on the Nigerian Stock Exchange and (un)employment in the period 2006 to 2017. The
587 table shows the regression coefficients (Coeff.) t-values, total explanatory power (adj. R²), F-
588 statistics, the probability of F, number of observation (n) for the total sample
589

590 Recall in Table 4, without control variables, the coefficient and T-value of *AAE* is
591 0.025 and 2.425 respectively and significant at the 5% level, which is consistent with our HI.
592 Hence, comparatively with the results in Table 5, when control variables are included in the
593 model, the T value (4.011) of *AAE* becomes more strongly positive and improved
594 significantly at the 1% level. There are two implications to these findings. First, the
595 employment reaction to aggregate earnings can be attributed to the influence the
596 macroeconomic variables -control variables. Second, after controlling for these
597 macroeconomic indicators, the importance of aggregate earnings becomes more significant.
598 These results further agree with hypothesis 1b.

599 In cognizance of the control variables, the coefficient of financial deepening (*FD*) is
600 positive and strongly significant at the 1% level, implying that the employment reacts more
601 positively as funds are moved from the surplus side to deficit side of the economy. The finding
602 agrees with Badjun (2009) that “financial deepening propels economic growth through both a
603 more rapid capital accumulation and productivity growth. The coefficient of *inflation* is
604 negative and significant at the 1% level, consistent with the prediction that higher inflation
605 discourages investors from investing their funds that will generate employment (Klinefelter et
606 al. (2019). Hence, the higher the inflation, the lower the income. The coefficient of real
607 interest rate (RIR) is also harmful and strongly significant at the 1%, which suggests that the
608 higher the real interest rate, the lower the employment rate.

609 Regarding the unemployment changes, in Table 4 without control variables, the
610 coefficient of *AAE* is -0.819 and marginally significant, which suggests that aggregate
611 accounting earnings are an important variable in explaining variations in the unemployment.
612 However, the inclusion of the selected macroeconomic variables the model did not improve
613 the explanatory power of aggregate earnings on unemployment. Thus, hypothesis 1b is not
614 confirmed. Also, we examined whether the unemployment rate decline is related to financial
615 intermediation; we found that the *FD* is insignificantly negative, suggesting that the variable
616 is not the major causes of the unemployment changes. Although the intercept is correctly
617 signed which implies the higher the financial deepening activities within the economy, the
618 lower the unemployment rate

619 Results also show that inflation and real interest rates have a significant positive effect
620 on the unemployment rate (1.586; t-statistic= 4.420 and 0.768; t-statistic =3.228,
621 respectively). Such results emphasize the need to consider the real interest rate and inflation
622 in an emerging economy in eradicating unemployment and enhancing employment growth.

623 **6.4 Robustness checks**

624 We conducted several robustness tests for hypothesis 1. First, if control of only one
625 selected macroeconomic variable can enhance the reaction of the relationship that exists
626 between aggregate earnings and unemployment. Therefore, we re-examine the results after
627 excluding other control variables. Table 6, column 1 shows the magnitude and significance
628 level of the *InAAE* coefficient changed while columns 2 and 3, the magnitude and
629 significance level of the *InAAE* coefficient remain unchanged, indicating that the inflation
630 rate (*Infr*) is the only control variables among the selected macroeconomic variables that
631 exert serious effect on our main results. Interestingly, aggregate earnings remained correctly
632 negatively signed as expected.

633 **Table 6**
634 Robustness check of Unemployment rate reaction to aggregate earning with individual
635 macroeconomic variables

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	U	U	U	U	U	U
<i>InAAE</i>	-0.8160** (-2.3729)	-0.6570 (-1.5163)	-0.5647 (-1.0968)	-1.2519*** (-3.6393)	-1.1185*** (-3.2819)	-0.53584 (-1.4740)
<i>Infr</i>	0.9070** (2.7944)				0.4975 (1.3964)	1.2940** (2.8016)
<i>FD</i>		0.4478 (1.5094)				-0.5891 (-1.7385)
<i>RIR</i>			0.26182 (0.9903)			0.6528** (2.4708)
<i>Gdpagr</i>				-1.2192*** (-3.2729)	-0.8482* (-1.915)	-0.4006 (-1.0022)
<i>N</i>	12	12	12	12	12	12
<i>Adj. R²</i>	0.511	0.270	0.176	0.583	0.62	0.7541
<i>DW</i>	1.313	0.898	0.964	1.764	1.685	2.043

636 All variables are defined in Table 1 expect the additional variable *Gdpagr*, gross domestic
637 product annual percentage growth rate. Values of robust t-statistics are in parentheses. U is
638 the unemployment rate; N is the employment rate; *InAAE* is the natural log of aggregate
639 earnings, the sum across all the firms in the sample is computed to derive a measure of
640 aggregate earnings; *FD* is the financial deepening; *Infr* is the inflation rate; *RIR* is the real
641 interest rate; *Gdpagr* is gross domestic product annual growth rate.

