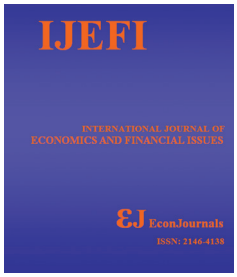

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Exchange Rate (MIS-) Alignment: An Application of the Behavioural Equilibrium Exchange Rate (beer) Approach to Zimbabwe (1990-2018)

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ABSTRACT

This study employed the behavioral equilibrium exchange rate (BEER) approach to establish whether or not there is an exchange rate (mis-)alignment in Zimbabwe. The country is characterized by strong and significant deviations between the official and parallel exchange rates and high inflationary pressures which result in macroeconomic and financial instability leading to dwindled economic growth. Among others, the BEER model analysed the significance of macroeconomic variables in influencing exchange rates and also assessed episodes (or states) of over- and under valuation of the currency. The results indicate that all variables except investment (INV) are significant in explaining the BEER. These variables are terms of trade (TOT) which include price of gold, capital flows (CAP) and government spending (GOV) are all highly significant at the 1% level whilst trade openness (OPEN) is weakly significant at the 10% level. The results also indicate that episodes of over-valuation outweighed and outnumbered episodes of under-valuation during the study period 1980-2018. The study concludes that exchange rate volatility may originate from factors other than macro fundamentals given the split system that exist between the official and unofficial (parallel) exchange rates. Thus, in addition to correct regulation of macro variables, there is also need to build trust in order to curb speculation, corruption and arbitrage behaviors which amplify distortions.

Keywords: Exchange Rates, Behavioral Equilibrium Exchange Rate, Inflation, Macroeconomics, Zimbabwe
JEL Classifications: C22, E31, E32, E52, E58

1. INTRODUCTION

Establishing macroeconomic stability remains central in achieving high economic growth, socio-economic transformation in any economy. Equilibrium real exchange rate significant variable in economics and in the recent past it has gained prominence in macroeconomic stabilisation policies and policy formulation dimensions in developing countries. Real exchange rate divergence from real equilibrium exchange rate level that is significant, sustained, and unprecedented, that is misalignment may have grievous implications on the macroeconomic stability of any economy (Bazdresch and Werner, 2005; Jongwanich, 2009). Therefore, the relative cost of tradable to nonreadable that leads to the simultaneous achievement of equilibrium in the external and domestic sectors of the economy is the real exchange rate (Edwards, 1989; Korsu and Braima, 2011; Bouzahzah and Bachar, 2014). More specifically, RER is the difference between the price of tradables and non-tradables (ibid). According to Hinkle and Nsengiyumvaana (1999) RER is defined as external terms between nations and internal terms within the country.

RER misalignment is therefore one of the major indications in determining an economy's susceptibility and/or its macroeconomic stability, according to a wide theoretical and empirical literature. RER misalignment is therefore described by studies by Ca'Zorzi et al. (2020), Imam, (2011), Jongwanich (2009), Hinkle and

Nsengiyumva (1999), and Edwards (1989) as the difference between the RER and long-run real equilibrium exchange rate. Therefore, misalignment may be divided into overvaluation and undervaluation. According to Ebaidalla (2014), an exchange rate is said to be overvalued when it rises beyond equilibrium or undervalued when it falls below equilibrium, and both circumstances are referred to as misalignment. In particular, Edwards (1989 and 2000) hinted that RER overvaluation is seen as a sign of impending disaster. In the same vein, overvaluation of exchange rates among many Sub-Saharan African Countries (for instance Botswana; Sudan; Democratic Republic of Congo, Nigeria, Zambia and Guinea) has resulted in dramatic deterioration in their agriculture and external sectors of their economy (World Bank, 1984; Ghura and Grennes, 1993; Iimi, 2006; Elbadawi et al., 2012). Furthermore, persistent overvaluation indicates unfavourable macroeconomic conditions in a country, which leaves it open to speculative attacks and currency crises. RER undervaluation that persists, on the other hand, might cause an economic overheat that would pressure domestic prices and result in an incorrect allocation of resources between tradeable and non-tradeable sectors (Jongwanich, 2009).

Under the behavioural equilibrium exchange rate (BEER) model, estimates of the exchange rate (mis-)alignment based on a reduced form connection between RER and important macroeconomic factors are going to be generated in order to determine if there is exchange rate (mis-)alignment. According to Fidora et al. (2021), any misalignments, if any, are predicted to disappear in the medium run as RER moves back toward the predicted equilibrium. However, if nominal and/or structural rigidities exist that might prevent expected corrections, severe misalignment could continue (ibid).

Academics and policymakers in first world countries and developing nations have recently given concerns relating to the responsible management of the RER a lot of attention. For instance, it has been suggested that the current international debt crises were strongly influenced by the improper exchange rate policies implemented around the turn of the millennium (Edwards et al., 2003). According to Edwards (2020), a fixed exchange rate system was a major contributing factor to Chile's currency and financial crises. Undeniably, stability in the RER is a key aspect in improving a country's trade sector, and in enhancing the overall macroeconomic stability and performance of a country (Conrad and Jagessar, 2018; Mahraddika, 2020 and Fidora et al., 2021). RER misalignment has been considered as one of the primary causes of macroeconomic instability and dismal macroeconomic performance of several countries (Heriqbaldi et al., 2020).

Several studies have modelled the equilibrium real exchange rate for many developing countries (Abbott, 2012; Aissa and Saida, 2021; Nouira and Sekkat, 2015; De Mendonça and Tiberto, 2017 and Mahraddika, 2020). A growing number of empirical studies are showing evidence in support to the notion that most developing countries are experiencing macroeconomic instability owing to the ripple effects of exchange rate misalignment using different set of macroeconomic fundamentals to measure misalignments (Ghosh et al., 2014; Amaira, 2021; Conrad and Jagessar, 2018; Mahraddika, 2020 and Banerjee and Goyal, 2020). Despite several studies in literature, Researchers disagree on whether changes of nominal exchange rate correspond to movements in equilibrium RER. The objective of the research is to examine if the is misalignment in exchange rate with its macroeconomic fundamentals between 1990 first quarter to 2018 fourth quarter. Specifically, the study seeks to establish the equilibrium real exchange rate in Zimbabwe and to examine whether Zimbabwe's real exchange rate is mis aligned.

1.1. Background

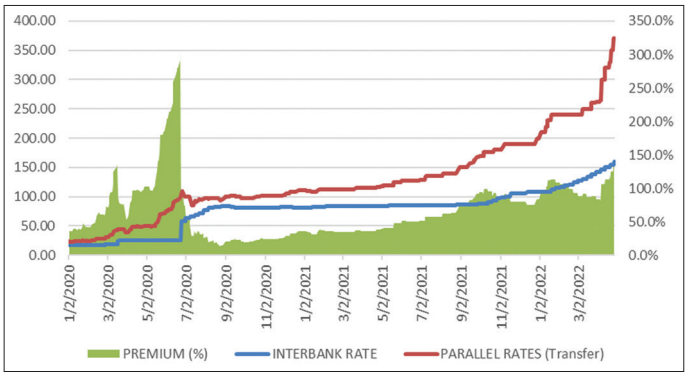
The multicurrency regime in Zimbabwe introduced in 2009 changed following the introduction of the Zimbabwean dollar (ZWL) in 2016. This introduction was in an attempt to suppress the liquidity crisis which the economy was facing. Reserve Bank of Zimbabwe (RBZ) introduced bond notes and coins (surrogate currency) in May 2016 which was to be backed by US$200 million Afrexim Bank facility (Madzokere et al., 2018). Despite resistance from the corporate world and general public the RBZ subsequently introduced the ZWL on 28 November 2016. Temporary presidential powers were used to introduce the notes into the financial sector, directly into the already existing US dollar bank accounts before the RBZ Act (Chapter: 22:15) was amended (*ibid*). This arrangement sailed through for almost 2 years, each successive day saw daily cash withdrawals being reduced from US$10 000 in 2015 to US$20 between 2016 and 2019 (Madzokere et al., 2018).

