Journal of Finance and Accounting Research (JFAR)
Volume 3 Issue 2, Fall 2021
ISSN:(P) 2617-2232 ISSN:(E) 2663-838X
Journal DOI: https://doi.org/10.32350/jfar
Issue DOI: https://doi.org/10.32350/jfar/0302
Homepage: https://ojs.umt.edu.pk/index.php/jfar

Article: **Sustainable Core Earnings & Stock Performance: An Evidence of the Pharmaceutical Sector of Pakistan**

Author(s): Rehan Yousaf, Shahid Ali

Affiliation: IM Sciences, Peshawar, Pakistan

Article DOI: https://doi.org/10.32350/jfar.0302.04

Article History:
Received: July 5, 2021
Revised: September 28, 2021
Accepted: November 18, 2021
Available Online: December 28, 2021

Citation: Yousaf, R., & Ali, S. (2021). Sustainable core earnings & stock performance: An evidence of the pharmaceutical sector of Pakistan. *Journal of Finance and Accounting Research*, *3*(2), 59–101.

Journal QR

Article QR

Rehan Yousaf

Indexing

A publication of the
Department of Banking and Finance, School of Business and Economics
University of Management and Technology, Lahore, Pakistan

Sustainable Core Earnings and Stock Performance: A Case Study of Pharmaceutical Firms of Pakistan

Rehan Yousaf* and Shahid Ali

IM Sciences, Peshawar, Pakistan

Abstract

This study furnishes a new measure of earnings quality that pertains to the sustainability of core-component and non-core components of earnings, measured through the profitability benchmarks of firms and industries. It also determines its impact on stock performance in the context of the pharmaceutical sector of Pakistan. The study identified twelve major determinants of sustainable earnings in the pharmaceutical firms of Pakistan. These were mainly classified into core and non-core earnings and sub-classified into the firms and industries' profitability benchmark and all three profitability measures (gross profit, operating profit and net profit). Based upon the core and non-core earnings components, the intensity of core earnings was measured and its impact on stock performance was analyzed. For this purpose, a balanced panel data of 09 pharmaceutical firms listed on the Pakistan Stock Exchange (PSX) for a period of 10 years, that is, 2010 to 2019, was used. The study employed two estimators. First, random effects model was used to find the determinants of sustainable earnings and its ability of sustainability and predictability. Second, dynamic GMM (Generalized Method of Moments) model was used to measure the impact of sustainable earnings on stock performance. The current study affirms that the earnings of pharmaceutical firms are sustainable. All twelve determinants of the sustainable earnings were significant. Furthermore, the intensity of core earnings was found to be a significant determinant of the profitability of firms. Conversely, industrial intensity of core earnings was found to be an insignificant determinant of firms' profitability. Lastly, the study did not find any significant impact of unexpected earnings on the stock performance of firms. Hence, this study is of vital interest to investors, auditors, analysts, educational institutes, and researchers since it introduces

*Corresponding Author: rehan.yosaf@gmail.com

a better approach to analyze the earnings quality of firms. It is also important for regulators for benchmarking.

Keywords: core earnings, intensity of core earnings, non-core earnings, pharmaceutical sector, sustainable earnings, stock performance

Introduction

Earnings quality is a strong indicator of stock performance. Therefore, it has a significant contribution towards investment decision-making (Dechow et al.,2010; Francis et al., 2008; Lev & Thiagarajan, 1993). There are many perspectives of measuring the earnings quality and they are mainly classified into two perspectives. From the measurement perspective, the earnings quality of a firm is measured by persistence and value-relevance (An, 2017). Whereas, the earning management perspective detects various transitory accounting techniques used in financial reporting that manipulate the earnings (Francis et al., 2008; Schilit & Perler, 2010).

Thus, the earnings quality can be deteriorated through various earning management techniques that largely affect earnings sustainability. Consequently, it has a significant impact on the stock returns of the company (Lev & Thiagarajan, 1993). Due to this striking impact on the stock performance, many researchers worked on the sustainability of earnings through various perspectives that are mainly accrual-based (Abarbanell & Bushee, 1997; Amir et al., 2013; An, 2017; Chan et al., 2001). However, (Amir et al. 2013; Agarwal et al. 2019) worked on extracting the core component of earnings out of total earnings. They purport that the core-component earnings have a stronger capability for measuring the sustainability and predictability of earnings as compared to other methods, especially, the accrual-based method. Before their work, no empirical study was available on extracting the core earnings component from total earnings and distinguishing the core & non-core earnings for predicting the future earnings to take investment decisions.

To date, most of the studies, which pertain to earnings sustainability and its impact on stocks performance, have been carried out in the US & European Market (Amir et al., 2013; Banz, 1981; Basu, 1983; Campbell & Shiller, 2001; Elliott, 2006; Fairfield et al., 1996; Fairfield & Yohn, 2001; Fama & French, 2000; Fama & MacBeth, 1973). There are some studies in

the Asian market as well (Agarwal et al., 2019; An, 2017; Jiang & Wang, 2008). However, no study is available that has evaluated the Pakistani market for the sustainability of earnings with a special focus on extracting the core component of earnings from total earnings and its impact on stock performance. In this purview, it is strongly felt that the same measure may also be applied in the Pakistani context. This is because, currently, there is a group of studies that point out the earnings quality issues in the context of Pakistan There is another group of researchers who say that the quality of earnings reporting (sustainable earnings) is well established Thus, there is no conclusive evidence that can validate the results of previous research. In this purview, this study has applied a new measure to extract the core component of earnings out of profit margins to measure the earnings quality in the context of Pakistan.

After the announcement of the National Drug Pricing Policy, 2018, by the Drug Regulatory Authority of Pakistan, the prices of drugs significantly escalated in the country. Those of the life-saving drugs (essential drugs) were particularly increased by 200 %. The motive behind the new pricing policy was to upgrade the previous level of the availability of essential drugs while addressing the pharmaceutical industry's concerns about the pricing mechanism (Saeed et al., 2020). The price hike prompted financial analysts to question the policy, asking why it has been made when the majority of low-income people are unable to bear its brunt. The price hike was attributed to the pharmaceutical industry's alarm of the mass closure of pharmaceutical companies because of the losses they suffered and mentioned in their financial statements, bringing them under the category of "hardship" as per the DRAP terminology (Junaidi, 2019). Under this scenario, there is a dire need to inquire into the earnings quality of the pharmaceutical firms operating in the country. Thus, this study shall determine the sustainability feature of their earnings quality.

Significance of the Study

Earning is undoubtedly the prime motive of corporate finance as it indicates a firm's financial performance. That is why the earnings of the firms are manipulated to forward positive reports to the market and create a favorable market sentiment. However, such manipulations may deteriorate the earnings quality and portray a wrong picture of the financial

performance of the firm. Thus, it is necessary to gauge the quality of earnings of a firm. The measure of earnings quality through extracting the core component of earnings from profit margins accords another aspect to gauging the quality of earnings. Thus, this measure indirectly detects the phenomenon of earning management in the financial reporting of the firm. As this measure has both cross-sectional and longitudinal constructs, it provides an in-depth insight into the earnings quality of the firm. Hence, the contribution of this study is manifold. The study adds a conceptual model and a new tool to the measuring of a firm's earnings quality. It fills the gap in the existing literature by studying the efficacy of a new tool to measure earnings quality as there is no agreement on a uniform measure of it. Thereby, it will be much easier for them to evaluate and value the firm (Dechow et al., 2010). This aspect is of interest to educational institutions and researchers. Lastly, it is also important for regulators, allowing them to establish benchmarks (An, 2017). Furthermore, as this study has been conducted on the pharmaceutical sector of Pakistan, it will provide important insight into the financial reporting of the companies operating in this sector, subsequently impacting their stock performance.

Literature Review

An extensive literature review reveals that there exist many variables that impact earnings sustainability from different perspectives. These variables mainly pertain to the earning management that may involve the use of certain accounting variables, other techniques or financial shams that may window dress the earnings. These may include accruals, wrong classification of revenue streams, selling a part of a business to another company and purchasing the product from it at inflated/deflated price, inventory in-out techniques, stocks appreciation/depreciation, and other manipulations (Beneish, 1999; Schilit & Perler, 2010; Sloan, 1996; Wilson, 1987). Richardson et al. (2005) determined the association between accrual reliability and earnings persistence and their impact on stock performance. Elliott (2006) reported the reliability of pro-forma earnings for determining the financial performance of the firm. Ohlson (2006) found out through his exploratory study that in the measurement of earnings, the income statement approach is relatively more reliable than the balance sheet approach. Jiang and Wang (2008) analyzed the Chinese market and found out that earnings

that are based on delisting requirements have specification issues. Dechow et al. (2010) reviewed the past literature and pointed out that the earnings quality determinants are context-dependent, however, it is a function of a firm's fundamental performance. The matter has remained of high importance among researchers because of its significant impact on the firms' stock performance(Nissim, 2021).

To cater to the above-stated issue, many researchers classified the earnings of the firms to better understand their financial positions(Agarwal et al., 2019; Amir et al., 2013; Bearden, 2019; Chan et al., 2001; Choi, 2018; Dechow et al., 2010; Francis et al., 2008; Ghosh et al., 2005; Islam, et al.,2011; Kothari et al., 2005; López et al., 2007; Ohlson, 2006; Penman & Zhang, 2003; Richardson et al., 2005; Schilit & Perler, 2010). Lipe (1986) classified the income into six components namely gross profits, general and administrative expense, depreciation expense, interest expense, income taxes, and other items. Kormendi and Lipe (1987)reported that there was a part of unexpected earnings in the total earnings of the firms. However, unexpected earnings do not have a significant impact on stock performance. Beneish (1999) moved a step ahead and proposed incentives and penalties for the firms that overstate their earnings. Chan et al. (2001) coined the term "earnings quality" for a better understanding of the earnings of the firm. They clarified that the earnings manipulations as accruals deteriorate the earning quality. In furtherance to this, Ames, et al. (2014) documented that the non-sustainable earnings largely deteriorate the earnings quality. These issues arise due to reporting manipulations, transient use of different accounting principles and techniques depending upon the market condition, and by using one-time events that ultimately impact the sustainability of earnings.

