

# International Trade as an Engine of Economic Growth in Zambia: An Application of New Structural Economics

Kiru Sichoongwe

Faculty of Business, Finance and Management, Cavendish University Zambia

P.O Box 34625, Lusaka, Zambia

Email: kirukwrs@gmail.com; ksichoongwe@cavendish.co.zm

## Abstract

International trade has been called the “*engine of growth*” that propelled the development of today’s economically advanced nations during the nineteenth and early twentieth centuries. Rapidly expanding export markets provided an additional stimulus to growing local demands that led to the establishment of large-scale manufacturing industries. From both theoretical and empirical point of view, the positive impact of international trade on economic growth has been widely documented. From this aspect, it has been argued that openness is important for growth since it generates channels for technology diffusion, which makes possible for less developed countries to import productivity gains from overseas. This study, from the perspective of *new structural economics* analyzed international trade as an engine of economic growth in Zambia. The study used secondary data from penn world tables 8.0, world bank’s world development indicators (WDI) and the country’s central statistical office. Study results indicate that Zambia is an open economy and that foreign direct investment and the trade to GDP ratio exerts a significant effect on economic growth in Zambia. In particular, study results suggest the need for policy makers to encourage expenditure on infrastructure that would facilitate trade and intensifying exports of goods in which Zambia has a comparative advantage in, such as traditional exports (mainly metals-copper and cobalt) and non-traditional exports (other than copper and cobalt).

**Keywords:** economic growth, export-led growth hypothesis (ELGH), new structural economics, Zambia

## 1.0 Introduction

Most economists agree that economic growth is an extremely complex process, and is a function of many variables such as capital accumulation (both physical and human), trade, price fluctuations, political conditions, income distribution, and geographical characteristics. According to the export-led growth hypothesis (ELGH), export expansion is one of the main determinants of economic growth. The hypothesis holds that the overall growth of countries can be generated by expanding exports and increasing the amounts of capital and labour within the economy. Thus its advocates believe that exports can perform as an “*engine of growth*” (Medina and Smith, 2001).

Despite the theoretical links between trade and economic growth been discussed for over two centuries, controversy still persists regarding their real effects. Since the initial wave of favourable arguments for trade as championed by the classical school of economic thought that started with Adam Smith and which was subsequently enriched by the work of Ricardo, Torrens, James Mill and John Stuart Mill in the first part of the nineteenth century; the justification for free trade and the benefits that international specialization brings to the productivity of nations have been widely discussed and are well documented in the economic literature (Bhagwati, 1978; Krueger, 1978).

Most economic models, even though they emphasize the nexus between trade and growth, they stress that trade is only one of the variables that enter the growth equation. Advocates of the ELGH have stated that trade was in fact the main engine of growth in South-East Asia. They argue that the *Four Tigers (Hong Kong, Taiwan, Singapore and the Republic of South Korea)* have been successful in achieving high and sustained rates of economic growth since the early 1960s because of their free-market, outward-oriented economies (World Bank, 1993). By the early 1980s, researchers and policy makers had already secured a wide consensus on export-led orientation and export promotion to such an extent that they had become “conventional wisdom” among most economists in the developing world (Tyler, 1981; Balassa, 1985). This consensus is still prevailing in some international organizations, the international bank community and multilateral lenders such as the World Bank and the International Monetary Fund (IMF), and among the mainstream policy makers. Most researchers and multilateral institutions agree that promoting exports and achieving export expansion are beneficial for both developed and developing countries for many reasons, some of which are (i) they generate a greater capacity utilization; (ii) they take advantage of economies of scale; (iii) they bring about technological progress; (iv) they create employment and increase labour productivity; (v) they relax the current account pressures for foreign capital goods by increasing the country’s external earnings and attracting foreign investment (World Bank, 1993).

## 1.1 New Structural Economics Trade Insights

New Structural Economics (NSE) proposes to use the neoclassical economic approach to study the determinants of economic structure, including technology, industry, infrastructure and institution, and its evolution in the process of economic development. NSE underscores that the starting point for a dynamic analysis of an economy’s structure lies in its endowments (the total budget) and endowments structure (factors’ relative price that is endogenously

determined), which are given at any specific time and changeable over time (Lin,2012). *Also, new structural economics analysis is consistent with neoclassical's view on economics that exports and imports are endogenous to the comparative advantage determined by a country's endowment structure (they are essential features of the industrial upgrading process and reflect changes in comparative advantage). Developing countries can exploit the advantages of backwardness and achieve a faster rate of innovation and structural transformation than is possible for countries already on the global technology frontier via Globalization, as openness is an essential channel for convergence.*

