AN EMPIRICAL ASSESSMENT OF THE EXCHANGE RATE PASS-THROUGH IN ZIMBABWE (2019-2023)

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Abstract

The purpose of this study is to examine Exchange Rate Pass-Through in Zimbabwe since the re-introduction of the Zimbabwean dollar for the period 2019 to 2023. In particular, the study assesses whether ERPT is complete and symmetric in the context of Zimbabwe. The study adopts the Vector Error Correction Model (VECM) to analyse ERPT in Zimbabwe and compare the effect of the US dollar exchange rate and South African Rand exchange rate on domestic prices. In addition, impulse response function and variance decomposition are used to determine ERPT asymmetry in Zimbabwe. The study results show that ERPT is incomplete as the change in the domestic prices is not proportional to the changes in the exchange rates. The results depict that domestic prices respond more to changes in the South African Rand exchange rate movements compared to the changes in the United States Dollar exchange rate. In addition, ERPT is asymmetric such that depreciation of the local currency results in greater changes in the domestic prices compared to appreciations. The study recommends flexible implementation of a market-driven mechanism for price discovery in foreign exchange auctions.

Keywords: VECM, domestic prices, movement, complete, asymmetry, appreciation, depreciation.

INTRODUCTION

Zimbabwe has experienced episodes of hyperinflation and exchange rate volatility over the past two decades. There was the re-introduction of the Zimbabwean dollar (ZWL) in 2019 by the Reserve Bank of Zimbabwe (RBZ) accompanied by the termination of the multi-currency system and frequent policy announcements and reversals (Zibizapanzi and Zivanomoyo, 2024).

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The study analyses the degree to which exchange rate movements or changes are reflected in the domestic prices, a phenomenon known as exchange rate pass-through (ERPT). Exchange rate pass-through refers to the extent to which fluctuations in exchange rates are reflected in the pricing of goods and services within a certain nation (Ha *et al.*, 2020). An enhanced comprehension of the impact of exchange rate movements on domestic prices is crucial for selecting the most effective combination of monetary policy instruments to maintain price stability (Choudhri and Hakura, 2016). The rationale for studying exchange rate pass-through analysis is grounded in the necessity to comprehend the impact of economic cycles, trade imbalances and particularly fluctuations in exchange rates on domestic pricing and monetary policy (Caselli and Roitman, 2019). Understanding of the ERPT is important in the formulation of effective exchange rate and monetary policies given that Zimbabwe is import-dependent and vulnerable to external shocks.

In the formulation and implementation of monetary policy, authorities or central banks need to be aware of the degree to which domestic prices react to changes in currency exchange rates. A low ERPT implies that even a significant devaluation or depreciation of the currency would have low impact on domestic prices (minimal inflationary effects) (Phuc and Duc, 2021). Conversely, a high ERPT indicates that domestic prices respond significantly to changes in the exchange rate and the country will be more susceptible to currency shocks. However, there has been a significant number of debates surrounding the transmission mechanism and channels by which ERPT affects the economy, specifically in relation to domestic prices and inflation (Ha *et al.*, 2020). According to Forbes (2016), there exists a notable deficiency in the comprehension of the precise impact of exchange rate fluctuations on inflation, especially in developing countries. Numerous scholarly investigations who have examined ERPT in industrialised nations have found that the magnitude of ERPT has been declining since the 1990s (Phuc and Duc, 2021). However, there is lack of studies on the analysis of ERPT in African countries.

