MCom

The Impact of Diaspora Remittances on Economic Growth: Evidence from Zimbabwe

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ABSTRACT

This research examined the impact of diaspora remittances on the economic growth of Zimbabwe using data collected from 1995 to 2018. The study further assessed whether the impact was realisable in the short-run or in the long-run. The results from the cointegration test and the causality test show that Diaspora Remittances have a long-run causal impact on economic growth in Zimbabwe. The results also show that the causal impact is unidirectional running from remittances to economic growth. In the short-run, the results reflected that remittances were failing to have a significant impact on the country's economic growth.

These findings thus suggest that the nation of Zimbabwe requires complete and concise solutions to drive the country's economic growth. Particular attention should be paid to the country's growth enhancers in the long-term like diaspora remittances. The policy-makers should strive to develop a strong institutional framework that facilitates the channeling of remittances to productive uses.

Finally, the policy-makers should craft policies that aim at increasing the diaspora remittances inflows through formal channels as one of the measures to enhance sustainable economic growth of the country.

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List of abbreviations

ARDL	Auto-Regressive Distributed Lag
ADF	Augmented Dick-Fuller
CIS	Common Wealth of Independent States
DW	Durbin Watson
DRIS	Diaspora Remittance Initiative
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GDPGR	Gross Domestic Product Growth
GVTEXP	Government Expenditure
ICDS	Inter-censual demographic survey
INV	Investment
IMF	International Monetary Fund
IOM	International Organisation for Migration
KPSS	Kwiatkowski–Phillips–Schmidt–Shin
PP	Philips Pheron
PCONSUP	Private Consumption
WREMIT	Diaspora/Workers Remittances (*Terms Diaspora & Workers used interchangeably*)
RBZ	Reserve bank of Zimbabwe
UN	United Nations
UN-DESA	United Nations Departpement of Economic and Social Affairs
VECM	Vector Error Correction Model
VIF	Vector Inflating Factor
WB	World Bank
ZIMSTATS	Zimbabwe National Statistics Agency

CHAPTER 1
INTRODUCTION

1.1 Background of the Study

Diaspora remittances are increasingly becoming a major form of inflows for least developed countries. The flow of remittances continues to receive attention because of the volume and impact they have to the receiving countries. Important stakeholders that include the government, academia, financial institutions, and donors have developed a lot of interest in the topic. Remittances are now more than three times the size of official development assistance and larger that Foreign Direct Investment in most lower to middle-income countries with exception of China (KNOMAD, 2018) and in some countries remittances representing 20% of the gross domestic product (GDP) (Ratha, 2013). Remittances to Sub-Sahara Africa grew from $34 billion in 2016 to $38 billion in 2017 and they are expected to continue on the same growth path (KNOMAD, 2018). These remittances in most Sub-Sahara African economies are very large when considered as a share of GDP, exports and reserves (KNOMAD, 2018).

Diaspora remittances are the transfer of money by workers in foreign countries to their home countries. Remittances are migrant workers' earnings sent back from the country of employment to the country of origin (Van Doorn, 2002). The remittances are usually aimed at financially supporting family members remaining in the country of origin given the existing family ties. One key advantage of diaspora remittances over foreign aid funding is that these funds go directly to the remittance targets (Bodomo, 2014).

Remittances are generally defined as the transfer of value in cash or in-kind using the various intermediary sources available. ILO (2009) defines remittances by following the deriving items in the balance of payments framework to facilitate standardised compilation of remittance aggregates. The two items in the balance of payments framework that substantially relate to remittances are 'compensation of employees' and 'personal transfers' (IMF, 2009). The compensation of employment is taken to refer to the income of border, seasonal and other short-term workers employed in an economy where they are not resident and of residents who are employed by non-resident entities and it is recorded gross before taxes and other expenses incurred in the economy where it is earned. Personal transfers are taken to refer to all currency transfers of cash or kind made or received by resident’s households to or from non-resident households.

Research has shown that diaspora remittances can help build financial and human capital development in the countries of origin. Besides the pure monetary benefits, remittances are associated with greater human development outcomes across a number of areas such as health, education, and gender equality (Ratha, 2013).

Presenting the 2019 monetary policy, the Reserve Bank of Zimbabwe (RBZ) governor, Dr. Mangudya, advised that Zimbabwe received a total of USD619.20 million in diaspora remittances for the year 2018. According to the monetary policy of 2018, diaspora remittances accounted for 9% of total foreign currency receipts for the country ahead of Foreign Direct Investment (FDI), which accounted for less than 0.5% (RBZ, 2019).

A number of factors impact the transfer of remittances to Zimbabwe, high among them the existence of a huge informal remittance channel. Kerzner (2009) states that almost exclusively, remittances from Johannesburg into Zimbabwe are through informal means. Kerzner (20019) further confirms that a paltry 2% are sent through the formal banking channels and 98% through informal means that includes taxi/bus drivers being the largest alternative and through visiting relatives or friends.

Zimbabwe is currently making a lot of effort to increase remittances through formal channels. In 2016, RBZ introduced the Diaspora remittance incentive scheme (DRIS) aimed at improving the remittances through formal channels. Under DRIS, RBZ adds a further 2.5% to 5% of the value of receipts paid out as the local surrogate currency the bond notes. Announcing the mid-term monetary policy in August 2017, the RBZ governor increased the pay-out incentive from 2.5% to the current 10%. According to the 2018 monetary policy document for Zimbabwe, 41.5 million bond notes were paid out as the incentive for the year 2017 (RBZ, 2018).

1.2 Statement of Research Problem

The current discourse on development generally portrays migrants from developing countries as agents for development due to the substantial nature of their contribution in the form of remittances (Upadhya & Rutten, 2012). Upadyha & Rutten (2012) argues that the connection between migration and development has developed as a key research area combined with numerous policy initiatives at the international and national levels directed at the linkages for migrants and their places of origin. Realising the potential benefit of diaspora remittances in economic development, Zimbabwe introduced a Diaspora Remittance Incentive Scheme (DRIS) in 2016 with a view to increasing the remittances through formal channels. Further, the Diaspora remittances have earned space in the monetary policy pronunciation for Zimbabwe. This, however, shows that Zimbabwe has a firm belief that remittances can benefit the economy although research around this topic is still very limited for the country.

The Inter-censual demographic survey (ICDS) of 2017 reported that 19%-enumerated households had at least one family member in the diaspora and 51% of them contributing amounts ranging from $50 to $5,000 in 2016. The total number of Zimbabwean emigrants is not clear, but figures from the ICDS showed that at least 723,000 are working in the diaspora, 87.4% in South Africa, 3.61% in Botswana and 2, 73% in the United Kingdom. The remaining 6.26% spread throughout the rest of the world. According to the central bank of Zimbabwe (RBZ), the country has received $180million in the first two months of 2018 with a year projection of $720 million, contributing at least 30% to foreign currency receipts. Given the quantum of the amounts involved and the share of contribution in foreign currency receipts, the question becomes what impact do these diaspora remittances have on economic development for Zimbabwe. Understanding the impact of remittances on the economic growth of Zimbabwe helps mainstream the receipts as a critical component for the country's economic revival in the view of falling FDI for the country. The report by KPMG (2017) states that FDI as a percentage of GDP for Zimbabwe has fallen from 3.4% in 2014 to 2.4% in 2016. According to the World Investment Report (2018), FDI flows into Zimbabwe has reduced from USD545 million in 2014 to a meager USD289 million in 2017. The report shows that, on average, the country has received 9 times lower FDI compared to Mozambique as a reference country for the period 2014 to 2017. Comparing the 2017 FDI inflow of USD289 million to USD698.9 million received in 2017 through diaspora remittances there is a strong case for understanding the impact of remittances to Zimbabwe's economic growth as a critical policy variable.

1.3 Research Questions and Objectives

This study, therefore, aims to answer the following questions:

1. Do diaspora remittances inflows have a short-term impact on Zimbabwe's economic growth?
2. Do diaspora remittances inflows have a significant long-term impact on Zimbabwe's economic growth?

In line with the research questions, the objectives of this study are as follows:

1. To examine the short-run and long-run impact of diaspora remittances inflows on Zimbabwe's GDP growth.

1.4 Justification of the Study

To the best knowledge of the author, research on the topic remittances for Zimbabwe in general or their impact on economic growth using evidence from the country is very limited. The study, therefore, aims to contribute to the vast and growing body of literature on remittances and economic development and, more so, examining evidence from Zimbabwe. The study will provide empirical evidence, which is also particularly useful for further studies on the same topic.

To policymakers and regulators, the study will shed more light on remittances and the economy of Zimbabwe, which can be used for policy and relevant institutional framework development for the country. Specifically, the exchange control regulators and the labour and migration organisations may find this study useful in their policy justifications and reviews.

The study will also be useful for financial intermediaries to come up with new strategies to correctly price and tailor-make products available to Zimbabwean migrants in the diaspora. The study can, therefore, influence innovation around financial products as well as technological advancements in financial intermediaries' operating systems.

Zimbabwean diasporans may also find this study useful in understanding their contribution to the economy of the country; therefore, they can lobby for changes in an enlightened manner. The study can also facilitate the diasporans who are relocating back to Zimbabwe in terms of understanding the environment of their country and clearing their expectations in their new dispensations back home.

1.5 Limitations of the Study

One key limitation of the study is the lack of accurate and conclusive remittance data. The challenge of data accuracy has long been discussed, but the vast informal networks and options available for remittance transfer primarily affect it. The other related challenge is also the unavailability of accurate migrant numbers in particular locations, given that most of them could be illegal migrants.

1.6 Organisation of the study

The study follows an organisation of five chapters. Chapter 1 introduces the remittances topic leading to the definition of the problem and stating the research objectives, research questions, and the research hypothesis. Chapter 2 gives a detailed literature review including the theoretical framework, the empirical research. Chapter 3 provides the methodology to be used in this study, specifying the type of research, data to be collected, the methods for data analysis, data reliability, and the associated limitations in this study. Chapter 4 presents the empirical results, and chapter 5 provides recommendations and conclusions for the study.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

This section reviews literature about the remittances and economic growth and the nexus between the two. It includes the theoretical framework providing the guidelines and a review of empirical studies conducted on the subject.

