Research Article

Testing the causality between Export Diversification, External Debt and Economic Growth in Cameroon using the Vector-Autoregrasive Analysis

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Abstract

This study aims at evaluating the links between export diversification, external debts, labour productivity, domestic investment and economic growth in Cameroon between 1980 and 2014 under the precondition that current data predict future events more than previous data. This work is therefore motivated on the ground that Cameroon economy which is highly diversified in natural resources, ,population, cultural, economic and political institutions remains underdeveloped while Ethiopia and East Asian nations with comparatively few resources are making news in their trends of growth and development in the globe. To achieve the desired objectives of this study, the Vector-Autogressive (VAR) technique is employed on the bases of its dynamism to stimulate the expected policies for the study of this nature. The findings are in agreement with the prior theoretical expectations and works of others especially in the Asian economies. Based on the findings of this study, it is strongly recommended that if growth and development is targeted in Cameroon, then the export base needs to be expanded by more than 60% under the endogenous growth hypothesis with limited external debts, This should be enhanced by research on new and complementary products, the creation of conducive business environment for private sector growth and high drive for technical and pragmatic capacity building in Cameroon.

Keywords: Economic Growth, External Debts, Productivity, Export Diversification, Domestic Investment, Conducive Environments and Transparency.

Résumé

Cette étude vise à évaluer les liens entre la diversification des exportations, les dettes extérieures, l'investissement antérieur, la productivité du travail et la croissance économique du Cameroun entre 1980 et 2014 à la condition préalable que les données actuelles prédit des événements futurs plus que des données précédentes. Néanmoins, cette étude est motivée sur le fait que l'économie du Cameroun qui est très diversifiée en ressources naturelles, les institutions culturelles, économiques et politiques reste sous-développé tandis que l'Ethiopie et les pays d'Asie orientale avec comparativement peu de ressources sont bien connus dans le monde entier pour leurs tendances de croissance et de développement. Pour atteindre les objectifs désirés de cette étude, nous avons utilisé la technique VAR (Auto régression Vectorielle) sur la base de son dynamisme pour stimuler les politiques attendus pour une étude de cette nature. Les résultats obtenus sont en accord avec les attentes a priori théoriques et les recherches des autres en particulier dans les économies asiatiques. Sur la base des résultats de cette étude, il est fortement recommandé que si la croissance et le développement sont ciblés au Cameroun, puis la base d'exportation doit être augmentée de plus de 60% sous l'hypothèse de croissance endogène avec des dettes externes limitées. Ceci devrait être renforcé par des recherches sur les produits nouveaux et complémentaires, la création d'environnements d'affaires propices à la croissance du secteur privé et de haute route pour le renforcement des capacités techniques et pragmatique au Cameroun.

Mots clés: Croissance économique, Dettes Externes, Productivité, la Diversification des Exportations, L'investissement Antérieur, Environnement Propice, et La Transparence**.**

I. INTRODUCTION

The links between economic growth, export diversification, labour productivity, and external debt have been examined in several studies with mixed conclusions. In Asian economics, it is observed that export diversification through capacity building; research and innovation have reduced possibility for external debts, hence high rate of economic growth and development. In Africa in general the transmission is not the best. While most countries in Africa have fairly diversified economies, their exports have little or no impact on their economic growth. The prospect to economic growth through external debt, export and export diversification are of two folds. First, the place of foreign exchange in economic transformation; that is, transactions in the international markets are carried out using hard currencies among which are the US dollar, the European Euro, the English British pound, the Japanese Yen. These currencies are obtained through export exchange by the countries involved (Investopedia, 2012). Second, exports tap a ready market for the different commodities and this is because world export markets are vastly larger than domestic ones, particularly those of developing countries like Cameroon. By 2010, China became the largest of Cameroon's exporting partners consuming 14.8% of Cameroon's exports, Netherlands 9.5%, Spain 8.8%, India 8.4%, Portugal 7.9%, Italy 5.9%, U.S 5.3% and others, (CIA World Factbook, 2012) thus providing an extended and ready market for Cameroon's exports.

Research has shown that all of the more successful developing countries relied heavily on export and through export diversification as the primary engine of economic growth. The "newly industrialized countries" or the "Asian Tigers" epitomized this export-led growth strategy (Bradley, 1991). According to World Bank Report and statistics from econstat.com (2012), Korea, from 1980 to 2004 increased its percentage of exports of goods and services from 8.58% to 29.3% recording a GDP increase from 39,109.6 Won to 100,254.1 Won, and thus achieving a percentage growth rate of 61%. From 2005 to 2010, the export further increased by 15% and recorded a GDP increase from 651,415.3 Won to 1,173,275 Won and thus a percentage growth of 80%. Brazil as well as most eastern European countries are also good examples of the export diversified driven economies.

In Sub-Saharan Africa, the Mauritanian economies have diversified from mono-crop economy depending on sugar exports in the 1970s to one based on manufacturing of textiles and garments and tourism in the 1980s over the past thirty years (Sanjay, (2011). Global business (offshore) and Freeport activities have also been growing continuously since the mid 1990s. The country's main export still remains textile and clothing, the services sector has surpassed the manufacturing sector to become the main contributor to the GDP which witnessed considerable growth that is $1.292 billion in 1980, $2.569 billion in 1990, $4.732 billion in the year 2000 and $11.22 billion by 2012, (World Economic Outlook, 2012). With sustained GDP per capita growth of 8% on average annually, since independence, Mauritius has moved to an upper middle income country status, (Economic Watch, 2012).

