



## **Determinants Of Remittances in Selected Southern African Countries**

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Signed *S S Malupe*

Date: *03 June 2022*

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## Abbreviations

BELN	Botswana, Eswatini, Lesotho and Namibia
RSA	Republic of South Africa
LSDV	Least Square Dummy Variable
SUR	Seemingly Unrelated Regressions
GDP	Gross Domestic Product
SACU	Southern African Customs Union
CMA	Common Monetary Area
SADC	Southern African Development Community
GMM	Generalized Method of Moments
CSD	Cross-Sectional Dependence
FGLS	Feasible Generalised Least Squares

## **Abstract**

*This study investigates the main determinants of remittance inflows from the Republic of South Africa (RSA) to selected Southern African countries specifically, Botswana, Eswatini, Lesotho, Namibia, and (BELN). The aim is to add to the scarce literature on intra-Africa remittance flows which, adversely affect policy interventions required to maximise the potential benefits of these inflows in African countries. Annual data from 2000 – 2017, and dynamic panel data estimation techniques such as the least square dummy variable (LSDV) fixed effects model and a random-effects model for sample-wide estimations and seemingly unrelated regressions (SUR) for country-specific estimations were used. The results showed that remittances received in BELN countries are mainly driven by institutional quality, financial intermediation and income of the migrants in RSA. These drivers are synonymous with self-interest investment motives for remittance flows rather than altruistic motives. However, there are country-level differences. Migrants from Botswana and Lesotho in RSA remit money home for altruistic reasons while migrants from Namibia remit money home for self-interest returns seeking purposes. Migrants from Eswatini also remit money home for altruistic reasons and partially for self-interest reasons. Consequently, country-level policy differentiation will be required to promote remittance inflows. For countries in which remittances are mainly driven by altruistic motives, financial service providers would have to design services and products that smooth income and consumption for households in order to encourage them to use formal channels for their remittances. In countries where self-interest motives are dominant, financial services and products that enhance the acquisition of physical assets, financial investments and business start-ups will be attractive to migrants and their families. A stable, free and participatory political environment is key to boosting the right confidence levels for remittance flows into the domestic economy.*

# **1. Introduction**

## **1.1. Background**

The impact of migration on development happens through a number of channels. These include skills transfer, business investments and job creation, productivity growth, tax revenue, improved trade relations and remittances. However, over time, remittances have emerged as one of the most significant links between migration and development. Data from the World Bank shows that global remittances from the diaspora to lower and middle income countries were approximately US\$24 billion in 1990. By the year 2000, remittance flows had more than doubled to US\$59 billion, reaching as high as US\$550 billion in 2012. In countries such as Lesotho, Nepal and Moldova, remittances represent 25 percent or more of the Gross Domestic Product (GDP). This exponential growth in international remittance flows has attracted significant research and policy attention over the past few decades.

Consequently, a huge amount of research has emerged on the impact of remittances on recipient countries, from both the microeconomic and macroeconomic perspectives. From the micro perspective, studies include the ability of remittances to smooth consumption and income for households thereby helping to reduce poverty (Ratha, 2003); serve as working capital for small scale enterprises, thereby creating jobs (Woodruff & Zenteno, 2001); smooth access to finance where financial systems are underdeveloped (Gupta et al., 2007); and reduce income inequality (Carrasco & Ro, 2007). A few examples of macroeconomic related research into remittances explore how remittances impact aggregate demand and inflationary pressures in recipient countries (Gupta et al., 2007); its impact on the exchange rate and how that affects the trade account (Singer, 2008); remittances and labour supply in receiving countries and how that ultimately impacts on economic growth (Chami et al., 2003) and the multiplier effect of remittance flows (Kapur, 2005).

However, most of the existing literature has focussed more on diaspora flows to Africa than remittance flows from within the continent of Africa itself. Again, what drives these inflows in the first place has also been researched to a much lesser extent than other characteristics of remittance flows. This has created a gap in the literature that needs to be filled. Research on intra-African remittances flows, what drives these inflows and their impact on the microeconomy and macroeconomy of recipient countries in Africa is scanty. Hence, the factors that drive intra-African remittances flows are not as well-known as what drives diaspora remittance inflows. This adversely affects the formulation and implementation of required policy to mitigate any adverse effects of these flows such as money laundering or enhance their benefits to society such as improving financial inclusion, leveraging the inflows to create jobs or reducing poverty.

This study seeks to add to the scarce literature on intra-African remittance flows by focussing on Africa's leading migration destination, Republic of South Africa (RSA), and what drives remittance flows from RSA to member states of the Southern African Customs Union (SACU), namely Botswana, Eswatini, Lesotho and Namibia . The choice of these countries is based on the fact that RSA is the main destination of migrants from these countries, whose economies



are more interdependent with and integrated into the RSA economy than the entire continent of Africa, making them an excellent case study for intra-African remittance flows.

## **1.2. Problem Statement**

There is inadequate awareness of the drivers of and constraints to remittance flows in intra-African migration corridors. Most studies on remittance flows to Africa have focussed on diaspora remittances and not intra-African remittance flows. The literature on intra-African flows remains scanty. The literature on remittance inflows for other international migration corridors has cited factors such as overregulation, underdeveloped financial systems and markets, lack of the requisite structures and enabling environment as factors that facilitate or constrain these inflows (Ketley, 2006). However, for Southern African migration corridors, more research is required to establish the drivers of remittance inflows.

This study, therefore, adds to the scarce literature on intra-African remittance flows and also helps to isolate factors which drive remittance flows from RSA to BELN countries, to facilitate policy interventions that can lead to optimisation of these flows and maximisation of their potential benefits such as poverty reduction, job creation and financial inclusion BELN.

## **1.3. Justification**

Despite the existence of vast literature on remittances behaviour in several international migration corridors, there is limited research on intra-African remittance flows, specifically for BELN countries, which have high outmigration rates to RSA.

## **1.4. Research Objective**

The objective of this study, therefore, is to establish the motives dominate the remitting decision of BELN countries' migrants in RSA, whether altruism or self-interest and to address pressing policy challenges associated with each motive to achieve financial exclusion, poverty reduction and job creation.

## **1.5. Research Hypothesis**

A null hypothesis ( $H_0$ ): Remittances in BELN are not collectively determined by income level in the host country (RSA GDP growth, a proxy for changes in migrant income); Income level in the home country (BELN GDP per capita growth); Interest Rates Differentials between RSA and BELN; Institutional Quality; Financial Deepening as a Measure of Financial Intermediation; Market Sophistication and Financial Sector Development.

The alternative hypothesis ( $H_1$ ): Remittances in BELN are collectively determined by income level in the host country (RSA GDP growth a measure of host), Income level in the home country (BELN GDP per capita growth), Interest Rates Differentials between RSA and BELN, Institutional Quality, Financial Deepening as a Measures of Financial Intermediation, Market Sophistication and Financial Sector Developments.

