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# Earnings surprise and share price of firms in Nigeria

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## Abstract

This study examines earnings surprise and share price of firms in Nigeria. It sought to evaluate the impact of earnings surprise in predicting share price of firms. The paper employed the Ohlson valuation model and variants of the model to ascertain the impact of earnings surprise on share price. The sample consisted of 76 listed firms over the period 2010–2020. The study reveals that earnings surprise has a negative insignificant impact on share price. The study further reveals that with the interaction of earnings surprise with the bottom line metrics of book value per share and earnings per share, earnings surprise also has a negative insignificant impact on share price of firms, respectively. The paper provides fact that earnings surprise interacts with book value per share and earnings per share in determining share price. This paper also presents evidence to the fact that investors are not just concerned with the magnitude of book value per share and earnings per share but are also concerned with the quality of the earnings in terms of its surprise. This paper further presents evidence to the fact that investors do not consider magnitude and surprise of earnings in isolation. Rather, the decision is influenced by the fusion of the magnitude and the surprise of the metric.

**Keywords:** Earnings, Earnings quality, Earnings surprise, Share price

## Introduction

Earnings are essential indicators of business success and, as such forms, the essential parameter through which the business of firms is assessed by investors. Therefore, analysts and managers forecast earnings that are used by investors in making accurate investment decisions [12]. These earnings forecasted by analysts and managers sometimes fall below or above the actual earnings of firms. Earnings, good or bad, influence the performance of shares and can move share prices upward or downward [25]. Investors are interested in the share price of firms because they invest in firms with high market values and not in firms whose markets value is static or has been decreasing over time. Thus, management ensures that their market values are competitive with firms in

similar industry. Systematic patterns in the financial market are irreconcilable to the, as share price can be predicted using these systematic patterns [5].

An examination of the impact of earnings quality on share price is paramount because the quality of earnings is determined from accounting information made available to investors of organizations [26]. Investors and analysts are interested in the impact because management can engage in acts capable of distorting earnings quality which will in turn affect share price. Managers are concerned with ensuring that analysts' forecast is met by ensuring stable growth of the organization, while analysts, on the other hand, are concerned with measuring the quality of earnings so that investors' portfolio can be optimized [18]. According to Fonou-Dombeu et al. (2022), earnings quality is unique and can influence stock return volatility. In the same vein, Alduais [4] opined that the relationship between earnings and stock return is one of the research area which have received wide attention based on financial markets.

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Earnings surprise is a determinant of share price of firms [9, 12, 16, 19, 20, 22, 24, 35]. Earnings surprise is when a company's reported profits are above or below analyst expectation [3]. This connotes that earnings surprise is when a firm reports earnings that are drastically different from analysts' estimates. The earnings reported tend to move share price either upward or downward. In several of the leading studies in this research area conducted in both developed and developing economies [9, 12, 16, 19, 20, 22, 24, 35], a fundamental weakness was observed. The studies did not show how earnings surprise interacts with book value per share (BVPS) and earnings per share (EPS) in determining share price. This is premised on the fact that earnings surprise, which underlines earnings information, is determined from accounting information made available to investors. Therefore, it is expected that earnings surprise would interact with the bottom line metrics of BVPS and EPS in determining share price. The justification of the interactive effect in the study is done from the perspective of investors who do not only consider the magnitude of key metrics like EPS and BVPS but also the quality. However, investors do not consider magnitude and quality in isolation. Rather, the decision is influenced by the fusion of the magnitude and the quality of the metric.

The idea that earnings surprise and share price may be dynamically and endogenously related is not new. Prior studies in developing economies did not explore the dynamic endogeneity [12, 23]. Therefore, this study adopts the advanced panel vector autoregressive (PVAR) technique so as to explore the dynamic relationship between the different variables in the system. The justification of the PVAR technique in the study is hinged on its ability to show the response of earnings surprise to orthogonal shocks in share price. By orthogonalizing the response, we were able to identify the effect of one shock at a time, while holding other shocks constant. PVARs are able to capture both static and dynamic interdependencies, easily incorporate time variations in the coefficients and in the variance of the shocks as well as account for cross-sectional dynamic heterogeneities. This study is focused on the Nigerian Exchange Limited due to the fact that the Nigerian market is an inefficient one which is characterized with a delay in the reflection of accounting information [earnings surprise] into share price. Section two describes literature review and hypothesis development, section three describes methodology, and section four describes the findings, while section five describes the conclusion and recommendations.

## Literature review and hypothesis development

### Earnings surprise

Earnings surprise is when a company's reported profits are above or below analyst expectation [3]. Atiase et al. [6] define earnings surprises as the difference between the

actual quarterly earnings per share (EPS) and the average quarterly earnings forecast for individual analysts made within thirty days from the date of the previous quarter's earnings announcement, and discharged from the share price at the beginning of the current quarter. Hwang et al. [17] define earnings surprise as the difference between reported earnings per share and analyst expectations set according to the late price. According to Abdelghany [1], earnings surprise is the ratio of net operating assets at the beginning of the year scaled by total sales. The computed ratio determines the level of earnings surprise. The lower the ratio, the higher the earnings quality, and the higher the ratio, the lower the level of earnings quality. Earnings quality and earning surprise are negatively related.