In 2009, the Zimbabwean government implemented the multicurrency system after a period of hyperinflation that resulted in the RBZ losing its ability to set the exchange rate due to the absence of a domestic currency within the multicurrency basket (Matanda, *et al.*, 2018). Between 2009 and 2019, despite the recognition of multiple currencies as valid forms of legal

cash, the prevalent use of the United States Dollar (USD) and the South African Rand (ZAR) in Zimbabwe was much greater compared to other currencies such as the Euro, British Pound and Botswana Pula (Munzara and Dube, 2020). In the year 2019, the government re-introduced the Zimbabwe Dollar as the official domestic currency through Statutory Instrument (SI) 142 of 2019 and the reintroduction was accompanied by the establishment of a foreign exchange auction system in 2020 (RBZ, 2023). The primary objectives of these measures were to enhance price stability, transparency within the foreign currency market and establish a market-determined exchange rate. However, annual inflation increased by approximately 6% to 175.5% in June 2019 (RBZ, 2019b).

A transparent foreign exchange auction system was put in place on 23 June 2020 together with a rigorous adherence to the monetary targeting framework to ensure price stability (RBZ, 2020). There has been a notable surge in parallel market premium, rising from approximately 20% in August 2020 to approximately 60-90% by the end of December 2021 (IMF, 2022). In 2022, the ZWL depreciated by approximately 521% against the USD (African Development Bank, 2023). This depreciation was observed as the exchange rate declined from ZWL$108 per USD in January 2022 to ZWL$671 per USD in December 2022 (*ibid.*). This resulted in a notable increase in domestic prices in inflation, with the month-on-month inflation rate surging from 60.6% in January 2022 to 285% in June 2022. The economy experienced a combination of factors, namely the significant increase in demand for foreign currency and the rapid decrease in demand for local currency (RBZ, 2023). The implementation of monetary tightening, characterised by significant increases in interest rates up to 200%, resulted in a notable reduction in monthly inflation to 230% in January 2023 (*ibid.*). Between April and June 2023, the nation witnessed a notable depreciation of ZWL, resulting in a substantial increase in inflation rates.

Although the exchange rate measures put in place, have to a certain extent, supported macroeconomic stability, it is imperative to consistently check its performance in terms of supporting domestic price stability (Vasantkumar, 2023). The aim of the study is to look into the ERPTin Zimbabwe. It is this study`s view that this is the first study to focus on ERPT in Zimbabwe after the re-introduction of the local currency. In particular, the study assesses whether ERPT is complete and symmetric in the context of Zimbabwe. There is no study that has compared the USD and South African Rand in the

Zimbabwean economy. The research questions are posed as what is the nature of ERPT in Zimbabwe since the re-introduction of the local currency? Is ERPT asymmetric in Zimbabwe? Which currency has a significant impact on the domestic prices? This allows the country to take measures to ensure both exchange rate and price stability, boosting economic performance in line with the National Development Strategy (NDS1).

LITERATURE REVIEW

The theoretical underpinning of ERPT is derived from open-economy macroeconomics and early contributions were made by seminal scholars such as Obstfeld and Rogoff (1995) and Dornbusch (1987). Prior to discussing the theoretical foundations, it is critical to define completeness and symmetry of ERPT. Goldberg and Knetter (1997) establish a formalised and standardised approach for assessing ERPT as follows:

$$\Delta P_t = \propto + \beta \Delta e_t + \gamma \Delta C_t^* + \delta \Delta d_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

where ΔP_t the change is the import price; e_t is the exchange rate expressed as foreign currency per home currency unit; C_t^* is the marginal cost in the foreign country and d_t represents a vector of demand controls such as home competition.

Aaron *et al.* (2012) acknowledge that an incomplete pass-through phenomenon is observed when changes in the exchange rate result in a less than proportionate change in domestic prices. Hence from equation 1, ERPT completeness is assessed by β, it is "complete" if $\beta = -1$ and "incomplete" if $\beta > -1$: a complete ERPT implies that a depreciation has a 1-for-1 effect on increasing inflation. The concept of asymmetric pass-through pertains to situations in which the depreciation of a currency results in a distinct level or rate of pass-through compared to the appreciation of the same currency (*ibid.*).

