The diaspora effect to poverty alleviation in Zimbabwe

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Abstract
The main objective of this study is to empirically examine the impact of diasporas on poverty alleviation in Zimbabwe from 1980 to 2017. Thus, this research analysis explores the empirical poverty alleviation impact of formal diaspora in Zimbabwe, using per capita GDP and income inequality as control variables. Using the Ordinary Least Squares estimation at first difference and linearized data, the study found no statistical evidence that remittances contribute towards poverty reduction in Zimbabwe over the period under review. However, per capita GDP and income inequality with positive and negative expected signs, were found to have statistically significant coefficients at 1 percent and 10 percent, respectively and accounted for 65 percent of changes in poverty levels in Zimbabwe. The study failed to establish a relationship between remittances and poverty levels in Zimbabwe because it used the data on remittances from the formal channels only while most of the remittances get their way into the economy through informal channels. The study goes on further to recommend measures that improve formal inflows of remittances into the economy such as granting voting franchise to people in the diaspora so that they can participate in the country’s democratic processes as well as putting in place policies that promote the investment of diaspora monies into the financial sector and help enhance financial literacy of both migrants and their households.

Keywords: Diaspora, poverty alleviation, remittances

Introduction
Over the past 37 years from 1980-2016, the country has experienced unprecedented migration of able-bodied personnel into the neighboring countries of South Africa, Botswana, Namibia, Zambia and Mozambique, among other SADC countries due to the deteriorating socio-economic environment. More so, an even larger proportion of Zimbabweans have migrated to the first world countries that include the United Kingdom, Australia, Canada and New Zealand in search of jobs and greener pastures. By and large, these migrants had maintained contact with their family members in Zimbabwe which had been sustained by remittances sent through both official and unofficial channels. The World Bank (2015) estimates remittances to Zimbabwe to be over 2 billion US dollars per annum as of 2015.

On the contrary and while the country is receiving such amounts in terms of remittances it is still among the poorest countries in the world with poverty prevalence rate as high as 65% according to ZIMSTAT (2015). It is this study’s assertion that these remittances could be used to reduce the poverty levels in Zimbabwe as well as fostering economic growth. With an estimated diaspora population of over four million people sending back into the country over $1 billion according to RBZ (2017) report, remittances have increasingly become a critical component of national income that now warrants investigation. In view of the foregoing, this study wishes to determine the impact of remittances on poverty in Zimbabwe for the period 1980 to 2016.
Background of the Study
Zimbabwe’s economic policies like Growth with Equity (1981) and the Zimbabwe Programme for Economic and Social Transformation (ZIMPREST) (1996-2000) have been largely populist in nature aiming towards attainment of social equity and placing little emphasis on investment in real sectors that would lead to sustained economic growth. More so, since 1997, the country’s macroeconomic conditions have deteriorated progressively into a hyperinflation environment characterized by an official annual inflation rate of 231 million percent by July 2008 (Munangagwa, 2009). Poverty and unemployment were above 90 percent by December 2008. The official exchange rate against the USD was at one time pegged at US$ 1/ZWD $ 300 000 with the parallel market rate reaching the astronomical rate of US $1/ZW $ 1.5 million in 2007 (Tambama, 2011). Overall, this period was characterized by declining national output, hyperinflation and devastating unemployment. The country experienced a cumulative economic decline of 50.3 percent (MTP, 2010). This has resulted in unsustainable socio-economic conditions that compelled 37.8 percent of the population or approximately 4 million people to migrate internationally (Pasura, 2008). Ever since, an external means of livelihood in the form of remittances played a fundamental role in the lives of Zimbabweans (ZIMVAC, 2009). Interestingly, while Zimbabwe’s economy has been declining over the past two decades, the levels of remittances into the economy has been on the rise (RBZ, 2017).

Global Remittance Trends
The growth in remittance flows indicated on Table 1.2 is not limited to Zimbabwe as many countries in Africa and even beyond had been experiencing steadfast increase in remittances (World Bank, 2015 a). In fact, remittances in the world now represent one of the major financial resources which sometimes exceed the inflows of Foreign Direct Investment (FDI). Thus, the World Bank (2014) estimates global remittances at USD 430 billion as in 2011. In fact remittances are now widely accepted as the most tangible and the list controversial link between migration and development. They are now regarded as a vital building block in poverty reduction and economic development in migrant sending countries. However, the impact of remittances on poverty reduction is more profound in developing countries which receive about 74 percent of world inward remittances (World Bank, 2014). In some cases remittances contribute up to 27 percent of the GDP in developing countries (World Bank, 2014). The enormous increase in remittances payments could be attributed to the fact that immigration between developing countries and developed countries has increased dramatically in the past 20 years. This is due to increasing income gaps and the decline in transaction costs as technological improvements have allowed for faster, lower cost mechanisms for the international transfer of payments between individuals (World Bank, 2014).

African Remittance and Financial Flows Trends
Remittances to Africa increased from USD 11.45 billion in 2000 to USD 50.11 billion in 2010 according to the World Bank (2015). They are now an important source of foreign finance, accounting for 20 percent of GDP in African countries like Lesotho, Liberia, Gambia and Comoros as shown on Table 1.1 below. Furthermore, Table 1.1 indicates that in 2013 alone, Lesotho received remittances that amount to over 20% of its GDP followed by The Gambia, with Nigeria and Madagascar tails 4%. This confirms the fact that remittances are destined to play a critical role in the economic development and subsequently in poverty reduction strategies of most African countries and Zimbabwe cannot afford to be left out. Harnessing of remittances for economic development therefore becomes a compelling reality for Zimbabwe.
Table 1.1: Remittance flows to African countries as a (% of GDP) in 2013

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>% of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesotho</td>
<td>20.9</td>
</tr>
<tr>
<td>The Gambia</td>
<td>20.0</td>
</tr>
<tr>
<td>Liberia</td>
<td>19.7</td>
</tr>
<tr>
<td>Comoros</td>
<td>19.4</td>
</tr>
<tr>
<td>Senegal</td>
<td>10.9</td>
</tr>
<tr>
<td>Cape Verde</td>
<td>9.6</td>
</tr>
<tr>
<td>Togo</td>
<td>9.2</td>
</tr>
<tr>
<td>Sao Tome and Principe</td>
<td>8.7</td>
</tr>
<tr>
<td>Mali</td>
<td>8.2</td>
</tr>
<tr>
<td>Guinea-Bissau</td>
<td>6.7</td>
</tr>
<tr>
<td>Egypt</td>
<td>6.6</td>
</tr>
<tr>
<td>Morocco</td>
<td>6.4</td>
</tr>
<tr>
<td>Tunisia</td>
<td>4.9</td>
</tr>
<tr>
<td>Nigeria</td>
<td>4.0</td>
</tr>
<tr>
<td>Madagascar</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Source: World Bank (2015 b)

Remittances are also growing to be one of the largest source of external financial flows to Africa, overtaking the Official Development Aid flows (ODA) since 2010 as shown on Figure 1 below. While FDI has been topping the volumes of financial flows into developing countries over the period 1990-2015, remittances have been in the second place and ahead of official development assistance and private debt and portfolio equity (World Bank, 2015 a).

Figure 1: Financial inflows to Africa, 1990-2015 (billions of dollars)

Source: World Bank (2015 a)

Zimbabwean Remittance Trends
The deterioration of Zimbabwe’s economy saw an increase in remittances inflows especially from the mid-1990s to date. A study by Bracking and Sachikonye (2007) estimated that 50 percent of the country’s population receive remittances in one form or another. However, the total remittance flow to Zimbabwe is certainly unknown as most of the remittances come through informal channels of friends and relatives or ‘omalitshas’. Again, during the hyperinflationary period, most remittances came in the form of goods and services covered under the IMF category 3 of remittances definition. As such, the country has not been spared from the worldwide challenge paucity of remittance data. Different remittance statistics for the same period by different sources is a testimony to this position. For instance, the International Fund for Agricultural Development (IFAD) reported that in 2006 Zimbabwe received USD 361 million in remittances, representing a 7.2 percent of the country’s GDP for 2006, while the Reserve Bank of Zimbabwe (RBZ) reports a paltry figure of $5.5 million for the same period. Notwithstanding conflicting reporting figures, official RBZ records show a general increase in remittances inflows from 2006 to 2016 as shown on Table 1.2. For instance, in 2006 formal remittances were only $5.5 million and by 2011 they had hit a billion dollar mark and reached a crest of $1.2 billion dollars in 2015 and closed at $1.1 billion in 2016 (RBZ, 2017).

### Table 1.2: RBZ Remittances Estimates from 2006-2016

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Remittances ($ millions )</td>
<td>5.5</td>
<td>47.511</td>
<td>75.0</td>
<td>554.8</td>
<td>662.0</td>
<td>1029.6</td>
<td>1164.0</td>
<td>1104.3</td>
<td>1166.0</td>
<td>1253.2</td>
<td>1102.8</td>
</tr>
</tbody>
</table>

**Source:** Reserve Bank of Zimbabwe, 2017

To collaborate the increasingly important role remittances are now playing in the Zimbabwean economy, Tevera and Chikanda (2009) did a migration and remittances survey and found that on average, a migrant sends R 2 759 per annum. They also found that in the SADC region, the largest remitters were in Botswana followed by Zambia and South Africa. Such a phenomenal rise in formal remittances could be just a tip of the iceberg as informal remittances could be several times higher than the reported figures over the 10 year period indicated on table 1.2. Hence, Orozco and Lindley (2007) estimated that in 2005 alone USD 1.3 billion were remitted to Zimbabwe through both formal and informal channels. A study by Magunha et al (2009) weigh in suggesting that 81.7 percent of Zimbabweans living in England remitted an estimated US$0.94 billion to Zimbabwe in 2007 alone. The same study shows that cash remitted was 60.2 percent for food, 41.9 percent for medicines and 52.6 for school fees. Also, Bracking and Sachikonye (2009) found out that 24.6 percent of migrant remitters were in the UK and 22.7 percent in South Africa, with the low density Harare suburbs receiving 62 percent of the primary senders ordinarily resident in the UK. This shows that Zimbabwe has been receiving reasonably higher amounts of remittances which if invested could contribute significantly towards growth in GDP and eventually reduce poverty. There is therefore need for coordination in the mobilization of remittances as well as in their use so that they can be invested in areas of the economy where they trigger sustainable economic growth and ultimately reduce poverty levels in the economy.