The new structural economics approach recognizes, however, that many developing countries start climbing the industrial ladder with the legacy of distortions from old structural economics strategies of import-substitution. It would therefore suggest a gradualist approach to trade liberalization. *During transition, the state may consider providing some temporary protection to industries that are not consistent with a country's comparative advantage, while liberalizing at the same time entry to other more competitive sectors that were controlled and repressed in the past. The dynamic growth in the newly liberalized sectors creates the conditions for reforming the old priority sectors. This pragmatic, dual-track approach may achieve the goal of growth without losers in the transition process (Naughton 1995; Lau, Qian, and Roland 2000; Subramanian and Roy 2003; Lin 2009).*

## **1.2 Overview of Economic Performance and Trade Policy in Zambia**

### **1.2.1 Economic Performance**

Zambia inherited an archetypical dual economy at the time of its independence in 1964. The country imported almost all the manufactured goods consumed and its small export enclave was devoted almost entirely to crude copper, which constituted 90-95% of its exports. At independence, the country's manufacturing sector contributed less than 7% of the total Gross Domestic Product, about half as much as was typical of other countries with the same income per capita. The manufacturing sector was dominated by the beverages and tobacco industries, which produced almost a third of total manufacturing value-added. Government revenue expanded as a result of the high copper prices of the 1960s thus permitting expenditures to double from 1965 to 1970 (Seidman, 1974).

During the 1960s and 1970s, many African countries including Zambia followed a development strategy driven by large-scale urban-based industrialization and a vast degree of state intervention in the economy. This strategy was threefold. Firstly, African governments believed that the most effective means of achieving modernization was via state-directed industrialization. This development paradigm of that time was widely supported by both development economists and international institutions (Helleiner 1986; Lofchie 1997). Secondly, since well-organized consumers and trade unions were located in African cities, this posed greater threats to African leaders given the prevailing one-party political systems, as compared to remote and dispersed smallholder agricultural producers. Thus African governments invested more in urban areas, consequently leading to the decline of the agricultural sector development. Thirdly, mineral resources which many African countries were endowed with provided revenues for financing investments in state industries at the expense of agriculture. For example, in the decade after Zambia achieved independence in 1964, the country's budget constituted 53% of copper revenues (Bratton, 1994).

In 1991 when Zambia experienced a political shift from one-party socialist to a multiparty democracy, they were fundamental changes in the re-orientation of the economy. The new government in place embarked on drastic economic reforms whose immediate priority was stabilization of major macroeconomic indicators, encouraging the private sector and the State withdrawing from running enterprises. The elements of economic reforms that were implemented included: abolition of price controls, removal of exchange rate and bank interest rate controls, abolition of foreign currency controls, 100% repatriation of net profits, privatisation of state-owned enterprises, promotion and facilitation of both local and foreign direct investment, promotion of exports, development of the capital market through the Lusaka Stock Exchange (Saasa, 1996).

### **1.2.2 Recent Economic Developments and Prospects**

For more than ten years after 2000, the Zambian economy exhibited macroeconomic stability and achieved impressive growth averaging 7.7% per annum, raising Zambia above the threshold for lower-middle-income countries. The economy grew as a result of favourable copper prices and increasing regional trade. In addition, economic growth was also driven by investments in the mining sector spilling into construction, transport, communications, wholesale and retail trade.

Since 2013, the Zambian economy has been facing increasing economic headwinds because of decelerating growth in China and a slow turnaround in US and European economies. Another contributing factor has been the significant fall in the copper prices since their 2011 peak, thus affecting the mining profitability. Growing fiscal deficits and poor

economic management since 2013, have additionally waned sentiments about the strength of the Zambian economy. Evidence of this was revealed through the significant depreciation of the Zambia Kwacha in 2015. In 2015, the Zambian economy slowed to its lowest growth rate in more than 15 years, its estimation falling below 4.0% compared to 5.0% in 2014. The falling copper exports contributed to some deterioration in the trade balance, which significantly moved into negative territory for the first time since 2003, albeit with a small deficit. The trade deficit amounted to USD 74 million in 2015. The deficit impacted the current account, which moved into a deficit of USD 770 million. Currently, the government plans to diversify the economy away from copper dependence towards other sectors that includes energy, agro-processing and tourism. Thus stabilizing the economy and placing the country on a sustainable fiscal track, remains one of the overarching goals of the government (African Development Bank [AFDB], 2016).

### 1.2.3 Overview of Trade and Trade Policy

Zambia is committed to regional economic integration and free-trade facilitation, which is central to promoting export-led growth and economic diversification. The country participates actively in the Southern African Development Community (SADC) and the Common Market for Eastern and Southern Africa (COMESA) free-trade areas and it has affirmed its commitment to participate in interregional trade with the East African Community (EAC) to form the COMESA-EAC-SADC Tripartite free-trade area (FTA) with a combined population of 632 million and a total GDP of USD 1.3 trillion. Thus trade agreements are viewed by the Zambian government as the main vehicle to drive economic growth and diversification by increasing non-copper exports.

