

## **THE EFFECT OF COMMON CURRENCY ON BILATERAL TRADE BETWEEN ZIMBABWE AND ITS ANCHOR COUNTRIES (2009-2013)**

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### **Abstract**

*Confronted with economic meltdown owing to severely invested hyperinflation, the country abandoned its local currency for the multicurrency regime. Because a dollarized country cannot create US dollars, money supply in Zimbabwe may be increased through trade surpluses and capital inflows. In the same vein, international competitiveness and attracting foreign capital become key because declining money supply may stimulate unemployment and deflation. This heightens the need for more export trade. Underlying theory on dollarization hypothesizes that improved trade emerges between small open economies and an anchor country issuing the adopted foreign currency. Against this background, the study was motivated by the need to test whether theory prediction apply to Zimbabwe by examining the effects of common currency on bilateral trade between Zimbabwe and its anchor countries. The methodology utilizes a gravity model with panel data for the period 2009 to 2013 from a sample of 12 countries. The results indicate that common currency is statistically significant in explaining bilateral trade flows between Zimbabwe and its anchor countries. It is recommended that focus should be centered on production of commodities which are highly required by anchor countries with due diligence being applied to composition and value of exports.*

*Keywords: Common currency, Bilateral trade, Zimbabwe, Anchor Countries, Gravity Model*

## INTRODUCTION

The history of dollarized countries is varied and compounded by data limitations as they tend to operate under special circumstances (Edwards, 2001). Zimbabwe was confronted with an economic meltdown owing to severely invested hyperinflation and this led to the abandonment of the local currency. Subsequently, in 2009 the country adopted a bundle of currencies from five anchors which included: Botswana, South Africa, United Kingdom, European Union and the United States of America. Theory affirms that when the Euro was introduced in 1999, one of the reasons was to reduce transaction costs of trade between European Union countries and its rational depended on patterns of trade, similarity of business cycles and other factors. In the same vein, in the advent of 2014, Zimbabwe adopted four more currencies against the background that there was remarked improvement in trade and investment between the country and China, Japan, India and Australia. To date Zimbabwe's basket of adopted foreign currencies includes: Botswana Pula, British Sterling Pound, Euro, South African Rand, United States Dollar, Australian Dollar (AUD), Chinese Yuan (CYN), Indian Rupee (INR) and Japanese Yen (JPY) (RBZ, 2014). These countries are defined herein as AC12. The postulations by Palley (2003) are also evident in Zimbabwe's context as US dollars cannot be printed and further compounded by the limited options to grow money supply. Nonetheless, the country faces negative trade balances and limited capital inflows and thus being exposed to future risk of rising unemployment and deflation.

Frankel and Rose (1998) suggest that monetary integration is a catalyst for highly correlated business cycles as evidence drawn from 21 industrialized countries showed a positive correlation between increased trade and business cycle synchronization. Meyer (2000) asserts that if the right conversion rate is used, then dollarization should lead to more trade. Nonetheless, despite the novelty of adopting the multicurrency regime with aims of restoring economic growth and price stability, Zimbabwe faces some inevitable setbacks given that economic decisions are highly associated with trade -offs. Notably, Jácome and Lönnberg (2010) suggest that having more than one official currency leads to extra costs in the marketplace and hence the need for an organized exchange rate. However, Reinhart and Rogoff (2002), assert that countries can rely on the exchange rate of the nominal economic anchor and this should make the country's commodities cheaper to its importers. Despite the abundance of well written thoughts on this issue, Garcia and Sosa (2011) suggest that the trade-off between dollarization and exchange rates is mixed across country experiences. Typically, exchange rate problems were the main drivers of de-dollarization in Bolivia. Nonetheless, literature suggests that a number of factors influence bilateral trade flows between

countries and some of these include: common currency, distance, history, common language, Gross Domestic Product (GDP), population and sharing a common border.