Cameroon like most of the other developing countries depends on primary, few and low valued commodities as their source of export earnings. The Major export commodities of Cameroon include; cocoa (9.7%), coffee (2.6%), banana (2.6%), cotton 3.2%, natural rubber 2.4%, crude oil and petroleum products 48.4%, timber and timber products 13.9%, minerals and unwrought aluminum 2.7% and others 19.5%, (Cameroon Economic, Social and Finance Report, 2011). If not all of these products, most confront a number

of difficulties in the international market such as; price instability, inferior products, quotas and restrictions, tariffs, tax escalation and other trade barriers.

Agriculture was one of the main sources of growth and foreign exchange in Cameroon until 1978 when oil production replaced it as the cornerstone of growth for the formal sector till the mid 1980s (Economic Watch, 2010). Today, due to depleting oil reserves, agriculture is still the backbone of Cameroon's economy, employing about 70% of its labour force, while providing about 42% of its GDP and 30% of export revenue, (Cameroon National Institute of Statistics, 2010). A portion of these crops are meant for export while the rest are used locally. Main food crops are plantains, cocoyam, banana, yams, cassava and derivatives, corn, millet and sugar cane which are meant primarily for local consumption while small quantities are exported to CEMAC and other neighboring countries. From 2010 to 2012 the production of food crops stood at 15millon, 15.6milliom and 17million tons respectively while exports stood at 128 thousand, 144 thousand and 301 thousand dollars respectively (MINADER, MINEPIA Annual Reports, 2013). In recent years, reductions in the total volume of goods exported by Cameroon became pronounced as it increased from 3.8% in 2008 to 13.3% in 2009, due to contraction of world demand. Furthermore, the export of some products such as fuels and lubricants (-50.4%), wooden veneer sheets (-44.4%), aluminum (-35.2%), banana (-9.4%), timber (-5.3%), and crude oil (-4%) dropped, others witnessed expansion in their volumes such as raw cotton (52.1%), cocoa beans (8.9%) and coffee (12%), (Cameroon Economic, Social and Finance Report, 2011). In 2010 and 2011 exports increased from 1924.2 billion CFA francs to 2171.5 billion CFA Francs respectively, up by 12.9% following increases in the export of petroleum products and lubricants (39.9%), crude oil (14.4%), raw cotton (33.9%), raw rubber (31.1%), sawn timber (10.5%), fresh banana (3.2%) and coffee (4%). Conversely, the export of cocoa beans, aluminum and log timber dropped by 19.8%, 8.1% and 62% respectively. Non-oil exports increased by 12% to stand at 1372.4 billion CFA Francs, (Cameroon Economic, Social and Financial Report, 2012).
Cameroon manufacturing sector is composed mainly of light and agro-manufacturing industries. World Bank Report (2012) shows that manufacturing export in Cameroon rose from 3.75% in 1980 to 18.28% in 1986. By 2006 industrial manufacturing contribution to total export fell to the lowest value of 3.03% and since then it has been increasing timidly. In 2009, the manufacturing production index grew by just 1.3% compared to that of 2008 which stood at 15.5%. All branches of manufacturing activity contributed positively to growth except for chemicals and petroleum industries where production contracted by 10.2%. Contrary to this, in 2011, production of agro-food was 4.2% and oil sector 10.6%, beverages 7%. The tertiary sector accounted for 45.6% of GDP by 2009, grew by 3.5% and contributed 1.6% of growth from 2010 to 2011 (Cameroon Economic, Social and Finance Report, 2012). This trend is explained by good performances in the telecommunication and transport with tourism sub-sectors which have been increased in subsequent years.

Exports are supposed to play a major role in Gross Domestic Product (GDP) growth. But for the recent years, in Cameroon, GDP has been 3.3 for the year 2010, 4.1 for 2011 and 4.7 for 2012 (World Economic Outlook, 2012). While the targeted growth is above 19% , what was realized was the above listed poor growth. This poor growth can be attributed to limited export contribution to GDP. On the average, between 1980 and 1990 the contributions of exports to growth in Cameroon stood at 25.6%, between 1991 and

2000 it stood at 22.6% and between 2001 and 2010 it increased to 26.7% (World Economic Outlook, 2012) which appears quite low compared to other emerging nations mentioned above. Fluctuations in the export prices of major export products of Cameroon and also persistent negative current account balances which stood at -0.9796, -0.625, -0.8320 and -0.1960 billion Francs CFA in the respective recent years of 2011, 2010 , 2009 and 2008 in descending order are major causes of low contributions of export earnings to growth in Cameroon. It also resulted from long term net capital flows which became negative from 1990/91 as well as the effects of considerable accumulation of public external debt, (Cameroon's external debt stood at 69.1% of GDP by 2004 and 13.9% by 2011, (CIA Fact book, 2012)) relative to stagnations and declining trade surpluses. High unemployment rate and extreme poverty have both plagued the Cameroonian economy causing productivity and investments to fall leading thus to low export earnings as noticed.