2.2 Definition and Motives for Remittances:

This section presents the scholarly definition of remittances found in literature and the motives for remittances.

2.2.1 Definition of remittances

A review of the literature shows that the definition of remittances is without question. However, two categories of the definitionsare observable in literature. The narrow or simple definition of remittances is based on the concepts of migration and defines remittances as household income received from abroad, as a result of the migration of workers to foreign countries (Young, 2011); whether the migration is temporary or permanent (International Monetary Fund, 2009).

The broader definition of remittances, also known as the formal definition is derived from the Balance of Payments manual produced by the IMF and (International Monetary Fund, 2009). The conceptual definitions of remittances, however, have been a subject of extensive discussions the rationale being that their definition influences their calculation; therefore, standardisation is necessary (United Nations, 2006). The main players involved in the discussions include the IMF Committee on Balance of Payments Statistics (BOPCOM), The Advisory Expert Group on National Accounts (AEG) and the United Nations Technical Subgroup on Movement of Persons (TSG) (United Nations, 2006).

2.2.2 Motives for remittances

A review of the theoretical framework shows that remittances are generally transferred for two reasons, the altruistic motive and the self-interest motive. Understanding these motives which drive remittances has been the agenda of researchers for at least three decades (Schiopu & Siegfried, 2006).

Altruisim is defined by as the willingness of a person to part with their own time or resources for a good cause as a utility function which could turn obligatory (Tchouassi & Sikod, 2010). In this case the giver feels good by doing the unselfish act of helping a specific individual or organisation but does not focus on getting any reward (Tchouassi & Sikod, 2010)Berker (1974) is quoted by Black et al. (2006) as the first to be credited for modeling the altruistic behaviour in the context of a household arguing that the utility of one household member the 'donor' is positively affected by the well being of the other household the 'receiver.' Black et al. (2006), therefore, derive a prediction that an increase in the gap between the 'donor' and the 'recipient' increases the size of the transfer. In contrast, the reduction in the income gap likewise reduces the size of the transfer.

Black et al. (2006) split the self-interest motive into exchange and co-insurance motives. They recognise that for the exchange motive, the private transfers are treated as payment for services rendered. Therefore they argue that an increase in the size of the income of the donor is associated with an increase in both the probability and size of the transfer. Therefore, a higher pre-transfer income of the family member and the lower unemployment at home would raise the amount of remittances (Schiopu & Siegfried, 2006). In contrast to the altruism theory, de Haas (2007) suggests that the new economics of labour migration and other household approaches takes a view of migrant remittances as co-insurance and investment capital generating strategies for households and families.

2.2.3 Key challenges facing remittances

The key challenges facing remittances have been identified as high transaction cost, access to formal remittances services, the prevalence of informality, limitations in maximizing productive potential of remittances, coordination between stakeholders, and lack of accurate and meaningful data (International Organisation for Migration (IOM), 2017). Besides, these structural challenges affecting remittances, trends in the financial services sector appear to threaten the industry even more. Edwards (2016) identifies de-risking or de-banking, which is caused by restrictive anti-money laundering and anti-terrorism financing laws as the single biggest threat to the existence of remittances. De-risking involves the practice of closing of the accounts or exiting relationships with individuals that are considered high risk (Alani, 2017;

Edwards, 2016). Vasquez (2017) found out that that de-risking profoundly affects the growth of remittances in small jurisdictions and is the reason for the sustained higher transaction costs and access to formal remittances.

2.3 Overview of remittances in Zimbabwe

Zimbabwe ranks amongst the top remittance earners in Africa and the World. According to the Global economy rankings, Zimbabwe received a total of $1.74bn in the year 2017 and was positioned at number 41 out of a total of 143 countries remittance-receiving countries worldwide (The Global Economy (2019), For the year 2018, the country received $1.9bn and was the fifth top remittance-receiving country in Africa (Knomad, 2018).

The main driver of remittance in Zimbabwe, just like other SADC countries, has been the economic migration of employment seekers looking for better standards of living than what is presently available in their own countries. The IOM website states that the economic crisis of Zimbabwe precipitated the exodus of professionals and skilled workers into neighbouring countries, and the net migration of Zimbabwe stands at the rate of 2 migrants per 1000 population (IOM, 2019). Research by Madebwe and Madebwe (2017) concluded that a severely ravaged economy, political and social instability had been the significant driver of contemporary migration from Zimbabwe (Madebwe & Madebwe, 2017). Makina (2010) also attributes the unprecedented migration to South Africa on the political and economic crisis currently gripping the nation.

Accurate data on the stock of migrants from Zimbabwe is not consistent across most reports and mostly unsubstantiated. UN estimates the total stock of migrants from Zimbabwe as of 2013 stood at 571,970 (UN, 2019). IOM, however, estimates that between 500,000 to 3 million Zimbabweans live abroad in countries such as South Africa, Botswana, and the United Kingdom, among other destinations (International Organisation for Migration (IOM), 2019). According to Makina (2010), surveys have estimated that as of 2009, between 1.5 million and 2 million Zimbabweans had left the country (Makina , 2010). The disparity between the reported figures by the International Organisation for Migration and the United ationspartment of Economic and Social Affairs (UN-DESA) and other researchers suggest that the country does not publish remittance data. Zimbabwe is listed among together with countries like DR Congo and Somalia as being top remittance recipient countries that do not provide remittance data (World Bank, 2010). A fieldwork study by the IOM in 2017 found no evidence of any mechanism to collect comprehensive migration-related data on departures and returns of Zimbabweans at designated ports of entry (IOM, 2018).

The country, however, has consistently made strides either in the policy framework or setting institutions aimed at harnessing and increasing the diaspora remittances.

In the year 2004, the Reserve Bank of Zimbabwe established Homelink, a financial institution solely created to service the diaspora market through providing intermediary services such as money transfer services, savings account, loans, and mortgage financing. Among some of its objectives, Homelink seeks to positively impact economic growth by tapping into the remittances market following the dispersion of Zimbabweans in various parts of the World (Homelink, 2020).

The Ministry of Foreign Affairs and International Trade established a Diaspora Directorate that was affirmed by the cabinet in 2007 and reinforced as a general directorate in 2008. The directorate has a responsibility to cater for Zimbabwean citizens living or working outside the country and their untapped potential in national development. Specifically, the Diaspora directorate seeks to act as a focal entry point to liaise with the government as a one-stop-shop and also to harness the untapped potential of Zimbabweans in the diaspora by structuring investments, facilitating skills transfer, access to markets and technology (Diasporazim, 2020).

Formal remittances are sent through agencies like Western Union, World Remit, and Mukuru and Banks from which the official remittances figures are based. However, the country has struggled with informal remittances between South Africa and Botswana where most remittances come from. The Monetary policy statement of 2018 attributes the decline in remittances received through official channels (USD 699 million in 2017 to USD 619.20 in 2018) to the rise of informality and the preference of sending in-kind (RBZ, 2019). Makina (2010) indicates that the informal remittances to Zimbabwe surpass the formal remittances (Makina , 2010). A huge volume of traffic crosses the Beit Bridge and Plumtree border post every day to South Africa, Botswana, and back because of the trade relations between the countries. This makes it relatively easy to send or receive money or goods between Zimbabwe and these countries. A study by Finmark trust (2008) in Botswana estimated that its citizens living in Botswana were remitting 67 million Pula annually to Zimbabwe. A total of 38% of this value is channelled informally to Zimbabwe (Finmark Trust, 2018). A study by Chisasa

(2014) found out that speed, convenience, and efficiency were some of the reasons why Zimbabwe migrants in South Africa prefer to use informal channels like cross border buses and taxis (Chisasa, 2014).

In a bid to curb the informality and the preference to send in kind, the Zimbabwean government introduced the diaspora remittance initiative scheme (DRIS) on the first of October 2016. Under this arrangement, the recipients of money from abroad will receive their money in hard currency, and they will be given an incentive or bonus ranging from 2,5% to 5% paid out as local currency (RBZ, 2016). In making an effort to enhance the ease of doing business and increase competition in the remittance market, the Reserve Bank of Zimbabwe reduced the new and renewal licences fees by 40% effective 1 August 2017 (RBZ, 2017). The decrease was also aimed to increase market penetration, especially in rural areas, and enhance financial inclusion (RBZ, 2017).

In February 2018 the Reserve Bank of Zimbabwe introduced a further incentive to encourage inward investment by Zimbabweans in the Diaspora through opening investment accounts with a bank of their choice in Zimbabwe (RBZ, 2018). Under this arrangement, the accounts will be entitled to a 7% remittance incentive paid over and above the interest paid by the bank, and these funds will be ring-fenced against commingling with the local currency (RBZ, 2018).

Despite the efforts by the Zimbabwean government, diaspora remittances have continued on a steady decline having peaked in 2015, as shown in **Table 1** below:

Table 1: Remittances received from 2014-2015

Year	Amount "USD millions."
2014	**837.4**
2015	**939**
2016	**779**
2017	**698.9**
2018	**619.2**
Total	**3254.3**

Source: Adopted from the RBZ monetary policy statements

2.4 Remittances and Economic Growth: Theoretical Perspective

Two main schools of thought are observable in the literature concerning remittances and development. These can be identified as 1) The Developmental Optimistic School inspired by the neo-classical migration hypothesis and 2) The Developmental Pessimistic School of the structuralist dependency inclination (de Hass (2007); Adenutsi (2010). A further school of thought, Remittances-Development Pluralist, has also emerged, which is chiefly a compromise of the traditional two (Adenutsi, 2010). De Haas (2010), states that the scholarly and policy debates on migration and development has swung like a pendulum from optimism in 1973 to pessimism in 1990 and back to optimism from around the year 2001 (de Hass, 2010). Both groupings do not deny the direct contribution of migration and remittances in improving livelihoods, but they do differ over the supposed impact to sustainable human and economic development in the countries of origin (de Hass, 2007).