642 *Indicate significance at the 10% level
643 ** Indicates significance at the 5% level
644 *** Indicates significance at the 1% level

645 Model Specifications:
646 $N_t = \beta_0 + \beta_1 InAAE_t + \beta_2 Infr_t + \varepsilon_t$
647 $N_t = \beta_0 + \beta_1 InAAE_t + \beta_2 FD_t + \varepsilon_t$
648 $N_t = \beta_0 + \beta_1 InAAE_t + \beta_2 RIR_t + \varepsilon_t$

$$N_t = \beta_0 + \beta_1 InAAE_t + \beta_2 Inf_t + \beta_3 FD_t + \beta_4 RIR_t + \beta_5 Gdpagr_t + \varepsilon_t$$

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Second, the (un)employment reaction to aggregate earnings may depend on the economic growth of a country where companies operate. Hence, in column 4, 5, and 6 of Table 6 avoiding variable biases, we include economic growth proxied by gross domestic annual growth rate (*Gdpagr*) in the regressions. Column 4 shows that the coefficient *Gdpagr* is positive and significant at the level of 1%, whereas that of *InAAE* coefficient increased in magnitude and significance ($-1.2519^{***} > -0.8160^{**}$, absolute value). In column 5, we add *Gdpagr* in the regression specification for column 1, to check if the effect of inflation on the reaction of unemployment to aggregate earnings change. The coefficient of *Gdpagr* remains negative and weakly significant, whereas that of *InAAE* still negatively significant ($p < 0.01$) at the 1% level. The coefficient of inflation still positive, but insignificant, suggesting that economic growth combats the effect of inflation. Column 6 adds *Gdpagr*, the annual growth rate of gross domestic product to the model (equation 5). For the unemployment reaction to aggregate earnings and selected macroeconomic variables sign, magnitude and significance level remain almost the same, although the coefficient of *Gdpagr* is negative but insignificant, indicating that economic growth helps to curb unemployment but not significant in our context. Further check on our earlier result about the explanatory power of the combination of aggregate earnings and all selected macroeconomic variables and subsequent inclusion of *Gdpagr* on the variations on unemployment remains almost the same (i.e., $Adj R^2 = 75\%$, $P < 0.01$ and $DW = 2.02$).

670

6.5 Further Robustness check

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We consider it an important issue not to be neglected as well as sufficient condition to arrive at the cogent conclusion of this paper by exploring the relationship between aggregate earnings growth and (un)employment changes. Thus, we specify the following equations 8,9 and 10 for the further analyses and results reported in table 7.

$$\Delta U_t/N_t = \gamma_0 + \gamma_1 \frac{AAE_t - AAE_{t-1}}{AAE_{t-1}} + \varepsilon_t \quad (6)$$

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$$\Delta U_t/N_t = \gamma_0 + \gamma_1 \frac{AAE_t - AAE_{t-1}}{AAE_{t-1}} + \gamma_2 \frac{FD_t - FD_{t-1}}{FD_{t-1}} + \gamma_3 \frac{Infr_t - Infr_{t-1}}{Infr_{t-1}} + \gamma_4 \frac{RIR_t - RIR_{t-1}}{RIR_{t-1}} + \varepsilon_t \quad (7)$$

680

$$\Delta U_t/N_t = \gamma_0 + \gamma_1 \frac{AAE_t - AAE_{t-1}}{AAE_{t-1}} + \gamma_2 \frac{FD_t - FD_{t-1}}{FD_{t-1}} + \gamma_3 \frac{Infr_t - Infr_{t-1}}{Infr_{t-1}} + \gamma_4 \frac{RIR_t - RIR_{t-1}}{RIR_{t-1}} + \gamma_5 \frac{Gdpagr_t - Gdpagr_{t-1}}{Gdpagr_{t-1}} + \varepsilon_t \quad (8)$$