Consequently, a statistically significant  $p$  value of any of the drivers of remittance flows outlined in the hypothesis above indicates rejection of the null hypothesis and acceptance of the alternative hypotheses that the specific variable is a driver of remittance flows from RSA to BELN countries. On the contrary, statistical insignificance of the  $p$  value of any of the drivers of remittances outlined

in the hypothesis above indicates the failure to reject the null hypotheses that the specific variable is not a driver of remittance flows from RSA to BELN countries

### **1.6. Significance of the study**

This study attempts to contribute to the body of knowledge on the main determinants of remittances from RSA to BELN countries. Most studies on remittances to African countries focus on diaspora remittance flows, or more matured migration corridors. The literature on intra-African remittance flows is still scanty. This study, therefore, adds to the scarce literature on intra-African remittance flows. Again, while the selection of countries is motivated by the fact that they are all in the SACU region, they also serve as useful illustrations of the range of migration experiences in Africa. They include some of the poorer (Lesotho and Eswatini) and some of the (relatively) richer countries (Botswana) in the Sub-Saharan Africa region and relatively more stable countries like Namibia. All these countries serve as recipients of migrants' remittances from the rest of the world and largely RSA. RSA, in particular, is also a member of SACU and remained arguably the largest economy in Africa as well as being the highest remitter of migrant's remittances to its neighbours (see, Nayyar, 2010).

### **1.7. Structure of Paper**

The remaining parts of the paper are organised as follows: Section 2 provides a snapshot of economic setting in BELN, Section 3 reviews the relevant literature on remittances, Section 4 presents an analytical framework, Section 5 outlines the estimation results and lastly, Section 6 provides conclusion and recommendations of the study.

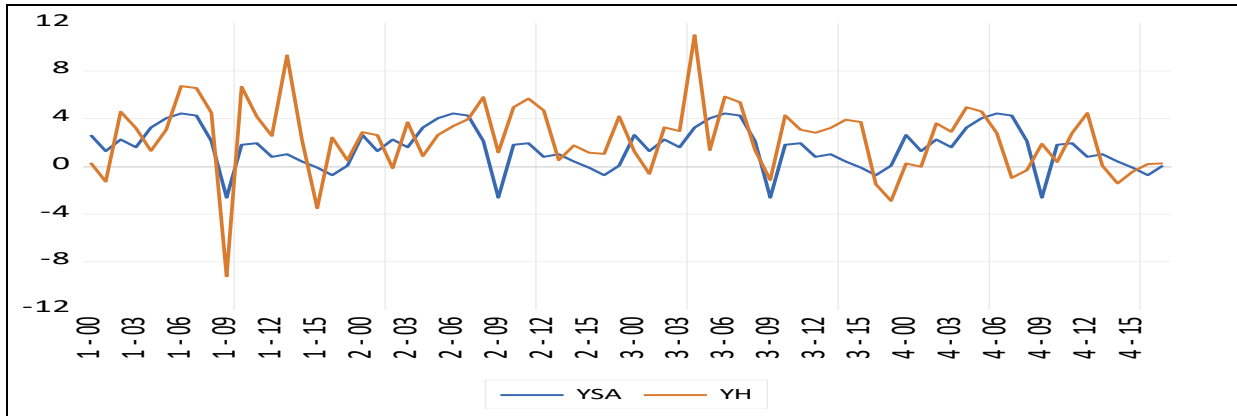
## **2. Snapshot of economic setting in BELN and remittance flows**

### **2.1. Background**

This section relates macroeconomic trends in BELN countries and how that synchronises with remittance flows in each of these countries. Macroeconomic variables such as economic growth, inflation, and unemployment are explored to see what patterns exist in these countries and how that relates to remittance inflows.

All BELN countries border RSA with Lesotho surrounded by it. Their economies are economically integrated with RSA to the extent that Lesotho, Namibia and Eswatini are under Common Monetary Area (CMA) with RSA where their currencies are pegged at par (one to one basis) with RSA rand and the rand can circulate freely within their borders. In addition, more than 50 percent of their total imports originate from RSA. The BELN economies are largely based on agriculture, manufacturing, and mining, and depend heavily on inflows of workers' remittances and receipts from the SACU. Figure 1 confirms the level of procyclicality between economic growth in RSA and GDP growth in each of the BELN countries. GDP growth in each of these countries responds and more drastically so to trends in economic growth in RSA.

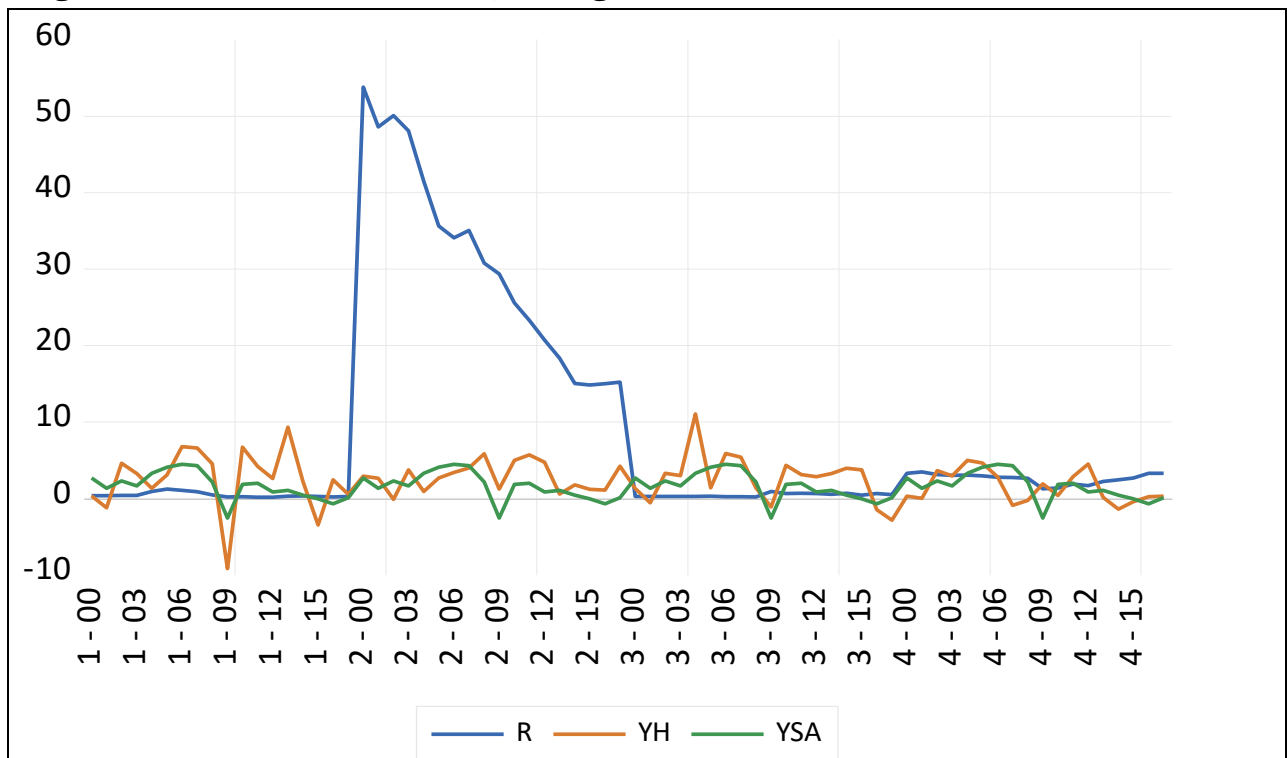
**Figure 1: Graph of economic grow in RSA and average growth in BELN countries**