### Empirical review and hypothesis development

Ioannidis [19] examines earnings surprise and the effect of stock return using listed firms among several European countries within the period 2000–2018. The study revealed that negative earnings surprises have a high impact on stock returns of young companies than positive earnings surprise and it tends to reduce as the firm ages. The study also revealed that the growth effect of firms is attributed to the uncertainty that investors face when firms are valued. The study concluded that uncertainty plays a significant role in the accuracy of analysts' forecasts. The study opined that uncertainty factors like the size of the company, the coverage and the forecast horizon had a negative relation on analysts' forecasts. The result also showed that this relation varies among countries, industries and examined period. Heni and Rizki [15] examine the effect of earnings surprise and earning per share on stock return of manufacturing firms in Indonesia within the period 2016 to 2018. The result revealed that earnings surprise and earnings per share simultaneously and partially have no effect on stock return. Bulsiewicz [7] investigates forecastability of earnings surprises. Unlike, prior studies that revealed easy forecast of earnings surprise, the result revealed a great difficulty in forecasting earnings surprises. Ekpe et al. (2020) examine earnings surprise and stock prices reactions of quoted companies in Nigeria. The study used a sample of 64 firms chosen from all sectors of the Nigerian Stock Exchange within the period 2013 to 2017. The data were analysed using the generalized least squares technique. The results for positive earnings surprise revealed that share price react negatively to positive earnings surprises. The negative earnings surprise revealed that share price react positively to negative earnings surprises. Lim (2009) examines the relationship between earnings surprise and returns, as well as earnings surprise and volatility using 30 firms listed in USA using data from 2002 to 2008. The study revealed that the market does use the

information provided by estimates and quarterly earnings reports, and in the short run, earnings surprise is significantly correlated with regards to volatility and overnight returns. Furthermore, there appears to be an increase in volatility in the trading period after earnings are announced, but there is no systematic bias that indicates the direction that prices go in the period. The study further revealed that even when the quarterly earnings reported are equal to what the analysts predicted, the announcement is followed by an increase in volatility in the trading period immediately after the announcement is made.

Ekpe et al. [12] examine earnings surprise and stock prices reactions of quoted companies in Nigeria. The study used a sample of 64 firms chosen from all sectors of the Nigerian Stock Exchange within the period 2013 to 2017. The data were analysed using the generalized least squares technique. The results for positive earnings surprise revealed that share price react negatively to positive earnings surprises. The negative earnings surprise revealed that share price reacts positively to negative earnings surprises. Lim [22] examines the relationship between earnings surprise and returns, as well as earnings surprise and volatility using 30 firms listed in USA using data from 2002 to 2008. The study revealed that the market does use the information provided by estimates and quarterly earnings reports, and in the short run, earnings surprise is significantly correlated with regard to volatility and overnight returns. Furthermore, there appears to be an increase in volatility in the trading period after earnings are announced, but there is no systematic bias that indicates the direction that prices go in the period. The study further revealed that even when the quarterly earnings reported are equal to what the analysts predicted, the announcement is followed by an increase in volatility in the trading period immediately after the announcement is made.

Kothari et al. [20] investigate stock returns, aggregate earnings surprise and behavioural finance using listed firms in the USA using data from 1970 to 2000. The study suggests that there is no relationship between returns and past earnings, suggesting that prices neither underreact nor overreact to aggregate earnings surprise news. The finding suggests that earnings and discount rates move in the same direction in the long run and provide new evidence that discount-rate shocks explain a significant level of aggregate stock returns. Huang [16] investigates the impact of earnings announcement surprise on stock prices. The study used Bloomberg quarterly forecasts for three companies (Hewlett Packard, IBM and Walt Disney) from 1984 to 2015. The results indicate that positive earnings surprise tends to raise stock prices around announcement

days except for IBM. Positive surprise has a smaller impact than negative surprise under a lower price earnings ratio. The result further revealed that if the forecasts' standard deviation is high, investors may respond more or less to earnings surprise.

Lyimo [23] examines the relationship between earnings quality and stock price synchronicity in India using sample for the period 2006 to 2016. Pooled ordinary least square was used as the method of data analysis. Earnings quality was proxied using earnings surprise. The study revealed that earnings surprise had a significant negative impact on stock price synchronicity. The study further revealed that earnings surprise improves stock price informativeness. DuCharme et al. [9] examine earnings management, earnings surprises and stock price reactions to earnings components in the USA for the period 2000 to 2001. The study decomposed earnings surprises into expected cash flows, expected normal accruals and an abnormal accrual component. The study revealed that that abnormal stock returns had a positive impact on the three decomposed elements of earnings surprise. The study further revealed that the impact on stock prices varies across the components.