Table 2: Main phases in migration and development research and policies

Period	Research community	Policy Field
Before 1973	Development and, migration optimism (de Haas, 2007)	Developmentalist optimism; capital and knowledge transfers by migrants helping developing countries in development take-off (de Haas, 2007).
1973 to 1990	Development and Migration pessimism (dependency, brain drain) (de Haas, 2007).	Growing scepticism; concerns about brain drain; after experiments with return migrants; policies focussed on integration in receiving countries; migration primarily out of sight in the development field (de Haas, 2007).
1990-2001	Readjustment to more subtle views under the influence of increasing empirical research (de Haas, 2007).	Persistent scepticism; tightening of immigration policies (de Haas, 2007).
After 2001	A boom in publications; mixed but generally positive views (de Haas, 2007).	The resurgence of migration and development optimism and sudden turnaround of views: brain gain, remittances, and diaspora involvement; further tightening of immigration policies but greater tolerance of highly-skilled immigration (de Haas, 2007)

Source: adapted from de Hass (2007)

2.4.1 Development Optimism/ Neo-Classical Views (1950 to 1973)

During the 1950's most researches concluded that both the migrant-sending and receiving countries stood to benefit from migration. It was therefore widely assumed that through a policy of human capital transfer and industrialisation, poor or developing countries would also rapidly modernise and develop economically (de Haas, 2007). This was to be achieved by what the development optimists thought as a ‘North-South’ transfer of investment capital and knowledge(de Hass, (2007); Adenutsi (2010)). Under this view (Neo-Classical view), the free movement of labour coupled with the unconstrained market will lead to scarcity of labour. If this coincides with increased marginal labour productivity in the migrant-sending countries, capital will flow in the opposite direction from labour scarce countries to capital scarce migrant-sending countries (de Hass, 2010). This process is known as the factor price equalisation and is predicted to cease once wage levels in both the sending and receiving countries converge (Massey , 1990). Migrants are therefore taken as important agents for change and innovation and are expected to bring back not only money but new ideas, knowledge, and entrepreneurial attitudes (de Hass (2010); Adenutsi (2010); Anyanwu & Erhijakpor (2010))

The optimism, however, appears to dimish in the 1970s though there has been a resurgence around the year 2001 with a number of authors weighing in on the Development-Optimism views.

Anyanwu & Erhijakpor (2010) argues that remittances promote community development through spillover mechanism from increased consumption multiplier effect, promotion or setting up of small scale enterprises and creation of community and social assets such as schools. Ratha (2003) states that remittances are a more stable source of external funding compared to private capital flows. He argues that private capital often moves pro-cyclically, thus raising incomes during booms and depressing them during downturns. By contrast, remittances are less volatile and a poised to rise significantly once sluggish labour markets in G-7 economies recover, and scrutinising international travellers becomes routine. Ratha (2003) further posits that remittances are less likely to suffer from withdrawal shocks as compared to portfolio investment in emerging markets are now being used as collateral by banks to borrow on the international market.

Further, remittances increase the foreign exchange reserves for the receiving country and more than offset tax revenues and production losses suffered from brain drain (Ratha, 2003)

In spite of the counter-arguments against remittances, vast amounts of the literature suggest a host of benefits from both the micro and macro environment. Remittances help transfer purchasing power, help reduce poverty, smooth consumption, and help in gender equality and have a general multiplier effect on the economy Ratha,(2013). They also constitute a major source of foreign currency for developing countries contributing positively to the balance of payment and also acting as a buffer against economic shocks (Black, et al., 2006).

2.4.2 Development Pessimism (1973-1990)

The Migrant remittance development pessimists is a counter-argument to the optimism theory. According to Adenutsi (2010), the counter-argument posits that the net effect of international migration and remittances would only worsen the already bad situation of underdevelopment instead of achieving sustainable development. The migration pessimists have also argued that migration provokes the removal of human capital from the economy and therefore leads to a deterioration of once stable village communities resulting in the growth of a non-productive and remittance dependent people (de Haas, 2007). Apart from the critical problems of 'brain drain,' 'brawn drain,' such problems as inequality among societies, inflationary pressures from increased purchasing power and the increased dependency syndrome sustained by the change in tastes due to exposure to foreign products is also blamed on migration (de Hass (2007); Adenutsi (2007)). Migration pessimists have also argued that there is a high tendency of remittances being spent mainly on conspicuous consumption and "consumptive" investment such as houses and rarely invested for productive capacities (de Hass (2007); Adenutsi (2010)). de Haas (2007) argues that from a dependency structuralist viewpoint, remittances have been commonly seen as an unreliable source of external revenue for families, communities, and states because these can rapidly decline with the settlement or return of migrants. He calls it's a remittance decay hypothesis, which creates an artificial and temporary improvement in the livelihoods, which, however, creates a dependency syndrome on external revenues. Clemens and McKenzie (2014) also present quite an interesting review of empirical evidence suggesting that remittances appear not to affect growth. Their significant points are founded in the measurements of remittances, implying that the rise and souring of remittances in the past is a result of differences in measurements, and even if the remittances were measured correctly there was a little theoretical basis for a substantial growth effect of that rise. They further argue that the reason why most countries receive a huge inflow of remittances is that their labour force is outside the country, which has countervailing negative impacts on the home country.

2.4.3 Remittance-developmental pluralists (1990 onwards)

The third school of thought is mainly an attempt to combine both the 'Optimistic' and the 'Pessimistic' positions with a view to bringing in a more comprehensive understanding into the linkages between remittances and development. According to Adenutsi (2010), the advocates of the third school of thought argue that both the positions of the Optimistic and Pessimistic are too static and therefore lack the dynamism that connects the causes and effects of migration. Further, he states that the 'pluralists' bring into account the entire positive and negative developmental responses of migration thus providing a more dynamic insight into the complex realities of the nexus between remittances and development (Adenutsi, 2010).

2.5 Empirical Literature: the relationship between remittances & economic growth

Surveys of remittances show a mixed bag of findings that suggest that remittances do not affect development while others support the notion that remittances positively affect development and economic growth. There is no consensus in the literature regarding the long-run impact of remittances and economic growth (Sobiech, 2019). Studies have confirmed the link, but the direction of the relationship remains conclusively unclear.

A study by Kadozi (2019) observed a positive and significant effect of remittances on economic growth in Rwanda. In their analysis, they attribute the positive impact on the interplay between institutional environment and development factors. Consequently, Kadozi (2019) goes on to argue that structural reforms in terms of governance, economic development, and human capital development actively enhance mechanism through which remittances can positively impact economic growth (Kadozi, 2019). The study by Kadozi (2019) is consistent with the study by El Hamma (2019) in which it was concluded that a robust institutional environment is one instrument for channelling for remittances towards economic growth.

In a study of Albania and other 5 regional countries, Meyer and Shera (2017) confirmed that remittances positively and significantly contribute to the economic growth of the six countries (Meyer & Shera, 2017). In their study, Imai et al. (2014) also confirm that remittances are beneficial to economic growth and that they are a valuable complement to the broad-based development efforts. They, however, bring caution that similar to FDI, they are also a source of output shocks such that the volatility of them is potentially harmful to economic growth.

In a study by Aboulezz (2015) in Kenya, a bi-directional causality from international remittances to economic growth and from economic growth to international remittances was observed. Aboulezz (2015), therefore, recommends that the government of Kenya adopt policies that aim for higher economic growth rates to receive higher international remittances and consequently do the same for remittances to establish sustainable economic growth rates. Other studies that confirm that remittances significant impact to economic growth include Golitsis et al. (2018); Cismas et al. (2019); Giuliano and Ruiz-Arranz (2009).

Remittances have been observed to have complementary efforts with financial development in enhancing economic growth. Sobiech (2019), in their model to test whether financial development can help foster the impact of remittances on economic growth, found out that economies with least developed or less advanced financial markets produced a positive impact on economic growth. The reason being, a huge inflow of remittances was likely to be spent most efficiently in the domestic economy compared to developed markets (Sobiech, 2019). However, this observation is slightly not consistent with El Hamma (2019), who argues that high financial development instead would enhance growth if, however, is combined with a strong institutional environment. The observation by Sobiech (2019) is consistent with the findings of Kwesi (2019) in which he found out that remittances and financial development are growth-enhancing in the long run for Ghana.

In a study for Sub-Saharan Africa, Olayongbo & Quadri (2019) found a positive effect on economic growth from both remittances and financial development, however, did not establish any causality between the two. Anetor (2019) also found some complementarity between remittances and financial development but arrived at a different conclusion that both remittances and financial development had a negative and significant impact on economic growth for Nigeria. Sibindi (2014) also confirms the complementary effect of remittances and financial development in enhancing economic growth but finds evidence that remittances can spur economic growth for Lesotho contrary to the study in Nigeria by Anetor (2019).

A study by Adbelahadi & Bashayreh (2017) in Jordan revealed a stable relationship between remittances and economic development both in the short-run and the long-run. By implication, the authors, therefore, recommend that Arab countries cut fees on remittance transfers to invest remittances into productive areas for higher economic growth (Abdelhadi & Bashayreh, 2017). Using a panel data of 116 countries, Matuzeviciute & Butkus, (2016) found evidence of a positive long-run impact of remittances to economic growth in countries with a higher GDP per capita compared to the one with lower GDP per capita.

In a study by Hassan & Shakur, (2017), a non-linear relationship between remittances and economic growth for Bangaladesh was observed. The findings indicated that remittances appeared to reduce per-capita GDP growth in the short-run but increased the per-capita GDP growth rates in the long-run. Hassan & Shakur (2017) therefore, went on to conclude that inward remittances for Bangladesh were put to non-productive uses in the early development but later on were mostly spent on more productive purposes.

A study by Wadood & Hossain (2015) concluded that there is a one-way causal relationship from remittances to economic growth. Further analysing their findings, they concluded that the causality of remittances to economic growth could be due to several factors that include the multiplier effect as an indirect effect from the consumptive expenditure. The findings of Wadood & Hossain (2015) are, however, not consistent with the finds of Chami et al. (2005). Using a theoretical model on family economics, and new panel data set of remittances, Chami et al. (2005) found out that there is a robust negative correlation between remittances and GDP growth, indicating that remittances may not be intended to serve as a source of capital for economic development.