685 We take natural log “ln” of AAE and specifying equations (6, 7 and 8) in dynamic
686 econometric form; we transform them to

$$(U_t)N_t = \beta_0 + \beta_1 \Delta \ln AAE_t + \varepsilon_t \quad (9)$$

$$(U_t)N_t = \beta_0 + \beta_1 \Delta \ln AAE_t + \beta_2 \Delta \ln Infr_t + \beta_3 \Delta \ln FD_t + \beta_4 \Delta \ln RIR_t + \varepsilon_t \quad (10)$$

$$(U_t)N_t = \gamma_0 + \gamma_1 \Delta \ln AAE_t + \gamma_2 \Delta \ln Infr_t + \gamma_3 \Delta \ln FD_t + \gamma_4 \Delta \ln RIR_t + \gamma_5 \Delta \ln Gdpagr_t + \varepsilon_t \quad (11)$$

690

691 A key takeaway from Further analysis presented in Table 7 is that aggregate
692 accounting earnings growth of the 101 sample firms of this study associate significantly
693 (un)employment changes in Nigeria. We calculate the yearly percentage change of
694 (un)employment, aggregate-level earnings, and control variables. We used growth in
695 (un)employment as the dependent variables. As shown in Table 7, column 1, 2, and 3 the
696 equivalent quality robust checks reveal that coefficient of $\Delta \ln AAE$ is generally negative,
697 which suggests that growth in firms aggregate earnings reduce unemployment growth.
698 Column 1 and 4 of Table 7 report from the regression model of future levels of
699 (Un)employment activities on aggregate earnings measure in equation 9. Results are
700 generally consistent with the prediction and facts that aggregate earnings numbers capture
701 information about (un)employment activities. As shown in columns 1 and 4, the coefficients
702 of $\Delta \ln AAE$ are -1.0598 and 0.0184, and significant at the 5% and 1% levels respectively.

703 **Table 7**

704 Robustness check of (Un)employment rate reaction to aggregate earning growth with
705 individual macroeconomic variables

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	ΔU	ΔU	ΔU	ΔN	ΔN	ΔN
$\Delta \ln AAE$	-1.0598** (-3.9848)	-0.6540 (-1.4964)	-0.6680 (-1.3953)	0.0184*** (3.7816)	0.0113 (1.7731)	0.0124* (2.2335)
$\Delta \ln fr$		1.3431 (0.0589)	1.3140* (2.0583)		-0.0294*** (-3.4885)	-0.0271*** (-3.6618)
ΔFD		-0.3774 (-0.7567)	-0.4008 (-0.7282)		0.0170 (2.3474)	0.0189** (2.9634)
ΔRIR		0.5541 (0.1416)	0.5560 (1.5596)		-0.0143*** (2.9924)	-0.0144*** (-3.4935)
$\Delta Gdpagr$			-0.1512 (-0.2572)			0.0118 (0.1428)
Prob (F- statistic	0.0031***	0.0216**	0.0624	0.0043***	0.006***	0.008***
N	11	11	11	11	11	11
Adj. R ²	0.5980	0.69	0.635	0.570	0.792	0.845
DW	1.867	1.926	1.9770	0.87	1.2359	1.362

706 All variables are defined in Table 1 expect the additional variable Gdpagr, gross domestic
707 product annual percentage growth rate. Values of robust t-statistics are in parentheses. ΔU is
708 the unemployment rate; ΔN is the employment rate; $\Delta \ln AAE$ is the natural log of aggregate
709 earnings growth, the sum across all the firms in the sample is computed to derive a measure
710 of aggregate earnings; ΔFD is the financial deepening change; $\Delta \ln fr$ is the inflation rate
711 change; ΔRIR is the real interest rate change; $\Delta Gdpagr$ is gross domestic product annual
712 growth rate change.

713 *Indicates significance at the 10% level

714 ** Indicates significance at the 5% level

715 *** Indicates significance at the 1% level

716 Model Specifications:

717 $(U_t)N_t = \beta_0 + \beta_1 \Delta \ln AAE_t + \varepsilon_t$

718 $(U_t)N_t = \beta_0 + \beta_1 \Delta \ln AAE_t + \beta_2 \Delta \ln fr_t + \beta_3 \Delta FD_t + \beta_4 \Delta RIR_t + \varepsilon_t$

719 $(U_t)N_t = \gamma_0 + \gamma_1 \Delta \ln AAE_t + \gamma_2 \Delta \ln fr_t + \gamma_3 \Delta FD_t + \gamma_4 \Delta RIR_t + \gamma_5 \Delta Gdpagr_t + \varepsilon_t$

720

721 More so, we add control variables and exclude gross domestic product annual growth
722 rate change in equation 10, to enable us to compare results in Table 5. As shown in columns 2
723 and 5 of Table 7 for the reaction of unemployment and employment changes to aggregate
724 earnings growth measure and selected macroeconomic variables, respectively, overall, the
725 findings help substantiate the inference that aggregate earnings numbers capture information
726 about (un)employment activities and that this information is influenced by the selected
727 macroeconomic indicators.