Keeping in view the importance of sustainable earnings, many researchers highlighted components of sustainable earnings (Agarwal et al., 2019; Amir et al., 2013; Francis et al., 2008). Francis et al. (2008) classified earnings quality as innate and discretionary based on innate and reporting sources. Innate source of earning quality refers to the business model, its operating environment, and risks. Whereas, the reporting sources are composed of management decisions, information systems that support the financial system, auditing (internal & external), government structure, and

regulatory/standards (accounting, auditing & reporting) compliance. These researchers devised a model in which the total earnings of a firm is estimated through its size, the standard deviation of its cash flows from operations, and of its sales, log of its operating cycle, and a period in which it reported negative earnings. However, in this model, the core income is not extracted from the total income.

Amir et al. (2013) addressed this issue and differentiated the earnings as core earnings: the sustainable part of earnings that is obvious by means of deriving income through operations and non-core earnings: the non-sustainable part of earnings that is based on non-business activities. They further coined the term intensity of core earnings (ICE) to determine a firm's earnings sustainability by comparing it with its profitability of the last four years as well as with industry benchmark. The measure of ICE is derived from an assumption that revenue and expenses are proportionate to one another. However, these are disproportionately influenced by internal and external shocks.

There are two main approaches to the methodology through which the construct (ICE) is strengthened. First, the vertical approach (also called the time-series approach) in which the average profit margin of the last four years is taken to calculate the profit of the current year. The basic assumption behind this approach is that the profit margin reverts to its average. Thus, through this analysis, the accurate profits of the firms can be obtained. The second approach is the horizontal approach (also called the cross-sectional approach) in which the profit margin of the company is compared with the industry. This approach holds the assumption that the industry profit margin is the unbiased measure of the profit margin of the firm (Fairfield et al., 2009). Similar work is also carried out by Agarwal et al. (2019). However, the work of Amir et al. (2013) is on the US market while Agarwal et al. (2019) focused on the Indian industry. In this purview, it is felt that the same measure may also be applied in the Pakistani context. This is because, currently, there is a group of studies that point out the earnings quality issues in the context of Pakistan While, there is another group of researchers who say that the quality of earnings reporting (sustainable earnings) is well established Thus, there is no conclusive evidence found in this regard to validate the results of previous research. In

this purview, this study shall apply a new measure that extracts the core component of earnings out of profit margins to measure the earnings quality in the context of Pakistan.

After the announcement of the National Drug Pricing Policy 2018, the prices of drugs, especially of life saving, were significantly increased in Pakistan. The motive behind this new pricing policy was to ensure the enhanced availability of essential drugs while addressing the concerns of the pharmaceutical industry on the pricing mechanism (Saeed et al., 2020). The major reason behind the price increase was reported to be a warning from the pharmaceutical industry that hinted at mass closure of the pharmaceutical manufacturing companies due to the losses reported in their financial statements that came under the category of "Hardship" as per the terminology of the DRAP (Junaidi, 2019). Under this scenario, a compelling need arises to inquire about the earnings quality of the pharmaceutical firms operating in the country. Thus, this study will determine the sustainability feature of the earnings quality in the firms operating in the pharmaceutical sector of Pakistan.

Research Gap

In the light of the above-given literature review, the study identifies the following research gaps:

i. Despite being a significant market in the world, s no study has been conducted in Pakistan to t find out determinants of sustainable earnings of firms.
ii. The market of Pakistan has not so far been analyzed for core earnings (CE) & non-core earnings (NCE).
iii. The earnings sustainability of the firms operating in the same industry through vertical (time series) and horizontal (cross-sectional) analysis has not been determined in the context of Pakistan. Furthermore, the panel data approach has not been adapted in any study in the context of Pakistan.
iv. The impact of sustainable earnings on the stock performance in the context of Pakistan has not so far been analyzed.

To cover the above-stated research gaps, this study determines determinants of sustainable earnings in the context of the pharmaceutical

sector of Pakistan. This study further investigates the CE & NCE of firms' earnings and their sustainability through vertical (time series) and horizontal (cross-sectional) and panel data analysis in the context of the pharmaceutical sector of Pakistan. Finally, this study examines the impact of sustainable CEon the stock performance of the firms operating in the context of the pharmaceutical sector of Pakistan.

Research Objectives

Based on the research gaps, the following are the objectives of this paper:

i. To examine various determinants of sustainable earnings of firms operating in the context of the pharmaceutical sector of Pakistan.
ii. To check the core &non-core components of earnings, their sustainability and check which component is superior in the context of the pharmaceutical sector of Pakistan.
iii. To investigate the impact of sustainable earnings on stock performance in the context of the pharmaceutical sector of Pakistan.

Research Hypotheses

In the light of the research objectives, the following are the hypotheses of the study:

H_1: There are no significant determinants of sustainable earnings in the context of the pharmaceutical sector of Pakistan.

H_{1a}: Gross profit of the firm is not a significant determinant of sustainable earnings.
H_{1b}: Operating profit of the firm is not a significant determinant of sustainable earnings.
H_{1c}: Net profit of the firm is not a significant determinant of sustainable earnings.
H_{1d}: Intensity of core earnings of the firm based on gross profit is not a significant determinant of sustainable earnings.
H_{1e}: Intensity of non-core earnings of the firm based on gross profit is not a significant determinant of sustainable earnings.
H_{1f}: Intensity of core earnings of the firm based on operating profit is not a significant determinant of sustainable earnings

H_{1g}: Intensity of non-core earnings of the firm based on operating profit is not a significant determinant of sustainable earnings

H_{1h}: Intensity of core earnings of the firm based on net profit is not a significant determinant of sustainable earnings

H_{1i}: Intensity of non-core Earnings of the firm based on net profit is not a significant determinant of sustainable earnings

H_{1j}: Intensity of core earnings of the industry based on gross profit is not a significant determinant of sustainable earnings

H_{1k}: Intensity of non-core earnings of the industry based on gross profit is not a significant determinant of sustainable earnings

H_{1l}: Intensity of core earnings of the industry based on operating profit is not a significant determinant of sustainable earnings

H_{1m}: Intensity of non-core earnings of the industry based on operating profit is not a significant determinant of sustainable earnings

H_{1n}: Intensity of core earnings of the industry based on net profit is not a significant determinant of sustainable earnings

H_{1o}: Intensity of non-core earnings of the industry based on net ross profit is not a significant determinant of sustainable earnings

H_2: Sustainable earnings have no significant impact on stock performance in the context of the pharmaceutical sector of Pakistan.

H_{2a}: Intensity of core earnings of the firm based on gross profit has no significant impact on abnormal returns

H_{2b}: Intensity of core earnings of the firm based on operating profit has no significant impact on abnormal returns

H_{2c}: Intensity of core earnings of the firm based on net profit has no significant impact on abnormal returns

H_{2d}: Intensity of core earnings of the industry based on gross profit has no significant impact on abnormal returns

H_{2e}: Intensity of core earnings of the industry based on operating profit has no significant impact on abnormal returns

H_{2f}: Intensity of core earnings of the industry based on net profit has no significant impact on abnormal returns

Research Model

This study segregates earnings of the firm into two distinct parts, one, the core earnings, and, other, the non-core earnings. The core earnings are the earnings derived by the firm while operating in the industry it belongs to. Therefore, a major contributor toward the core earnings is the sales of the company. On the contrary, the contributor toNCE is other than sales. This may be other income or any factor of earning management that may involve the use of certain accounting variables or other techniques or financial shams that may window dress the earnings (Schilit & Perler, 2010; Wilson, 1987). If the CE is extracted from the profit margins and their sustainability is determined, it would better reflect the financial position of the firm. This measure is referred to by Amir et al. (2013) as the intensity of core earnings (ICE). ICE holds the assumption that the revenues and expenses are related to each other in proportion, however, these are differently affected by the economic shocks, transitory accounting, and manipulations (Agarwal et al., 2019; Amir et al., 2013). Any deviation from the CE can be detected through ICE. Thus, ICE is an excellent surrogate for earning quality, earning persistence, and earning management proxies.

This paper has adopted the methodology of Amir et al. (2013) in the context of Pakistan. However, the methodology is modified according to the scenario and data constraints. There are two main approaches to the methodology of (Amir et al., (2013). First, the vertical approach (also called the time-series approach) in which the average of the profit margin of the last four years is taken to calculate the profit of the current year. The basic assumption behind this approach is that the profit margin reverts to its average. Thus, through this analysis, accurate profits of the firms can be obtained. The second approach is the horizontal approach (also called the cross-sectional approach) in which the profit margin of the company is compared with the industry. This approach holds the assumption that the industry profit margin is the unbiased measure of the profit margin of the firmUsing the given methodology, the core earnings are calculated as follows:

Core earnings = Profit Margin x Sales

Mathematically,

$CE_{it} = \left(\frac{PM_{it-4}+PM_{it-3}+PM_{it-2}+PM_{it-1}}{4}\right) \times Sales_{it}$

Where,PM (Profit Margin) may be: Gross Profit/Sales, Operating Profit/Sales, and Net Profit/Sales.

Non-core earnings (NCE) are estimated as follows:

NCE= Actual Profit – CE

Where, Profit may be: Gross Profit, Operating Profit, and Net Profit.

Vertical Approach (firm-specific)

In a vertical approach, the CE is the average of the profit margin of the firm for the last four years that is taken to calculate the profit of the current year. Mathematically,

$F[CE_{it}] = \left(\frac{F[PM_{it-4}]+F[PM_{it-3}]+F[PM_{it-2}]+F[PM_{it-1}]}{4}\right) \times F[Sales_{it}]$

Where,

$F[CE_{it}]$ =CE of a firm i for time t.
$F[PM_{it}]$= Profit Margin of firm i at time t[GP/Sales, OP/Sales & NP/Sales].