There are three theoretical frameworks that can be used to discuss the concept of ERPT and these are Law of One Price, New Keynesian Phillips Curve (NKPC) and Pricing-to-Market (PTM) Theories. According to the PTM Theory, exporters adjust profit margins instead of prices in response to exchange rate movements. The theory provides the firm level explanation for ERPT in segmented markets where consumers in one market cannot engage in arbitrage and purchase goods from one country due to various

factors, including transport costs and tariffs. This allows the firm to charge different prices (Madushika and Sooriyakumar, 2020). The PTM Theory suggests that a firm selling goods on different foreign markets sets a different price in each market based on demand elasticity, prevailing competitive conditions rather using the exchange rate to convert the domestic price (Nguyen and Sato, 2020). If there is a depreciation of the exporter`s currency, in highly competitive markets (high elasticity), the price in the foreign markets will be lowered by the full amount of the depreciation (complete ERPT) (Bhat and Bhat. 2022). Conversely, in relatively uncompetitive markets (low elasticity), the price in foreign markets will not fall by the full amount of the depreciation (incomplete ERPT) (*ibid.*).

The One Price Theory states that similar goods should sell at the same price when expressed to a common price (Itskhoki, 2021). The purchasing power parity extends the law of one price and posits that the exchange rate adjusts to equalise the price of a basket of goods and services traded between two countries (general price level), hence a complete ERPT (Itskhoki, 2021).

Empirical evidence indicates that transport costs and trade rigidities lead to deviations from purchasing power parity (PPP), particularly in the short run. In the Zimbabwean context, import restrictions and persistent parallel-market exchange rate premiums further undermine the assumptions of PPP and the law of one price (LOP), (Chivige and Sheefeni, 2022) and this can lead to asymmetric and incomplete ERPT. The NKPC acknowledges that the current level of inflation is dependent on the expectations of economic agents on the future levels of inflation. According to the NKPC, ERPT is not fixed but is an endogenous factor that depends on the credibility of the monetary regime (Ayisi and Afful-Mensah, 2022). If there is high credibility of the monetary regime, economic agents expect any spike in prices after the currency depreciation to be temporary as the price levels will return to the target (Nasir *et al.*, 2020). Conversely, if there is low credibility in the monetary regime, a depreciation in the currency will result in aggressive pricing and high ERPT (*ibid.*).

EMPIRICAL LITERATURE

Numerous scholarly investigations have examined the ERPT phenomenon, primarily in wealthy nations (Taylor, 2000; McCarthy, 2006; Özyurt, 2016), with relatively less attention given to its analysis in developing

countries (Akofio-Sowah, 2009; Razafimahefa, 2012; Lariau *et al.*, 2016; Helmy *et al.*, 2018). Despite the increasing body of material on ERPT in developing economies, Nguyen and Sato (2020) contend that the existing literature remains focused predominantly on studies conducted in developed economies. A study by Rowland (2018) employed an unrestricted vector autoregressive (VAR) model to examine ERPT in Colombia based on monthly data for the period 1983 to 2002. The findings of the study indicate that approximately 28% and 20% of exchange rate variations were be transferred to producer and consumer prices, respectively indicating an incomplete ERPT. Omisakin (2019) employs McCarthy's (2006) methodology, specifically utilising a VAR model that incorporates pricing dynamics across the distribution chain to quantify the extent of ERPT to consumer prices within the context of Maldives. The findings indicate that there is a 79% pass-through rate to consumer prices within a one-year timeframe. For Mozambique, Aisen (2021) found that ERPT to consumer prices was 0.53%.