Theoretical conjectures mostly propagated by Cameroon politicians contend with the fact that export in Cameroon is diversified but very little scholarly works have been presented to tie these conjectures to economic growth. For example, Bamou (2002), in her study, provided only an indication of a priority order of exports by classifying them according to their world market access prospects. She used the competitive and financial capital profitability indexes to show that the 33 identified non – traditional exports of which close to three fourth are industrial, 19 (4 primary agriculture and 15 industrial) are competitive and profitable and can thus be promoted in priority within the export diversification promotion framework. Thus, using competitive and financial capital profitability index this study was only able to classify the products accordingly to their different sectors in the economy. Again no product or natural resources should be allowed to rot and so even if some are not competitive but are useful, they should be exploited. And finally the study had nothing to do with the effects of export diversification on economic growth in Cameroon. Most empirical studies on export diversification, external debt and economic growth on different countries have proven a positive link but a study on Columbia by Amin et al. (2000), produced a negative result. Based on the fact that findings from different countries yield mixed conclusions, this study is designed to assess the Cameroon experience via export diversification, external debt and economic growth in Cameroon.

This study is therefore conducted under the null hypotheses that the exports in Cameroon are not significantly diversified and that external debt reduction does not retard economic growth and development in Cameroon. This study therefore is conducted under five sections. While the introduction presents the background information, section two provides the recent literature for the study. Sections three and four anchor on analytical methodology, and discussion of results respectively. while section five draws the study to logical conclusion through summary of major findings and recommendations.

2.1: Empirical Literature Review

Amin and Ferrantino (1997), affirm the modesty of export diversification as a good driver of economic growth. Based on a study on the Chilean economy, these authors concluded that, in the long run, export diversification and external debt might have improved Chilean growth relative to what it would have been with a concentrated export basket over the period from 1960 to 1990. Amin and Ferrantino (1997) infer that export diversification was used in Chile as a response to recessions and that before boosting economic growth, adjustment costs are made in-terms of

lower export growth.

Naude and Rosouw (2008), employed the use of time series data from 1962-2000 for South Africa to examine the causal relationship between export diversification and economic growth. They observed that export diversification granger cause growth in GDP per capita. This was confirmed by the computable general equilibrium estimate for the South African economy which reveals that increase in GDP per capita and employment opportunities are as a consequence of a diversified export base.

The application of the general equilibrium model analysis by Naude and Rosouw (2008) has added value in the technique employed to estimate the effect of export diversification on economic growth using African data. This approach required full information which is not available. Their inability to examine the dynamics of this relationship also cast doubt on their recommended policies.

Hess (2006) in his part observes that, the effect of export diversification is dependent on the income level of a country. In his paper, Hess shows a positive relationship between export diversification and external debt on per capita income growth. The established non-linearity in the diversified export basket is realistic for developing countries as it contributes to growth, whereas specialization is of greater benefits to developed countries. Again, for developing countries, Hess argues that, export concentration is detrimental to per capita income growth. Hess' analysis used a panel growth model (Solow), for 91 countries for the years 1960 to 2000.

On the contrary Hess' suggestion that income level of a country depends on export diversification is not conclusive since there are other macro economic variables that positively affect GDP growth. Again there is no limit to export diversification since technology evolves daily, therefore, export diversification and value added are continually necessary to both developed and developing countries in this dynamic world.

Using time series data from 1971-2013 and employing the vector auto regressive technique, Haseeb (2014) was able to empirically prove that exports and foreign direct investment have a positive impact on economic growth in Malaysia. Using export and foreign direct investment in a model without conducting a multi-collinearity test leaves us without the knowledge of the strength of the relationship existing between the variables in the model.

In their study on investigation of the various factors influencing export, using Ordinary Least Squares for Pakistan from 1981-2011, Nadeem et al. (2012), concluded that export volumes are needed to be expanded maximally in other to achieve higher levels of economic growth. Here again the work fails to conduct all the necessary pretests such as multi-collinearity test and cointegration tests, thus casting doubts on the final results obtained.

Amin et al. (2000), using time series analysis found an inverse relationship between export diversification and growth in Columbia. However, as pointed out by Herzer et al. (2006), this study suffers a lot of methodological short falls including the omission of unit root test and possible presence of structural breaks when testing for unit roots. Normality, autocorrelation and Heteroskedasticity tests were not conducted meaning that the study could suffer the effect of spurious regression if it do exist.

Savietti and Frenken (2008), using panel data from OECD countries, show that export diversification can have a positive effect for developed countries. They found out that both horizontal and vertical diversification have a positive impact on economic

growth. This paper also presents evidence that diversifying the export basket horizontally has immediate effect on economic performance while it takes time for vertical diversification to affect economic growth positively. Vertical diversification can potentially be deterred by adjustment cost and technological barrier. Nevertheless it is good to undertake this type of diversification since, at a certain stage, the rate of horizontal diversification's return will start to diminish (Savietti and Frenken, 2008).

