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The Effect of Macroeconomic Factors on the Profitability of Non-Finance Firms in South Africa

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Abstract: This study examines the effect of macroeconomic factors on the profitability of non-finance firms in South Africa. Using an annual dataset of listed non-finance firms from 2006 to 2022, and employing the Generalized Method of Moments technique results show that, prior profits of the firms positively influence their current profit levels. The study finds that, interest rates negatively affect the profit levels of the firms. Again, the result of the study reveals that while inflation, exchange rates, corporate tax rates, work ethics, and unemployment negatively influence profitability through Return on Assets (ROAs), they impact the profitability of the firms positively through Return on Equity (ROE). Corruption was also found to positively influence profitability through ROA but negatively through ROE. Policymakers are advised to monitor the effects of macroeconomic variables and assess the net effect of the volatility of these variables on the behaviour of non-financial firms in their respective economies to address the various dynamics posed by the macroeconomic factors to firms.

Keywords: Profitability; Non-finance firms; Macroeconomics Variables; Return on Assets; Return on Equity

JEL Classification: D2; D46; D92; H25; L25

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1. Introduction

Non-finance firms contribute immensely to the overall growth and development agenda of several economies worldwide. The contributions by non-finance firms to the advancement of their economies depend greatly on how well these firms perform in the respective sectors they belong. Generally, non-finance firms are firms that do not belong to the banking, insurance and investment sectors of a country. They fall under the agricultural, manufacturing, commercial, services, mining, construction and telecommunication sectors. The performance of these firms in terms of growth and profitability is very much influenced by both micro and macroeconomic factors. According to Broadstock et al. (2011) and Adidu et al. (2006), factors such as inputs of production, manufacturing, product, demand and organizational culture constitute the microeconomic factors that the management of a firm has power over, while macroeconomic elements are beyond the influence of management of firms because they exist outside of the firms. These macroeconomic variables may include but are not limited to unemployment, inflation, stock market index, gross domestic product (GDP), interest rates, exchange rate, and corporate tax rate (Broadstock et al.; 2011; World Bank Group, 2015).

Since firms' performance is affected by both micro and macroeconomic factors, firms need to identify these variables to minimize their effects on the firm's profitability and cash flow. Whereas factors such as demand and factors of production are considered to be microeconomic and could be controlled by management because their impacts are predictable, factors such as corporate tax rates and unemployment rates are macroeconomic whose control and influence reside outside of the firm, so firms ought to anticipate the heterogeneous implications of such noncontrollable variables on their respective corporate performances (Broadstock, Shu, & Xu, 2011). These macroeconomic factors can impact the productivity of firms either favourably or unfavourably. These macroeconomic factors largely impact the growth and expansion of firms and influence firms' ability to compete effectively in their respective industries to maximize value for shareholders.

Largely, prior studies relating to the impact of macroeconomic variables on firms' performance in terms of profitability generally concentrate on the banking sector issues to the neglect of firms in the non-financial sector (Kamamia, 2018; Nagaraju & Boateng, 2018). In South Africa for example, previous studies have examined issues such as the impact of macroeconomic variables on Stock Returns (Ndlovu, 2018), Long run relationship between macroeconomic indicators and stock price (Shawtari, 2016), and the impact of macroeconomic and financial factors on the performance of the housing property market in South Africa (Kwangware, 2008). However, there is sparse empirical literature on how macroeconomic factors impact the profitability of non-financial firms in South Africa through return on assets and

return on equity. Again, the influence of macroeconomic factors on firms' profitability tend to vary among economies, particularly across emerging markets and developed economies. In an emerging economy like South Africa, the macroeconomic environment, the laws and regulatory frameworks, and work culture are distinct from those of other developed countries (Oladele et al.; 2022). It is Africa's second-largest economy, and it is home to the continent's largest stock exchange (SARB, 2016), therefore, examining the impact that macroeconomic factors have on the profitability levels of non-finance firms in South Africa is absolutely useful. This is based on the fact that profitability is considered an indicator of the continued viability of a business, and universally the fact that the bottom line for any commercial outfit is profit, and regardless of all the unique initiatives that firms tend to adopt, they are ultimately guided by the profit motive, it is appropriate to investigate the effect of macroeconomic factors on the performance of non-finance firm in South Africa. Additionally, these non-finance firms' number about 165,189 in South Africa (Tsebe et al.; 2018) and control a substantial amount of cash reserves. The total cash held by non-financial companies grew by 17.4 percent between 2007 and 2017. In 2017, the top 100 non-financial firms held R765 billion worth of cash, up from R154 billion 10 years earlier (Kasongo, 2019). Again, since profitability is considered the most important measure of the success of an enterprise (Joo & Hussanie, 2017) and keeping in view the role profitability plays in improving the overall performance of firms, investigating how macroeconomic factors influence the performance of non-finance firms of South Africa in terms of their profitability is relevant.

