International Journal of Agriculture Innovations and Research
Volume 2, Issue 2, ISSN (Online) 2319-1473
Manuscript Processing Details (dd/mm/yyyy) :
Received : 14/09/2013 | Accepted on : 03/10/2013 | Published : 08/10/2013

Determinants of Uganda's Export Supply

Thomas Mwebaze
Makerere University, School of Economics
Email: tm2001ug@yahoo.com

Abstract – **The aim of this paper is to identify the major factors that determine the supply of exports in Uganda. The Ugandan economy heavily depends on the agricultural sector as a source of its export products. The traditional exports include coffee, cotton, tea and tobacco. There also a variety of non-traditional exports. For the last two decades, the Uganda government has adopted various policy measures geared at improving its export sector. However the economy has continued to experience chronic trade deficit.. The analysis starts with the performance of exports at the macro level, where the determinants of export supply are analysed. This is followed by the firm level analysis. The study uses data from Uganda Bureau of Statistics (UBoS), World Bank (World Development Indicators), and the RPED data by the World Bank.**

The study reveals that there has been a slow response of exports to the economic reforms adopted in the last decade and macroeconomic stability of the economy. At the macro level, the results indicate that, capacity of the economy to produce output, relative movement of prices at home and abroad, and domestic investment, are major factors determining the level of exports supply in Uganda. While at the firm level, the key factors include; labour productivity, capital, firm size, investment per worker, source of finance, sector, prior experience of the firm manager, capacity of the machines and legal status of the firm. Surprisingly, location was not found to be a significant factor for the export supply. Foreign direct investment was found not to be significant and this may be due to the fact that, whereas major exports are from agriculture, less of FDI is directed to the sector.

Thus, in order the Ugandan Economy to improve on its export supply, there is need for improvement in provision of credit facilities at affordable rates, increasing the capacity of the economy to produce more output, encourage FDI in the agricultural sector, enhancing the skills of those in the agricultural sector, and provision of basic inputs at affordable prices.

Keywords – **Agriculture, Exports, Non-Traditional, Output, Traditional, Trade Policy.**

I. INTRODUCTION

Exporting is one of the most important channels through which developing countries can link with the world economy. Exporting allows firms in developing countries to enlarge their markets and benefit from economies of scale. Additionally, several scholars have pointed out the importance of exporting as a channel of technology transfer (e.g. Pack, 1993). Thus, for better performance of a developing country, it is vital to identify the major determinants of its export supply. In order to formulate trade and industrial policies aimed at stimulating exports, it is important to understand which factors stimulate or deter firms from entering foreign markets.

Strong linkages to international markets, physical infrastructures, soundness of the macroeconomic framework and quality of institutions have been identified as some of the major determinants of export performance. Equally important is the issue of building competitive supply capacity to effectively exploit export opportunities. The main components of supply capacity are transport costs and factors affecting cost of production. The macroeconomic environment also has an important role in shaping supply capacity. This study investigates those factors responsible for the export supply for the Uganda case.

1.1 Facts about Uganda

Uganda is a landlocked East African country with an average population of 33 million people. It borders three co-members of the East African Community (Kenya, Tanzania and Rwanda), as well as Sudan and DR Congo. The country enjoys a generally good equatorial climate with adequate rainfall and fertile land, favouring Agriculture. It holds an estimated 2.3bn barrels of proved oil reserves located in Lake Albert. Agriculture is the most important sector of the economy, employing over 80% of the work force. However, Agriculture accounts for 23.9% of GDP, services for 50%, and industry the remaining 26.1 %, of which manufacturing constitutes 8%. The population is both young and one of the fastest growing in the world. Uganda is a Least Developed Country whose GNI per capita was estimated at US$ 510 in 2012. It currently experiences a budget deficit which is about 3.5% of GDP. The nation is governed under relative political stability and has enjoyed a reprieve from violent civil conflict in its northern region.

Over the last two decades, Uganda has implemented significant economic reforms to reorient the economy to market–based systems. These have included among others; liberalizing trade and the foreign exchange market, deregulation, attaining macroeconomic stability, privatization and the participation in regional agreements such as the Common Market for Eastern and Southern Africa (COMESA) and the East African Community (EAC). Many institutional reforms, especially dismantling state monopolies on marketing, complemented the trade reforms. Further still, the government is committed to streamlining and liberalizing the trade regime with strong emphasis on private sector development as a major engine for economic growth.

Over the last two decades there has also been several trade negotiations and autonomous reforms which have improved access to international markets such as the Africa Growth and Opportunity Act (AGOA) initiative and the European market to which Uganda is a beneficiary.

1.2 Major Exports of Uganda

Uganda's exports are predominantly agricultural products, exported in raw form. About 90 percent of the

value of total merchandise exports is agricultural. These exports are classified into two categories;- that is the Traditional and Non-Traditional Exports. The traditional exports are those products that have historically featured as, and been the mainstay of the export menu of Uganda as primary/raw material exports. These traditional exports include:- coffee, cotton, tea and tobacco. The Non-traditional exports are the export products other than the traditional exports. These include; fish, fruits, vegetables, spices, floricultural products, oilseeds, cereals, honey, animals and animal products (cows, goats, sheep and chicken).

Coffee continues to provide the biggest share of export revenue (22 percent of total export revenue-BOU, May 2013), amidst a growing a share of non-traditional exports. Non-traditional Exports fetch more export earnings than traditional exports (60 percent of total export earnings). Fish exports dominate non-traditional exports. Another emerging non-traditional export is cut flowers. Since the last century, the positive performance of the non-traditional exports has demonstrated that they hold the future of Uganda's Exports. From 2000 to-date, the non-traditional sector has continued to grow steadily. While it contributed 47% of the total export earnings in the year 2000, it has contributed over 60% in the last seven years.
Macroeconomic stability has been achieved for quite some time in Uganda, where, for the last decade the country has had a single digit inflation rate averaging at 5 per cent and GDP growth rate of an average of 6 per cent over the last decade (Statistical Abstracts, 2000-2012). Despite the progress at the macro level, the performance of exports has not been commensurate with the growth of the economy.

For several years, Uganda has run a current account deficit. That is attributed to low export earnings caused by the decline in world prices of most of Uganda's traditional exports. The export revenue has almost remained constant despite the upward trend in the share of non-traditional exports.