728 Lastly, in columns 3 and 6 of Table 7, we add economic growth variable proxied by
729 gross domestic product annual growth rate changes using the multiple regression
730 specifications of equation 10. We observe that the result remains almost the same as the
731 explanatory power of the joint effect of the combination of aggregate earnings and control
732 variables on (un)employment unchanged. The other robustness checks confirm the validity of
733 the empirical results of our hypotheses, majorly H1.

734 **6.6 Discussion of findings**

735 The findings of this study are discussed in this section. The finding agrees with the view of
736 Beaver et al (2015) that the period is characterized by the economic and financial crisis and
737 the worst recession. This finding is supported by communication theory, a clear view an
738 indication of noise as a result of business cycles that are transmitted on accounting numbers
739 and communicated to investors for decision making thereby causing wide variations in
740 accounting information. The distribution characteristics of the data revealed that aggregate
741 accounting earnings are negatively skewed and had a negative minimum value in 2009, a
742 year characterized by corporate failure, scandals and financial crisis as noted by Beaver et al
743 (2015) and Hann et al. (2016). The descriptive statistics also indicate that at the year 2009 in
744 which earnings reported by the sampled firms was minimum (-4.76), the unemployment rate
745 was at the highest level of 19.70%. This finding supports the view of Hann et al. (2017) that
746 positive earnings news leading to additional investment and hiring whereas negative earnings
747 tending to be downsizing and layoff and in tandem with Roys (2016) idea that persistent
748 shocks determine to the extent of changes in employment (i.e., hiring or firing of workers),
749 while transitory shocks result in changes in wages.

750 The results are consistent with our hypothesis one that states that aggregate
751 accounting earnings of quoted Nigerian firms significantly affect the unemployment of
752 Nigeria. Also, the result agreed with Hann et al. (2016), who concluded that aggregate GAAP

753 earnings are valued relevance about the future labor market conditions. Implying that as
754 aggregate earnings increases, unemployment reduces. Our findings provide evidence that
755 earnings provide social benefits as pointed out by Kessler *et al.* (2019) pointed out that “a
756 decrease in national unemployment, and with the associated rise in job security, would likely
757 contribute to increases in mental health and well-being.

758 **7. Conclusion**

759 We examine how to aggregate accounting earnings informativeness about
760 (un)employment is affected by selected macroeconomic variables. The purpose is to examine
761 whether aggregate earnings **associated** with (un)employment, taking the effect of other
762 macroeconomic variables into account. Towards this end, we exploit the setting in Nigeria, an
763 emerging economy, where in recent years is facing an economic downturn, also was the rate
764 of inflation and real interest rate are in the two-digit figure.

765 Consistent with prior research, we generally find that aggregate earnings contain
766 useful information about economic growth indicator (un)employment. We find in one hand, a
767 more positive reaction of employment to aggregate earnings both when the influence of
768 selected macroeconomic variables is controlled and not controlled than to a negative reaction
769 of unemployment. Interestingly the magnitude and significance of the positive employment
770 reaction to aggregate earnings are positively related to financial deepening and cannot be
771 offset by the negative influence of both inflation and real interest rates. On the other hand, the
772 weak significant negative association between unemployment and aggregate earnings could
773 not be strengthened by the significant negatively related financial deepening but rendered
774 insignificant by the magnitude and significance of inflation and real interest rates

775 Additional analysis (i.e., robustness check) also shows that firms aggregate earnings
776 growth associated with unemployment growth than to the employment changes. Our results
777 are consistent with the conclusion that is accounting earnings growth associated with future

778 changes in (un)employment in our study context. Interestingly, aggregate accounting earnings
779 maintained its sign as expected in all the tested models. Our results are robust for emerging
780 economies taken cognizance of strong significant effect of the relationship between aggregate
781 earnings growth and (un)employment changes.

782 One implication of our results is that aggregate accounting earnings contain
783 information about (un)employment changes in Nigeria. Our results suggest that effective
784 monetary policies aimed at reducing inflation and interest rate as well as enabling economic
785 policies encouraging and efficient mobilizing of fund from surplus side to deficit side of the
786 economy will reduce unemployment and lead to employment.