Empirical studies show that different levels of ERPT are realised in different countries. The differences in the results can emanate from differences in the methodology applied in the study and the macroeconomic conditions of the country under review. Taylor (2000) argues that ERPT is more pronounced in economies with high levels of inflation (especially in developing countries) compared to low inflation environment (in developed countries). Furthermore, the differences in the results can emanate from the size and market power of a country, where, as noted by Krugman (1987), foreign exporters to large countries will absorb exchange rate changes in their profit margins to keep the prices stable and maintain their market share, resulting in a low ERPT. In terms of methodology, Bussière (2013) acknowledges that a standard Ordinary Least Squares regression might show moderate ERPT. However, non-linear models that separate positive and negative shocks, might reveal that pass-through is 70% during depreciation periods and only 30% during appreciation periods. The choice between treating the exchange rate as exogenous or endogenous can also explain the differences in the empirical result. Vector autoregressive models account for other factors that may influence ERPT, whereas single-equation models do not, leading to different conclusions (Shambaugh, 2008). The most common techniques used in ERPT analysis include the ordinary least squares method, Autoregressive Distributed Lag (ARDL), Vector VAR and Structural VAR (SVAR) (McCarthy, 2007), non-linear ARDL (NARDL) and panel data estimation.

In Zimbabwe, the RBZ (2019b) acknowledges the role of parallel market premiums in driving inflation. However, no study has comprehensively analysed ERPT in Zimbabwe between 2019 and 2023, a period characterised by the reintroduction of the ZWL (in 2019), foreign exchange auction system (2020-2021) and resurgence of exchange rate depreciation and inflation (2022-2023). The study fills the gap by analysing the completeness and asymmetry of ERPT in Zimbabwe from 2019 to 2023.

METHODOLOGY

MODEL SPECIFICATIONS

Many econometric techniques are used to estimate ERPT and these techniques include single equation econometric models, VAR models, VECMs, structural macroeconomic models and Dynamic Stochastic General Equilibrium (DSGE) models (López-Villavicencio and Pourroy, 2019). The study utilised VECM to analyse the nature of ERPT in Zimbabwe. According to Huong and Cao (2019), VECMs are a type of VAR models that were developed to handle non-stationary variables that exhibit cointegration. A VECM is a multivariate dynamic model that allows for the inclusion of cointegrated interactions across variables (Ahmed *et al.*, 2018). The study estimates VECM as follows:

$$\Delta log\ CPI_t = \gamma_1 \Delta\ log\ Ol_{t-1} + \gamma_2 \Delta log\ \ ZAR_{t-1} + \gamma_3 \Delta log\ US_{t-1} + \gamma_4 \Delta\ log\ IR_{t-1} + \beta_1 \Delta\ log\ \ Ol_{t-1} + \beta_2 \Delta\ log\ \ ZAR_{t-1} + \beta_3 \Delta\ log\ \ US_{t-1} + \beta_4 \Delta\ log\ \ IR_{t-1} + \varepsilon_t$$

.....Model 1

where ε_t ≈idd $(0, \sigma^2)$

$X_t =$

(

$OI_t : Oil\ prices;\ ZAR_t : Rand\ Exchange\ rate;\ USD_t : US\ dollar\ exchange\ rate;\ IR_t : Interest\ rates)$

The exchange rates are expressed as 1 unit of foreign currency per domestic currency such that the appreciation of the USD exchange and Rand exchange rates represent depreciation of the local currency, hence a positive relationship with the Consumer Price Index (CPI) is expected. The study utilises oil prices to represent global shocks which may have an impact on the domestic prices and interest rates to represent domestic economic conditions. The study analyses the impulse responses and variance decomposition from the VECM. To test whether ERPT is complete, the study analyses β *and* γ_1, γ_2 γ_3 and γ_4 such that ERPT is incomplete if the coefficients are greater than 1, since exchange rates are expressed as one unit of foreign currency to domestic currency.