In order to keep up with global trends, international trade is very vital for developing economies like Zimbabwe and expansion of trade aids to facilitate improved allocation of resources, increasing economic efficiency and overall economic growth (Sunde et al, 2009). However, because results on dollarized economies are mixed, there is scanty empirical evidence to suggest that bilateral trade has improved in Zimbabwe. Notably, it may be asserted that dollarization leads to increased trade or that it is prompted by improved trade and investment flows as seen in Zimbabwe when it adopted additional currencies in 2014. Nonetheless, the country persistently faces a huge trade deficit and thus it becomes compelling to figure out whether the use of the same currency improves trade. This paper is set apart from prior work as it dwells on bilateral trade with anchor countries unlike studies that have focused on trade in both the pre-dollarized and post-dollarized era. In some instances, trade was examined in its general form and in others; emphasis was on trade with countries in regional blocs or major trading partners. Such work includes: Sunde et al (2009), Kamoyo (2012), Makova (2012), Saungweme (2013) and Sunge and Mapfumo (2014). In this regard, the purpose of this paper was to test the proposition that small dollarized open economies experience improved trade with anchor countries by examining the effect of a common currency.

The term anchor countries refer to countries issuing all foreign currencies adopted by Zimbabwe irrespective of time. Essentially, monetary authorities suggest that the additional adoption of currencies was prompted by improved trade and investment flows. However, this study seeks to investigate whether the effect of using common currency was significant in export trade between Zimbabwe and AC12 countries since the inception of the multicurrency regime. The rationale of including countries that became anchors in 2014 is that it is suggested that trade with them grew after dollarization however it is uncertain whether sharing the same currency would improve or undermine this development. This is why this paper made an enquiry into the role of using the same currency in trade. The method entails the use of a gravity equation and panel data for the period 2009 to 2013 and the findings of this study indicate that sharing a common currency plays a significant role in enhancing exports between Zimbabwe and anchor countries.

Section Two provides an overview of foreign trade in Zimbabwe and also focuses on theoretical and empirical work on influences of bilateral trade between countries. Section three provides the methodology of the paper. Section Four involves the presentation and analysis of results and Section Five dwells on the conclusion and policy implications.

## LITERATURE REVIEW

The section focuses on articulation on the background of trade in Zimbabwe since it adopted the multicurrency regime. Furthermore, the paper probes into some propositions made by theory on trade in dollarized economies and a review of work on trade and gravity models.

### Overview of Foreign Trade in Dollarized Zimbabwe

Given that international commodity prices were favourable, there was improved industrial capacity utilization and merchandise exports increased significantly by 30.2% from US\$3 380 million in 2010 to US\$4 339 million in 2011 (RBZ, 2012). Nevertheless, imports which grew by 23.3% from US\$ 161.8 million in 2010 to US\$6 365.4 million in 2011 and thus aided crowning the reappearance an unsustainable current account deficit estimated at US\$1 887 million in 2011, representing 23.4% of GDP (RBZ, 2012).

According to RBZ (2013), Zimbabwe increasingly became more reliant on imports due to persistent supply gaps as the country experienced industrial under-capacity utilization. Notwithstanding this, the recovery in exports were relatively weak and highly constrained by feeble foreign direct investment inflows and volatility in international prices some commodities like nickel, platinum, copper, and diamonds.

According to UN (2012), the country's major export trading partners in 2012 were South Africa (68.9%), United Arab Emirates (12.4%), Mozambique (7.3%) and its major import trading partners in the same year were South Africa (42.2%), United Kingdom (17.2%), and United States (7.6%). Merchandise trade was greatly biased towards imports of finished consumer goods and vehicles.

For the year 2012, exports amounted to US\$3,884 million against imports of US\$7,484 million attributing to a highly unsustainable current account deficit of \$3,600 million. Although approved short-term trade facilities amounted to \$3.3 billion from \$2.9 billion in 2011, only 33% of these were utilized compared to 47% in 2011. It is suggested that this partly due to the external debt overhang and the failure of borrowers to meet the requirements to facilities. The three prime sectors for the years 2011 and 2012 with the largest amounts approved short-term facilities were agriculture, financial and mining sectors respectively (RBZ, 2013). Figure 1 depicts the overall trade flows during the period under review.

Figure 1: Composition of Trade (%) for the period 2009-2013.