Sanjay (2011) observes the relationship between export diversification and economic growth for Mauritius from 1980 – 2008. Based on Vector Error Correction Modeling and the Johansen co-integration analysis, he found an inverse relationship between export concentration and economic growth. His results call for the need to promote export diversification through the provision of appropriate incentives, such as dealing with market information and failures, promoting entrepreneurship as well as providing a competitive business environment for sustained economic growth. The work of Sanjay (2011) on export diversification, external debt in a country with limited natural endowments justified the necessity of export diversification through value added which is paramount to Mauritius. The use of vector error correction mechanism to test co-integration increases the reliability of the results obtained.

2.2 Theoretical Literature

In the field of finance, portfolio, constitute an appropriate combination or set of investments. The best of the mix of investment depends on the mix expected return and its variance (Ross et al., 2005). The higher a portfolio's attractiveness, the higher it's expected returns and the lower its standard deviation. It becomes therefore important to create a diversified portfolio including securities that share a negative covariance with each other as only this will lead to decrease in the portfolio's standard deviation and hence variance. The strategy for diversification should lower earning's variance of basically any portfolio and thus can also be applied to the export portfolio of a country, where export products represent the investments (Stanley and Bunnag, 2001).

Translating the theory to export diversification implies that the growth prospect of Cameroon depends on Cameroon's export portfolio, and her ability to pay for complementary financing in our case known as external debt hence the composition of its export basket. The wider the export base, the better the portfolio of a country could enhance the export earnings making it less volatile, therefore ameliorating the condition for stable growth (Agosin, 2009). To this theory, export concentration increases the risk of fluctuations in export earnings. Unstable export earnings make economic planning impossible as it reduces import capacity, reduces the chance of debt repayment resulting from total economic instability and furthermore leads to higher growth variance (Stanley and Bunnag, 2001).

Agosin (2009) refers to this portfolio effect as potential explanation for a positive relationship between export diversification and growth. By "not putting all the eggs in one basket" diversification of exports induces lower volatility of export earnings and consequently results to lower GDP variance. Export diversification is thus necessary for countries that do not have unrestricted access to world financial and commodity markets but still need to smooth consumption in times of fluctuation in export proceeds and output Agosin (2009).

In appraisal, issues on export diversification as a means of development and growth became important in economics only in the 1950s when the world began viewing dependence on primary

products as harmful for growth in developing countries due to the extreme volatile price and low elasticity of demand (Chaudhuri, 2001).

According to the endogenous growth theory, labour productivity and investments can affect both the level of growth and per capita output. It will be interesting at this point to use the "AK model" which works on the property of absence of diminishing returns to capital. The simplest form of the production function is given as;

$Y = AK$

Where A is a positive constant that affects the level of technology, K is capital (to include human capital). Y=AK, output per capita and the average and marginal product are constant at the level A>0.

Then $f(k)/k = A$ in equation of transitional dynamics of Solow-Swan model which shows how an economy's per capita income converges towards its own steady-state value and to the per capita incomes of other nations. Transitional dynamic equation, where growth rate on K is given by;

$\Delta k = k/K = s.f(k)/K - (n+\delta)$, substituting A, we get

$đK = sA - (n+\delta)$

At $x = 0$, because we want to show that per capita growth can now occur in the long run even without exogenous technological change, then this explains the perpetual growth, with exogenous technical progress. Any vertical distance drawn between two lines say; sA and $n+\delta$ gives đk. As, $sA > n+\delta$, so independent of K which means that, K always grows at steady rate.

$đ^*k = sA - (n+\delta)$ since $y = AK$, $\Delta k = đ^*k$ at every point of time. In addition, since

$C = (1 - s)\, y$, the growth rate of c equals $đ^*k$.

Hence, the entire per capita variable in the model grows at the same rate, given by $đ^* = sA - (n+\delta)$.

However, we can observe that y=AK technology displays a positive long run per capita growth without any exogenous technological development. The per capita growth depends on behavioral factors as the saving rate and population. It is unlike neo-classical model, which is higher saving, s, promotes higher long-run per capita growth.

Since the theory assumes diminishing returns to capital, it thus becomes one of its major critiques. The theory again fails to explain conditional convergence reported in the literature. Some economists contend that new growth theory has not proven successfully than the exogenous growth theory in explaining income divergence between developing and developed countries.

3.0. Analytical Methodology

The study covers the period of 35 years (1980-2014) as time series data drawn from World Bank, World Data, Africa Economic Indicators, and Cameroon Financial Bills among others. This period is chosen because it is within this period that data are available and during this period many policy reforms associated to export developments actually took place. An ex-post factor and causal research designs are adopted in the research work to ascertain the interactive relationships between the variables in the vector autoregressive models. Based on the disaggregated microeconomic models Ssemogerere and Kasekende (1994), identified market prospects for specific commodities. Here, the higher the contribution of labour and capital the higher the country's output. Based on the free market transmission mechanism not presented due to space, the model is specified as follows;

$$X_t^d = đ(Yw_t\,(Px_t^d/Pw_t)) \quad \textbf{3.1}$$

Where X_t^d is the quantities of export of commodity X over time t, Px_t^d is export prices in foreign exchange of commodity X, Pw_t is the average export price of X in the international market and Yw_t is the income of the importing countries.