To test for asymmetry of ERPT, the partial sums of the exchange rate are utilised such that

$$ZAR_t = ZAR_t^- + ZAR_t^+$$
$$USD_t = USD_t^- + USD_t^+$$
$$\Delta log\ CPI_t = \gamma_1 \Delta\ log\ Ol_{t-1} + \gamma_2 \Delta log\ (ZAR^- + ZAR^+)_{t-1} + \gamma_3 \Delta log\ (US^- + US^+)_{t-1} + \gamma_4 \Delta\ log\ IR_{t-1} + \beta_1 \Delta\ log\ Ol_{t-1} + \beta_2 \Delta\ log\ ZAR_{t-1} + \beta_3 \Delta\ log\ US_{t-1} + \beta_4 \Delta\ log\ IR_{t-1} + \varepsilon_t$$
……Model 2

These partial sums are substituted in *Model 1* and for *Model 2.* Thus, asymmetry of ERPT is tested from the direction than the size perspective, that is whether there are differences in the CPI changes due to different directions of the exchange rates (appreciation or depreciation).

The study utilises cointegration prior to estimation of VECM. Cointegration refers to the phenomenon where variables exhibit a long-term relationship, even if they may temporarily deviate from each other in the short term (Gujarati, 2008). The study estimates the Johannsen cointegration as follows:

$Y_t = \mu + A_1 Y_{t-1} \ldots + A_p Y_{t-p} + \varepsilon_t$
here t= 1, 2…….T $\varepsilon_t \approx$idd $(0, \sigma^2)$

The lag length is reflected by p. The cointegration condition is that $A < 1$ so that the model is dynamically stable.

DIAGNOSTIC TESTS

To obtain accurate estimations, it is necessary to conduct diagnostic examinations that detect the presence of econometric concerns (Oktayer and Oktayer, 2013). The unit root test is employed to ascertain the stationarity of a variable (Nkoro and Uko, 2016) as the presence of unit roots has implications on the accuracy of the coefficients and the dependability of the study's results. The ADF Fisher unit root test was employed to evaluate the presence of unit roots in the variables. The duration of the lag has a substantial influence on the Granger causality test. The Akaike Information Criterion (AIC) is considered to be an unbiased estimator for calculating the

optimal lag length and was employed to determine the optimal lag length in the study.

DATA

The collection of credible data is important as it improves the quality and credibility of the study. The data on exchange rates, interest rates and CPI was collected from the RBZ. The data on oil prices was collected from West Texas Intermediate (WTI). The monthly data were collected from June 2020 to August 2023, with a total of 51 observations. According to the Central Limits Theorem, observations greater than 30 are considered adequate for statistically significant and credible results.

FINDINGS AND DISCUSSION

FINDINGS

Descriptive statistics are vital as they provide a comprehensive picture of the properties of the variables under investigation in a study. Table 1 presents descriptive statistics of the variables used in the study.

Table 1: Descriptive statistics

Variable	CPI	Interest rates	Oil prices	USD Exchange rate	Rand Exchange rate
Mean	2.0619	1.5664	1.8005	0.9007	2.1070
Median	2.0850	1.4420	1.8466	0.7710	1.9327
Std. Dev.	0.3772	0.3397	0.1636	0.6995	0.7246
Skewness	-0.5588	0.3117	-1.0994	0.4042	0.4434
Kurtosis	2.8427	2.1295	4.8064	2.6263	2.6450

Table 1 shows that the standard deviation of all the variables is close between 0 and 1 and that all the variables are moderately skewed as they do not significantly deviate from the normal skewness value of zero. The variables, CPI and oil prices are negatively skewed whilst interest rates, USD and Rand exchange rates are positively skewed. The normal value for kurtosis is 3; variables with kurtosis of greater than 3 are leptokurtic, whilst variables with a kurtosis value of less than 3 are platykurtic (Gujarati, 2008). Table 1 shows that all variables, except oil prices, are platykurtic. Therefore, the descriptive statistics show the need to establish the order of integration of the variables in the model. Table 2 shows the ADF unit root test results

Table 2: ADF unit root test results

Variable	t-statistic	Critical value (5%)	Probability	Order of integration
CPI	-4.498314	-1.947665	0.0000	I(1)
Interest rates	-1.995069	-1.949097	0.0452	I(1)
Oil Prices	-5.46217	-1.947665	0.0000	I(1)
USD Exchange rate	-4.652913	-1.947665	0.0000	I(1)
Rand Exchange rate	-2.466339	-1.947975	0.0147	I(1)

Table 2 shows that all the variables in the model are integrated of order 1, that is, they are not stationary at levels and contain at least one-unit root. Since the variables are integrated of order 1, VECM can be applied to estimate ERPT in Zimbabwe.