Remittances have been observed to cause a decline in the economic growth due to de-industrialisation or decline in the tradeables sector whilst a boom in the services sector or the non-tradeable sector is recorded. This phenomenon has been defined as the Dutch disease (Igor (2016), Chami (2016)). Hien N.P et al. (2019) defines this phenomenon in terms of real exchange rates as the overshooting of a country's real exchange rate, which reduces a country's competitiveness due to receiving huge remittances. A study by Igor (2016) on resource-poor countries of central Asian countries, Kyrgyzstan and Tajikistan, showed evidence of partial Dutch disease because of the remittances coming from Russia. In their analysis, they found strong growth in the services sector and a depreciation of the local currency, indicating a strong buying power in the hands of the remittance recipients and a general over-reliance on imported goods. They also attributed the growth in the non-tradeable sectors as confirming de-industrialisation (Igor, 2016). This observation also confirms the model developed by Acosta et al. (2009) in which they concluded that an increase in remittances ultimately culminates in the rise of household income that consequently results in an increase in consumption that is biased towards non-tradeables. Using the Salvadorian data and the Bayesian techniques, Acosta et al. (2009) developed a model that confirms that remittances cause a decrease in the labour supply and, therefore the Dutch disease whether the remittances are altruistically motivated or otherwise. Studies by Amuedo-Dorantes et al. (2014), Chami et al. (2003), and Jongwanich (2007) also support the position that remittances have a negative effect on economic growth.

Anetor (2019) having arrived at the same conclusion, also argues that remittances have a negative impact on economic growth because they will mostly be spent non-productive investment. For South Africa, Nyasha & Odhiambo (2019) found out that remittances have a negative impact on economic growth. Nyasha & Odhiambo (2019), therefore, recommend that South Africa's policymakers need to be cautious in taking steps to lure more remittances.

A study by Pradhan (2016) on the BRICS nations found a mixed bag of results between the countries. However, as a general conclusion, the study found out a negative long-run impact of remittances to economic growth in all BRICS countries. Further analysing the long-run impact Pradhan (2016) concluded that the long-run relationship between remittances and economic growth was due to the impact of exchange rates on per capita GDP across all the BRICS countries (Pradhan, 2016).

A study by Betting & Zazzaro (2011) using a panel of 66 developing countries for the period 1991 to 2005 showed that remittances have an ambiguous effect on growth; therefore, only a small group of countries with efficient financial markets were able to derive benefits.

2.6 Chapter Summary

This chapter, Literature Review, discussed the definitions and motives for international remittances. It was observed that the definition of remittances is not in question. However, there exists a narrow and broader definition of the remittances with the former based on migration concepts and the latter on the Balance of Payments Manual produced by the IMF. The chapter also highlights and discusses the main motives for remittances, which are 'Altruism' and the 'Self-interest' motives. The main theories for informing international remittances and economic development discussion are also highlighted and discussed in detail. It was observed that the researches and discussions schools of thought about remittances and economic development have swung like a pendulum in history beginning with Development Optimists (before the year 1973) to Development Pessimists (1973-1990) and recently settling in the mid-point Development Pluralists (after the year 2001) representing a compromise of the earlier two. The chapter concludes with a review of the empirical findings of studies conducted around the world on the nexus between remittances and economic growth.

The chapter also gives a highlight of remittances in Zimbabwe and the efforts made in trying to attract more remittances. A key observation was that remittance and migration data was not complete due to high levels of undocumented emigrants and the preference to use informal means when making remittances. A mixed bag of findings was observed without any clear pattern. Some studies observed that remittances positively impact economic growth while some observed no impact at all. The next chapter presents the methodology that guided this study.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Introduction

The chapter presents the methods or the blueprint followed from data collection to analysis in line with the study objectives. Research methodology can be described as an outline of how a research inquiry should be carried out, therefore suggesting that it is an outline of the assumptions, principles, and procedures followed in a particular approach to inquiry (Schwardt, 2007). Specifically, the chapter outlines the research philosophy and design followed, the sources and scope of data collected on the study variables. The chapter also outlines the estimation models employed to analyse the data in line with the research objectives and provides validations and or logic for the employment of the particular set of methods in answering the research objectives.

3.2 Research Paradigm

This research follows the positivist state of thinking founded in the works of Comtee (1853), who reasoned that there can be no factual knowledge or understanding besides that which is grounded on facts observed. This study had the objective of examining the impact of diaspora remittances on economic growth in Zimbabwe. In view of this objective and the policy implications of the results of this study, it was essential to follow a positivist hypothesis, which entails the use of consistently logical scientific approaches. The positivist hypothesis will allow for the elimination of bias and achievement of maximum possible objectivity through basing data analysis on observable facts.

3.3 Research Design

The study employed a quantitative research design to examine the impact of diaspora remittances on economic growth in Zimbabwe. Attainment of this objective required the collection and quantitative analysis of the research data. The requirements of the study were in line with the characteristics of quantitative research design. A quantitative model is numerical and non-descriptive, is an iterative process, and is conclusive (Rajasekar, Philominathan, & Chinanathambi, 2013). The design enhances the description of the change, analysis, and explanation of relationships and or dependencies between certain economic phenomena (Vaus, 2001). Also, a quantitative design's primary emphasis is deductive reasoning (also referred to as top-down logic), which entails moving from the general to the specific. It is these characteristics and capabilities of quantitative research design and how it facilitates the achievement of the study's objectives that led the researcher to follow this design.

3.4 Empirical Model

The time series regression specification of the relationship between diaspora remittance inflows and economic growth is defined in equation 1 as;

$$GDPGR_t = \beta_0 + \beta_1 RWEMIT_t + \beta_2 INVESTMENT_t + \beta_3 PCONSUMP_t + \beta_4 GVTEXP + \varepsilon_t \ldots\ldots 1$$

Where $GDPGR_t$ denotes economic growth rate in year t; $WREMIT_t$ represents Diaspora/Workers remittances in year t; $INVESTMENT_t$ refers to gross physical capital formation in year t; $PCONSUMP_t$ is private consumption in year t; $GVTEXP$ denotes government consumption in year t and ε_t is the error term.

3.5 Description and Measurement of variables

3.5.1 GDP growth rate (GDPGR)

A dependent variable is one that is explained or predicted by changes or movements in explanatory variables. The dependent variable in this study is the GDP growth rate (GDPGR), which is the Real GDP per capita taken in this study as a proxy for economic growth. Changes in real GDP have been found to do a reasonable job in capturing changes in the economic wellbeing of a country (Dynan & Sheiner, 2018). However, Dynan & Sheiner (2008) go further to express that real GDP excludes non-market activities that bear on the economic well-being; therefore, it remains an inadequate measure.

The expenditure approach, which involves summing up expenditures in the economy, is adopted in this study for measuring real GDP per capita. The following is the generalised formula:

Y = C + I + (X-M)

Where Y= GDP, C = Consumption, I = Investment, (X-M) = the difference between exports and imports.

3.5.2 Diaspora/Workers Remittance (WREMIT)

The particular variable of concern in this study is WREMIT, which represents the level of diaspora/workers remittance inflows expressed as a percentage of GDP. Empirical studies have reported ambiguous relationships between diaspora remittance inflows and economic growth. However, it is observable that the relationship is indirect therefore and has a multiplier effect (Chami et al. (2003); Nzima et al. (2017), Meyer & Shera (2017)) with transmission channels that include financial development, investment, trade and consumption (Mansur & Syed, 2015).

3.5.3 Growth Fixed Capital Formation (INVESTMENT)

This study makes use of gross fixed capital formation as a to the level of investment in the country. Gross fixed capital formation constitutes the acquisition of produced assets, including the production of such assets (OECD, 2020). Investment in capital goods is generally expected to lead to an increase in productivity, which in turn leads to increased production of goods and services and, ultimately, high economic growth rates. (Ongo & Vukenkeng, 2014). It, therefore, follows that economic growth and development are firmly dependent on the availability of fixed capital.

3.5.4 Private Consumption (PCONSUMP)

The variable Consumption (PCONSUMP) measures total private consumption on household goods and services expressed as a percentage of GDP. Remittances are expected to increase the level of private consumption, especially in low-income countries like Zimbabwe. Given that the level of consumption in a country has been found to impact economic growth through increased aggregate demand, remittances can have an impact on economic growth indirectly through their tendency to lead to increased consumption levels (Alper, 2018). A study by De et al. (2016), on the relationship between remittances and the business cycle, also incorporates consumption as a variable that can predict economic growth. Cisma et al. (2019) also employ private consumption as a control variable, which explains economic growth.

3.5.5 Government Expenditures (GVTEXP)

Government expenditure represents the capital and consumptive expenditures by the state. The effect of government spending on economic growth is still debatable. In Zimbabwe, research has shown that expenditure by the central government is both growth-enhancing and retarding.

Mhari (2016) found out the government expenditure in Zimbabwe was growth-enhancing on capital expenditure, on consumption was neutral, and on social services, it was growth retarding. Mazorodze (2018) found a significant and causal relationship between the various components of public expenditure and economic growth for the country in the long-term. However, a significant non-causal relationship between the variable and economic growth was observed by Mbanyele (2019). The declining influence of government expenditure in Zimbabwe is, however, attributable to declining capital investment, huge defence budget deficit, and transfer payments (Shumba, 2011).

Table 3 Summary of Variable Definitions

Variable	Proxy or Definition	Expected Sign
GDPGR	GDP growth rate per capita	
WREMIT	Workers Remittance received as a percentage to GDP	+
INVESTMENT	Growth Fixed Capital Formation as a percentage of GDP	+
PCONSUMP	Private Consumption expenditure as a percentage of GDP	+
GVTEXP	Spending by the Government as a percentage of GDP	+/-

3.6 Data Sources and Scope

For the purposes of this study, which is a 'desk research,' secondary data collection was employed. The data structure was longitudinal (spanning across 2 decades), and this made secondary data collection the most logical and economically suitable data collection technique. The chief advantage of using secondary data is that the data is readily available and particularly useful when there are time constraints and impracticability of collecting the data in terms of costs (Johnston, 2014). Data for all the variables in the study are contained in several databases and websites containing a broad set of economic, political, technological, and social indicators, making desk research more applicable.

