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## Article

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## Does Exchange Rate Matter in Profitability of Listed Companies in South Africa? An Empirical Approach

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### ABSTRACT

Exchange rate fluctuation is phenomenal in South Africa. This study thus estimates the impact of exchange fluctuation on the profitability of listed mining and manufacturing companies over 2000-2014. The study controlled for company level factors including liquidity, leverage, firm size, tangibility, the opportunity for growth and interest cover. The macroeconomic factors controlled for were interest rate and economic growth. The study used random effect model for estimation. Profitability was measured as return on asset (ROA). Exchange rate fluctuation had a significant negative impact on return on the asset when both industries are considered. However, exchange rate fluctuation had no significant impact on return on the asset in the mining industry but in the manufacturing industry. Liquidity, Interest cover, and tangibility had a significant positive impact but leverage had a significant negative impact on ROA. At the macro level, interest rate had a significant positive impact but economic growth had no significant impact on ROA. The study recommends that managers of manufacturing companies should adopt strategies such as currency swaps, future contract, and hedging to avert exchange rate fluctuation risk.

**Keywords:** Exchange Rate, Mining Companies, Profitability, South Africa

**JEL Classifications:** F41; L72; L25; O55

### 1. INTRODUCTION

Foreign exchange market is the largest financial market in the world due to increased globalization of companies and international trade. Commercial and investment banks are the major agents in this market. The forces of demand and supply determine the price within the financial market (Stephen et al., 1998). Global trade encompasses diverse currencies; the foreign exchange rates variability is a potentially stimulating factor that drives profitability levels of firms as it affects their monetary intermediation process (Chiira, 2009). It is a fact that there is no country that can be self-reliant so they all transact commercial activities with each other, foreign exchange rates become accessible.

Some scholars have subjected the exchange rate and profitability relationship to empirical studies with varied outcomes.

Chow et al. (1997) noted that most previous studies found no significant relationship between exchange rate and company's profit. Others contend that impact of exchange on profitability is company specific. Previous studies in banking industry show the significant negative impact of exchange rate fluctuation on profitability (Otuori, 2013; Ahmed, 2015; Chamberlain et al., 1997; Taiwo and Adesola, 2013; Isaac, 2015). However, little study has been done in other industry like mining and manufacturing, especially in South Africa. It is therefore uncertain as to the impact of exchange rate fluctuation on the profitability of mining and manufacturing companies in South Africa. This study in this vein investigates through empirical approach the impact of exchange rate fluctuation on the profitability of listed mining and manufacturing companies in South Africa. The study is significant since it would help corporate managers in South Africa to know how exchange fluctuation affects their companies' profitability.

Management with this knowledge would adopt appropriate strategies to resist the adverse impact of exchange rate fluctuations.

### 1.1. Financial Performance and Exchange Rates Fluctuations

Financial performance as defined by Murthy and Sree (2003) is the capability to leverage operational efficiency and strategic investment decisions to ascertain a firm's financial sustainability. The financial performance is the achievement measurements of an organization (Adetayo et al., 2004). According to Reid and Joshua (2004), broad bases of measures are employed to measure a firm's financial performance such as; profitability, liquidity and debt measures. Therefore, financial performance measure firms benchmarks and their financial objectives. Bradley and Moles (2002) indicate that the ultimate motive of any business is to maximize profit, therefore, profitability measures are generally employed as compared to other measurements. According to Khrawish (2011), return on asset (ROA) is important in explaining a firm's profitability ratio. It usually gives an awareness of the efficiency of management investment decisions.

Exchange rate fluctuations impact a nation's prices through consumption prices of imports and intermediate goods Njaaga, (2013). Njaaga, (2013) states that Exchange rate variation impacts on a country's prices significantly influences the production cost of domestically produced goods directly and typically produce significant positive or negative returns. Serdaneh and Nimer, (2011) documented that the more a company is involved in international trade, the more its accounting exposure and unless a company hedges this risk then it faces financial gains and/or losses from transaction and translation of foreign activities. Additional exclusive measurement of exchange rate exposure is that of ventures financed by foreign donors as Kinyuma (2013) examined. According to Gatobu (2012), international companies' net profit is greatly influenced by unrealized foreign exchange consequences.