Source: International Monetary Fund

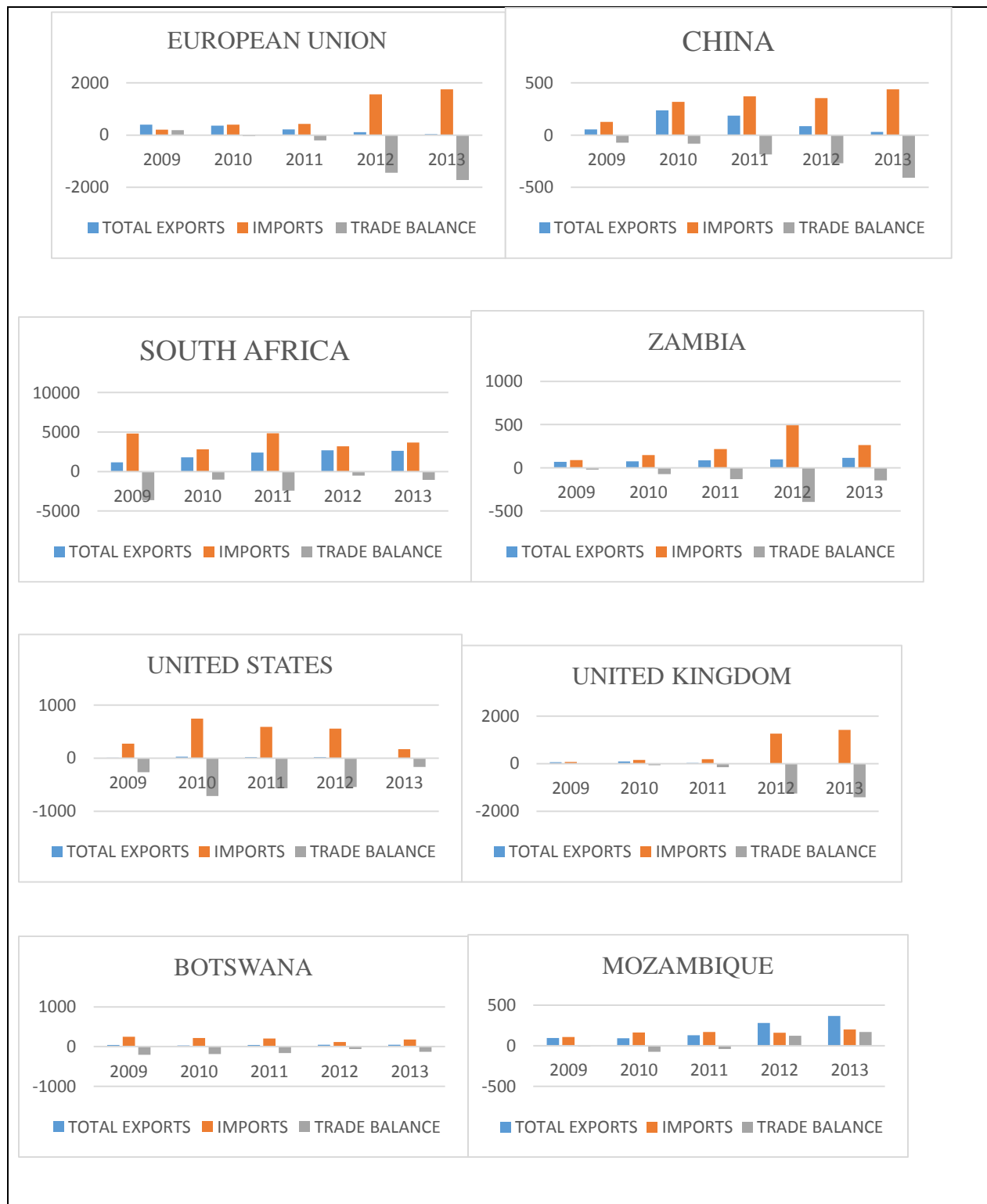
The need to finance the current account deficit through debt-finance indicates limited financing options and tends to exacerbate the country's external debt. This heightens the need to increase exports which bring in the much needed foreign currency amid abatement of foreign aid, foreign direct investment, and offshore credit lines and Diasporas remittances. However, the country is still largely dependent on imports and subdued by uncompetitive exports which led to a negative trade balance during 2013.

Apparently, only South Africa and China are among the AC12 countries however, the former retains a large share of export trade. The composition of total exports from Zimbabwe shows that mining exports had increased from 41% in 2009 to 53% by the end of 2014; however, these were largely affected by the decline in metal prices on the world market. Notably, the US dollar appreciated against Zimbabwe's major trading currencies and this made imports cheaper while subsequently reducing the competitiveness of the country's exports. Nonetheless the major exports were gold, platinum, tobacco and diamonds making up 67.8% and 65.3% of total exports in 2013 and 2014 respectively. The country's trade deficit was \$3.3 billion with exports amounting to \$3.1 billion and imports were \$6.4 billion. Some of the major constraints were the decline in international commodity prices and lack of competitiveness (IMF, 2014).