The ZWL and US dollar coexisted for a period backed by the Government, through the gazetting of Statutory Instrument 33 of 2019 which stated that, the ZWL was at "par" with the US dollar. This saw genesis of parallel exchange rate which saw the US dollar being traded in the alternative informal market and consequently there were two exchange rates. This arrangement had a negative impact as the US dollar crowded out the bond notes and coins, and it led to the Government's pursual of a partial flexible exchange rate regime in February of 2019 (Sakarombe and Makoni-Marimbe, 2020).

Later, the Government of Zimbabwe, through S.I 142 of 2019 introduced the mono-currency (ZWL) in June of 2019 which brought clarity to the currency market and facilitated competitiveness of the local industry including growth in exports. However, this was short-lived as the advent of Covid-19 pandemic disruptions, rising inflation and continuous devaluation of the domestic currency leading to the reintroduction of the multicurrency regime through Statutory Instrument 85 of 2020 by the Central Bank (Sakarombe et al., 2022). Therefore, the exchange rate was moved to free-market conditions, which saw the introduction of the Dutch Auction System on 23 June 2020. Consequently, ZWL depreciated by more than 200% in value against the USD, from ZWL25: US$1 in May of 2020 to ZWL82: US$1 in October 2020 (*ibid*).

Since then, the parallel exchange rate has increased in value relative to the auction rate, while both the official auction exchange rate and parallel market exchange rate have declined. Figure 1 below shows the successive widening of the exchange

Figure 1: Official Exchange Rate and Parallel Exchange Rate in Zimbabwe



Source: Author's illustrations using RBZ, ZIMSTAT and MoFED data

rate premium (January 2021 to March 2022), which suggests that Zimbabwe's exchange rate may be overvalued and, as a result, out of line with the equilibrium real exchange rate (ERER). Montiel (1997) defined ERER as a consistent level with simultaneous internal and external balances. The Zimbabwean economy has also faced high double digit inflation rates during these periods of high premium with a record high of 752.7% being recorded in 2020 (Ministry of Finance and Economic Development, 2021). Recently a widening exchange rate premium has grown in tandem with the inflationary pressures as witnessed in the 2021 third and fourth treasury quarterly bulletins (ibid).

Since the advent of the Zimbabwean dollar (ZWL), the official rate and the parallel market rate have not converged. Even though the market responded briefly to the introduction of the Dutch Auction System, the premium between the parallel market and the official exchange rate has substantially widen as indicated in the graph below.

A major depreciation of the official exchange rate may be required given the continued expansion of the exchange rate premium, which indicates that it may be severely overpriced. In light of this, the equilibrium real exchange rate for the Zimbabwean economy is determined, and the BEER (behavioural equilibrium exchange rate) technique is used to determine the potential of (mis-)alignment from the equilibrium level.

1.2. Problem Statement

Why policy makers are interested in the idea of an equilibrium exchange rate may be that RER determination is connected to macroeconomic fundamentals. Strong, significant, and repeated deviations from equilibrium levels can significantly affect the pricing dynamics, growth prospects, financial stability, and even macroeconomic stability in the economy (Ca'Zorzi et al., 2020; Gan et al., 2013). Exchange rate misalignment, may cause high inflationary pressures, dwindling economic growth, financial instability and/or severe macroeconomic instability as these factors are interlinked and maybe as a result of exchange rate misalignment ripple effects (Ibid). Since the turn of the millennium, Zimbabwe has been experiencing macroeconomic instability especially, with a notable widening premium between the official and parallel exchange rates. Therefore, exchange rate misalignment maybe a serious and urgent problem which needs urgent attention, it is macroeconomic in its cause, catastrophic in its consequences and ripple effects. Generally, good management of macroeconomic variables is associated with the alignment between RER with these macroeconomic fundamentals.

The Zimbabwean economy has witnessed sustained widening gap between the official exchange rate since the turn of the year 2020, despite the efforts by the Government in introducing the partially flexible exchange rate through the Dutch Auction System. Since the Smithsonian Agreement in 1973, IMF (2004), finds that while other countries have moved towards more flexible exchange rate regimes, a larger part has retained inflexible exchange rate regimes such as, soft pegs and bands covering conventional fixed (for example Botswana) and crawling pegs, as well as hard pegs or legal tender and currency boards. Zimbabwe is using a partially flexible exchange rate system. For that reason, it is imperative to determine right nominal exchange rate regime as well as ascertaining whether it is misaligned from macroeconomic fundamentals. This will help in macroeconomic policy recommendation for Zimbabwe as a developing country. The official exchange rate and the parallel exchange rate have not converged in Zimbabwe. This sustained widening of the premium suggests that our currency maybe be overvalued and hence need to ascertain the equilibrium exchange rate and evaluate whether there is any (mis-) alignment.

1.3. Significance of the Study

Governments give the assessment of the equilibrium exchange rate a lot of attention through central banks and financial research organizations. Although methods vary, the underlying principles that determine the equilibrium real exchange rate have largely stayed constant. Therefore, one of the crucial steps in developing and implementing macroeconomic policies for the advancement of any economy is equilibrium exchange rate determination. The literature on exchange rate regimes uses the Purchasing Power Parity as its initial point and claims that just because the real effective exchange rate is consistent, the rate of exchange reflects changes in the nominal exchange rate (Cassel, 1916). According to Williamson (1994), the Fundamental Equilibrium Exchange Rate (FEER) is the actual exchange rate that simultaneously maintains internal and external balances. Potential production with low inflation serves as a proxy for the internal balance, while the external balance is shown by the coexistence of a sustainable balance of payments position and a sustainable amount of foreign debt.

The Behavioural Equilibrium Exchange Rate (BEER) was developed to display the cyclical and sporadic fluctuations of the real exchange rate based on current values instead of the values of fundamentals connected to the full employment condition. This action was taken to dispel this "idealistic" perception of the FEER. The behavioural equilibrium exchange rate, which is defined as a function of a variety of macroeconomic factors, is then used to calculate this equilibrium value. Using the Vector Error Correction Model and the Behavioural Equilibrium Exchange Rate (BEER) method (VECM). This study tries to determine the equilibrium exchange rate for Zimbabwe and, as a result, determine if there is exchange rate (mis)alignment. Few existing literatures: Sakarombe

et al., (2022); Sakarombe and Makoni-Marimbe (2020) and Madzokere et al. (2018) dwelt on other aspects of the exchange rate in Zimbabwe, leaving a gap on the establishment of the equilibrium real exchange rate in Zimbabwe to be a critical need and consequently the determination of the exchange rate (mis-) alignment.