Further, despite the dominance of non-finance entities in South Africa, it appears that the present study remains an untapped topic in the empirical literature, although some studies by Khémiri et al. (2020) and Sixpence et al. (2019) on non-finance firms in South Africa on different issues exist. Indeed, research has not yet been conducted to determine the extent to which macroeconomic factors like inflation, lending rate, corruption, exchange rate, unemployment, and work ethics among others influence the performance of firms in the non-finance sector of South Africa. These macro-level factors are considered crucial since they are considered comprehensive measures of economic performance (Soukhakian et al.; 2019). For instance, both foreign and domestic market participants suffer the consequences of unexpected fluctuations in the foreign exchange rates. Also, domestic firms can be more or less competitive with foreign firms as a result of foreign exchange fluctuation. Therefore, investigating the roles these factors play on non-finance firms in South Africa becomes useful in diverse ways. First, the study provides insights into macroeconomic variables that affect non-finance firms' performance. Second, the study contributes to the direct measurement of the effects of macroeconomic factors on non-finance firms' performances in South Africa. Three, the study adds to the literature of corporate finance and macroeconomics on how macroeconomic

factors affect the performance and success of firms. The influence of changes in labor market conditions and pricing on firm performance is shown in this study through the use of macroeconomic variables like unemployment rates and inflation. The study defines the macroeconomic environment in terms of the previous year's profitability, exchange rate, inflation, corporate tax, interest rate, corruption, work ethics, and unemployment. The investigation expects a positive association between the firms' current profitability levels and their previous year's profitability levels. However, the relationship between the exchange rate, lending rate, corporate tax, inflation, corruption, unemployment and profitability is expected to be negative a priori apart from work ethics which this study expects a positive relationship between it and profitability as suggested by Matulich et al. (2011) that diligent managers impact employment contracts, riskiness, growth potential, and organizational structure, which ultimately enhance firm value.

The rest of this research is structured as follows: Section 2 seeks to review the relevant literature and develop the hypotheses. Section 3 discusses the methodology applied in conducting this research. Section 4 presents the result and its discussion while Section 5 draws conclusions and implications.

2. Literature Review and Hypotheses Development

The extent to which macroeconomic factors impact the profitability of non-finance firms in South Africa can be analyzed from various aspects within different theoretical frameworks. The study is therefore underpinned by the aggregate demand and supply theory of Keynesian economics and resource dependency theory.

2.1. Aggregate Demand and Supply Theory

Keynesian economics emphasizes that during the short run, total spending in an economy plays a significant part in the magnitude of economic activity, thus, fluctuations in aggregate demand can lead to variation in the level of output and general employment (Hoover, 2005; Lawlor, 2016). The proponent contends that in recessionary times when private investment is inadequate to sustain employment, increased government expenditure becomes the only tool to stimulate economic activity (Harrod, 1937). Aggregate supply which denotes the quantum of goods and services producers are willing to supply at the prevailing market price is assumed to be relatively fixed in the short run culminating in conditions where variations in aggregate demand can contribute to changes in output levels without price adjustment (Hoover, 2005; Lawlor, 2016). In the context of how macroeconomic variables impact the profitability of non-finance firms, it can be noted that, in a booming economy, a rise in demand will lead to GDP growth and when this booming economy is also showing favourable inflationary and exchange rate conditions, non-

financial firms will experience sales growth and consequently higher profit. The reverse of this situation in recessionary times will mean low sales revenue and a decline in profit.

2.2. Resource Dependency Theory

The main focus of resource dependency theory is how firms rely on outside resources to survive and prosper (Hillman et al.; 2009). Macroeconomic variables that affect the profitability of non-financial enterprises may include interest rates, inflation, exchange rates, corruption, work ethics and unemployment. These variables can be viewed as external resources or factors (Drees & Heugens, 2013). Non-financial companies depend on the macroeconomic environment for resources such as loans, aggregate demand by their consumers, stable currency values, and macroeconomic stability (Biermann & Harsch, 2017). In the context of macroeconomic variables' impact on firms' profitability, the resource dependency theory assists in examining how non-financial enterprises rely on macroeconomic factors to be profitable and offers a platform for analyzing how changes in these external factors affect the firm's profitability (Hillman, 2009). Through the perspective of resource dependency theory, managers can better comprehend how macroeconomic factors relate to business profitability and make strategic decisions to reduce risks and take advantage of opportunities in the external environment which translate into higher sales revenue and eventual higher profits.

2.3. Empirical Review

In the analysis of Pacini et al. (2017) on the effect of macroeconomic factors on the top 100 United Kingdom firms' performances from 2000 to 2014, the results obtained indicate that exchange rate and interest rate have a negative effect on the profitability of firms. Conversely, the rate of inflation, Gross Domestic Product (GDP) as well as debt interest payment recorded a positive impact on firms' profitability. Dewi et al. (2019) analyzed the impact of macroeconomic factors on the financial performance of fast-moving consumer businesses in Indonesia through a multiple regression technique with data from 1998 to 2016. The study found that the exchange rate positively influence on ROA while inflation and unemployment exert a negative impact on profitability in sharp disagreement with Pacini et al. (2017)'s position of a positive association between profitability and inflation.