**Poverty Levels in Zimbabwe**

In Zimbabwe poverty is mainly a rural phenomenon most prevalent in Matabeleland North province (85.7 %) and least prevalent in Harare (36.4 %) and Bulawayo (37.2 %) as shown on Table 1.3 (ZIMSTAT, 2015). On average, the poverty prevalence rate at 65 percent is very high, hence the need to come up with strategies to reduce it to acceptable low levels. Interestingly, the poorest provinces of Matabeleland North and South and Manicaland receive...
most of the cross-border remittances from South Africa and Botswana (Orozco & Lindley, 2007). Therefore, this study posits that remittances could be used as a poverty reduction measure in these provinces and eventually in Zimbabwe as a whole.

Table 1.3: Poverty Prevalence in Zimbabwe by Provinces

<table>
<thead>
<tr>
<th>Province</th>
<th>Poverty Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulawayo</td>
<td>37.2</td>
</tr>
<tr>
<td>Manicaland</td>
<td>71.8</td>
</tr>
<tr>
<td>Mashonaland Central</td>
<td>75.6</td>
</tr>
<tr>
<td>Mashonaland East</td>
<td>67.3</td>
</tr>
<tr>
<td>Mashonaland West</td>
<td>73.3</td>
</tr>
<tr>
<td>Matabeleland North</td>
<td>85.7</td>
</tr>
<tr>
<td>Matabeleland South</td>
<td>73.6</td>
</tr>
<tr>
<td>Midlands</td>
<td>68.7</td>
</tr>
<tr>
<td>Masvingo</td>
<td>65.7</td>
</tr>
<tr>
<td>Harare</td>
<td>36.4</td>
</tr>
</tbody>
</table>

Source: ZIMSTAT, Poverty Atlas, 2015

Statement of the problem

For a decade now, Zimbabwe had been experiencing the worst economic crisis in its recent history which witnessed an estimated 4 million Zimbabweans settling in countries in the region and overseas (Pasura, 2008). The livelihood of the remaining Zimbabweans during the crisis and up to now implies an external source of income as there is a huge discrepancy between earnings and the poverty statistics such datum line.

The countercyclical nature of remittances is particularly important to Zimbabwe, where variations in climatic conditions have a marked bearing on economic growth. As Quarterly and Blankson (2004) found for Ghana, the counter-cyclical nature of remittances smoothens household consumption and welfare overtime. As most of these remittances are directed to households, it would be very interesting to evaluate their impact on poverty in Zimbabwe. More so and given that in some African countries like Lesotho and Liberia remittances contribute over 20 percent of the GDP, Zimbabwe should put up strategies to increase remittance flows through the formal channel so that they can contribute more meaningfully to economic growth and eventual poverty reduction (Word Bank, 2015a). Also, the income disparity between the urban and rural populations is too high in Zimbabwe as shown by statistics on poverty under Table 1.3 and remittances could be used to bridge the gap.

Thus, the motivation of this study issues out from the fact that remittances have evidently rejuvenated the economies of countries that were at one time in similar circumstances to Zimbabwe. Countries whose economies have been largely shaped by remittances include Ethiopia in Africa and Mexico in South America, among others. Despite the sustained increase in formal remittances there has been little effort to analyze its empirical effect on poverty reduction in Zimbabwe. In fact, notwithstanding that remittances have evolved to become a vital source of income with crucial income smoothing effect and contribution to standards of living, its impact in Zimbabwe has not been fully established. Thus, because of low understanding of the impact of remittances on poverty in Zimbabwe, remittances have remained somewhat mismanaged. Consequently, this makes it an inescapable imperative that the impact of remittances in Zimbabwe be investigated.

Objectives of the study
The major objective of this study is to investigate the impact of remittances on poverty in Zimbabwe.

Specific objectives are:

- To establish an econometric relationship between remittances and poverty
- To find out how economic growth (as measured by per capita GDP) affects poverty
- To establish the effect of income inequality (as captured by the Gini coefficient) on poverty

Statement of hypothesis

\( H_0 \): Remittances have a role to play in poverty reduction.

\( H_1 \): Remittances have no role to play in poverty reduction.

Significance of the study

Existing studies on remittances in Zimbabwe are mainly of a qualitative nature concentrating on the uses of remittances. These studies confirm that remittances were mainly used for consumption purposes (Maphosa, 2004 and Bracking and Sachikonye, 2006). There has been no attempt to statistically test the impact of remittances on poverty in Zimbabwe. This study therefore seeks to establish the direct impact of remittances on poverty in Zimbabwe using an econometric approach with a view to recommending ways on improving remittance inflows into the economy. Also, several microeconomic studies like those of Maphosa (2004) and Tevera and Chikanda (2009) have indicated that remittances play an insurance role for migrant’s families, but no analysis studied the poverty reduction role of remittances at the macroeconomic level.

Therefore, this study provides an insight to policy makers on the impact of remittances on poverty levels in Zimbabwe. The study will avail evidence on the effect of remittances on poverty hence providing information for policy formulation. This study stands to benefit Zimbabwe as a whole by foregrounding ways to increase formal remittance inflows into the economy thereby stimulating economic growth via the consumption and savings channels. The study will also make policy makers understand the importance of remittances in the reduction of poverty. More so, the study will add literature to the ongoing intense debate on the impact of remittances on poverty reduction in developing countries such as Zimbabwe.

Theoretical Literature Review

Several theories have been developed to link migration to remittances and development but they are extensions or variants of the push-pull theory developed by Ravenstein (1889). These include the neoclassical economic theory (Sjaastad 1962; Todaro 1969) and the historical/structural theory of Sassen (1988), among others. Theories on remittances are closely linked to theories on migration and are anchored on the bedrock of two schools of thought, the optimistic and pessimistic views as put forward by De Haas (2008).

Migration Optimists

The migration optimists believe that migration has had a positive impact on the development process in sending societies, as it can generate counter-flows of capital in the form of remittances and investment as well as knowledge, which can be invested to stimulate development and modernization. According to Englama (2009) this school of thought argues that remittances are positive to the receiving households and countries as they could alleviate poverty and promote economic development as well as ease pressure on governments faced with large external debts. Thus, remittances could alter the fortunes of Zimbabwe for the
better, substituting official development assistance which is currently very low due to the negative perceptions the country is receiving from the traditional donor countries. One of the theories from migration optimists is the equilibrium model of migration.

The Equilibrium Model of Migration
In the neo-classical economic theory on population movement is conceptualized as the geographical mobility of workers in response to imbalances in the distribution of land, labour, capital and natural resources (Sjaastad 1962; Todaro 1969). The differences in the distribution of factors of production determines the unequal returns to each factor thereby influencing the direction and magnitude of migration streams. The neo-classical approach to international migration is based on the premises of wage differentials between receiving and sending areas, as well as on the migrant’s expectation for higher and stable earnings in the host country (Todaro, 1969).

By redistributing human capital from places of low productivity to places of high productivity, migration stimulates development. The remittances of migrant labourers are viewed as instrumental in correcting balance of payments as well as motivating savings and investment in countries of origin. On return, repatriates serve as agents of change by applying the ideas and skills acquired abroad to establish farms, businesses and other enterprises conducive to development.

According to the equilibrium model, the international movement of labour is expected to lead to a gradual convergence in the levels of economic growth and social well-being and thereby contributing to optimal allocation of production factors for the benefit of all. This process of factor equalization leads to cessation of migration once the wage levels are equal (De Haas, 2007).

Several studies in support the developmental and poverty reduction role of remittances especially for developing countries like Zimbabwe have been carried out. Brown and Jimenezi (2008) have estimated the impact of remittances on poverty in Fiji and Tonga where they found cessation of remittances to increase the poverty index from 34.1 percent to 42.9 percent for Fiji. Biyase (2012) found similar results for South Africa where removing remittances would increase the poverty index from 47.7 percent to 67 percent.

With regards to easing pressure governments faced with large external debts by providing foreign exchange, Guliano and Arranz (2005) study found that remittances improve credit constraints on the national budget. Thus, to the extent that they represent a stable and large source of foreign currency, remittances have been shown to help correct current account deficits during periods of economic instability and thereby improving a country’s credit rating and facilitating the inflow of new investments (Amuedo-Dorrantes and Pozo, 2004).

The equilibrium model has tended to dominate the literature on migration by providing a formal theory of individual behavior. However, problems with neoclassical perspective relate to the equilibrium that is presumed to follow from geographical mobility of labour as well as the underlying causes of structural parameters within which individual decisions are made (Amin, 1974). Also, the approach relates to the actors and to their motivations for return which seem to be determined by financial or economic factors only, while providing little explanation of how remittances are used in home countries. Thus, for countries like Zimbabwe it could take several decades to establish the equilibrium level since it appears that most of the remittances sent from abroad are used for consumptive purposes such as
construction of houses, health and education. Hence, stimulation of savings and investment as propounded by the optimists is negligible for Zimbabwe, at least in the short-run.

**Migration Pessimists: Historical and Dependency Views**

Most migration pessimists tend to regard migration as a negative phenomenon leading further underdevelopment of sending societies through the ‘migrant syndrome’ which drains developing countries of their labour and human capital resources (Papademetriou, 1985). Conceptualizing their thinking around brain-drain, these theorists viewed migration as a means to increase spatial and inter-personal disparities in developmental levels as well as negative socio-cultural effects rather than as a vehicle for development (Adams, 1969). In sum, migration is believed to increase regional development inequalities between the developed and developing countries.

Migration pessimists argue that remittances are used for consumption and leads to a culture of dependency. They allege that recipients tend to choose more leisure as opposed to more work with some recipients virtually stop working and simply wait for remittances to come (Kapur and McHale, 2005). Inflation was also regarded as a result of migrant’s remittances by the pessimists due to increased consumption as remittances are believed to increase the appetite for foreign goods. They also increase the demand for non-tradable goods and generate real exchange rate appreciations (Dutch Disease) which in turn could hurt competitiveness and growth of a nation.

Furthermore, the structural perspective draws its inspiration from Max’s historical materialism. This perspective assumes that population movement can only be examined in the context of historical analysis of the broader structural transformations underway in a particular social formation. In this approach, migration is seen as a form of cultural domination. This paradigm leads to the hypothesis that international migration is especially likely between past colonial powers and their former colonies. This is because of cultural, linguistic, administrative, investment, transportation, and communication links that were established and which were allowed to develop during the colonial era. This partly explains why a large percentage of Zimbabwean migrants stay in the United Kingdom, the country’s former colonizer.