2. REVIEW OF THEORETICAL FRAMEWORK

The foundational works of literature in the field of exchange rates. It assesses the effects of monetary and fiscal policy on small open economies with floating or fixed exchange rate regimes (Fleming and Mundell, 1964; Hamilton, 1989). This is an expansion of the IS-LM model (autarky), which describes how the loanable funds market equilibrium interacts with the equilibrium in the products market (Guo et al., 2010). Mundell-Fleming Model This model is based on the independent work of Fleming (962) and Mundell (1963), extended from the IS-LM model. It is one of the genesis literatures in exchange rate fraternity. It evaluates the impact of economic policies, either monetary or fiscal, in small open economy which uses either floating or fixed exchange rate regimes (Fleming and Mundell, 1964). This is an extension of the IS-LM model (autarky), which explains how equilibrium in the goods market interacts with the equilibrium in the money market, the loanable funds market (Mankiw and Taylor, 2020). This model has as its starting point a modest, open economy with complete capital mobility, implying the country can borrow or lend at will in the international financial markets, hence its economy's interest rate (r) is dependent to the world interest rate (r*), which can be denoted as.

$$r = r^* \quad (1)$$

This model explains why we have exchange rate misalignment in fixed and partially fixed exchange rate regimes in different countries as authorities will be seeking to manipulate the exchange rate in favour of their economies (Saikkonen, 1992; Hsing, 2021, Nenkova and Kovachevich, 2022). The model has aided in this research's understanding of the implications of various exchange rate regimes, which will aid in the analysis of the study's findings. Although this model may be used to determine the best course of action under various exchange rate regimes, it does not account for the creation of an equilibrium exchange rate; for this reason, we will explore more modern models in the lines that follow.

The Purchasing Power Parity (PPP) is the rate of exchange between two currencies that, if represented in a single currency, could equalize the two important national price levels, ensuring that a unit of one exchange rate would have the same purchasing power in both economies (Brooks, 2014; Taylor et al., 2001). The PPP is based on the law of one price, which establishes the equilibrium exchange rate. The PPP theory states that nominal exchange rates ought to fluctuate over time to counteract shifts in competitiveness that cause price indices to move in various directions (Taylor and Taylor, 2004; Norman, 2010; Fidora et al., 2017). According to the idea, which has its roots in the Salamanca School of Spanish scholars from the sixteenth century, exchange rate swings that reflect changes in relative price indices are appropriate (Ca'Zorzi, 2020). Cusav Cassel first used the phrase "purchasing power" over a century ago, and the gold standard's inception saw the development of suitable exchange rate computations.

Since then, the PPP has evolved into the accepted method for determining the equilibrium exchange rate. It has been used to evaluate exchange rate parities for nations with fixed exchange regimes as well as exchange rate misalignment for nations with flexible exchange rate regimes (ibid). According to Taylor and Taylor (2004), PPP has never been applied to or conceived of as a short run theory to determine exchange rates, but rather as a long run phenomena. A number of recent studies, including Engel (2016), Ca'Zorzi (2017; 2020), and Mijakovic et al. (2020), make the assumption that the PPP represents the real exchange rate's equilibrium value, with deviations being accounted for by interest rate differences or risk premia as covered by the uncovered.

Additionally, the PPP theory is characterized in two different ways: relative and absolute. Since it posits that prices in two nations are not exactly equal and that the relative buying power of two distinct monetary units would mostly not vary over time, the relative PPP theory appears to be the most attractive and pertinent (Mijakovic et al., 2020).

$$rer^{PPP} = rer \quad (2)$$

The relative PPP, which is more severe since it anticipates that the same basket of commodities should be similarly priced when denominated in a shared currency, is the exact reverse of the absolute PPP (ibid.).). However, due to the implied convergence in purchasing power, the PPP theory has been widely accepted as empirically less relevant to determine equilibrium exchange rate. Real exchange rates should behave as a mean-reverting stationary process, according to the PPP theory's conclusion. However, a few of scholars contend that the rate of mean reversion is extremely sluggish and that a complete return is unlikely to occur. Therefore, the slow adjustment is sometimes referred to as the PPP conundrum (Rogoff, 1996), leading to a number of reasonable justifications for the process's sluggishness (Taylor et al., 2001, Bergin et al., 2017). Real exchange rates may not be stable, according to some studies, hence it makes sense to try to explain their behavior in terms of other economic fundamentals using a cointegrating framework (Bergin et al., 2017 and Mijakovic et al., 2020; Dunaway et al., 2009). In IMF jargon, this strategy is referred to as the Behavioural Equilibrium Exchange Rate (BEER) model (Hasted and MacDonald, 1998) or the reduced form model (Lee et al., 2008).

This method quantifies the basic factors that affect the real exchange rate using econometric analysis and an expanded interpretation of the uncovered interest rate parity (Engel, 2016; Engel et al., 2019). As a result, this involves determining how closely the real exchange rate (rer^{BEER}) and macroeconomic fundamentals (F_t) (Égert, 2005) so that the estimated value of the BEER will be given by:

$$rer^{BEER} = \beta F_t + \epsilon_t \quad (3)$$

Deviation from this established equilibrium exchange rate will therefore represent misalignment. Literature has discussed most plausible choice of economic fundamentals to be used in the BEER approach, including their expected signs. In several studies, terms of trade, net foreign assets, and government spending have been used. There are indications that increasing government spending will cause the real exchange rate to appreciate, increasing net foreign assets will increase interest income on the current account, and increasing terms of trade will increase wealth, which will strengthen the real exchange rate (Fidora et al., 2021; Ca'Zorzi et al., 2020). Following MacDonald (1998) and Fidora et al. (2017), who included investment and interest rate differentials as additional macroeconomic basic factors in calculating the equilibrium real exchange rate, these variables have been employed in this analysis.

Making an arbitrage between a currency's low volatility and misalignment is the troubling problem that any nation may encounter. Although the impact of the exchange rate misalignment on macroeconomic fundamentals has not been conclusively demonstrated, there is general agreement that an equilibrium exchange rate corresponds to adequate growth and long-term internal and external balance (Musyoki et al. 2012; Palić et al. 2014 Edwards, 1989). In order to achieve this desired equilibrium value, a collection of macroeconomic factors is specified as the behavioural equilibrium exchange rate. This supports the decision to employ the BEER strategy in this study rather than the previously stated PPP and the upcoming MB approaches, which will be detailed below. Due to its forward-looking nature, the macroeconomic balance (MB) method varies significantly from the earlier models. The MB approach requires a system of equations to find the real level of the real exchange rate as opposed to examining historical trends in the real exchange rate and its potential explanatory variables (Williamson, 1994; Pinno and Serletis, 2007; Lee et al., 2008; Ricci et al., 2013).

Our ability to calculate the equilibrium exchange rates at points of internal and external equilibrium is made possible by the model. Swan (1963) provided the initial outline for the analytical foundation of the MB model, which the IMF staff improved in the early 1970s. Williamson (1994), Ricci et al. (2008), Ricci et al. (2013), Comunale (2018), and Cubeddu et al. (2019) have all used this foundation in their research on fundamental equilibrium exchange rates. Accordingly, in this model, equilibrium is described as a quantity that is compatible with both internal and external balances throughout the medium term (Ricci et al., 2008). While external balance is defined as reaching an equilibrium position in the current account and capital account, internal balance is defined as reaching the fundamental level of potential production (ibid).