The VECM is heavily dependent on the number of lags in the model and Table 3 shows the optimal lag length of the two models.

Table 3: Lag length determination

Model	AIC	Number of lags
Model 1	-15.62810*	2
Model 2	-32.01926*	4

Table 3 shows that the models with partial sums of exchange rates, have higher order lags. This implies that these models may have limited degrees of freedom compared to models that have aggregated exchange rates. The Johannsen Test was to determine the presence of cointegration in the two models. Table 4 shows the cointegration test results.

Table 4: Cointegration test results

Model	Hypothesised No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Probability**
Model 1	At most 1	0.541230	98.41250	69.81889	0.0001
Model 2	At most 3	0.742410	156.8740	95.75366	0.0000

Based on the Johansen Test, there is one cointegrating equation in Model 1 and three cointegrating equations in Model 2 This implies that the variables move together in the long run, although short-run deviations may be observed. Since cointegration was established, the VECM is used to estimate ERPT in Zimbabwe.

COMPLETENESS OF ERPT

The completeness of ERPT is important as it guides the implementation of monetary policy to curb inflation in the economy. Table 5 presents the long-run estimates of the model.

Table 5: ERPT completeness

Timeframe	Constant	CPI	Interest rates	Oil Price	USD Exchange rate	Rand Exchange rate
Long run	-11.3393	1	-1.2349	1.5451	7.129	7.3139
Short run	-	-0.07177	0.116945	0.004175	0.0554	0.072

The results in Table 5 show that a 1% appreciation of the USD and Rand exchange rate (depreciation of local currency) is associated with a 7.13% and 7.31% increase, respectively, in the domestic prices in the long run. In the short run, a 1% appreciation of the USD and Rand exchange rates (depreciation of local currency) is associated with a 0.055% and 0.072% increase in the domestic prices, respectively. This implies that ERPT is incomplete as the change in the change in the domestic prices is not proportional to the changes in the exchange rates.

ASYMMETRY OF ERPT

The study aims to ascertain whether ERPT is asymmetry in the Zimbabwean economy. Impulse response functions and variance decompositions were used to establish whether ERPT is asymmetry. Tables 6 and 7 show impulse response and variance decomposition of partial sums of the exchange rates.

Table 6: CPI impulse response to partial sums of exchange rates

Period	Oil Prices	Interest Rates	USD Depreciation	USD Appreciation	Rand Depreciation	Rand Appreciation
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0039	-0.0096	0.0016	0.0321	0.0154	0.0219
3	-0.0102	-0.0171	-0.0295	0.0340	0.0009	0.0407
4	-0.0163	-0.0372	-0.0488	0.0134	-0.0190	0.0237
5	-0.0107	-0.0575	-0.0425	0.0449	-0.0082	0.0419
6	-0.0030	-0.0501	-0.0316	0.0725	0.0134	0.0774
7	-0.0041	-0.0260	-0.0017	0.0623	0.0340	0.0864
8	-0.0216	-0.0110	-0.0089	0.0392	0.0071	0.0755
9	-0.0196	-0.0026	-0.0219	-0.0049	-0.0413	0.0368
10	0.0044	0.0081	0.0489	0.0320	0.0060	0.0399