Reinforcing this thinking, Portes and Rumbaut (1996) place migration in a context of structural unbalancing of peripheral societies under the influence of core capitalist countries. Apart from historical causes, this kind of structural unbalancing may also be brought about by means of mass communication, which spreads information on Western style and shapes consumption expectations in the cultural periphery societies.

In addition, given that remittances enter recipient countries through household transfers which are not taxed directly, they have an indirect impact on fiscal policy by expanding the indirect tax base through consumption-based taxation (Chami et al, 2006). This, they further argue allowed governments to incur additional expenditures and carry more debt. Thus, Chami et al (2012) note that by enabling governments to carry more debt without clearly showing the full cost of government actions, remittances could damage the quality of government institutions in receiving countries. Furthermore, Chami et al (2012) found that by increasing government expenditure, remittances could enable governments to appropriate more resources and allocate them to those in power rather than invest in national development. Therefore, a moral hazard could arise because of the risk of government corruption.
The prevailing situation in Zimbabwe where most of the diaspora are spending billions of dollars in the construction of houses is a testimony to this theory. This, in Zimbabwe has led to the creation of dead capital in the form of brick and mortar (houses). The houses so constructed just lock up capital that is supposed to be invested in the vibrant sectors of manufacturing and agriculture, where most of the growth is expected to come from.

The Pluralist Perspective

De Haas (2007) notes that the variation and complexity of real life migration-development-poverty reduction interaction is difficult to fit into deterministic schemes. This is so because there is no automatic mechanism by which international migration results in development and poverty reduction. Migration is typically not a desperate response to poverty and unemployment, but a deliberate attempt to spread income risks, improve social and economic status and hence, overcome local development constraints. Accordingly, migration is generally a response to relative rather than absolute poverty and thus, a survival or coping strategy (de Haas, 2007). The pluralist perspective is clearly outlined in the New Economics for Labour Migration (NELM).

The New Economics of Labour Migration (NELM) and Livelihood Approaches

Pioneered by Stark and Bloom (1985) the theory models migration as the risk-sharing behavior of households. It emerged as a neutralizer of neo-classical theory and the structuralist theory that appears to be too rigid to deal with the complex realities of migration-development–poverty reduction interactions. Individuals and households are able to diversify resources such as labour in order to minimize income risks. Thus, family members are stated to implicitly enter into a co-insurance agreement where the family invests in members to allow them to migrate and obtain a return on this investment from the migrants through repayment of the costs incurred.

NELM views return migration as the logical outcome of a calculated strategy, defined at the level of the migrant’s household, and resulting from the successful achievement of goals. In fact, as Stark (1991) argues, NELM approach diverts the focus of migration theory from individual dependence to mutual interdependence. Remittances are part and parcel of an overall strategy aimed at diversifying the resources of the household with a view to compensating for the risks linked to the absence of an efficient insurance markets in home countries. NELM contends that people move on a temporary basis to achieve their goals, hence return migration is viewed as a success story, if not a logical outcome. NELM also suggests that the poorest do not have access to migration opportunities because of their lower risk-taking capacity. Thus, in the pluralist views on migration and development, the question is not whether migration has a positive or negative impact on development and poverty reduction but why its effects varies from one community to another (Ghosh, 1992). In this regard, the weakness of the NELM approach pertains to its treating of migrants as foreign-income bearer or mere financial intermediaries.

In the same vein and while Carling (2004) shares the same sentiments with NELM he recognizes that the way remittances are used determine whether they contribute to development or not. For instance, if remittances are spent on consumption, then future expenditure have to be financed by future remittances or other sources of income leading to a vicious cycle of poverty difficult to escape from. However, if remittances are invested or saved in financial institutions they would lead to development and finance future
consumption as well. Invested or saved remittances would consequently have a multiplier effect and thus leading to sustainable development and eventually a reduction in poverty levels. An important means of reducing the riskiness of income streams that is available to the poor households is income diversification, and Ellis (2003) points out that migration is one of the main mechanisms open to poor households to diversify income in this manner.

A number of studies have been carried out in support of this theory. These studies, which include that by Ratha et al (2009) assert that migration enables remittance-receiving households to diversify their income sources, and by so doing reduces household vulnerability to external shocks. In addition Ratha et al (2009) also found that remittance-receiving households in Ethiopia are less likely to sell their productive assets such as cattle to cope with food shortages when faced with external shocks. In the same vein, household surveys conducted in the Senegal River Valley found that remittances serve as an intra-household risk diversification strategy that support household consumption against adverse external shocks (Azam and Gabert, 2005).

The NELM theory is very applicable to Zimbabwe as it provides explanation as to why most Zimbabweans have migrated from the country, providing reasons such as imperfect markets brought about by the economic meltdown over the last decade as well as the need to diversify sources of income. Also, its assertion that the poorest in society do not have capacity to migrate is true for Zimbabwe given that most migrants are from the middle income to higher income groups of society. Again whenever the poorest got an opportunity to migrate they do not follow formal routes but become border-jumpers who work in farms of South Africa and Botswana where they are paid very low wages such that they cannot remit.

Theories on Motives to Remit

The theoretical debate about the determinants of remittances were triggered by Lucas and Stark (1985) with their pioneering paper: “Motivation to remit: Evidence from Botswana”, which is still the basis of the current discussions and extensions. Lucas and Stark (1985) studied remittances on household level and suggested that the main determinants to be “pure altruism”, “pure self-interest” and “tempered altruism or enlightened self-interest”. The works of Lucas and Stark were then followed by wide range of theories and studies by other scholars investigating the motivations to remit and these are discussed below.

**Theory of Pure Altruism**

According to Lucas and Stark (1985) remittances are sent to the family left behind due to altruistic feelings of the migrant. Cox et al, (1998) also concur with this view arguing that the migrants remit money simply because they care about the well-being of the family members by providing them with additional income. Further, migrants remit because they derive positive utility from the consumption of the family. Thus, migration and remittances are considered to be part of household resource arrangement to maximize household utility especially through investment as Ahlburg and Brown (1998) put it. As such, households send the migrants to finance investment by the remittance, or allocate the household member in the place where the income shocks are not positively correlated to reduce vulnerability to risks. In this case there is a positive relationship between adverse conditions of the receiving households and remittances sent as illustrated under Table 2.1 below. Therefore, remittances should increase with migrant income, especially permanent income and thus conforming to the Milton Friedman 1957 Permanent Income Hypothesis. Thus, in a pure altruistic model, remittances tend to increase
at any time the income of the potential remitter’s income increases, unless the potential remitter’s income is very low and probably below subsistence level.

Table 2.1: Theoretical Determinants of Remittances

<table>
<thead>
<tr>
<th>Effect of … on level of remittances</th>
<th>Household income</th>
<th>Migrant income</th>
<th>Household shock</th>
<th>Migrant risk level</th>
<th>Education level of migrant</th>
<th>Intent to return</th>
<th>No. of migrant in HH</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure altruism</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pure self-interest</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Co-insurance</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
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Theory of Informal Contracts of Insurance or Tempered Altruism

A less extreme view of the motivations to remit is tempered altruism. In this case the migrant and the family at home mutually benefit from migration, through some kind of implicit contractual agreement. The contractual arrangements include co-insurance, loan repayment and exchange of services. Another type of contractual agreement between the migrant and the family is loan repayment that includes repaying for the human capital investment or the cost of migration. Poirine (1997) argues that migrants remit to pay off the debts incurred when they were preparing to emigrate. These debts can be in the form of education costs, air tickets and other forms of benefits received in the past. Carling (2004) found out that migrant workers enter into contractual insurance agreements with household members back home and send remittances when households experience shocks. At the same time, households support migrants by, for example paying the costs of migration or supporting the migrant during periods of unemployment.

As shown on Figure 2, when the migrant is able to find a better paying job abroad due to education acquired he or she will send remittances to repay the family for the initial investment. At this stage the migrant might also become a lender, by financing other migrant family members which increases overall remittances. This is illustrated by the U-shaped time profile of remittances shown under Figure 2 below. In this case, the family contract has the aim of increasing income instead of reducing uncertainty.

Figure 2: Remittance Profile
The final contractual arrangement is the exchange motive (Cox, 1987). Here transfers in the wider sense are paid to the household at home for services provided such as childcare. According to this theory, a rise in migrant’s income leads to an increase in remittances. Brenheim et al (1986) state that migrants remit in exchange for services from their families such as taking care of their children, assets and livestock among other concerns.

**The Theory of Self-Interest or Inheritance Motive**

Self-interest is also a motivation to remit. Osili (2007) states that migrants sent remittances to maintain or increase their inheritance portion through good behavior that takes the form of remittances. The migrant wants to demonstrate acceptable behavior as an investment for the future on return home. According to this theory, remittances increase the household’s assets and income, the probability of inheriting which is however dependent on the age of parents and the number of siblings, the migrant’s wealth and income. Studies in support of this theory include that of Adams and Page (2003) who found that migrants remit in order to enhance their social status or keep a connection with parents in the hope of inheriting their wealth. Also Lucas and Stark (1985) in examining the households in Botswana found that remittances are positively associated with wealth of the family left home.

**Portfolio Diversification Theory**

According to this theory, the decision to remit is sometimes influenced by the offer of a risk return option to be weighed against local sources of income (Englama, 2009). One of the determinants of the return is the rate of interest that the remitter will receive on funds such as positive real interests. Consideration for interest rate differential on comparable deposit account offered in host and home countries, black market exchange premium, the return on real estate in the home country, inflation rates and other returns will thus influence the decision as whether to remit or not.
Thus, to the extent that remittances affect household portfolio of assets, they facilitate paths from poverty as the accumulation of such assets plays a role in determining which households are able to escape poverty. These assets include human capital, physical capital, financial capital, natural capital and social capital. A large part of the reason that such asset accumulation is important is that holding more assets allows households to derive income from a wider range of sources and thus diversifying their income streams and reducing their overall risk. More income streams may also translate into a higher absolute level of income and more substantial holdings of assets such as land, livestock, education levels, access to better roads and better rainfall, and amount of male labour in the household all seem to improve the ability of the household to leave poverty.

Ellis (2003) spells out the link between asset accumulation, poverty reduction, migration and remittances and avers that the higher the level and the more diverse the assets owned by the household, the greater its capacity to manage risk and cope with shocks, that is less vulnerable it is. A number of studies have found evidence to confirm this relationship between the receipt of remittances and the accumulation of assets which can help households to leave poverty.

