DETERMINATION OF LEVEL OF IMPORTS IN THE CONSTRUCTION INDUSTRY IN TANZANIA

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ABSTRACT

The construction industry has to be competitive and be able to undertake most of the construction projects in Tanzania and export its services and product according to the Tanzania construction policy. This is contrary to the fact that the industry is dominated by Foreign Service providers to the tune of approximately 70 percent in terms of market share. This study employed an econometric model estimation to answer the question of what determined import for construction services in Tanzania for the period 1985-2008. The Ordinary Least Square technique was adopted and applied for regression analysis using Stata 10 software. The findings reveal that four out of five variables are significant in determining the imports of construction service imports to Tanzania. While the national GDP is insignificant, both FDI inflows to the industry and the cost of construction or affordability negatively determine construction service imports of Tanzania. Both productivity and total country imports are positive determinants for construction service imports. To safeguard the existence, participation and performance of local construction service providers, the Government is advised to consider the above determinants in its policy-making machinery by especially encouraging investment-based service imports which in the long run will build the capacity of the local construction service providers and ultimately reduce the dominance of foreign providers.

***Keywords**: Import Performance, Construction, Trade*

INTRODUCTION

Construction is one of the industries that are booming in the whole world. The industry contributes a huge chunk to global GDP, amounting to 10%. It has immense potential for generating a huge amount of employment. It has been found that the construction industry offers employment to around 7 percent of the workforce around the globe. It **is**

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the largest sector in respect of consumption of energy as it consumes around two fifths of all the energy, consumed throughout the world. Resource utilization in the case of the construction industry amounts to half of all the resources used all over the world (Economy Watch, 2009).

Construction is a major component of investment; hence expansion in construction is closely related to economic growth. Construction output grows particularly fast, often exceeding the rate of growth of the economy as a whole, as countries put their basic infrastructure in place during the early stages of development (Bon and Crosthwaite, 2000).

Since the construction industry output is taken as the key to economic growth of a country, its performance should also be studied and measured. Performance measurement can be defined as the process of quantifying the efficiency and effectiveness of an action (Amaratunga and Baldry, 2000). Therefore performance measurement is the process of determining how successful organizations or individuals have been in attaining their objectives and implementing their strategies (Evangelidizs, 1992). Performance measurement has received great attention from researchers over the last few decades (Bassioni et al., 2004). Globalization and the increase of competition in the business environment have prompted the need for measuring performance and determining critical success factors.

Traditionally, various industries have measured their performance in financial terms, mainly profit and turnover. These financial measures of performance have been the sole measures of a company's success. However, performance measurement based on financial measures alone cannot cope with the recent changes occurring in the construction industry, particularly due to the emergence of new technologies and the increased intensity of competition (Kaplan and Norton, 1992).

Performances and conducts of all services including construction are governed by GATS of the WTO (1994) as the results of the Uruguay Round of Multilateral Trade Negotiations. The Uruguay Round of meetings at Punta Del Este in 1986 generated much excitement, with the promise of initiating negotiations aimed at developing a framework for trade in services. The literature was once more directed at policies that explored methods and implications for trade liberalization (Hindley, 1988). The conclusion of the General Agreement on Trade in Services (GATS) allowed governments to obtain exact information on their target markets and to negotiate for the reduction or removal of trade barriers among nations (LEK, 1994).

Construction and related engineering services, termed "physical construction services", are defined in GATS as involving the implementation of an investment project, and include the following sub-sectors: general construction work for buildings; civil

engineering works; installation and assembly work; and the finishing of buildings. Others refer to pre-erection work at construction sites, such as laying foundations, drilling for water and the renting of equipment for the construction or demolition of buildings or civil engineering works. This work can be carried out either by general contractors who do the complete construction work for the owner of the project, or by sub-contracting parts of the work to specialized contractors (GATS, 1994).

GATS also defines four ways in which a service can be traded, known as "modes of supply", which are services supplied from one country to another (like international telephone calls), officially known as "cross border supply" and consumers from one country making use of a service in another country (like tourism), officially known as "consumption abroad" others are company from one country setting up subsidiaries or branches to provide services in another country (like a bank from one country setting up operations in another country), officially known as "commercial presence"; and individuals travelling from their own country to supply services in another (like an actress or construction worker), officially known as "movement of natural persons" (ibid).

The Tanzania construction industry policy (2003) defines the construction industry as a sector of the economy that transforms various resources into constructing the physical, economic and social infrastructure necessary for socio-economic development. It embraces the process by which the said physical infrastructure is planned, designed, procured, constructed or produced, altered, repaired, maintained, and demolished. The constructed infrastructure includes: buildings, transport systems and facilities which are airports, harbours, highways, subways, bridges and railways, and transit systems, such as pipelines and power lines. It also includes structures for fluid containment, control and distribution, such as water treatment and distribution, sewage collection and treatment, sedimentation lagoons, dams, and irrigation and canal systems, and finally underground structures, such as tunnels and mines.