Source: World Bank Indicators (2017) Note: 1- Botswana; 2 – Lesotho; 3 – Namibia; 4 - Eswatini

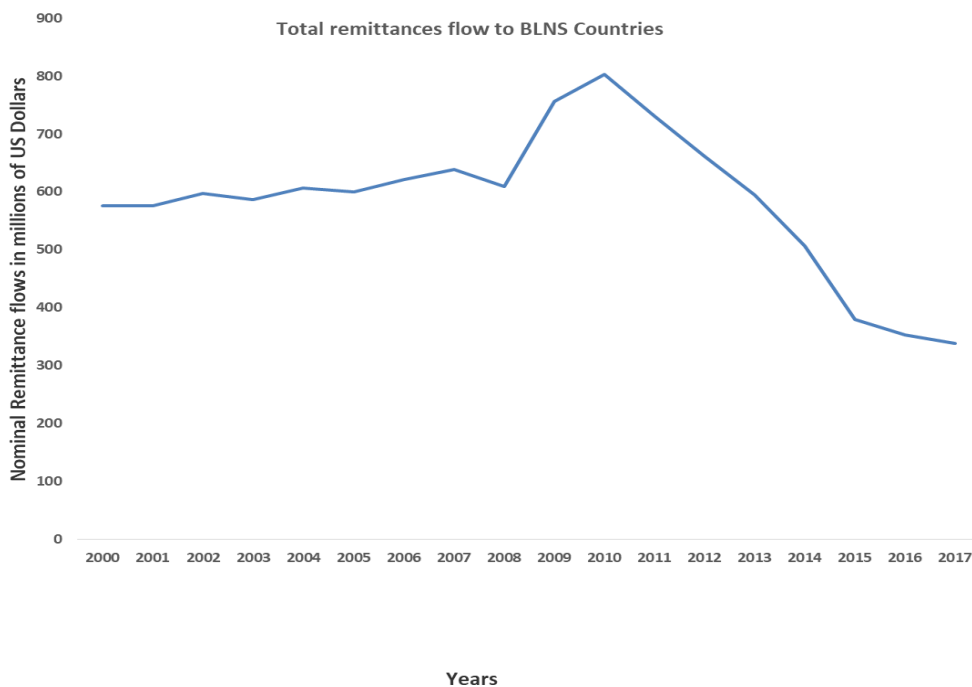
The World Bank (2017) shows that the average GDP per capita of Botswana, Lesotho, Namibia and Eswatini between 2000 and 2016 were USD 6, 192; USD 1, 101; USD 4, 918 and USD 3, 545 respectively. Lesotho being the poorest country among the four, it exhibits higher remittance flows than the rest. While most of the BELN countries have seen declines in remittance flows, Lesotho has seen a sharp decline from 54 percent of GDP in the year 2000 to 15 percent of GDP in 2017. This aligns with the economic decline in RSA from 2.62 percent GDP growth in 2000 to less than 1 percent of GDP in 2017.

**Figure 2: Trends in remittances, GDP growth in BELN countries and RSA.**



Source: World Bank Indicators (2017) Note: 1- Botswana; 2 – Lesotho; 3 – Namibia; 4 - Eswatini

**Figure 3: Trends in total remittance flows to BELN Countries**



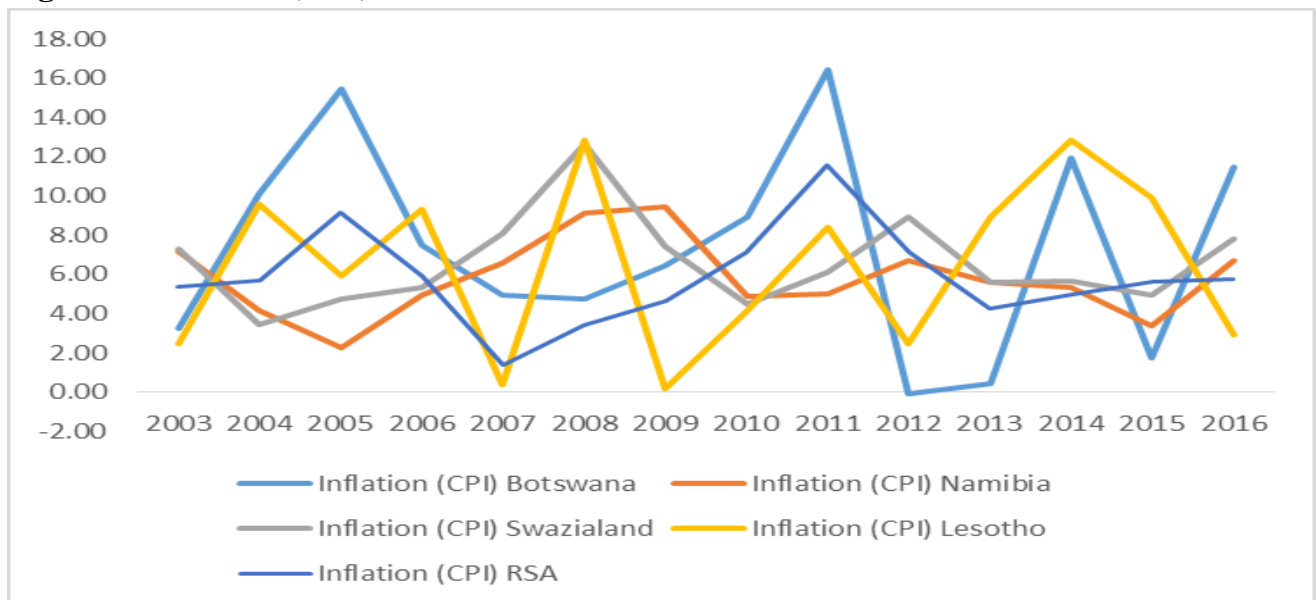
Remittances from RSA to BELN countries increased steadily from 576 million U.S. dollars in 2000 to 609.8 million U.S. dollars in 2007. The onset of the global financial crisis saw a steep rise to 803 million U.S. dollars by the year 2010. However, since 2010 there has been a sharp decline

in total remittance flows down to 339 million US dollars by 2017, again reflecting the economic contraction in the host country.

## 2.2. The impact of remittances on inflation

The literature on the impact of remittances on inflation is inconclusive. While some studies suggest that remittances can induce inflation in the recipient economies especially where aggregate supply does not increase correspondingly in response to increases in aggregate demand (e.g. Narayan, Narayan & Mishra, 2011; Nisar & Tufail, 2013; Khan & Islam, 2013) other studies conclude that a high inflow of remittances lowers poverty, smoothes household consumption and stimulates aggregate supply thereby lowering inflation (e.g. Acosta, Baerg, & Mandelman, 2009; Giuliano & Ruiz-Arranz, 2009). A detailed empirical analysis will be required to establish which of the two transmission mechanisms prevail in relation to remittance flows and how they impact remittances in these countries. However, this is outside the scope of this study.