In 2015, as a result of lower copper trading and a sharp depreciation of the kwacha, Zambian trade levels decreased thus reducing the overall level of imports. Also, the country experienced a trade deficit for the first time since 2003. Copper exports, which accounted for 71% of total exports in 2015, declined by 28%. Non-copper exports fell by 19% in 2015, a deviation from previous years with rising exports. The increased cost of foreign goods led importers to reduce imported goods by 14% in 2015.

Besides, the European Union is one of Zambia's major trading partners in non-copper exports. Its export market is the second largest after the SADC market. In 2013, exports to the European Union stood at USD 325.5 million. These declined from USD 472 million in 2003. In 2013 exports to the European Union stood at 3 of total exports, compared with 63 of total exports in 2003. Thus both the magnitude and share of Zambia's exports to the European Union have been declining since 2003. On the other hand, Zambia's imports from the European Union have increased since 2003, to USD 1,08 million in 2013, an increase of over seven times the 2003 level. This has implications in terms of the loss of revenue from lower tariffs on imports from the European Union under a free trade agreement with the European Union.

Zambia's exports have also not grown significantly in real terms as they are limited in volume and value addition, and by a lack of competitiveness. These have been accelerated by high production and trade costs. The country's broad developmental strategy is to pursue an outward-oriented export-led trade strategy based on open markets and international competition. The aim is to create opportunities for the country to integrate into the world economy. Zambia's trade policy has been set out in several policy papers and in the national trade policy document, with tariff reform being the main instrument (UNCTAD, 2016).

### 1.3 Study Objectives

The objectives of this study are twofold;

- (a) To find out whether international trade positively influence economic growth in Zambia.
- (b) To identify other macroeconomic variables (other than international trade) that positively influence economic growth in Zambia.

### 2.0 Literature Review

Empirical studies on the relationship between economic growth and exports have found growth in exports to be associated with increase in Gross Domestic Product (GDP) or output (Michaely, 1977; Tyler, 1981 and Balassa, 1985). A study by Michaely (1977), in determining the relationship between exports and growth found a weak correlation between the two variables, in less developed countries. A simple regression and correlation analysis was used. Besides, a study by Tyler (1981), also confirmed a positive relationship between the expansion of exports and increase in production. This confirmation was based on a sample of 55 developing countries. The study concluded that it is necessary for some countries to achieve a minimum level of development in order to benefit from export expansion, especially of manufactured exports.

Also, a study by Schneider (2004) on International trade, economic growth and intellectual property rights (IPRs) conducted using a unique panel data set of 47 developed and developing countries from 1970 to 1990. The results

suggested that: (1) high-technology imports are relevant in explaining domestic innovation both in developed and developing countries; (2) foreign technology has a stronger impact on per capita Gross Domestic Product (GDP) growth than domestic technology; (3) IPRs affect the innovation rate, but this impact is more significant for developed countries; (4) the results regarding Foreign Direct Investment (FDI) are inconclusive. Furthermore, Sun and Heshmati (2010); the effects of international trade on China's economic growth through examining improvement in productivity. The study used econometric and non-parametric approaches and data was based on a 6-year balanced panel data of 31 provinces of China from 2002 to 2007. For the econometric approach, a stochastic frontier production function was estimated and province specific determinants of inefficiency in trade were identified. For the non-parametric approach, the Divisia index of each province/region was calculated and used as a benchmark. The salient findings of the study were that (i) international trade has made an increasingly significant contribution to economic growth in china (ii) international trade experienced rapid expansion together with its dramatic economic growth which has made the country to target the world as its market. (iii) increasing participation in the global trade helped China reap the static and dynamic benefits, stimulating rapid national economic growth.

Lall (2000) and Te Velde (2001), argued that international trade impacts the economic growth of countries through the attraction of foreign direct investment. FDI contributes to economic growth through technology transfer, capital accumulation, access to international market, job creation and managerial and marketing practices. Also, Blomstrom and Kokko (2003) added that FDI and trade can facilitate economic growth only after the minimum level of infrastructure, human capital and technology have been met.

Karbasi et al. (2005) analyzed the role of FDI and trade in promoting economic growth in 42 selected developing countries. Their findings reveal that important sources of economic growth for developing countries include FDI, human capital, trade and domestic investment. In addition, their study found a positive significant relationship between trade and growth and that the contribution of FDI to economic growth is enhanced by its positive interaction with human capital and sound macroeconomic policies and institutional stability.

## 2.1 Conclusion

The difference in empirical findings on the impact of international trade on economic growth is of serious concern, especially in developing countries; and necessitates further research. This is the gap that this study will fill. The study will contribute to the debate on the impact of trade on economic growth using Zambia as a case study. The study will use a regression equation, that is, Ordinary Least Squares (OLS), since OLS estimates are best, unbiased, consistent and efficient (Gujarati, 2004).

## 3.0 Methodology

### 3.1 Variables for this Study

The dependent variable in this study is Real GDP growth rate. The choice of these variables is based on a review of the literature on the topic and available data. Table 1 presents these variables.