The Research Problem

The services sector has the potential to make a major contribution to economic growth. Trade in services continues to play a key role in the economies of Least Developed Countries (LDCs), in particular those that are members of the World Trade Organization (WTO) and part of the Multilateral Trading System (MTS). Unhelpful domestic support measures, export subsidies for agriculture and escalating tariffs continue to inhibit LDC exports to developed countries and advanced developing countries. In developed countries and in most countries other than the LDCs, their local construction industries have the lion's share in relation to market opportunities.

In particular, in all fourteen countries of the Southern Africa Development Community (SADC), except South Africa, the largest share of the construction market (about 70%) is controlled by foreign firms, in spite of the fact that each country has implemented some degree of preferential procurement procedures to increase local or indigenous participation (Ngowi et al. 2002).

The dominance seems to persist as also reported by Msita (1998). Msita pointed out that, in LDCs, the construction industries are dominated by Foreign Service providers to the tune of at least 60 percent in terms of market share. For example in the SADC region, with the exception of South Africa, local contractors and consultants have approximately a 30 percent market share in the region; Malawi (77 percent), Swaziland (60-70 percent), Tanzania (approximately 70 percent) and South Africa (10-20 percent).

The Tanzania construction industry policy (2003) states that, the goal of the construction industry is to develop an internationally competitive industry. The industry is expected to undertake most of the construction projects in Tanzania and export its services and products, ensure value for money and be environmentally responsible when implementing construction projects. Hence, determining import factors for foreign construction services in Tanzania is very crucial. The study will focus much on the entry factors as to what drives those foreign companies to operate in Tanzania particularly.

Objective of the Study

The general objective of the study was to assess the import determinants for the construction industry in Tanzania. In particular the study sought to assess the performance of the construction sector in Tanzania and to suggest desirable market entry strategies for local construction service providers so that they are locally and internationally competitive.

Research Questions

The study was expected to answer the following questions;

a) How well does the construction service sector of Tanzania perform?
b) What factors determine the imports of foreign construction services?
c) What could be proper market entry strategies for local service providers?

Construction Industry in Tanzania

Tanzania Construction Industry Policy (2003)

The Construction Industry Policy aims at creating an enabling environment for the development of a vibrant, efficient and sustainable local industry that meets the demand for its services to support sustainable economic and social development objectives. Its vision is to have a dynamic, efficient and competitive local construction industry that is able to undertake construction projects of any magnitude and participate effectively in providing its services in the regional and global marketplace. The mission is to create an enabling environment for the development of a vibrant, efficient and sustainable local industry that meets the demand for its services to support sustainable economic and social development objectives. The goal of the construction industry is to develop an internationally competitive industry that will be able to undertake most of the construction projects in Tanzania export its services and products and ensure value for money to industry clients as well as environmental responsibility in the implementation of construction projects.

Major Institutional Players in the Construction Industry

The construction industry in Tanzania includes companies and firms working as Consultants, Contractors, Sub-contractors, Quantity Surveyors, Architects, material and component producers, plant and equipment suppliers, builders and merchants. It is overseen by the following major institutions:

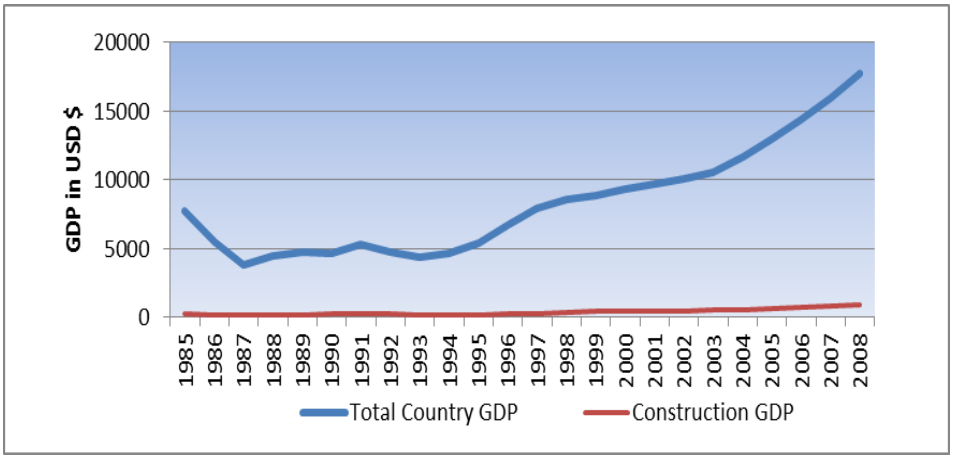
The Ministry of Infrastructure Development Representing the Government
The National Construction Council (NCC)
The Tanzania Bureau of Standards (TBS)
Training and Research Institutions
The Contractors Registration Board (CRB)
The Architects and Quantity Surveyors Registration Board (AQRB)
The Engineers Registration Board (ERB)
Professional Associations