After calculating the CE of the firm i at time t, its non-core earnings are calculated by simply subtracting core earnings from actual profits (GP, OP & NP).

$F[NCE_{it}] = P - F[CE_{it}]$.

Where,
P= Profits [Gross Profit, Operating Profit & Net Profit].

Horizontal Approach (Industry specific)

In a horizontal approach, the CE of the industry is calculated through the industry profit margin. The ratio obtained is thenused to calculate the profit of firm i at time t for the current year. Mathematically,

$I[CE_{it}] = \left[\frac{\sum_{k\in I(i)} P_{kt}}{\sum_{k\in I(i)} Sales_{kt}}\right] \times Sales_{it}$

Where,

P_{kt}= Sum of profit of kfirms operating in the industry at time t.

P [GP, OP & NP]

$Sales_{kt}$= Sum of sales of k firms operating in the industry at time t.
$Sales_{it}$= Sales of firm i at time t.
$I_{(i)}$= Total number of firms in the industry of firm i.

After calculating the core earnings of the firm i at time t through industry benchmark, its non-core earnings are calculated by simply subtracting core earnings from actual profits (GP, OP & NP).

$I[NCE_{it}] = P - I[CE_{it}]$.

Where,

P= Profits [Gross Profit, Operating Profit & Net Profit].

Sustainable Earnings

After the formulation of the model for determining CE & NCE of the firm(s), the next step is to check their sustainability. The deviation of the profits (GP, OP & NP) will help in extracting sustainable earnings. In this purview, the following models are constructed:

$$P_{it} = \propto_{0i} + \propto_{1i} P_{it-1} + \propto_{2i} CV(P)_{it} + \propto_{3i} BM_{it+} + \propto_{4i} MV_{it} \quad (1)$$

Where,

P_{it}= Profit of firm i at time t [Gross Profit, Operating Profit & Net Profit]

P_{it-1}= First lag of profit of firm i at time t [GP, OP & NP]

$CV(P)_{it}$= Coefficient of variation of profit of firm i at time t.

$$CV(P)_{it} = \frac{Mean\ of\ P_{it}}{SD\ of\ P_{it}}$$

BM_{it}= Book to market ratio of firm i at time t.

$$BM_{it} = \frac{Book\ Value\ of\ Equity\ at\ year\ end}{Market\ Value\ of\ Equity\ at\ year\ end}.$$

Book value of equity = Total assets – Total liabilities
Market value of equity = Average stock price x total outstanding share

Average Stock
Price = Average of the daily stock price for the year.

MV_{it}= Market value of common equity at year-end for firm i at year t.

The three variables namely: Coefficient of variable (CV), book-to-market value (BM), and market value (MV) are included in the model to avoid the misspecification error.

The above process is repeated for the CE as well as NCE for firm-specific and industry-specific estimators. Following are the constructed equations for core earnings:

$$F[CE]_{it} = \propto_{0i} + \propto_{1i} F[CE]_{it-1} + \propto_{2i} CV(P)_{it} + \propto_{3i} BM_{it+} + \propto_{4i} MV_{it} \quad (2)$$

$$I[CE]_{it} = \propto_{0i} + \propto_{1i} I[CE]_{it-1} + \propto_{2i} CV(P)_{it} + \propto_{3i} BM_{it+} + \propto_{4i} MV_{it} \quad (3)$$

Similarly, for NCE following equations are constructed:

$$F[NCE]_{it} = \propto_{0i} + \propto_{1i} F[NCE]_{it-1} + \propto_{2i} CV(P)_{it} + \propto_{3i} BM_{it+} + \propto_{4i} MV_{it} \quad (4)$$

$$I[NCE]_{it} = \propto_{0i} + \propto_{1i} I[NCE]_{it-1} + \propto_{2i} CV(P)_{it} + \propto_{3i} BM_{it+} + \propto_{4i} MV_{it} \quad (5)$$

The sustainability of the earnings in the above-stated equations is measured through coefficient $\propto_{1i}$. Nevertheless, it is anticipated that the coefficient for the core earnings shall be greater than the coefficient for the non-core earnings.

Intensity of Core Earnings (ICE)

The measure of the intensity of core earnings is formulated based on core and non-core earnings estimators.

$$\text{ICE} = \frac{Absolute\ Value\ of\ Core\ Earnings\ (CE)}{Absolute\ value\ of\ Core\ (CE)\ \&\ Non-Core\ Earnings\ (NCE)}$$

The ICE measure is simple, yet, a strong predictor for measuring earning quality (Amir et al., 2013). The measure of ICE for the firm shall be as follows:

$$F[ICE]_{it} = \frac{|F[CE_{it}]|}{|F[CE_{it}]| + |F[NCE_{it}]|}$$

The absolute terms are taken because the measure includes the deviation from actual profit margin (GP, OP & NP) that may be positive or negative.

Where,

$F[ICE]_{it}$ = Intensity of core earnings for the firm i at time t.

Similarly, ICE based upon industry benchmark is as follows:

$$I[ICE]_{it} = \frac{|I[CE_{it}]|}{|I[CE_{it}]|+|I[NCE_{it}]|}$$

Where,

$I[ICE]_{it}$ = Intensity of core earnings for the firm i at time t based upon industry benchmark.

Earning Sustainability and Intensity of Core Earnings (ICE)

In the light of the above-given construct of the Intensity of Core Earnings (ICE),a model is constructed for measuring the earnings sustainability of the firm as proposed byAmir et al. (2013).

$$P_{it} = \beta_{0i} + \beta_{1i}F[CE]_{i,t-1} + \beta_{2i}F[NCE]_{it-1} + \beta_{3i}CV(P)_{it} + \beta_{4i}BM_{it+} + \beta_{5i}MV_{it} + \varepsilon_{it} \quad (6)$$

The description of variables can be seen in the description of variables in equation 1.

Similarly, a model for industry-specific earning sustainability is as follows:

$$P_{it} = \beta_{0i} + \beta_{1i}I[CE]_{i,t-1} + \beta_{2i}I[NCE]_{it-1} + \beta_{3i}CV(P)_{it} + \beta_{4i}BM_{it+} + \beta_{5i}MV_{it} + \varepsilon_{it} \quad (7)$$

Now, the model for estimating the efficacy of ICE in the predictability of the income is constructed as follows:

$$P_{it} = \beta_{0i} + \beta_{1i}DVF_{i,t-1} + \beta_{2i}P_{it-1} + \beta_{3i}DVF_{i,t-1}P_{it-1} + \beta_{4i}CV(P)_{it} + \propto_{5i} BM_{it+} + \beta_{6i}MV_{it} + \varepsilon_{it} \quad (8)$$

Where,

$DVF_{i,t-1}$= Dummy variable for a firm, assuming a value of 1 if firm-pecific ICE is greater than the median at time t-1 otherwise 0.

The description of other variables can be seen in the description of variables in equation 1.

Similarly, a model for industry-specific ICE is as follows:

$$P_{it} = \beta_{0i} + \beta_{1i}DVI_{i,t-1} + \beta_{2i}P_{it-1} + \beta_{3i}DVI_{i,t-1}P_{it-1} + \beta_{4i}CV(P)_{it} + \propto_{5i} BM_{it+} + \beta_{6i}MV_{it} + \varepsilon_{it} \quad (9)$$

Where,

$DVI_{i,t-1}$ = Dummy variable for Industry, assuming a value of 1 if industry-specific ICE is greater than the median at time t-1 otherwise 0.

Intensity of Core Earnings (ICE) and Stock Performance

Amir et al. (2013) attributed ICE with two earning quality properties i.e. sustainability and predictability. Thus, ICE can be a good predictor of stock performance. In the light of the above, they give the following model for firm-specific intensity of core earnings (F[ICE]) and industry-specific intensity core earnings (I[ICE]):

$$AR(SW)_{it} = \delta_{0i} + \delta_{1i}D_{i,t} + \delta_{2i}FE_{it} + \delta_{3i}D_{i,t} \times FE_{it} + \eta_{it}$$

Where,

$AR(SW)_{it}$= 3-day excess buy and hold stock return around firm i's preliminary announcement date.

$D_{i,t}$= Dummy variable for ICE for Firm & Industry, assuming a value of 1 if the firms' ICE is above the median in period t.

FE_{it}= Analyst forecast error (unexpected earnings)

$D_{i,t} \times FE_{it}$= Association between ICE and forecast error (unexpected earnings)

However, in the context of Pakistan, no data is available for 3-day excess to buy and hold stock return and analyst forecast. Therefore, alternate proxies for these variables are needed to be substituted. So, keeping in view the constraints, the substitute for these two variables is suggested by Agarwal et al. (2019)due to similar issues they faced in the Indian market. Thus, the proxies for AR(SW) and FE are adapted that are suggested by them. Following proxies are usedinstead:

$AR(SW)_{it}$= 3months after the financial year-end (Agarwal et al., 2019; Ball, 1978; Ghosh et al., 2005). Thus, the returns of the securities are compared with the returns of the PSE 100 Index.

FE_{it}=Model of Penman and Zhang (2003) for calculating forecasted earnings is adapted.

Thus,

$$FE_{it} = OP_1 = OP_0 + RNOA_0 \times \Delta NOA_o$$

Where,

OP_1= Operating profit at year end (forecasted)
OP_0= Operating income of last year (actual)
$RNOA_0$= Return on net operating assets (previous year)

Where,

$RNOA_0$= NOPAT / NOA
ΔNOA_0=Change in net operating assets (actual).

Where,

NOA=Equity– Financial assets +Financial liabilities.