Whereas imports have been experiencing an upward trend, exports have almost remained constant (figure *1),* worsening the balance of payment position. Imports have continued to grow at a faster rate compared to exports of goods hence inducing the sustained widening of the current account gap that has translated into a form of chronic imbalance. With the sustained macroeconomic stability and growth, one would have expected a decline in the trade deficit, which has not been the case.

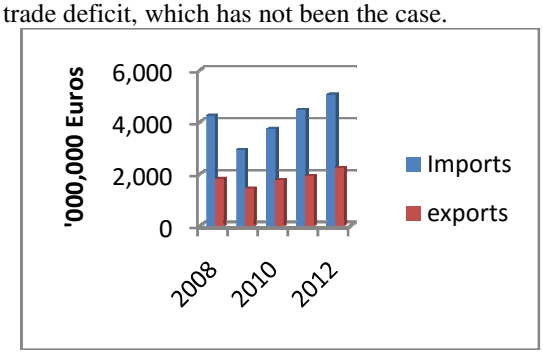

Fig.1. Uganda's Exports/Imports (2008-2012)
Source: UBOS

1.3 Empirical Evidence

Limao and Venables (2001), indicated that levels of trade flows observed for African countries are relatively low, essentially because of poor transport infrastructure. According to Srinivasan (1998), reliable and efficient infrastructure facilities are essential for reducing costs, ensuring timely supply of exports and thereby improving export performance. Most African countries, many of which are LDC's, are characterized by poor transport infrastructure, and are found in all periods to be poor export performers. Many developing countries lack reliable and efficient infrastructure facilities due to mainly under-investment and the public sector intervention. This contributes to higher costs and poor export performance. This appears to indicate that Uganda could do much better to raise its supply capacity by investing in transport infrastructure.

Redding and Venable (2004), investigate the relative contribution towards export performance. They find that internal components related to supply capacity such as internal geography and institutional quality played a significant role in explaining the observed differential in export performance.

According to Redding and Venables (2004), the relative export performance of the African and Middle Eastern countries tended to deteriorate over 1980s and 1990s. This was driven by relatively poor performance in supply capacity. However, since the late 90s, East Asian and Pacific countries in particular have been among the main beneficiaries of foreign market access which coincides with their successful diversification efforts.

Real exchange rate which reflects the underlying relative movement of prices at home and abroad, is proved to have a significant effect on the export performance of the lowest performers.

Gonenc and Yilmaz (2008) point out the high effect of exchange rate on the competitiveness. They did find out that imported input costs act as a natural hedge against exchange rate movements and have a substantial effect on competitiveness. Aysan and Hachasanoglu (2007), on the other hand, found that real exchange depreciation does not induce a huge increase in exports.

The literature available on the firm level variables having influence on export performance shows absence of comprehensive and detailed studies on the subject. Different studies taken together have examined a number of variables but only a few of them have been considered in any given study. Thus, although no single comprehensive study is available on the topic in the literature; different studies can help identify several firm level determinants of export performance from the experience of numerous countries. Thus, *Firm Size* exerts a significant positive influence on exports according to the studies by Lee and Habte-Giorgis (2004) for US manufacturing firms; Aitken, Hanson and Harrison (1997) for Mexican firms; Roberts and Tybout (1997) for Columbian firms; Hirsch and Adar (1974) for firms in Israel; Wignaraja and Ikiara (1999) for Kenyan firms; as well as Dholakia and Kapur (1999) for Indian firms. While Zinkota and Johnson (1983) suggested that company size

does not affect export activities. Gripsrud (1990), revealed a negative relationship between firm size and the attitude towards future exports.

Similarly, *Research and Development (R&D) expenditure* has a significant positive influence on the export performance in studies by Hirsch et al (1988) for Israeli firms; Ito and Pucik (1993) for Japanese firms; Wignaraja and Ikiara (1999) for Kenyan firms; Lee and Habte-Giorgis (2004) for US manufacturing firms; and Kumar and Siddharthan (1993) for Indian firms. However, Lall (1986) reports a negative influence of R&D expenditure in the Indian engineering and chemical firms on their export behaviour.

The studies by Dholakia and Kapur (1999) for Indian firms found a positive relationship between *Technology Imports* and export performance. The role played by *Import Intensity* in determining the export performance of firms is, however, controversial as seen from the studies on the same country. Thus, Pant (1993) and Dholakia and Kapur (1999) find a positive influence but Patibandla (1992) finds a negative relationship between import intensity and firm level export performance in India. *Capital Intensity* that gives competitive advantage to a firm through the production of technologically superior or better quality products, however, gives a negative relationship with export performance for Indian firms (Kumar and Siddharthan, 1993). However, Bernard and Wagner (1996) have found the exporting firms to be much more capital-intensive than the non-exporting firms in Germany indicating positive influence of capital intensity on export performance. Aaby and Slater (1989), indicate that perceived technological strengths are positively related to propensity to export. In contrast, Reid (1986) concluded that there is only a weak relationship between technology and export performance, and Christensen et al (1987) revealed no relationship.

Madsen (1989) found that a firm's exporting experience has a positive effect on export performance. Ruane and Sutherland (2005) for Ireland and Swenson (2005) for China have found that the presence of foreign firms has a negative effect on the export possibilities of domestic firms. That, this is attributed to the fact that there is little interaction between domestic and foreign firms. According to Melitz (2003), if the presence of foreign firms drives up the costs of labour or other factor inputs, then in a heterogeneous firm framework, this would make it less likely that the marginal domestic firm will start to export and lower the extent to which established exporters sell their goods abroad. In similar manner, foreign firms may also lead to the congestion of local infrastructure or services necessary for access into, or delivery to, export markets, again raising the costs of exporting.

It follows that the export behaviour and performance of current exporters is an area of legitimate interest, and such studies can be of importance to both public and private sector administers concerned with future export development and success. Less empirical attention has been paid to the export behaviour of firms that are already engaged in exporting activities (Gripsurd, 1990).

1.4 Objective(s) of the study

The overall objective of this study is to determine the extent to which certain factors influence the export supply and the performance of the key export products. This study attempts to tease out the factors that constrain export growth. At the macro level, the aim is to ascertain the factors responsible for Uganda's export supply performance. Particular attention is devoted to factors affecting supply conditions after controlling for access to international markets. A detailed analysis is undertaken to get an order magnitude of various factors affecting export performance, taking a systematic look at policy options that induce export supply to the desired levels.