Construction Industry Status

The growth rate of the construction industry was 10.5 percent in 2008 compared with 9.7 percent of 2007. This growth is attributed to the expansion in construction of residential buildings, roads and making land improvements. Moreover, the contribution of construction services to the national GDP was 7.7 percent in 2008 compared with 7.8 percent in 2007. In 2006 the industry registered a notable growth of 33.8 percent from 8.8 percent in 2005 largely stemming from an increased number of infrastructure projects, such as roads, port rehabilitation and residential houses.

In line with the registered growth its share of GDP also increased to 7 percent from 6 percent in 2005. During 2000, the growth in construction activities slowed down for the second time in consecutive year, declining to 8.4 percent from 8.7 percent in 1999. The slowdown is mainly explained by the postponement of government-funded construction projects, although the industry's contribution to GDP remained unchanged at 4.6 percent. The trends of the industry's contribution to GDP and national GDP are clearly shown in figure 1.

Figure 1: Tanzania's Gross Domestic Product from 1985 to 2008

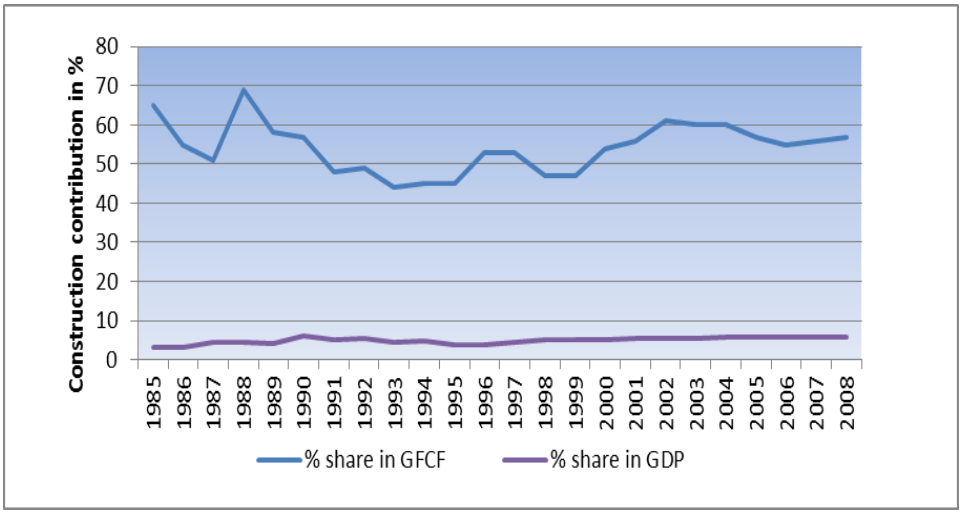


Source: Author's generation using Economic Surveys (1985-2008)

GDP and GFCF Contributions by Construction Sector in Tanzania

The average contribution to national GDP over the period of analysis was 4.83 percent, with a maximum of 5.98 percent in 1990 and a minimum of 3.08 percent in 1985. Also the average contribution to national Gross Fixed Capital Formation (GFCF) over the period of analysis was 54.05 percent with a maximum of 69 percent in 1988 and a minimum of 44 percent in 1993. The trends between 1985 and 2008 are shown in figure 2. In comparison with other construction industries East Africa, especially Kenya, Tanzania is performing better. The average contribution of the Kenyan construction industry[i] to GDP over the period 1980-2000 was 3.165 percent, with a maximum of 4.8 percent in 1999 and a minimum of 2.4 percent in 1981. The average contribution to GFCF over the period was 22.061 percent, with a maximum of 165.782 percent in 1990 and a minimum of -32.685 in 1985.

Figure 2: Tanzania Construction Sector Contribution to the GDP and GFCF at Current Prices



Source: Author's generation using Economic Surveys (1985-2008)

There is no sector of the Rwandan economy[ii] that shows more promise than the construction sector and associated industries. Between 2003 and 2008, the construction sector grew by 351 percent from an average annual output of US$100 million in 2003 to an estimated US$351 million. There are over 30 companies in the industry with an annual turnover of approximately US$1.7 million. The South Africa Construction Industry Development Board (CIDB) reported that the industry's is contribution to GDP in 2006 was 6.9%, in 2007 7.8%, in 2008 7.8% and in 2009 8.3%. The Board also projected the contribution would be 8.9% in 2010 and 9.5% in 2011.