Zou and Chen [35] examine earnings surprise, investor sentiments and contrarian strategy of firms listed on the New York Stock Exchange within the period 1990 to 2012. The study revealed that both positive earnings surprises and negative earnings surprises had significant impacts on subsequent returns. However, negative earnings surprises have less impact on value stocks relative to glamour stocks. The study further revealed that investor sentiments could be an alternative source of superior performances from value stocks, indicating that when the investor's sentiment is higher, value stocks earn significant higher returns than glamour stocks. The study concludes that investors naively extrapolate past performance and overestimate the future growth rates of glamour stocks relative to value stocks. The study further opined that analysts tend to be excessively pessimistic about value stocks and over optimistic about glamour stocks. Okoro and Ofor [28] examine the determinants of accounting earnings surprises in Nigeria using 20 quoted firms for the period 2008 to 2017. Panel regression was used in analyzing the data. The variables used for the study were Earning Surprises as dependent variable, while the independent variables were Firm Reputation, Earnings Management, Sales Growth, Cash Flow and Firm Size. The study revealed that Firm Reputation have significant negative effect on earnings surprises, while Earnings Management, Sales Growth and Cash Flow have significant positive effect on the earnings surprises of quoted manufacturing firms in Nigeria.

Skinner and Sloan [33] examine earnings surprise, growth expectation and stock return from the Thomson Financial's Institutional Brokers Estimate System from 1984 to 1996.

The study revealed that asymmetric response to negative earnings surprises completely explains the return differential between 'growth' and 'value' stocks. The study further revealed that lower returns of growth stocks relative to value stocks relate to the realized returns in quarters when negative earnings surprises are announced. The study documented that growth stocks perform as well as value stocks in quarters when zero earnings surprises or positive earnings surprises are announced. The study further documents that little of the return differential is observed at the formal earnings announcement date, due to the fact that managers of growth firms tend to preannounce negative earnings surprises. Erlein [13] examines earnings announcement and stock return using listed firms in Norway within the period of 2007–2010. The study suggests that several studies have confirmed a high degree of efficiency in capital markets, but some have also detected delayed stock price responses to new value-altering information, a phenomenon referred to as the post-earnings announcement drift. The study revealed that the Norwegian market appears to be largely efficient, with a couple of minor deviations. Earnings announcements that differ from expectations are confirmed to cause abnormal returns and that the negative earnings surprises yield results easiest to interpret. Against the backdrop, earnings surprise has no significant impact on share price of firms in Nigeria.

## Methodology

Correlation research design is adopted in this study. Correlation research design is a research design that carefully reveals the relationship of variables under investigation. The population of the study comprised of all 115 non-financial firms listed on the floor of the Nigerian Exchange Limited as at 31 December 2020. The study covers the period 2010 to 2020. Filters were carried out to arrive at a sample size (Cassey & Anderson, 1999; Adelegan, 2003). In view of the filters, 39 firms were eliminated and the remaining 76 firms were found to have satisfied all the filters and therefore constituted the sample size of the study. Ordinary least square multiple regression is adopted to examine the effect of earnings surprise on share price of firms in Nigeria. The idea that earnings surprise and share price may be dynamically and endogenously related is not new. The study employed panel VAR technique to explore this dynamic endogeneity.

## Model specification

This study adapted the Ohlson [27] model in determining the effect of earnings surprise on share price of firms. The Ohlson [27] model conceptually links accounting information to firm value.

The model takes the following form:

$$SP_{it} = \alpha_0 + \alpha_1 BVPS_{it-1} + \alpha_2 EPS_{it-1} + \varepsilon_{it-1} \quad (1)$$

where  $SP_{it}$  is the share price of firm  $i$  at end of the current year  $t$ .  $BVPS_{it-1}$  is the book value per share of firm  $i$  at the end of last year  $t$ .  $EPS_{it-1}$  is the earnings per share of firm  $i$  at the end of last year  $t$ .

In this study, in order to determine the effect of earnings surprise on share price of firms, we use earnings surprise as proxy for other information. Deriving from the above process, the regression model (1) is modified with the inclusion of earnings surprise to give us model (2).

$$SP_{it} = \alpha_0 + \alpha_1 BVPS_{it-1} + \alpha_2 EPS_{it-1} + \alpha_3 ESUR_{it-1} + \varepsilon_{it-1} \quad (2)$$

The regression model (2) is modified with the inclusion of the interaction effect of earnings surprise with the bottom line metrics of book value per share (BVPS) and earnings per share (EPS) on share price to give us model (3).

$$SP_{it} = \alpha_0 + \alpha_1 BVPS_{it-1} + \alpha_2 EPS_{it-1} + \alpha_3 ESUR_{it-1} + \alpha_4 BVPS_{it-1} * ESUR_{it-1} + \alpha_5 EPS_{it-1} * ESUR_{it-1} + \varepsilon_{it-1} \quad (3)$$

where  $SP_{it}$  is the share price for firm  $i$  at end of the current year  $t$ .  $BVPS_{it-1}$  is the book value per share for firm  $i$  at the end of last year  $t$ .  $EPS_{it-1}$  is the earnings per share for firm  $i$  at the end of last year  $t$ .