787 As such, we contribute to the few accounting literatures on aggregate earnings
788 informativeness about macroeconomic variables in the following ways: First, by applying the
789 same aggregated accounting-based measure- aggregate earnings as Ball and Sadka (2015) in
790 our Nigerian setting, our results reinforce their position that the design and investigation of
791 accounting information content necessarily should involve addressing aggregate effects.
792 Hence, we provide the first evidence.

793 Second, we reinforce the inferences of Saini and White (2015) but in another
794 dimension by considering the effects of other macroeconomic variables on the relationship
795 between aggregate earnings and (un)employment changes. Finally, our study also adds to the
796 aggregate earnings literature (e.g., Ball et al. (2019); Konchitchki and Patatoukas, 2014a) by
797 documenting evidence of aggregate earnings informativeness. The examination of accounting
798 earnings and macroeconomic factors have been relatively unexplored in accounting and
799 economic literature (Klein & Marquardt, 2006)

800 Our study has caveats. First, Hann et al. (2017) opined that the informativeness or the
801 ability of the different earnings components to predict unemployment rates is of practical
802 importance only if accounting earnings contain information that is incremental to other

803 available macroeconomic indicators. However, this still suggests that aggregate earnings per
804 se cannot predict unemployment rates unless the firm's earnings management is adequately
805 curtailed. A prediction that anchored on false accounting earnings likely may result in another
806 round of analyst error in forecasting unemployment, GDP growth, and other macroeconomic
807 indicators. When the information is bias and uncertain, resources are poorly allocated, leading
808 to operating and investment inefficiencies (Shahab, Clinch, and O'Neill, 2018).

809 Finally, this study focuses on yearly reported earnings to examine the long-term
810 association between accounting earnings and (un)employment. The investigation could also
811 be done by using quarterly aggregated accounting earnings (e.g., aggregate corporate
812 earnings always reported by the Bureau of Economic Analysis (BEA) as it is done in a
813 developed economy (e.g., the US, Konchitchki and Patatoukas, 2014a), creating a short
814 window around the time accounting information is released. However, Nigerian setting, we
815 are limited to only individual firm's reports. However, to overcome this limitation, we
816 vigorously aggregated accounting earnings from the individual firm for this study bearing in
817 mind that macroeconomic variables are aggregated.

818 In cognizance and consistent with these stated and other caveats to this study, we do
819 not conclude that aggregate earnings have no predictive power. Instead, we firmly conclude
820 that in the context of our study aggregate earnings growth associated with (un)employment
821 rate changes, and this symbiotic relationship is significantly influenced by other
822 macroeconomic variables. Moreover, there is a need for further study in this area of micro to
823 macro accounting and doing so, scholars adding the effect of IFRS and political instability as
824 control variables is recommended.

825 Al Mamun, M., Sohag, K., & Hassan, M. K. (2017). Governance, resources, and growth.

826 *Economic Modelling*, 63(June), 238–261.

827 <https://doi.org/10.1016/j.econmod.2017.02.015>

- 828 Alnodel, A. A. (2018). The Impact of IFRS Adoption on the Value Relevance of Accounting
829 Information: Evidence from the Insurance Sector. *International JOURNAL OF*
830 *BUSINESS AND M*, 5(4), 138–148. <https://doi.org/10.5539/ijef.v5n4p71>
- 831 Badjun, M. (2009). Financial Intermediation by Banks and Economic Growth: A Review of
832 Empirical Evidence. *Financial Theory and Practice*, 33(1988), 121–152. Retrieved from
833 <http://ideas.repec.org/a/ipf/finteo/v33y2009i2p121-152.html>
- 834 Ball, R., & Sadka, G. (2015). Aggregate earnings and why they matter. *Journal of*
835 *Accounting Literature*, 34, 39–57. <https://doi.org/10.1016/j.acclit.2015.01.001>
- 836 Ball, R., Sadka, G., & Sadka, R. (2009). Aggregate earnings and asset prices. *Journal of*
837 *Accounting Research*, 47(5), 1097–1133. <https://doi.org/10.1111/j.1475->
838 [679X.2009.00351.x](https://doi.org/10.1111/j.1475-679X.2009.00351.x)
- 839 Barth, M. E., Beaver, W. H., & Landsman, W. R. (2001). The relevance of the value
840 relevance literature for financial accounting standard setting: another view. *Journal of*
841 *Accounting and Economics*, 31(1–3), 77–104. <https://doi.org/10.1016/S0165->
842 [4101\(01\)00019-2](https://doi.org/10.1016/S0165-4101(01)00019-2)
- 843 Barth, M. E., Landsman, W. R., Lang, M., & Williams, C. (2012). Are IFRS-based and US
844 GAAP-based accounting amounts comparable? *Journal of Accounting and Economics*.
845 <https://doi.org/10.1016/j.jacceco.2012.03.001>
- 846 Barth, M. E., Li, K., & McClure, C. (2017). *Evolution in Value Relevance of Accounting*
847 *Information. SSRN*. <https://doi.org/10.2139/ssrn.2933197>
- 848 Bayer, C., Luetticke, R., Pham-dao, L., & Tjaden, V. (2019). Precautionary Savings, Illiquid
849 Assets, and the Aggregate Consequences of Shocks to Household Income Risk, 87(1),
850 255–290. <https://doi.org/10.3982/ECTA13601>
- 851 Beaver, W. H. (1968). The Information Content of Annual Announcements Earnings. *Journal*
852 *of Accounting Research*, 6(1968), 67–92. <https://doi.org/10.2307/2490070>