Thus, an attempt is made to empirically test a model of export performance focusing on exports from Uganda. The relevance of such an exercise rests also on the fact that no clear policy implications emerge from economic literature which looks at the relationship between trade policy and output growth. The positive correlation between output growth and export performance is a strongly asserted empirical observation. Thus, a better knowledge of the determinants of export performance should contribute towards a better qualification of the relationship between trade policy and export growth, linked to economic growth.

Determinants of export performance can be split into external and internal components. External components include market access/entry conditions and a country's location vis à vis international markets. Internal components are related to supply-side conditions, which is the focus of this study.

Since the effects of specific policies on firm performance may not be captured at macro level, we have extended our analysis to the firm level. A major part of this research focuses on the investigation of those factors underlying a firm's export performance. Differences in export supply at firm level are assessed. This will contribute to the understanding of export behaviour and performance of firms in Uganda. One major traditional export product (coffee) and a non traditional export (fish) are assessed to further benchmark the constraints to export supply at firm level.

II. ANALYTICAL FRAMEWORK

The analysis consists of estimation of both aggregate export supply response equations and firm supply response functions based on both time series and cross section data.

(i) Macro level export supply determinants

In this study, we are interested in modeling the main determinants of exports supply in Uganda, following Goldestein and Khan(1985), Redding and Venabes (2004b). The model proposed by Goldstein and Khan (1985) is based on the standard supply function;

$$X_S = G(GDP, REER, INVEST, INF, POP, IMPORTS, FDI, COMP)$$

Where;

Xs = Exports

GDP = Gross Domestic Product

REER = Real Effective Exchange Rate

INVEST = Investment

INF = Inflation
POP = Population
IMPORTS = Imports
FDI = Foreign Direct Investment
COMP = Competitiveness

(ii) Firm-specific export supply determinants

This follows a two-stage process where export behaviour is analysed in two stages. In the first stage, the firm decides whether it will export or not. If yes, then the model goes to the second stage, looking at how much is exported. Due to the fact that "exporting or not" and "how much exported" are interdependent, the approach is adopted to avoid any bias involved were they will be considered separately. We describe firms' bahviour using the Dixit-Stiglitz-Krugman monopolistic competition framework, and display the main equations that allow us to obtain the estimable equation for the export decision of the firm. This is theoretically consistent with the recently developed models of exports (Melitz, 2004; Helpman et al., 2004; Bernard et al., 2003).

The model has two stages. First stage, a dichotomous variable Z determines whether or not the firm exports (export intensity). In the second stage, how much is exported is modeled conditional to its determinants. Thus we have that Z is a dummy variable and a realization of a latent continuous variable (Z*) that has a normally distributed and independent error term (e) with a zero-mean.

Therefore, the model has the following form.

(i) Decision to export equation (1st stage)

$$Z_i^* = W_i\alpha + e_i$$

$$Z_i = 0 \text{ if } Z_i^* \le 0$$

$$Z_i = 1 \text{ if } Z_i > 0$$

Where;

Z_i = latent variable

W_i = vector of covariates for unit i for the decision to export equation

α = vector of coefficients for decision to export equation

e_i = random disturbance for the decision to export equation

(ii) Amount exported (2nd stage)

$$y_i^* = x_i\beta + u_i$$

$$y_i = y_i^* \text{ if } Z_i = 1$$

$$y_i \text{ not observed if } Z_i = 0$$

Thus, the observed export share y_i is zero when the firm does not export ($Z_i = 0$) and assumes a positive value when the firm exports ($Z_i = 1$)

Where;

y_i = outcome equation

x_i = vector of covariates for amount exported equation

β = vector of coefficients for amount exported equation

u_i =random disturbance for amount exported equation

III. METHODOLOGY

The activities were implemented using an array of methods including desk research, discussion with stakeholders, institutions, and econometric analysis. Export supply is determined by a variety of macroeconomic policy, institutional and structural conditions, and thus differs significantly among countries. We examine these determinants in Uganda. This is done at the aggregate level as well as at firm level.

In order to disentangle the relative importance of these various influences on export performance, our approach is broken into two broad categories consisting macro/aggregate level analysis, and firm level analysis.

(i) Macro level analysis

In the aggregate analysis, the aim is to ascertain how Uganda's export performance has evolved over the past decade, whether export trends are declining or rising, and which factors are immediately responsible. After assessing the trends, an attempt is made to examine the role that policy and institutional settings may have in shaping long-term export supply. This is expected to provide clues to the question, what impact do macroeconomic policies and conditions have on export supply? This includes an overview of the potential factors driving growth in the long run. A number of policy and institutional factors that could influence export supply are explored.

The key research questions for the macro level analysis include;

- How have export supply trends performed in recent years?
- What are the factors that have influenced the performance of export supply in recent years?
- Which of the sectors is the major source of export supply?
- What impact do macroeconomic policies and conditions have on export supply?

These questions are addressed 1st by analyzing trends in total exports as a percentage of GDP and pointing out the possible macro economic underpinnings of the observed trends. This includes relating the observed trends in exports to major macroeconomic policy and institutional reforms. We then endeavor to look at the trends both in the volume of exports for coffee (major traditional export) and fish (major non-traditional export) and explaining the possible macroeconomic and institutional reasons for the observed differences.

Thereafter the specified econometric model is used to understand the relationship between exports and macroeconomic and institutional factors.

Model

The following regression equation will be used to estimate the determinants of export supply as proposed by Goldstein and Khan (1985). The model is specified in log-linear form;

$$\ln(X_t) = \alpha_0 + \alpha_1 \ln(GDPC_t) + \alpha_2 \ln(REER_t) + \alpha_3 \ln(INF_t) + \alpha_4 \ln(IMPORTS_t)\alpha_5 \ln(INVEST_t) + \alpha_6 \ln(FDI_t) + \alpha_7 \ln(COMP_t)$$

Where;

GDPC = Gross domestic product per capita

REER = Real exchange rate

INF = Inflation.
IMPORTS = Imports.
INVEST = Investment (domestic)
FDI = FDI inflows
COMP = Competitiveness.

All the variables are in log form so that the estimated parameters could be interpreted as elasticities.