Construction Industry Performance in Relation to Other Service Sectors

The construction industry performs better as regards its contribution to GDP than other service sectors. Table 3 below shows the contribution to GDP by all service sectors in 2001, when the construction industry was in fourth position. In 1998, 1999, 2002 and 2003 the industry was the main contributor to national GDP, followed by the communications sector. The industry was in last position in 2000 mainly attributed to the postponement of government-funded construction projects.

Table 1: Contribution of Services Sectors (%) to Global GDP

Sectors	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08p
Construction	10.8	9.6	0.1	7.9	13.1	15.6	14.5	10.1	9.3	9.5	9.6
Trade and Repairs	6.3	6.0	4.3	6.4	8.3	9.7	5.8	6.7	9.5	9.8	9.9
Hotels and Restaurants	7.3	6.0	4.1	4.8	6.4	3.2	3.6	5.6	4.3	4.4	4.4
Transport	4.3	3.8	4.3	4.9	5.9	5.0	8.6	6.7	5.3	6.5	5.4
Communication	5.3	6.6	5.6	8.7	10.4	15.6	17.4	18.8	19.2	20.1	20.5
Financial Intermediation	4.5	4.0	3.9	6.9	10.1	10.7	8.3	10.8	11.4	10.2	9.5
R. Estate and Business	3.6	3.7	5.1	3.4	8.1	7.1	7.3	8.4	8.0	7.5	5.7
Public Administration	3.2	2.7	10.7	10.5	9.2	9.6	13.6	11.4	6.5	6.7	7.5
Education	6.6	3.6	4.0	11.4	7.0	2.8	4.0	4.0	5.0	5.5	5.8
Health	2.4	3.2	5.1	5.6	8.6	8.7	7.8	8.1	8.5	8.8	8.9
Others	4.0	9.5	3.1	3.1	2.1	2.0	3.0	2.6	3.7	3.2	3.0

Source: NBS and Economic Surveys (1998-2008)

Theoretical Background and Review of Literature

The concept of trade in services was initiated in the mid-1970s by policy makers, primarily in the USA. The literature is descriptive and policy-oriented (Sapir and Winter, 1994), occupied with establishing the importance of trade in services, and it succeeded in drawing attention to the lack of government intervention in promoting trade in services, especially in the General Agreement on Trade and Tariffs (GATT). The 1980's brought more analytical and empirical research that explained trade in services by using the same factors that determined trade in goods (Shelp, 1981). By the mid-1980's it became apparent that the principles of comparative advantage of trade, as applied to goods, were also applicable to services (Deardorff, 1985).

International Transactions in Services

The transactions in services in the construction industry are diverse and therefore have to be classified according to the nature of the activity taking place at any one point in time.

Table 2: Typology of International Transactions in Services

	Provider does not move	**Provider moves**
User does not move	**Commodity Trade (Type 1)**	Temporary Movement **Factor Trade (Type 3)** Permanent Movement **FDI/Migration (Type 4)**
User moves	Temporary Movement **Commodity Trade (Type 2)** Permanent Movement Migration	

Source: Sapir & Winter (1994)

An Architect for example can, using today's technology, do a design for a client in another country, and by doing so the Architect would have participated in Commodity Trade - Type 1 see (Table 2), which resembles international trade in goods and is therefore marketed in the same manner as goods. If in the course of providing this service, the Architect moves temporarily to the user's country, then he would be participating in Factor Trade - Type 3, which is trade in services and satisfies the requirement of proximity.