**Figure 4: Inflation (CPI)**



World Bank Indicators (2017)

## 2.3. Remittances and Unemployment

Most studies have found that migration has a positive effect on unemployment and that once conditions in the host country improve, migrant incomes improve as well. This increases the likelihood of having returning nationals to their communities getting involved in development activities that create jobs (Fields, 1975; Todaro, 1969; Oliver, 1964). On the contrary, Chami et al. (2003) found that countries that receive a significant amount of remittances often experience lower levels of labour supply, which keeps unemployment high. This is because households are reluctant to respond to interventions that seek to address unemployment as the level of remittances received exceed the wages households could earn at their respective levels of skill. To establish which of the two scenarios obtains in BELN countries would require further empirical analysis beyond the scope of this study. What can be said though is that the economic contraction in RSA has had a declining effect on remittance flows to BELN countries, over the past decade as can be seen from Figure 3.

### **3. Literature Review**

#### **Theoretical Literature Review**

Understanding the motives why migrants remit has been on the agenda of researchers for at least three decades. Two main motives stand out; altruism and self-interest, and further modifications of both. Individual altruistic motives are mainly pure or impure altruism (enlightened self-interest) and exchange motives between the migrants and her/his recipient family in the country of origin. It is widely acknowledged that altruism towards family members at home is an important motivation for remitting (Johnson & Whitelaw, 1974; Lucas & Stark, 1985). This implies a utility function in which the migrant cares about the consumption of the other members of the household. In the case of purely altruistic motives, the utility of the migrant depends only on the amount of remittances s/he sends (Lucas & Stark 1985). In the case of impure altruistic motives, migrants send money back home in order to contribute to the income of their families left behind. Then the utility of the migrant depends also on the income of his family in the country of origin. In this respect, the motive is to insure the income of the domestic family against volatility. This is based on intra-familial arrangements between the migrant and his family. In the rural areas of most developing countries, where financial and assurance markets are incomplete and agriculture is the main source of income, the revenues are subject to risks such as drought and price fluctuations, among others. To diversify income sources in order to mitigate the risk of rural income volatility, families can decide to allocate some members to urban or foreign migration. Although urban and foreign jobs are also subject to risks, these risks are independent of the agricultural income variations. At the beginning of the contract, the family pays the migration costs in exchange for future remittances. In the case of these types of family contracts, remittances can flow to the family in case of agricultural income drops and to the migrant in case of unemployment (Rapoport & Docquier, 2006). The amount of remittances should increase with the migrant's income, and decrease with the increase in the domestic income of the family back home. The duration of stay of the migrant has also been found to have a negative impact on the remittances because it is supposed that the attachment to the family weakens gradually over time (Salt, 2006). Family unification in the host country also has the same effect as there are fewer people left behind to look after (Lucas & Stark 1985).

On the other hand, enlightened self-interest motives for remitting may evolve if the family is perceived as a market in which members aim at entering into mutually beneficial agreements. For instance, Lucas and Stark (1985) found remittance flows to be the result of an intergenerational contract between migrants and their parents in the home country. In contrast with the altruistic motive, remittances should increase the family's income and wealth if sending remittances is a way for migrants to compete for inheritance. In this case, the migrant transfers with the objective to get a return on the family investment in the home country for him and for his children like inheritance or strategic returns. The migrant can decide to invest their savings in their home country as well as in their host country. If the main motivation to remit is to invest in the home country, we can say that investment motive dominates the remitting decision of migrants. In that case, the migrant calculates his potential returns in his home country relative to his potential returns in the host country. The macroeconomic stability in the home and host countries and the interest rate differentials determine the remitting decision of the migrant.

The New Theory of Economics of Labour Migration postulates that the decision to remit may be clearly linked to the causes of migration. The range, period of travel and means of travel of individual migration is determined primarily by economic factors. While there is some consensus on some determinants, e.g. altruism, self-interest and enlightened self-interest many of the results remained controversial due to a number of methodological problems. First, the decision to remit is often linked to the decision to migrate, which comes with its own methodological problems. The movement of people takes several different forms and this has implications for the motives and frequency of remittances. A common form of migration is known as rural exodus, primarily aimed at movements within countries. There are also known periodic movements related to the type of work, tourism and pilgrimage (Porumbescu, 2012). On the other hand, there is conducted migration organized in groups, which can be final (warlike migrations – some of the great invasion, colonization – migrations of hunters, livestock farmers, farmers after exhausting their land). They can also be rhythmic; the ones that took place in a defined space (pastoral nomads, nomadic fisherman, hunter, picker, farmer with seasonal rhythm) or have a seminomadic character – agricultural and pastoral life in the mountains or so. Such movements are determined by a way of life, shaped for centuries gone by. All these different patterns of movement of people affect when, how and reasons why migrants remit, based on whether the migration is temporary or permanent. In relation to this, Glytsos (1997) distinguishes between remittances sent by temporary migrants and remittances sent by permanent migrants. His results suggest that temporary migrants are more likely to remit for investment and future consumption smoothing. Permanent migrants are more likely to remit for altruistic purposes.

In addition, macroeconomic factors have been found to play a role in remittance flows. Hasan (2008) examined the macroeconomic determinants of workers' remittances in Bangladesh using various regressions to find that the macroeconomic variables such as inflation, interest rate, the exchange rate of Bangladesh and GDP of the five remittances sending countries have a significant impact on remittances inflow in Bangladesh. The study concluded that remittances in Bangladesh were very responsive to changes in the domestic interest rate and exchange rate. Again, if the GDP of the rest of the five countries increases by 1 percent, then remittances will increase by 3 percent. Prior to this study, El-Sakka and McNabb (1999) in a study on Egypt found that the black market premium and interest rate differentials are important variables explaining remittances and that the ultimate goal of worker transfers was to finance the consumption of durable goods. In the same way, Elbadawi et al. (1992) showed that macroeconomic variables play an important role in determining remittances.

## **Empirical literature Review**

In a related study, Higgins et al. (2004) found that exchange rate uncertainty (as a measure of risk) is an important determinant of remittances. The results also show that unemployment in the host country and the exchange rate are significant determinants of remittances. Faini (1994) concentrates on the issue of the effect of real exchange rate depreciation on remittances. The author's main contribution is that the real exchange rate depreciation of the home currency has a positive effect on remittances. Other findings indicate that home country income is negatively related to remittances. Katseli and Glytsos (1986) in a study using data from Greece found that

remittances are negatively related to inflation in the home country, host country income and host country interest rates.

In another study, Borja (2012) concluded that understanding the cyclical characteristics of remittances and their relationships with the home and host country's output is a critical matter because remittances can be considered a blessing if they move counter-cyclically to the home country's GDP. This is because remittances smoothen consumption and operate as a cushion against output variations. However, evidence of procyclical co-movements could become a curse, as remittances would infuse volatility into the domestic economy. In addition, finding evidence of pro or counter-cyclical behaviour would require corrections of potential biases emerging in empirical assessments of the impact of remittances on recipient economies. Literature has the motives to remit to be complex, and the examination of numerous empirical studies indicates that these motives might not be exclusive. Borja (2012) reviewed a specific case of Latin America and suggests that the United States economy affected the level of remittances in the region but the impact of the home country business cycle on remittances is not definite. While more than 60 per cent of the results indicated a countercyclical relationship, providing evidence of the altruistic motive to remit, about 40 per cent of the results showed procyclical or acyclical co-movements, suggesting self-interest behaviour or other motives to remit.