Yeboah and Takacs (2019) explored how exchange rate affect the profitability of mining and manufacturing companies with data covering 2000-2014 while controlling for interest rate and GDP. Employing the random effect method, exchange rate fluctuations showed a statistically non-negligible adverse effect on profitability when the two industries were examined. On the contrary, the exchange

rate showed no effect on the profitability of mining firms but a significant negative impact on manufacturing firms' return on assets. Interest rate recorded a positive effect in both estimations but GDP was found to not influence profitability. The inverse association between exchange rate and profitability is consistent with prior views expressed by Pacini et al. (2017). Similarly, Egbunike et al. (2018) explored the financial performance, firm characteristics, and macroeconomic influences on Nigerian manufacturing companies. The study concluded that, whereas inflation rate and GDP growth rate have a noteworthy impact on a firm's ROA, there exists no notable impact of exchange rate and interest rate on ROA. Similarly, Kandir (2008) using all non-finance firms on the Istanbul Stock Exchange from 1997 to 2005, studied the effect of macroeconomic factors on stock returns in Turkey. The variables the study considered were the growth rates of the international crude oil price, the narrowly defined money supply, the industrial production index, changes in the CPI, interest rates, exchange rates, and return on the MSCI World Equity Index. Using multiple regression analysis, the study revealed that, while there was no notable impact on stock returns by oil prices, money supply, and industrial production, the inflation rate was important for only 3 out of the 12 portfolios, with world market return, interest rate and exchange rate affecting the entire portfolio returns.

Further, Mutambara et al. (2023) investigated the effect of working capital management and macroeconomic factors that affect the profitability of listed South African firms. The study applied the Generalized Method of Moment (GMM) to analyze data from 2010-2010 and found that working capital management adversely affects profitability while interest rate positively influences the return on assets. This position supports the prior findings put forth by Yeboah & Takacs (2019). Almaqtari (2020) also examined the implications of macro and socio-economic variables on the profit levels of firms listed in India. The inquiry used data collected from 1,770 firms within the period 2008-2015. Through the application of GMM, GDP per capita, number of factories and capital invested showed a significant positive effect on the profitability of firms.

Lastly, Kamamia (2018) explored the effect of macroeconomic factors on the profit levels of investment banks in Kenya using quarterly data spanning 2008-2017. Ordinary least square estimation showed that interest rate and exchange rate adversely impact profitability

The review done thus far suggests that prior studies have not focused on non-financial firms in South Africa (Kamamia, 2018; Nagaraju & Boateng, 2018). Therefore, it is fitting to explore the extent to which macroeconomic factors influence the profit levels of firms, particularly those in the non-finance sector in South Africa since these firms number about 165,189 (Tsebe et al.; 2018) and control a substantial amount of cash reserves. A ten-year analysis of the cash flow of the top

100 non-financial firms showed an increase in cash from R154 billion to R765 billion, which indicates a growth of 17.4 percent between 2007 and 2017 (Kasongo, 2019). Additionally, the present study applies the system GMM to address issues relating to endogeneity, heteroskedasticity and autocorrelation.

Based on the above discussions, therefore the present study expects a positive association between the firms' current profitability levels and their previous year's profitability levels. However, the relationship between the exchange rate, lending rate, corporate tax, inflation, corruption, unemployment and profitability is expected to be negative a priori apart from work ethics which this study expects a positive relationship between it and profitability as suggested by Matulich et al. (2011) that diligent managers impact employment contracts, riskiness, growth potential, and organizational structure, which ultimately enhance firm value. For instance, Yeboah & Takacs (2019) suggest that fluctuation of exchange rates has a negative impact on the profitability of listed companies in South Africa, particularly in the manufacturing industry. Cook et al. (2006) also put forth that the lending rate has a negative and significant effect on firm profitability while Osei-Assibey et al. (2019) and Mohammad et al. (2024) found a negative relationship between corporate tax avoidance and firm profitability, suggesting that reducing tax expenses may not always lead to increased profitability. Similarly, Carter & Simkins (2012) find that inflation negatively affects profitability due to increased costs and uncertainty. Further, Fisman & Svensson (2007) suggest the existence of a negative relationship between corruption and firm profitability, with corruption acting as a significant deterrent to efficient business operations.

Following the review thus far, the study puts forth the hypotheses below for testing:

H1: Non-finance firms' profitability is affected by macroeconomic factors and lagged values of profitability;

H2: inflation adversely affects the profitability of non-finance firms;

H3: the exchange rate is adversely related to the profitability of non-finance firms;

H4: the level of corruption is negatively related to the profitability of non-finance firms;

H5: unemployment rate is adversely related to the profitability of non-finance firms;

H6: work ethics is adversely related to the profitability of non-finance firms;

H7: interest rate is adversely related to the profitability of non-finance firms.