The model also corresponds to the following three steps: First, calculating the long-term link between the level at which the current account balance will stabilize assuming stable exchange rates over time (ca') (Symansky et al., 1994). Secondly, there is need for setting up a current account target (ca^{targ}) and lastly, it is necessary to determine how changes in the actual exchange rate influence the current account (ca) (ibid). After completing the above steps, the equilibrium exchange rate will then be computed as:

$$rer^{MB} = rer - \frac{ca' - ca^{targ}}{ca} \quad (4)$$

The convergence of the current account to its aim should thus be guaranteed by the resulting real exchange rate. The aforementioned formula shows that the MB method focuses more on the present level and current account imbalances than it does on previous real exchange rate movements. As a result, the MB approach's results might be very different from those of the PPP and BEER approaches. According to Ca'Zorzi et al. (2020), the MB technique produces time series equilibrium real exchange rates that are unpredictable and unrelated to other models. The current account balance's historical associations with a number of macroeconomic factors are used to determine MB real exchange rate equilibrium, with equilibrium relationship being the main tenet of econometric estimations. So, if output gaps at home and abroad are filled, equilibrium is the speed at which the current account stabilizes at the desired level. Therefore, the last stage is to estimate trade elasticities and use those estimates to calculate the adjusted exchange rate required to narrow the gap between the current account norm and the real current account.

In terms of economic intuition, the PPP models merely provide the idea that real exchange rates are mean reverting when compared to the five models previously mentioned. The BEER method is more illuminating since it connects the evolution of real exchange rates with that of the macroeconomic fundamentals, in contrast to the Mundell Fleming model, which provides insights on policy impacts in fixed and flexible exchange rate regimes. According to Ca'Zorzi et al. (2020), the MB method is more complicated since it calls for a description of what makes up external imbalances as well as a theory regarding how trade volumes and prices are impacted by exchange rates, which leads to the current account modification process. The failure of the PPP approach to account for transportation costs, tariffs, and currency changes, among other issues with the MB approach and other models, as well as time and data constraints to run the dynamic stochastic general equilibrium (DSGE) model, have influenced the decision to use the BEER approach, which employs a linear regression model and is frequently used in recent studies by the IMF and other studies (Rangasamy, 2009; Iimi, 2006; Lebdaoui, 2013; Omuru and Odjegba, 2013 and Kiptui and Ndirangu, 2015).

3. EMPIRICAL OVERVIEW

Some global experiences, comparing the BEER and FEER models in their study, Clark and MacDonald (1998) came to the conclusion that the BEER model uses an econometric model to analyze the behaviour of the real exchange rate and provides a more varied measure of misalignment by demonstrating the relationship between estimated equilibria. The decision in this study was influenced by the BEER model's ability to anticipate the future through the use of an econometric model. Their findings and conclusions bring up the important problem of endogeneity

in econometric modelling. According to Du Plessis (2005), endogeneity is another prerequisite for an equilibrium exchange rate model, making the existence of an equilibrium exchange rate dependent on more than just the link between the actual exchange rate and economic factors. Endogeneity in econometric modelling is a critical issue that Du Plessis (2005) emphasizes, casting doubt on the reliability of McDonald the pair asserts that their equilibrium model is not considerably affected by the lack of weak endogeneity.

In order to evaluate exchange rate regimes and currency misalignments in 128 emerging and developing countries, Coudert and Couharde (2009) estimated equilibrium real exchange rate using an econometric model. They came to the conclusion that pegged exchange rate regimes are more overvalued than floating ones. The fact that Zimbabwe has been using a regulated floating currency rate system may help explain these findings. Jongwanich (2009) investigated the equilibrium real exchange rate, misalignment, and export performance using emerging Asian nations, and came to the conclusion that the real exchange rate was overvalued in the run-up to the 1997-1998 financial crises, especially in the most crisis-affected countries. The results of the study suggest that real exchange rate misalignment can be detrimental to the region's export performance. According to the report, authorities might employ ongoing monitoring of misalignment and actual exchange rate equilibrium to help balance the economy. The findings of this study are particularly interesting because Zimbabwe, the subject country, is categorized as a developing nation by the International Monetary.

Furthermore, Ca'Zorzi et al. (2020) assessed the prediction capacity of the various equilibrium exchange rate techniques using data from the European Central Bank and came to the conclusion that the PPP delivers little economic insights but has a decent forecasting ability. Even if the BEER technique establishes a correlation between economic fundamentals and currency rates, it is less foretelling than the PPP approach. However, the study found that the MB technique had weak predicting ability while having an appealing economic interpretation. In contrast to previous techniques, they hypothesized that the BEER model delivers greater insight by offering equilibrium exchange rates that can be explained by changes in economic fundamentals. This is why this study chose to use the BEER model. From 1995 to 2016, Krekó and Oblath (2020) examined the connection underlying real exchange rate deviation and growth in the European Union. They discovered that, within the EU, overvaluation or undervaluation was correlated with lower or greater growth, which is mostly attributable to changes in countries with fixed exchange rate regimes, using pooled Ordinary Least Squares (OLS) and dynamic panel approaches. These results showed that the degree of development is not a factor in the strength of the association between growth and misalignment within the EU.

In the African context, Iimi (2006) discovered that the pula in Botswana was undervalued in the late 1980s and inflated in the early years of the 21st century. This came after the pula had many devaluations and switched from a fixed to a crawling peg exchange rate. Because Zimbabwe's currency rate was partially controlled during the research period, the results show that managed exchange rates can cause misalignment. Based on these findings, this paper offers recommendations for policy consideration. De Jager (2012) used a Vector Autoregressive Model (VECM) to forecast an equilibrium route in an effort to gauge the extent of the REER's deviation from its long-run value in South Africa. The primary factors affecting the equilibrium REER were demonstrated to be real interest rate differentials, an openness metric, commodity prices, the size of the fiscal balance, and capital inflows into South Africa. As a consequence, it was found that the Rand/dollar exchange rate was too expensive during the first quarter of 2011.

The study carried out by De Jager (2012) used a VECM to examine the numerous economic elements that affect the REER and adhered to the BEER exchange rate computation technique. Additionally, the study used data from the years 1982 to 2011 to calculate the equilibrium real exchange rate and the real exchange misalignment. Commodity prices, terms of trade, the financial sector, the sector responsible for the fiscal balance, the real sector, and the international sector were used to categorize the exogenous variables in the research. De Jager (2012) also comes to the conclusion that important economic factors have a significant role in determining the equilibrium. De Jager (2012) issues a warning that the collection of economic fundamentals given in the model affects the level of the equilibrium real exchange rate. The researcher also emphasizes that various model specifications will lead to different results. Endogeneity in the Du Plessis model is not discussed in the paper by De Jager (2012). (2005). Endogeneity will be incorporated into this study's model.