Most of the studies that addressed the issue of worker remittances stressed their impact on the countries of origin; their incomes, balance of payments and employment. Coulibaly (2009) examined the macroeconomic determinants of migrants' remittances dynamics. The study used panel vector autoregression methods in order to compensate for both data limitations and endogeneity among variables using the annual data for 14 Latin American and Caribbean countries over the period 1990-2007. The model which was based on a macroeconomic framework stipulated that given that an increase in migrant income allowed migrants to send more money for altruistic motives and to make more investment that can take place in the host or home country, an improvement in the economic conditions of the host country has a positive effect on the total remittances (altruistic remittances plus self-interest remittances). If the altruistic motive dominates, a negative relationship is to be expected. However, since improvement in the home economic conditions would reflect an increase in the expected return on assets, if the motive for remitting were to exploit investment opportunities, remittances would respond positively to improvement in the economic conditions of the home country. The model allowed to hypothesize how total remittances respond to changes in the economic conditions of host and home countries. The results show evidence that host (U.S) economic conditions were an important factor explaining remittances dynamics, while home economic conditions do not have a significant influence on remittances in the countries in this particular study.

A close concern about remittance flows is the issue of using formal channels. Research has shown that more often than not, informal channels are used for remittances especially to developing countries due to the financial exclusion of migrants in host countries. The closest paper to this study is by Sekyere et al. (2017) which looked at how Southern African Development Community (SADC) countries could harness remittance flows from RSA as an alternative source of development finance. They conducted a study into how remittances from RSA to ten countries in the SADC region could be directed through formal channels to impact on development outcomes.



The study found that different factors drive remittances to the SADC countries in the panel when spatial and individual effects are controlled for. They used a two-step system generalized method of moments (GMM) by Arellano and Bover (1995) and seemingly unrelated regressions (SUR) by Zellner (1962) on annual data from 1994 to 2008. They determined that the optimal policy pathway intended to moderate the use of informal networks or maximising the impact of remittances on development outcomes would not be the same between countries. They also concluded that the level of financial deepening is key to the ability of countries to harness remittances through formal channels for more productive uses. Fayissa and Nsiah (2010), Mallat (2007) and Rao and Hassan (2011) corroborated these findings. According to Mallat (2007), the relative advantages of using mobile payments for remittances include time and place independence, availability, possibilities for remote purchases, and queue avoidance. However, Mallat (2007) concludes that there are several barriers to the adoption of mobile payments, including premium pricing of the payments, the complexity of payment procedures, a lack of widespread merchant acceptance, and perceived risks.

Most of the literature on remittance flows are on developed countries or more mature migration corridors. Studies on remittance flows to African countries again focus on diaspora remittances, and not remittances from intra-African migration. This paper, therefore, adds to scarce but growing literature on remittance flows in intra-African migration by looking into remittance flows from RSA to SACU countries.

## 4. Data and methodology

### 4.1 Theoretical framework

This study adopts a theoretical framework from Huang and Vargas-Silva (2005), in which they established explicitly the relationship of remittances with home and host country macroeconomic conditions. Their model and its main implication is presented very generally as follows.

They used a two period model in which remittances are sent in the first period. They assumed that they have an individual (emigrant) living in a foreign (host) country and his utility depends on his consumption in the host country ( $H^1$ ) and the consumption of the household in the home country ( $H^*$ ). The utility function of the emigrant in the first period is  $U(H^1, H^*)$  with  $U_1 > 0$ ,  $U_{11} < 0$ ,  $U_2 > 0$ ,  $U_{22} < 0$ . The consumption of the household in the home country depends on income and remittances received ( $\alpha r$ ) where  $\alpha$  is the cost associated with sending remittances ( $\alpha \leq 1$ ), and  $r$  is the amount of remittances sent.

The household income is  $(y^* + \mu Y^*)$  where  $\mu$  reflects the relationship between the economic conditions of the home country and household income. The household consumption is given by,  $h^* ((y^* + \mu Y^*) - \alpha r)$ . The emigrant's income is  $(y^1 + vY^1)$  where  $v$  reflects the relationship between the economic conditions of the host country and emigrant's income.

The income restriction of the emigrant in the first period is:

$$y^1 + vY^1 = h^1 + r + s \quad v \geq 0$$

Where  $s$  is the percentage of emigrant's income which he saves in the host country. In the second period, the household migrates to the host country and joins the emigrant (assuming that the emigrant returns to the home country and joins the household does not change results). The maximization problem is then:

$$\text{Max}_{crs} U(h^1, h^*) + \beta V(h^2) \quad 1$$

$$\text{s.t. } y^1 + vY^1 = h^1 + r + s \quad 2$$

and

$$h^2 = y^2 + vY^2 + (1+i) s \quad 3$$

Where  $V(h^2)$  is the utility from second-period consumption,  $\beta$  is a discount factor. And  $(1+i) s$  is interest earnings on savings.

The main implications of the model are:

$\frac{\partial r}{\partial Y^1} \geq 0 \Rightarrow$  an improvement in the economic conditions of the host country has a positive effect on remittances

$\frac{\partial r}{\partial Y^*} \leq 0 \Rightarrow$  an improvement in the economic conditions of the home country will be accompanied by a decrease in remittances.

Mouhoud et al. (2008) linearised the model and included the motives for migrants to remit. The motives were summarised to be altruistic motivations and family contracts motivations and for this paper, the motives are modelled as in equation 4.

The model

$$\Delta \text{Log}(R_{i,t}) = C_0 + \varphi_i \cdot \Delta \text{Log}(R_{i,t-1}) + \psi_i \cdot \Delta \text{Log}(Y_{h,t}) + \psi_i \cdot \Delta \text{Log}(Y_{rsa,t}) + \chi_i \cdot \Delta \text{Log}(M2_{i,t}) + \varphi_i \cdot \Delta \text{Log}(DC) + \omega_i \cdot \Delta \text{Log}(RD_{i,t}) + \varphi_i \cdot \Delta \text{Log}(IQ_{i,t}) + \mu_i + v_{i,t} \quad 4$$

Where  $i$  is a BELN country,  $C$  is a constant and  $t$  is time period;  $\mu$  represents country specific effects and  $V_{it}$ , the idiosyncratic error term.

## 4.2 Data and stylised facts

This paper uses annual data from 2000 to 2017. Table 1 presents the sources and definition of the variables.