3. Methodology

3.1. Estimation Method

A greater number of economic associations have dynamic features. Regarding the performance of firms, the profitability of the firms in the previous period relates to their current profits. Therefore, the study uses the lagged of the dependent variable as a regressor in the form of a dynamic component in the models below where the return on assets ROA and return on equity (ROE) are used as a measure of the profitability of non-finance firms against which various macroeconomic variables were regressed. To test the hypotheses as stated in section 2.3 therefore, the study adopts the research designs of (Bates et al.; 2009; Itzkowitz, 2013; Ghaly et al.; 2015) and specifies the models as stated below for the investigation of how macroeconomic variables impact profitability levels of non-finance firms in South Africa:

$$\boldsymbol{ROA_{it}} = \beta_0 + \beta_1 ROA_{it-1} + \beta_2 INFLATION_{it} + \beta_3 TAX_{it} + \beta_4 EXCHANGE\ RATE_{it} + \beta_5 INTEREST\ RATE_{it} + \beta_6 UNEMP_{it} + \beta_7 CORRUP_{it} + \beta_8 WETHICS_{it} + \varepsilon_{it}, \varepsilon_{it} = v_{it} + u_{it} \quad (1)$$

$$\boldsymbol{ROE_{it}} = \beta_0 + \beta_1 ROA_{it-1} + \beta_2 INFLATION_{it} + \beta_3 TAX_{it} + \beta_4 EXCHANGE\ RATE_{it} + \beta_5 INTEREST\ RATE_{it} + \beta_6 UNEMP_{it} + \beta_7 CORRUP_{it} + \beta_8 WETHICS_{it} + \varepsilon_{it}, \varepsilon_{it} = v_{it} + u_{it} \quad (2)$$

where;

$ROA_{it}\ and\ ROE_{it}\ represent\ the\ profitability\ of\ firm\ i\ at\ time\ t, with$

$i = 1, \dots, N, and\ t = 1, \dots, T,\ ROA_{it-1}\ and\ ROE_{it-1}$ are the one-period lagged profitability, β_0 is a constant term, $\beta_2 INFLATION_{it}, \beta_3 CORPORATETAX_{it}\ \beta_4 EXCHANGE\ RATE_{it},$

$\beta_5 INTEREST\ RATE_{it}\ , \beta_6 UNEMPLOYMENT_{it},\ \beta_7 CORRUPTION_{it}\ and\ \beta_8 WORKETHICS_{it}$

are explanatory variables, specifically denoting the macroeconomic factor serving as the coefficients to be estimated, ε_{it} is the error term, where u_{it} the idiosyncratic error and i is the unobserved firm-specific effect. Inflation rate and annual growth rate were included in this model since business success is partly affected by the general economic situation prevailing in a country. Since the estimation of models 1 to 2 through O.L.S. frequently produces inconsistent and skewed results, this study uses a panel estimator which is dynamic in nature called the generalized methods of moments (G.M.M.), introduced by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998).

The dynamic model with one lagged dependent variable without exogenous variables, $|\gamma < 1$, is $Y_{it} = \gamma Y_{it-1} + \alpha_i + \mu_{it} \sim iid\ (0, \sigma^2\mu)$.

Here, Y_{it-1} dependent positively on α_i: This is simple to see when inspecting the model for the period (t−1): $Y_{it-1} = \gamma Y_{it-2} + \alpha_i + \mu_{it-1}$

Consistency is one key quality of using the Arellano–Bond (also Arellano–Bover) method of moments estimator. For the validity of the G.M.M. estimator, two key requirements must be satisfied. The first requirement is that the over-identifying restrictions and all instruments to be used must be valid. The second requirement is that there should not be second-order serial correlation in the residuals where Arellano and Bond's test statistics (AR1 and AR2) are used to validate the second condition, while the Hansen test is used to establish the first condition's overall validity. According to Anderson & Hsiao (1981), the first-order autocorrelation in the differenced residuals' does not essentially indicate that the estimate is uniform. Hence, the presence of the first-order autocorrelation means the GMM estimator is consistent, but there should be no second-order autocorrelation in the model.

3.2. Variables Description

Macroeconomic factors that impact the profitability of non-finance firms can be analyzed using different approaches from various angles. Bradley and Moles (2002) posit that the overriding goal of any business entity is profit maximization, hence the use of measures of profitability in this study other than other measures. According to Khrawish (2011) and Zielińska-Chmielewska (2021), return on assets (ROA) and Return on equity (ROE) are important in explaining firms' profitability ratios. They usually reveal how prudent investment decisions management has been. Careful consideration has been given to the selection of the variables used in this study based on appropriate empirical studies, theories, research and availability of data. A discussion of these variables is presented below.