The findings also demonstrate that misalignment occurred when the exchange rate was only partially regulated. Therefore, it is important to study Zimbabwe's (mis-)alignment in order to provide policy suggestions that might increase its ability to compete globally. Lebdaoui and Wild (2016) also looked at the relationship between the exchange rate regime, the external balances, and the misalignment of the exchange rates. Findings show that in Morocco, there was a long-term causal relationship between exchange rate misalignment, or divergence from equilibrium, and external balances. Moreover, findings from Khomo and Aziakpono's study (2020) indicate that the rand's REER and economic fundamentals, such as terms of trade, external openness, capital flows, and government spending, are linked in a long-run equilibrium state in South Africa. In this study, the terms of trade and trade openness are also assessed.

3.1. Zimbabwe

There are few researches that have looked at the problems of misaligned currency rates in Zimbabwe. Masters and Ianchovichina (1998) showed that proxy-based findings understate misalignment by about 25% and overestimate depreciation by 4% annually using a conventional model with disaggregated data for Zimbabwe. This study uses monthly data to assess recent (mis-)alignment (from 2019 to 2021). Masunda (2011) also examined a representative sample of sectors using practical generalized least squares panel data approaches. The study found that sectoral output is negatively impacted by actual exchange rate misalignment. While this study aims to assess (mis-)alignment in the recent past multicurrency

period, it was conducted using data from 1980 to 2003 when the country's currency was generally stable (2019-2021).

For Zimbabwe, Ndhlela (2012) offers an empirical examination of the link that exist among the real exchange rate misalignment and real GDP based on the BEER approach. The study discovered that growth was negatively impacted by exchange rate mismatch. Overall, the study's findings are consistent with the proposition that persistent over-valuation of RER was a major factor contributing to the nation's post-2000 economic crisis and GDP contraction. Because this study was also conducted during the mono-currency era, there is a vacuum in the literature that this one aims to fill by assessing (mis-)alignment during the multicurrency age.

The necessity for a new research to add to the body of knowledge is explained by the fact that the studies described above about exchange rate (mis-)alignment in Zimbabwe cover a time when we were utilizing a mono-currency and the Zimbabwean economy was reasonably stable. This study aims to determine Zimbabwe's equilibrium real exchange rate in order to determine whether there is (mis)alignment. This is significant because an overvalued currency would have an impact on the export industry, which would then have an impact on economic growth. Real exchange rates are frequently used to gauge competitiveness. Misalignment might also quickly lead to currency and balance of payment crises (a current problem in Zimbabwe). As a result, this study will provide additional light on the reasons behind the issues plaguing the Zimbabwean economy. In order to propose suitable policy actions, its more to create an equilibrium RER and (mis-) alignment.

4. METHODOLOGY

Finding solutions to research objectives involves a methodical strategy, and the credibility of the research findings depends on the dependability, appropriateness, and manner of data analysis utilized (Brakni and Azzazi, 2021 and Mukul, 2011). The behavioural equilibrium exchange rate (BEER) approach focuses on employing a reduced-form equation to simulate the behavioural link among RER and necessary economic factors. By finding statistically important long-term REER drivers, this approach aims to predict the exchange rate in a behavioral setting.

According to Baak (2012) and Gal et al. (2013), the equation has been reduced as follows:

$$LREER_t = \beta F_t + \epsilon_t \quad (5)$$

$LREER_t$ depicts log $REER_t$, t is the random disturbance term, F denotes a vector of economic variables values that have long-term insistent impacts on Equilibrium Real Exchange Rate (ERER) and represents the coefficient of the vector of values of economic fundamentals.

Different economic factors are chosen by empirical investigations as the long-term drivers of the exchange rate. For instance, Eita and Sichei (2006) employed a dummy variable reflecting the political environment as well as other economic factors while assessing the evenness RER for Namibia. Furthermore, Terra and Valladares (2010) included trade openness, fixed capital creation, and inflation rate in their model to explain REER in Ghana. The variables included in the model for this study were chosen grounded on economic fundamentals, observed research, data accessibility, and utmost crucially, Zimbabwe's economic and political history, which has had a significant influence on exchange rate fluctuations.

From being the largest agricultural producer and exporter in Sub-Saharan Africa in the 1970s to go through political and economic sanctions in the early 2000s, the transition to popular democracy in 1994, and rising to become one of the top global tobacco exporters luring important capital flows. The final long-run REER model had the following parameters (ii) The equilibrium REER is determined as shown in the equation below:

$$GLREER_t = \alpha + \beta_1 TOT + \beta_2 OPEN + \beta_3 CAP + \beta_4 GOV + \beta_5 INV + \epsilon_t \quad (6)$$

Where TOT is the terms of trade, OPEN is the trade openness, CAP is the capital expenditure, GOV is the government spending, INV is the gross fixed capital formation. We utilize quarterly data with a total of 116 observations of the 1st quarter for 1990 to the 4th quarter of 2018. All of the variables included in the models, save the CAP, are converted into natural logarithms. The Reserve Bank of Zimbabwe, the Zimbabwe National Statistics Agency, the World Bank, and Trading Economics Indicators Data provided the information.

4.1. Econometric Procedure

The long-run connection between the variables is estimated using the Johansen (1995) cointegration method. In estimating the the co-integrating equation, the single equation was used. The ordinary least squares (DOLS) supported by Stock and Watson (1993) was utilized in finding the equation, in accordance with Goldfajn and Valdés (1999). (6). Because it adds indications and intervals of initial differences of the explanatory variables to the cointegration equation, the DOLS approach is favored over the VECM.

The equation is specified as follows:

$$LREER_t = \beta F_t + \sum_{j=k-1}^{k_2} \gamma \Delta F_{t-j} + e_t \quad (7)$$

When k_1 and k_2 are the lead and lag values and the dependent variable is LREER, F denoted the values of exogenous factors.

4.2. Pre-estimation Tests

In testing the stationarity of the series, the augmented dickey fuller (ADF) test was employed in by the study. Because it is doubtful that non-stationarity can be found when a series has a structural break using traditional unit root techniques, such as the ADF test, the Break-point test for unit root was employed to complement and endorse the Augmented Dickey Fuller (ADF) test results (Perron, 2006). Table 1 below presents the results of the unit root test. The presents of the structural breaks from the Breakpoint unit root test will give the reliability if the unit root tests results and the findings regarding the method used to generate the data in the series more

Table 1: Unit root test results

Augmented Dickey-Fuller			First difference	Conclusion
Variable	Level			
	Intercept	Intercept and trend		
LREER	−2.24	−2.79	−10.09***	I (1)
LTOT	−0.43	−2.39	−5.46***	I (1)
LOPEN	−2.56	−2.97	−13.64***	I (1)
LGOV	−0.61	−1.14	−5.27***	I (1)
CAP	−2.26	−3.19*	−3.03**	I (1)
LINV	−1.99	−2.56	−7.59***	I (1)
Break point	**Unit Root Test**			
LREER	−3.39	−3.80	−10.73***	I (1)
LTOT	−2.96	−4.08	−16.66***	I (1)
LOPEN	−3.83	−4.59	−14.88***	I (1)
LGOV	−9.00***	−10.73***	−29.48***	I (0)
CAP	−5.05***	−4.59	−6.02***	I (1)
LINV	−3.66	−4.15	−8.05***	I (1)

Source: Own study. *; **; *** denote levels of significance at 10%, 5%, 1%, respectively

believable (Perron, 2006). The Johansen (1995) method is used to check if the variables are co-integrated. The goal is to find an equilibrium long run relationship between the exchange rate and the macro-economics variables. Accordingly, the correlation matrix, economic theory, exchange rate endogeneity in the model, and the right signs of the coefficients were used to carefully choose the economic indicators that go into the long-run equation. In determining the duration of the lag, the Schwarz information criterion (SIC), Akaike information criterion (AIC) and the Hannan Quinn information criterion were employed. Out of a possible 10, the information criterion chosen between 2 and 6 fall short. Following validation of a co-integrating relationships among the variables, a long-run equilibrium exchange rate was computed as well as its oscillations were compared with the original Real exchange rate to determine the possibility of distortion in the Zimbabwean Dollar. To compute a long-run co-integrating equations, the DOLS approach was applied. According to Hossfeld (2010), the DOLS technique enhances predict sturdiness by accounting for possible confounders across regressors. We used the Engle-Granger as well as Phillips-Ouliaris tests to check the DOLS for cointegration as a rigorous check.