The next sections of the study focus on theoretical underpinning, related literature review, methods and materials used in the study, results and discussions and conclusions, limitations and recommendations.

## 1.2. Theoretical Underpinnings

This article was based on purchasing power parity, international fishers effect, comparative advantage, and pecking order theories.

### 1.2.1. The purchasing power parity (PPP) theory

The Purchasing power parity theory clarifies the value of a homogenous commodity is alike in other nation based on the currency of that country. The assumptions of this theory are centered on the fact that transactional costs do not exist, that commodities being traded are homogeneous has no barriers. A currency of a country may be wrongly valued whereby money has no purchasing power beside the country's level of commodities (Ross et al., 2008). Progressive by Viswanathan and Menson (2005) Purchasing Power Parity theory describes the value attached to homogenous commodities is similar in other countries based on their individual currency. Accordingly, when purchasing power is similar in other nations then the exchange rates between

these countries' currencies will be at equilibrium. According to Reid and Joshua (2004), the ratio of commodities price levels ought to be equal to the country's currency. Ross et al., (2008), stated that a country's currency may be wrongly valued whereby money has no purchasing power against the nation's commodities level.

This theory is based on the assumptions that there are no barriers to trade, no transactional costs, and the commodities being traded are homogeneous. If the trading currency is exchanged at the spot exchange rate, the price of homogenous goods should be alike across borders. The theory recommends the use of price indexes to find the exact price of a homogenous commodity between countries. The main drawback of this belief is in measuring purchasing power parity developed from price indexes given that different nations employ different commodities to decide their price level (Reid and Joshua, 2004). Adetayo et al., (2004) in determining a nation's balance of trade, it is significant to exchange rate variation. According to Berger and Bouwman (2010), exchange rates are similar to any other goods have both demand and supply sides. The supply of foreign currencies is clarified by fluctuations in a country's monetary policies while foreign currency demand is determined by wide range indicators such as; inflation rates and interest rates (Brunnermeier and Lasse, 2009).

### 1.2.2. The international fisher effect

International Fisher effect theory posits that the difference in earnings equals inflation rate modifications between two given countries. The theory emphasizes that policy to borrow from one country and invest in a different country should not bring positive returns as exchange rates adjust to offset differs in interest rate (Ubindi, 2006). Companies import and export and have some of their asset and liability dominated in foreign currencies; hence exchange fluctuation matters to them. One of the countries where exchange rate fluctuation is common in South Africa.

Promoters of the international Fisher effect Shapiro (2007) clarifies that differences in returns equal inflation rate differences between countries. The theory accordingly, states that nominal risk-free interest rates include expected inflation and the actual rate of return. Ubindi (2006) emphasizes that differences in interest rates amongst nations are the cause of expected inflation diverge since investors want a meaningful return. Staikouras and Wood (2004) demonstrate that foreign currencies usually depreciate if they have comparatively higher interest rates. The theory builds on a strategy that borrowing from one country and investing in another country should not be profitable as exchange rates adjustment to offset the differences in interest rate (Ubindi, 2006). Exchange rate fluctuation affects company's performance (profitability) through three ways, namely through prices of imported consumer goods, through producer prices and consumer price indexes (Bailliu and Bouakez, 2004). Depreciation of RAN directly increases domestic price of imported consumer goods and production cost of domestically produced goods. However, the direct effect of depreciation of RAN on consumer price index depends on the proportion of imported goods in the consumption basket. Depreciation of exchange rate increases demands domestically produced goods relative to imported goods, leading to higher prices of domestically produced goods. This consequently would

lead to increase in demand for wage increase by labour unions which would further fuel higher prices of goods and services if production does not increase to the level of increase in demand (Bailliu and Bouakez, 2004).