Notwithstanding this, there was a decline in the trade deficit from \$3.9 billion in 2013. Saungweme (2013) asserts that there are differences in trade patterns, composition, value and policies in the periods 1990-1999 and 2000-2012. By 2011, South Africa had become Zimbabwe's major trading partner taking up about 60% of total trade. There was a major shift of exports and imports from the European Union to neighboring countries like Zambia, Mozambique and South Africa. Fig 2 shows trade balances between Zimbabwe and some AC12 selected countries. In recent times, this major shift is justified by increased restrictions on

imports by countries in the European Union overall, annual total trade between 2009 and 2013 fell from 152.5% to -1.2% respectively (IMF, 2014).

Figure 2: Trade flows between Zimbabwe and selected AC12 countries (2009-2012)



The composition of total exports from Zimbabwe shows that mining exports had increased from 41% in 2009 to 53% by the end of 2014, however, these were largely affected by the decline in metal prices on the world market. Notably, the US dollar appreciated against Zimbabwe’s major trading currencies and this made imports cheaper while subsequently reducing the competitiveness of the country’s exports. Among the major trading partners, South Africa stand to be the dominant as it is the main source of Zimbabwe’s imports as well as the destination of the exports. Nonetheless the major exports were gold, platinum, tobacco and diamonds making up 67.8% and 65.3% of total exports in 2013 and 2014 respectively (IMF, 2014). Fig 3 shows trade flows between Zimbabwe and its major trading partners as well as with AC12 countries. The country’s trade deficit was \$3.3 billion with exports amounting to \$3.1 billion and imports were \$6.4 billion. Some of the major constraints were the decline in international commodity prices and lack of competitiveness.