$ESUR_{it-1}$  is the earnings surprise for firm  $i$  at the end of last year  $t$ .  $\alpha_0$  is the constant.  $\alpha_1$ – $\alpha_5$  are coefficients of the parameters estimate.  $\varepsilon$  is the error term.

Extant literature shows that share price is affected by fundamental economic factors. In order to isolate the effect of earnings surprise on share price, there is the need to control for these company specific factors. Company-specific factors identified in previous literature are cash flow from operations and firm size [18, 24, 31, 34].

The final regression model taking into cognisance the effect of the control variables in determining the impact of earnings surprise on share price is indicated in model (4)

$$SP_{it} = \alpha_0 + \alpha_1 BVPS_{it-1} + \alpha_2 EPS_{it-1} + \alpha_3 ESUR_{it-1} + \alpha_4 BVPS_{it-1} * ESUR_{it-1} + \alpha_5 EPS_{it-1} * ESUR_{it-1} + \beta_1 CFO_{it-1} + \beta_2 FSIZE_{it-1} + \varepsilon_{it-1} \quad (4)$$

where  $CFO_{it-1}$  is cash flow from operations for firm  $i$  at the end of last year  $t$ ;  $FSIZE_{it-1}$  is firm size for firm  $i$  at the end of last year  $t$ .

## Measurement of variables

See Table 1.

**Table 1** Measurement and operationalization of variables

Operationalization of variables	Definition of variables	Measurement of variables	Sources	A priori Sign
SP	Share price (dependent variable)	As a result of the documented inefficiency of the Nigerian capital market hitherto identified in the study, the time duration at which earnings surprise information is impounded in share price is not exactly known. This is because accounting information is not contemporaneously associated with share price. Therefore, the earnings surprise information in the context of the Ohlson [27] framework is employed four months after year end. Consequently, the study measured share price as the average price per share at the end of four months after the statement of financial position date so as to accommodate the effect of the documented inefficiency	Omokhudu and Ibadin [29]	
ESUR	Earnings surprise (independent variable)	It is measured as the difference between actual EPS and forecast EPS. Forecast EPS is derived from an (1) earnings model	Atiase et al. [6], Hwang et al. [17]	+
CFO	Cash flow from operation (control variable)	CFO scaled by total assets	Shehu and Abubakar [31]	+
FSIZE	Firm size (control variable)	It is measured by the natural log of total assets	Yodbutr [34], Lyimo and Jain [24]	+

Source: Authors' Compilation (2022)

## Results

The descriptive statistics for the variables in this study is presented in Table 2, and as observed, SP has a mean of 34.595 with maximum and minimum values of 1555.9 and 0.20, respectively. The standard deviation stood at 128.13 and indicates significant dispersion of SP of the individual firms from the mean. The skewness statistics indicates that the SP is positively skewed and the kurtosis statistics is positive which indicates that there are high frequencies in only a small part of the curve. ESUR has a mean of

0.0025 which is low and indicates low level of earnings surprises for the study period and for firms in the distribution with maximum and minimum values and minimum of 25.12 and -26.0, respectively. The standard deviation stood at 2.84 which indicates the extent of dispersion of ESUR of the individual firms from the distribution mean. The skewness statistics indicates that the variable is positively skewed and the kurtosis statistics is positive which indicates that there are high frequencies in only a small part of the curve.

**Table 2** Descriptive statistics

	Mean	Max	Min	Std. Dev	Skewness	Kurtosis	J.B	Prob	Obs
SP	34.595	1556	0.2	128.129	8.5795	87.78	236,312	0.00	836
ESUR	0.0025	25.12	-26	2.84567	-1.2281	36.468	31,906.6	0.00	836
BVPS	76.378	37,037	1.297	1353.86	26.948	735.75	17,026	0.00	836
EPS	1.768	57.63	-20.2	5.5745	4.9328	38.361	42,454.5	0.00	836
CFO	0.094	0.5895	-0.337	0.13389	0.1251	4.1226	29.437	0.00	836
FSIZE	7.071	9.229	5.3513	0.825	0.2467	2.62264	8.5841	0.013	836

Source: Researcher's Compilation (2022)

Table 3 shows the correlation statistics for the variables, and the focus for the study is the correlations between earnings surprise and share price (SP). The results reveal that SP is negatively correlated with ESUR ( $r = -0.029$ ) though not significant ( $p = 0.496$ ). In addition, SP is negatively correlated with BVPS ( $r = -0.0055$ ) though not significant ( $p = 0.8984$ ). On the other hand, SP is positively correlated with EPS ( $r = 0.8032$ ) and significant at 1% ( $p = 0.000$ ) and positively correlated with FSIZE ( $r = 0.2501$ ) and significant ( $p = 0.00$ ) at 1%. SP is positively correlated with CFO ( $r = 0.2345$ ) and significant at 1% ( $p = 0.000$ ).