### 1.2.3. Comparative advantage theory

Theories of international trade such as comparative advantage theory by Ricardo (1817), Product Cycle Theory by Vernon (1966) and Aliber theory by Aliber (1970) suggest that companies trade internationally and exchange rate fluctuation possess a risk to them. The exchange rate fluctuation leads to erosion of companies profit and at the worse failure of companies (Wong et al., 2008). Empirical studies have confirmed the significant negative impact of exchange rate fluctuation on company's profit (He et al., 2014; Bailliu and Bouakez, 2004; Pinkowitz and Williamson, 2001). The impact of exchange rate fluctuation on profitability depends on industry type or nature of companies (Bodnar and Gentry, 1993). Koutmos and Martin (2003) explained that companies with high foreign business have higher exposure to exchange rate fluctuation than companies operated domestically only or with the little foreign business operation. Aside, exchange rate fluctuation, company level factors affect profitability and this study focused on leverage, firm size, the opportunity for growth, liquidity, interest coverage, and tangibility.

### 1.2.4. The pecking order theory

The pecking order theory suggests a negative relationship between leverage and profitability. Some empirical studies have confirmed this negative relationship (Kester, 1986; Titman and Wessels, 1988; Rajan and Zingales, 1995; Booth et al., 2001). However, theories such as trade-off theory, agency theory, and signal theory predict a positive relationship between leverage and profitability. The positive relationship between leverage and profitability has been confirmed empirically (Sangeetha and Sivathaasan, 2013; Frank and Goyal, 2004; Velnampy, 2013). Both global and local studies have been established on exchange rate fluctuations and financial performance.

## 2. LITERATURE REVIEW

Opaluwa et al. (2010) explored the impact that exchange rate variations have on the Nigerian industrial sector. The research used data from 1986 to 2005 period. The study employed the econometric tool of regression. The study stated that exchange rate fluctuations and financial performance have a positive statistically significant correlation and have a negative effect on the output of the industrial sector. Gachua (2011) examined the influence of foreign exchange exposure on firms' financial performance. The study established that the exchange rate significantly impacts imports and exports. The research concluded that unrealized foreign exchange gains/losses adversely spurs net income.

The impact of firm size on profitability is inconclusive with some studies indicating a positive relationship between the two variables (Velnampy and Nimalathasan, 2010). Demsetz (1973) noted that the positive relationship between firm size and profitability is not due to economies of scale. He explained that larger firms earn an abnormal profit in highly localized market whiles smaller firms

earn normal profit. However, Amato and Wilder (1985) on the basis of managerial utility maximization suggested a negative relationship between firm size and profitability. The negative relationship between firm size and profitability has been confirmed by Hall and Weiss (1967). Sivathaasan et al. (2013) found no significant impact of firm size on profitability.

Firm growth is not the same as firm size as the two are not correlated in any way (Sutton, 1997). Macmillan and Day (1987) established a positive relationship between growth opportunity and profitability. Firms that enter a new market quickly and become larger with ease earn a higher profit than those with slower growth rate. Growth is an indicator of competitive edge for a firm with resultant higher profit (Markman and Gartner, 2002). Other studies such as Carland et al., (1988) and Sivathaasan et al. (2013) found no significant relationship between growth opportunity and profitability.

Liquidity management is aimed at helping firms to meet their maturing current liability. Empirical studies on the relationship between liquidity and profitability are not conclusive as findings are mixed. Some empirical studies have established a negative relationship between liquidity and profitability (Sivathaasan et al., 2013; Carpenter and Johnson, 1983; Shah and Sana, 2006). However, Chowdhury and Amin (2007) found a positive relationship between liquidity and profitability. Sivathaasan et al. (2013) found no significant impact of liquidity on profitability.