Where,

Financial Assets =Cash + Short-term investments (equity + bonds) + Accounts receivable
Financial Liabilities= Accounts payable + Loans (Short & long term)

Thus, keeping in view the above modifications, the modified models for F[ICE] & I[ICE] are given below in equations 8 & 9:-

$$AR(SW)_{it} = \delta_{0i} + \delta_{1i}DVF_{i,t} + \delta_{2i}FE_{it} + \delta_{3i}DVF[ICE]P_{i,t} \times FE_{it} + \varepsilon_{it} \quad (10)$$

$$AR(SW)_{it} = \delta_{0i} + \delta_{1i}DVI_{i,t} + \delta_{2i}FE_{it} + \delta_{3i}DVI[ICE]P_{i,t} \times FE_{it} + \varepsilon_{it} \quad (11)$$

Here, the value of δ_3 explains the impact of unexpected earnings (deviation of actual earnings from expected earnings) on the stock performance (abnormal returns).

Research Design

Data Sources, Sample Population, and the Analysis Period

Keeping in view the significance of the Pakistani economy and the fact that no empirical research has been carried out in its perspective, this study has been conducted in the context of Pakistan. However, as this is an initial step, the focus of the study has been restricted to the pharmaceutical sector of Pakistan. Later on, its scope shall be extended to the country's entire financial sector. As per the Finance Bill (2020) the pharmaceutical sector of Pakistan is its 4th largest sector that registered PKR 423 billion in FY 2020In all, 650 companies are operating in the sector(PACRA, 2020). However, only 12 of them are enlisted with the Pakistan Stock Exchange, having a cumulative market share of 33%. Nevertheless, only 9companies remained enlisted in the period of the study. Therefore, these 9 companies are analyzed for a period of 10 years i.e. 2011 to 2020. For the operationalization of variables, data is collected from 2007 to 2020 to accommodate their lags. The financial data of the companies is retrieved from the annual publication of the State Bank of Pakistan (SBP) namely "Financial Statement Analysis of Companies". A further probe is made through the retrieval of online annual financial reports available on the companies' websites. While the stocks price data is retrieved from historical data given on the Pakistan Stock Exchange website.

Formulation of Variables

The formulation of the variable, intensity of Core Earnings (ICE) has been borrowed from the research work of Amir et al. (2013). Table 1 provides the formulation of dependent variables:

Table 1

Formulation of Variables

	Variable	Symbol	Measurement
1	The Intensity of Core Earnings	ICE	$\frac{Absolute\ Value\ of\ Core\ Earnings\ (CE)}{Absolute\ value\ of\ Core\ (CE)\ \&\ Non-Core\ Earnings\ (NCE)}$ OR $\frac{\lvert CE_{it}\rvert}{\lvert CE_{it}\rvert + \lvert NCE_{it}\rvert}$

	Variable	Symbol	Measurement
2	Firm-Specific Intensity of Core Earnings	F[ICE]	$\frac{\lvert F[CE_{it}]\rvert}{\lvert F[CE_{it}]\rvert + \lvert F[NCE_{it}]\rvert}$
3	Industry-Specific Intensity of Core Earnings	I[ICE]	$\frac{\lvert I[CE_{it}]\rvert}{\lvert I[CE_{it}]\rvert + \lvert I[NCE_{it}]\rvert}$
4	None-Core Earning	NCE	Actual Earnings – Core Earnings (calculated)
5	Firm's Core Earning	F[CE]	$\left(\frac{F[PM_{it-4}] + F[PM_{it-3}] + F[PM_{it-2}] + F[PM_{it-1}]}{4}\right) \times F[Sales_{it}]$
6	Industry's Core Earning	I[CE]	$\left[\frac{\sum_{k\in I(i)} P_{kt}}{\sum_{k\in I(i)} Sales_{kt}}\right] \times Sales_{it}$
7	Book-to-Market Ratio	BM	$\frac{Book\ Value\ of\ Equity\ at\ year\ end}{Market\ Value\ of\ Equity\ at\ year\ end}$
8	Market Value of Common Equity	MV	Average Stock Price x Total outstanding share
9	3-day Excess Buy and Hold Stock Hold Return	AR(SW)	3 months after the financial year-end. The returns of the securities are compared with the returns of the KSE 100 Index for the same period.
10	Analyst Forecast Error	FE	$FE_{it} = OP_1 = OP_0 + RNOA_0 \times \Delta NOA_o$

Statistical Analysis

For the analysis of regression equations (panel data) 1 to 7, the Random Effects model is used. This is because there is an inherent issue of autocorrelation and heteroscedasticity in the predictor variables of the study that may render the normal regression model unreliable (Freeman et al., 1982; Gujrati et al.,2012; Kennedy, 2003). For the multicollinearity test, Pearson's correlation matrix is applied.

While considering equation 8 as dynamic and keeping in view the autocorrelation issue in the stock performance, Generalized Methods of Moments (GMM) is applied(Gujrati et al., 2012; Naveed, 2015). For finding the health of the instruments, the Sargan Test is employed.

Data Analysis and Results

Descriptive Statistics

Table 2 furnishes the results of the descriptive statistics of the variables of the study.

Table 2

Descriptive Statistics

Variable	Mean	Median	Minimum	Maximum	Std. Dev.
Firm GP	2998.9	2037.5	1.0000	10089.	2908.7
Firm OP	1326.2	624.00	-213.00	5852.0	1572.4
Firm NP	878.27	404.00	-200.00	4205.0	1120.1
BM	0.49858	0.33461	0.010036	1.7723	0.40570
MV	17069.	6247.0	140.00	93699.	23421.
F[CE]GP	3052.4	2038.0	91.000	11585.	3044.2
F[NCE]GP	-53.500	9.0000	-2823.0	1182.0	584.71
F[CE]OP	1359.6	633.50	-126.00	6834.0	1669.1
F[NCE]OP	-33.444	26.500	-3822.0	1512.0	695.93
F[CE]NP	900.44	377.50	-165.00	4797.0	1199.5
F[NCE]NP	-22.178	0.00000	-3173.0	1516.0	597.00
F[ICE]GP	0.87630	0.90028	0.45965	1.0000	0.11141
F[ICE]OP	0.70302	0.74359	0.041270	0.98861	0.21072
F]ICE]NP	0.66708	0.68415	0.016327	0.99449	0.23722
I[CE]GP	2998.9	1710.8	143.46	11376.	3111.2
I[NCE]GP	-0.023091	-35.538	-3306.5	3159.7	1001.9
I[CE]OP	1333.3	731.36	59.164	6148.2	1434.4
I[NCE]OP	-7.0582	-52.198	-1271.7	1688.7	609.66
I[CE]NP	878.29	467.66	31.871	4207.4	963.44
I[NCE]NP	-0.023875	-59.794	-1274.4	2091.7	568.90
I[ICE]GP	0.80648	0.82932	0.50072	0.99494	0.10984
I[ICE]OP	0.71968	0.72822	0.25284	0.99894	0.14933
I[ICE]NP	0.66570	0.65687	0.23331	0.98352	0.16648
FE	121.67	16.368	-2256.4	13263.	1501.7
AR(SW)	0.20965	-0.0051309	-0.93138	3.0580	0.77485

Diagnostic Tests

For checking the issue of multicollinearity among the independent variables of models1 to 9, the technique of Pearson's correlation matrix was applied. The risk of multicollinearity is a serious problem if it is more than ±0.8 among the predictor variables (Kennedy, 2003). However, the multicollinearity among the constructs of models1 to 09hasmulticollinearity of less than ±0.8. Therefore, there is no issue of multicollinearity in the models. Table 3 shows the multicollinearity among all variables.

Table 3

Pearson's Correlation Matrix

Panel 1					
BM	MV	CVGP	GPDF	GPDI	
1.0000	-0.4499	0.0163	-0.1818	-0.2090	BM
	1.0000	0.1737	0.6053	0.5915	MV
		1.0000	0.2607	0.2436	CVGP
			1.0000	0.5467	GPDF
				1.0000	GPDI
Panel 2					
BM	MV	CVGP	GPDF	GPDI	
1.0000	-0.4499	0.0163	-0.1818	-0.2090	BM
	1.0000	0.1737	0.6053	0.5915	MV
		1.0000	0.2607	0.2436	CVGP
			1.0000	0.5467	GPDF
				1.0000	GPDI
Panel 3					
BM	MV	CVOP	OPDF	OPDI	
1.0000	-0.4366	-0.1327	-0.2428	-0.2184	BM
	1.0000	0.4110	0.6937	0.6179	MV
		1.0000	0.6064	0.5102	CVOP
			1.0000	0.4879	OPDF
				1.0000	OPDI

5% critical value (two-tailed) = 0.2072 for n = 90

Models 10 & 11 have dynamic panel nature. Therefore, SarganTest is employed for checking the health of instruments. The instruments are considered healthy if the P-value of the Sargan Test comes above 0.2 Naveed2015). The results show that the P-value (J-Statistics) of all 6 models of equations 10 & 11 is above 0.2. Thus, the instruments in the models are healthy.

Analysis Results

The models illustrated in Equation 1 to 5 explain the status of Sustainable Earnings of the firms operating in the pharmaceutical sector of Pakistan. Equation 1 explains the sustainability of the Gross, Operating, and Net Profits of the firms. The analysis of Equation 1 reveals that the lag of Gross, Operating, and Net Profits have a significant impact on the Gross, Operating, and Net Profits respectively. This validates that the income (Gross Profit, Operating Profit, and Net Profit) of the pharmaceutical sector is sustainable. Further, this affirms that the lag of profits (GP, OP & NP) is a significant determinant of the current year's profitability. The results thus obtained are similar to the findings reported by (Amir et al. 2013;Agarwal et al.,2019). Table 4 shows the results.