Data

The macro level analysis largely rely on secondary data which was obtained from existing sources and enabled us understand past export trends as well as to project likely future trends. For the macro level analysis, we have used data from Uganda Bureau of Statistics (UBOS), Bank of Uganda and World Development Indicators. Our major focus was data on the variable in the model from 1987 up to date. This section documents the major secondary data sources and the data that can be obtained from the various sources.

The Uganda Bureau of Statistics (UBoS); UBoS collects and maintains a wide range of data sets that the proposed study will immensely benefit from. The first data set of interest from UBoS is the statistical abstract. This provided aggregate level information on total exports as well as shares of the different sectors in the total exports over time. Other sources of secondary data include the Uganda Business Inquiry (2006), Uganda Business Register and the monthly survey of selected manufacturing industries. The data are available from UBoS on request.

The World Development Indicators; Additional information on trends in exports as well as their composition was obtained from the World Development Indicators (WDI) of the World Bank. The World Bank data sets can support analysis issues related to export sub-sector performance. The data is available at the World Bank Office, Kampala.

II. Firm Analysis

The aggregate analysis may fail to capture the effect of certain policy actions such as sector targeted interventions and regulations. Likewise, differences in exports at firm level may point to variations in the extent to which certain firms benefit from broad policy actions. We extend the analysis of how policy influences export supply by exploring firm-level data, to provide clues on the policy influences on long-term export supply at the firm-level. We attempt to examine the micro determinants of export supply by focusing on the reallocation of resources at firm level, resulting from the expansion of more productive firms, the entry of new firms and the exit of obsolete ones. Key research questions include;

- What are the factors that influence the firms' decision to export?
- What are the factors affecting export supply at firm-level?
- Which of the sectors is the major source of export supply?
- How do institutional settings and market policies affect exports?

If firms within an industry vary significantly in efficiency and other characteristics, then one would expect the export activity of an individual firm to be influenced by a combination of comparative advantage factors and the characteristics of the individual firm. Thus, the above questions are addressed through the following:

Baseline model

Export propensity =

$$\alpha_0 + \alpha_1 L\ln pot1 + \alpha_2 ownership + \alpha_3 L\ln invest + \alpha_4 L\ln emplo + \alpha_5 L\ln age + \alpha_6 L\ln capacity + \alpha_7 L\ln \exp er + \alpha_8 \sec tor + \alpha_9 educmger + \alpha_{10} location + \alpha_{11} legal + \alpha_{12} finance + e_i$$

Export intensity =

$$\alpha_0 + \alpha_1 L\ln pot1 + \alpha_2 ownership + \alpha_3 L\ln invest + \alpha_4 L\ln emplo + \alpha_5 L\ln age + \alpha_6 L\ln capacity + \alpha_7 L\ln \exp er + \alpha_8 \sec tor + \alpha_9 educmger + \alpha_{10} location + \alpha_{11} legal + \alpha_{12} finance + e_i$$

Where;
Pot1 = labour productivity
Ownership = domestic or foreign owned
Age = years of operation of the firm in Uganda
Invest = level of investment
Emplo = number of employees
Capacity = capacity utilisation
Exper = experience of the firm manager
Sector1 = Agriculture
Educmger = level of education of the firm manager
Location = location of the firm
Legal = legal status of the firm
Finance = source of finance.

Data

In as far as the study is concerned, two data bases from the World Bank have been deemed to be important. The first is the Regional Programme on Enterprise Development (RPED) data set. The RPED is a six year panel (2001-2003 and 2004-2006) that captures information on various enterprises in Uganda including their employment levels, ICT use and market orientation, among others. The RPED data are available on request from the World Bank. Additional information on trends in exports as well as their composition are obtained from the World Development Indicators (WDI) of the World Bank. The World Bank data sets can support analysis issues related to export sub-sector performance.

IV. FINDINGS OF THE STUDY

Macro Level

The exports as percentage to GDP has been highly volatile in the last decade due to the sector's inability to rapidly adjust to policy changes and macroeconomic stability. Exports as a percentage of GDP experienced a sharp decline in the 80s. This could be attributed to the civil wars that extended to the whole country during that period. Since the 1990's the exports as percentage of GDP have been experiencing an upward trend though not so strong. This is an indication that although there has been a positive response, it is still very weak.

Performance of coffee exports

Before 1995, both the quantity and value of coffee exports were increasing. In the late 90s, despite the increase in the quantity of coffee exports, the value was falling. This was due to the fall in the international prices.

This lead to the substitution of coffee with other products. Some farmers cut down the coffee trees and started planting other crops, while others just abandoned the coffee plantations. Thus, since early 2000s, quantity of coffee has generally been falling.

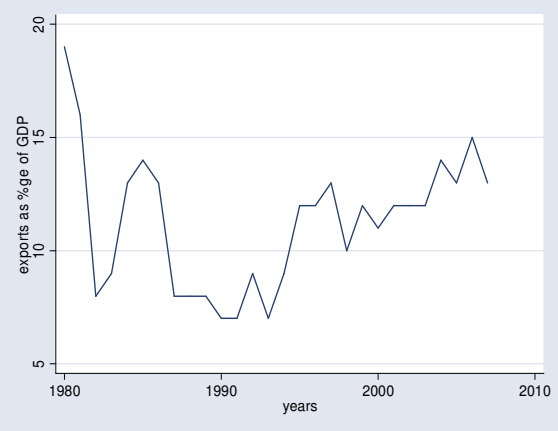

Fig.2. Exports as Percentage of GDP (1980-2009)
Source: UBoS/Bank of Uganda

Fig.3. Exports of coffee (1990-2007)
Source: UBoS/Bank of Uganda

Performance of fish Exports

Since the early 1990's fishing activity has increased. Figure 4 shows that fish exports have experienced a significant positive trend over the past years. Although there was a slight fall in value and volumes of fish exports in early 2000, it picked up within a short time. This was due to increasing international prices arising from improved quality of fish and fish products. There is therefore a competitive advantage in fish exports.

Fish and fish products export grew from 10,428 tons in 1997 to 35,963 in 2005. The value of fish and fish products export increased from 29.983 millions US $ in 1997 to 140.057 millions US$ in 2005.