Figure 3: Imports from Major trading Countries

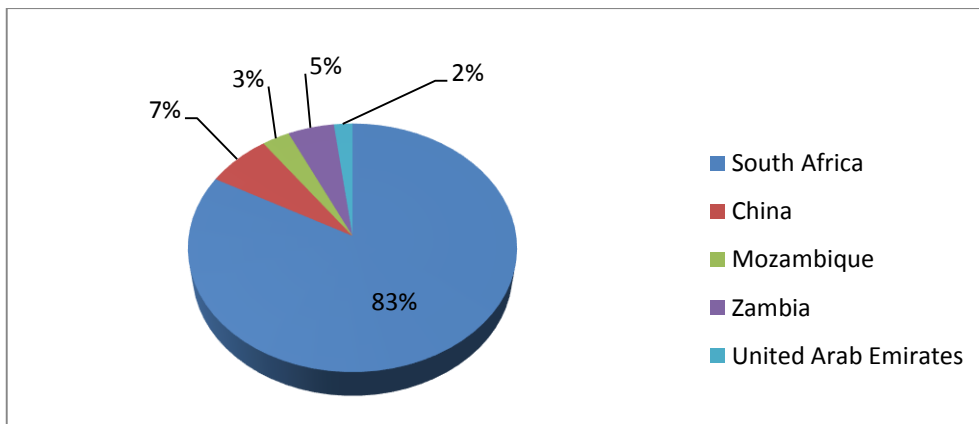


Figure 4: Exports to Major trading Countries

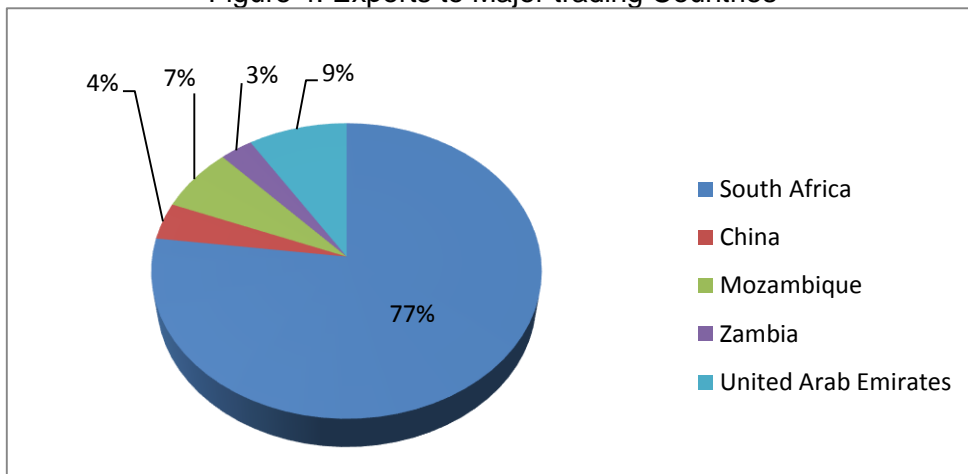


Figure 5: Imports from Anchor Countries

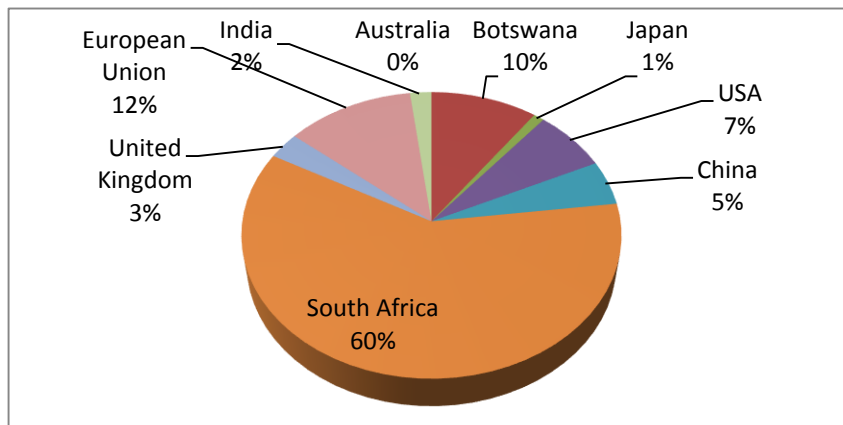
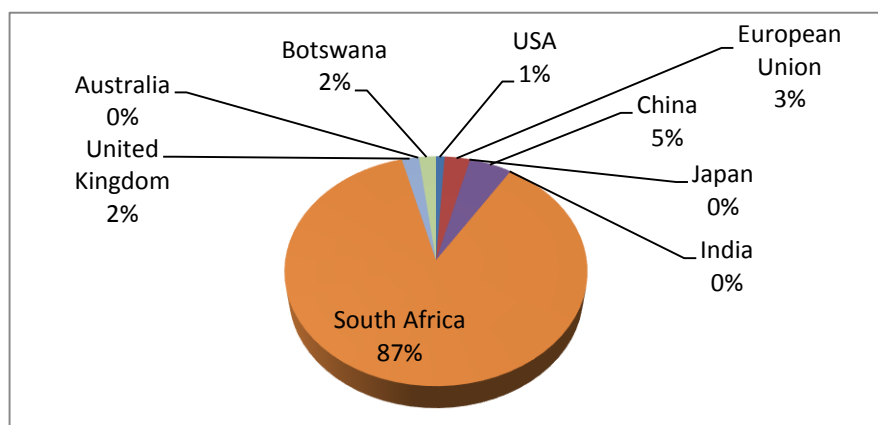


Figure 6: Exports to Anchor Countries



### Trade and Dollarized Economies

Dollarization may end up boosting bilateral trade and investment flows because of lower transaction costs between them (Stein et al., 1999) unless there is little commercial and financial integration due to trade and investment barriers. The same view is shared by Hinds, (2002) and Pesantes (2005) also argues that in the long run, Panama achieved successful trade integration with the US. Kenen (1969) suggests that the survival of sharing a common currency needs to be backed by a high degree of diversification in production. Furthermore, Eichengreen (1994) shows that if a country's trade is concentrated with a particular partner, the means-of-payment and unit-of-account functions of money can be better serviced by having a common currency with that partner.

According Optimum Currency Area (OCA) literature originating Mundell (1961), it is asserted that when countries are integrated and are major trading partners they should maintain



a single fixed exchange rate system because continuous exchange rate adjustments are expensive and inefficient. However, small economies with weak trade connections between them may use flexible exchange rates. There is limited empirical evidence to disqualify the use of multiple currencies although Jácome and Lönnberg (2010) suggest that it leads to extra costs in the market place. McKinnon (1963) argues against Mundell (1961) by asserting that the existence and reliance on one currency may not be desirable because currency and capital market integration would stem from commodity trade through two currencies. As such the existence of a major competitive currency would safeguard small economies (Johnson and Swoboda, 2013). The common standpoint by Mundell (1961) and MacKinnon (1963) is that using a common currency would improve trade if there was integration of commodity trade and correlation of fluctuations of business cycles in private sectors of two economies. Berg et al (2003), thus argues that although commodity trade may be integrated, dissimilarities in fluctuations of business cycles may undermine the usefulness of sharing a common currency.