Table 4

Analysis results of Equation 1

Panel 1.Dependent variable: Firm Gross Profit (GP)					
Independent Variable	*Coefficient*	*Std. Error*	*z*	*p-value*	
Const	1121.64	311.605	3.600	0.0003	***
FirmGP_L1	0.186093	0.0218167	8.530	<0.0001	***
BM	−7.90, .,,,,,N,B784	230.251	−0.03434	0.9726	
MV	0.0347447	0.00680967	5.102	<0.0001	***
CVGP	−33.7019	21.9066	−1.538	0.1239	
Within R-squared	0.722886				
Panel 2. Dependent variable: Firm Operating Profit (OP)					
Independent Variable	*Coefficient*	*Std. Error*	*z*	*p-value*	
Const	−110.122	131.239	−0.8391	0.4014	
FirmOP_L1	0.272145	0.0406503	6.695	<0.0001	***

CVOP	29.7043	21.6258	1.374	0.1696	
007ASBM	125.733	157.619	0.7977	0.4250	
MV	0.0324407	0.00478790	6.776	<0.0001	***
Within R-squared	0.659517				

Panel 3. Dependent variable: Firm Net Profit (NP)

Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	28.8519	104.170	0.2770	0.7818	
FirmNP_L1	0.381736	0.0627794	6.081	<0.0001	***
CVNP	13.5333	18.6885	0.7242	0.4690	
BM	9.76326	124.747	0.07826	0.9376	
MV	0.0201874	0.00394133	5.122	<0.0001	***
Within R-squared	0.630381				

After examining and affirming the sustainability of earnings of the firms operating in the pharmaceutical sector of Pakistan, this study focuses on its basic objectives. The pointwise objectives are discussed below.

Study Objective 1

To Examine Various Determinants of Sustainable Earnings of Firms Operating in the Context of the Pharmaceutical Sector of Pakistan. The analyses of Equations 2 to 5are undertaken to achieve this objective. The determinants of the sustainable earnings analyzed in the study are firm CE, firm NCE, industry CE, and industry NCE. All three aspects of profits (Gross Profit, Operating Profit, and Net Profit) are analyzed. Tables 5, 6, 7, 8 show the analyses results of the models shown in Equations 2 to 5 respectively.

The analyses reveal that there is a significant and sustainable portion of CEin the profits of the firms operating in the pharmaceutical sector of Pakistan. Table 5 explains the sustainability of firms' CE in all three measures of profitability. Therefore, firm CE is a significant determinant of profitability (Gross profit, Operating profit, and net profit) that has a strong predictability attribute. The decreasing trend in the value of coefficient $\propto_1$ (0.936 for GP, 0.896 for OP &0.864 for NP) reveals that there is a decrease in the persistence of the firm's core earnings as we go down the income statements. Thus, the future predictability of gross profits with the help of the core earnings determinant is stronger as compared to the predictability

of net profits. However, the significant value of the coefficient still makes the firm's core earnings a strong determinant of profitability measures.

Similarly, the Industry CE measures the profitability of the firms through the perspective of industry profitability. Table 6 shows the analysis detail of Equation 3 that measures the profitability of the firm from an industry perspective. The industry CE is also a strong determinant for measuring the profitability of the firm.

Table 5

Analysis Results of Equation 2

Panel 1.Dependent variable: $F[CE]^{GP}$					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	184.510	119.836	1.540	0.1236	
CV^{GP}	1.73268	13.8838	0.1248	0.9007	
BM	−27.2360	77.0702	−0.3534	0.7238	
MV	0.0174002	0.00974010	1.786	0.0740	*
$F[CE]^{GP\_1}$	0.936042	0.0923154	10.14	<0.0001	***
R-squared	0.865867				
Panel 2. Dependent variable: $F[CE]^{OP}$					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	−38.9626	24.0766	−1.618	0.1056	
CV^{OP}	33.0323	14.0366	2.353	0.0186	**
BM	0.513720	38.4064	0.01338	0.9893	
MV	0.0114647	0.00339873	3.373	0.0007	***
$F[CE]^{OP\_1}$	0.896467	0.0457501	19.59	<0.0001	***
R-squared	0.882615				
Panel 3. Dependent variable: $F[CE]^{NP}$					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	−47.5664	64.5154	−0.7373	0.4609	
CV^{NP}	27.2945	10.4011	2.624	0.0087	***
BM	10.5495	72.5500	0.1454	0.8844	
MV	0.00986813	0.00174454	5.657	<0.0001	***
$F[CE]^{NP\_1}$	0.864163	0.0398674	21.68	<0.0001	***
R-squared	0.888259				

*** denotes the significance at 1%.

As observed in the trend of the coefficient of Firm's CE, a similar decreasing trend (0.9456 for GP, 0.7889 for OP & 0.74245 for NP) is observed in the coefficient of industry CE. However, there is a more negative deviation in the industry-based CE. This reveals that firm-specific measures are a stronger predictor of profitability. This is mainly attributed to the product portfolio structure of the firms that are discussed in the third objective of the study in detail. However, the statistically significant (at 1%) figures of the coefficient affirm the industry core earnings as a strong predictor of profitability.

Table 6

Analysis Results of Equation 3

Panel 1.Dependent variable: $I[CE]^{GP}$					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	126.565	82.1049	1.542	0.1232	
CV^{GP}	−1.33237	14.7430	−0.09037	0.9280	
BM	31.7052	31.9292	0.9930	0.3207	
MV	0.0155030	0.00651352	2.380	0.0173	**
$I[CE]^{GP\_1}$	0.945624	0.0593790	15.93	<0.0001	***
R-squared	0.875215				
Panel 2. Dependent variable: $I[CE]^{OP}$					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	138.956	64.6436	2.150	0.0316	**
CV^{OP}	−22.2958	17.7678	−1.255	0.2095	
BM	−0.957500	46.4953	−0.02059	0.9836	
MV	0.0164671	0.00451368	3.648	0.0003	***
$I[CE]^{OP\_1}$	0.788934	0.0762690	10.34	<0.0001	***
R-squared	0.834176				
Panel 3.Dependent variable: $I[CE]^{NP}$					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	94.7120	46.9354	2.018	0.0436	**
CV^{NP}	−13.5937	18.7535	−0.7249	0.4685	
BM	17.6590	39.3543	0.4487	0.6536	
MV	0.0120605	0.00312658	3.857	0.0001	***
$I[CE]^{NP\_1}$	0.742511	0.0987500	7.519	<0.0001	***
R-squared	0.751887				

*** & ** denote the significance at 1% and 5% respectively.

Table 7 reveals the results of Equation 4 which deals with the non-core aspect of the firm's earnings. The analysis reveals that NCE is an insignificant predictor of gross profits. This reveals that most of the firms in the sector earn gross profit by carrying out the core business. The firms have not made unrelated product diversification or do concentric diversification (Rijamampianinaet al., 2003). However, the operating profits show a sustainable component of non-core earnings. The analysis of the financial reports of the firms reveals that they have opted for short and long term investments. The short-term investment includes investment in securities, using hedging in forex dealings etc. the long-term investments, in contrast, mainly include the investment in long-term bonds. However, transitory accounting is the least component of the financial reporting of the firms. The statistically significant value of the non-core component of the earnings of the firms in the operating and net profit measure makes the non-core earnings a strong determinant of operating and net profit. However, it is not a strong determinant of gross profit.

Table 7

Analysis Results of Equation 4

sPanel 1.Dependent variable: $F[NCE]^{GP}$					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	255.395	147.764	1.728	0.0839	*
CV^{GP}	−42.0406	21.1405	−1.989	0.0467	**
BM	−47.3987	110.892	−0.4274	0.6691	
MV	−0.00218420	0.00181592	−1.203	0.2291	
$F[NCE]^{GP\_1}$	0.322218	0.447926	0.7194	0.4719	
R-squared	0.251987				
Panel 2. Dependent variable: $F[NCE]^{OP}$					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	112.119	68.5539	1.635	0.1019	
CV^{OP}	−48.3813	16.2439	−2.978	0.0029	***
BM	−14.4501	61.6184	−0.2345	0.8146	
MV	0.000541718	0.00585198	0.09257	0.9262	
$F[NCE]^{OP\_1}$	0.813301	0.276862	2.938	0.0033	***
R-squared	0.542568				

Panel 3. Dependent variable: $F[NCE]^{NP}$					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	105.103	69.1404	1.520	0.1285	
CV^{NP}	−27.6992	15.3934	−1.799	0.0720	*
BM	−64.0561	57.3838	−1.116	0.2643	
MV	−0.00175100	0.00557676	−0.3140	0.7535	
$F[NCE]^{NP\_1}$	0.778395	0.180171	4.320	<0.0001	***
R-squared	0.452477				

***,** & * denotes the significance at 1%, 5% & 10% respectively.

Like the results of Industry CEs, the Industry NCEs also show significant results for all three profit measures. The value of the coefficient of the non-core earnings (0.9443 for GP, 0.845 for OP, and 0.835 for NP) reveal that there is a decreasing trend in the predictability of profitability as we move down the income statement. The significant industry non-core earnings show the fact that the industry is following the same trend in cross-section in terms of earnings from other sources.