**Table 1: Explanatory variables for this study**

Variable	Description	Expected Sign
Inflation	Sustained increase in the general level of prices for goods and services.	±
Exchange Rate	Price at which the currency of Zambia is converted to the currency of the United States (\$/K).	+
Foreign Direct Investment	Net inflows of investment to a country.	+
Trade to GDP ratio	Sum of exports and imports divided by GDP. It measures a country's integration in the world economy.	±

### 3.2 Data Sources

The data for this study is time series. Data on real Gross Domestic Product was available from 1965-2011 and it came from Penn World Table 8.0. The data on real Gross Domestic Product was used to compute the real GDP growth rate (dependent variable). As for data on Exchange rate, Foreign direct investment, Export and Import value; it was obtained from the World Bank's World Development Indicators (WDI). It span from 1965-2015, 1970-2015 and 1965-

2015 respectively. Data on Inflation rate, was obtained from the Country's Central Statistical Office (CSO). The data was available from 1966-2014.

### 3.3 Empirical Model (Ordinary Least Squares)

Ordinary Least Squares is concerned with approximating a dependent variable  $y$  using the independent variables  $x_1, x_2, \dots, x_k$ . The OLS model is a linear function of the parameter vector  $\beta^0$ :

$$y = \beta_1^0 x_1 + \beta_2^0 x_2 + \dots + \beta_k^0 x_k + \varepsilon$$

or, using vector notation:

$$y = X' \beta^0 + \varepsilon$$

The dependent variable  $y$  is a scalar random variable,  $X = (x_1 \ x_2 \ \dots \ x_k)'$  is a  $k$  vector of explanatory variables, and  $\beta^0 = (\beta_1^0 \ \beta_2^0 \ \dots \ \beta_k^0)'$ . The superscript "0" in  $\beta^0$  means this is the "true value" of the unknown parameter. In using data to determine the best linear approximation to  $y$  using the variables  $X$ , the data  $\{(y_t, X_t)\}, t = 1, 2, \dots, n$  are obtained by some form of sampling (cross-sectional data may be obtained by random sampling; time series data accumulate historically). An individual observation is thus

$$y_t = X_t' \beta + \varepsilon_t$$

The  $n$  observations can be written in matrix form as

$$y = X\beta + \varepsilon,$$

Where  $y = (y_1 \ y_2 \ \dots \ y_n)'$  is  $n$  by 1 and  $X = (X_1 \ X_2 \ \dots \ X_n)'$ .

### 3.4 Model Specification

The mathematical form of the model is stated as follows;

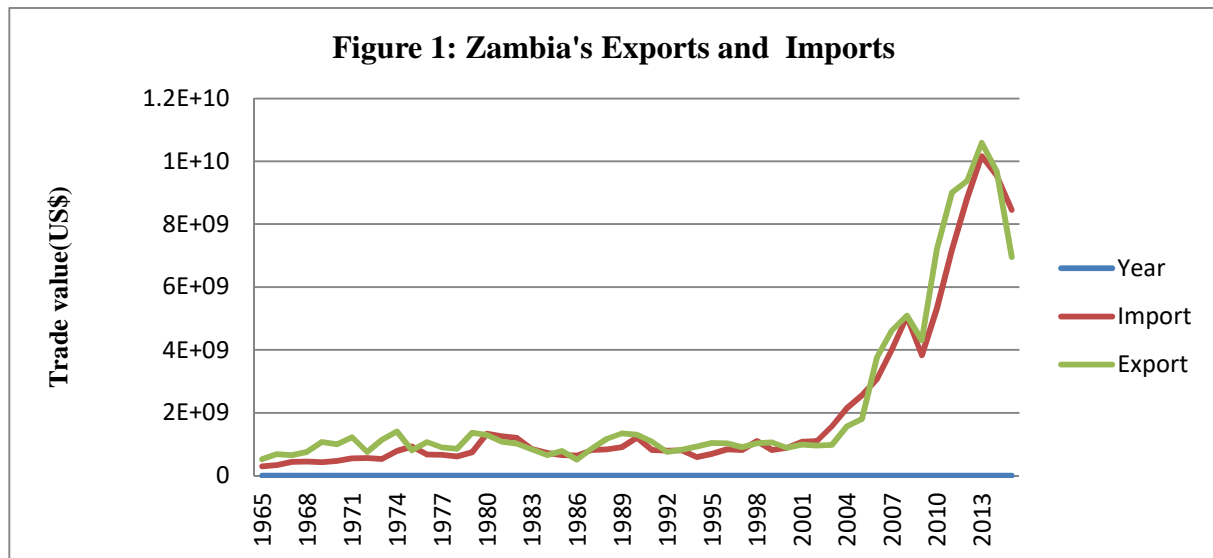
$$RGDP\_GR = f(INF, XRATE, FDI, TGDPR)$$

$$RGDP\_GR = \beta_0 + \beta_1 INF + \beta_2 XRATE + \beta_3 FDI + \beta_4 TGDPR + \varepsilon_t$$

The dependent variable in this model is Real GDP growth rate. The explanatory variables are coded as inflation rate (INF), exchange rate (XRATE), foreign direct investment (FDI) and Trade to GDP ratio (TGDPR).  $\varepsilon_t$  is a white noise error term.