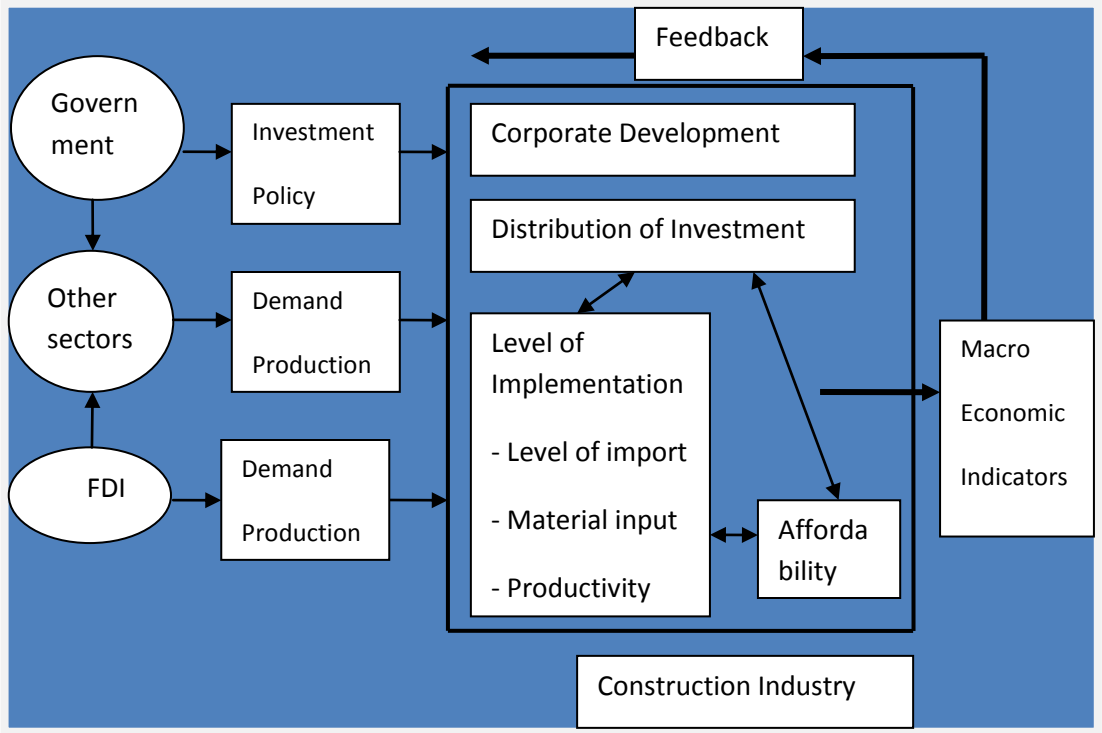
When the Architect decides to operate an office in the foreign country, he will be performing a Foreign Direct Investment - Type 4- (FDI) transaction for the production of goods on an international level. However, if the Architect decides to operate an office through local staff and make frequent visits he would have reverted to Factor Trade - Type 3, a trade in services character.

On the other hand, a building contractor or sub-contractor operating internationally is required to be present at the location of production for the life cycle of the physical erection of the facility, or until the completion of his/her service. The involvement of the contractor and sub-contractor is a Factor Trade (Type 3). It can be concluded then that commodity trade can take place in construction services when it involves the movement of the embodied factor services. Factor trade on the other hand involves the international movement of disembodied factors of production and it occurs in the construction services sector.

Industry Performance Theory

Ofori (1998) suggests the following as some of the of indicators that may be used to measure and describe the construction industry, construction in the economy; level of implementation; volume of material inputs; level of imports into construction corporate development; distribution of involvement; affordability and productivity. The indicators suggested by Ofori may be categorized into macro-economic and intra-industry indicators. Macro-economic indicators relate either to the drivers and/or originators of growth in the construction industry or measure the global output of the construction industry in relation to the economy as a whole. In order to describe the macro-level performance of the construction industry, a categorization is necessary, namely: Economic performance indicators, Quality performance indicators, Environmental performance indicators, and Informal sector performance indicators.

Figure 3: Performance Analysis



Source: Tindiwensi (2000)

Figure 3 is a conceptual model that describes the inputs and outputs of the construction industry in regard to Construction Industry Development (CID). The model suggests that intervening or driving-force issues in relation to CID include government policy and investment, demand from other sectors of the economy and the stimulant to demand and production as a result of Foreign Direct Investment (FDI). The output or macro-economic indicators measure the global performance of the construction industry and serve as input/feedback to government policy and investment decisions in the construction industry and also as a stimulant to FDI. The construction industry has a continuous exchange with other sectors of the economy between demand and production. The level of demand by other sectors of the economy may also depend on their own intervening factors of government and FDI.

The intra-industry indicators presented in figure 5are by nature straightforward and easy to measure and represent. This is because each one of these indicators can be directly measured. The macroeconomic indicators are rather complex and require several measures to describe them. Economic performance indicators describe the contribution of the construction industry to the national economy. This indicator may be measured in terms of proportional contribution to GDP and GFCF, and the amount of manpower employed by the industry (Lema and Price, 1998).