4.3. The Markov Switching Model

In calculating the likelihood of being in a certain regime, the misalignment series were used as a dependent variable from the MSM framework. A crucial part of the MSM is testing the data from the normal distribution that was created by combining two normal distributions such that the mean parameters from various regimes are significantly different from one another. The overvaluation and undervaluation of REER should be considered by the model in the current study as two states in the misalignment series. The model can be presented as follows:

$$Y_t = \alpha_1 S_t + \alpha_2 (1 - S_t) + [\sigma_1 S_t + \sigma_2 (1 - S_t)]\epsilon_t \text{ where } \epsilon_t \sim N(0,1) \quad (8)$$

Where St is a binary variable designating the system's unobservable regime and Y_t is the exogenous variable (series for exchange rate mis-alignment). The following transition probabilities would apply to a Markov chain with two regimes that controls the evolution of the unobserved state variable (St) (Brooks and Persand, 2001; Engel and Hamilton, 1990).

In accordance with earlier research (Nikolsko-Rzhevskyy and Prodan, 2012), the behavior of the exchange rate Zimbabwean Dollar random walk model that permits both the drift term and variance to take two different values during episodes of over- and undervaluation. As a result, we can represent exchange rate misalignment in any given quarter as coming from one of the two regimes, and we can determine which regime the exchange rate is in using parameter estimations. According to Terra and Valladares (2010), the use of the MSM represented the following probability matrix:

$$P = \begin{bmatrix} Poo & Pou \\ Puo & Puu \end{bmatrix} \quad (9)$$

Where Poo is the likelihood of the exchange rate being over-valued, Puu is the likelihood that it will stay in an undervalued state, Puo is the likelihood that it will switch from an undervalued to an overvalued period, and Pou is the likelihood that it will switch from overvalued to undervalued.

5. RESULTS

Using E-Views 10 software, chapter four shows the findings and explanations related to the variables from chapter three. The diagnostic tests were performed to evaluate the model's resilience as well as the accuracy and dependability of the findings. The E-Views software was employed for regression analysis.

Table 2 presents an overview of descriptive statistics. Our data collection has 116 observations altogether. Between the first quarter of 1990 (Q1/1990) and the fourth quarter of 2018 (Q4/2018), there was an average real effective exchange rate of 4.7458. The mean and median show that the actual effective exchange rate has the strongest central tendency. Between Q1 of 1990 and Q4 of 2018, Zimbabwe's real effective exchange rate peaked at 4.9346. In contrast, Zimbabwe's real effective exchange rate for the same time period was at a minimum of 4.4313. The test findings of the descriptive analysis demonstrate that REER, with a value of 0.1195, has the highest standard deviation from the mean value, indicating that its volatility is greater than that of other variables. The true effective exchange

rate data's skewness value is −0.3414; it is negatively skewed. The fact that the kurtosis value was discovered to be 2.3303, which is just below the 3-point cut off, indicates that the data has a normal distribution. Additionally, the dependent variable REER's Jarque-Bera value of 4.4208, which is slightly above zero, demonstrates that the data has a normal distribution. Table 1 below presents the results of the unit root test. The presents of the structural breaks from the Breakpoint unit root test will give the reliability if the unit root tests results and the findings regarding the method used to generate the data in the series more believable (Perron, 2006).

The first difference reveals that all the variables are stationary according to the results from the ADF unit root test. The dependent variable's (LREER) break date is determined by the Breakpoint unit root test to be 1998Q1, which also corresponds to the commencement of an episode of the depreciation in exchange rate as seen in Figure 2. Findings of the Breakpoint unit root test indicate that the bulk of the variables should be integrated at first order at the level of 1%. The results obtained from the ADF test for the level series and a graphical analysis of the series demonstrate that, with the exception of the LTOT series, the data generation series has no solid evidence that the trend exists in the data, although the majority of the series display intercept. As a result, the linear deterministic trend was used in the co-integration study that came next.

5.1. Tests for Co-integration

The Johansen (1995) method is used to check if the variables are co-integrated. The goal is to find an equilibrium long run relationship between the exchange rate and the macro-economics variables. Accordingly, the correlation matrix, economic theory, exchange rate endogeneity in the model, and the right signs of the coefficients were used to carefully choose the economic indicators that go into the long-run equation. In determining the duration of the lag, the Schwarz information criterion (SIC), Akaike information criterion (AIC) and the Hannan Quinn information criterion were employed. Out of a possible 10, the information criterion chosen between 2 and 6 fall short. The results of the co-integration test are presented in the Table 3 below.

Table 3 above shows the trace test indication that one co-integrating vector among the fundamentals is present, however the maximum Eigen-value test indicates that co-integration do not exist.

The outcomes of the VIF test are shown in Table 4 above. The centred variance inflation factor findings demonstrate that the variables are not multi-collinear since their centred VIF is <2.5, which is the accepted threshold for the existence of multi-collinearity.

5.2. Exogeneity Test

The REER is endogenous in the model, and most significantly, the weak exogeneity test findings in Table 5 validated this. The results show an adequately big Chi-square statistic of 4.63 in conjunction with a P = 0.03. Despite being endogenous as well, CAP and LOPEN have good coefficients for error correction in the VECM (Du Plessis, 2005).