**Multicollinearity test**

C	NA
ESUR	1.5938
EPS	1.9224
BVPS	1.8961
CFO	2.311
FSIZE	1.8961

Source Researcher’s Compilation (2022) using Eviews 10. In this study, the variance inflation factor [VIF] test was constructed to test for multicollinearity. Basically, the VIF explains how much of the variance of a coefficient estimate of a regressor has been inflated, as a result of collinearity with the other regressors. Essentially, VIFs above 10 are seen as a cause of concern as observed, none of the variables have VIF’s values more than 10 and hence none gave serious indication of multicollinearity. The VIF test results for the variables reveal that all the variables have VIF values far less than 10. Thus, the VIF confirms

that the threat of multicollinearity is non-existent, and hence, the results are expected to be robust and reliable.

**Panel regression results**

The relationship between ESUR and SP is presented in Table 4, with the bottom line metrics of BVPS and EPS controlled for, and as observed, both fixed and random effect estimations are presented. To decide between fixed or random effects, a Hausman test is conducted. The  $\chi^2_{Hausman}$  statistic and  $p$  value (32.402,  $p = 0.00$ ) indicate that the fixed effects model estimation is the appropriate estimation for the model indicating the existence of significant correlations between firm specific disturbances and the betas. Therefore, the fixed effects estimation is more robust and appropriate and is used for the discussion of the results.

The  $R^2$  for the fixed effects regression stood at 0.93 which indicates that the model is able to account for about 93% of systematic variations in the dependent variable which indicates a very good fit for the model with an adjusted value of 91.4%. The  $F$ -stat is 80.815 ( $p$  value = 0.00) which is significant at 5% and suggests that the hypothesis of a significant linear relationship between the dependent and independent variables cannot be rejected. It is also indicative of the joint statistical significance of the model. The analysis of coefficients reveals that ESUR has a negative ( $-94.9033$ ) effect on the SP which though is not statistically significant at 5% ( $p = 0.320$ ).

In Table 5, the estimation incorporates the interaction of ESUR with bottom line metrics of BVPS and EPS. The  $\chi^2_{Hausman}$  statistic and  $p$  value (38.43,  $p = 0.00$ ) indicate that the fixed effects model estimation is the appropriate estimation for the model indicating the existence of significant correlations between firm specific disturbances and the betas. The  $R^2$  for the fixed effects regression stood at

**Table 3** Correlation statistics

Prob	SP	ESUR	BVPS	EPS	FSIZE	CFO
SP	1					
ESUR	-0.0296	1				
Prob	0.4956					
BVPS	-0.0055	-0.00437	1			
Prob	0.8984	0.9198				
EPS	0.8032	-0.390	-0.031	1		
Prob	0.000	0.000	0.481			
FSIZE	0.2501	0.0439	0.023	0.229	1	
Prob	0.00	0.3111	0.593	0.00		
CFO	0.2345	-0.01398	-0.014	0.2501	0.0361	1
Prob	0.000	0.7473	0.755	0.000	0.4041	

Source: Researcher’s Compilation (2022)

**Table 4** Earnings surprise regression result

	A priori sign	Dependent variable: SP	
		Fixed effects	Random effects
C	+	202.525 (183.85) {0.2712}	-7.3374 (6.9808) {0.2936}
ESUR	+	-94.9033 (104.02) {0.320}	15.7767*** (5.0611) {0.0019}
BVPS	+	0.0008 (0.0007) {0.247}	0.0006* (0.0006) {0.0630}
EPS	+	92.9929 (103.83) {0.3709}	24.3118*** (4.6339) {0.000}
AR(1)		0.4061*** (0.0849) {0.000}	
R <sup>2</sup>		0.925	0.510
Adjusted R <sup>2</sup>		0.914	0.5079
χ <sup>2</sup> Hausman		32.402(0.000)	
F-statistic		80.815	233.2
Prob(F-stat)		0.000	0.000
Durbin-Watson		1.98	1.070

Source: Researcher's Compilation (2022) \*\*\*sig @1%, \*\* sig @ 5% and \*sig @ 10%

0.928 which indicates that the model is able to account for about 92.8% of systematic variations in the dependent variable which indicates a very good fit for the model with an adjusted value of 92%. The *F*-stat is 82.51 (*p* value = 0.00) which is significant at 5% and suggests that the hypothesis of a significant linear relationship between the dependent and independent variables cannot be rejected. It is also indicative of the joint statistical significance of the model.