For instance, in Mexico and El Salvador, the receipt of remittances has found to improve school attendance levels, reduce likelihood of children leaving school and improve child literacy rates (Ellis, 2003). In Malawi, Dinkelman and Mariotti (2016) found that children in areas where recruiting for South Africa Mines had taken place and remittances had been repatriated, had gained more years of schooling than those in districts without recruiting stations. Ellis (2003) cites studies which found that remittances had been used to undertake improvements in the quality of agricultural land, purchase agricultural inputs that improve outputs and invest in agricultural equipment as well as fund education. Rapoport and Docquier (2005) cite multiple studies in Tunisia, Turkey and Mexico which found that money saved by migrants is frequently invested in entrepreneurial activities on return to the home country. In many cases, access to financial services is poor and thus savings from remittances are the only available means of start-up capital. Crush et al (2010) found evidence of remittance funds establishing and sometimes supporting Spaza Shops, Shebeens and taxi business in Lesotho, as well as remittance earnings being used to establish micro-lending business.

### The Strategic Decision Theory

The strategic decision model, first explained by Stark (1995) and later by Stark and Wang (2002) stems from a strategic migration decision made because of wage differentials. Since high skilled migrants usually have a larger amount to gain by migrating, they are typically the first to go and then unskilled workers follow. As individual productivity is unobservable in the rich country, migrants are paid the average productivity of the group which they are identified with. For this reason, skilled workers may have an incentive to remit money home to keep unskilled workers in their home country, since migration of these workers may mean depressed wages for the skilled migrants (Docquier and Papport, 1998). Expanding on the works of Stark and Wang (2002), Adams et al (2005) found out that remittances increase with income and education of the migrant and with low income back home.

However, most of the studies that support theories on motivation to remit were carried out at household level hence the need to test the applicability of these theories at national level and for a developing country like Zimbabwe. Notwithstanding this inherent shortcoming of these
theories, they nevertheless provide an enduring and solid framework under which remittances and their impact on poverty could be studied.

**Classical or Developmentalist Theory (1950s-1960s)**
This theory states that large scale capital transfer and industrialization to poor countries would steer their economies towards rapid economic development and modernization. It argues that migration leads to a north-south transfer of investment capital and accelerates the exposure of traditional communities to liberal, rational and democratic ideas as well as modern knowledge and education. As such, developing countries should actively encourage emigration as it was instrumental to the promotion of national development. Further, migrants are viewed as agents of change, innovation and investors as they bring with them to their countries of origin new ideas, practices, identities and social capital. The evolution of Home Town Associations (HTAs) among the migrants to promote their individual or collective interests reinforces this theory. The HTAs have been responsible for several development projects in their home towns, for example, the Mexican HTAs have contributed immensely to infrastructure development in their country.

**Empirical Literature Review**
There have been a number of studies on the relationship between remittances and poverty. A number of empirical studies have also appraised the importance of remittances in reducing the impact of poverty at both micro and macroeconomic levels as reviewed next:

**Remittances and Poverty Reduction**
Several household studies have concluded that a country at the initial stage of receiving remittances has a high income gap. But subsequently the increase in income attributed to remittances overtime reduces the income gap and poverty levels. According to Ratha et al (2011) a lot of empirical literature abounds on how remittances reduce poverty. Remittances directly impact poverty by augmenting the income and consumption of poor remittance-receiving households. They also indirectly affect poverty and welfare in recipient countries through their multiplier and macroeconomic effects.

Using a cross-national level study, Adams and Page (2005) found that a 10 percent increase in per capita remittances leads to 3.5 percent decrease in the share of people living in poverty in the recipient countries. Studies based on household level data have also shown that poverty indices have been ameliorated through remittance inflows in Guatemala (Adams, 2004) and Mexico (Adams et al, 2005). Similarly, Yang and Martinez (2006) analyzed the impact of remittances on poverty using household surveys in Philippines and found remittances to have a negative relationship with poverty. Evidence for African countries also points to the poverty-reducing impact of remittances. Using household data from 1994-1995, Adams et al (2005) found remittances to reduce rural poverty in Burkina Faso by 7.2 percent and urban poverty by 3.2 percent. Adams (1991) looked at a sample of households in rural Egypt and found that the number of poor households decreases by 9.8 percent when international remittances are included in household income.

Cross-country macroeconomic evidence on the impact of remittances on poverty was more limited until the pioneering works by Adams and Page (2005) led to the building of a database on remittances, poverty and inequality that enabled researchers to examine the remittances-poverty nexus in developing countries. Thus, macroeconomic studies of Spatafora (2005) and more recent one by Gupta et al (2009) also confirm the positive role
played by migrant remittances on poverty reduction. Similar results have been obtained by country case studies such as that of Adams (1991) for Egypt and Gustafsson & Makonnen (1993) in Lesotho. These studies have found an estimated elasticity of remittances on poverty that varies between -1.5 and -3.5.

As has been shown in the preceding paragraphs, a number of empirical studies have shown the ability of remittances to reduce poverty levels in other African countries but little has been done to establish this relationship for Zimbabwe. Hence, this study will attempt to establish the relationship between remittances and poverty in Zimbabwe. Such information is critical in determining strategies that could be applied in improving remittance levels as well as in reducing poverty in the country.

**Remittances and Income Distribution**
The impact of remittances on income inequality in Zimbabwe is still uncertain. A number of studies suggest that remittances increase income inequality hence increases the incidence of poverty. Stahl (1982) found that remittances increase inequality in Nicaragua. Similarly, Docquier and Rapoprt (2003) found that in India, remittances increase inequality in rural areas while Ahlburg (1996) found remittances to reducing inequality in Tonga.

The impact of remittances on inequality ultimately depends on where those who migrate or remit are situated in the distribution of income. If migration is more prevalent among individuals from poor segments of the population, remittances are likely to be inequality decreasing as typically poorer families will receive the additional income. This is the case with the remote parts of Manicaland, Masvingo and Matabeleland provinces of Zimbabwe where remittances mostly from migrants in South Africa and Botswana have had an income inequality-reducing effect. Poor families in these provinces of Zimbabwe have had their standard of living improved due to remittances from family members working in South Africa and Botswana.

Alternatively, if migration is more prevalent among individuals from richer segments of the population as has been the case with international migration to the United Kingdom (UK), the United States of America (USA), Canada, Australia and New Zealand, remittances are likely to increase income inequality as comparatively richer households will benefit from them. Bracking and Sachikonye (2007) found out that low density Harare suburbs enjoyed receipts from 62 percent of the primary senders identified as being resident in the UK.

Despite the growing importance of remittances as a source of finance for development and income for poverty alleviation, the high cost of sending remittances to and within Africa limit their impact on welfare outcomes. According the Word Bank (2013) the average costs of sending remittances to and within Africa was 11.5%, compared with a global average cost of 8.9%. This seems to explain why migrants prefer informal channels when sending remittances. Formal channels are very expensive. It has become apparent from the foregoing discussion that the impact of remittances on income inequality is still shrouded in a veil and this study will attempt to establish the nature of relationship between the two variables.

**Economic growth and Poverty**
The perennial problem of poverty in the developing world has led many to question the efficacy of economic growth and development as a means to reduce poverty. However, most economists believe that economic growth benefits nearly all citizens and thus reduces poverty (Roemer and Guderty, 1997). The extent these benefits are realized by various groups in the
society will be reflected in changes in the distribution of income. Two arguments are often made against the proposition that economic growth reduces poverty. The first is loosely based on the “Kuznets” hypothesis put forward by economist Simon Kuznets in 1995. Kuznets hypothesized that as national income grew, the distribution of income would initially become more unequal, as higher-income individuals benefitted relatively more from economic growth than lower-income groups (Roemer and Gugerty, 1997).

Second, the obvious depth and persistence of poverty has created doubts, especially among development professionals working directly with the poor in developing countries, about the ability of economic growth to reduce poverty levels. In addition, stabilization and structural adjustment measures that are prescribed to promote growth are widely perceived to deepen poverty, particularly in the short run, casting further doubt on the wisdom of attacking poverty through faster growth. This study contends that while there is little direct evidence on the relationship between structural adjustment and poverty alleviation, the policies promoted by structural adjustment, namely openness to the world economy and sound macroeconomic management, do tend to reduce poverty through their effects on growth.

As such, the extent to which a given rate of growth affects poverty depends upon many factors, but particularly on economic structure and policies (Roemer and Gugerty, 1997). They further assert that growth is more likely to lead directly to a reduction in poverty when economic assets of a country are distributed relatively equal or when economic growth is based on the intensive employment of abundant factors of production, which for most countries is labour. In largely rural economies based on small-scale farming, as in many African countries like Zimbabwe, most of the poor are engaged in agriculture. When such a country grows through agricultural exports, or when growth in manufacturing increases the demand for food and materials supplied by the rural sector, growth benefits both the poor farmers and the even poorer laborers they employ.

In contrast, mineral-rich economies typically have very concentrated income distributions, the country’s wealth is in very few hands. Thus, when growth comes from mineral exports, the market mechanisms that would involve the lower income in that growth are weak. The best means for poverty reduction in such countries may involve government programmes to channel mineral revenues to the poor through education, health and rural works and activities that would attract private players. The ongoing community ownership schemes such as Chegutu-Mhondoro-Zvimba Community Ownership Scheme established around platinum mining is a very good example. This scheme has established health centres, schools and even constructed roads that are benefitting the community.

For instance, using the Deininger-Squire data set covering 26 developing countries Roemer and Gugerty (1997) found that an increase in the rate of per capita GDP growth translates into a one-to-one increase in average income of the poorest 40% of the population. In other words, GDP growth of 10 percent per year is associated with income growth of 10 percent for the poorest 40 percent of the population. In their celebrated growth and poverty model, Ravallion and Chen (1995) also found that 10 percent growth in sample income of 64 countries reduces the number of people living below the poverty line by 9.9 percent with the poverty line defined as 75 percent of mean sample income. They also found that a 10 percent rise in sample income reduces poverty by 17.6 percent for this sample with the poverty line defined as the international standard of only $1 per day.
The study will adopt the Ravallion-Chen growth model to establish the relationship between economic growth and poverty in Zimbabwe. The model will be modified by including remittances, income inequality, inflation, literacy rate and unemployment.