Table 6 shows that domestic prices are more responsive to appreciation of the exchange rates compared to their depreciation. A 1% appreciation of the South African Rand and USD against the local currency (local currency depreciation), leads to domestic consumer prices immediately increasing by 0.0219% and 0.0312%, respectively. The prices show an upward trend till the 10th period, where a 1% appreciation of the South African Rand results in a 0.04% increase in the domestic prices. The largest response of the domestic prices is in period 7 where a 1% appreciation of the South African Rand results in 0.09% increase in the domestic prices

Table 7: CPI Variance Decomposition To Partial Sums Of Exchange Rates

Period	S.E.	Oil Prices	Interest Rates	USD Depreciation	USD Appreciation	Rand Depreciation	Rand Appreciation
1	0.0309	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0605	0.4187	2.4966	0.0713	28.0664	6.4422	13.1336
3	0.0881	1.5518	4.9559	11.2784	28.1846	3.0552	27.5631
4	0.1161	2.8733	13.1142	24.1598	17.5560	4.4334	20.0262
5	0.1608	1.9386	19.5981	19.5757	16.9344	2.5678	17.2371
6	0.2098	1.1599	17.2283	13.7743	21.8867	1.9168	23.7444
7	0.2403	0.9132	14.3071	10.5052	23.4005	3.4666	31.0427
8	0.2621	1.4439	12.2012	8.9443	21.9033	2.9864	34.3889
9	0.2698	1.8923	11.5201	9.0996	20.6974	5.1630	34.2993
10	0.2936	1.6209	9.8067	10.4597	18.6698	4.4034	30.8222

Table 7 shows that the largest variations in the domestic prices emanate from positive movements of other currencies relative to the local currency. Specifically, the largest variation (34.39%) in the domestic prices emanate from the appreciation of the South African Rand than other variables *ceteris paribus*. The variations in the domestic prices emanating from the positive changes in the USD against the local currency gradually lowers from 28.07% in period 2 to 18.7% in period 10. The variations in the domestic prices emanating from appreciations of the South African Rand increase from 13.13% in period 2 to 30.82% in period 10.

DISCUSSION AND POLICY IMPLICATIONS

The study results show that ERPT in Zimbabwe is incomplete and the level of incompleteness is greater in the long run than in the short run. This implies that the impact of exchange rate on domestic prices is not transitory, but it is persistent. The results also show that ERPT in the Zimbabwean context is inflationary as it leads to increases in domestic prices as reflected by positive coefficients both in short run and long run. The study results align with Aisen *et al.* (2021) who found that ERPT is incomplete in Mozambique. ERPT is usually complete in countries dependent on imports. According to Bonga (2018), in instances where a significant portion of a nation's transactions and trade are conducted using foreign currencies, such as in the situation observed in Zimbabwe, the country's inflation rate is more susceptible to the impacts of swings in exchange rates. Zimbabwe is a net importing country since the value of the imports is always exceeding the value derived from exports (Ngoma, 2020). The anticipated pass-through of exchange rates is significant due to Zimbabwe's reliance on imports (Matanda, *et al.*, 2018). The findings support the study by Bonga (2018) as it shows that, despite being considered a small open economy, ERPT is incomplete. One of the reasons brought forward is that incomplete ERPT is because of irrational behaviour of economic agents, particularly producers. This is supported by the RBZ (2023) which notes that the presence of robust macroeconomic fundamentals in the economy highlights that the fluctuations in prices observed over the period of May and June 2023 were not primarily influenced by monetary variables (RBZ, 2023). Instead, they may be attributed to unfavourable behavioural characteristics such as forward pricing and an insatiable need for foreign money exhibited by economic agents (*ibid.*).