To the supply model, the formulation depends on the production function from which a supply model is derived as in equation 3.2.

$$Q = A(đK^{-ρ} + (1-đ)L^{-ρ})^{-1/ρ} \ldots\ldots\ldots \mathbf{3.2.}$$

Where; Q is quantity of output for export, A is the coefficient of technological change, K is capital, L is labour, ñ is the substitution parameter, ð is the distribution parameter coefficients. Using the endogenous growth model, investments, balance of payments, external debt and labour productivity are specified to affect growth level or per capita output. Thus for simplicity, the "AK" model presented in the literature which works on the property of absence of diminishing returns is employed as model for this study;

$$Y = AK \ldots\ldots \mathbf{3.3}.$$

A is a positive constant and K is capital. "A" which is the effect on the level of technology is positive while K that also includes human capital is assumed positive. Y = AK, output per capita and marginal average product are constant at level A > 0. The transitional dynamic equation of Solow-Swan model f(k)/K =A shows how an economy's per capita income converges to its own steady state value and to the per capita income of other nations. The transitional dynamic equation is given as DK = k/K = s. f(k)/K – (n + d). Replacing K with A implies DK = sA – (n + d). If technology is zero that is X = 0, we can show that per capita growth can occur in the long run even without exogenous technological change.The model explains the perpetual growth, with exogenous technical progress. The vertical distance between the two lines, sA and n+δ gives đk. As, sA > n+δ, so independent of K that is K always grows at a steady rate.

$\Delta^{*}k = sA - (n+\delta)$ since y = AK, $\Delta k = đ^{*}k$ at every point in time.

From equation **3.3**, the growth rate of commodity X can be derived and written in the form;

$$DlogGDPPC = A_0 + A_1 DlogHIREXIN + A_2 DlogLAB + A_3 DlogINV + A_4 DlogBOP + A_5 DlogEXTD + U \ldots\ldots\ldots\ldots\ldots \mathbf{3.4}$$

GDPPC is the real per capita GDP or real per capita income, HIREXIN is the Hirschman concentration index, Inv is the investment, BOP is balance of payments, EXTD is external debt, LAB is labour productivity index, Us are the residuals assumed to have constant variances and zero means. All variables are in logarithmic form to enable interpret the estimated parameters as elasticities and first difference, based on the fundamental notion that time series data are always stationary after their first difference. From equation **3.1** and **3.2** above, a set of criteria based on world market conditions and domestic supply conditions for identifying a priority of commodities for exports are derived. These criteria include; high income elasticity of demand, high price elasticity and supply responsiveness of the products.

Most economic models have limitations or difficulty in application for developing countries like Cameroon. Most Export models are not explicit enough to motivate individual exporters who produce for the world market. The higher the profits from exports, the greater the exporters are motivated. Competitiveness is also a factor associated with foreign trade which in turn inhibits developing country's exporting capacity.

Going by our model expressed above, specifically the supply model, increases in capital and labour contributions, will lead to increase in output since in both developed and developing countries, what are produced are also consumed and exported. Export Concentration Index is therefore used to investigate the relationship between export diversification and other related variables. This work has exploited export concentration measure of HIREXIN derived by Hirscmann in 1945.

Written as $\mathbf{H}_j = \sqrt{\sum_i^n \left(\frac{x_i}{X}\right)^2}$ ……..……**3.5**

Where; H_j is Hirschman export concentra index, x_i is export of good **i** in **j** year, X is $\sum xi$ (sum of all export in **j** year). For H nearer to zero

implies higher export diversification and for H nearer to one implies higher export concentration. Advantages of the HIREXIN are that it encorporate merchandise trade and services and so it is good even to Small Island states who solely depend on services as their own principal source of foreign earnings. Also in calculating the HIREXIN, products' export shares are used as their own weights ($w_i = s_i$) and so the index takes account of all export categories.

To investigate on the causality between economic growth, export diversification, and EXTD for Cameroon, we employ the Vector Autoregressive (VAR) Model which has served as an extension of the Granger Causality test (Njimanted, 2014). As such, it permits the extension away from the bivariate framework of the dependent and independent variables only. From equation 3.4, our VAR models are presented thus;

$$DlogGDPPC_t=\beta +\Sigma^k{}_{j-1}\beta_j DlogHIREXIN_{t-1}+ \Sigma^k{}_{j-1}\beta_j DlogLAB_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogINV_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogBOP_{t-1}+ \Sigma^k{}_{j-1}\beta_j DlogEXTD_{t-1} + U_1 \quad 3.6$$

$$DlogHIREXIN_t= \beta +\Sigma^k{}_{j-1}\beta_j DlogGDPPC_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogLAB_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogINV_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogBOP_{t-1}+ \Sigma^k{}_{j-1}\beta_j DlogEXTD_{t-1} + U \quad 3.7$$

$$DlogLAB_t= \beta +\Sigma^k{}_{j-1}\beta_j DlogHIREXIN_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogGDPPC_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogINV_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogBOP_{t-1}+ \Sigma^k{}_{j-1}\beta_j DlogEXTD_{t-1} + U_3 \quad 3.8$$