Furthermore, Mundell (1961) reiterates on the importance of geographical and trade characteristics by providing groundwork to weigh the welfare gains of an exchange rate regime. Levy-Yeyeti and Sturzenegger (2001) suggest that countries with flexible exchange rates tend to grow faster in trade than those with fixed exchange rates. Notably, dollarization is classified as an extreme case of fixed exchange rate regime and a rigid regime is appropriate for small economies that tend to trade more internationally. In that regard, geographical concentration if a country's trade is suggested to be better suited for countries which peg their currency to that of their major trading partners. However, Garcia and Sosa (2001) fail to reach a conclusion on the trade-off between exchange rates and dollarization as they cite that Bolivia eventually decided on de-dollarization owing to exchange rate depreciation.

### **Empirical Review of Trade and Gravity Models**

There is an extensive pool of literature which has suggested that sharing the same currency leads to increased trade flows between trading partners. Frankel and Ross (1998) suggest that if there was no significant trade prior to dollarization, there should be an increase in trade between the anchor country as well as better business-cycle co-movement. Notably, it is acknowledged that there may be disparities to begin with but the use of a common currency may turn out to be sustainable overtime. Alesina and Barro (2000) investigate the effect of a common currency on reducing the transaction costs of trade. The results indicate that the smaller the countries and the larger the number of transactions in the world, the smaller the number of currencies that will be needed and hence suggest that some countries keep their domestic currencies for sovereignty although they may be better off adopting a stronger

currency. According to Pesantes (2005) it is prudent to consider the exchange rate arrangements of neighbors, trade partners and competitors because by devaluing their currencies they may undermine competitiveness of domestic exports and make imports cheaper. But if trade is mostly done with the anchor country, this becomes less important as adopting the anchor country's currency would reduce transaction costs and eliminate of exchange rate uncertainty. Frankel and Ross (2002) argue against Keene (1969) that the use of a common currency would lead to trade diversion.

## METHODOLOGY

The study used a gravity model as it has strong theoretical orientation and has been extensively used in assessing bilateral trade flows.

### Model

To estimate the Standard Gravity Model equation as a baseline for trade flows, this paper uses exports as the dependent variable as determined by Gross Domestic Product (GDP). The Modified Standard Gravity Model includes GDP, distance between capitals, population, exchange rate, dummy for common border as explanatory variables. The function is specified as follows:

$$\log E_{ijt} = \alpha_0 + \alpha_1 \log GDP_{jt} + \alpha_2 \ln D_{ijt} + \alpha_3 \ln POP_{jt} + \alpha_4 \ln Ex_{ijt} + \alpha_5 CC + U_{ijt} \quad (1)$$

Where, the  $\alpha'$  sare elasticities and  $\alpha_0, \alpha_1, \alpha_3, \alpha_5 > 0$  while  $\alpha_2, \alpha_4, \alpha_6 < 0$

$j = 1, 2, 3, 4, \dots, 11.$

$i = 1$  (Zimbabwe).

$t = 2009, 2010, \dots, 2013.$

$\log E_{ijt}$  - Logarithm of Zimbabwe's export to country j in year t

$\log GDP_{jt}$  - Logarithm of Gross Domestic Product in country j in year t

$\log D_{ijt}$  - Logarithm of Distance between capital cities in kilometers

$\log POP_{jt}$  - Logarithm of Population in country j in year t

$\log Ex_{ijt}$  - Logarithm of Real exchange rate in country j in year t

CC - common currency dummy variable

$U_{ijt}$  - Error term

### The Data

The paper uses panel data containing annual export trade flows, GDPs, exchange rates, population, common border and distance between capital cities of Zimbabwe and its 12 anchor

countries (AC12) namely USA, South Africa, United Kingdom, Botswana, Japan, India, Australia, Germany, Belgium, Italy and China. However, due to the relative size of the European Union and uneven distribution of exports from Zimbabwe, this paper used four countries with relative share of over 75% of total exports from Zimbabwe. 2009 was used as a base year and sample countries include Germany, Belgium, Italy and Netherlands.