However, the tremendous growth in fish exports has resulted in several concerns. First, in the last three years, there has been a decline in fish catches, raising concern that there may be over fishing in the lakes, especially lake Victoria, the major source. Moreover, the actual fish stock in Uganda's water bodies is not known at all.

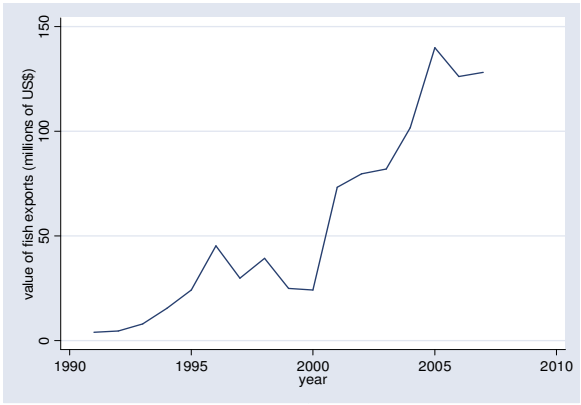

Fig.4. Value of fish exports (1990-2009)
Source: UBoS/Bank of Uganda

4.1 Estimation

The estimation technique that was employed by this study involved three major steps. The first step involved testing the time series characteristics of the variables. This was done through testing for the presence of unit root tests. The time series characteristics of the variables were determined using the standard procedures (in our case the Elliott-Rothenberg-Stock DF-GLS (ERS) and Phillips-Perron (PP) unit root tests). Those variables that were found to be integrated were differenced appropriately to induce stationarity. In the second step, the Johansen's Maximum Likelihood test was used to establish whether the dependent variable is cointegrated with the independent variables. The Johansen procedure was also employed to obtain the long run relationship among integrated variables. In the third step, the Ordinary Least Squares (OLS) Equations and error correction models were estimated.

Unit root tests

The study employed both the parametric (the Elliot, Rothenburg and Stock – ERS) and non parametric (Pillips-Perron-PP) tests for the presence of unit roots.

The results show that all the variables are integrated of order one (Appendix, table 6). This implies that the variables have to be differenced to induce stationarity before they can be used in the short run specification.

Cointegration

The multivariate approach to testing for cointegration based on the Johansen procedure was employed on LNEXPORT, LNREEER, LNGDPC, and LNFDI that were found to be integrated of order one. The cointegration tests are presented in table 7 in the appendix. The results suggest that there is one cointegrating equation. This suggests that there is a long run relationship among the variables in the model.

Long run Analysis

In addition the long run relationship among integrated variables were obtained and interpreted.

Table 1: Results for Long run analysis

1 Cointegrating Equation(s): Log likelihood 33.31824			
Normalized cointergating coefficients(s.e. in paranthesis			
LNEXPORT	LNREER	LNGDPC	LNFDI
1.000000	-0.457468	-0.623985	-0.044216
	(0.10915)	(0.26923)	(0.03387)

In the long run, a one hundred percent depreciation of the exchange rate increases volume of exports by about 46 percent whereas a one hundred percent increase in GDP which in our case is a proxy for supply capacity increases exports by 62 percent. On the other hand a one hundred percent increase in foreign direct investment increases exports by four percent. The low response of exports to foreign direct investment is due to the fact that most of Uganda's exports are agricultural based whereas most of the foreign direct investment has been directed to non agricultural sectors.

The collected data were preprocessed to eliminate non parametric components. This involved taking the first-order differencing of all the variables. Having identified a generic description of model error correlation, estimation of the overall model including both this correlation and the regression components was accomplished using ordinary least square estimation.

The basic methodology that was employed in the study is the general–to-specific; modeling approach. This approach starts off with specification of an over parameterized model and then proceeds through a reduction process to obtain a more parsimonious and a better characterization of the underlying economic relationships. The results of the general model are presented in table 2 below.

Table 2: General Model Results

Dependent variable: DLNEXPORT

Variable	coefficient	std Error	P-value
DLNINVEST	0.6263	0.2684	0.0583
DLNIMPORT	-0.0035	0.2382	0.9886
DLNREER	-0.0630	0.0501	0.2549
DLNOECD	0.0341	0.0696	0.6405
DLNGDPC	7.6239	2.3300	0.0170
RESID06(-1)	-0.7673	0.3760	0.0873
C	-0.5212	0.2744	0.1062
DLNINVEST(-1)	0.2429	0.2365	0.3440
DLNIMPORT(-1)	-0.1207	0.4138	0.7803
DLNINNEER(-1)	-0.0123	0.0615	0.8482
DLNOECD(-1)	0.0003	0.0617	0.9969
DLNGDPC(-1)	1.8356	3.4429	0.6130
R-squared	0.9104	Mean dep variable	0.2412
Adj R^2	0.7462	S.D. dep variable	0.2184
S.E. of reg	0.1100	Akaike criterion	-1.344
SSR	0.07263	Schwarz criterion	-0.7478
Log likelihood	24.07	F-statistic	5.5439
DW stat	1.3394	Prob (F-stat)	0.02355

The model in table 5 is over parameterized and cannot be interpreted in any meaningful way. We thus proceed to reduce the model to make it more parsimonious. The model reduction process is guided initially by statistical considerations rather than economic theory and we proceed by eliminating variables with very small 't' values in absolute terms, the validity of which is assessed at each stage using indicators such as the adjusted R^2 and the information criteria. The parsimonious model results are presented in table 3.

Table 3: Reduced Model

Dependent variable: DLNEXPORT

Variable	coefficient	std Error	P-value
DLNINVEST	0.6342	0.1001	0.0000
DLNGDPC	7.5750	1.3522	0.0001
DLNINEER	-0.0812	0.0275	0.0120
RESID07(-1)	-0.5657	0.1273	0.0008
C	-0.4188	0.0955	0.0009
DLNINVEST(-1)	0.1889	0.0768	0.0301
R-squared	0.8919	Mean dep variable	0.2413
Adj R^2	0.8469	S.D. dep variable	0.2184
S.E. of reg	0.0854	Akaike criterion	-1.8204
SSR	0.0876	Schwarz criterion	-1.5237
Log likelihood	22.384	F-statistic	19.810
DW stat	1.5523	Prob (F-stat)	0.0000

The model reduction process has led to elimination of insignificant variables without losing a lot of useful information. Whereas the R^2 reduced slightly from 0.9104 in the general model to 0.8919 in the specific model, the adjusted R^2 increased from 0.7462 to 0.8469. The Akaike and Schwarz criteria reduced from-1.344 to -1.8204 and -0.7478 to -1.5237 respectively. The F statistic which measures the hypothesis that all the right hand side variables are not different from zero increased from 5.5439 to 19.810. The standard error of the regression reduced from 0.1100 to 0.0854 in the general to the specific model respectively.