### 4.0 Results and Discussions

Figure 1 below shows Zambia's trade balance value in current U.S. dollars. Trade balance is the difference between merchandise exports and merchandise imports. Merchandise exports show the free on board (f.o.b.) value of goods provided to the rest of the world valued in current U.S. dollars whilst Merchandise imports show the cost, insurance and freight (c.i.f.) value of goods received from the rest of the world valued in current U.S. dollars. From 1965-1979, the merchandise export for Zambia exceeded the merchandise imports thus making the trade balance positive. From 1965 to 2013, there are very few cases where Zambia imported more as compared to exporting. Furthermore, from 2003 to 2013, the volume of merchandise export, merchandise import have been increasing markedly while the trade balance had some fluctuations and was negative after 2013.



Source: Authors Computation based on World Development Indicators (WDI) data.

Figure 2 below shows the trade-to-GDP-ratio (openness ratio) of Zambia from 1965-2013. This ratio/indicator measures the country's openness in the world economy. Furthermore, it represents the combined weight of total trade in its economy, a measure of the degree of dependence of domestic producers on foreign markets and their trade orientation (for exports) and the degree of reliance of domestic demand on foreign supply of goods and services (for imports). A low ratio for a country does not necessarily imply high (tariff or non-tariff) obstacles to foreign trade, but may be due to the factors such as size and geographic remoteness from potential trading partners. In the case of Zambia, the ratio has been increasing steadily as an indication that the country is open to the world economy and that exports and imports play a greater role as far as trade is concerned. Trade openness brings many economic benefits such as increased technology transfer, total factor productivity, increased labour, economic growth and development.



Source: Authors Computation based on World Development Indicators (WDI) data and Penn World Table 8.0 .

#### 4.1 Descriptive Statistics Analysis

From table 2 below, exchange rate and Inflation rate had the highest observations as compared to the other variables. A comparison of the mean and the standard deviation shows that there were some variations in all the variables except

for Trade to GDP ratio and Export to GDP ratio variable. This is so because the data for this study span from 1965-2015 and this period is marked with different levels of economic performance (i.e. economic recession, economic recovery and economic boom).

**Table 2: Descriptive Statistics**

	INF	XRATE	FDI	TGDPR	EXP/GDP	RGDP-GR
Observations	49	51	46	47	47	47
Mean	30.75	1.78	3.46E+08	2.60E+05	1.40E+05	4.00E-03
Maximum	1.86E+02	8.63	2.10E+09	8.90E+05	4.90E+05	1.70E-01
Minimum	0	0	-3.84E+07	1.30E+05	5.80E+04	-1.00E+00
Std.Deviation	40.42	2.22	5.42E+08	1.60E+05	9.00E+04	1.60E-01

INF=Inflation rate; XRATE= Exchange rate; FDI=Foreign direct investment; TGDPR= Trade to GDP ratio (sum of exports and imports divided by GDP); EXP/GDP= Export to GDP ratio; RGDP.GR= Real GDP growth rate

#### 4.2 Unit Root Test

Empirical work based on time series data assumes that the underlying time series is stationary. Broadly speaking, a data series is said to be stationary if its mean and variance are constant over time and the value of covariance between two time periods depends only on the distance or lag between the two time periods and not on the actual time at which the covariance is computed [Gujrati (2003)]. Researchers use unit root test to distinguish if data has stationary Autocorrelation Function (ACF) or Partial Autocorrelation Function (PACF) figure diagnosis. It is too arbitrary to use figure diagnosis to judge variable's stationary. There are various methods of testing stationarity of a series. The most common ones are: The Augmented Dickey–Fuller (ADF) Test and Phillips–Perron (PP) Unit Root Tests. This study used Augmented Dickey–Fuller test (ADF) that it is purposed to eliminate error term correlations. The test statistics is given as:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^m \alpha_i \Delta Y_{t-i} + \varepsilon_t$$

Where;

$\Delta$  denotes the first difference operator,  $\beta_1$  is a constant term,  $m$  is the optimum number of lags in the dependent variable and  $\varepsilon_t$  is a pure white noise error term.

Table 3 below shows results of unit root test. All the variables were differenced once in order to induce stationary thus eliminating the possibility of having a spurious relationship.