Data was collected for the period 2009 to 2013 using statistics from IMF's direction of trade statistics (DOTS, 2014) and ZimStat. The product of GDP of Zimbabwe and AC12 in time  $t$  was used as a measure of economic size (Cheng and Wall, 2004) and is expected to be positively related. The data is obtained from IMF at constant prices. Population was used as a proxy of country mass to estimate the market size and a positive relationship is expected with trade. This was also obtained from IMF (2015) data base. A number of countries consider the U.S as one of the most important trade partners. Whilst others peg their currencies to the U.S dollar, as such it is logical that the US dollar is preserved as an international reserve currency. Furthermore, it is the predominance currency used in Zimbabwe thus, the bilateral exchange rate is viewed to be a good proxy for real effective exchange rate.

A negative relationship is expected with trade as an appreciation of the US dollar results in exports becoming too expensive and imports cheaper. Distance was used as a proxy for transport costs between Zimbabwe and AC12 using great circle distance between the capital cities (Byers, 1997). A negative relationship is expected as implied by an increase in transport costs. The last variable used was common border as it signifies closeness. Value 1 denotes sharing same border and 0 otherwise and a positive relationship is expected.

## ANALYSIS AND RESULTS

A regression was run with the logarithm of exports as the regress and. The Hausman test was conducted and indicated that the fixed effects model was more appropriate than the random effects model.

Furthermore, the paper deliberated on the different kinds of fixed effects models and resorted to using the Least Squares Dummy Variable model (LSDV). Notably the assessment of fixed effects model with  $n$  entity-specific intercepts and LSDV showed consistencies in coefficients and probability values of regressors.

Table 1 shows the OLS regression results obtained due to multicollinearity, United Kingdom and USA were dropped from analysis.

Table 1: Regression Results

Variable	Coefficient	Std error	T	Prob >   z
Ex	5.553908	4.8043	1.16	0.254
POP	-45.26616	16.2749	-2.78	0.008
GDP	-0.9323375	0.8984439	-1.04	0.305
CC	46.20883	15.50403	2.98	0.005
D	166.0952	58.1172	2.86	0.006
Number of observations	= 60			
R-squared	= 0.7280			
F (14, 45)	= 8.60			
Prob > F	= 0.0000			

The results indicate that using a common currency increases export trade between Zimbabwe and the respective anchor country by 46.20883. Real exchange rate and GDP was found to be insignificant in explaining bilateral trade flows. However, population and distance were found to be statistically significant in explaining bilateral trade flows between Zimbabwe and AC12. Nonetheless, population had a negative sign contradicting theory and hence this paper asserts that it may be because of changes in preferences and taste in the advanced world which no longer match conventional exports from Zimbabwe.

## CONCLUSION AND POLICY IMPLICATIONS

From the study, it is apparent that dollarization has had an impact on bilateral trade flows with anchor countries. The state of current research on the benefits of trading with anchor countries is scanty in Zimbabwe. However, this paper confirms theory predictions by providing empirical evidence of a country case on recent dollarization. Furthermore, the evidence in this paper reinforces the decisions by monetary authorities in Zimbabwe to adopt other currencies into the existing package; often criticism on government policies and intervention targets areas with economic inefficiencies like the trade deficit. Nonetheless, this paper affirms that the present day trade deficit has some of its roots deeply embedded in factors originating from the pre dollarized era. In the same accord it will take time to correct such imbalances. The findings of this paper provide enlightenment on some course of action that is required to increase money supply through export trade by paying close attention to the composition and value of exports to anchor countries.

This paper calls for further inquiry into the composition and value of exports to anchor countries to determine the various courses of action that may propel exports growth. Indications have shown that mining exports has been significant over the period under review as well as some commodities from the agricultural sector. It would be preposterous to presume that all

exports are equal and should receive equal attention and hence government should prioritize key areas. In this regard, the results of this paper have serious implications for sustaining dollarization in Zimbabwe and avoiding the risk of deflation.