Macroeconomic factors such as interest rate and economic growth determine the profitability of companies. The interest rate is the cost of borrowing to the companies. Therefore, higher the interest rate the higher the cost of production which results in lower profit. Economic growth boost production through higher demand for goods and services and this also leads to higher profit for companies which produce these goods and services. Thus strong macroeconomic environment, anchored on high economic growth and lower interest rate leads to higher profitability of companies in the country.

The study on the basis of the above-conceptualized exchange rate impact on profitability as shown in Figure 1.

## 3. METHODS AND MATERIALS

The study used random effect model to examine the impact of foreign exchange rate on the profitability of 49 listed companies in South Africa over the period 2000-2014. The companies were made up of 10 listed mining companies and 39 listed manufacturing companies (Table 1). The study made use of secondary data obtained from DataStream. The commonest foreign currency used by the selected companies was US dollar; hence exchange rate used in this study was RAN to US dollar.

The study specified the impact of foreign exchange rate on company's profit (measured as ROA) as shown in equation 1.



$$ROA_t = \alpha_0 + EXCHR_t + \sum_{i=1}^k \text{COMPANY} + \text{YEAR} + \quad (1)$$

Where;

$ROA_t$  = ROA at a given year

$EXCHR_t$  = Exchange rate at the end of financial year of a company.

Aside from exchange rate, empirical studies have identified other important company level factors and macroeconomic factors that influence company's profit. This study however considered liquidity (LIQ), leverage (LEV), firm size (FS), interest cover (INTCOV), tangibility (TANG) and opportunity for growth (OPG) as company level factors and Gross Domestic Product growth (GDPG) and interest rate (INTR) as macroeconomic factors due to data availability. These variables were controlled for in this study and equation 1 becomes as shown below.

$$ROA_t = \alpha_0 + \alpha_1 FEXCR_t + \alpha_2 LIQ_t + \alpha_3 LEV_t + \alpha_4 FS_t + \alpha_5 OPG_t + \alpha_6 INTCOV_t + \alpha_7 TANG_t + \alpha_8 GDPG_t + \alpha_9 INTR_t + \sum_{i=1}^k \text{COMPANY} + \text{YEAR} + \varepsilon \quad (2)$$

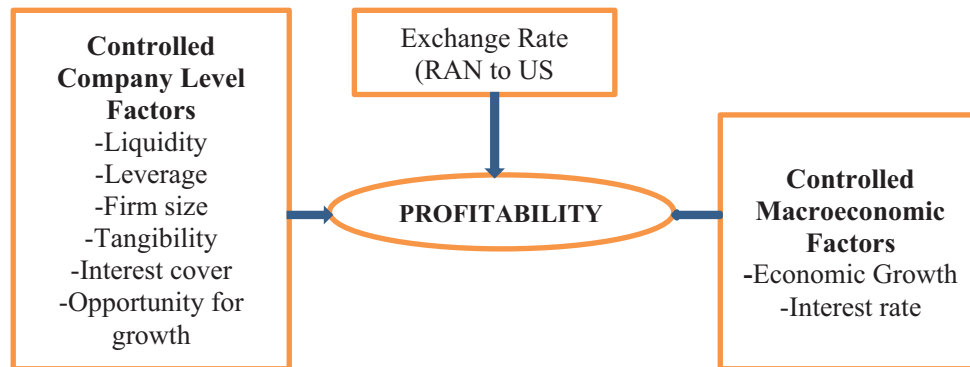
Equation 2 is for both listed mining and manufacturing companies. The study further divided equation 2 into two as ROA estimation for the mining industry and manufacturing industry and estimated them as well.