The analysis of coefficients reveals that ESUR still maintained a negative (-76.17) effect on the SP which though is not statistically significant at 5% (*p* = 0.3519). BVPS displays a positive coefficient (0.0018) and significant at 10% (0.0755), while EPS has a negative effect on SP though not significant (-74.99, *p* = 0.3583). The interaction coefficient ESUR\*BVPS is positive though not significant at 5% (0.0005, *p* = 0.4420), and ESUR\*EPS is negative and significant at 1% (-0.1129, *p* = 0.000).

In Table 6, the robust ESUR and share price regression result is presented and the χ<sup>2</sup><sub>Hausman</sub> statistic and *p* value (37.617, *p* = 0.00) indicate that the fixed effects model estimation is the appropriate estimation for the

**Table 5** Earnings surprise regression result

	A priori sign	Dependent variable: SP	
		Fixed effects	Random effects
C	+	169.286 (144.43) {0.2417}	-6.68602 (5.5756) {0.2309}
ESUR	+	-76.165 (81.7380) {0.3519}	19.2557*** (4.1358) {0.000}
BVPS	+	0.0018* (0.0010) {0.0755}	0.0018 (0.0028) {0.5141}
EPS	+	-74.987 (81.561) {0.3583}	22.787*** (4.4107) {0.000}
ESUR*BVPS	+	0.0005 (0.0007) {0.4420}	0.0007 (0.0019) {0.7384}
ESUR*EPS	+	-0.1129*** (0.0146) {0.0000}	-0.2513*** (0.1198) {0.0363}
AR(1)	+	0.4094*** (0.0846) {0.0000}	
R <sup>2</sup>		0.928	0.591
Adjusted R <sup>2</sup>		0.917	0.588
χ <sup>2</sup> Hausman		38.43(0.000)	
F-statistic		82.51	193.97
Prob(F-stat)		0.000	0.000
Durbin-Watson		1.99	1.29

Source: Researcher's Compilation (2022) \*\*\*sig @1%, \*\* sig @ 5% and \*sig @ 10%

model indicating the existence of significant correlations between firm specific disturbances and the betas. The R<sup>2</sup> for the fixed effects robust regression stood at 93.1% with an adjusted value of 92%, respectively, indicative of a good fit for the model. The *F*-stat is 826.34 (*p* value = 0.00) which is significant at 5% and suggests that the hypothesis of a significant linear relationship between the dependent and independent variables cannot be rejected. It is also indicative of the joint statistical significance of the model.

The analysis of coefficients reveals that ESUR still maintained a negative (-68.67) effect on the SP and still statistically insignificant at 5% (*p* = 0.3259). BVPS displays a positive coefficient (0.0019) and significant at 10% (0.0810), while EPS has a negative effect on SP though not significant at 5% (-67.373, *p* = 0.338). The interaction coefficient ESUR\*BVPS is negative though not significant at 5% (0.0006, *p* = 0.4072), and ESUR\*EPS has a negative coefficient and significant at 1% (-0.1102, *p* = 0.000). CFO has a negative coefficient though not significant at 5% (-0.6457, *p* = 0.1511), while FSIZE variable is negative and significant at 10% (-1.0425, *p* = 0.0855).

**Table 6** Earnings surprise regression result

	A priori sign	Dependent variable: SP	
		Fixed effects	Random effects
C	+	166.2321 (124.52) {0.1825}	-14.669 (31.243) {0.6389}
ESUR	+	-68.665 (69.829) {0.3259}	19.4656*** (4.5800) {0.000}
BVPS	+	0.0019* (0.0011) {0.0810}	0.0018 (0.0028) {0.5078}
EPS	+	-67.373 (69.635) {0.338}	23.028*** (4.8549) {0.000}
ESUR*EPS	+	-0.1102*** (0.0165) {0.000}	-0.2501** (0.1184) {0.0350}
ESUR*BVPS	+	0.0006 (0.0007) {0.4072}	0.0006 (0.0019) {0.7308}
CFO	+	-0.6457 (0.4490) {0.1511}	1.6276 (10.872) {0.8810}
FSIZE		-1.0425* (0.6051) {0.0855}	1.0535 (4.9767) {0.8324}
AR(1)		0.4139*** (0.0802) {0.000}	
R <sup>2</sup>		0.931	0.578
Adjusted R <sup>2</sup>		0.919	0.574
χ <sup>2</sup> Hausman		37.617 (0.000)	
F-statistic		82.341	127.92
Prob(F-stat)		0.000	0.000
Durbin-Watson		2.03	1.34

Source: Researcher's Compilation (2021) \*\*\*sig @1%, \*\* sig @ 5% and \*sig @ 10%

### Impulse response functions

The impulse response functions capture the time profile of the effect of shocks at a given point in time on the expected future values of variables in a dynamic system [32].