## REFERENCES

- Alesina, A., & Barro, R. J. (2000). Currency unions (No. w7927). National Bureau of Economic Research.
- Alesina, A., & Barro, R. J. (2000). Currency unions (No. w7927). National Bureau of Economic Research.
- Berg, A., Borensztein, E., & Mauro, P. (2003). Monetary regime options for Latin America. *Finance and Development*, 40(3), 24-27.
- Edwards, S. (2001). Dollarization and economic performance: an empirical investigation (No. w8274). National Bureau of Economic Research.
- Eichengreen, Barry (1994) *International Monetary Arrangements for the 21st Century*, the Brookings Institution, Washington, DC
- Frankel, J. A., & Rose, A. K. (1998). The endogeneity of the optimum currency area criteria. *The Economic Journal*, 108(449), 1009-1025.
- Frankel, J. A., & Rose, A. K. (1998). The endogeneity of the optimum currency area criteria. *The Economic Journal*, 108(449), 1009-1025.
- Garcia-Escribano, M. and S. Sosa (2011), "What is Driving Financial De-dollarization in Latin America?" IMF Working Paper 11/10.
- Hinds, M. (2004). Is Dollarization a Worthwhile Option for Developing Countries? *International Finance*, 7(2), 287-309.
- International Monetary Fund. (2015, June). Zimbabwe country tables. Retrieved from International Financial Statistics Online database
- Jácome, L. I., & Lönnberg, Å. (2010). Implementing official dollarization. IMF Working Papers, 1-31.
- Johnson, H. G., & Swoboda, A. K. (2013). *The Economics of Common Currencies (Collected Works of Harry Johnson): Proceedings of the Madrid Conference on Optimum Currency Areas (Vol. 6)*. Routledge.
- Keene, D. (1969). *The Japanese Discovery of Europe, 1720-1830*. Stanford University Press.
- Levy-Yeti, E. L., & Sturzenegger, F. (2001). Exchange rate regimes and economic performance. UTDT, CIF Working Paper, (2/01).
- Makova, T. (2012). Tracking Zimbabwe's trade performance before and during dollarization. *Journal of Strategic Studies: A Journal of the Southern Bureau of Strategic Studies Trust: Joint Research Programme of the Ministry of Finance, the Zimbabwe Economic Policy and Research Unit and the University of Zimbabwe*, 3(1), 68-77.
- McKinnon, R. I. (1963). Optimum currency areas. *The American Economic Review*, 717-725.
- Meyer, S. (2000). Dollarization: An Introduction. Presentation for the Friends of Global Interdependence Center.
- Mundell, R. A. (1961). A theory of optimum currency areas. *The American Economic Review*, 657-665.
- Palley, T. I. (2003). The economics of exchange rates and the dollarization debate: the case against extremes. *International Journal of Political Economy*, 33(1), 61-82.
- Pesantes, R. V. P. (2005). Dollarization and price dynamics (Doctoral dissertation, Vanderbilt University).
- Reinhart, C. M., & Rogoff, K. S. (2002). The modern history of exchange rate arrangements: a reinterpretation (No. w8963). National Bureau of Economic Research.
- Reserve Bank of Zimbabwe, (2009-2015). Monetary Policy Statements. Accessed on: [www.rbz.co.zw](http://www.rbz.co.zw)

Saungweme, T. (2011). Trade Dynamics in Zimbabwe (1980-2012): The Untold Trade Story of Zimbabwe. *Russian Journal of Agricultural and Socio-Economic Sciences*, 10, 22.

Stein, Ernesto, Ernesto Talvi, Ugo Panizza and Gustavo Marquez. (1999). "Evaluando la Dolarizacion: Una Aplicacion a Paises de America Central y del Caribe". Inter-American Development Bank. Accessed on: [www.iadb.org/oce/exchange\\_rate/evaluan.pd](http://www.iadb.org/oce/exchange_rate/evaluan.pd)

Sunge, R., & Mapfumo, A. (2014). The Impact of Intra-Regional Country to Country-Bilateral Trade Agreements on Trade Flows between Zimbabwe and its SADC Trading Partners. *Journal of Economics and Sustainable Development*, 5(14), 111-118.

Sunde, T., Chidoko, C., & Zivanomoyo, J. (2009). Determinants of Intra Industry Trade between Zimbabwe and its Trading Partners in the Southern African Development Community (1990-2006). , 5(1), 16-21.

Kamoyo, M., & Mabvure, T., J. (2012). Role of Technological Factors on Zimbabwe's Export Competitiveness in Southern Africa Development Community Free Trade Area from 1995-2010. *Interdisciplinary Journal of Contemporary Research in Business*. November 2012. Vol 4, No 7

Cheng I., & Wall, H. (2005). Controlling for heterogeneity in gravity models of trade and integration. Federal Reserve Bank of St Louis. Working Paper 1999-010 pp 49-63.

IMF (April 2015): Direction of Trade Statistics accessed on: [www.imf.org/external/data.htm](http://www.imf.org/external/data.htm)