Table 1: Sources and definition of Variables

No	Variable	Source	Definition
R	Remittances	World Bank	Personal remittances, received (% of GDP)

Yh	Real GDP per capita growth in migrant home country (annual %)	World Bank	Annual percentage change in real GDP per capita in 2010 US dollar constant prices.
Yrsa	Real GDP per capita Growth in RSA as a measure of host country income (annual %)	World Bank	Annual percentage change in real GDP per capita of RSA in 2010 US dollar constant prices.
RD	Interest Rate Differential (RD)	World Bank	Differential between the deposit interest rate in BELN countries and the S.A.
IQ	Institutional quality	Freedom House Dataset	The degree of political freedoms, ranging from 1 (highest degree of freedom) to (lowest degree of freedom)
M2	Financial deepening as a measure of financial intermediation	World Bank	Broad money supply growth (annual %)
DC	Market Sophistication and financial sector development	World Bank.	Domestic credit provided by financial sector (% GDP)

The dependent variable is captured by personal remittances received (R) as a percentage of GDP, while the explanatory variables include real GDP per capita (Y) annual percentage growth rate as a measure of national income level in BELN countries. Real per capita terms are used to align with standard growth theory, control for inflation and population growth dynamics (Solow, 1956). Interest rate differential (RD) representing investment opportunities in the home country is measured by the difference in deposit interest rates between BELN countries (the home countries of migrants in this paper) and RSA as the host country. RSA is used as a representative host country because it is the strongest economy in the region and the main migration destination for SADC country migrants (Migration Policy Institute, 2006). The BELN countries are also members of the SACU and are closely integrated with RSA's economy. This creates a high degree of interdependencies between BELN/SADC countries and RSA. Institutional quality is measured by a democracy variable from Freedom House. Although there are other measures of institutional quality, this measure of institutional quality is preferred in this study because the freedom to invest or be economically active is less of a challenge in the countries in this panel. Furthermore, this aligns with Chami et al. (2003) who found that political stability and confidence issues are relevant to remittance flows to developing countries, in addition to economic stability and interest rate differential between home and host country. Financial deepening (M2/GDP) equals currency, demand deposits and interest bearing-liabilities of the financial sector as a ratio to GDP. It is considered the broadest measure of financial intermediation (Ruiz-Arranz & Giuliano, 2005). Domestic credit provided by the financial sector as a percentage of GDP is also used as a measure of financial sector development (Ruiz-Arranz & Giuliano, 2005). The rest of the variables are obtained from the World Banks's development indicators data hub.

Table 2: Descriptive Statistics

Variable	Mean	Min	Max	Obs.
R	8.6	0.13	53.8	72
Yh	2.3	-9.2	11.0	72
Yrsa	1.6	-2.6	4.4	72
RD	-3.3	-7.2	-0.37	72
IQ	3.5	2	7	72
DC	15.9	-70.4	78.9	72
M2	13.8	-6.6	72.4	72

From Table 2, remittances received in BELN countries averaged 8.6 percent of GDP and reached as high as 53.8 percent of GDP across the sample period. Although average per capita growth rate in RSA averaged 1.6 percent over the sample period compared to 2.3 percent for the BELN countries, it is by far the most diversified and productive economy in the SADC region, hence the main migration destination for SADC and intra-Africa migration. The mean institutional quality value of 3.5 reflects relatively stable institutions in the BELN region over the sample period compared to other parts of the African continent. Without Eswatini which is a ruling monarchy, this figure is 2.4, reflecting even stronger institutions. Credit by the financial sector averaged 15.9 percent of GDP, and broad money supply 13.8 percent of GDP over the sample period. This depicts a good level of financial inclusion and prudential monetary policy management by monetary authorities in the BELN region.

Table 3: Cross correlation analysis

	R	Yh	Yrsa	RD	IQ	DC	M2
R	1						
Yh	0.06	1					
Ysa	0.12	0.46***	1				
RD	-0.51***	0.09	0.06	1			
IQ	-0.13	-0.16	-0.04	-0.34***	1		
DC	-0.32***	-0.02	-0.14	0.05	0.02	1	
M2	-0.09	0.03	0.06	0.13	-0.04	-0.18	1

Note: (\*), (\*\*), (\*\*\*) denotes 10%, 5% and 1% level of significance respectively.

Column 1 of Table 3 shows the cross-correlation coefficients between remittances received in BELN countries and the independent variables. There is a positive but low correlation between remittances received in BELN countries and economic conditions in these countries. However, this low correlation coefficient is not statistically significant. The correlation coefficient between RSA's income level and remittances received in BELN countries is also low, positive but not statistically significant. A higher interest rate differential which represents investment opportunities in the home country has an inverse relationship with remittances received in BELN

countries. This is depicted by the negative correlation coefficient of -0.51 between remittances received and interest rate differential significant at 1 percent level. The impression this gives is that remittance flows to BELN countries do not increase or respond to investment opportunities back home. The correlation coefficient between institutional quality and remittances received in BELN countries is low, negative but not statistically significant.

Financial sector development has a negative correlation with remittances received depicted by the negative coefficient of -0.32 significant at 1 percent level. A developed financial sector means higher levels of financial inclusion to help households smooth income and consumption over time, which is known to reduce the level of dependence on remittance flows. Altruistic remittance flows are therefore higher in countries with underdeveloped financial sectors. In countries with underdeveloped financial systems remittances enhance access to finance for the poor and financially excluded (Gupta et al., 2009), contribute to employment creation by providing capital for microenterprises (Woodruff & Zenteno, 2001) and economic growth by providing finance for investment (Guiliano & Ruiz-Arranz, 2005). A positive correlation coefficient (0.46) can be observed between the income levels of BELN countries and RSA, significant at 1percent level. This is a reflection of the strong level of integration between the economies of BELN countries and the RSAn economy. Table 4 details *a priori* expectations emanating from the theoretical and empirical literature as well as the cross-correlation analysis.

Table 4: A priori expectations

Variable	Sign	Reason
Yh	Negative or positive	Negative: For altruistic motives bad economic times attract more remittance inflows. Positive: For self-interest returns seeking motives positive / good economic conditic attracts more remittance flows.
RD	Positive	A positive differential between home country deposit interest rate and host country deposit interest rate is expected to increase the migrant's portfolio allocation of investments back home, and reduce his investments in host country, <i>ceteris paribus</i> .
Yrsa	Positive	An increase in the real GDP per capita in the host country (South Africa) is assumed to be synonymous to an improvement in the migrant's income, which is likely to have a positive effect on remittances sent home by migrant.
DC/M2	Negative or positive	Negative: Altruistic remittance inflows are known to be higher to countries with less developed financial systems. Under such circumstance, remittances are known to smooth credit constraints. Positive: Self-interest rent seeking remittances increase with deeper financial systems.
IQ	Positive	Strong institutions and political stability are favourable to remittance flows for self-interest returns seeking motives.