Table 8

Analysis Results of Equation 5

Panel 1. Dependent variable: $I[NCE]^{GP}$					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	216.993	127.958	1.696	0.0899	*
CV^{GP}	−30.9328	17.1673	−1.802	0.0716	*
BM	−51.3809	87.3630	−0.5881	0.5564	
MV	−0.00085062	0.00213067	−0.3992	0.6897	
$I[NCE]^{GP\_1}$	0.944359	0.0879703	10.73	<0.0001	***
R-squared	0.279395				
Panel 2.Dependent variable: $I[NCE]^{OP}$					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	−71.2920	63.5063	−1.123	0.2616	
CV^{OP}	17.1186	13.4024	1.277	0.2015	
BM	26.2416	45.2728	0.5796	0.5622	
MV	0.000472868	0.00197946	0.2389	0.8112	
$I[NCE]^{OP\_1}$	0.845128	0.0753446	11.22	<0.0001	***
R-squared	0.291447				

Panel 3.Dependent variable: $I[NCE]^{NP}$					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	−28.4829	79.5952	−0.3578	0.7205	
CV^{NP}	18.4470	13.3388	1.383	0.1667	
BM	−47.1686	66.5361	−0.7089	0.4784	
MV	−0.00028797	0.00267846	−0.1075	0.9144	
$I[NCE]^{NP_{-1}}$	0.835266	0.0581468	14.36	<0.0001	***
R-squared	0.312373				

***, ** & * denotes the significance at 1%, 5% & 10% respectively.

The analysis of Equations 2 to 5 in this objective reveals that the firm's core earnings, industry's core and non-core earnings are the significant determinants of all measures of profitability. However, the firm's non-core earnings are the significant determinant of operating profit and net profit only.

Study Objective 2

To Check the Core & Non-Core Components of Earnings, their Sustainability, and Which Component is Superior in The Context of the Pharmaceutical Sector of Pakistan. For accomplishing study's objective 2, Equations 6 to 9are analyzed. The analysis results are shown in Tables 9 to 12. The analysis of Equation 6 reveals that there are core and non-core components of earnings in firms operating in the pharmaceutical sector of Pakistan. However, the firms' CEsare significant and superior as we go up in the income statement. The value of the coefficient of firm CEs (0.87 for GP, 0.714 for OP & 0.647 for NP) and NCEs (0.559 for GP, 0.353 for OP, and 0.27 for NP) shows that the core component of earnings is superior to non-core earnings. The findings of the study are similar to the findings of (Amir et al., 2013;Agarwal et al., 2019).

Table 9

Analysis Results of Equation 6

Panel 1. Dependent variable: FirmGP					
Independent Variable	*Coefficient*	*Std. Error*	*z*	*p-value*	
Const	407.774	227.612	1.792	0.0732	*
BM	−25.0650	96.0486	−0.2610	0.7941	

MV	0.0222202	0.00847223	2.623	0.0087	***
CV^{GP}	−28.7291	24.3632	−1.179	0.2383	
$F[CE]^{GP\_1}$	0.870430	0.0778576	11.18	<0.0001	***
$F[NCE]^{GP\_1}$	0.558687	0.402267	1.389	0.1649	
R-squared	0.745865				
Panel 2.Dependent variable: Firm OP					
Independent Variable	*Coefficient*	*Std. Error*	*z*	*p-value*	
Const	19.5172	59.1588	0.3299	0.7415	
BM	95.8185	36.0901	2.655	0.0079	***
MV	0.0255555	0.00850444	3.005	0.0027	***
CV^{OP}	18.4621	18.9525	0.9741	0.3300	
$F[CE]^{OP\_1}$	0.714191	0.144677	4.245	<0.0001	***
$F[NCE]^{OP\_1}$	0.352890	0.105001	3.673	0.0002	***
R-squared	0.736952				
Panel 3.Dependent variable: Firm NP					
Independent Variable	*Coefficient*	*Std. Error*	*z*	*p-value*	
Const	19.2630	71.8453	0.2681	0.7886	
CV^{NP}	21.5869	10.7264	2.013	0.0442	**
BM	24.9040	52.5644	0.4738	0.6357	
MV	0.0192449	0.00569404	3.380	0.0007	***
$F[CE]^{NP\_1}$	0.647000	0.121298	4.510	<0.0001	***
$F[NCE]^{NP\_1}$	0.269863	0.127873	3.766	0.0002	***
R-squared	0.629295				

***, ** & * denotes the significance at 1%, 5% & 10% respectively.

Table 10 shows interesting results of Equation 7 that reveal the generalized trend of the firms operating in the pharmaceutical sector of Pakistan. All six components of industry CEs and NCEs are found to be significant determinants of the firms. However, the coefficient of CE (0.87 for GP, 0.63 for OP & 0.60 for NP) is superior to coefficient of NCE (0.86 for GP, 0.60 for OP and 0.50 for NP). These results reveal that the main source of revenue generation in the pharmaceutical sector of Pakistan is coreearnings. Thereafter, the organizations also look upon some non-core sustainable earnings of the firms that, by the analysis of financial statements, come to be the investment in securities and long-term bonds. Thus, the component of transitory accounting is not much prevalent in the

context of the pharmaceutical sector of Pakistan. That is why, both the core and non-core components of earnings are significant and sustainable across the industry.This practice of firms in the developing pharmaceutical industry of Pakistan is in contradiction to the firms of the developed countries where certain transitory accounting and earning management techniques are much prevalent to window dress the earnings of the firms(Choi, 2018; Francis et al., 2008; Ghosh et al., 2005; Schilit & Perler, 2010). Thus, it can be established that accounting and financial ethical standards are observed in the pharmaceutical sector of Pakistan better than the firms of the developed countries. Furthermore, the financial reporting in this sector is more transparent and accurate as compared to the firms of the developed countries.

Table 10

Analysis Results of Euation 7

Panel 1. Dependent variable: FirmGP					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	372.321	214.835	1.733	0.0831	*
BM	5.70297	79.9010	0.07138	0.9431	
MV	0.0220742	0.00764614	2.887	0.0039	***
CV^{GP}	−24.5909	22.1309	−1.111	0.2665	
$I[CE]^{GP\_1}$	0.869177	0.0683593	12.71	<0.0001	***
$I[NCE]^{GP\_1}$	0.859451	0.107475	7.997	<0.0001	***
R-squared	0.725456				
Panel 2.Dependent variable: FirmOP					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	28.8765	88.2906	0.3271	0.7436	
BM	69.7127	44.7699	1.557	0.1194	
MV	0.0256059	0.00848923	3.016	0.0026	***
CV^{OP}	14.3205	19.7339	0.7257	0.4680	
$I[CE]^{OP\_1}$	0.631107	0.159739	3.951	<0.0001	***
$I[NCE]^{OP\_1}$	0.596843	0.141878	4.207	<0.0001	***
R-squared	0.683617				
Panel 3.Dependent variable: FirmNP					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	41.3003	96.3392	0.4287	0.6681	

CV^{NP}	21.2017	13.1406	1.613	0.1066	
BM	5.99704	66.6756	0.08994	0.9283	
MV	0.0198494	0.00564931	3.514	0.0004	***
$I[CE]^{NP\_1}$	0.607113	0.156273	3.373	0.0007	***
$I[NCE]^{NP\_1}$	0.504744	0.123325	4.904	<0.0001	***
R-squared	0.571949				

***, ** & * denotes the significance at 1%, 5% & 10% respectively.

Table 11 analyzes the firm intensity of core earnings as the determinant of sustainable earnings. The data shown in the table reveals that the firms' intensity of CE is a significant determinant for gross profit, operating profit and net profit. In contrast, Table 12, while showing the results of Equation 9, reveals that the industry intensity of CE is a significant determinant only for the gross profit while it is not a significant determinant for operating profit and net profit.

Table 11

Analysis Results of Equation 8

Panel 1. Dependent variable: Firm GP					
Independent Variable	*Coefficient*	*Std. Error*	*z*	*p-value*	
Const	741.400	361.062	2.053	0.0400	**
DFGP_L1	161.168	202.067	0.7976	0.4251	
FirmGP_L1	0.236544	0.0395081	5.987	<0.0001	***
GPDF	0.0209548	0.0103376	2.027	0.0427	**
CV^{GP}	−52.7424	21.7232	−2.428	0.0152	**
BM	−49.7820	154.952	−0.3213	0.7480	
MV	0.0271144	0.00671634	4.037	<0.0001	***
R-squared	0.726476				
Panel 2. Dependent variable: Firm OP					
Independent Variable	*Coefficient*	*Std. Error*	*z*	*p-value*	
Const	−88.1328	85.1672	−1.035	0.3008	
BM	96.8346	91.3892	1.060	0.2893	
MV	0.0275267	0.00485890	5.665	<0.0001	***
FirmOP_L1	0.281129	0.0589459	4.769	<0.0001	***
DFOP_L1	0.154477	181.550	0.0008509	0.9993	
CV^{OP}	4.43854	26.3565	0.1684	0.8663	
OPDF	0.0789029	0.0525488	1.323	0.0786	*

R-squared	0.714178				
Panel 3.Dependent variable: FirmNP					
Independent Variable	*Coefficient*	*Std. Error*	*z*	*p-value*	
Const	40.4330	107.751	0.3752	0.7075	
BM	19.4903	79.7131	0.2445	0.8068	
MV	0.0199882	0.00556402	3.592	0.0003	***
Firm NP_L1	0.330412	0.107675	3.069	0.0022	***
DFNP_L1	155.266	90.8159	1.710	0.0873	*
CV^{NP}	−31.3359	22.6964	−1.381	0.1674	
NPDF	0.146371	0.0314822	4.649	<0.0001	***
R-squared	0.710126				

***, ** & * denotes the significance at 1%, 5% & 10% respectively.

Table 12

Analysis Results of Equation 9

Panel 1.Dependent variable: Firm GP					
Independent Variable	*Coefficient*	*Std. Error*	*z*	*p-value*	
Const	806.890	405.535	1.990	0.0466	**
Firm GP_L1	0.246261	0.0600481	4.101	<0.0001	***
CV^{GP}	−48.8941	31.3965	−1.557	0.1194	
BM	11.1998	160.725	0.06968	0.9444	
MV	0.0308535	0.0112163	2.751	0.0059	***
DIGP_L1	9.07603	419.466	0.02164	0.9827	
GPDI	−0.0213402	0.00984434	−2.168	0.0302	**
R-squared	0.725840				
Panel 2.Dependent variable: Firm OP					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	−133.899	106.836	−1.253	0.2101	
BM	118.682	91.9971	1.290	0.1970	
MV	0.0315052	0.00924930	3.406	0.0007	***
Firm OP_L1	0.285195	0.0820637	3.475	0.0005	***
CVOP	30.4075	14.4443	2.105	0.0353	**
DIOP_L1	−38.9198	145.642	−0.2672	0.7893	
OPDI	−0.000988072	0.0845835	−0.01168	0.9907	
R-squared	0.696097				