**Table 3: Unit root test results**

Variables	Level		First Difference			Conclusion
	ADF-Stat	Critical value (5%)	ADF-Stat	Critical value (5%)	Order of Integration	
INF	-2.259	-2.936	-6.881	-2.938	1	I(1)
XRATE	2.790	-2.930	-3.023	-2.933	1	I(1)
FDI	-2.552	-2.944	-12.146	-2.947	1	I(1)
TGDPR	1.601	-2.941	-5.876	-2.944	1	I(1)
EXP/GDP	0.872	-2.941	-6.664	-2.944	1	I(1)
RGDP-GR	-2.314	-2.941	-3.048	-2.944	1	I(1)

#### 4.3 Diagnostic Tests

After fitting the OLS model, the hypothesized independent variables were checked for the existence of arch effect and serial correlation (autocorrelation) in order to ensure the robustness of the model and to ensure that econometric

estimation output is not misleading, and interpretations as well as conclusions drawn are not wrong. The different tests carried included; LM test for autoregressive conditional heteroskedasticity (ARCH), Breusch-Godfrey LM test for autocorrelation, Durbin's alternative test for autocorrelation and variance inflation factor. The test results revealed that there was no ARCH effects and no serial correlation as each of the tests failed to reject the null hypothesis and as such, the regression results are robust to make inference (see table 4).

**Table 4:Diagnostic test results**

Test	Null hypothesis (Ho)	Test statistics	Prob>chi <sup>2</sup>
LM test for autoregressive conditional heteroskedasticity (ARCH)	no ARCH effects	Chi2(1)=0.234	0.6285
Breusch-Godfrey LM test for autocorrelation	no serial correlation	Chi2(1)=0.798	0.3717
Durbin's alternative test for autocorrelation	no serial correlation	Chi2(1)=0.695	0.4046

Furthermore, no multicollinearity between any two or more explanatory variables was found. The variance inflation factor (VIF) values of all the variables in the model was less than 10 showing that there was no problem of multicollinearity. When multicollinearity between explanatory variables is present, it is quite difficult to separate the independent effect of each parameter estimate on the dependent variable and it induces limited confidence in any policy prescriptions based on the estimates.

**4.4 Econometric Model Results**

Table 5 below shows the model results. The results indicate that the coefficient of the variables inflation and exchange rate are statistically insignificant based on their probability values. Whereas the coefficient for foreign direct investment and trade to GDP ratio are statistically significant at 1 % level of significance as indicated by their probability values. Besides, the coefficient sign for foreign direct investment is positive, 'a priori' (consistent with theoretical expectation). This implies a positive relationship between foreign direct investment and real GDP growth rate (economic growth). These results are in agreement with those of Lall (2000) and Te Velde (2001) in which they argued that FDI contributes to economic growth. Also, Blomstrom and Kokko (2003); Karbasi et al. (2005) added that FDI facilitates economic growth and/or FDI is an important source of economic growth for developing countries.

A study paper by UNCTAD, 2016, points out that most of the FDI inflows into Zambia have been significant especially in mining activities. For instance, FDI increased from an average of USD 164.9 million per year in the period 2001– 2004 to an average of USD 1 billion in the period 2006–2012. They were estimated to be USD 1,811 million in 2013. Thus there is need to attract FDI inflows to the manufacturing, agricultural, industrial and services sectors to support export diversification and value addition processes. This is only possible if costs are reduced and the country is competitive.

Furthermore, the results establishes a negative relationship between trade to GDP ratio and real GDP growth rate. Similar studies by Michaely, 1977; Tyler, 1981 and Balassa,1985 , though they did not take into account trade to GDP ratio; their results indicate growth in exports being associated with increase in gross domestic product. The negative relationship could be due to the fact that since its independence in 1964, Zambia has been overly dependent on the production and export of copper such that currently, the country faces some of its worst economic headwinds with copper prices at their lowest since 2003, a significant energy crisis resulting in 10-14 hours of load shedding a day, and a fiscal deficit of more than 8% in 2015. Thus economic growth has been largely subdued by the energy crisis (UNCTAD, 2016 & AFDB,2016).

The study findings are related to *New structural economics* which views exports and imports as being endogenous to the comparative advantage determined by a country's endowment structure. The findings indicate that Zambia is an open economy (its exports and imports play a greater role in trade ; see Figure 2), with its main constraint to increased export earnings being limited volumes in its major export sectors/commodities, limited value addition in its export products and lack of export competitiveness because of high costs in the domestic economy (UNCTAD, 2016). Thus the need for the country to diversify the economy and its export base so as to register economic growth since exports and imports are essential features of the industrial upgrading process and reflect changes in comparative advantage of a country. For Zambia to diversify its export base, it has to identify new industries consistent with its latent comparative advantage and remove binding constraints to facilitate private firms entry into those industries, or facilitate industries that are already active in the country to grow fast. This can be achieved by employing the Growth Identification and Facilitation Framework (GIFF), that lays out a step-by-step approach for policy makers to facilitate



structural change based on the framework of New Structural Economics. The GIFF is briefly discussed in the subsequent section.