The coefficients for both contemporaneous and lagged investment have the correct signs and are significant. In particular, a one percent increase in contemporaneous investment increases exports by 0.6 percent whereas lagged investment increases exports by about 0.19 percent. Investment increases both productive capacity and productivity and should result in an expansion in supply for export.

Results reveal a strong positive relationship between GDP per capita and export supply. A one percent increase in GDP per capita, increases export supply by 7.5 percent. GDP per capita is used as a proxy for the capacity of the economy to produce output, part of which should find its way in export markets. Generally, the results suggest an important role for supply side factors in the determination of export supply. This is in line with the thinking that the problem is supply capacity and supply side factors**.**

In Uganda the exchange is defined as foreign currency in terms of local currency such that an increase can be interpreted as depreciation. The real exchange rate, which reflects the underlying relative movement of prices at home and abroad, was found to have a significant effect on the export performance. We use the real exchange to capture appropriate incentives for exports, which trigger supply response. A depreciating real exchange rate would make Uganda's exports more competitive in the world market while appreciating real exchange rate would make it less competitive. In particular, an appreciation of the nominal effective exchange rate reduces exports supply. On average a 1 per cent real depreciation of the nominal exchange rate increases exports by 0.08 percent.

Firm level Analysis

We estimate the baseline model using the RPED data in order to analyse the relationship between export performance and its determinants for the Ugandan firms'. The analysis utilizes the entire information in the panel on the variables in our model. The results are presented in table 4 and 5 below.

We find that labour productivity is a major determinant for the decision to export. Thus firms with low labour productivity will not be able to enter the export market, which is a common phenomenon for domestic firms. Labour is one of the major factors of production in Uganda where most firms employ labour-intensive technologies especially in agriculture.

The level of employment matters a lot for the decision of the firm to export. Capital intensity, measured by the investment per worker is also found to be a major determinant for the decision to export. It means that only firms with high capital intensity will be able to enter the export market.

Prior experience of the firm manager significantly affects the decision to export. Belonging to the agricultural sector was found to be one of major factors influencing the decision to export**.** Surprisingly, location of firm is not a significant determinant of the decision to export. The reason could be that most of exporting firms are located in the urban areas.

Table 4: Decision to export

Dependent var: Export status=1.0

	(1)	(2)	(3)	(4)
Llnpot1	0.032			0.059
	(2.69)**			(6.67)**
Llninvest	0.017	0.014	0.022	0.022
	(2.24)*	1.74)	(2.67)**	(2.95)**
Llnemploy	0.054		0.042	0.080
	(3.01)**		(2.07)*	(5.03)**
Llnage2	-0.014	0.018		-0.030
	(0.84)	(0.90)		(1.61)
Llncapacity	0.141	0.229		0.220
	(2.28)*	(3.52)**		(3.41)**
Llnexper	0.057	0.059	0.056	
	(2.37)*	(1.97)*	(2.01)*	
sector1	0.192		0.208	0.207
	(3.68)**		(3.85)**	(3.63)**
sector2	0.023			
	(0.34)			
sector6	0.012			
	(0.73)			
educmger	0.028	0.038	0.014	
	(0.66)	(0.93)	(0.33)	
location	0.002	0.030	0.027	
	(0.63)	(0.61)	(0.045)	
legal	0.098		0.172	0.152
	(2.48)*		(3.71)**	(3.58)**
finance2			0.330	0.264
			(2.31)*	(2.05)*
Observations	272	272	272	272

Robust z statistics in parentheses
* significant at 5%; ** significant at 1%

Where:
Llnpot1 = lagged labour productivity (in logs)
Llninvest = lagged investment per worker (in logs)
Llnemploy = lagged labour employed (in logs)
Llnage2 = lagged age of firm squared (in logs)
Llncapacity =lagged capacity utilisation (in logs)
Llnexper = lagged experience of the firm manager (in logs)
Sector 1 = Agriculture
Sector 2 = chemical and paints
Sector 6 = paper, printing and publishing
Educmger = education of the manager
Location = location of the firm (Urban=1 rural =0)
Legal = regal entity of the firm
Finance2 = if the firms source of finance is the bank

The results as shown in table 5 reveal that the decision to export is determined by labour productivity, capital intensity, labour employed (firm size), capacity utilisation, experience of the manager, sector, legal status of the firm and financial source. All these variables are significant as shown in table 7.

The most significant variable is sector1 which represents the agricultural sector. This means that firms which produce agricultural products will find it easier to export than firms in the other sectors (i.e. as categorized in the study). The results are not surprising since agricultural exports constitute about 60 percent of Uganda's exports. Therefore since Uganda has comparative advantage in agriculture probably the country should target the agricultural sector which has outperformed other sectors in the export market.

Labour employed is also a major determinant of the decision to export. Thus the size of the firm, measured by the number of workers employed is a significant factor for the firm in deciding to export. Such a variable greatly influences output in Uganda, particularly for the agro industries.

Installed capacity refers to the capacity of the machines used to produce. It is significant because it greatly influences the level of output and will enable the firm to enter the export market that demands large volumes of commodities.

The experience of the manager influences the firm's decision to export. This suggests that the managerial capacity of the firm impacts on the firm's ability to export, since the export market is a highly competitive market that requires good business acumen.

Capital productivity measured by investment per hour is also significant. Capital is a major factor of production and greatly influences output. Capital productivity is significant because export markets demand large quantities of products which highly depends on the level of investment.

The legal status of the firm greatly influences a firm's decision to export, because export markets are highly streamlined markets which operate using contracts that must be adequately enforced. Therefore only legally established firms would gain access to the export market, because they would be able to enter into legal contracts of supplying the required quantities, quality and delivery terms.

Financial source also influences the firm's decision to enter the export market. It is important because normally

the source determines the amount of finance an entrepreneur will obtain. Finance2 represents the bank, meaning that credit obtained from the bank is a very important source that influences a firm's decision to enter the export market. This is because credit obtained from the bank is normally sizeable and would greatly impact on the level of production.