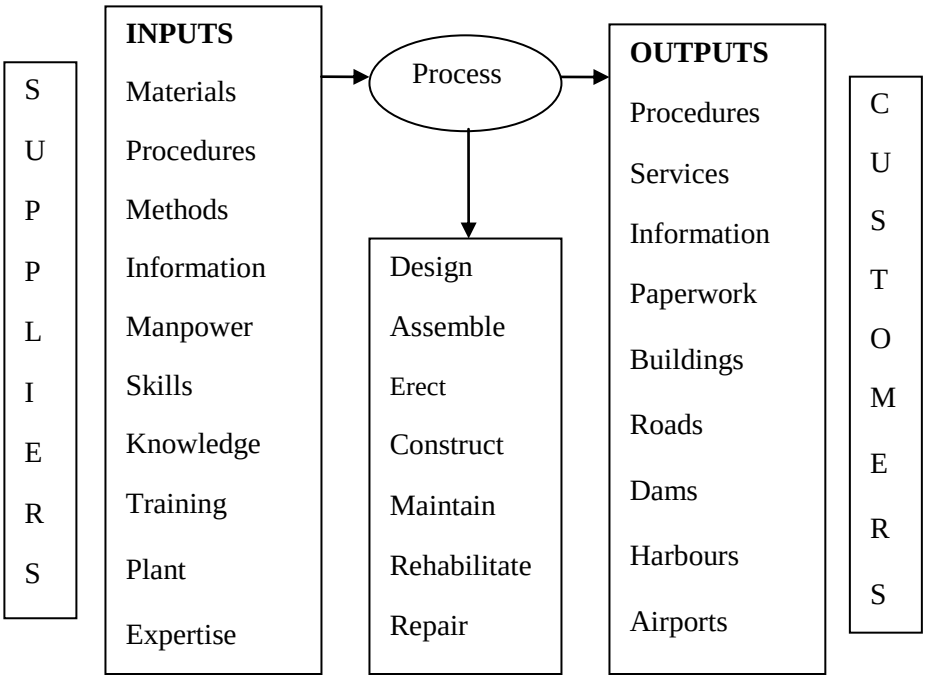
Products or Services in the Market

Marketing in the construction industry is defined as finding information about the economy, the client and competition. It was also found to mean having the goods at the right time, in the right place and at the right price (Wheeler and Woon, 1987). Like other markets, the construction industry market of Tanzania undertakes many activities involving the supply side and the consumer side, with the basic parts of inputs, processes and outputs for consumption. Figure 4 below shows details of the activities that take place between suppliers and customers.

Markets Available in Construction

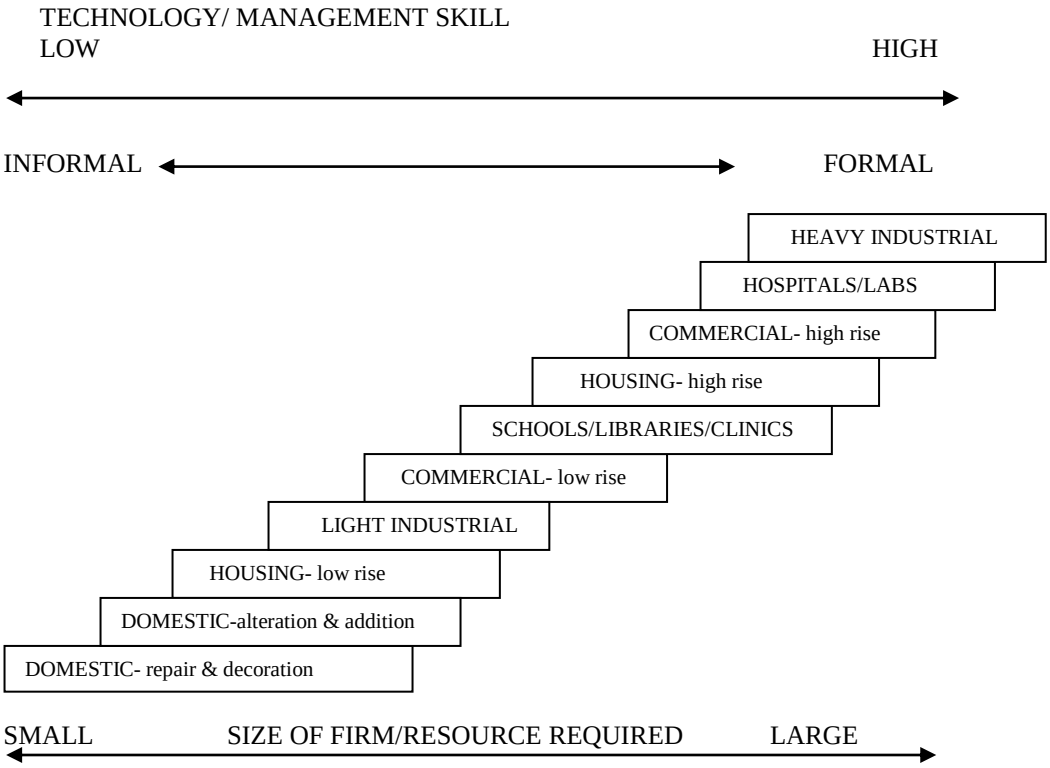
Different sizes of construction firms are needed, considering the various markets that are available to the construction industry. For example, Hindle (1997a) gave a hierarchy of markets for the construction industry, showing the level of technology required and the expected participation of different types and sizes of contractors. This is shown in figure 5. Informal and small formal firms can operate at the low end of the market, where the technology and managerial skills involved are also on the low side. According to Hillebrandt (2000), there are few large projects and many small projects. Hindle also stated that large firms which undertake large projects are few and small firms which undertake small projects are many.