Unemployment and Poverty
According to Gregory and Sheehan (1998) unemployment is regarded as a major cause of primary or income poverty. It was also found that poverty increased sharply with the duration of unemployment, rising from 13 percent for those unemployed less than 8 weeks to 80 percent for those unemployed for more than a year (Gregory and Sheehan, 1998). It is important to recognize that while poverty is generally measured using income which is a flow variable, normally measured on an annual basis in poverty studies, unemployment is a stock variable that records labour force status at a point in time. It is thus possible to be unemployed at the time at which one is interviewed by the researchers like ZIMSTAT in their household income surveys, but to be employed for some part of the year, and thus have annual income sufficient to take one above the poverty line.

In addition, the unit of analysis used to determine labour force status is the individual, whereas poverty research focuses on the incomes of income units or households, who are assumed to share resources including income for the benefit of all members. Thus an individual can have a low or zero income and still not poor, as long as other members of the family unit have an income which, when shared is sufficient to raise the family above the poverty line. In view of the high unemployment rates the country has experienced over time, it would be interesting to find how the unemployment variable behaves as it relates to poverty.

Inflation and Poverty
Economists hold diverse opinions about the impact and consequences of inflation on people’s well-being. Easterly and Fischer (2001) confirmed that inflation concerns the poor more than the rich. Using polling data for 31 869 households in 38 countries and allowing for the country effects, they found evidence supporting the view that inflation reduces the relative income of the poor. Similar concerns have been expressed for developing countries as well. Ravallion (1998) and Braumann (2004) find that there is a positive correlation between inflation and poverty. Chaudhry and Chaudhry (2008) found that food price inflation increases poverty in Pakistan. While there are studies supporting the view that there is a positive relationship between inflation and poverty, there are studies which negate the view as well. For instance, Blank and Blinder (1985) found no such relationship between inflation and poverty. Cutler and Katz (1991) in contrast, found that an increase in inflation reduces the poverty rate in the United States. Romer and Romer (1998) found that, under certain conditions, there is a negative relationship between inflation and poverty. It would be interesting through this study to find out whether the relationship between inflation and poverty is positive or negative.

Literacy Rate and Poverty
Higher literacy can boost the economic and financial success of individuals and the economy as a whole. It can reduce poverty, improve health, lift community engagement and lead to a higher standard of living. Statistics Canada (2012) confirms that literacy skill level and household income are positively correlated. Literacy is measured on a scale of 0 to 5, with 5 being the highest level and 3 being roughly high school equivalency. In an information-based economy, people who struggle with literacy have a hard time getting a job or making more than a minimum wage. Likewise literacy and numerous skills are associated with greater
employment levels and higher earnings. Similarly, adults with higher level of literacy and education make more money. For instance, Statistics Canada (2012) found that household income for those with literacy level 4 or 5 is 70 percent higher than for those with literacy level below 1 or below, and 33 percent higher than those with literacy level 2.

Thus, when parents have less than a high school education, they are more likely to live at or below the poverty line. Living in poverty has a huge impact on the lives of the young as it hinders them from attaining requisite literacy level to get out of poverty, hence a vicious cycle occurs.

**Gap analysis**

There is great need for this study to be done in Zimbabwe because factors that hold on stable economies cannot do so in Zimbabwe. It should be noted that most of the above studies were done outside Africa and some in developed countries and very few these researches were done in Zimbabwe hence the decided to fill in that gap. Despite the rising importance of remittances, there has been limited empirical studies on micro and macroeconomic impact of remittances in Zimbabwe, which is the purpose of this study. Moreover, studies analyzing the impact of cross-border remittances have predominantly focused on developing countries in West Africa and a few countries in the SADC. Again, very limited empirical studies examine the impact of cross-border remittances to Zimbabwe, for example, Maphosa (2004) and Bracking and Sachikonye (2006). Most empirical studies examine the impact of domestic remittances at the household and community level, for example, Tevera and Chikanda, (2009) and Magunha *et al* (2009).

Furthermore, in some instances, policy differentiations, the time when the researches were undertaken, the methodology and places where the above researches were done as well as the level of development of places of study influences the findings. A gap is created hence the need for this study. The study therefore seeks to fill the gap in the literature by analyzing the impact of cross-border remittances on poverty in Zimbabwe. There also realized the need for proper understanding of the significance of macroeconomics and political climate on migrant’s decision to remit especially through the formal channel as well as to embark on big investments in the country of origin. More knowledge is required on changes required in poor countries or in countries with uncertain economic and political environments like Zimbabwe that would enable remittances to be put to effective use. The study will therefore attempt to fill these gaps and recommend appropriate measures Government can put in place to attract more organized remittances through Home Town Associations (HTAs) and similar associations towards infrastructure development.

**Theoretical model**

In order to develop a relationship between remittances and poverty, the study adopted the theory of pure altruism with the developmentalist theory as its anchorage. The study chose pure altruism as the most enduring reason why migrants remit. Pure altruism does not wane hence a continuous flow of remittances is assured and the impact on poverty could be profound. According to Lucas and Stark (1985) remittances are sent to the family left behind due to altruistic feelings of the migrant. Funkhouser (1995) also concur with this view arguing that the migrants remit money simply because they care about the well-being of the family members by providing them with additional income.
Further, migrants remit because they derive positive utility from the consumption of the family. In this case there is a positive relationship between adverse conditions of the receiving households and remittances sent. Therefore, remittances should increase with migrant income, especially permanent income and thus conforming to the Milton Friedman 1957 Permanent Income Hypothesis. Thus, in a pure altruistic model, remittances tend to increase at any time the income of the potential remitter’s income increases, unless the potential remitter’s income is very low and probably below subsistence level.

In addition the study found the Classical or developmentalist theory very useful in explaining the relationship between remittances and poverty as it argues that migration leads to a north-south transfer of investment capital and accelerates the exposure of traditional communities to liberal, rational and democratic ideas as well as modern knowledge and education. Further, migrants are viewed as agents of change, innovation and investors as they bring with them to their countries of origin new ideas, practices, identities and social capital the net effect of which would be poverty reduction.

According to economic theory a sustained increase in remittances would eventually lead to a reduction in poverty levels through the savings-investment and consumption channels. Thus remittances contribute to an increase in income, some of which could be consumed and stimulate production hence economic growth and resultantly poverty alleviation. On the other hand, remittances could lead to savings and investment that would compound to an increase in GDP per capita and finally a reduction in poverty levels. Pure altruism reduces income inequalities as it is based on love and care for one’s family members hence every household with a migrant who remits has the potential to have improved living standards.

This is depicted as follows:

\[
\uparrow \text{Remittances} \Rightarrow \uparrow \text{Savings} \Rightarrow \uparrow \text{Investment} \Rightarrow \uparrow \text{GDP per Capita} \Rightarrow \downarrow \text{Poverty}
\]

Or,

\[
\uparrow \text{Remittances} \Rightarrow \uparrow \text{GDP per Capita} \Rightarrow \uparrow \text{Consumption} \Rightarrow \uparrow \text{Standards of Living} \Rightarrow \downarrow \text{Poverty}
\]

This can be shown as:

\[P= f (\text{GDP per Capita, Gini.}) \] \[\ldots (3.1)\]

Where P is Poverty level, GDP per capita is Income and Gini is the distribution of this income (Ravallion and Chen, 1995)

**Empirical model**

One of the methodological issues important for analysis is how to determine the role of remittances on household consumption. In the given review of empirical literature, there are two possible methodological treatments of remittances. The first method involves treating remittances as a potential substitute of earnings emigrants would realize if they stayed in the home country, while in the second phase the remittances represent exogenous transfer of money.

If remittances are treated as a substitute for domestic earnings, effects of remittances on poverty would be estimated by generating counterfactual household consumption with an absence of migration and remittances. In that case a hypothetical question would be: what would be the level of household consumption be if emigrants of such households stayed and worked in the home country Pekovic (2017). If remittances are treated as exogenous transfer of money, there is a question of what would be the poverty level if those households did not receive remittances. Household consumption simply decreases for an amount of remittances.
The study chose the second method whereby remittances are treated as exogenous transfers because it provides a simplified picture of the remittances’ impact on poverty. This method of research was also used by Adams (2004, 2006), Olowa et al (2013) and Sobrevinas (2013). Thus, following the empirical studies on direct impact remittances have on poverty by Adams and Page (2003), Ravallion (1997), Gupta et al (2009) and Gaaliche and Zanyati (2015) the study extends the basic Ravallion and Chen growth-poverty model to include GDP per capita income, Gini coefficient, remittances, literacy rate, unemployment and inflation. Thus, from the mathematical model proposed above, the study constructs the household per capita consumption as a function of the per capita GDP, the distribution of this income or the Gini index, remittances, literacy rate, unemployment and inflation. According to Adams and Page (2005), the Household per capita consumption depends arithmetically on inequality and the level of income. Inequality affects poverty levels by hampering growth and by reducing the marginal impact of growth on poverty abatement (Ravallion, 1998).

Then following Adams and Page (2005) and Pattillo et al (2009), the study expresses poverty as a function of mean income per capita, a variable of income distribution (the Gini Index), and workers remittances per capita, literacy rate, unemployment rate and inflation rate.

The following empirical model is therefore suggested and estimated:

\[ Pov_t = \alpha + \beta_1 PCRGDP_t + \beta_2 GI_t + \beta_3 REM_t + \beta_4 UNEM_t + \beta_5 INF_t + \beta_6 Litrate_t + U_t \]  

Where:
- \( Pov \) is a measure of poverty proxied by Household per Capita Consumption in Zimbabwe at time \( t \),
- \( \alpha \) represents captured fixed effects,
- \( \beta_1 \) is the growth elasticity of poverty with respect to per capita income \( PCRGDP \),
- \( \beta_2 \) is the elasticity of poverty with respect to GI, that is the Gini coefficient/index,
- \( \beta_3 \) is the elasticity of poverty with respect to remittances, \( REM \), expressed as remittances per capita.
- \( \beta_4 \) is the elasticity of poverty with respect to unemployment, \( UNEM \), expressed as a percentage.
- \( \beta_5 \) is the elasticity of poverty with respect to inflation, \( INF \), expressed as a percentage.
- \( \beta_6 \) is the elasticity of poverty with respect to literacy rate, \( Litrate \), expressed as a percentage.
- \( U \) is the usual error term capturing errors in the poverty measure used.