In Fig. 1, it is observed that SP responds to positive innovations in earnings surprise. Though SP appears to respond positive in the immediate period to earnings surprise, the dynamic path eventually becomes explosive as no convergence is observed. Hence, the initial positive response of SP to one standard deviation increases in ESUR is far from dynamically stable (Table 7).

Note that the response of the independent variables on SP is constrained to zero in the first period. The entire study period is decomposed into 10 horizons. As observed, BVPS and EPS still account for a higher proportion of changes in SP, which seems to validate the

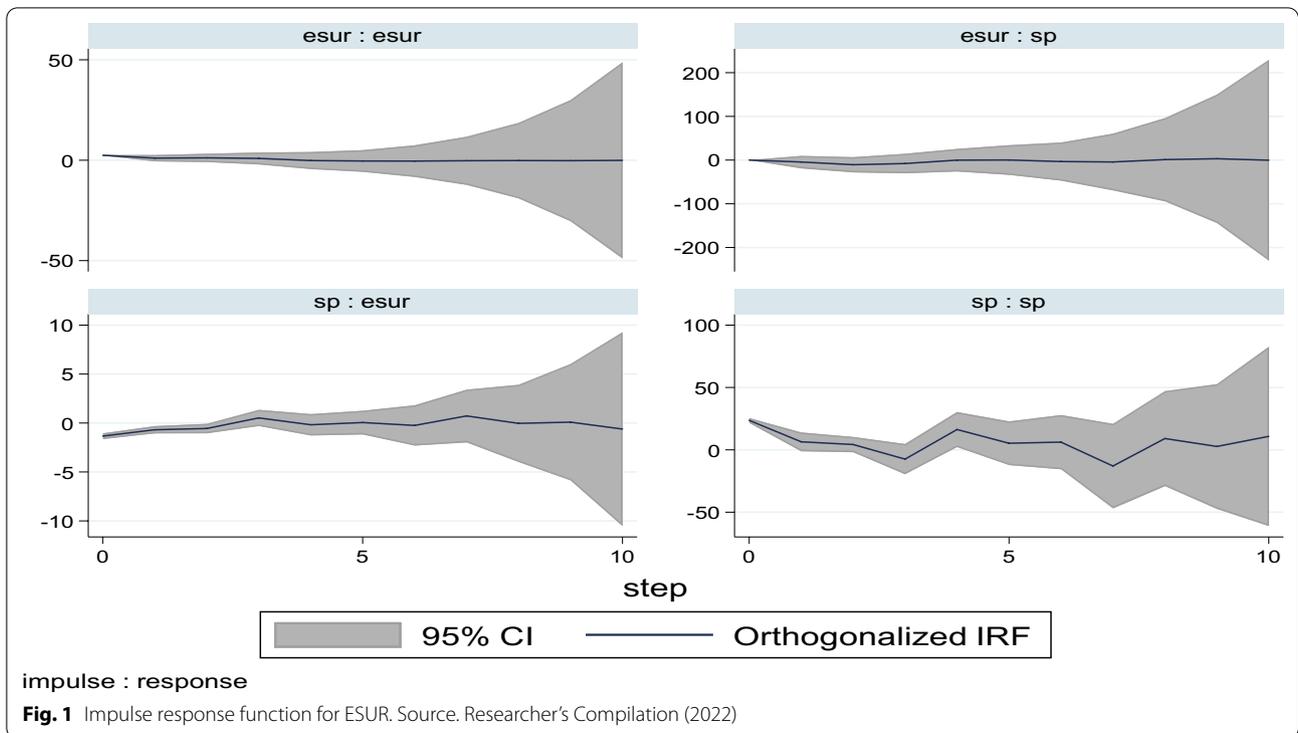
original Ohlson model, which places emphasis on both variables. Specifically, BVPS accounts for 53% of forecast variance in SP in the 2nd period and then to 49.8% in the 3rd period and then moving to 37.1% in the 6th period and the final at 39% at the end of the horizon. EPS also shows a relatively strong effect on SP changes over the period moving from 35.5% in the 4th period to 37.9% in the 7th period and then final at 38.3% at the end of the horizon. ESUR does fairly well accounting for an average of about 16% of fluctuations in SP.

### Discussion of result and implication of findings

The relationship between ESUR and SP is presented in Table 4 with the bottom line metrics of BVPS and EPS controlled for, and as observed, the model of coefficients reveals that ESUR has a negative (-94.9033) effect on SP which though is not statistically significant at 5% ( $p=0.320$ ). The non-significance of the results could be occasioned by the low level of earnings surprise as indicated by the mean of ESUR which implies minimal dispersion between actual earnings and forecasted earnings for the sample of companies used over time period. BVPS displays a positive coefficient (0.0008) though not significant at 5% (0.247), while EPS has a positive effect on SP but also not significant (92.99,  $p=0.3709$ ).