After the cointegration between the variables was confirmed, an estimated long-run equilibrium exchange rate was calculated, and the changes were linked to the real REER to see whether the Zimbabwean

Table 2: Summary of descriptive statistics

Variable	LREER	LTOT	LOPEN	LGOV	LINV	CAP
Mean	4.745838	0.891268	−0.163677	−1.730787	−1.166538	−0.482202
Median	4.743002	0.892286	−0.205728	−1.726962	−1.225188	−0.488260
Maximum	4.934618	2.125432	0.442693	−1.623745	−0.176397	2.732184
Minimum	4.431333	−0.166742	−0.718603	−1.861224	−2.011688	−2.788670
SD	0.119475	0.744560	0.345536	0.064961	0.445225	0.752776
Skewness	−0.341384	0.061734	0.024213	−0.121965	0.104836	0.524969
Kurtosis	2.330314	1.545290	1.611959	1.818678	2.155505	5.304181
Jarque−Bera	4.420818	10.30189	9.323508	7.032620	3.659479	30.98950
Probability	0.109656	0.005794	0.009450	0.029709	0.160455	0.000000
Observations	116	116	116	116	116	116

Source: Own study

Figure 2: Equilibrium REER and Actual REER Misalignment

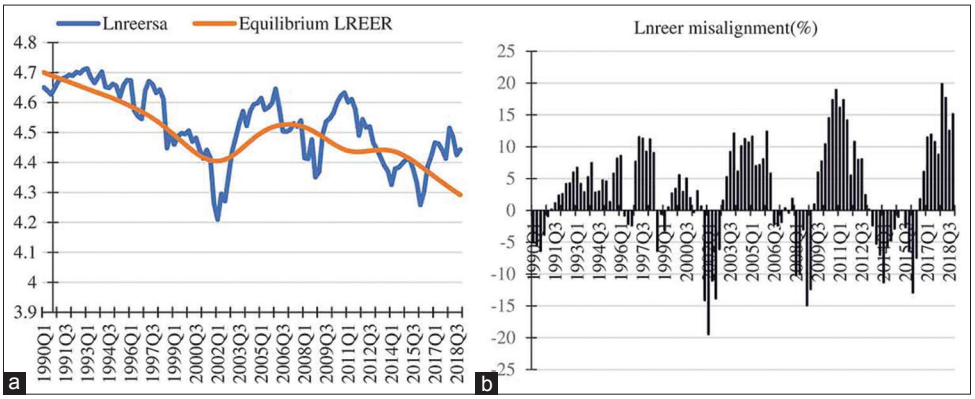


Table 3: Cointegration test results (trace test)

Hypothesized no. of CE (s)	Eigen value	Trace statistic	0.05 critical value	Prob.**	Max Eigen statistic	0.05 critical	Prob.**
None	0.284	106.26	95.75*	0.008	36.75	40.08	0.11
At most 1	0.218	69.51	69.82	0.05	27.05	33.88	0.26
At most 2	0.176	42.46	47.86	0.146	21.23	27.58	0.26
At most 3	0.11	21.23	29.8	0.344	12.87	21.13	0.46
At most 4	0.065	8.36	15.49	0.428	7.35	14.26	0.45

Source: Authors' computations

Table 4: VIF test results

Variable	Coefficient Variance	Uncentered VIF	Centred VIF
DLGOV	0.077558	1.042210	1.039589
DLINV	0.069681	2.373743	1.160579
DLOPEN	0.017461	1.326966	1.215039
DLTOT	0.008878	1.412101	1.193140
CAP	4.74E-05	1.851434	1.038361
C	4.24E-05	3.035080	NA

Source: Authors' computations

Table 5: Exogeneity test

Variables	Endogenous	Exogenous
LREER	4.63 (0.03)	
CAP	8.05 (0.00)	
LTOT		1.56 (0.21)
LOPEN	3.59 (0.06)	0.74 (0.39)
LINV		0.01 (0.93)
LGOV		0.06 (0.81)

Source: Own computations

dollar may be out of alignment. The long-run cointegrating equation was calculated using the Dynamic Ordinary Least Squares (DOLS) technique, and Table 5 showed the results. According to Hossfeld (2010), the DOLS technique enhances the estimates' robustness by accounting for potential endogeneity among the explanatory factors. We used the Engle and Granger and Phillips-Ouliaris tests to thoroughly evaluate the DOLS for cointegration. Table 6 below shows the long-run estimated equation results.

Table 6 shows the derived long run co-integration equation of the REER of the Zimbabwean dollar. Since the long-run parameters are what are most important, they are the only ones presented and the short run coefficients were excluded. All factors, with the exception of investment, are significant and shows the right indications, indicating that the selected fundamentals over the long term, explain movements of the REER. According to the findings, an increase by a 1% in the nation's terms of trade, which include the price of gold, will result in 0.96% decline in the REER. With regard to the currency rate and foreign trade openness, a similar directional link is shown. The exchange rate, however, increases by 0.23% and 0.68%, respectively, for every 1% increase in net capital flows and government spending. Investment has a positive sign indicating an appreciation impact, while not being statistically significant. The findings are consistent with those of earlier investigations by De Jager (2012).

The equilibrium EREER and the REER comparison is presented by the (Figure 2a) for the period 1990-2018, while (Figure 2b) presents the degree of misalignment (represented as the actual REER's percentage deviation from the estimated EREER's percentage deviation) (b). Figure 2 shows a historical misalignment trend that supports comparable findings from other research, such as Masunda's, showing the exchange rate drifts away from its equilibrium level over time (2012). The investigation confirms that the currency rate was severely undervalued in 2001/2002 (approximately 20% in 2002Q1) and between 2008 and 2009. (About 15% in 2008Q4). The currency rate was overvalued by more than 12% by 2006 as a result of a large correction that started in 2002.

From 2013Q2 to 2016Q2, the REER undervalued once again, the levels of rate of exchange falling to its lowest level of 13% in that time frame. The REER has since continued to go through overvaluation events. (Figure 2b) shows that there are extended swings in the REER's divergence from its equilibrium level as well as rapid changes in the misalignment direction. For instance, after an undervaluation of more than 20% in 2002, the exchange rate swiftly returned to equilibrium before experiencing an overvaluation of nearly 10% in 2003. The global financial crisis during the year 2008 lead to a sharp decrease in the currency before a rebound around 2010, similar movements seen between those years.

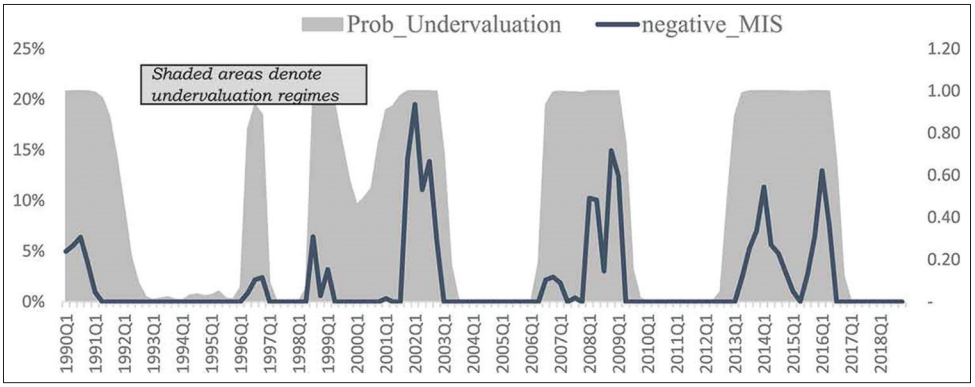
The currency rate has generally been increasingly overvalued during the study period, according to an examination of the misalignment series, which is skewed and leptokurtic. A modelling approach that determines if multiple periods for mis-alignment (undervalued vs. overvalued states) exist may offer good fit for the data, according to Brixiova and Ncube (2014). (Misalignment series). The Method of Simulated Moments (MSM) used in the study determines the potential existence of over-valuation and under-valuation periods that are seen as various departures from the equilibrium exchange rate. Below is the findings form the MSM model.