Figure 4: Activities in Construction Service Business



Source: Merged from Lema (1996) and Oakland (1995)

Figure 4: A Hierarchy of Markets for Building Construction



Source: Hindle (1997a)

Appropriate Market Entry Strategies for Local Construction Firms

Competitive Service Delivery Mode

Local construction firms enter the domestic market and compete with foreign firms in the short and long run. The business of the firm must be better than that of the competitor as regards competitiveness. This can be difficult for local construction firms but it can be done through working on five performance areas as suggested by Slack (1991). The areas are making things right; making things fast; making things on time; changing what is to be produced or delivered; and making things cheap.

Joint Venture or Strategic Alliances Mode

Local firms can also enter the market by joining forces with other local firms or foreign firms already operating in the domestic market in the areas of management, financing and decision making. It is a higher risk mode as joint ventures entail a degree of resource commitment. Joint ventures may also be known as strategic alliances (Johansson, 1997) and include all forms of distribution, manufacturing, and research and development alliances.

Partnership Mode

Local firms can form partnerships with other firms operating inside or outside the country especially in the areas of sub-contracting, research and development, training and tendering. The reasons for sub-contracting are given by Lee (1997, pp 255-360), who is quoted below when describing sub-contracting in the construction industry of Singapore:

"Although construction projects are awarded to registered main contractors, in practice, the main contractors always sub-contract out nearly all labour to trade sub-contractors (kepalas). The tender system does not encourage main contractors to provide direct employment to construction workers. A substantial proportion of the work on any project is actually carried out by the trade sub-contractors, leaving the main contractors the task of overall management and control. Only in some smaller projects, the main contractors may directly employ workers to carry out the works. In fact, most tradesmen and workers in the industry are employed by kepalas or trade sub-contractors. The trade sub-contractors are therefore an important component in the construction industry".

Empirical Evidence

Tindiwensi et al. (2002), in their study of the historical macro-economic performance of the Ugandan construction industry for the period 1975/76 to 2001/02, used established macro-economic indicators. The indicators used are percentage contribution to GDP and GFCF. The major political and economic policy shifts are also presented in the same period in an attempt to explain the trends in the level and volatility of the performance indicators presented. It was found out that the contribution of construction to GDP follows the same growth pattern as that of GDP itself. Their study is very interesting; however the addition of micro-industry performance indicators could give a broader picture.

Francois (1999) fitted a gravity model to bilateral services for the United States of America and its major trading partners, taking Hong Kong and Singapore as free trade benchmarks. The independent variables include GDP per capita and Western

Hemisphere dummy variable. The results indicated that Brazil has the highest estimated tariff equivalent for business/financial services (35.7 percent), followed by Japan, China, South Asia, and Turkey at about 20 percent. The estimated tariff equivalents are considerably higher for construction services, in the 40-60 percent range for China, South Asia, Brazil, Turkey, Central Europe, Russia, and South Africa, and in the 10-30 percent range for the industrialized countries. From this study the GDP is seen as a strong determinant of service transactions between the countries. The study was good though it may lead to different results when considering the economies of LDCs like Tanzania.

Metwally (2004) tested the relationship between FDI, exports and economic growth in three countries, Egypt, Jordan, and Oman, from 1981 to 2000 by using a simultaneous equation model. The result suggests that the exports of goods and services are strongly influenced by the FDI in these three countries. But the analysis of Brecher and Diaz-Alejandro (1977) gives us evidence that foreign capital can lower economic growth by earning excessive profits in a country with severe trade distortions such as high tariffs. Carkovic and Ross (2002) also concluded in their econometric study on FDI and GDP growth that the exogenous component of FDI does not exert a robust, independent influence on growth.

All the studies were robust; however no consensus has yet been reached on the steady state or the dynamic effects of FDI on growth. While some studies argue that the impact of FDI on growth is highly heterogeneous across countries with relatively open economies showing statistically significant results, other studies maintain that the direction of causality between the two variables depends on the recipient country's trade regime. Thus, most studies do not pay any serious attention to the possibility of a bi-directional link between the two variables referred to.

Davis (2008) conducted research into the question of whether there is a problem of low or declining productivity in the building and construction sector in New Zealand and, if so, what factors are likely to be contributing to this situation. It paints a somewhat bleak picture of productivity growth in the sector since the late 1980s. The overall conclusion is that productivity appears low, relative to the construction sectors in other countries, and that the productivity growth rate over time has been poor. There are a variety of possible reasons for this including factors related to regulation, investment, competition, innovation, enterprise and skills. While the specific causes of poor productivity are unclear from the available research, there are indications that there may be issues in the areas of skills, investment quality, and innovation and management practices.