**Table 1: Selected listed Companies**

Names of listed manufacturing companies	Names of listed mining companies
Allied Electronics	African Rainbow Ltd
Aveng	Drdgold
African Oxygen Ltd	Oceana
AECI	AngloGold Ashanti
NAMPAK	Anglo American Plc
Arcelor Mittal	BHP Billiton Plc
SABMiller	Sasol Ltd
Impala Platinum Holdings Ltd	Reunert
PPC Limited	Harmony Gold Mining
Murray & Roberts Holdings Ltd	Tongaat
Sappi Ltd	Omnia
Illovo Sugar Ltd	Group Five
Aspen Pharmacare Holdings	Growth Point
Datatec	Sentula
Mustek	York timbers
Metair	Netcare
Argent	Basil
Assore	Hosken
Astral Food	Iliad
Astrapak	Jasco
AVI	Merafe
Barlo World	
Bidvest	
Sovereign	
Crookes	
Distell	
Grindrod	
Beige	

Source: JSE Website (2018)

**Figure 1: Conceptual framework**



**Table 2: Description of variables**

Variables	Formula/description	Source
Profitability (Dependent variable)	Return on Asset=Net profit/total asset	Baker and Martin (2011)
Firm level factors (Controlled variables)	1. Firm size=Ln (Total Asset)	Li (2010)
	2. Interest cover=Earnings before interest and tax/finance cost	Badertscher et al. (2014)
	3. Leverage=Total debt/total asset	Baker and Martin (2011)
	4. Liquidity=Current asset/current liability	Breuer et al. (2012)
	5. Tangibility=Net PPE/total asset	Baker and Martin (2011)
	6. Growth opportunity=Market to book ratio	Baker and Martin (2011)
	7. Market-to-book=book value/market capitalization where; book value=PPE-Depreciation	
	8. Market capitalization=total share X share price	
Macro-economic factor (Controlled variables)	9. Gross Domestic Product (GDP)	Data stream
	10. Interest rate	Data stream
Main explanatory variable	Exchange rate	Data stream

All the variables used in the study are described in the Table 2.

#### 4. RESULTS AND DISCUSSION

The summary of descriptive statistics of the variables used in the study is shown in Table 3.

Table 3 shows that mean values of ROA, FS, TANG, and OPG significantly differ between listed mining and manufacturing

companies. The listed manufacturing companies significantly had higher ROA, FS, and OPG than listed mining companies. However, listed mining companies had higher ROA than listed manufacturing companies and this is significant at 5%.

Table 3 further shows that mean values of LIQ, LEV and INTCOV did not significantly differ between listed mining and manufacturing companies in South Africa.

**Table 3: Descriptive statistics**

Variables	All companies				Mining companies	Manufacturing companies	t-test for equality of means
	Min.	Max.	Mean	Standard deviation	Mean	Mean	P-values
ROA	-1.8140	1.1108	0.0630	0.1384	0.0515	0.0659	0.007
LIQ	0.0846	11.8334	1.5418	0.8834	1.3427	1.5929	0.357
LEV	0.0011	1.0305	0.1963	0.1618	0.1694	0.2032	0.352
FS	6.8926	19.7141	12.0600	2.9110	9.5164	12.7122	0.000
INTCOV	-41.2769	1422.00	17.6223	67.7987	18.7842	17.3244	0.313
TANG	-0.1758	1.1062	0.3481	0.2173	0.4101	0.3322	0.000
OPG	-0.0037	0.1582	0.0019	0.0112	0.000006	0.0024	0.028
INTR	4.94	12.7300	7.6867	2.2023	-	-	-
EXCHR	5.333	12.0000	8.2488	1.6539	-	-	-
DGPG	-1.5381	5.5850	3.2317	1.72811	-	-	-

**Table 4: Pearson's correlation matrix (for all companies)**

Variables	ROA	LIQ	FS	LEV	INTCOV	INTR	EXCHR	DGPG	TANG	OPG
ROA	1.000	0.143	0.036	-0.190	0.217	0.071	-0.105	0.080	0.024	0.035
LIQ		1.000	0.101	-0.361	0.118	-0.080	-0.020	-0.086	-0.021	0.059
FS			1.000	-0.046	0.029	-0.092	-0.005	-0.093	-0.210	0.135
LEV				1.000	-0.201	0.015	0.014	-0.050	0.369	0.040
INTCOV					1.000	0.011	0.030	0.060	0.080	-0.009
INTR						1.000	-0.047	0.119	-0.027	0.010
EXCHR							1.000	-0.316	-0.014	0.020
DGPG								1.000	-0.012	0.034
TANG									1.000	0.051
OPG										1.000