$$DlogINV_t= \beta +\Sigma^k{}_{j-1}\beta_j DlogHIREXIN_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogLAB_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogGDPPC_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogBOP_{t-1}+ \Sigma^k{}_{j-1}\beta_j DlogEXTD_{t-1} + U_4 \quad 3.9$$

$$DlogBOP_t= \beta +\Sigma^k{}_{j-1}\beta_j DlogHIREXIN_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogLAB_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogINV_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogGDPPC_{t-1}+ \Sigma^k{}_{j-1}\beta_j DlogEXTD_{t-1} + U_5 \quad 3.10$$

$$DlogEXTD_t= \beta +\Sigma^k{}_{j-1}\beta_j DlogHIREXIN_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogLAB_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogINV_{t-1} + \Sigma^k{}_{j-1}\beta_j DlogBOP_{t-1}+ \Sigma^k{}_{j-1}\beta_j DlogGDPPC_{t-1} + U_6 \quad 3.11$$

We observe here that, the differencing of the variables will be done only when such variables are not stationary at level. It is a-priori here that, Hirschman export concentration coefficient index and external debt should take a negative value since higher values imply lesser export diversification while investment, balance of payments and labour productivity are expected to be positive since they have expansionary effects on CPI and so their increases are expected to increase real GDP per capita.

Actual estimation of the parameters of the variables required that we conduct their trend analyses using graphs; stationarity tests particularly the augmented Dickey-Fuller and Phillips-Perron unit root tests since no structural break has been exhibited by any of the variables as reported by the graphs. We also determine the level of integration of the variables in the series and using the unit circle tests. The Johansen-Juselius (JJ) co-integration tests were also conducted and later the normalized co-integration test to ascertain whether or not the series meets up with the a-priori expectations, the pair wise correlation test was used in testing the degree of multi-collinearity among the variables while the Langragian Multiplier (LM) test was used in testing for whether or not serial correlation are embodied in the models. The granger causality test was used to show the level of causality between the variables in the model. Normality tests such as Jacque Bera, kurtosis, standard deviation, and mean, median, were conducted (not also presented because of space). They all justify that the variables are normally distributed within our study area and period of study.

4.0. DISCUSSION OF RESULTS

From the trend analyses conducted we observed that the graphs of the variables have drifts but no trends

and they are schocastic in nature.(graphs not presented here because of space).They were stochastic with drifts. Thus testing for stationarity and order of integration of the variables reveal that some of the variables such as BOP and HIREXIN attained stationarity at level while EXTD, LAB and INV attained stationarity at their first differences. The Unit circle result also showed that the residuals of the various models are all integrated at the other one 1(1). The above results affirmed the presence of co-integration. This therefore implies that long-run equilibrium exists between the variables in the models. The normalized co-integration equation also reveals that, in the long-run further export diversification will continue to have positive effects on economic growth in Cameroon and so confirms the alternative hypothesis while rejecting the null hypothesis. These results tie with the a priori expectations. The coefficients of BOP, EXTD, LAB and INV (-0.001728, 0.035151, 0.872679 and 0.10654) respectively follow the a-priori expectations as any increase in labour productivity, increase in balance of payments, ,investment and drop in external debt are expected to result to higher economic growth, as explained by external debt-over hanged hypothesis.

The pair wise correlation matrix (see appendix G), for BOP and DLOG(EXTD) have negative relationship with GDPPC while DLOG(LAB), DLOG(INV) and LOG(HIREXIN) have positive relationship with GDPPC but that of LOG(HIREXIN) is weak while the others are strong. The relationships between some of the variables are weak; some are weakly positive while others are weakly negative. This shows that there is no multicollinearity between the variables specified in our model. As such the variables have reported in one way or the other their independent effects.

Testing for auto correlation using the VAR residual serial correlation LM tests, the result shows that the calculated LM value is 63.05382 at lagged length nine with a 0.3% probability at chi-square critical value of 31.41 at five percent significant level leads us to reject the null hypothesis of serial correlation in favour of the alternative that there is no serial correlation within the period of study.

The Vector Auto Regression Estimate, (see appendix A) shows that GDPPC in the first and second lags significantly affects GDPPC growth; BOP only affects GDPPC negatively and significantly in the second lag. EXTD shows a negative and significant relationship with GDPPC in the second lag but significant and positive in the first lag. LAB shows a positive and very significant relationship with GDPPC implying that in the first and second lags 3.03% and 2.32% increase in GDPPC are accounted for by a% percent increased in labour productivity. This finding is in line with that of Amin (2002) whose findings reveal that the growing GDP in Cameroon is accounted for by dynamic labour force.