Additional diagnostics are conducted on the data set to establish the time series characteristics of the data set. As depicted in Table 5, the Hausmann specification test fails to reject the null of exogeneity of the regressors. The Breusch and Pagan (1980) test for cross-sectional dependence (CSD) of the error term reveals that the BELN countries are interdependent. The BELN countries are members of the SACU, have several regional agreements and protocols, cross border trade and well-integrated economies. This creates a high degree of inter-dependencies between BELN countries and RSA. Research has shown that heteroscedasticity and serial correlation are assumed applicable in studies of countries in the same region. The results of the F Tests for the validity of individual effects indicate that the countries are so closely integrated and interdependent that there is no need to control for country-specific or time-specific effects. The F tests for country-specific effects ( $F_{stat} = 0.81 < F_{critical} = 2.77 (0.05, 3, 58)$ ) fails to reject the null of no country-specific effects. Secondly the F test for time specific effects ( $F_{stat} = 0.78 < F_{critical} = 1.87 (0.05, 16, 46)$ ) also fails to reject the null hypothesis of no time effects. However, on the balance of economic theory and what is known about each country's unique experiences, it will be expedient at least to control for country-specific experiences. RSA has had some unique experiences relating to high unemployment, poor economic growth, xenophobic attacks and sovereign downgrades, a change of leadership among the ruling elite, all of which are specific to RSA. Lesotho has experienced political instability during the sample period, unique to Lesotho. Botswana also saw some tense political moments in the process of changing political leadership. Each of these were individual country-specific experiences driven by different reasons. Hence on the balance of reality, country-specific effects are still controlled for. These characteristics of the dataset, therefore, warrant the use of estimation techniques that control for country-specific effects, heteroscedasticity, serial correlation and CSD of the error term.

A least square dummy variable (LSDV) fixed effects model is estimated as a benchmark estimation approach, controlling for heteroscedasticity, using the robust command. As per the Hausmann test results a random-effects model for robustness controlling for heteroscedasticity is further estimated.

Table 5: Stationarity tests of variables

Test	Ysa	yh	r	rd	Pi	M2
ADF Fisher Chi square test [p-value]						
In levels	15.23** [0.05]	17.95* [0.06]	14.61* [0.07]	14.27* [0.07]	3.07 [0.80]	19.47*** [0.01]
In differences	-	-	-	-	8.0 [0.02]	-

PP-Fisher chi-square	20.97**	28.2***	33.4**	20.56**	3.01	22.67***
[p-values]	[0.01]	[0.00]	[0.01]	[0.01]	[0.81]	[0.00]
In differences	-	-	-	-	14.46	-
					[0.00]	

NB: \*\*\*/\*\*/\* denote 1%/5%/10% level of statistical significance. Rd includes individual intercepts and trends.

Stationary tests on the variables were done using the Augmented Dickey Fuller – Fisher (1979) and Phillip Perron – Fisher (1988) Chi-square tests which allow for heterogeneity of cross-sections. The test results show that all the variables are  $I(0)$  except the institutional quality index, which ideally cannot be differenced for stationarity since it is an index. It is the same figure for a number of years in a row for each of the countries in this panel.

Table 6: Test for endogeneity and cross sectional dependence of the error term

Test	Test statistic	Critical value	Inference
Hausmann specification test $H_0 : E(u_{it} X_{it}) = 0$ $H_A : E(u_{it} X_{it}) \neq 0$	$\chi^2_{(6)} = 2.42$	Prob = 0.88	Regressors are exogenous.
Breusch & Pagan CD Test for Cross sectional independence $H_0 : corr(u_{it}, u_{jt}) = 0 \text{ for } i \neq j$ $H_A : corr(u_{it}, u_{jt}) \neq 0 \text{ for some } i \neq j$	$\chi^2_{(6)} = 14.57$	Prob = 0.02	Cross-sections are interdependent.

The SUR approach by Zellner (1962) is finally estimated to control for cross-sectional dependence of the error term. The SUR also yields country specific results as an added advantage. Other estimations that could control for CSD yielded results that were not useful. These include feasible generalised least squares (FGLS) of Parks (1967) and Kmenta (1986) and the Driscoll and Kraay (1998) corrected standard errors. The SUR is best suited for estimations with cross-sectional dependence since it captures the efficiency due to the contemporaneous correlation of the error terms across cross-sections especially when  $T > N$  (Baltagi, 2008). It also allows for detailed country-specific analysis in comparison to full sample estimation results.

## 5. Estimation Results

The empirical results are detailed in Table 7 (sample wide results) and Table 8 (country-specific results). In Table 7, the first set of results is from an LSDV fixed effects estimation and the second is from a random-effects estimation.

### 5.1 Sample wide estimation results

Table 7: Least square dummy variables Fixed Effects estimation and Random effects Model

Variable	LSDV Fixed effects	Random effects
Lag R	0.92*** [0.01]	0.93*** [0.002]
Yrsa	0.06* [0.03]	0.02 [0.03]
Yh	-0.05 [0.03]	-0.03 [0.03]
RD	0.01 [0.04]	0.001 [0.02]
IQ	0.55*** [0.29]	0.05** [0.26]
M2	0.01** [0.003]	0.01* [0.004]
DC	-0.0004 [0.002]	0.003* [0.002]
R <sup>2</sup>	0.96	0.97
F=stat probability	0.00	0.00

Note: \*\*\*/\*\*/\* denotes a 1/5/10 per cent level of significance; standard errors in square parenthesis.

It can be observed from both the fixed effects and random effects model that the coefficient of lagged remittances (Lag R) is quite high and statistically significant at 1 percent level. This depicts a strong level of persistence in the dependent variable which supports the use of a dynamic panel model specification in this study. The coefficient of host country income (Yrsa) is low, positively signed and statistically significant at 10 percent in the fixed effects estimation. By implication, an increase in the BELN migrant's income in the host country leads to a mild increase in remittances sent home. Although the coefficient of home country income (Yh) is negatively signed, it is not statistically significant. This implies the possibility of the existence of some altruistic remittance motives by BELN countries considered together. Interest rate differential is also not statistically significant indicating that investment opportunities in the home country might not necessarily drive remittance flows back home. This aligns clearly with earlier results of the cross-correlation analysis.

Contrary to the results of the correlation analysis, the coefficient of institutional quality (IQ) is positive and statistically significant at 1 percent and 5 percent in the fixed effects model and the random-effects model, respectively. As explained in the *a priori* expectations in Table 4, quality institutions are a strong incentive for investment and returns seeking financial flows including remittances. This finding is further corroborated by the positive and statistically significant



coefficients of financial deepening/market sophistication as measured by M2 and DC. (Gupta et al., 2007; Singh et al., 2010).

It can be derived from the sample wide empirical results in Table 7 that the drivers of remittance flows from RSA to BELN countries considered together, are good institutional quality (as measured by political freedoms), good financial intermediation, financial sector development and an increase in the income of the BELN migrant in RSA. These drivers are more indicative of self-interest investment motives for remittance flows than altruistic motives. This conclusion is further strengthened by the fact that from the sample wide results bad economic conditions back home do not necessarily drive remittance flows to BELN countries considered together. The R<sup>2</sup> figures of both models indicate acceptable levels of goodness of fit. The F-stat probabilities are all statistically significant which denotes that the variables in the model are relevant in explaining what drives remittances from RSA to BELN countries.

However, the fixed effects and random effects models do not control for CSD, hence the data is further estimated using seemingly unrelated regressions by Zellner (1962), which also reveals country-specific differences. This is very relevant as regional studies of this nature are often criticized as lacking country-level specificity.