3.2.1. Return on Assets (ROAs)

Return on assets (ROAs) is employed as a measure of the firms' performance regarding their profitability (Dietrich & Wanzenried 2011). It refers to the net income of total assets (Lee et al.; 2018). Firms experiencing higher returns on their assets are expected to be in an excellent position to raise more funds in security markets since they provide prospects for good returns on the firm's investments. The ratio of returns on assets provides a direct assessment of the management's ability to use the firm's assets more efficiently. Higher values of this measure are better since they indicate greater efficiency in the use of company resources.

3.2.2. Return on equity (ROE)

Return on Equity is a measure of how efficiently a company can earn a profit after tax from its economic resources or capital. According to Hertina et al. (2019), a higher Return on Equity indicates how productive a firm's management is performing. The ROE tends to measure management's effectiveness and efficiency based on how well management can give back value to shareholders. Mohd et al. (2014) employed ROE as a profitability metric to investigate the factors that impact

profitability of construction companies in Malaysia while Alarussi et al. (2018) also used ROE to investigate factors affecting profitability in Malaysia.

3.2.3. Exchange Rate

Exchange rate is the measure of the value of a country's currency with respect to another country's currency (Setyani & Gunarsih, 2018). Importation of productive resources or raw materials by non-finance firms turns out to be cheaper and at lower risk when there is a stable exchange rate. This also positively affects the balance of payment position of the economy (Laham et al.; 2013). Exchange rate fluctuations have a huge impact on the costs of production of domestically manufactured goods and push firms to make either positive or negative returns. However, a stable exchange rate offers a lower price for consumers (Njaaga, 2013). The rate at which a country's currency depreciates or appreciates is largely influenced by the extent to which rate the foreign exchange changes. Firms that operate in the domestic environment also experience the negative effects of foreign exchange rate fluctuations on costs of production and price settings, which in the long run affect the profitability of the domestic firms (Kurt et al.; 2020).

3.2.4. Inflation

One key variable that could affect the performance of an organization aside from economic growth is monetary instability. There is a general assumption that firms' profitability and inflation positively relate with one another, however, Ali et al. (2018), argue that this impact is largely influenced by the degree to which inflation is expected or unexpected. Additionally, the purchasing power of fixed-income earners is drastically reduced during an inflationary period. This also affects the demand for firms' products and consequently affects firms' performance and profitability. Nasution (2017) argues that the expense of borrowing as a result of rising interest rates and taxes are two important areas of business operations that are usually impacted by inflation. Demir (2009) also emphasizes adverse impact of inflation dynamics on listed companies in Turkey, in line with the conclusions of Pattitoni et al. (2014) for European companies.

3.2.5. Corporate Taxes

A corporate tax is most often charged on the profits generated by companies, public corporations and unincorporated associations such as industrial and provident societies, clubs and trade associations (Raza, Ali & Abassi, 2011). Corporate tax planning by a firm legally help them to reduce their tax liability, which increases the firms after-tax returns and has a positive impact on the firm's cash flow (Nwaobia & Jayeoba, 2016). High corporate taxes can ultimately have an impact on the profitability of firms. Aransiola (2013) is of the view that since corporate taxes are levied on the profit of business entities, it reduces the ability of the firms to

adequately invest and expand. This effectively serves as a disincentive for potential investors (Ezugwu & Akubo, 2014).

3.2.6. Interest Rates

Interest rate describes the cost of capital for investment. The expectation is that high levels of interest rates will lead to the reduction of the profitability of firms (Bolarinwa et al.; 2021). Amadeo (2012) defines interest rate as the cost a borrower pays for using the money of a lender to undertake a business or for using their funds. For instance, when a person takes a bank loan to purchase an asset, the lender gets paid interest at a defined rate for delaying the use of the money and giving it to the borrower instead. There is a positive correlation between inflation and interest rate, hence an increase in interest rate makes borrowing more difficult and expensive which also affects currency depreciation and increases the cost of capital and cost of operating a business in the long run. High interest rates thus hurt firms' profitability.

3.2.7. Corruption

Corruption can be defined as obtaining illegal personal benefits through the abuse of authority entrusted to a person. This includes all kinds of benefits be it in cash or kind. Corruption as an art continually dwells among us even though its huge negative implications are well known. Indeed, Ernst and Young (2016) posit in their 14th Global Fraud Survey that corruption poses a greater risk to "stagnant global growth and weak financial markets". Corruption continue to exist because of some financial benefits enjoyed by firms. This viewpoint is in line with that of Galang (2012), who contends that corruption has a varied impact on a firm's performance, allowing certain businesses to profit from it. Ferris et al. (2021) put forth that firms tend to benefit from corruption that goes on in the corporate sector. Earlier research works however suggest that the entire economic system suffers from corruption (Alm et al. 2016; Litina and Palivos 2016). The corruption variable therefore is included in the model to determine its influence on non-finance firms in South Africa.