853 Beaver, W. H., Joan, H., McNichols, M. F., Marriner, E., & Wang, Z. Z. (2015). The
854 Information Content of Earnings Announcements: New Insights from Intertemporal and
855 Cross-Sectional Behavior.

856 Bedford, N. M., & Baladouni, V. (1962). A Communication Theory Approach to
857 Accountancy. *The Accounting Review*, 37(4), 650–659. <https://doi.org/10.2307/242352>

858 Bist, J. P. (2018). Financial development and economic growth : Evidence from a panel of 16
859 African and non- African low-income countries. *Cogent Economics & Finance*, 12(1),
860 1–17. <https://doi.org/10.1080/23322039.2018.1449780>

861 Bove, V., & Elia, L. (2017). Migration, Diversity, and Economic Growth. *World*
862 *Development*, 89, 227–239. <https://doi.org/10.1016/j.worlddev.2016.08.012>

863 Bozzolan, S., Trombetta, M., & Beretta, S. (2009). Forward-Looking Disclosures, Financial
864 Verifiability and Analysts' Forecasts: A Study of Cross-Listed European Firms.
865 *European Accounting Review*, 18(3), 435–473.
866 <https://doi.org/10.1080/09638180802627779>

867 Cuong, N. T., & Ly, D. T. (2017). Measuring and assessing the quality of information on the
868 annual reports : The Case of seafood ' s companies Listed on the Vietnam stock market.
869 *International Research Journal of Finance and Economics*, (160), 26–40.

870 Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the
871 proxies, their determinants, and their consequences. *Journal of Accounting and*
872 *Economics*, 50(2–3), 344–401. <https://doi.org/10.1016/j.jacceco.2010.09.001>

873 Dumitru, G. (2011). The Accounting Information Quality Concept. *Journal of Academic*
874 *Research Un Economics*, 3(3), 559–570.

875 Elaoud, A., & Jarboui, A. (2017). Auditor specialization, accounting information quality and
876 investment efficiency. *Research in International Business and Finance*.
877 <https://doi.org/10.1016/j.ribaf.2017.07.006>

878 Elbakry, A. E., Nwachukwu, J. C., Abdou, H. A., & Elshandidy, T. (2017). Comparative
879 evidence on the value relevance of IFRS-based accounting information in Germany and
880 the UK. *Journal of International Accounting, Auditing and Taxation*, 28, 10–30.
881 <https://doi.org/10.1016/j.intaccaudtax.2016.12.002>

882 Gaertner, F. B., Kausar, A., & Steele, L. B. (2015). *The Usefulness of Negative Aggregate*
883 *Earnings Changes in Predicting Future Gross Domestic Product Growth*. SSRN.
884 <https://doi.org/10.2139/ssrn.2656597>

885 Gallo, L. A., Hann, R. N., & Li, C. (2016). Aggregate earnings surprises, monetary policy,
886 and stock returns. *Journal of Accounting and Economics*, 62(1), 103–120.
887 <https://doi.org/10.1016/j.jacceco.2016.04.003>

888 Givoly, D., Hayn, C., & Katz, S. (2017). The changing relevance of accounting information
889 to debt holders over time. *Review of Accounting Studies*. [https://doi.org/10.1007/s11142-](https://doi.org/10.1007/s11142-016-9374-y)
890 [016-9374-y](https://doi.org/10.1007/s11142-016-9374-y)

891 GKOU GKOUSI, X. (2014). Aggregate Earnings and Corporate Bond Markets. *Journal of*
892 *Accounting Research*, 52(1), 75–106. <https://doi.org/doi:10.1111/1475-679X.12030>

893 Hail, L., Muhn, M., & Oesch, D. (2017). *Do Risk Disclosures Matter When it Counts?*
894 *Evidence from the Swiss Franc Shock*. SSRN Electronic Journal.
895 <https://doi.org/10.2139/ssrn.2939935>

896 Hann, R. N., Li, C., & Ogneva, M. (2016). Another look at the macroeconomic information
897 content of aggregate earnings. *Insead*, (May), 1–40.