The study used secondary data obtained online from the World Bank, The International Monetary Fund (IMF), the Reserve Bank of Zimbabwe (RBZ), and the Zimbabwe statistical agency (ZIMSTATS). Zimbabwe's remittances data and economic growth parameters were collected for a period spanning from 1995 to the year 2018. These sources were considered dependable as they make frequent time-to-time compilations of various countries' economic, political, legal, and social and other indicators. Some of the data were crosschecked across several internal and external sources for inconsistencies as a measure to secure the quality of the data and improve reliability of study the results.

3.7 Estimation Approach

The study's primary objectives were to explore first the relationship between inflows of funds through diaspora/workers' remittances and economic growth both in the short and long-run and to check the impact of the former on economic growth, taking the case of Zimbabwe. Since these variables are both time dimensional, the most appropriate method of data analysis is through a time-series framework using co-integration and causality tests. Time series analysis is useful in that it enables examination of how a given study variable varies over time in relation to itself and also the other study variables over the same period. First and foremost, the variables were subjected to diagnostic tests for stationarity and auto-correlation to ensure the model and reliability of the results.

3.7.1 Diagnostic Tests

- **Stationarity Tests**

Regression analysis models are based on the assumption that each time series dataset is stationary at level. A variable is said to be stationary if the data points of the dataset are mean-reverting and that its properties are not only affected by the change in time. Thus a stationary series should have a constant mean (equation i), a constant variance (equation ii), and a constant covariance (equation iii) at any given time of measurement (Shrestha & Bhatta, 2018).

$$E(Y_t) = E\ (Y_{t-s}) = \ \mu\ , for\ some\ s > 0 \qquad \text{(i)}$$

$$Var(Y_t) = Var\ (Y_{t-s}) = \ \sigma y^2 \qquad \text{(ii)}$$

$$Cov(Y_t\ , Y_{t-s}) = \gamma_s \qquad \text{(iii)}$$

Where, *$E(Y_t)$* = expected value of Y at period t, *Var* = Variance of Y_t from E(Y_t), *Cov* = Covariance between Y_t and Y_{t-s}, and Y_{t-s} = Lagged value of Y up to period $t-s$.

It is now a well-known fact that most macroeconomic time series data or variables are non-stationary (Dickey & Fuller, 1979; Gujarati, 1995). In a case where variables are non-stationary, applying standard regression models is inappropriate because of the possibility of obtaining a spurious relationship, which makes study results unreliable (Shrestha & Bhatta, 2018). As a result, it is important to test if the study variables are time stationary, to avoid a spurious relationship, which reduces the reliability of analytical results. A series is said to be stationary if it tends to fluctuate around its mean.

Augmented Dickey-Fuller Test for Stationarity

The ADF test for stationarity takes the following form (i);

$$\Delta Y_t = \phi Y_{t-1} + \sum_{j=1}^{p=1} \alpha_j \ \Delta y_{t-j} + \mu_t \qquad \text{(iv)}$$

In this model, the pair of hypothesis H_0: $\phi = 0$ versus H_1: $\phi < 0$ is tested on the t-statistic of the co-efficient ϕ. H_0 is rejected if the t-statistic is smaller than the relevant critical value (commonly 5%). If ϕ=0 (under the null hypothesis), the series Y_t has a unit root and is, therefore, non-stationary, whereas it is regarded as stationary if the null hypothesis is rejected. Non-stationary data can be made stationary through differencing.

Phillips-Perron (PP) Test for Stationarity

To further test for the stationarity of variables, the Phillips-Perron test was conducted. The Phillips-Perron unit root test is a development of the ADF methodology. It is more robust if the data has a structural break due to the impact of macro-economic shocks (Shrestha & Bhatta, 2018). The PP test follows the following form (v);

$$\Delta y_t = \pi y_{t-1} + \beta D_{t-i} + \varepsilon_t \qquad \text{(v)}$$

Where $\mathcal{E}_t$ is a series integrated in the order, I(0) with zero mean and D_{t-i} is the deterministic trend component. Thus the null hypothesis is tested for $\pi = 0$.

- **The goodness of Fit Test**

The study made use of the R^2, and the Breusch-Godfrey Serial Correlation LM (BGLM) test for autocorrelation to perform model diagnostics. The R^2 shows how well the model explanatory variables explain the variations in the dependent variables. An R-squared closer to 1 implies that the independent variables have more explanatory power on the dependent variable. In multiple regression analysis, adjusted R-squared is preferred over the R^2. The adjusted R-squared only changes due to changes in the predictive power of the explanatory variables and not a mere addition of variables, which is not the case with the R-square. The Breusch-Godfrey Serial Correlation LM (BGLM test was employed to check for autocorrelation in the residuals. If the p-values of the F-statistic or Observed R-squared are greater or equal to 5%, then the model is considered not to have autocorrelation problem.

3.7.2 Johansen Co-integration Tests

The co-integration test measures the strength of the long-run association between two or more series. Two variable series are co-integrated when they have common stochastic trends meaning a long-running equilibrium relationship, therefore, suggesting the presence of a long-run association between the two data sets (Gujarati, Basic Econometrics, Fourth Edition, 2004). This means the series has an economic relationship that prevents them from diverging without bound in the long run. In this study, the task is to investigate the co-movement between variables for co-integration. The notion of co-integration refers to the case where two or more variables move together over time, and the difference between them is stable over time. This means, one variable tends to follow the other in the long-run and thus share the same movement.

Testing for co-integration is necessary for examining if the predictor variables and the dependent variable in the model have empirically meaningful relationships. To test for cointegration, the study employed the Johansen Co-integration approach, which is applicable for variables not stationary at levels.

The general model for testing cointegration can be written as;

$$\Delta Y_t = \pi Y_{t-1} + \sum_{j=1}^{k=1} ¥_j A Y_{t-j} + \varepsilon_t \quad \text{(i)}$$

Given the above equation, if π is equal to zero, this means that there is no co-integration.

3.7.3 Vector Error Correction Model (VECM)

The study employed VECM to test for the short term impact of remittances on economic growth. If the series are co-integrated, then a VECM can be employed to investigate how in the short-run, the model reverts to the long-run equilibrium. The VECM can be employed even if the variables are not stationary at level. The VECM allows for short-run adjustment dynamics whilst controlling for the long-run behaviour of the model endogenous variables. The VECM co-integration term is termed the error correction term (ECT) as the all deviations from the long-term equilibrium level is adjusted or gradually corrected through a series of partial short-term adjustments.

3.7.4 Granger Causality Test

The study employed a granger causality test to examine if diaspora remittance inflows have a long-term causal impact on Zimbabwe's economic growth level. Granger causality tests if past values of remittances can be useful in predicting the changes in the dependent variable (Enisan & Olufisayo, 2009).

According to Granger (1969), causality is said to exist between two variables when a variable X predicts (granger causes) another variable Y, better than the past values of the variable Y can predict itself. Thus, the information contained within past values of the variable X is better at predicting values of Y than previous values of Y can predict itself. Conventional Granger causality can be represented by the following bivariate system equations:

$$y_{1t} = \delta_1 + \sum_{i=1}^{m} \beta_i \, y_{1t-1} + \sum_{i=1}^{n} \alpha_i \, y_{2t-1} + \varepsilon_t \qquad \text{(viii)}$$

$$y_{2t} = \delta_2 + \sum_{i=1}^{q} \pi_i \, y_{1t-1} + \sum_{i=1}^{r} \phi_i \, y_{2t-1} + V_t \qquad \text{(ix)}$$

Where δ_1 and δ_2 are drifts. The coefficient α is relevant for testing Granger causality running from y_{2t} to y_{1t} while the coefficient π is appropriate for the Granger causality test running in the opposite direction. Four findings are possible in a Granger causality test. First, neither variable Granger causes the other. In other words, independence is suggested when the set of Y_{1t} and Y_{2t} coefficients are not statistically significant in both regressions. Second, unidirectional causality from Y_{2t} to Y_{1t}, which means Y_{2t} causes Y_{1t} but not vice versa. Third, unidirectional causality from Y_{1t} to Y_{2t}, which means Y_{1t} causes Y_{2t} but not vice versa. Fourth, bilateral causality between two variables, which means Y_{1t} and Y_{2t} Granger cause each other (feedback effect).

According to the above equations, the null hypothesis that Y_{2t} does not Granger causes Y_{1t} is rejected if the coefficients of α in equation (1) are jointly significant. The null hypothesis that Y_{1t} does not Granger causes Y_{2t} is rejected if the π_is are jointly significant in equation (2). If in both equations some $\alpha_i \neq 0$ and some $\pi_i \neq 0$, then there is feedback between Y_{1t} and Y_{2t}. Usually, the standard F-test is used to determine the joint significance and hence the causal relationship between variables.

Given this study, conventional Granger causality can be represented by the following equations;

$$REM_t = \delta_1 + \sum_{i=1}^{m} \beta_i \ REM_{t-1} + \sum_{i=1}^{n} RGDP_{t=j} + \mu_{1t} \quad \text{(x)}$$

$$RGDP_t = \delta_2 + \sum_{i=1}^{m} \beta_i \ RGDP_{t-1} + \sum_{i=1}^{n} REM_{t=j} + \mu_{2t} \quad \text{(xi)}$$

Where RGDP is the economic growth rate and REM is diaspora remittance inflows.

3.8 Chapter Summary

The chapter outlined the research methodology employed in the examination of the impact of diaspora remittance inflows and economic growth in Zimbabwe from the year 1996 to 2018. The study employed a quantitative research design in line with other prior studies. In order to test for the presence of a long-run relationship between the variables, the Johansen Co-integration test, the VECM, and the Granger causality methodology were employed. The next chapter presents the findings of the study.

CHAPTER 4

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

The study sought to examine how diaspora remittance inflows into Zimbabwe impact the economic growth of the country. This chapter presents research findings in the form of diagrams, tables, and graphs, where applicable, and also provides a detailed analysis and presentation of the research findings in line with the research objectives. Analysis and evaluation will be done with reference to findings of previous empirical studies on the impact of remittances.