The study will only adopt one variable that is remittances and will also add per capita income in order to match with the theoretical framework. For the research to be more robust, the study will also add Gini Index, unemployment, inflation and literacy rate as other explanatory variables. Thus equation (3.2) above identifies the impact of remittances on poverty after controlling for income per capita and other variables. The model is expressed in the log-log form. The appeal in using a log-log is that it enables the slope coefficients to be interpreted as elasticities (Gujarati, 1995). It also smoothens the data and reduces variability. The underlying model assumes that poverty is reduced as per capita income increases (Gupta et al, 2009). Therefore, \( \beta_1 \) is expected to be negative (\( \beta_1 < 0 \))

The specification of the model adopted for this investigation is implicitly stated as follows:

\[ \text{LogPov}_t = \alpha + \beta_1 \text{LogPCRGDP}_t + \beta_2 \text{LogGI}_t + \beta_3 \text{LogREM}_t + \beta_4 \text{LogUNEM}_t + \beta_5 \text{LogINF}_t + \beta_6 \text{LogLitrate}_t + U_t \]  

Where:
- \( \text{Log Pov} \) is the Poverty measure proxied by Household per Capita Consumption
- \( \text{Log PCGD} \) is the per capita GDP or income
Log GI is the Gini Index
Log Rem are the Remittances per capita received over the study period
Log UNEM is the Unemployment rate per year over the study period
Log INF is the Inflation rate per year over the study period
Log Litrate is the Literacy rate per year over the study period
μ is the stochastic disturbance term or error term
α is the intercept
β1, β2, β3, β4, β5 and β6 are the slopes of the regression equation.

Definition and Justification of Variables in the Model
The estimate of the specific and joined effects of remittances on poverty is based on time series data on Zimbabwe from 1980-2016.

The Dependent Variable
Household per capita Consumption
As a measure of poverty the study used the Household per capita consumption. It is the market value of all goods and services, including durable products (such as cars, washing machines, and home computers), purchased by households during one year, divided by the country's average (or mid-year) population for the same year. It excludes purchases of dwellings but includes imputed rent for owner-occupied dwellings. It also includes payments and fees to governments to obtain permits and licenses (World Bank, 2014). The variable was calculated by the researcher using the World Development Indicators (WDI) data. The study, like Pindiriri et al 2016) has chosen Consumption per Capita as a measure of poverty because it has the advantage of being easy to construct and understand. More so household consumption was chosen because previous studies such as that of Adams (2006) and Olowa et al (2013) showed that households averagely reported smaller income than consumption. The households are more willing to report consumption than their income. In addition, coverage of total income itself may present a problem because except for regular earnings, it includes other sources of income such as interest, dividends, rents, income of self-employment which the examinee may overlook or forget to report. Also, some sources of income are very hard to determine, for example, growth of value of animals or land used in agricultural production. Lastly, household consumption is relatively stable and less subject to short term fluctuations hence there is a larger possibility that monthly and eventually yearly consumption of the household will be representative in relation to income (Houghton and Khandker, 2009)

Control Variables
In order to control the impact of remittances on poverty, real per capita GDP and Gini coefficient were used.

GDP Per Capita
This is the average income measured by the GDP per capita expressed in constant USD with 2010 as the base year (WDI, 2017). Per capita real GDP is a measure of total output of a country that takes gross domestic product (GDP) and divides it by the number of people in the country. An increase in per capita real GDP will lead to an increase in consumption which leads to better standards of living hence a reduction in poverty. Per capita real GDP is expected to have a positive relationship with the household per capita consumption and ultimately a negative relationship with poverty, that is, the higher the level of per capita real GDP the lower would be the poverty levels.
Gini Index (GI)
The Gini Index measures the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution. Thus, a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality in the distribution of income (World Bank, 2015 a). The lower the index the higher the chances of having reduced poverty levels. A decrease in Gini Index will lead to an increase in household per capita consumption and eventually a decrease in poverty head count indicating a general decrease in poverty. Gini Index is expected to have a negative relationship with poverty.

Unemployment Rate (UNEM)
Unemployment is a phenomenon that occurs when a person who is actively searching for employment for the past four weeks is unable to find work (Zimstats, 2015). Unemployment is often used as a measure of the health of the economy. The most frequently used measure of unemployment is the unemployment rate, which is the number of unemployed people divided by the number of people in the labour force. According to Gregory and Sheehan (1998) unemployment is regarded as a major cause of primary or income poverty. It is expressed as a percentage and is expected to have a negative relationship with the poverty proxy, consumption per capita. Thus, the higher the unemployment levels the lower the consumption levels leading to increase in poverty.

Inflation Rate (INF)
Inflation refers to an overall increase in the Consumer Price Index (CPI), which is weighted average of prices for different goods. Annual inflation refers to the percentage change of the CPI compared to the same month of the previous year. Ravallion (1998) finds that there is a positive correlation between inflation and poverty. That is the higher the inflation the decrease in consumption per capita translating to more incidence of poverty. It is expected to have a negative relationship with the poverty proxy, consumption per capita.

Literacy Rate (LitRate)
Literacy rate is the total number of literate persons in a given age group, expressed as a percentage of the total population in that age group. It shows the accumulated achievement of primary education and literacy programmes in imparting basic skills to the population thereby enabling them to apply such skills to daily life and to continue learning and communicating using the written word. Literacy rate has been chosen because it represents a potential for further intellectual growth and contribution to economic-socio-cultural development of society hence help eradicating poverty. An increase in literacy rates should therefore bring about a decrease in poverty levels as reflected in some decrease in poverty head count. Higher literacy can boost the economic and financial success of individuals and the economy as a whole. It can improve health, lift community engagement and lead to a higher standard of leaving. Expectations are that poverty decreases as literacy rate increases, hence a negative relationship.

Interest Variable
Remittances (Rem)
The remittances variable is the result of the sum of compensation of employees, workers remittances and migrants’ transfers. This data set was obtained from the World Bank and obviously does not include the large amount of remittance monies which are sent through the unofficial channels. An increase in the level of remittances would imply an increase in the standard of living of the citizens, and an increase in the consumption level and investment in the economy leading to a decrease in poverty. Therefore, remittances’ variable is expected to have a negative relationship with poverty, that is, the higher the level of remittances, the lower would be the poverty levels.
Summary of Variables and their Expected Signs
Table 3.1 provides a Summary of variables and their expected signs after regression.

Table 3.1: Summary of Variables and their Expected Signs
Dependent Variable: Household Consumption per Capita (Poverty Proxy)

<table>
<thead>
<tr>
<th>INDEPENDENT VARIABLE</th>
<th>EXPECTED SIGN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remittances</td>
<td>Negative (-)</td>
</tr>
<tr>
<td>Literacy Rate</td>
<td>Negative (-)</td>
</tr>
<tr>
<td>Inflation Rate</td>
<td>Negative (-)</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>Negative (-)</td>
</tr>
<tr>
<td>Gini Index</td>
<td>Negative (-)</td>
</tr>
<tr>
<td>Per Capita GDP</td>
<td>Positive (+)</td>
</tr>
</tbody>
</table>

Source: Author’s Own Estimates from literature

Diagnostic Tests
The main aim of regression modelling and analysis is to develop a good predictive relationship between the dependent (Response) and Independent (Predictor) variables (Bresley et al, 1980). According to Draper and Smith (1998), regression diagnostics plays a vital role in finding and validating such relationship. For instance, they help in establishing whether the model is correctly specified and meaningful, the assumptions are reasonable and the sample data is sampled from a population that meets the assumptions.

Unit Root Test
A time series is said to be stationary if its mean, variance and auto-covariance at various lags remain the same no matter at what time we measure them (Gujarati 1995). The stationarity of a series can powerfully influence its behavior and properties. For instance, perseverance of shocks will be unlimited for non-stationary series. If the variables in the regression model are non-stationary, then it can be proved that the normal assumptions for asymptotic analysis will not be suitable. This is so because the standard t-ratios will not pursue a t-distribution and so the theory tests about the regression parameters cannot be authentically undertaken (Gujarati, 2004). According to Gujarati (2004), the Augmented Dickey Fuller (ADF) is therefore used to test for stationarity. If the ADF is greater than the critical values at 5% level of significance we can conclude that data is stationary, there is no unit root. If ADF is less than critical values then data is non stationary. The hypothesis that is to be tested is affirmed as:

\[ H_0: \text{The series is stationary hence no unit root} \]
\[ H_1: \text{The series is non-stationary hence there is a unit root} \]

The unit root tests are done using Ordinary Least Squares since the variables are differenced of the same order.

Autocorrelation
Autocorrelation arises when the covariance among different error terms are not identical to zero as posited by Draper and Smith (1998). When two or more successive error terms are linked, then the error term is subject to autocorrelation (Durbin et al, 1975). In the regression
situation, the classical linear regression model assumes that such autocorrelation does not exist in the disturbances. The classical model assumes that the disturbance term relating to any examination is not inclined by the disturbance term connecting to any observation. Gujarati (2009) postulated that, autocorrelation arises from the violation of the assumption of the independence of consecutive values of the disturbance term. The error term picks up the authority of those variables disturbing the reliant variables that have not been included in the model. Perseverance of the things of exuded variables is therefore a frequent cause of positive autocorrelation. Tests that are typically used to test for the survival of autocorrelation in a model are the graphical method, the Durbin Watson Test and the Breusch Godfrey test. The researcher is going to use both the Breusch Godfrey test and the Durbin Watson test. The hypothesis used will be as follows:

$H_0$: There is no autocorrelation
$H_1$: There is autocorrelation

**Multicollinearity**

Cook and Weisberg (1982) defined multicollinearity as the survival of a perfect linear connection among some explanatory variables of a regression model. It can also be a situation whereby the explanatory variables are highly inter-correlated. If the explanatory variables are extremely inter-correlated then it becomes tricky to separate the separate effects of each of the explanatory variables on the explained variable as postulated by Maddala (1993). This problem can also arise if some or all of the explanatory variables are extremely connected with one another that is, if the correlation matrix shows the value above 0.8 across two explanatory variables. It reveals itself through low t-ratios and high p values. This study will use the correlation matrix to test for multicollinearity. The hypothesis will be as follows:

$H_0$: There is no multicollinearity among explanatory variables
$H_1$: There is multicollinearity among explanatory variables

**Heteroskedasticity**

Gujarati (2004) postulated that heteroskedasticity arises when the errors do not have a constant variance across observations and it can also arise as a result of the existence of outliers. An outlier is an observation that is much different relative to the remarks in the sample as propounded by Gujarati (2004). The addition or elimination of such an observation, particularly if the sample size is small can significantly change the results of regression analysis. If the regression model is not correctly specified heteroskedasticity also arises. Heteroskedasticity may also be due to the absence of vital variables from the model. The presence of heteroskedasticity can be detected by using the Spearman Rank Correlation. Other tests are the graphical method and the Breusch-Pagan-Godfrey Heterskedasticity Test. This research will employ the Breusch-Pagan-Godfrey Heterskedasticity test to test for the existence of heteroskedasticity. The hypothesis to be used is as follows:

$H_0$: There is no heteroskedasticity
$H_1$: There is heteroskedasticity

**Misspecification**

A model is said to be misspecified if the important variables are omitted from the model or by choosing the wrong functional form as postulated by Gujarati (2004). The strength of interpreting the predictable regression will be highly dubious. In model misspecification errors we do not know what the true model was to begin with. Knowing the penalty of specification errors is one thing but finding out whether one has devoted such errors is quite another. Specification biases occur involuntary, perhaps from our inability to formulate the
model as exactly as possible because the original theory is weak. This could be because we do not have the correct kind of data to test the model. Davidson (1999) states that any hypothesis in economics always turns out to depend on additional assumptions necessary to specify a reasonable econometrical model, which may or may not be justified. Gujarati (2004) also states that once it is found that specification errors have been made the remedies often suggests them.