## 5.2 Country-Specific results

It can be observed from Table 8 that Botswana migrants in RSA remit money home during bad economic times and remit more money when their incomes improve in RSA. This is depicted by the positive coefficient of host country income and negative coefficient of home country income, both statistically significant at 1 percent level. The coefficient of LagR is statistically significant at 1 percent but moderate.

Table 8: SUR Zellner (1962). Dependent variable: Remittances received (% GDP)

Country	Lag R	Yrsa	Yh	RD	IQ	DC	M2
Botswana	0.54*** [0.13]	0.15*** [0.03]	-0.03*** [0.01]	-0.13 [0.02]	0.02 [0.03]	-0.002 [0.004]	-0.003 [0.004]
Lesotho	0.91*** [0.06]	0.17 [0.36]	-0.52* [0.27]	0.03 [0.44]	0.83 [0.67]	0.003 [0.08]	-0.01 [0.05]
Namibia	0.39*** [0.15]	-0.05** [0.02]	-0.01 [0.01]	0.07** [0.03]	0.30*** [0.10]	-0.003 [0.002]	0.01*** [0.002]
ESwatini	0.44** [0.19]	0.11** [0.05]	-0.10** [0.05]	-0.05 [0.06]	0.33* [0.18]	-0.08* [0.05]	0.03** [0.01]

Breusch and Pagan (1980) test for Cross-Sectional Dependence:  $X^2_{(6)} = 7.86$  Pr = 0.25  
 Note: \*\*\*/\*\*/\* denotes a 1/5/10 per cent level of significance; standard errors in square parenthesis.

This indicates a moderate level of persistence in remittances received in Botswana, meaning remittances sent by Botswana migrants are only moderately influenced by past remittances. In contrast, remittances sent by Lesotho migrants in RSA are very strongly influenced by past remittances sent, denoted by the high and positive coefficient of LagR statistically significant at 1 percent level. Meaning, Lesotho migrants almost always send home what they have always sent in the past, like a pre-determined amount. Consequently, changes in their income level do not impact on how much they remit home as depicted by the statistically insignificant coefficient of their income in RSA (Yrsa). Lesotho migrants remit home for altruistic reasons. This altruistic motive is depicted by the negative coefficient of home country income (Yh) for Lesotho statistically significant at 10 percent level.

Remittances sent home by Namibian migrants seem to be driven more by self-interest returns seeking motives than by altruistic motives. Namibian migrants send more money in response to investment opportunities (RD), institutional quality (IQ) and financial deepening (M2). This is denoted by the positive and statistically significant coefficients of these variables for Namibia. However, they do not remit more money home when their incomes improve as denoted by the negative and statistically significant coefficient of host country income (Yrsa) for Namibia. Finally, Eswatini migrants in RSA remit money home for altruistic reasons. This is denoted by the negative and statistically significant coefficients of home country income (Yh) and financial sector development (DC). They also send more money home when their incomes improve in RSA. Eswatini migrants also respond positively to improvements in institutional quality (IQ) and financial intermediation (M2).

Table 9: Country specific result summary: Drivers of remittances to BELN countries

Country	Altruism	Self-interest	Increase in income
Botswana	Yes	No	Yes
Lesotho	Yes	No	No
Namibia	No	Yes	No
Eswatini	Yes	Partially	Yes

The post-estimation Breusch and Pagan (1980) test for cross-sectional dependence with a Pr = 0.25 confirms that we fail to reject the null hypothesis of no cross-sectional dependence of the error term. Hence, the CSD has been addressed by the SUR estimation approach.

## 6. Conclusion

This study set out to establish the determinants of remittance flows to BELN countries. RSA was used as a representative host country due to the fact that it is the strongest economy in the region and the main migration destination for SADC country migrants (Migration Policy Institute, 2006). The BELN countries are also members of the SACU and are closely integrated with RSA's economy. This creates a high degree of inter-dependencies between BELN/SADC countries and RSA. Annual data from 2000 to 2017 and panel data estimations that control for country fixed effects, heteroscedasticity, serial correlation and cross-sectional dependence of the error term were used in this study. These were the LSDV fixed effects model, a random-effects model for sample wide estimations and SUR approach by Zellner (1962), which yields country-specific results as an added advantage.

Two estimations were made; a sample wide estimation and country-specific estimation. The results from the sample wide estimations that considered BELN countries together showed that remittances received in BELN countries from RSA are mainly driven by good institutional quality, good financial intermediation, financial sector development and an increase in the income of BELN migrants in RSA. These drivers are more indicative of self-interest investment motives for remittance flows than altruistic motives. This conclusion is further strengthened by the fact that from the sample wide results that bad economic conditions back home do not necessarily drive remittance flows to BELN countries considered together. However, further empirical analysis of the data set on country-specific basis revealed significant country-level differences. Controlling for cross sectional dependence of the error term in addition to the country-specific analysis showed that migrants from Botswana and Lesotho in RSA remit money home for altruistic reasons while migrants from Namibia remit money home for self-interest returns seeking purposes. Migrants from Eswatini also remit money home mainly for altruistic reasons and partially for self-interest reasons. Again, migrants from Botswana and Eswatini send more money home when their incomes improve in the host country, while migrants from Lesotho and Namibia do not.

Underlying the altruistic motives are increases in remittances in response to adverse economic conditions back home, and underdeveloped financial sectors where remittances smooth income and financial inclusion constraints for households. Self-interest returns seeking motives are underlined by positive remittance responses to improvement in institutional quality, investment opportunities back home and good financial intermediation or financial sector development in the home country. The findings of this study are consistent with earlier studies by Lucas and Stark (1985) on altruism and self-interest drivers of remittance flows. However, contrary to Elsakka and

McNabb (1999), Katseli and Glystos (1986), interest rate differentials did not emerge as a prominent determinant of remittance flows from SA to the countries in this study due to the CMA. Institutional quality as measured by free and participatory political freedoms emerged strongly as relevant in enhancing remittance flows from RSA to the countries in this study. Also relevant was financial deepening and market sophistication which aligns with the findings of earlier research (Sekyere et al., 2017; Fayissa & Nsiah, 2010; Mallat, 2007; Rao & Hassan, 2011)

The results of this study have a number of policy implications. Country-level policy differentiation will be required for governments and financial institutions in BELN countries to effectively facilitate foreign exchange inflows via remittances. For countries in which remittances are mainly driven by altruistic motives, financial service providers would have to design services and products that smooth income and consumption for households in order to encourage them to use formal channels for their remittances. This also enhances financial inclusion for poor households, which are mostly excluded from basic financial services. In countries where self-interest motives are dominant, financial services and products that enhance the acquisition of physical assets, financial investments and business start-ups will be attractive to migrants and their families. A stable, free and participatory political environment is key to boosting the confidence levels for remittance flows into the domestic economy especially for investment purposes that could ultimately positively affect economic growth.

The country-specific results go to show that sample wide estimations sometimes require deeper analysis to enhance country-specific policy formulation and implementation. The estimation results met all required post estimation diagnostics. In terms of future research, it will be good to look at other sub-regional groupings on the African continent to see how patterns of migration and remittance flows compare with countries in the Southern part of the continent.

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