4.2 Descriptive Analysis

The summary statistics for all the research data (6 variables for the period 1995 to 2018) are presented in **Table 3** showing the mean, standard deviation, minimum, and maximum observations. The results show that diaspora remittance inflows as a percentage of GDP into Zimbabwe averaged 5% (which translates to US$ 766, 879, 170 per year) for the period with a minimum of 0.04% and a maximum of 13.61%. Remittances into the country generally have less deviation from the mean, as shown by the low standard deviation of 0.05. On average, the economic growth rate of Zimbabwe stood at 1.32% for the period with a minimum of -17,66% experienced in the year 2008 and a maximum of 19,67%. The summary statistics show that the country has a high propensity to consume, as shown by the mean consumption level of 98.7%. Generally, this implies that almost all of the income generated in the country is consumed. The results also show that in some years, the country consumes more than it generates, implying that the consumption could be financed by borrowings.

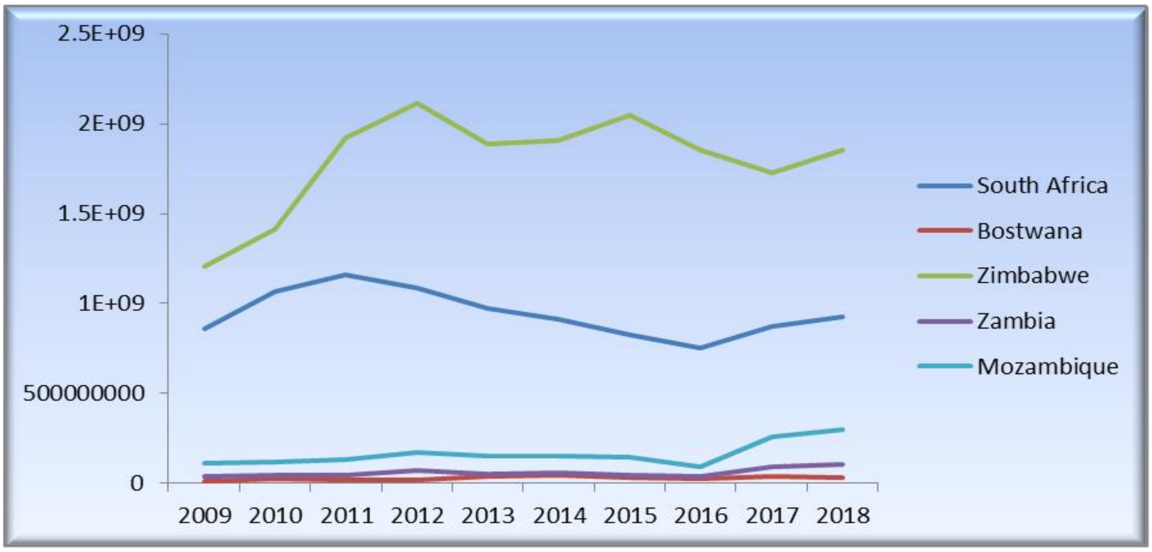
Table 4: Descriptive Statistics

	Mean	**Median**	**Maximum**	**Minimum**	**Std. Dev.**
GDPGR (%)	0.0132	0.0161	0.1967	-0.1766	0.0920
WREMIT	0.0463	0.0172	0.1361	0.0004	0.0511
INV	0.1093	0.1008	0.2457	0.0200	0.0595
PCONSUMP	0.9867	1.0185	1.2146	0.8034	0.1143
GVTEXP	0.1605	0.1785	0.2426	0.0204	0.0550

Note: PCONSUMP = Consumption; GDPGR = Gross Domestic Product Growth; GVTEXP = Government Expenditure; INV= Investment; WREMIT = Diaspora/Workers Remittances.

Source: Author’s Compilation EViews output 8.1

Figure 1: Comparative analysis of remittances flows in selected countries (2009-2018)



Source: Author's Compilation using World Bank data

For the period 2009-2018, Zimbabwe was the highest recipient of remittances, almost double the total amounts received by South Africa, Botswana, Zambia, and Mozambique. In this period, the country received average yearly remittance inflows of US$1.7 billion compared to South Africa's average of US$ 0.94 billion; Botswana, US$ 28 million; Mozambique, US$ 162 million and Zambia's US$ 60.2 million. This could be explained by a huge population of Zimbabweans working in foreign countries. Over the period, the country registered a 54% growth in remittances. Given this trend, it is therefore critical to explore the impact of these remittance inflows into the country in terms of economic growth and or development with a view to providing recommendations that are useful to policymakers.

4.3 Correlation Results

Correlation analysis among the variables used in this study is presented in **Table 4** below. The results show positive correlations between GDPGR, WREMIT, INV, and GVTEXP variables. A strong positive correlation was observed between GDPGR and WREMIT, as reflected by a correlation coefficient of **0.66**. No correlation was, however, observed between REMIT and INV**.** By inference, the idea that remittances were mostly used for consumptive expenditure as opposed to investment purposes can be sustained. The high levels of consumption that outweigh GDP at times can also support this notion. The correlation between variables, however, does not mean the presence of any causality among them; therefore, further analysis is required.

Table 5: Correlation Results

	GDPGR	WREMIT	PCONSUMP	GVTEXP	INV
GDPGR	1.0000	0.6571	-0.0603	0.2529	0.4171
WREMIT	0.6571	1.0000	0.5498	0.1096	0.0176
PCONSUMP	-0.0603	0.5498	1.0000	-0.4089	-0.5395
GVTEXP	0.2529	0.1096	-0.4089	1.0000	0.3578
INV	0.4171	0.0176	-0.5395	0.3578	1.0000

Note: PCONSUMP = Consumption; GDPGR = Gross Domestic Product Growth; GVTEXP = Government Expenditure; INV= Investment; WREMIT = Diaspora/Workers Remittances

The correlation coefficients between the explanatory variables are less than 0.8, suggesting that there is no problem of multi-collinearity among the variables. Therefore, the model did not drop any of the variables.

4.4 Diagnostic Test Results

To ensure the reliability and validity of research findings, diagnostic tests for stationarity, multi-collinearity, and serial correlation were conducted. The detailed diagnostic test results are shown in Appendices.

4.4.1 Unit Root Tests

The assumption of stationarity in the data used is essential for the analysis of time-series data. The significance of the stationarity of data in time series analysis lies in the fact that the conditions of constant covariance, variance, and mean need to be satisfied to ensure the accuracy of the estimated models and conditions. To test for the stationarity, the ADF test was applied. The PP and KPSS methodologies were also employed as a further test for stationarity.

Table 6: ADF Test Results

Variable	@ Level		@ First Difference	
	t-stat	p-value	t-stat	p-value
GDPGR	-2.5910	0.1091	-5.7429	0.0001***
WREMIT	-1.2570	0.6311	-4.5956	0.0016***
PCONSUMP	-1.9528	0.3040	-6.6882	0.0000***
INV	-3.3715	0.0230**	-6.1989	0.0000***
GVTEXP	-2.4296	0.1456	-3.4841	0.0186**

Notes: *PCONSUMP = Consumption; GDPGR = Gross Domestic Product Growth; GVTEXP = Government Expenditure; INV= Investment; WREMIT = Diaspora/Workers Remittances* *** and ** denotes significance at 1% and 5% respectively.

At level, the test fails to reject the null hypothesis that all the variables in the series have a unit root hence were not stationary at levels except for INV with a p-value of 0.02 at level. Variables

GDPGR, WREMIT, and PCONSUMP have statistically significant t-statistics (at 1% significate level) only after first differencing as shown by the p-values less 1%. GVTEXP has a significant t-statistics at 5% significance level. However, it has to be noted that, despite the fact that the data are not stationary at level, it is still possible to carry out further analysis. Based on the order of integration of the variable, it is possible to apply the Johansen cointegration methodology to find out if the variables are cointegrated. All the other variables were stationary after first differencing, as shown by the statistically significant t-statistics with p-values less than 5%. The Phillips Peron and KPSS methodologies were also employed and confirmed the stationarity of the variables only after first differencing.

4.4.2 Serial Correlation Test

The study employed the Breusch-Godfrey Serial Correlation LM test with the null hypothesis H_0 = no serial correlation. The results of the Breusch-Godfrey Serial Correlation LM test are presented in **Table 6** below.

Table 7: Serial Correlation Results

F-statistic	0.1554	Prob. F(2,17)	0.8572**
Obs*R-squared	0.4310	Prob. Chi-square	0.8061**

*Notes: **Significant if p-value is greater or equal to 0.05*

Source: Author's Compilation EViews 8.1 Output

Since all the p-values of the F Statistic and the Observed R-squared are all greater than 5% , the null hypothesis of no serial correlation cannot be rejected. Therefore, it can be concluded that the model has no problem with serial correlation.

4.4.3 Goodness-of-Fit Test

The Ordinary Least Squares regression (OLS) was used to test the adequacy of the model, without taking into consideration the stationarity of variables. Model summary regression results are as presented in **Table 7** below:

Table 8: OLS Regression Results

Statistic	Value
R-squared	0.7113
Adjusted R-squared	0.6505
S.E. of regression	0.0544

Sum squared resid	0.0563
Log-likelihood	38.6123
F-statistic	11.7004
Prob(F-statistic)	0.0001

Source: Author's Compilation EViews 8.1 Output

Regression results show that the model has an R-squared of 71.13% and an adjusted R-squared of 65.05%. Therefore the model can be deemed good and fit because variations in the model predictor variables can explain 71% of the variations in GDPGR. The results are significant with an F-statistic of 11.70 and a p-value of 0.0001, which is less than 5% significance level.

4.5 Cointegration and Causality Tests – Long-run Results

To test for the existence of a long-run association between remittance inflows and economic growth, the Johansen Cointegration Trace test was employed with Null hypothesis H_0 = No cointegration. Any equilibrium relationship observed among a set of non-stationary variables implies that there is a link in their stochastic trends Enders (2004). In this case, they are said to be cointegrated. To determine the optimal lag length, the study employed the Schwarz Info Criterion. The SIC methodology recommended 1 lag as optimal to use in the cointegration test. The Johansen Cointegration test results are presented in **Table 8** below.