3.2.8. Unemployment

Unemployment reflects how labour market trends affect firm performance. The contribution of unemployment in driving the establishment of businesses is a major concern. Profit is the veritable bottom line of the market system. As firms invest, they add to their aggregate capital stock. With a constant rate of profit, the total amount of profit grows correspondingly. However, if profits grow more slowly than the capital stock, then the profit rate falls. Felipe (2002) argues that higher profits lead to capital accumulation and higher employment.

3.2.9. Work ethics

Sigdel et al.(2020) suggest ethical responsibilities as important elements that influence the profitability of a firm. A key factor for achieving going concern as a

business and maintaining an increased profitability level is ethical leadership. A study by the Ethics Research Centre (ERC) in Washington found that firms that maintain a safe working environment and best management practices always end up getting the best human resource to work with (Fulmer 2004). Again, Mo and Shi (2018) maintain that there is a positive correlation between maintaining morally good leadership, employee performance, and profitability.

Table 1. Variable Description

Independent Variables	**Symbol**	**Description**
1. Return on Assets	ROA	This is calculated as net profit after tax divided by the total assets. This ratio measure for the operating efficiency for the company based on the firm's generated profits from its total assets.
2. Return on equity	ROE	It is net income divided by shareholder's income. The higher a company's ROE equity, the better the management is at employing investors' capital to generate profits. That is a rising ROE can signal that a company Is able to grow profits without adding new equity into the company.
Explanatory variables (Macroeconomic factors)	**Symbol**	
	INFLA	Annual inflation rate
	EXRATE	Exchange rate refers to the price or value of a country's currency expressed in another country's currency, or the amount of domestic currency required to obtain one unit of foreign currency
3. Inflation rate		
	CORRUPT.	
4. Exchange Rate		
	CORPTAX	Corruption is the abuse of entrusted power for obtaining illegal private gain. This includes not only merchandise but advantages of all kinds.
	INRATE	
5. Corruption		These are taxes paid by firms based on the amount of profit generated
	WETHICS	
6. Corporate tax		Annual interest rates, announced by the South African Reserve Bank are used in the study.
	UEMPL.	
7. Interest rate		Work ethics are a set of values guiding professional behavior, encompassing integrity, responsibility, quality, discipline, and teamwork.
8. Work Ethics		
9. Unemployment		The unemployment rate for the country is collected from the World Bank development indicators.

Source: Author's own Construction, 2024

3.3. Data and Sample Construction

This study uses a sample of 53 non-financial firms listed on the Johannesburg Stock Exchange of South Africa selected due to data availability and its quality spanning the period 2006 –2022. The main reason for the period is the availability of data. During this period also, several firms in South Africa have experienced different macroeconomic dynamics and regulatory and structural reforms. However, due to strict rules and regulations such as capital requirements guiding the operations of the financial industry, financial companies were not included in the sample. Previous studies (Al-Thuneibat, 2018; Badawi et al.; 2019; Bajaher et al.; 2021) suggest structures in the form of frameworks and regulations that govern banks and other financial organizations which are strictly supervised by accredited state agencies, and analyzing specific accounting items using different options. The annual data used for the study were sourced from the World Development Indicators (WDI) of the World Bank and TCdata360 of the International Monetary Fund. Profitability in this study is measured by return on assets (ROA) and return on equity (ROE) as has been variously used in the literature by Lee et al. (2018), Mohd et al. (2014) and Alarussi et al. (2018).

4. Results and Discussion

4.1. Descriptive Statistics

While Table 2 contains the descriptive analysis of the variables used in this research, the pairwise correlation matrix is displayed in Table 3.

It is ideal to have a low -value for the majority of the correlation coefficient. Corporate tax and the exchange rate variables had the highest correlation coefficient value equal to -0.83. Gujarati (1995) states that collinearity becomes an issue, its relational coefficient value must exceed 0.7. Therefore, multicollinearity was not seen to be a problem for our analysis.

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	706	7.8217	17.4208	0	300.42
EXCHRATE	901	11.3729	3.4770	6.63	16.99
UMEMP	901	23.2782	2.8623	19.51	29.81
INFLATIO	901	5.4843	1.6391	3.2100	10.075
LRATE	901	10.0220	1.9161	7.0416	15.125
CORRUP	530	9.64	2.6266	6	14.3
WETHICS	424	5.325	1.1990	3.7	7.7
TAX	795	23.233	1.6236	21.4	27

Source: Author's Calculations, 2024

Table 3. Correlation Matrix.