**Table 5: OLS regression output (Dependent Variable: Real GDP Growth Rate)**

<i>Variable</i>	<i>dy/dx</i>	<i>Std. Err.</i>	<i>p-value</i>
Inflation	5.40e-04	8.60e-04	0.527
Exchange Rate	-3.72e-02	7.00e-02	0.597
Foreign Direct Investment	3.96e-10	0.00000	0.000***
Trade to GDP Ratio	-1.35e-06	0.00000	0.001***
<i>Number of obs = 41</i>			
<i>F( 4, 36) = 4.81</i>			
<i>Prob &gt; F = 0.0033</i>			
<i>R-squared = 0.5757</i>			

Note: Significance level: \*\*\* ( $p \leq 0.01$ ); ( $p \leq 0.05$ ); \*\* ( $p \leq 0.10$ )\*

#### 4.5 Zambia's Latent Comparative Advantage

The Growth Identification and Facilitation Framework, lays out a step-by-step approach for policy makers to facilitate structural change based on the framework of the New Structural Economics, guides policy makers on how to identify new industries consistent with a country's latent comparative advantage and remove binding constraints to facilitate private firms entry into those industries, or facilitate industries that are already active in the country to grow fast. A recent study by Sichoongwe (2015) applied the GIFF to Zambia and concluded that a number of sectors, some of which are already active in Zambia and some new to Zambia, may hold significant potential for growth and employment creation and should be subject to detailed value chain analyses that would identify the type of interventions that would allow Zambia to effectively compete with its competitors<sup>1</sup> (see Table 6). Specific policy interventions to promote growth should primarily focus on (i) upgrading technological structure; (ii) improving inadequate skilled labour (iii) providing physical infrastructure; (iv) improving power supply, and (v) providing financial support. Thus Zambia will be in a position to increase both growth performance and employment intensity of growth.

**Table 6: Windows of Opportunities: Sectors that Zambia could potentially enter**

<b>Sector/Product Codes</b>	<b>Sector/Product Descriptions</b>
1007, 1515,1703,5203, 1701,2710	Sorghum, Other Pure Vegetable Oils, Molasses, Prepared Cotton, Raw Sugar, Refined Sugar
4403, 0901,7601, 2008,4407, 0-804, 4412,4411,1604,0-803	Rough Wood, Coffee, Raw Aluminum, Other Processed Fruits & Nuts, sawn wood, Tropical Fruits, Plywood, Wood Fiberboard, Processed Fish, Bananas
6205, 6206,4203,5208, 7210, 6109, 7403	Non-Knit Men's Shirts, Non-Knit Women's Shirts, Leather Apparel, Light Pure Woven Cotton, Coated Flat-Rolled Iron, Knit T-shirts, Refined Copper
4202, 6201, 6203, 6204, 2701, 6304	Trunks And Cases, Non-Knit Men's Coats, Non-Knit Men's Suits, Non-Knits Women's Suits, Coal Briquettes, Bedspreads
5516, 6811, 7308, 7323,1301, 3306, 4106	Woven fabric <85% artificial staple fibre, Articles of asbestors-cement & cellulose fibre cement,Structures, parts of structures of iron or steel, nes, Table, Kitchen, household items of iron or stell nes, Lac; natural gums, resins, gum-resins and oleoresins ,Preparations for oral or dental hygiene, including denture fixative pastes and powders; yarn used to clean between the teeth (dental floss), in individual retail packages (for example, balsams),Tanned or crust hides and skins of other animals, without wool or hair on, whether or not split, but not further prepared.

<sup>1</sup>Applying the Growth Identification and Facilitation Framework: The Case of Zambia With Kiru Sichoongwe

#### 4.6 Conclusion

This paper examines whether foreign trade promotes economic growth in Zambia. It also looks at other macroeconomic variables that influence economic growth in Zambia. In the empirical analysis, Ordinary Least Squares, unit root test and diagnostic tests were employed. Prior to employing Ordinary Least Squares, the variables were tested for stationarity using Augmented Dickey Fuller (ADF). Variables that did not exhibit stationarity were differenced once so as to induce stationarity. The study found that foreign direct investment and the trade to GDP ratio exerts a significant effect on economic growth in Zambia. The study also established that Zambia is an open economy, with its main constraint to increased export earnings being limited volumes in its major export sectors, limited value addition in its export products and lack of export competitiveness. Based on *New structural economics*, for the country to diversify its economy and its export base so as to register economic growth, there is need for the government to create appropriate economic policies that would improve Zambia's trade status, encourage expenditure on infrastructures that would facilitate trade and considering exporting more goods in order to promote trade which is an essential tool for economic growth. Also, Zambia should intensify the exports of goods in which it has a comparative advantage such as traditional exports (mainly metals-copper and cobalt) and non-traditional exports (other than copper and cobalt), *ceteris paribus* favorable metal prices on the international market (see table 6, & table 7 in Annex 1). Also, policy makers should consider providing some temporary protection to industries that are not consistent with Zambia's comparative advantage (see table 8 in Annex 1). Lastly, there is need for further research in identifying new and/or additional industries or goods that are consistent with Zambia's latent comparative advantage, that is, subject to available time and resources.