We look at some broad features of the results when determining model adequacy, such as the coefficient of determination value, estimated t ratios, signs of the estimated coefficients in relative to their prior opportunity and the Durbin–Watson statistic. This research will use the Durbin-Watson Statistic test to test for the specification of the whole model specification. The hypothesis will be as follows

Hₐ: The model is correctly specified
H₁: The model is not correctly specified

Estimation Procedure
This research will employ the Ordinary Least Squares (OLS) estimator to approximate the unknown parameters. This method gives the most excellent technique for the confirmation and status of parameters. It also provides quantitative estimation of the relationship amongst variables without much prejudiced judgment. According to Gujarati (2003), the simple classical regression model in its general form which is the general set contains simple and multiple regressions as corresponding subsets. This can be represented as:

\[ Y = \alpha + \sum \beta_i X_i + \mu \]  

Where \( Y \) is the dependent variable; \( X_1 + X_2 + X_3 + \ldots + X_k \) are \( k \) independent variables, \( \alpha \) and \( \beta \) are the regression coefficients, representing the parameters of the model for a specific population and \( \mu \) is the stochastic disturbance term which can be interpreted as resulting from the effect of unspecified independent variables and or a totally random element in the relationship specified.

Data Sources and Problems
This research used secondary data that were quantitative in nature and is much worried with modeling historical information to deduce answers to the research. The research used time series data for the period from 1980 to 2016. The remittances data were obtained from the IMF Balance of Payments Statistics Yearbook. Indeed, the IMF keeps annual records of the amount of worker remittances received by each labour-exporting country. However, the IMF only reports data on official worker remittance flows, that is, remittance monies which are transmitted through official banking channels. Since a large and unknown proportion of remittance monies is transmitted through private and unofficial channels, the level of remittances recorded by the IMF underestimates the actual flow of remittance monies returning to labour exporting countries.

The per capita income and consumption data were obtained from the World Bank (WDI) while that on Poverty levels and unemployment data came from ZIMSTATS Quarterly Digest of Statistics Publications. The inflation rate and literacy rate also came from ZIMSTAT. The main problem for the data is that from ZIMSTATs is that is likely to suffer from underreporting as well.

Descriptive statistics
Table below presents descriptive statistics of the variables employed in the model for 37 observations. The mean, median, maximum, minimum and standard deviations of the
variables are shown in the table below. From the table we can note that remittances per capita has the widest variability recording the highest standard deviation of 3.370929. This wide variation in remittances could be a result of the presence of outliers on the remittance figures. Literacy rate has the lowest standard deviation of 0.072608 which indicate a high degree of reliability in explaining variations in Household Per Capita Consumption. Household Per Capita Consumption, remittances, inflation rate and unemployment rate are positively skewed whereas the Gini index, literacy rate and per capita GDP are negatively skewed. The Jarque-Bera test indicates that all variables except inflation are normally distributed since the Jarque-Bera probability is greater than 0.1 as illustrated on the table below.

Table 4. 1: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>LHHCPC</th>
<th>LPCGDP</th>
<th>LGI</th>
<th>LREM</th>
<th>LUnem</th>
<th>LLitrate</th>
<th>LINF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>6.213757</td>
<td>6.531002</td>
<td>-0.598722</td>
<td>-0.340791</td>
<td>2.631914</td>
<td>4.471258</td>
<td>3.548790</td>
</tr>
<tr>
<td>Median</td>
<td>6.061749</td>
<td>6.570323</td>
<td>-0.468405</td>
<td>-1.937995</td>
<td>2.564949</td>
<td>4.477337</td>
<td>3.083974</td>
</tr>
<tr>
<td>Maximum</td>
<td>6.752709</td>
<td>7.008505</td>
<td>-0.468405</td>
<td>4.967753</td>
<td>3.520461</td>
<td>4.580877</td>
<td>10.10279</td>
</tr>
<tr>
<td>Minimum</td>
<td>5.792830</td>
<td>5.785977</td>
<td>-0.860383</td>
<td>-4.596911</td>
<td>1.526056</td>
<td>4.332048</td>
<td>0.489575</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.298286</td>
<td>0.315258</td>
<td>0.158426</td>
<td>3.370929</td>
<td>0.617550</td>
<td>0.072608</td>
<td>2.223149</td>
</tr>
<tr>
<td>Skewness</td>
<td>0.521344</td>
<td>-0.371530</td>
<td>-0.544588</td>
<td>0.422203</td>
<td>0.005834</td>
<td>-0.074171</td>
<td>1.517976</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>1.827617</td>
<td>2.331263</td>
<td>1.633135</td>
<td>1.674290</td>
<td>1.869436</td>
<td>5.314163</td>
<td>5.314163</td>
</tr>
<tr>
<td>Jarque-Bera Probability</td>
<td>3.795090</td>
<td>1.540663</td>
<td>4.709208</td>
<td>3.808731</td>
<td>2.886202</td>
<td>2.004445</td>
<td>0.149936</td>
</tr>
<tr>
<td>Source: Based on Author’s Calculations using Eviews 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Diagnostic Tests
Unit Root tests

Table 4. 2: Unit Root Test in Levels

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF Test statistic</th>
<th>1% critical value</th>
<th>5% critical value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHHCPC</td>
<td>-1.437897</td>
<td>-3.626784</td>
<td>-2.945842</td>
<td>Non stationary</td>
</tr>
<tr>
<td>LGI</td>
<td>-0.284904</td>
<td>-3.626784</td>
<td>-2.945842</td>
<td>Non stationary</td>
</tr>
<tr>
<td>LREM</td>
<td>-0.795568</td>
<td>-3.626784</td>
<td>-2.945842</td>
<td>Non stationary</td>
</tr>
<tr>
<td>LPCGDP</td>
<td>-1.412726</td>
<td>-3.626784</td>
<td>-2.945842</td>
<td>Non Stationary</td>
</tr>
<tr>
<td>LUnem</td>
<td>-0.967733</td>
<td>-3.626784</td>
<td>-2.945842</td>
<td>Non Stationary</td>
</tr>
<tr>
<td>LLitrate</td>
<td>-1.503553</td>
<td>-3.626784</td>
<td>-2.945842</td>
<td>Non Stationary</td>
</tr>
<tr>
<td>LINF</td>
<td>-2.271109</td>
<td>-3.646342</td>
<td>-2.954021</td>
<td>Non Stationary</td>
</tr>
</tbody>
</table>

Source: Based on Author’s calculations using Eviews 7

The data was subjected to econometric tests. Table 4.2 presents the unit root results. The calculated Augmented Dickey-Fuller (ADF) test statistic is greater than the ADF critical values at the 5 % for all variables. Hence, we have adequate statistical evidence to conclude
that the variables are non-stationary or are integrated of order one at the 5% level of significance. Thus, since the calculated ADF does not exceed the critical value we do not reject the null hypothesis of non-stationarity, hence the variables are non-stationary at their initial levels.

Table 4.3: Unit root test in First Difference

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF Test statistic</th>
<th>1% critical value</th>
<th>5% critical value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(LHHCPC)</td>
<td>-5.427019</td>
<td>-3.632900</td>
<td>-2.948404</td>
<td>Stationary</td>
</tr>
<tr>
<td>D(LGI)</td>
<td>-6.079117</td>
<td>-3.632900</td>
<td>-2.948404</td>
<td>Stationary</td>
</tr>
<tr>
<td>D(LREM)</td>
<td>-6.164682</td>
<td>-3.632900</td>
<td>-2.948404</td>
<td>Stationary</td>
</tr>
<tr>
<td>D(LPCGDP)</td>
<td>-4.960785</td>
<td>-3.632900</td>
<td>-2.948404</td>
<td>Stationary</td>
</tr>
<tr>
<td>D(LUNEM)</td>
<td>-5.822704</td>
<td>-3.632900</td>
<td>-2.948404</td>
<td>Stationary</td>
</tr>
<tr>
<td>D(LLITRATE)</td>
<td>-7.985091</td>
<td>-3.632900</td>
<td>-2.948404</td>
<td>Stationary</td>
</tr>
<tr>
<td>D(LINF)</td>
<td>-5.280374</td>
<td>-3.653730</td>
<td>-2.957110</td>
<td>Stationary</td>
</tr>
</tbody>
</table>

Source: Based on Author’s calculation Eviews 7- D means First Differences

Table 2 reports that all the variables are not stationary at their initial levels. Therefore, there is need to correct non-stationarity in the model by using differenced series. Table 3 then shows the results of the unit root tests for all the variables in their first differences and indicate that all the variables are stationary.