INV in the first lag positively and significantly affects GDPPC growth while in the second lag its negatively but significantly affects GDPPC growth. These results are in agreement with that of Khan et al. (2004) who observe that private and public INV combined play an important role in economic growth but the reverse is true for public INV only. HIREXIN positively and significantly affect GDPPC; in the first and second lag meaning that a 0.52% increased in GDPPC in the current year is accounted for by a 1% increase in HIREXIN of the current year, 0.65% increase in GDPPC of previous year respectively. Both results are significant at 1% level. This result is in line with those of Sanjay (2011) for Mauritius; in Mauritius export diversification from traditionally primary to manufacturing and services has successfully transformed Mauritius from a low

income to a middle income country. The adjusted R^2 shows that 63% of the outcome in the model is explained by the independent variables used in the model with the F-statistic of 14.97 confirming the fact that the results are about 90% reliable. Furthermore, the results of the VAR model for BOP reveals that a 0.49% decrease in BOP and 0.57% decrease in BOP of the first and second lags accounted for 1% variation in current BOP. These results are both statistically significant at 10 and 1% level of significant respectively. It is also observed from the results that 30.78% decrease in BOP in the present year is accounted for by 1% change in EXTD of the second lag, and a 31.09% decrease in BOP of the current year is accounted for by again 1% variation in EXTD. Both results are statistically significant at 10%. These results conformed to those of Osakwe (2007) which states that most African nations have accumulated EXTD as a consequence of persistent negative BOP. Lastly but not the least, 29.12% increase in BOP of the present year is accounted for by 1% variation in HIREXIN of the previous year. Although these results are statistically insignificant and are in agreement with status quo the second lag is not. The increase in BOP is 60.54%, which is significant at 10% level of significance. This is again in agreement with the portfolio theory which link export concentration to volatile growth via export earnings and general instability. The adjusted R^2 shows that 53% of the outcome in the model is explained by the independent variables used in the model with the F-statistic of 3.58 confirming the fact that the results are about 95% reliable.

The VAR results for EXTD equation appear insignificant but some variables affect EXTD negatively while others positively. That is a 0.01% increase in EXTD of the present year is accounted for by 1% variation in BOP for the previous year. This result is significant at 5%. This result is still in agreement with those of Osakwe (2007), which shows that most African countries have accumulated EXTD as a consequence of persistent current account deficit.

According to the VAR equation for LAB, it is observed that a 4.22% decrease in LAB for the present year is the result of 1% increased in GDPPC the previous year and this is significant at 1% while for the second lag 0.91% decrease in LAB was as a result of 1% increase in GDPPC but this result is insignificant. This explains the fact that majority of the labour force are unskilled and uneducated as such the Lewis theory of excess labour supply holds. Again the VAR result also explains that, a decrease of 0.01% in LAB productivity in the current year is accounted for by 1% variation in BOP for the second lag at 1% significance level. This is in agreement with the Nurkse's theory of disguised unemployment. The theory stipulates that given the techniques and productive resources, the marginal productivity of labour in the agriculture over a wide range, is zero in over populated underdeveloped countries. Any 1% increase in external debt in both the first and second lag, LAB increases by 0.26 percent and decrease by 0.27 percent in the current year respectively. This implies that for the second lag a 1% increase in EXTD causes 0.27% decrease in LAB but for first lag, 1% increase in EXTD in the previous year causes 0.26% increase in LAB the current year. The results of both first and second lags are significant at 5%. This can be explained by the fact that in the second lag, LAB is affected negatively by EXTD but the preceding year with increase in debts because of debt defaults, LAB will have a positive effect due to re-investments of the proceeds of labour.
Furthermore, for a 2.78% increase in LAB in the current year is accounted for by 1% variation in LAB for the previous year more than the increase in the second lag that is 1.97%. The result is significant at 1% and is in agreement with the

Lewis theory of unlimited labour supply in the subsistent economy. When labour moves from the subsistence to the capitalist sector, the minimum subsistence wage is paid to labour and surplus re-invested, marginal productivity of labour will increase leading to further increase in productivity till all labour at the subsistence sector is absorbed. Also 1.05% increased in LAB in the current year is accounted for by 1% variation in investment for the previous year and a decrease in about 0.71% the year lag. Both results are significant at five percent level of significance. This scenario can again be tied to the Lewis theory of unlimited supply of labour where in the capitalist sector increase in minimum wage causes increase in marginal productivity of labour resulting from the increase in capitalist surplus used for re-investment. A 1 % variation in HIREXIN in the previous year is reflected by a 0.61% increase in LAB for the current year significant at 1% significance level which is greater than the 0.58% increase for the second lag. This result follows the modern growth theories which see growth as a continuous process.

The VAR estimate for INV shows that 6.05% decrease in INV for the current year is accounted for by 1% variation in GDPPC for the previous year. And in the second lag, the decrease is 3.13%. All the results are significant at 1% level of significance. Also the result follows the modern economic growth theories that regard growth as a continuous process and not spontaneous, it also depicts the fact that increased GDPPC results to increase savings and subsequently increase investment. The result claims further that a 0.01% decrease in INV in the current year is accounted for by a 1% variation in the BOP position in a second lag. This result is significant at 5% level of significance. Also a 0.54% decrease in INV in the current year is accounted for by one percent variation in EXTD in the second lag but for the previous year a 0.38% increase in INV in the current year is accounted for by 1% variation in EXTD. Both results are significant at 5% level of significance. A 1% change in LAB in both first and second lags results to 3.66 and 4.33% increase in INV in the current year. These results are statistically significant at 1% level of significance.