The study results show that ERPT from the South Africa Rand exchange rate is greater than the ERPT emanating from the USD exchange rate. South Africa is one of Zimbabwe`s main trading partners and a significant proportion of the import that comes into the country is sourced from South Africa (Mhlanga and Ndhlovu, 2021). Whilst prices in Zimbabwe are quoted in United States dollars, the South African Rand serves as a timely and relevant indicator of the cost pressures, hence changes in the Rand exchange rate easily filter into the Zimbabwe domestic market prices (Chirwa and Kader, 2018). In addition, psychological factors may be a possible explanation to why the ERPT from the South Africa Rand exchange rate is greater than the ERPT emanating from the USD exchange rate. Owing to the proximity of South Africa to Zimbabwe, businesses operating in Zimbabwe are more attuned to changes in the South African Rand and quickly adjust their prices whenever there is an exchange rate movement (Mhlanga and Ndhlovu, 2021).

The study results show that there is ERPT asymmetry in Zimbabwe, where domestic prices respond more to the appreciation of US dollar and Rand exchange rates (depreciation of local currency) compared to their depreciation (appreciation of the local currency). This is in line with the economic theory which predicts that the depreciation of a currency against others is associated with domestic price increases (Dilanchiev and Taktakishvili, 2021). In general, the domestic prices are more responsive to appreciation of other currencies than their depreciation. Caselli and Roitman (2019) note that ERPT is more pronounced when other currencies appreciate against the local currency. These results imply that there is need to safeguard against local currency depreciation as it has a pronounced pass through to domestic prices compared to appreciation.

CONCLUSION AND RECOMMENDATIONS

The exchange rate is one of the significant factors that influence economic variables in the economy. The study aimed to analyse ERPT in Zimbabwe. The study found a significant pass-through effects for the two main bilateral exchange rates in Zimbabwe with respect to the US Dollar (USD/ZWL) and South Africa's Rand (ZAR/ZWL). In the long run, each 1% depreciation of the ZWL dollar, *vis-à-vis* the US Dollar and the Rand leads, respectively, to 7.13% and 7.31% increase in domestic prices, all else equal. Thus the study found that ERPT is incomplete and asymmetrical, hence the South African rand exchange rate has a significant impact on domestic prices compared to

the USD exchange rate. The results are plausible since South Africa is Zimbabwe's major trading partner.

The study recommends the need to ensure local currency appreciation to minimise pass through to domestic prices. One potential measure to minimise ERPT is to introduce increased flexibility by implementing market-driven mechanism for price discovery in the RBZ foreign exchange auctions. Distortions have been greatly decreased as a result of the establishment of the new Zimbabwean currency and an interbank foreign exchange market. The disparity between the rates on the parallel market and the interbank market will continue because capital controls are in place. However, the premium remains relatively too high and the authorities need to gradually relax the margin requirements for trading in the interbank foreign exchange market and gradually remove exchange controls and surrender requirements to allow the exchange rate to be freely determined by supply and demand. This will minimise speculative behaviours and forward pricing, especially by formal retailers and reduce the pass through to domestic prices.

Furthermore, it is necessary for the central bank to conduct a survey of inflation expectations as these influence the interaction between exchange rates and inflation. This will allow the central bank to take proactive measures to stabilise the exchange rate and inflation. Moreover, a floating exchange rate regime consistent with a credible interest rate-based forward-looking monetary policy regime, could prove effective in anchoring inflation expectations. In addition, since the economy adopted monetary targeting, it is prudent to have money-based stabilisations. Zimbabwe can continue targeting broad money base with a tight monetary policy that mops up excess liquidity in the economy and reduces exchange rate overshoot, hence controlling inflation. As noted by Berg *et al.* (2003), Peru adopted monetary targeting in a tight monetary policy and managed to control exchange rate fluctuations and reduce inflation.

The study concludes that authorities need to put in place measures to minimise local currency deprecation to achieve stable inflation. Stabilising prices requires a coordinated policy approach focused on restoring confidence in the Zimbabwean dollar and addressing structural bottlenecks. Thus there is need for all stakeholders including the RBZ, fiscal authorities,

public sector and private sector to work together to ensure that adverse exchange rate movement do not translate into increases in domestic prices.

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