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## Annex 1:

**Table 7: Top 15 Exports by Zambia (in 4-digits; the latest year 2013)**

No.	Commodity Code	Commodity	Trade Value (US\$)	% of total exports
1	7403	Copper and articles thereof // Refined copper and copper alloys, unwrought.	6,607,429,503	62.37
2	2807	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes // Sulphuric acid; oleum.	254,001,028	2.40
3	2523	Salt; sulphur; earths and stone; plastering materials, lime and cement // Portland cement, aluminous cement, slag cement, supersulphate cement and similar hydraulic cements, whether or not coloured or in the form of clinkers.	209,810,911	1.98
4	2822	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes // Cobalt oxides and hydroxides; commercial cobalt oxides.	181,218,218	1.71
5	2401	Tobacco and manufactured tobacco substitutes // Unmanufactured tobacco; tobacco refuse.	180,287,875	1.70
6	2208	Beverages, spirits and vinegar // Undenatured ethyl alcohol of an alcoholic strength by volume of less than 80 % vol.; spirits, liqueurs and other spirituous beverages.	171,478,690	1.62
7	7108	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; imitation jewellery; coin // Gold (including gold plated with platinum) unwrought or in semi-manufactured forms, or in powder form.	162,865,038	1.54
8	1005	Cereals // Maize (corn).	154,849,829	1.46
9	8105	Other base metals; cermets; articles thereof // Cobalt mattes and other intermediate products of cobalt metallurgy; cobalt and articles thereof, including waste and scrap.	132,529,486	1.25
10	2716	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes // Electrical energy. (optional heading)	132,135,112	1.25
11	7408	Copper and articles thereof // Copper wire.	127,658,236	1.20
12	1701	Sugars and sugar confectionery // Cane or beet sugar and chemically pure sucrose, in solid form.	121,993,228	1.15
13	7112	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; imitation jewellery; coin // Waste and scrap of precious metal or of metal clad with precious metal; other waste and scrap containing precious metal or precious metal compounds, of a kind used principally for the recovery of precious metal.	96,048,481	0.91
14	7409	Copper and articles thereof // Copper plates, sheets and strip, of a thickness exceeding 0.15 mm.	79,019,875	0.75
15	7103	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; imitation jewellery; coin // Precious stones (other than diamonds) and semi-precious stones, whether or not worked or graded but not strung, mounted or set; ungraded precious stones (other than diamonds) and semi-precious stones, temporarily strung for convenience of transport.	68,809,964	0.65

Data source: UN Comtrade Database. <http://comtrade.un.org/data/>

**Table 8: Top 15 Imports by Zambia (in 4-digits; the latest year 2013)**

No.	Commodity Code	Commodity	Trade Value ( US\$)	% of total imports
1	2831	Copper ores & concentrates	1,389,387,258	13.67
2	3346	Petroleum oils & oils obtained from bituminous minerals (other than crude) & preparations n.e.s., containing by weight 70 %/more of petroleum oils/of oils obtained from bituminous minerals, these oils being the basic constituents of the preparations, other than waste oils	919,623,265	9.05
3	7821	Motor vehicles for the transport of goods	341,009,969	3.36
4	6911	Structures (excluding prefabricated buildings of group 811) and parts of structures (e.g., bridges and bridge sections, lock-gates, towers, lattice masts, roofs, roofing frameworks, doors and windows and their frames and thresholds for doors, shutters, ba	325,213,061	3.20
5	7283	Machinery for sorting, screening, separating, washing, crushing, grinding, mixing or kneading earth, stone, ores or other mineral substances, in solid (including powder or paste) form; machinery for agglomerating, shaping or moulding solid mineral fuels,	295,484,033	2.91
6	5621	Mineral or chemical fertilizers, nitrogenous	253,752,649	2.50
7	7812	Motor vehicles for the transport of persons, n.e.s.	238,363,299	2.35
8	5225	Oxides of zinc, chromium, manganese, iron, cobalt, titanium and lead	215,592,369	2.12
9	7232	Mechanical shovels, excavators and shovel-loaders, self-propelled	183,126,858	1.80
10	2879	Ores and concentrates of other non-ferrous base metals	167,432,733	1.65
11	7239	Parts, n.e.s., of the machinery of group 723 (excluding heading 723.48) and of subgroup 744.3	147,921,142	1.46
12	7413	Industrial or laboratory furnaces and ovens, etc. and parts thereof	121,774,260	1.20
13	5429	Medicaments, n.e.s.	120,985,248	1.19
14	5629	Fertilizers, n.e.s.	102,711,434	1.01
15	7641	Telephone sets, including telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data, including apparatus for communication in a wired or wireless network (such as a lo	100,086,423	0.98

Data source: UN Comtrade Database. <http://comtrade.un.org/data/>