898 Horvath, J., & Zhong, J. (2019). Unemployment dynamics in emerging countries: Monetary
899 policy and external shocks. *Economic Modelling*, 76(July 2018), 31–49.
900 <https://doi.org/10.1016/j.econmod.2018.07.017>

901 ICAEW. (2017). *Growth, development and accounting: seeing the bigger picture*. ICAEW
902 *THOUGHT LEADERSHIP INFORMATION FOR BETTER MARKETS*.

903 IMF. (2016). 2016 Article Iv Consultation — Press Release; Staff Report; and Statement By
904 the Executive Director for Nigeria. 2016, (16). Retrieved from
905 <https://www.bookstore.imf.org/books/title/Nigeria-:-2016-Article-IV-Consultation-->
906 [Press-Release;-Staff-Report;-and-Statement-by-the-Executive-Director-for-Nigeria](https://www.bookstore.imf.org/books/title/Nigeria-:-2016-Article-IV-Consultation--)

907 Kalay, A., Nallareddy, S., & Sadka, G. (2018). Uncertainty and sectoral shifts: The
908 Interaction between firm-level and aggregate-level shocks, and macroeconomic activity.
909 *Management Science*, 64(1), 198–214. <https://doi.org/10.1287/mnsc.2016.2581>

910 Kanodia, C., & Sapra, H. (2016). A Real Effects Perspective to Accounting Measurement and
911 Disclosure: Implications and Insights for Future Research. *Journal of Accounting*
912 *Research*, 54(2), 623–676. <https://doi.org/10.1111/1475-679X.12109>

913 Kessler, J. G., Ferreira, S., Kessler, J. G., Ferreira, S., & Ahmadiani, M. (2019). What Makes
914 People Happy ? Explaining the Cross- National Variation of Life Satisfaction, 1–22.

915 Klein, A., & Marquardt, C. A. (2006). Fundamentals of Accounting Losses. *The Accounting*
916 *Review*, 81(1), 179–206.

917 Klinefelter, D. A., Penson, J. B., Fraser, D. R., Klinefelter, D. A., Penson, J. B., & Fraser, D.
918 R. (2019). Effects of Inflation on Financial Markets and Agricultural Lending
919 Institutions, 62(5), 1054–1059.

920 Konchitchki, Y. (2016). Accounting Valuation and Cost of Capital Dynamics: Theoretical
921 and Empirical Macroeconomic Aspects. Discussion of Callen. *Abacus*, 52(1), 26–34.
922 <https://doi.org/10.1111/abac.12071>

923 Konchitchki, Y., & Patatoukas, P. N. (2014). Accounting earnings and gross domestic
924 product. *Journal of Accounting and Economics*, 57, 76–88.
925 <https://doi.org/10.1016/j.jacceco.2013.10.001>

926 Kothari, S., Shivakumar, L., & Urcan, O. (2012). Aggregate Earnings Surprises and Inflation
927 Forecasts. Available at SSRN 2194122.