Table 9: Johansen Cointegration Test Results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.
None	0.7056	74.6358	69.8189	0.0196**
At most 1	0.5998	47.7307	47.8561	0.0514
At most 2	0.4500	27.5840	29.7971	0.0881
At most 3	0.3884	14.4332	15.4947	0.0718
At most 4	0.1516	3.6176	3.8415	0.0572
Trace test indicates 1 cointegrating eqn (s) at the 0.05 level				
** denotes rejection of the hypothesis at the 0.05 level				

Source: Author's Compilation EViews 8.1 Output

The results indicate the presence of a long-run relationship between the research variables. This is reflected by the probability values that are less than the 5% significance level. We, therefore, reject the null hypothesis that there is no cointegration and conclude that there is a long-run association amongst the variables.

The presence of the cointegrating equation shows that the variables share the same stochastic trend (long-run relationship). Therefore it can be concluded that there is a long-run equilibrium relationship between the explanatory variables and economic growth in Zimbabwe. As guided by Engle and Granger (1987), this result implies that causality must exist in at least one direction between economic growth and remittances and the other explanatory variables. The test was therefore conducted and results presented in **section 4.7**.

The long-run relationship among the variables is presented in **Table 9** below. The variable of concern is REMIT, and it has a normalised regression coefficient of **2.0513** at 1% significance level. This implies a positive impact on GDPGR, where a **1** unit increase in WREMIT leads to a **2.0513** unit increase in GDPGR. These findings are consistent with empirical findings like Kadozi (2019) and El Hamma (2019) who found a positive and significant impact of remittances to economic growth and attributes the relationship to the interplay of the institutional environment and developmental factors. The findings of a long-run positive effect on economic growth also align with the results of Matuzeviciute & Butkus (2016); Meyer and Shera (2017); Imai et al., (2014); Sibindi (2014). However, the findings are contrary to results by Nyasha & Odhiambo (2019), Pradhan (2016) & Anetor (2019), who concluded that remittances had a negative impact on economic growth. The negative impact has been attributed by some to the Dutch disease, Igor (2016), Chami (2016) Hien NP at al, (2019), whereby the decline in economic growth was attributed to the de-industrialisation and growth of the tradeables sector.

The study results also show that the model control variables have a statistically significant impact on economic growth in the long run. There is evidence of a positive long-run relationship between investment and economic growth. The variable has a coefficient of 1.09, which is significant at the 1% level, implying that for every unit increase in private investment, the country's GDP grows by 1.09 units. The results also show the existence of a negative relationship between consumption and economic growth. The variable has a statistically significant coefficient of -0.6 at the 1% significant level. As illustrated in **section 4.2**, the country has a very high marginal propensity to consume, with consumption levels averaging 98% of GDP over the study period. Given the substitutive nature of consumption and investment in low-income countries, high levels of consumption would result in low levels of investment and ultimately negatively impact economic growth. Also, high consumption leads to reduced savings, and as such more debt will be required to finance investment, which might, in turn, negatively impact economic growth.

Evidence of a negative relationship is also found between government expenditure and economic growth. Specifically, the results show that, as government expenditure increases, the rate of economic growth declines for Zimbabwe. This observation could be possible in a situation whereby expenditure by the government might be at the expense of private investments which results in the crowding-out effect. Secondly, most of the expenditures by the government are more consumptive and less on developmental investments, for example, in infrastructure and defence.

Table 10: Normalized Cointegration Coefficients (Long-run results)

	Coeff	Std Errors	t-stat
WREMIT	2.0513	0.5302	3,8689***
PCONSUMP	-0.5992	0.2911	-2.0584***
GVTEXP	-1.9650	0.3240	-6.0648***
INV	1.0899	0.3713	2.9354***

Notes: *PCONSUMP = Consumption; GDPGR = Gross Domestic Product Growth; GVTEXP = Government Expenditure; INV= Investment; WREMIT = Diaspora/Workers Remittances. *** denotes significance at 1%*

Source: Author's Compilation EViews 8.1 Output

4.6 Vector Error Correction Model-Short-run Results

The VECM was employed to test the short-run impact of remittances on economic growth as the cointegration test showed the presence of a long-run stochastic trend with 1 cointegrating equation. The results are presented in **Table 10**.

Table 11: Summary VECM Short-Run Results

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
ECT(-1)	-0.2912	0.2652	-1.0979	0.2896
D(GDPGR(-1))	-0.3577	0.3396	-1.0533	0.3089
D(WREMIT(-1))	1.4529	1.3175	1.1028	0.2875
D(PCONSUMP(-1))	0.3908	0.2909	1.3432	0.1992
D(GVTEXP(-1))	0.5251	0.5305	0.9899	0.3379
D(INV(-1))	-0.0423	0.3792	-0.1116	0.9126
CONSTANT	-0.0106	0.0189	-0.5570	0.5857

Notes: *Note: PCONSUMP = Consumption; GDPGR = Gross Domestic Product Growth; GVTEXP = Government Expenditure; INV= Investment; WREMIT = Diaspora/Workers Remittances. ECT = Error Correction Term*

Source: Author's Compilation EViews 8.1 Output

The VECM results show that the previous deviations from the long-run equilibrium are corrected in the current period at an adjustment speed of **29.12%.** The results also show that a percentage change in remittances is associated with a **145.3 %** in GDP in the short-run ceteris paribus. However, the regression coefficient for REMIT is statistically insignificant, with a p-value of **28.75%**, which is greater than 5% significance level. Therefore, VECM results show that remittances have no statistically significant impact on economic growth in the short-run, as demonstrated by the probability values higher than 5%. Thus, it can be concluded that remittances do not have any direct impact on economic growth in the short-run. The short-run results are in line with the findings of some major studies. A study by Hassan and Shakur (2017) revealed that in the early stages of development, remittances have a little on the economic development of a country. However, Alguacil et al. (2011) concluded that the speed with which remittances impacted economic growth depended on the trade openness of the country.

In relation to Zimbabwe, it can be concluded that the remittances are failing to have a significant impact on economic growth in the short run due to the absence of an enabling environment that can put these funds to more productive and efficient use. The non-significance of short-term results can also be attributed to the fact that the growth of the economy is a long-term phenomenon and mostly does not respond to injections in the short-run. Remittances in themselves do not lead to economic growth so directly but through an indirect impact on other economic determinants.

4.7 Granger Causality Test

The Granger Causality test was applied to examine if REMIT can predict GDPGR better than GDPGR can predict itself and vice-versa. The test shows that there is a unidirectional causal relationship between REMIT and GDPGR running from REMIT to GDPGR. Thus, it can be concluded that REMIT has a long-run causal impact on GDPGR, as shown by the statistically significant F-statistic with probability value below 5% significate level. REMIT can, therefore, be used to predict GDPGR in the long-run. The results from the granger causality test are presented in **Table 11**.

Table 12: Granger Causality Test Results

Null Hypothesis:	Obs	F-Statistic	Prob.
REMIT does not Granger Cause GDPGR	22	4.0983	0.0353**
GVTEXP does not Granger Cause GDPGR	22	3.3255	0.0604***
CONS does not Granger Cause GDPGR	22	1.4839	0.2547
INV does not Granger Cause GDPGR	22	0.3220	0.7290
REMIT does not Granger Cause CONS	22	0.4694	0.6333

*Note: PCONSUMP = Consumption; GDPGR = Gross Domestic Product Growth; GVTEXP = Government Expenditure; INV= Investment; WREMIT = Diaspora Remittances. *** and ** denotes significance at 1% and 5% respectively*

The observation that remittances have a positive causal impact on economic growth aligns with expected results as well as empirical findings. A unidirectional causality running from remittances to economic growth was also observed by Wadood & Hossain, (2015). A study by Abduvaliev and Bustillo (2019), found that on average, a 1% increase in remittance flows provokes about 0.25% rise in per capita GDP in Common Wealth of Independent States. However, in Kenya, Aboulezz (2015) observed a bi-directional causality between remittances and economic growth.

4.8 Chapter Summary

In line with the objectives of the study, the chapter presented and discussed the findings from the analysis of research data. The next chapter summarizes the research and provides both conclusion and recommendations

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter creates connections and links with the research objectives to respond to the main problem of the research adequately. Explicitly the chapter presents the summarized research work undertaken in the determination of the short and long-term impact of workers remittances on economic growth in Zimbabwe, the conclusions and recommendations drawn out of the research findings as well the suggestions for further research as an outgrowth of this study

5.2 Summary of the Study

The study sought to investigate the impact of diaspora remittances on the economic growth of Zimbabwe using data for the period 1995 to 2018. The study further assessed whether the impact was realisable in the short-run or the long-run. To ensure the reliability and validity of the research findings, diagnostic tests for data stationarity and serial correlation were conducted.

Through trend analysis, the study found Zimbabwe to be the highest recipient of diaspora remittances in comparison to South Africa, Botswana, Zambia, and Mozambique. Considering the 2009 to 2018 period, the study finds the country received almost double than what was received by the other four countries combined. The difference could be more if there is the consideration of the funds which flow through the informal sector, which might be representing a very large volume of funds received in comparison to the formal sector.

In line with the research objectives, the study went on to explore the long-term impact of diaspora remittances on economic growth employing the Johansen cointegration and Granger causality test. The results show the presence of cointegration and causality. Specifically, the results show that remittances have a causal impact on economic growth. The results are statistically significant, as shown by the normalized cointegrating coefficient of 2.053, implying that a 1-unit change in remittances leads to a 2.053 unit changes in economic growth. The study thus concludes that remittances have a long-run positive impact on economic growth, and therefore the former can be used to predict or forecast the later.

The results from short-run impact analysis using a vector error correction model show that remittances have no impact on economic growth in the short-term. This is also the case for the control variables. All the variables were statistically insignificant, with probability values above 10%. It can be concluded that the economy is slow in responding to any injections or withdrawals in the economy in the short-run.