Results (Table 5) show that the amount of firms' exports depend on a number of factors which include; the level of employment (firm size), capacity utilisation, age of the firm, experience of the firm owner, source of finance and legal status of the firm. A Firm that is a privately held, limited company is found to export more.

Table 5: Amount exported (exports)

Dependent var : exports

Table 5: Amount exported (exports)

Dependent var: exports

	(1) exports	(2) exports	(3) exports
Llnpot1			0.853
			(7.32)**
Llninvest	0.002	0.015	0.074
	(0.16)	(0.38)	(1.59)
Llnemploy	0.887		0.517
	(10.70)**		(4.10)**
Llnage2	0.003		0.748
	(0.04)		(5.74)**
Llncapacity	0.158	0.596	0.411
	(1.17)	(3.17)**	(1.75)
Llnexperience	0.200	0.398	0.468
	(1.18)	(2.00)*	(2.51)*
sector1	0.060	0.620	0.557
	(0.34)	(2.18)*	(1.91)
sector2	-0.112		
	(0.76)		
sector6	-0.146		
	(0.68)		
educmger	-0.022	-1.098	-0.930
	(0.24)	(4.02)**	(3.19)**
location	0.152	0.683	0.527
	(1.32)	(2.20)*	(1.62)
legal3	0.395	1.325	1.478
	(2.23)*	(4.63)**	(5.07)**
finance2	0.245	1.459	1.717
	(2.46)*	(4.51)**	(4.15)**
Constant	1.537	13.679	13.272
	(1.46)	(14.40)**	(12.23)**
Observations	129	130	129

Robust t statistics in parentheses

*significant at 5%; **significant at 1%

In summary the key policy variables are the agricultural sector, labour, capital and the legal framework. In order for the Government of Uganda to encourage firms to enter the export market it should target the agricultural firms. Secondly the Government should aim at improving the labour market in Uganda especially the issue of labour productivity which improves the firm's efficiency and will give the firm a place in the export market. Capital or level of investment is another important policy variable. Government should encourage private sector investment by providing a good investment climate to address constraints faced by firms such as the cost of utilities, poor infrastructure and access to credit. Lastly the legal framework should be streamlined through making it more accessible and affordable.

V. Summary and Policy Recommendations

Generally, export supply response in Uganda has been very low over the last couple of years, despite the institutional and macroeconomic frameworks in place. Although the traditional exports such as coffee still play a key role, the performance of non traditional exports such as fish is continuously and significantly on the rise. At the macro level, the level of investment, capacity of the economy to produce output (proxied by GDP per capita), and real exchange rate were found to be the major determinants of Uganda's exports.

The current investment promotion policies which were introduced in the 90s, have stimulated investment in processing and marketing, hence increased volume of non-traditional exports. For example, standards of fishing have improved over the last three years with emphasis on the quality and size of the fishing net, lake surveillance and refrigeration services. The Export supply is still faced with major constraints, which need to be addressed in order to experience a higher response. There is growing inability of Uganda's exports to rapidly adjust to the increasing market challenges posed by the technical barriers to trade, especially quality and standard requirements in the country's leading markets. Supply-side inadequacies continue to pose enormous challenges as the export sector is not able to guarantee consistent supplies in the country's leading markets.

Whereas the macroeconomic policy environment has been favorable for investors in Uganda, other infrastructure-related constraints, particularly utilities, remain a major challenge. Trade policy barriers are only a component of the transactions costs associated with trade. Poor infrastructure, notably by increasing transport costs, and institutional inefficiencies can significantly increase trade costs. The implicit tax on exports due to transport costs and inefficiencies are often very high, in many cases representing a greater cost (tax) to exporters than trade policy. However, institutional rigidities and infrastructure inefficiencies persist and these constrain trade performance.

Based on our findings, there's need to improve on the productive capacity of the economy and enhance domestic investment. More emphasis on the agricultural production, since it is a major source of exports. It is also recommended that Government should improve infrastructure facilities. Specifically it should increase the supply of electricity and reduce the tariffs. It should increase water supply and improve the transport system i.e. road, water and air transport. This would reduce the transaction costs hence increased supply of exports.

More of the FDI should be directed to the Agricultural sector to compliment the domestic investment. This may assist in improving the skills of those involved in the sector and also improve on the capacity utilization.

Provision of credit facilities will accelerate growth of export supply. This will assist firm to acquire machines with higher capacity and hence increase productivity. Relevant institutions such as Uganda Export Promotions Board (UEPB), Private Sector Foundation (PSF) and Uganda Manufacturers Association should provide trainings in order to improve on the managerial skills for the business community and provide technical information.

Individual firms should improve firm/product competitiveness through reducing the cost of doing business, improving standards and adding value to the product. In addition, Individual firms should improve networking and forming strategic alliance with foreign firms in order to increase on their managerial skills, which will also help them to penetrate the market.

REFERENCES

[1] Aaby, N.E., Slater, S.F. (1989), "Managerial influences on export performance: a review of the empirical literature 1978-88", *International Marketing Review*, Vol. 6 No.4, pp.53-68.

[2] Aitken, Brian; Hanson, Gordon H; Harrison, Ann E. (1997), "*Spillovers, Foreign Investment, and Export Behaviour*", Journal of International Economics, Vol.: 43, Issue: 1-2, August, pp. 103-132.

[3] Aysan, A. F. and Hacihasanoglu, Y. S., 2007, "Investigation into the Determinants of Turkish Export-Boom in the 2000s," *The Journal of International Trade and Diplomacy* Vol. 1 No.2, Fall: 159-202.

[4] Bernard A.B., Eaton J., Jansen B., and Kortum S.S (2003). Plants and Productivity in International Trade. *American Economic Review*, Vol 93(4) pp 1268-1290.

[5] Bernard, Andrew B. and Wagner, Joachim (1996), "*Exports and Success in German Manufacturing*", MIT Dept of Economics Working Paper No. 96-10.

[6] Christensen, C.H., Da Rocha, A., Gertner, R.K. (1987), "An empirical investigation of the factors influencing exporting success of Brazilian firms", *Journal of International Business Studies*, Vol. 19 pp.61-77.