- 928 Larson, R. K., & Kenny, S. Y. (1995). An Empirical Analysis of International Accounting
929 Standards, Equity Markets, and Economic Growth in Developing Countries. *Journal of*
930 *International Financial Management & Accounting*, 6(2), 130–157.
931 <https://doi.org/10.1111/j.1467-646X.1995.tb00054.x>
- 932 Leuz, C., & Wysocki, P. D. (2016). The Economics of Disclosure and Financial Reporting
933 Regulation: Evidence and Suggestions for Future Research. *Journal of Accounting*
934 *Research*, 54(2), 525–622. <https://doi.org/10.1111/1475-679X.12115>
- 935 Lilien, D. M. (1982). Sectoral Shifts and Cyclical Unemployment. *Journal of Political*
936 *Economy*, 90(4), 777–793.
- 937 Mechelli, A., & Cimini, R. (2014). Is Comprehensive Income Value Relevant and Does
938 Location Matter? A European Study. *Accounting in Europe*, 11(1), 59–87.
939 <https://doi.org/10.1080/17449480.2014.890777>
- 940 Merkl-Davies, D. M., & Brennan, N. M. (2017). A theoretical framework of external
941 accounting communication. *Accounting, Auditing & Accountability Journal*, 30(2), 433–
942 469. <https://doi.org/10.1108/AAAJ-04-2015-2039>
- 943 Navarro-García, J. C., & Madrid-Guijarro, A. (2016). Real economic activity and accounting
944 information in Spanish construction and real estate firms. *Revista de Contabilidad*,
945 19(1), 21–30. <https://doi.org/10.1016/j.rcsar.2014.10.002>
- 946 Onodugo, V. A., Obi, K. O., Anowor, O. F., Nwonye, N. G., & Ofoegbu, G. N. (2017).
947 DOES PUBLIC SPENDING AFFECT UNEMPLOYMENT IN AN EMERGING
948 MARKET? *Risk Governance and Control: Financial Markets & Institutions*, 7(1).
949 <https://doi.org/10.22495/rgcv7i1art4>
- 950 Oxelheim, L. (2003). Macroeconomic Variables and Corporate Performance. *Financial*
951 *Analysts Journal*, 59(4), 36–50.
- 952 Özcan, A. (2016). Assessing the Effects of Ifrs Adoption on Economic Growth : a Cross

953 Country Study. *ACU International Journal of Social Sciences*, (2), 70–86.
954 <https://doi.org/10.22466/acusbd.v2i2.5000202321>

955 Palea, V. (2013). IAS/IFRS and financial reporting quality: Lessons from the European
956 experience. *China Journal of Accounting Research*, 6(4), 247–263.
957 <https://doi.org/10.1016/j.cjar.2013.08.003>

958 Ross, J. F. (2016). The information content of accounting reports: An information theory
959 perspective. *Information (Switzerland)*, 7(3). <https://doi.org/10.3390/info7030048>

960 Saini, J. S., & White, T. P. (2015). The effects of volatility and leverage on the earnings-GDP
961 relation. *Academy of Accounting and Financial Studies Journal*, 19(3), 267–282.

962 Schulz, C. (2016). An Informational Perspective on Agency Causation. *Topoi*, 35(1), 241–
963 252. <https://doi.org/10.1007/s11245-014-9255-6>

964 Shahab, S., Clinch, J. P., & O'Neill, E. (2018). Accounting for transaction costs in planning
965 policy evaluation. *Land Use Policy*, 70(September 2017), 263–272.
966 <https://doi.org/10.1016/j.landusepol.2017.09.028>

967 SHIVAKUMAR, L. (2010). Discussion of Aggregate Market Reaction to Earnings
968 Announcements. *Journal of Accounting Research*, 48(2), 335–342.
969 <https://doi.org/doi:10.1111/j.1475-679X.2010.00369.x>

970 Shroff, P. K. (2002). The Relation between Aggregate Earnings and Security Returns over
971 Long Intervals*. *Contemporary Accounting Research*, 19(1), 147–164.
972 <https://doi.org/doi:10.1506/MX3L-QM8G-H7D8-FE17>

973 Sikka, P. (2015). The hand of accounting and accountancy firms in deepening income and
974 wealth inequalities and the economic crisis: Some evidence. *Critical Perspectives on*
975 *Accounting*, 30, 46–62. <https://doi.org/10.1016/j.cpa.2013.02.003>

976 Treichel, V. (2010). *Putting Nigeria to Work. Putting Nigeria to Work.*
977 <https://doi.org/10.1596/978-0-8213-8072-7>

978 Uwakaeme, O. S. (2015). Economic Growth in Nigeria: An Empirical Investigation of
979 Determinants and Causal Relationship (1980 – 2012). *American Journal of Economics*,
980 5(1), 9–20. <https://doi.org/10.5923/j.economics.20150501.02>.

981 Venter, E. R., Gordon, E. A., & Street, D. L. (2018). The role of accounting and the
982 accountancy profession in economic development: A research agenda. *Journal of*
983 *International Financial Management & Accounting*, 29(2), 195–218.
984 <https://doi.org/doi:10.1111/jifm.12080>

985 Zaidi, S. K. R., & Huerta, E. (2014). IFRS Adoption and Enforcement as Antecedents of
986 Economic Growth. *International Journal of Accounting and Financial Reporting*, 4(1),
987 1. <https://doi.org/10.5296/ijafr.v4i1.5410>

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