**Table 5: Random effect model results**

Variables	All companies			Mining companies			Manufacturing companies		
	Coefficient	Standard error	z	Coefficient	Standard error	z	Coefficient	Standard error	z
EXCHR	-0.0075	0.0029	-2.61*	-0.0089	0.0061	-1.45	-0.0065	0.0033	-2.00
LIQ	0.0123	0.0061	2.01*	0.0602	0.0207	2.90*	0.0100	0.0065	1.55
LEV	-0.2080	0.0436	-4.77*	-0.0773	0.0915	-0.84	-0.2053	0.0493	-4.16*
FS	0.0033	0.0028	1.16	0.0250	0.0070	3.55*	0.0011	0.0033	0.32
INTOV	0.0003	0.0001	3.60*	0.0010	0.0002	5.09*	0.0002	0.00008	2.21*
TANG	0.0804	0.0344	2.59*	-0.0089	0.0615	-0.14	0.1013	0.0416	2.44*
OPG	0.3931	0.5007	0.79	-2778.69	2073.701	-1.34	0.3556	0.5127	0.69
INTR	0.0054	0.0021	2.55*	0.0090	0.0045	2.01*	0.0040	0.0024	1.69
DGPG	0.0029	0.0028	1.02	-0.0041	0.0038	-0.71	0.0055	0.0032	1.70
CONST	0.0200	0.0556	4.76*	-0.2356	0.1163	-2.02*	0.0463	0.061	2.70*
No. of Obs	733			149			584		
No. of Groups	49			10			39		
Wald Chi <sup>2</sup> (9)	76.30			77.90			52.54		
Prob>Chi <sup>2</sup>	0.0000			0.000			0.0000		
R <sup>2</sup> : Within	0.2979			0.2646			0.2848		
Between	0.4188			0.6114			0.4106		
Overall	0.2945			0.3591			0.2845		
Rho	0.5705			0.6115			0.5712		

Dependent Variable=ROA; Significant level=5%

The Pearson's Correlation matrix is given in Table 4 to show the correlation between the variables and to test the presence of multicollinearity among the explanatory variables.

Table 4 shows that ROA is positively correlated with LIQ ( $r = 0.143$ ), FS ( $r = 0.036$ ), INTCOV ( $r = 0.217$ ), TANG ( $r = 0.024$ ), OPG ( $r = 0.035$ ), INTR ( $r = 0.071$ ) and GDPG ( $r = 0.080$ ). However, ROA is negatively correlated with LEV ( $r = -0.190$ ) and EXCHR ( $r = -0.105$ ).

From Table 4, none of the correlation coefficients between the explanatory variables (LIQ, FS, LEV, INTCOV, TANG, OPG, INTR, GDPG and EXCHR) exceeded 0.5 and this is an indication that multicollinearity is not present.

The estimation of ROA for "all companies," "mining company" and "manufacturing companies" with random effect model are presented in Table 5.

Table 5 shows that EXCHR had a negative significant impact on ROA when all companies (both mining and manufacturing) are considered. However, EXCHR did not significantly impact on ROA among mining companies but had a significant negative impact on ROA among manufacturing companies. This is an indication that exchange rate impacts on profitability (ROA) depend on the nature of companies in South Africa. The profitability of manufacturing companies are significantly reduced when RAN depreciates against US dollar but this is not so in the mining companies. The listed manufacturing companies in South Africa have foreign operations or have more assets dominated in US dollar than mining companies; hence exchange rate fluctuation possesses a greater risk to them. This finding of the study is consistent with Koutmos and Martin 2003) notion that companies with high foreign business have higher exposure to exchange rate fluctuation than companies operating domestically only or with the little foreign business operation. The negative relationship between exchange rate fluctuation and profitability has been established by previous studies (Fayman and Casey, 2014; Bailliu and Bouakez, 2004; Japan and Williamson, 2001; He et al., 2014).