Variable	ROA	EXCHR	UNEMP	INFLA	LRATE	CORRU	WETHICS	TAX
ROA	1.0000							
EXCHR	0.0073	1.0000						
UNEMP.	0.0135	0.4700	1.0000					
INFLA	0.0530	0.2599	0.2949	1.0000				
LRATE	-0.0065	0.3685	0.6622	-0.0112	1.0000			
CORRUP	0.0298	-0.1220	0.4056	0.3737	0.5278	1.0000		
WETHICS	-0.0005	0.1190	-0.0113	0.1270	-0.1082	0.3732	1.0000	
TAX	-0.0204	-0.8374	-0.4852	-0.5023	-0.1608	-0.1147	-0.5434	1.0000

Source: Author's calculations, 2024

A good estimate of the lagged dependent variable, according to Roodman (2009), should range from O.L.S. point estimations and the least square dummy variable (L.S.D.V.) estimations. Also, while values above 1.0 denote an accelerating divergence away from the equilibrium with an unstable dynamic, having a value below 1.0 indicates that the estimate is likely to be reliable. With point estimates on the lagged dependent variables of 0.7544 (for ROA_{t-1}) and 0 .8906 (for ROE_{t-1}), both conditions were met in our analysis since their values were lower than 1.00 and because these values fall within the acceptable range for point estimates for L.S.D.V. and O.L.S (which is between 0.072 and 0.419). In assessing the essence of the regressors under the null of no association, the study rejected the Wald statistic in the study (Arellano & Bond 1991). The reason is that the validity of our null hypothesis was accepted because of the insignificant p-value of the Hansen test restrictions for all our chosen instruments. It is worth noting that, previous tests turn out to be weak when the number of groups is less than the number of instruments. However, the number of instruments employed in the two models for this research is low compared to the number of firms, implying that there is little chance of this test being weakened. Furthermore, the results for the test of second-order serial correlation (AR2 for Model 1=0.760 and AR2 for Model 2=0.304) validate the null hypothesis and implying that autocorrelation does not exist. Hence, conclusions can

be made on the validity of the model specification and instrument used, since the outcome of the analysis satisfies the requirements of GMM.

Table 4. Profitability

	Dependent Variables: ROA and ROE		
Independent Variables	**Model 1 (ROAs)**		**Model 2 (**ROE)
ROA_{t-1}	0.7544***	ROE_{t-1}	0 .8906***
	(0.0000)		(0.03202)
EXCHANGE RATE	-0.6544***		0.0954***
	(0.2561)		(0.0339)
INFLATION	-1.4423***		0.2007***
	(0.4345)		(0.0393)
CORRUPTION	0.5759***		-0.0370***
	(0.2078)		(0.0134)
WORKETHICS	-1.9727***		0.1701***
	(0.4916)		(0.0555)
UNEMPLOYMENT	-0.9727***		0.0637*
	(0.2618)		(0.0367)
CORPORATE TAX	-3.1770***		0.3558***
	(0.8186)		(0.1106)
LENDING RATE	-0.5321***		-.0008***
	(0.6060)		(.0518)
	DIAGNOSTICS		
Number of firms	53		53
Number of observations	314		382
Number of instruments	21		29
Wald chi2	4408.52***		59324.56 ***
Hansen test (p-value)	0.105		0.068
AR 1 (p-value)	0.117		0.033
AR 2 (p-value)	0.760		0.177

*Notes: *** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level. Standard errors in parenthesis. System GMM model is estimated by using the Blundell and Bond (1998) dynamic panel system GMM estimations and Roodman (2009) – Stata xtabond2 command*

Source: Author's calculations, 2024.

The study adopted the system GMM to establish the impact of macroeconomic factors on the performance in terms of profitability of non-financial firms listed on the Johannesburg Stock Exchange of South Africa. Two profitability measures Returns on Assets (ROA) and Return on Equity (ROE) were applied to investigate the impact macroeconomic factors have on the profitability of non-financial entities in South Africa.

The obtained results as shown in Models 1 and 2 indicate that the coefficient of ROA_{t-1} and ROE_{t-1} are positive and statistically significant at 1%, suggesting that the previous year's ROAs and ROE_{t-1} levels of non-finance firms in South Africa are

relevant in explaining the current profit levels of these firms. The reason could be that, as the firms' profitability levels increase, managers of these non-financial firms may reinvest these profits in activities of the firms that could ensure sustained growth and improvements in profits. The finding agrees with Jang et al. (2011) who put forth that prior profits of firms have a positive influence on current profits.

The EXCHR coefficient is negative and statistically significant at 1% for Model 1 (ROA). This means that the depreciation of South African currency causes the profits of non-monetary firms in South Africa to fall. The possible reason for this may be that the increase in the exchange rate will decrease profitability because the non-financial firms using inputs from abroad will experience increases in their production costs. Again, because the majority of non-monetary firms in South Africa use imported inputs, the increase in the exchange rate may also reflect in their costs of production. This result is similar to prior findings of Pacini et al. (2017) who suggest an adverse impact of exchange rate on firms' profitability. However, for Model 2 (ROE), the coefficient for the EXCHR is positive and statistically significant suggesting that improvement in the EXCHR position of the country helps the firms' profitability to also improve in terms of the equities held in the non-finance finance.