5.3 Conclusions of the study

The econometric results of the study carried out to investigate the impact of diaspora remittances on the economic growth of Zimbabwe indicate that remittances have a positive significant impact in driving the economic growth of the country in the long-term. The results are not unique, given the almost similar outcomes observed in the empirical literature findings. The results, therefore, positively contribute to the growing literature on remittances, specifically on Zimbabwe, its region, and developing countries operating under similar circumstances. The inference of these results should, however, result in delineating the applicable policy stances for the country as opposed to going by the trendy winds that are suggesting remittances to be integral to economic growth for developing economies who are faced with excess human capital. The results of the study, therefore, assist the policymakers in making rightful decisions that are based on empirical evidence that is capable of being interrogated.

5.4 Recommendations

The nation of Zimbabwe requires complete and concise solutions to drive the economic growth of the country. From the results of the study, it can be recommended that the country should pay particular attention to all sources of foreign currency given their importance in stimulating the performance of the local industry. These sources include remittances, international private capital, foreign portfolio investments, and official development assistance. It is also recommended that the policy-makers in Zimbabwe focus on developing a robust institutional framework that could help channel remittances to more productive uses

As for diaspora remittances, large volumes are being channeled through informal means which include cross-border buses and taxis. This could be caused by a lack of appropriate mechanisms or incentives to promote the use of formal channels and or the absence of a strong institutional framework. Also, there is low confidence in the local financial system starting from the Reserve Bank of Zimbabwe to money transfer agents. This has led people to be content with the use of informal channels suggesting inaccurate remittances statistics. Without accurate statistics that reflect the actual volumes of diaspora remittance inflows, it becomes difficult for policymakers to come up with policies that direct these funds to their most productive and efficient use. This study thus recommends the crafting of policies that restore confidence in the local financial system and promote the flow of foreign capital inflows through the formal channels.

5.5 Area for further Research Studies

This research focused on the impact of remittances on economic growth. Further research is therefore recommended to establish the impact of remittances on the financial development of the country Vis a Vis economic growth. Further research is also recommended to examine the brisk or bane of emigration in the context of remittances and human capital development issues that include brain drain and their effects on the economic growth of Zimbabwe. Ideally, these further researches will ultimately paint the correct picture of remittances and their impact on economic growth in Zimbabwe and therefore help policymakers in constructing the future of the country for the benefit of the generations to come. The study also suggests further inquiry by conducting a comparative analysis of remittances and other sources of foreign currency like FDI, foreign portfolio investment, and official development assistance in stimulating economic growth. Finally, studies to review gaps and methodologies in remittances and economic growth literature is recommended. These studies should be carried out with a view to recommend or advance a suitable methodological approach for use in research around the topic of remittances and economic growth relationship.

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APPENDICES

Appendix A: Descriptive Statistics

	GDPGR	REMIT	CONS	GVTEXP	INV
Mean	0.013240	0.046385	0.986701	0.160551	0.109322
Median	0.016097	0.017252	1.018534	0.178536	0.100840
Maximum	0.196753	0.136115	1.214600	0.242653	0.245773
Minimum	-0.176689	0.000437	0.803410	0.020471	0.020004
Std. Dev.	0.092052	0.051110	0.114305	0.055006	0.059529
Skewness	-0.060450	0.531011	-0.167689	-1.393521	0.343521
Kurtosis	3.013385	1.563883	2.127994	4.196825	2.638233
Jarque-Bera	0.014796	3.190324	0.872874	9.199998	0.602902
Probability	0.992629	0.202876	0.646335	0.010052	0.739744
Sum	0.317753	1.113232	23.68082	3.853221	2.623729
Sum Sq. Dev.	0.194891	0.060080	0.300507	0.069590	0.081505
Observations	24	24	24	24	24

Appendix B: Unit Root Tests

Null Hypothesis: D(REMIT) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.595618	0.0016
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(INVESTMENT) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.198950	0.0000
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(GVTEXP) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.484164	0.0186
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(CONSUP) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.688223	0.0000
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(GDPGR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.742896	0.0001
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

Appendix C: Lag Determination

VAR Lag Order Selection Criteria
Endogenous variables: GDPGR REMIT CONS GVTEXP INV
Exogenous variables: C
Date: 01/28/20 Time: 02:18
Sample: 1995 2018
Included observations: 23

Lag	LogL	LR	FPE	AIC	SC	HQ
0	175.3230	NA	2.54e-13	-14.81070	-14.56385	-14.74862
1	225.6820	74.44378*	2.98e-14*	-17.01583*	-15.53475*	-16.64334*

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Appendix D: Johansen cointegration Test

Date: 01/28/20 Time: 01:02
Sample (adjusted): 1997 2018
Included observations: 22 after adjustments
Trend assumption: Linear deterministic trend
Series: GDPGR REMIT CONS GVTEXP INV
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.705641	74.63578	69.81889	0.0196
At most 1	0.599789	47.73074	47.85613	0.0514
At most 2	0.449959	27.58395	29.79707	0.0881
At most 3	0.388362	14.43318	15.49471	0.0718
At most 4	0.151630	3.617645	3.841466	0.0572

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

1 Cointegrating Equation(s): Log likelihood 215.0292

Normalized cointegrating coefficients (standard error in parentheses)

GDPGR	REMIT	CONS	GVTEXP	INV
1.000000	-2.051340	0.599183	1.964952	-1.089899
	(0.53016)	(0.29114)	(0.32396)	(0.37131)

Adjustment coefficients (standard error in parentheses)

D(GDPGR)	-0.291181
	(0.26521)
D(REMIT)	-0.194450
	(0.05593)
D(CONS)	0.038773
	(0.26311)
D(GVTEXP)	-0.382694
	(0.08769)
D(INV)	0.048838
	(0.16991)

Appendix E: VECM Coefficient Estimates

Error Correction:	D(GDPGR)	D(REMIT)	D(CONS)	D(GVTEXP)	D(INV)
CointEq1	-0.291181	-0.194450	0.038773	-0.382694	0.048838
	(0.26521)	(0.05593)	(0.26311)	(0.08769)	(0.16991)
	[-1.09792]	[-3.47642]	[0.14737]	[-4.36419]	[0.28742]
D(GDPGR(-1))	-0.357658	0.055518	-0.123422	0.035862	-0.081041
	(0.33955)	(0.07161)	(0.33686)	(0.11227)	(0.21754)
	[-1.05332]	[0.77526]	[-0.36639]	[0.31942]	[-0.37253]
D(REMIT(-1))	1.452892	-0.262533	0.233985	-0.118257	1.164644
	(1.31750)	(0.27787)	(1.30704)	(0.43562)	(0.84409)
	[1.10276]	[-0.94482]	[0.17902]	[-0.27147]	[1.37976]
D(CONS(-1))	0.390763	0.212684	-0.557839	0.029074	0.223715
	(0.29092)	(0.06136)	(0.28861)	(0.09619)	(0.18639)
	[1.34319]	[3.46639]	[-1.93285]	[0.30226]	[1.20028]
D(GVTEXP(-1))	0.525084	0.110559	-0.291424	0.432368	0.094025
	(0.53046)	(0.11188)	(0.52625)	(0.17539)	(0.33985)
	[0.98986]	[0.98822]	[-0.55378]	[2.46515]	[0.27666]
D(INV(-1))	-0.042332	-0.066342	-0.176241	-0.354991	-0.316091
	(0.37921)	(0.07998)	(0.37620)	(0.12538)	(0.24295)
	[-0.11163]	[-0.82952]	[-0.46848]	[-2.83126]	[-1.30105]
C	-0.010550	0.000920	0.007840	-0.003642	-0.010748
	(0.01894)	(0.00399)	(0.01879)	(0.00626)	(0.01213)
	[-0.55705]	[0.23041]	[0.41727]	[-0.58165]	[-0.88578]
R-squared	0.390063	0.610160	0.225569	0.673462	0.322901
Adj. R-squared	0.146088	0.454224	-0.084203	0.542846	0.052061
Sum sq. resids	0.110224	0.004903	0.108479	0.012050	0.045243

Appendix F: Granger Causality

Pairwise Granger Causality Tests
Date: 01/28/20 Time: 02:21
Sample: 1995 2018
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
REMIT does not Granger Cause GDPGR	22	4.09825	0.0353
GDPGR does not Granger Cause REMIT		2.31926	0.1286
CONS does not Granger Cause GDPGR	22	1.48387	0.2547
GDPGR does not Granger Cause CONS		0.46216	0.6376
GVTEXP does not Granger Cause GDPGR	22	3.32553	0.0604
GDPGR does not Granger Cause GVTEXP		0.96109	0.4023
INV does not Granger Cause GDPGR	22	0.32201	0.7290
GDPGR does not Granger Cause INV		0.83489	0.4510
CONS does not Granger Cause REMIT	22	4.52872	0.0265
REMIT does not Granger Cause CONS		0.46936	0.6333
GVTEXP does not Granger Cause REMIT	22	8.32830	0.0030
REMIT does not Granger Cause GVTEXP		0.19224	0.8269
INV does not Granger Cause REMIT	22	0.81823	0.4579
REMIT does not Granger Cause INV		1.28503	0.3022
GVTEXP does not Granger Cause CONS	22	0.38824	0.6841
CONS does not Granger Cause GVTEXP		0.30911	0.7381
INV does not Granger Cause CONS	22	0.42922	0.6579
CONS does not Granger Cause INV		0.32982	0.7236
INV does not Granger Cause GVTEXP	22	3.03548	0.0746
GVTEXP does not Granger Cause INV		1.55970	0.2388

Appendix G: Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.155437	Prob. F(2,17)	0.8572
Obs*R-squared	0.431000	Prob. Chi-Square(2)	0.8061

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/03/20 Time: 11:56
Sample: 1995 2018
Included observations: 24
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.011048	0.217052	0.050901	0.9600
REMIT	-0.001088	0.341354	-0.003188	0.9975
CONS	-0.005160	0.188681	-0.027349	0.9785
GVTEXP	-0.045245	0.290639	-0.155675	0.8781
INV	0.012940	0.267948	0.048294	0.9620
RESID(-1)	-0.022386	0.261199	-0.085704	0.9327
RESID(-2)	-0.140742	0.252728	-0.556890	0.5849