5.3. The Markov Regime Switching Model

In calculating the likelihood of being in a certain regime, the misalignment series were used as a dependent variable from the MSM framework. A crucial part of the MSM is testing the data from the normal distribution that was created by combining two normal distributions such that the mean parameters from various regimes are significantly different from one another. The overvaluation and undervaluation of REER should be considered by the model in the current study as two states in the misalignment series. Table 7 shows the crucial model parameters and the results of the MSM which shows the two instances of the misalignment of the exchange rate.

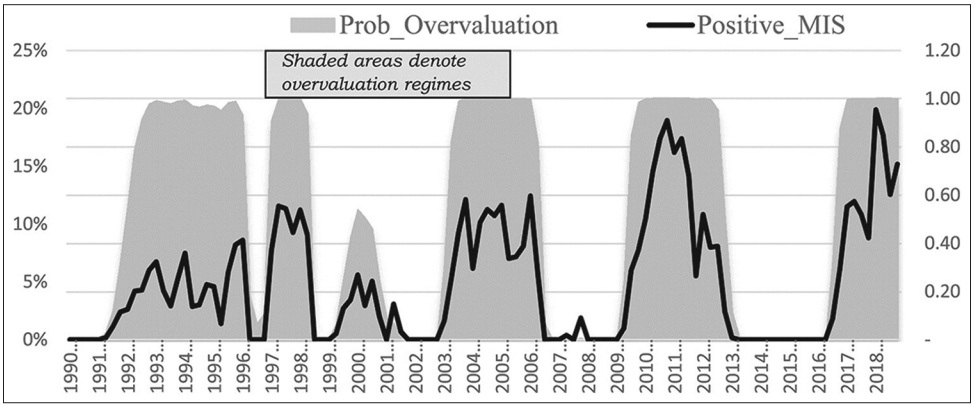
The computed parameters support the finding that the mean misalignment values are 0.081, weakly significant compared to the other values, which are highly significant. The mean for the overvaluation state is positive (2 = 8.699), whereas the mean for the

Figure 3: REER undervalued: The probability of being in regime One



Source: Trading Economics Economic Indicators Data (2021)

Figure 4: Probability of being in regime 2 (REER overvalued)



Source: Trading Economics Economic Indicators Data (2021)

Table 6: LREER model results using the dynamic ordinary least squares (DOLS)

Variable	LTOT	LOPEN	CAP	LGOV	LINV	Constant
Coefficient	−0.960 (0.000)	−0.820 (0.068)	0.232 (0.004)	0.683 (0.0097)	0.232 (0.468)	8.946 (0.000)
Adj. R^2=0.73						
Results of cointegration tests:						
Eagle and Granger	Tau-statistic	−6.04 (0.05)				
Phillips-Ouliaris	Tau-statistic	6.19 (0.003)				

Source: Authors' computations

Table 7: Results for MSM

Parameter	Estimate	z-statistic	Prob
μ_1	−3.521	−1.741	0.081
μ_2	8.699	5.432	0.000
μ_{21}	1.721	15.207	0.000
μ_{22}	1.529	12.975	0.000

Source: Authors' computations

undervaluation events is negative (u1 =−3.521). The findings also show that the volatility of the undervaluation regime is somewhat higher than that of the overvalued period that is 1.721 and 1.529 respectively. These periods are anticipated assumed that currency depreciation events in Zimbabwe have often been sudden and have corresponded with high nominal exchange rate volatility. This result is also in line with the leverage effects linked to exchange rate volatility, particularly the finding that negative shocks to the exchange rate increased volatility relative to positive shocks of comparable size (Masunda, 2012).

The matrix below shows the fixed probabilities for transition from one period to the other:

$$P = \begin{bmatrix} Poo & Pou \\ Puo & Puu \end{bmatrix} = \begin{bmatrix} 0.90 & 0.09 \\ 0.10 & 0.91 \end{bmatrix}$$

According to the values of Puu and Pou, the likelihood that the exchange rate will remain in regime 1 (undervaluation) provided that it was under-valued during the past quarter and the likelihood that it will remain in regime 2 (overvaluation) given that it was in regime 2 are shown, respectively. The exchange rate is extremely likely to continue in either regime 1 or 2 in the following time, according to the parameters Puu and Poo, which have high values and signal considerable steadiness (Elbadawi et al., 2012). The increased likelihood of the currency rate being overvalued and the observation that overvaluation events appear to have longer average lengths over the sample period are noteworthy in the MSM results. Manoeuvring the estimations from the model of

the odds of found in either of the two periods through the whole data regime confirms this.

Figures 3 and 4 compare these events with the misalignment series derived (solid lines) from the long-run co-integrating relationship and display the inferred probability (smoothed) from the MSM of being in regimes 1 and 2. The REER was more frequently overvalued than undervalued during the period 1990-2018, according to the MSM framework, which properly detects both undervaluation and overvaluation incidents. For instance, the model verifies that throughout the periods 1991Q3-1996Q1, 1997Q1-1998Q2, 1999Q2-2000Q4, 2003-2006, 2009Q3-2012Q4, and 20016Q3-2018Q4, the exchange rate was in regime 2 (overvalued). Similar to that, it tracked appropriately while the REER was in regime 1. (undervalued). Notably, every instance of significant undervaluation occurred at the same time as an external or internal economic catastrophe.

This analysis uses the BEER methodology and discovers evidence for a long-run equilibrium link between the REER of the Zimbabwean currency and terms of trade, external openness, investment, government spending, and capital flows (Masunda, 2011). Understanding the drivers of the equilibrium exchange rate is a crucial prerequisite if policymakers want to use the exchange rate as a policy tool. This is because any deliberate actions to address exchange rate misalignment would have to concentrate on the underlying macroeconomic fundamentals affecting the exchange rate.

6. CONCLUSION AND POLICY RECOMMENDATIONS

The main finding from the research is that the real effective exchange rate oscillates around the long-run equilibrium, with significant episodes of overvaluation (misalignment) as seen in the years 1991-1996, 1997-1998-1998, 1999-2000, 2003-2006, 2009-2012, and 2016-2017. The most recent episode of exchange rate misalignment over-valuation of the local currency that occurred between the third quarter of 2016 and the third quarter of 2018 may be the cause of the current exchange rate instability, huge premiums between the official and parallel exchange rates, along with currency crises in the face of escalating inflationary pressure in the Zimbabwean economy. Results also reveal a substantial positive relationship between the TOT, OPEN, government spending, and capital flows and the country's real equilibrium exchange rate. This suggests that in order to attain alignment, these macroeconomic foundations must be correctly regulated. The REER's tendency to oscillate around the long rung equilibrium may also indicate that it is in line with the applicable macroeconomic factors, such as trade terms, public spending, capital flows, and external openness. The important policy relevance of our findings is that exchange rate volatility may originate from factors other than basic macroeconomic fundamentals expressed in economics literature on exchange rate. It is challenging to accurately quantify the fundamentals given the split system that exists today with the legitimate and unofficial exchange rate markets. According to the central bank report, there has been an increasing high demand for foreign money that is utilized as a store of wealth-hoarding in the parallel market, which may have contributed to current volatility and misalignment. Possible causes of the exchange rate market's instability include a lack of trust, speculation, and a growing desire on the part of particular social groups to swap local currency for US dollars. Future studies related to this subject may consider other approaches such as the MB approach which is dynamic in nature and uses panel econometric techniques, integrating the current account balances which may proffer explanations encompassing a holistic approach to the problem in question.

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