In Table 5, the estimation incorporates the interaction of ESUR with the bottom line metrics of BVPS and EPS. The analysis of coefficients reveals that ESUR still maintained a negative (-76.17) effect on the SP which though is not statistically significant at 5% ( $p=0.3519$ ). In Table 6, the robust ESUR and share price regression result is presented and the analysis of coefficients reveals that ESUR still maintained a negative (-68.67) effect on the SP and still is statistically insignificant at 5% ( $p=0.3259$ ). The impulse response function in Fig. 1 also appears to support the fixed effects regressions as SP tends to be less responsive to one standard deviation increases in ESUR, and the short-run dynamics evolves quite similarly into the long-run relationship. Therefore, the study accepts the null hypothesis that earnings surprises have no significant impact on share prices.

The finding is in tandem with Ioannidis [19] which revealed that negative earnings surprises have a high impact on stock returns of young companies than positive earnings surprise and it tends to reduce as the firm ages. Also, Kothari et al. [20] which revealed that there is no relationship between returns and past earnings, suggesting that prices neither underreact nor overreact to aggregate earnings surprise news. The result is also in tandem with the study of Ekpe et al. [12] which revealed that earnings surprise had a negative impact on share price, though the study is in contrast with Lim [22] which revealed that earnings surprise is significantly correlated



**Table 7** Panel variance decomposition

Impulse variable SP	Forecast horizon	ESUR	BVPS
	0	0	0
	1	0	0
	2	0.310	0.530
	3	0.174	0.498
	4	0.222	0.417
	5	0.169	0.395
	6	0.165	0.371
	7	0.168	0.408
	8	0.158	0.404
	9	0.150	0.404
	10	0.155	0.390

Impulse variable SP	Forecast horizon	EPS	FSIZE	CFO
	0	0	0	0
	1	1	0	0
	2	0.130	0.0022	0.130
	3	0.321	0.006	0.037
	4	0.355	0.010	0.055
	5	0.372	0.014	0.683
	6	0.3766	0.014	0.331
	7	0.379	0.0187	0.077
	8	0.381	0.0211	0.084
	9	0.383	0.025	0.093
	10	0.383	0.030	0.096

Source. Researcher's Compilation (2022)

with regards to volatility and overnight returns. Huang's [16] result indicates that positive earnings surprise tends to raise stock prices around announcement. Lyimo [23] revealed that earnings surprise had a significant negative impact on stock price synchronicity. Furthermore, our results are in contrast with DuCharme et al. [9] study, which revealed that abnormal stock returns had a positive impact on the three decomposed elements of earnings surprise. In the same vein, Zou and Chen [35] revealed that both positive earnings surprises and negative earnings surprises had significant impacts on subsequent returns.

The implication of the finding is that earnings surprise affects the information contents of earnings through its impact on shareholders' perception of the integrity of the financial reporting process. Therefore, the findings of this study have implications for investors, accounting standard setters, financial analyst and capital market regulators. Measuring the impact of earnings surprise goes a long way in allowing decision makers in the corporate world to evaluate the place of earnings surprise in enhancing shareholders' perception of the reliability of financial statements. The limitation of this study is that there are several measurements of earnings surprise. The use of other measurements of earnings surprise is likely to affect the result of the study.

### Conclusion and recommendations

The impact of earnings surprise on share price of firms is a topical issue in the field of accounting and finance. This is because investors tend to rely on the forecast of earnings made by financial analysts in determining whether or not to invest in firms. These earnings forecast sometimes either rises above actual earnings or falls below actual earnings, thus giving rise to earnings surprise. This study is suited in the Nigerian environment considering the fact that the Nigerian market is an inefficient one. The study contributes to both theory and practice by providing empirical evidence to the fact that apart from the magnitude of earnings, investors are also interested in the quality of earnings and earnings surprise tends to increase investors' decision-making process through share price changes.

The study recommends that there is the need to improve accounting information quality which will ensure timely and complete disclosure of earnings announcement which will in turn reduce information asymmetry and consequently lead to share price improvements. The study further recommends that the earnings surprise of non-financial firms should be subjected to periodic and random stress quality tests by the Securities and Exchange Commission (SEC). This will enable the SEC to assess the degree to which compliance

with regulations propels earnings surprise so as to take remedial action if necessary.

### Abbreviations

BVPS: Book value per share; EPS: Earnings per share; PVAR: Panel vector autoregressive; SP: Share price; ESUR: Earnings surprise; CFO: Cash flow from operations; FSIZE: Firm size; VIF: Variance inflation factor.

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### Author contributions

S.A.O. wrote the introduction, literature review, collected the data, carried out the analysis, wrote the discussion and implication of findings and as well as the conclusion and recommendations. E.L.D. supervision and proofreading of the manuscript. O.O.O. conceived and designed the analysis, supervision and proofreading of the manuscript. All authors read and approved the final manuscript.

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