Panel 3.Dependent variable: Firm NP					
Independent Variable	*Coefficient*	*Std. Error*	*Z*	*p-value*	
Const	−19.6901	69.5840	−0.2830	0.7772	
BM	1.42702	73.6142	0.01939	0.9845	
MV	0.0188119	0.00706452	2.663	0.0077	***
Firm NP_L1	0.488555	0.167737	2.913	0.0036	***
CVNP	14.9996	13.9176	1.078	0.2811	
DINP_L1	45.1930	50.4976	0.8950	0.3708	
NPDI	−0.128766	0.109189	−1.179	0.2383	
R-squared	0.71012				

The answer to the above-stated deviation lies in the product mix of the companies operating in the pharmaceutical sector of Pakistan. The pharmaceutical products are mainly categorized into essential and non-essential drugs (Hartog, 1993). As per the World Health Organization (WHO), the essential drugs:

"*are those that satisfy the priority health care needs of the population".*

Although the demand for essential medicines in the market is high, their pricing is set in a manner that is in access to the population. The pricing of these drugs may involve government subsidies, or, allow the companies to set a modest mark-up or low margins(Litvacket al.,1989).By dint of this, the essential drugs producing firms may have high associated costs, including the cost of goods sold & operating expenses making the net margins relatively less.

The pricing of the non-essential medicines, which are not included in the list of essential drugs, is relatively de-regulated. Therefore, the companies of these drugs may charge higher leading to high profits. The firms operating in the pharmaceutical sector have a different mix of essential and non-essential drugs in their product portfolio. This product mix is a contributing factor in the determination of the profit measure of the firms. Table 13 shows detail of the product production portfolio of the firms used in the study.

Table 13

Product Portfolio of Pharmaceutical Companies

Particulars	Essential Drugs	Non-Essential Drugs
Mean	36.25%	63.75%
Median	28%	72%
Maximum	82%	83%
Minimum	17%	18%
Std. Dev.	21.95%	21.95%
Observations	9	9

Source: Drug Regulatory Authority of Pakistan

The table shows that out of the total 9 firms in the study, one has a product mix of 17% essential drugs and 83%non-essential drugs. The average profit margins of the firm for the last 10 years is: GPM 42%, OPM 10.6%, and NPM 7%. On the contrary, the firm having a product mix of 82% essential medicines and 18% non-essential medicines has profit margins of 23.3% (GPM**)**, 3.6% (OPM), and 1% (NPM). The above description justifies deviation of the study results from the previously established researches of (Amir et al., 2013;Agarwal et al., 2019) respectively.

In a nutshell, the second objective of the study reveals that both the core & non-core components of the earnings of the firms operating in the pharmaceutical sector of Pakistan are sustainable. However, the core earnings are superior to the non-core earnings. Lastly, the measure of the intensity of firm core earnings (F[ICE]P) is a good predictor of gross profit & net profit measures of the firm. In contrast, the measure of the intensity of industry core earnings (I[ICE]P) is not a significant predictor of firm's profitability measures. This result is attributable to the different product portfolio mix of the Pakistani pharmaceutical firms.

Study Objective 3

To Investigate the Impact of Sustainable Earnings on Stock Performance in the Context of the Pharmaceutical Sector of Pakistan. To fulfill the third objective of the study, Equations 10 & 11are employed. The equations are constructed upon the reasoning of modus tollens. Therefore, an alternate to sustainable earnings namely abnormal profits that are denoted by FE (Forecast Error,) is introduced in the study. FE is measured by determining the difference between the calculated forecasted income (based upon the forecasting equation of operating earnings) and the actual earnings. Secondly, the stock returns of the firms under study are analyzed to find out the abnormal stock returns (AR(SW)) in the study period. Lastly, a model is constructed in which AR(SW) is the dependent variable that is supposed to be affected by the FE, being unexpected returns. If the results of the analysis depict that the unexpected returns affect the abnormal stock returns, the investment decision-making is affected by the abnormal returns. Thus, in addition to sustainable earnings, the investor also seeks unexpected profits and vice versa.

In light of the above, Table 14 explains the results of Equation 10 in which the unexpected earnings of the firm are hypothesized to impact the abnormal returns. The results of coefficient δ_3 that pertain to DVF[ICE]P x FEexplain the impact of the unexpected earnings on the abnormal returns. The results explain that unexpected earnings do not impact the abnormal returns. Thus, the investor's decision-making is based on the firms' sustainable earnings. Therefore, the firm's sustainable earnings have a significant impact on the stock performance.

Table 14

Analysis Results of Equation 10

Panel 1.Dependent Variable: AR(SW)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ARSW(-1)	0.255369	0.086965	2.936454	0.0045
$DVF[ICE]^{GP}$	-0.232464	0.313672	-0.741105	0.4612
FE	7.37E-05	0.000174	0.424385	0.6726
$DVF[ICE]^{GP}\times$ FE	-0.000204	0.000608	-0.335410	0.7383
J-statistic	7.343785	Prob(J-statistic)		0.296302

Panel 2. Dependent Variable: AR(SW)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ARSW(-1)	0.266147	0.105098	2.532372	0.0136
DVF[ICE]^{OP}	-0.221643	0.788919	-0.280946	0.7796
FE	8.35E-05	0.000634	0.131741	0.8956
DVF[ICE]^{OP}× FE	-0.000320	0.001469	-0.218156	0.8280
J-statistic	7.775981	Prob(J-statistic)		0.269022
Panel 3.Dependent Variable: AR(SW)				
ARSW(-1)	0.213972	0.144910	1.476588	0.1444
DVF[ICE]^{NP}	0.004071	0.204860	0.019874	0.9842
FE	0.000203	0.000328	0.618011	0.5386
DVF[ICE]^{NP} × FE	-0.000905	0.001485	-0.609421	0.5443
J-statistic	7.530321	Prob(J-statistic)		0.284091

Table 15 reveals the results of Equation 11 which deals with the unexpected earnings of the industry and its impact on the stock performance. Here, the results reveal that the industry's unexpected earnings, denoted by DVI[ICE]P x FE and the coefficient δ_3 in all three measures (GP, OP & NP), have no significant impact on the abnormal returns. Thus, sustainable industrial earnings are the true determinants of the stock performance of the firms operating in the pharmaceutical sector of Pakistan. The results of Equations 10 & 11 are supported by the findings of (Amir et al., 2013;Agarwal et al., 2019).

Table 15

Analysis Results of Equation 11

Panel 1. Dependent Variable: AR(SW)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ARSW(-1)	0.239128	0.238119	1.004238	0.3188
DVI[ICE]^{GP}	-1.194112	3.945914	-0.302620	0.7631
FE	-0.000550	0.001246	-0.441372	0.6603
DVI[ICE]^{GP} × FE	0.001026	0.001657	0.619341	0.5378
J-statistic	6.495898	Prob (J-statistic)		0.260909

Panel 2.Dependent Variable: AR(SW)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ARSW(-1)	0.346932	0.154540	2.244940	0.0280
DVI[ICE]^{OP}	0.265264	0.793014	0.334501	0.7390
FE	0.000186	0.000483	0.385334	0.7012
DVI[ICE]^{OP} ×FE	-0.001057	0.001387	-0.762232	0.4486
J-statistic	5.090584		Prob (J-statistic)	0.404926
Panel 3.Dependent Variable: AR(SW)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ARSW(-1)	0.235835	0.237382	0.993482	0.3240
DVI[ICE]^{NP}	0.225712	0.350747	0.643519	0.5221
FE	0.000502	0.000481	1.044096	0.3001
DVI[ICE]^{NP} × FE	-0.001614	0.001516	-1.065056	0.2906
J-statistic	4.998423		Prob (J-statistic)	0.416073

Conclusion

This study is an attempt to furnish a new measure of sustainable earnings, measured through profitability benchmarks of firms and industry. It also identified the impact of sustainable earnings on the stock performance in the context of the pharmaceutical sector of Pakistan. To achieve the research objectives, built on identified research gaps, the study analyzed 9 observation units (pharmaceutical companies enlisted with the Pakistan Stock Exchange) based on their balanced panel data. The reported period of analysis of the study is 10 years, that is, from 2010 to 2019. However, for the operationalization of variables, the data is collected for 14 years, that is, from 2007 to 2019. Based on the models, Random Effects Model (REM) has been used to determine the determinants of sustainable earnings, and Generalized Methods of Moments (GMM) to analyze the impact of the new measure on the stock performance of the companies. The Pearson's Correlation Matrix and Sargan's Test are used as diagnostic tests for REM and GMM, respectively. Based on the analysis, the study identifies twelve major determinants of sustainable earnings in pharmaceutical firms. They are mainly classified into core and non-core earnings. The second sub-classification is based on firms' profitability and industry profitability benchmarks. Lastly, the third sub-classification is based on all three

profitability measures (Gross Profit, Operating Profit & Net Profit). Thereafter, based on the core and non-core earnings components, the intensity of the core earnings is measured from the perspective of firm's profitability and industry's profitability. Next, the impact of sustainable earnings (ICE) on the stock performance is analyzed by introducing an alternate variable of sustainable earnings, that is, forecast error or unexpected earnings (FE). This study affirms that the earnings of the firms operating in the pharmaceutical sector are sustainable, while the intensity of their core earnings is a significant determinant of their profitability and the industry intensity of the core earnings is an insignificant determinant of their profitability. This is based on the unique product portfolio mix of each company operating in the sector. Lastly, the study did not find any significant impact of the unexpected earnings on the stock's performance of the firms. This study furnishes a new measure of earnings quality, measured through the sustainability of the core-component and non-core components of the earnings through firm and industry profitability benchmarks. Therefore, the findings of the study are of vital interest to investors, auditors, analysts, educational institutes, and researchers. They are also important for regulators for benchmarking.