Regarding corruption, Model 1 (ROA) reveals that increases in corrupt practices positively affect the profitability of firms. However, Model 2 (ROE) shows that an increase in corruption negatively affects the profitability of non-financial firms through the return on their equities. The reason may be that firms can engage in corrupt practices in an attempt to maximize their profits and overcome timely administrative processes. However, these practices are negatively and significantly associated with firm performance similar to the position of (Athanasouli et al.; 2012).

The value of the measure of prevailing economic condition or economic stability, which is inflation is negative and statistically significant at 1% for Model 1 (ROAs), indicating that the general increase in price levels adversely affect the profits of non-financial firms. This discovery validates the Vatavu (2014) for Romania. This clearly shows that the macroeconomic environment in South Africa adversely affects the power of non-finance firms to earn more profit. When the inflation rate rises, production costs increase therefore causing a decline in the profit margin of firms. Conversely, Model 2 (ROE) depicts a positive coefficient for inflation implying that increases in price levels result in improvements in profit levels of non-monetary firms in South Africa. This confirms the prior views of Pacini et al. (2017) that inflation positively effects on profitability of firms.

Concerning corporate tax, its coefficient is negative suggesting that a high rate of taxes on the profits of the non-finance firms is a disincentive to these firms since high taxes decrease the firm's incomes for further investment and expansion. However, it is positive and significant for Model 2 (ROE), indicating that, corporate tax increases result in improvements in the returns of the firms' equities.

Further, the coefficient for work ethics was found to be negative and significant at 1% for model 1 (ROA) suggesting that an increase in unethical behaviours at workplaces of non-finance firms impacts negatively their performances in terms of profits. These may be because, perhaps non-finance firms in South Africa do not put adequate ethical standard measures in place at workplaces for employers and employees to adhere to. These findings are inconsistent with prior views of Khomba and Vermaak (2012) posit that, corporate organizations are under more and more pressure to conduct their operations in the most cost-effective, efficient, and ethical way possible in order to improve performance. Given the ongoing corporate failures caused by unethical behaviors, particularly those involving employees and senior executives, it is evident that businesses can no longer afford to ignore business ethics (Turyakira, 2018). Similarly, for Model 2 (ROE), work ethics is positive, suggesting that an improvement in the ethical behaviours at workplaces of non-finance firms in South Africa results in an upward surge in the profitability of these firms.

Additionally, the unemployment coefficient is negative and statistically significant at 1% for Model 1 (ROA), implying a rise in unemployment in South Africa hurts the profitability levels of non-finance firms in the country, and the rise in unemployment levels may suggest low per capita incomes and low purchasing power of individuals to consume more goods and services offered by non-finance firms. Contrarily, the obtained results show a positive and significant coefficient for Model 2 (ROE) implying that a rise in the unemployment levels positively affects the profits of non-finance firms in South Africa. The high unemployment rate indicates that people do not have jobs and incomes. This condition considerably does not influence the purchasing power and consumption of people for certain products which ultimately decreases sales and profit levels of the firms.

Lastly, the obtained results suggest that the interest rate which indicates the annual interest rates is negative and statistically significant. This means that a rise in the interest rate at which firms borrow from banks and other financial institutions adversely impacts the profits of these non-financial firms since these firms view higher interest rates as a discouragement for growth and also a disincentive to corporate borrowing, which in turn, leads to lower profits.

5. Concluding Remarks

This study examined the impact of macroeconomic factors on the profitability of non-finance firms in South Africa employing dynamic panel system GMM estimator models. The Return on Assets and Return on Equity were used as measures of profitability. This research uncovered that prior profits have a positive impact on the current profits of non-finance businesses in South Africa. As a result, a major message about the growth of firms and profitability is that profits may create and

improve the profitability of non-finance firms. The obtained results indicate that while prior profit levels positively influence the profitability of the firms, interest rates negatively affect the profit levels of the firms. Inflation, exchange rates, corporate tax rates, work ethics, and unemployment negatively influence profitability through ROAs, they however positively impact the profitability of the firms through ROE. Corruption, also positively influences profitability through ROA but negatively through ROE. The present study contributes to the understanding of how profitability mechanisms work in the non-finance sector of the economy of South Africa.

The study recommends that policy makers need to monitor the state of the economy and alter their strategic plans in accordance with prevailing macro factors to improve on profitability levels of their firms. The results of the present study offer managerial implications for the non-finance sector. The results indicate that even though prior profits of non-finance firms could positively impact their subsequent year's profit, other macroeconomic factors also motivate the changes in their profitability levels. This study has some amount of limitations, in view of that, generalizing the results of the study to other industries is not possible. Therefore, future studies can consider the effect of macroeconomic factors on firms in the various industries within the non-finance sector. Lastly, the moderating role of firm-specific variables can also be investigated in line with the impact of macroeconomic factors on the profitability of non-finance firms in South Africa.

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