Multicollinearity test

Table 4.4: correlation matrix

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>D(LHHCPC)</td>
<td>1.000000</td>
<td>-0.252928</td>
<td>0.476270</td>
<td>0.786639</td>
<td>0.167484</td>
<td>-0.205346</td>
<td>-0.369332</td>
</tr>
<tr>
<td>D(LG)</td>
<td>-0.252928</td>
<td>1.000000</td>
<td>-0.298159</td>
<td>-0.088161</td>
<td>0.003803</td>
<td>0.342294</td>
<td>-0.037405</td>
</tr>
<tr>
<td>D(LLITRATE)</td>
<td>0.476270</td>
<td>-0.298159</td>
<td>1.000000</td>
<td>0.398753</td>
<td>0.169763</td>
<td>-0.114299</td>
<td>-0.265256</td>
</tr>
<tr>
<td>D(LPCGDP)</td>
<td>0.786639</td>
<td>-0.088161</td>
<td>0.398753</td>
<td>1.000000</td>
<td>0.261249</td>
<td>-0.100933</td>
<td>-0.657317</td>
</tr>
<tr>
<td>D(REM)</td>
<td>0.167484</td>
<td>0.003803</td>
<td>0.169763</td>
<td>0.261249</td>
<td>1.000000</td>
<td>0.078765</td>
<td>-0.206184</td>
</tr>
<tr>
<td>D(UNEM)</td>
<td>-0.205346</td>
<td>0.342294</td>
<td>-0.114299</td>
<td>-0.100933</td>
<td>0.078765</td>
<td>1.000000</td>
<td>-0.000230</td>
</tr>
<tr>
<td>D(INF)</td>
<td>-0.369332</td>
<td>-0.037405</td>
<td>-0.265256</td>
<td>-0.657317</td>
<td>-0.206184</td>
<td>1.000000</td>
<td>0.000230</td>
</tr>
</tbody>
</table>

Source: Based on Author’s calculations using Eviews 7

The coefficient of determination between the explanatory variables should be less than 0.80 to reject the null hypothesis that the estimated model is suffering from multicollinearity (Gujarati, 2004). The table above shows that the data is not suffering from multicollinearity since all the values are less than 0.8.
Heteroskedasticity test

Table 4.5: Breusch-Pagan-Godfrey Heteroskedasticity Test

<table>
<thead>
<tr>
<th>Breusch-Pagan-Godfrey Heteroskedasticity Test:</th>
<th>Source: Based on Author’s Calculations using Eviews 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>0.833666</td>
</tr>
<tr>
<td></td>
<td>Prob. F(3,32)</td>
</tr>
<tr>
<td></td>
<td>0.4853</td>
</tr>
<tr>
<td>Obs*R-squared</td>
<td>2.6099660</td>
</tr>
<tr>
<td></td>
<td>Prob. Chi-Square(3)</td>
</tr>
<tr>
<td></td>
<td>0.4558</td>
</tr>
</tbody>
</table>

Author’s Calculations using Eviews 7

The Breusch-Pagan-Godfrey test is used to test for the presence of heteroskedasticity. This test states that a model is suffering from heteroskedasticity if the P-value of F-statistic is less than 10%. Since the probability of F-Statistic (0.4853) is greater than 0.1 we can conclude that there is no heteroskedasticity. This implies that there is no relationship between the squared residuals and the explanatory variables.

Autocorrelation test

The Durbin Watson statistic is used to test for the presence of autocorrelation. The Durbin Watson’s critical value of the DW test should be approximately equal to 2 so as to conclude that there is no autocorrelation (Gujarati, 2004). Since, the DW statistic from the estimated model is 2.401201, implies that there is no positive autocorrelation. Further interrogation using the Serial Correction LM test reinforced the absence of positive correlation as shown on Table 6 below.

Table 4.6: Serial Correlation LM Test

<table>
<thead>
<tr>
<th>Breusch-Godfrey Serial Correlation LM Test:</th>
<th>Source: Based on Author’s Calculations using Eviews 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>1.004834</td>
</tr>
<tr>
<td></td>
<td>Prob. F(2.30)</td>
</tr>
<tr>
<td></td>
<td>0.3780</td>
</tr>
<tr>
<td>Obs*R-squared</td>
<td>2.260194</td>
</tr>
<tr>
<td></td>
<td>Prob. Chi-Square(2)</td>
</tr>
<tr>
<td></td>
<td>0.3230</td>
</tr>
</tbody>
</table>

According to the test, we accept the null hypothesis that there is autocorrelation if the probability value of F-stat < 0.1. Since the P-value of F-Cal is 0.3780 we reject the null hypothesis that our model suffers from autocorrelation and hence conclude that the variables are not correlated.

Significance of the whole model

R-squared is 65% which is above the benchmark 60% implying that the model is statistically significant (Gujarati, D. 2004). It shows that 65 percent of the variations in the dependent variable that is Poverty proxied by Household per Capita Consumption are being explained by the independent variables in the model. We can therefore conclude that the model is correctly specified, hence there is no need to re-specify the model.

Estimation of Results

Regression Analysis

The regression results of the Ordinary Least Squares (OLS) method through the application of E-views 7 are presented in table 7 below.

Table 4.7: Econometric Results

Dependent Variable: D (LHHCPC)
Robustness of the Results
As discussed at length above, the formulation of the regression model require many supporting assumptions. To test the robustness of the results to alternative specifications, alternative regression models are presented on the tables on Appendix 5. On robustness tests, inflation rate, unemployment rate and literacy rate were dropped. Inflation and Literacy rate were dropped because they did not yield expected values on regression while unemployment was dropped because it affected the robustness of the model yet it is insignificant.

Results Interpretation and Discussions
Remittances
Remittances variable is not statistically significant and but have an expected sign. It has a coefficient of -0.003795 and a p-value of 0.7639. Interestingly, remittances, the study’s major variable could not explain poverty levels in Zimbabwe during the time of the study. Though insignificant this may be explained by the fact that it only captured formal remittances inflows only, while the majority of it find itself in the Zimbabwean economy informally. Because of this, its impact on poverty might be indirect as explained by the positive and significant relationship between per capita GDP and poverty in Zimbabwe.

The remittances could be insignificant to poverty as proxied by household per capita consumption because most remittances are not captured in the formal system. They are brought into the country through informal means such as bus couriers and relatives and friends that would have travelled abroad. This confirms the findings of UNCTAD (2011) using panel data for 77 developing countries for the period 198-2008. They found that remittances have a negative impact on poverty index but the impact was not statistically significant because of the very low volumes of remittances into some of the countries. However, when those developing countries whose share of remittances in GDP is less than 5 percent were omitted, the results showed statistically significant impact of remittances to the poverty index for 3.1 percent (UNCTAD, 2011).

GINI Index
Gini index has a coefficient of -0.648750 which shows a negative correlation with the poverty proxy, household consumption per capita. It has a p value of 0.0824 which is significant at 10 percent %. The estimate suggest that on average, a 1 percent increase in the income inequality will lead the 0.64875 percent decline in household consumption per capita in the long-run. These results are consistent with the findings of Gaaliche and Zanyati (2015) in their study on the relationship between remittances and poverty in developing countries. This evidence shows that gini coefficient has a negative relationship with poverty.
Per Capita GDP
Per Capita GDP has a coefficient of 0.733653 which shows a positive correlation with Household Per Capita Consumption, a poverty proxy. It has a p value of 0.0000 which is significant at 1%. A 1 percent increase in per capita GDP will result in household per capita consumption increasing by $73 per year. This then implies that improvement in consumption levels should be associated with improvements in welfare thereby indicating reduction in poverty in Zimbabwe.

As noted from this research, per capita GDP has a positive relationship with household per capita consumption. This is in line with economic theory which postulates that an increase in per capita GDP should be invariably lead to consumption as national income translates to family income through the growth and investment mechanism. In the Zimbabwean economy an increase in GDP over the period under review has on average led to increase in per capita incomes leading to an increase in household per capita consumption. In fact, the poverty’s elasticity with respect to the per capita GDP variable is consistent with other analysis of poverty reduction Adams (2003) and Ravallion (1997). They found household consumption per capita to increase as income increases leading to a decrease in poverty levels.

Summary
The purpose of the research was to determine the impact of remittances on poverty in Zimbabwe. Time series data covering the period 1980 to 2016 was used so as to assess the impact of remittances poverty in Zimbabwe. The Ravillion and Chen growth-poverty model was adopted, making use of OLS estimator and data was analysed using the E-views. The findings of the study have failed to subscribe to the thesis that remittances reduced poverty in Zimbabwe at least over the study period. However, the impact of remittances on poverty is transmitted via the per capita GDP channel which has been found to have a positive and statistically significant relationship with Household Per Capita Consumption and plays a pivotal role in poverty reduction. The Gini coefficient has a negative relationship with the poverty proxy hence the lower the index the higher the consumption levels in in Zimbabwe.

Conclusions
This study has analysed the effect of remittances on poverty in Zimbabwe and found insufficient evidence supporting the contention that remittances reduce poverty levels in Zimbabwe using household per capita income as a poverty proxy. This could explained by the fact that most of the remittances into the country enter through the informal channels while some come in kind in the form of groceries, clothes and even motor vehicles and are not captured into national accounts. They would only be captured when analyzing national consumption expenditure as part of income. Hence their impact on poverty is indirect via the per capita GDP channel. This implies that primary research is needed to capture remittances before they enter the formal financial services sector via the expenditure channel.

On the other hand, per capita GDP has been found to have a positive and statistically significant impact on household consumption per capita. A 1 percent increase in per capita GDP will on average increase household consumption per capita by $ 73 per year. Thus increasing GDP is will help reduce the poverty levels in Zimbabwe.

With regards to the Gini coefficient, the study found that it has a negative relationship with household consumption per capita under which a 1 percent decrease in income inequality will increase consumption per capita by 65 percent per annum. This implies that Zimbabwe should concentrate on policies that reduce income inequality so that consumption levels are
raised. Once consumption increases it triggers domestic demand of goods and services, leading to more production and eventually an increase GDP and economic growth.

**Recommendations**

- There is need for the government to put in place policies that encourage people in the diaspora to send their money via the formal channels. These policies should obvious include those that boost confidence into the financial services sector.
- The government should also put in place some mechanisms to determine the value of remittances that come in kind as most remittances from across the country’s borders and even beyond come in the form of goods and even cars. This would improve the quality of data on remittances that can be used in future to estimate their impact on poverty in Zimbabwe.
- The government should also put in place policies and strategies that help grow the economy and at the same addressing income inequality. This becomes crucial as increasing per capita income will help reduce poverty in Zimbabwe as shown by the results of the study. Income redistributive measures are also critical if Zimbabwe is reduce poverty levels as the study findings points to a significant role reducing the Gini coefficient plays in addressing poverty.
- In order to increase the volumes of remittances into the economy government should consider granting the people in diaspora a chance to participate in the country’s democratic processes such as harmonized national elections as well as putting in place policies that promote the investment of migrants monies into the financial sector and help enhance financial literacy of both migrants and their households.

**Suggestions for further studies**

The results obtained in this study should not be viewed as conclusive but as a stimulant for further research on the impact of remittances on poverty in Zimbabwe. Further research could be done in the areas of informal and in kind remittances which are not included in this research. A primary research will therefore be required to study the impact of remittances on poverty in Zimbabwe. The study could use other variables to determine how remittances can impact on poverty besides the variables used in this current study.

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