Limitations of the Study and Future Recommendations

This study examined the sustainability of the earnings of firms operating in the pharmaceutical sector of Pakistan. Future studies can extend the research by examining all the listed non-financial and financial sector firms of Pakistan.

Due to data limitations, different proxies for two variables, namely Abnormal Returns (AR(SW)) and Analyst ForecastError (FE), are applied. However, the application of the same measure, as applied in the original model of Amir et al. (2013), may render even better results. The measure may be applied to forecast the future earnings of firms.

References

Abarbanell, J. S., & Bushee, B. J. (1997). Fundamental Analysis, Future Earnings, and Stock Prices. *Journal of Accounting Research, 35*(1), 1-24. https://doi.org/2491464

Agarwal, A., Aggarwal, S. P., & Gupta, S. (2019). Sustainable earnings: a new eye for emerging finance. *Journal of Sustainable Finance & Investment*, *9*(4), 325-348. https://doi.org/10.1080/20430795.2019.1619338

Ames, D., Hines, C. S., & Sankara, J. (2014). Are earnings quality attributes reflected in financial strength ratings? *American Journal of Business*, *29*(3/4), 293-311. https://doi.org/10.1108/AJB-12-2013-0073

Amir, E., Einhorn, E., & Kama, I. (2013). Extracting Sustainable Earnings from Profit Margins. *European Accounting Review*, *22*(4), 685-718. https://doi.org/10.1080/09638180.2012.749067

An, Y. (2017). Measuring earnings quality over time. *International Journal of Economics and Financial Issues*, *7*(3), 82-87.

Ball, R. (1978). Anomalies in relationships between securities' yields and yield-surrogates. *Journal of financial economics*, *6*(2-3), 103-126. https://doi.org/10.1016/0304-405X(78)90026-0

Banz, R. W. (1981). The relationship between return and market value of common stocks. *Journal of financial economics*, *9*(1), 3-18. https://doi.org/10.1016/0304-405X(81)90018-0

Basu, S. (1983). The relationship between earnings' yield, market value and return for NYSE common stocks: Further evidence. *Journal of financial economics*, *12*(1), 129-156. https://doi.org/10.1016/0304-405X(83)90031-4

Bearden, B. (2019). Tax rates of responsible stock mutual fund holdings. *Journal of Sustainable Finance & Investment*, *9*(3), 226-239. https://doi.org/10.1080/20430795.2019.1600331

Beneish, M. D. (1999). Incentives and penalties related to earnings overstatements that violate GAAP. *The Accounting Review*, *74*(4), 425-457. https://doi.org/10.2308/accr.1999.74.4.425

Campbell, J. Y., & Shiller, R. J. (2001). Valuation ratios and the long-run stock market outlook: An update: National bureau of economic research.*The Journal of Portfolio Management*, *24*(2), 11-26.

Chan, K., Chan, L. K., Jegadeesh, N., & Lakonishok, J. (2001). Earning Quality and Stock Returns. *National Bureau of Economic Research, 79*(3), 10-41.

Choi, J. H. (2021). Accrual accounting and resource allocation: A general equilibrium analysis. *Journal of Accounting Research*, *59*(4), 1179-1219. https://doi.org/10.1111/1475-679X.12365

Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of accounting and economics*, *50*(2-3), 344-401. https://doi.org/10.1016/j.jacceco.2010.09.001

Elliott, W. B. (2006). Are investors influenced by pro forma emphasis and reconciliations in earnings announcements?. *The Accounting Review*, *81*(1), 113-133.

Fairfield, P. M., Ramnath, S., & Yohn, T. L. (2009). Do industry-level analyses improve forecasts of financial performance?. *Journal of Accounting Research*, *47*(1), 147-178. https://doi.org/10.1111/j.1475-679X.2008.00313.x

Fairfield, P. M., Sweeney, R. J., & Yohn, T. L. (1996). Accounting Classification and the Predictive Content of Earnings *Accounting Review*, *71*(3), 337.

Fairfield, P. M., & Yohn, T. L. (2001). Using asset turnover and profit margin to forecast changes in profitability. *Review of Accounting Studies*, *6*(4), 371-385. https://doi.org/10.1023/A:1012430513430

Fama, E. F., & French, K. R. (2000). Forecasting Profitability and Earnings. *The Journal of Business*, *73*(2), 161-175. https://doi.org/10.1086/209638

Fama, E. F., & MacBeth, J. D. (1973). Risk, Return, and Equilibrium: Empirical Tests. *The Journal of Political Economy*, *81*(3), 607-636.

Finance, M. o. (2020). *Economic Suvery of Pakistan*. Pakistan.

Francis, J., Olsson, P., & Schipper, K. (2008). *Earnings quality*. Now Publishers Inc.

Freeman, R. N., Ohlson, J. A., & Penman, S. H. (1982). Book Rate-of-Return and Prediction of Earnings Changes: An Empirical Investigation. *Journal of Accounting Research, 20*(2), 639-653. https://doi.org/2490890

Ghosh, A., Gu, Z., & Jain, P. C. (2005). Sustained Earnings and Revenue Growth, Earnings Quality, and Earnings Response Coefficients *Review of Accounting Studies, 10*(1), 33-37. https://doi.org/10.1007/s11142-004-6339-3

Gujrati, D. N., Porter, D. C., & Gunasekar, S. (2012). Basic Econometrics . New Delhi, ND.

Hartog, R. (1993). Essential and non-essential drugs marketed by the 20 largest European pharmaceutical companies in developing countries. *Social Science & Medicine, 37*(7), 897-904. https://doi.org/10.1016/0277-9536(93)90144-S

Islam, M. A., Ali, R., & Ahmad, Z. (2011). Is modified Jones model effective in detecting earnings management? Evidence from a developing economy. *International Journal of Economics and Finance, 3*(2), 116-125.

Jiang, G., & Wang, H. (2008). Should earnings thresholds be used as delisting criteria in stock market? *Journal of Accounting and Public Policy, 27*(5), 409-419. https://doi.org/10.1016/j.jaccpubpol.2008.07.002

Junaidi, I. (2019). Minister orders crackdown on firms increasing medicine prices, *DAWN News*.

Kennedy, P. (2003). *A guide to econometrics*: MIT press.

Kormendi, R., & Lipe, R. (1987). Earnings Innovations, Earnings Persistence, and Stock Returns. *Journal of Business, 60*(3), 323-345.

Kormendi, R., & Lipe, R. (1987). Earnings innovations, earnings persistence, and stock returns. *Journal of Business*, 323-345.

Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of accounting and economics, 39*(1), 163-197. https://doi.org/10.1016/j.jacceco.2004.11.002

Lev, B., & Thiagarajan, S. R. (1993). On the Usefulness of Earnings and Earnings Research: Lessons and Directions from Two Decades of Empirical Research. *Journal of Accounting Research, 31*(2), 190. https://doi.org/2491070

Lipe, R. C. (1986). The information contained in the components of earnings. *Journal of Accounting Research*, *24*, 37-64.

Litvack, J., Shepard, D., & Quick, J. (1989). Setting the price of essential drugs: necessity and affordability. *The Lancet, 334*, 376-379. https://doi.org/10.1016/S0140-6736(89)90549-7

Lopez, M., Garcia, A., & Rodriguez, L. (2007). Sustainable development and corporate performance: A study based on the Dow Jones sustainability index. *Journal of Business Ethics*, *75*(3), 285-300. https://doi.org/10.1007/s10551-006-9253-8

Naveed, M. (2015). *Effect of Internal and External Factors on Capital Structure of Pakistani Listed Firms Across Sectors* (Doctoral dissertation, Universiti Teknologi Malaysia).

Nissim, D. (2021). Earnings Quality. Columbia Business School Research Paper Forthcoming, Available at SSRN: https://ssrn.com/ abstract=3794378

Ohlson, J. A. (2006). A practical model of earnings measurement. *The accounting review*, *81*(1), 271-279.

PACRA. (2020). *Sector Study | Pharmaceutical* PACRA. Pakistan.

Penman, S. H., & Zhang, X. (2004). Modeling sustainable earnings and P/E ratios using financial statement information. *New York, NY: Columbia University*.

Penman, S. H., & Zhang, X. (2003). Modeling sustainable earnings and P/E ratios using financial statement information. *Unpublished paper*.

Richardson, S. A., Sloan, R. G., Soliman, M. T., & Tuna, I. (2005). Accrual reliability, earnings persistence and stock prices. *Journal of accounting and economics*, *39*(3), 437-485. https://doi.org/10.1016/j.jacceco.2005.04.005

Rijamampianina, R., Abratt, R., & February, Y. (2003). A framework for concentric diversification through sustainable competitive advantage. *Management Decision*, 4(4), 362-371. https://doi.org/10.1108/00251740310468031

Saeed, A., Saeed, H., Saleem, Z., Yang, C., Jiang, M., Zhao, M., . . . Babar, Z. U. D. (2020). Impact of National Drug Pricing Policy 2018 on access to medicines in Lahore division, Pakistan: a pre-post survey study using WHO/HAI methodology. *BMJ Open, 10*(10). http://dx.doi.org/10.1136/bmjopen-2019-034720

Schilit, H., & Perler, J. (2010). *Financial Shenanigans: How to Detect Accounting Gimmicks and Fraud in Financial Reports* Sloan, R. G. (1996). Do stock prices fully reflect information in accruals and cash flows about future earnings? *Accounting Review*, *71*(3), 289-315.

Wilson, G. P. (1987). 1986 Competitive Manuscript Award: The Incremental Information Content of the Accrual and Funds Components of Earnings After Controlling for Earnings. *Accounting Review*,*11*(2), 293-322.