[7] Dholakia, R.H. and Kapur, D. (1999), "*Trade, Technology and Wage Effects of the Economic Policy Reforms on the Indian Private Corporate Sector*", The Indian Journal of Labour Economics, Vol. 42, No. 4, pp. 981-992.

[8] Goldstein, M. and M. Khan. 1985. Handbook of International Economics. Ed. by R. Jones and P. Kenen. North Hollan. Vol. II, 1041-1105.

[9] Gonenc, R. and Yilmaz, G., 2008, "How did the Turkish Industry Respond to Increased Competitive Pressures, 1998-2007" TCMB WP No:08/04

[10] Gripsrud, G. (1990), "*The determinants of export decisions and attitudes to a distant market: Norwegian fishery exports to Japan*", Journal of International Business Studies, Vol. 21.

[11] Harrison A., 1996, "Openness and Growth: A Time-Series, Cross-Country Analysis for Developing Countries", *Journal of Development Economics*, 48, pp. 419-77.

[12] Helpman E., Melitz M., and Yeaple S. (2004). Export versus FDI with heterogeneous firms. *American Economic Review,* Vol. 94(1) pp 300-316.

[13] Hirsch, S. and Adar, Z. (1974), "*Firm Size and Export Performance*", World Development, 2:7, pp. 41-46.

[14] Hirsch, S., Kalish, S. and Katznelson, S. (1988), "*Effects of Knowledge and Service Intensities on Domestic and Export Performance*", Weltwirtschaftliches Archiv, 124, pp. 230-241.

[15] Ito, Kiyohiko and Pucik, Vladimir (1993), "*R&D Spending, Domestic Competition, and Export Performance of Japanese Manufacturing Firms*", Strategic Management Journal, Vol. 14, pp. 61-75.

[16] Kumar, N. and Siddharthan, N.S. (1993), "*Technology, Firm Size and Export Behaviour in Developing Countries: The Case of Indian Enterprises*", UNU/ INTECH Working Paper No. 9, Maastricht: UNU/INTECH.

[17] Lall, S. (1986), "*Technological Development and Export Performance in LDCs: Leading Engineering and Chemical Firms in India*", Weltwirtschaftliches Archiv, 122:1, pp. 80-91.

[18] Lee, Jooh and Habte-Giorgis, Berhe (2004), "*Empirical Approach to the sequential Relationship between Firm Strategy, Export Activity, and Performance in US Manufacturing Firms"*, International Business Review, Vol: 13, No. 1, February, pp.101-129.

[20] Limao, N. and Venables, A. J. (2001) Infrastructure, geographical disadvantage and transport costs, *World Bank Economic*, 15, 451–79, Review

[21] Madsen, T.K. (1989), "Successful export marketing management: some empirical evidence", *International Marketing Review*, Vol. 6 No.4, pp.41-57.

[22] Melitz M..J. (2003). *The impact of Trade on intra-Industry Reallocation and aggregate Industry Productivity,* Econometrica, Vol 71(6) pp 1695-1725.

[23] Pant, Manoj (1993), "*Export Performance, Transnational Corporations and the Manufacturing Sector: A Case Study of India*", Indian Economic Review, Vol. XXVIII, No. 1, pp. 41-54.

[24] Patibandla (1992), "*Scale Economies and Exports in an Import Substituting Regime – Some Observations for Indian Industry*", Economic and Political Weekly, Vol. XXVII, No. 9, February 29, pp. M-24 to M-30.

[25] Redding S. and Venables A.J. (2004) Economic Geography and International Inequality. *Journal of International Economics* 62 (1) 53-82.

[26] Reid, S.D. (1986), "Is technology linked with export performance in small firms?", in Hubner, D. (Eds),*The Art and Science of Innovation Management*, Elsevier Science Publishers, Amsterdam, pp. 273-83.

[27] Roberts Mark J. and Tybout James R. (1997), "*What Makes Exports Boom?*" Directions in Development Series, (The World Bank, Washington D.C.).

[28] Rodriguez F. and D. Rodrik, 2000, "*Trade Policy and Economic Growth: A Skeptic's Guide to Cross-Sectional Evidence*", Macroeconomics Annual 2000, B. Bernanke and K. Rogoff, eds., MIT Press for NBER.

[29] Ruane, F. and J .Sutherland (2005) "Export Characteristics of Irish Manufacturing Industry" forthcoming in The World Economy.

[30] Srinivasan, T. N. (1998), "*India's Export Performance. A comparative Analysis*". In I.J. Ahluwania and I.M. D. Little (eds). India's Economic Reforms and Development Essay for Manmohan Singh. Delhi: Exford University Press.

[31] Statistical Abstract for Uganda: 2000-2012.

[32] Wignaraja, G. and Ikiara, G. (1999), "*Adjustment, Technological Capabilities, and Enterprise Dynamics in Kenya*", in S.Lall (ed.), Opening Up, and Shutting Down? Import Liberalization and Industrial Technology in Sub-Saharan Africa, Oxford: Oxford University Press.

[33] Yanikkaya H., 2003, "*Trade Openness and Economic Growth: A Cross-Copuntry Empirical Investigation"*, Journal of Development Economics, 72, pp. 57-89

AUTHOR'S PROFILE

Dr. Thomas Mwebaze
is a lecturer at Makerere University, School of economics, Department of Policy and Development Economics.

APPENDIX

Table 6: Unit root test results

Variable	ERS	PP	Order of integration
LNEXPORTS	-2.289120 (-3.190000)	-2.295850 (-3.603202)	**I(1)**
LNREER	-2.836401 (-3.190000)	-3.018826 (-3.603202)	**I(1)**
LNCPI	-2.199087 (-3.190000)	-0.955948 (-3.603202)	**I(1)**
LNGDP	-1.667599 (-3.190000)	-2.053939 (-3.603202)	**I(1)**
LNINVEST	-2.535087 (-3.190000)	-2.458222 (-3.603202)	**I(1)**

Table 7: Test for cointegration
Series: LNEXPORT LNREEER LNGDPC LNFDI
Lags interval (in first differences): 1 to 1
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.624129	48.09635	47.85613	0.0475
At most 1	0.510486	24.61212	29.79707	0.1758
At most 2	0.263267	7.467896	15.49471	0.5239
At most 3	0.005617	0.135190	3.841466	0.7131