This result ties to the findings of Al-Marhubi (2000); the possible indirect effect of export diversification is tested through investment. A more diversified economy leads to faster growth and increase possibility of fruitful investment. 1.31% increase in INV in the current year is accounted for by one percent variation in INV in the previous year. The result is also statistically significant at 5% level of significance. This implies that proceed of investment when re-invested and well managed the outcome is more growth. In the same line Kollamparambil and Nicolaou (2011) using quarterly data from 1960 – 2005 to analyse the nature and relationship between public expenditure and private investment in South Africa recommended that a more proactive fiscal policy is needed to increase investment GDP ratio and subsequently stimulating higher growth rates. Again if HIREXIN change by 1% in the second lag, INV ought to increase by 0.97% in the current year at 1% statistically significant level. Also in the first year an increase of 0.48% in INV in the current year is caused by 1% variation in HIREXIN and this result is statistical significant at 5% level of significance. This result conforms again to the portfolio effect theory demonstrated above. The adjusted R^2 shows that 53% of the outcome in the model is explained by the independent variables used in the model with the F-statistic of 3.59 confirming the fact that the results are more than 95% reliable.

The VAR estimate for HIREXIN shows that a 0.64% decrease in HIREXIN in the current year is accounted for by 1% variation in GDPPC in

the first year. Again, a decrease of 0.43% HIREXIN is accounted for by a percent variation in HIREXIN the second year and this result is statistically significant at 5%. This conforms to the principle of diminishing returns to scale where subsequent addition of labour into production will lead to decreasing output.

5.0. Summary of Findings, Recommendation and Conclusion.

An attempt to reconcile the bi-directional relationship between export diversification, external debt and economic growth in Cameroon from 1980-2014 reveals that, the fairly diversified exports of Cameroon have positively and significantly affected the economic growth, Labour productivity and investment also positively affects economic growth while external debt and balance of payments show a negative relationship with economic growth. This links are observed to be cyclical over our period of study using the VAR methodology. Based on the established significant nature of the relationship, it means a dynamic policy option is mandatory for the economic growth Cameroon in if expanded exports and export diversification via domestic investment, research and little external loan are the answer, We therefore, recommend as follows.

5.1. Recommendation.

The Asian miracles which have been indirectly tested in this work are strongly recommended for targeted economic growth and development in Cameroon. In this regard, export diversification can be achieved by exporters and the labour markets being able to acquire new production techniques through adventuring, adaptability, anticipative, backward and forward acquisition of factors of production, boldness in defending the course, object and means of production, creativity, consciousness, ability to cope with uncertainty, communicative, collaborative, courageous, conquerors, decisive, desperate for profit, disciplined, designators, efficient, effective, engineering, energetic, foresight, focused, frugal and faithful.

Exporters are also expected to be goal oriented, generous, gifted, high esteem, hardworking, hopeful, hospitable, honest, innovative, intelligent, interested in profits, industrious, interactive, imaginative, Just, judicious, negotiators, nurture of ideas, optimizers, risk bearer, rational, reliable, realistic, respectful, sincere, serious, speculative, sensitive, supervisor, self-confident, skillful, technocrats, talented, undertakers, unique, universalists, value oriented, vest, wise, ways circumstances, works for survival, x-efficient, yearns for profit and above all zealous to overcome the challenges of economic growth and development in Cameroon.

Research on the possibilities of the presence of other natural resources, the provision of incentives and subsides for private sector manufacturing and service industries development by the government are other key elements for endogenous growth needed in Cameroon. Fiscal policy armed at encouraging private and government investments need to be re-examined. Conducive business environment, the development of the right incentives, directed towards the encouragement of potential businessmen and increase capacity building are hereby recommended. Furthermore, efforts to stimulate investment and labour productivity and as such helps in enhancing export diversification, external debt reduction and economic growth are warranted.

Consistent balance of payments deficit neutralizes the gains from export diversification. Therefore proper management of the Cameroon public debt (ie internal and external debts) as a way of eliminating the recurrent and the persistent negative effects emigrating from the deficit balance of payments position which sucks away the proceeds of external trade is strongly recommended. This can also be achieved by

encouraging productive imports and directing all external debt to the real sector of the economy. Again, maintaining a competitive exchange rate is imperative for meaningful export growth. According to Brenton et al. (2007), to ensure that domestic resources go to optimum use, a modern incentive framework needs to be elaborated to meet up the rapidly changing technological environment to be able to face the powerful and complex international markets. Also, universities and other institutes of higher learning should design programmes sound enough to build qualified young Cameroonians with both entrepreneurial and technical skills to meet up with the challenges of modern production methods for both internal and external markets. All theses done, Cameroon stands the chance of emerging come 2035.

5.2. CONCLUSION.

The role of export diversification, external debt and economic growth and development on each other cannot be under estimated. Based on the links of these variables and those of labour productivity, domestic investment and capacity building empirically established in this paper, we therefore, recommend harmonization of fiscal, commercial, research and monetary policies directed towards guided import control, export promotion, external debt utilization and labour productivity as answers to targeted growth and development in Cameroon. All theses put in place, there is no doubt that Cameroon stands the chance of emerging come 2035.

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