At the company levels, LIQ, FS, and INTCOV significantly increased ROA but other variables (TANG, LEV, and OPG) did not have a significant impact on ROA within the mining industry. However, INTCOV and TANG significantly increased ROA while LEV significantly reduced ROA in the manufacturing industry. The results show that INTCOV significantly increased ROA in the two industries but OPG had no significant impact on ROA in both mining and manufacturing industries. When all companies are considered, leverage had a significant negative impact on profitability. This supports the Pecking Order theory but disapproves the Agency Theory and Signal theory. The finding is consistent with Rajan and Zingales (1995) and Booth et al. (2001) that leverage and profitability are negatively related. The study, however, contradicts studies that noted the positive relationship between leverage and profitability (Sangeetha and Sivathaasan, 2013; Frank and Goyal, 2004; Velnampy, 2013). Liquidity is expected to have a negative impact on profitability (Kahman and Nasir, 2007; Johnson, 1983; Shah and Sana, 2006). This is because

of companies with the aim of having higher liquidity turn not to invest more or take more risky investment. This study, however, found a positive relationship between liquidity and profitability as noted by Anupchowdhury and Amin (2007). At the macroeconomic level, INTR significantly increased ROA in the mining industry but not manufacturing industry. GDPG had not a significant impact on ROA in both mining and manufacturing industries.

## 5. CONCLUSIONS

The research concludes that the country should install adequate precautions for the local currency. This should promote foreign direct investments which will bring economic growth and subsequently cause the country's currency to appreciate. This would accordingly reduce borrowing costs thus making credit even further affordable and also translate to a more stabilized currency against global currencies. The study empirically estimated the impact of exchange rate on the profitability of listed mining and manufacturing companies in South Africa over the period of 2000-2014 by using random-effect model. The conclusively observed the RAN to US dollar fluctuation significant reduces profitability within manufacturing industry but not mining industry. This suggests that depreciation of RAN significantly erode profit of manufacturing companies but not mining companies. Considering all companies, the study concludes that liquidity, interest coverage, tangibility significantly increase profitability but leverage reduces profitability. At the macroeconomic level, the study found interest rate as having a significant positive impact on profitability.

### 5.1. Recommendations to Policy and Practice

The appropriate authorities, for instance, the Central Bank of South Africa should sufficiently put safety measures for value sustainability of the country's currency.

The government should deploy measures that are focused on increasing the country's national income based on locally funded investments. External funding should be limited to a minimum extent so that the local currency can be strong in the global capital markets.

The study recommends that managers of manufacturing companies should exchange rate risk management techniques such as currency swaps, future contract, and hedging to advert to exchange rate fluctuation risk.

### 5.2. Limitations of the Study

The article focused on 14 years (from 2001 to 2014). The period of study was therefore not completely exhaustive in exploring exchange rate variations impact on the performance of listed mining and manufacturing companies in South Africa. A wider time span study could be vital in examining the dependent variables against the independent variables.

Effects of other performance measures such as; return on equity; earnings per share, and market to book ratios were not studied by this research; therefore the research did not address the effects on other economic variables on performance. The research employed secondary data that had been primarily collected for

other objectives. The findings of this study are therefore totally dependent on the validity and accuracy of the data acquired from a secondary source.

### 5.3. Suggestions for Further Research

The research uses USA dollar fluctuation to calculate the foreign exchange fluctuations. It expects future studies to be carried by employing other global currencies such as; the Pound Sterling or the Euro with reference to the South African Rand. This comparison would ensure that fluctuations with other currencies can be done and the impact of such fluctuations studied against the firm performance. Further studies can be carried on other sectors such as; the banking sector, agriculture, tourism, and other sectors. This would provide a general pool of research findings that can be compared across industries for the formulation of optimal policy.

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