Kajeweski and Sultan (2002) did some research to examine the behaviour of the main construction costs and building rates, concurrently with socio-economic behaviour, for the purpose of identifying some of the deficits in construction activities in developing countries, such as Yemen. This was achieved by examining past and current trends in the construction industry over the last two decades. Comparisons with other developing and regional countries were made and finally a scale of international development was established. The scale is the Construction Development Index (CDI) which can give a very simple and direct indicator for monitoring the affordability and the cost of construction, which can be helpful for local and international comparisons. The study was good and hence provides the need to link it with the performance of the construction industry as to whether affordability impacts it negatively or positively.

METHODOLOGY

This study tests the following hypotheses;

a) Foreign Direct Investment (FDI) in the construction industry has a positive relationship with the construction service imports of Tanzania.
b) National GDP has a negative relationship with construction service imports.
c) Cost of construction has a negative relationship with construction service imports.
d) Productivity has a negative relationship with construction service imports.
e) Total country imports have a positive relationship with construction service imports.

Model Framework

Following Redding and Venables (2004), the supply capacity estimate is given by the exponential of exporter country dummy times its coefficient. That is

(1) $SC_i = exp(\beta count)$,

Where $\beta count$ = supply capacity of country i; and foreign market access is attained by using the following formula

(2) $FMA_i = \sum_{i \neq j} exp(\lambda partn_j) dist_{y_{ije}} exp(\gamma_2 bord_{ij})$,

Where

xi_j = value of exports from country j

$\lambda partn_j$ = export partner market capacity

$\beta count$ = supply capacity

$disti_j$ = bilateral distance costs

$\gamma_2 boardj$ = border dummy

FMA = foreign market access.

Combining equations (1) and (2) arrive at conclusion that, the supply capacity of a country is determined by the following equation (3)

$$In(x_i) = a + \lambda In(GDP_i) + \beta In(POPU) + \gamma In(FMA_i) + \delta In(t_i) + \chi COMP_i + U_i$$

Where POP_i is population, t_i is internal transport costs and related features and $COMP_i$ is a variable or set of variables affecting export sector competitiveness, either directly or indirectly.

The Model

Borrowing knowledge from the above equations, the formulated regression model below can be used to measure the determinants for construction service import in Tanzania. The model can also be used for estimating the relationship between the growth in imports of the construction industry and other factors.

$IMPCITZ_t = \mu + \mu_1 CIFDIGDP_t + \mu_2 GDPTZ_t + \mu_3 CoCTZ_t + \mu_4 PCITZ_t + \mu_5 IMPTZ_t + \Omega_t$

Where,

IMPCITZ = Imports of Construction Industry of Tanzania
CIFDIGDP = Construction Industry FDI as a ratio of GDP
GDPTZ = GDP of Tanzania
CoCTZ = Cost of Construction in Tanzania
PCITZ= Productivity in Construction Industry of Tanzania
IMPTZ= Import performance of Tanzania
Ω = Error term
t = Time
μ- μ_5 = Coefficients

Dependent Variables

From the literature studied, Imports of the Construction Industry of Tanzania (IMPCITZ) depend upon many determinants. Hence the IMPCITZ is taken as the imported value of the construction industry. The rationale for using this variable is to be able to analyze the impact of the variables to be studied thereafter.

Independent Variables

As suggested by different scholars in the theoretical and empirical literature reviewed, different variables can influence the performance of the construction industry differently. Hence the independent factors considered are:

Construction Industry FDI (CIFDIGDP)
This refers to the ratio of the annual FDI inflows to GDP for the period under review. FDI to GDP ratio (CIFDIPGDP) of Tanzania exports will be taken as a proxy for capital formation, and thus technology, since it has a bearing on export volume. The increase in FDI inflows is expected to cause an increase in imports of the Tanzania construction industry.

Gross Domestic Product of Tanzania (GDPTZ)
This is the total annual output, which is used as a proxy for the supply capacity of the country. The literature shows that GDP impacts negatively on import growth in many economies. Hence, a negative coefficient is expected.

Cost of Construction in Tanzania (CoCTZ)
The CoCTZ is measured by using the CDI, commonly known as the affordability indicator. Hence the CDI is taken as the ratio of construction costs per square meter (cost/m^2) to the parity purchasing power per capita (PPP/capita). The literature shows that CDI enables the industry to be more responsive in relation to construction costs and affordability in a particular country.

Productivity in Construction Industry of Tanzania (PCITZ)
The PCITZ is measured using Multifactor Productivity (MFP). MFP is defined as the ratio of output to the combined inputs of labour and capital. MFP is a more comprehensive productivity measure because it identifies the contribution of both capital and labour to output. Changes in MFP can reflect the influence of factors such as technical progress, improvements in the workforce, improvements in management practices and economies of scale. Some literature confirms negative relationship with service imports.

Import Performance of Tanzania (EXPTZ)
Import performance is the export growth index applied to proxy Tanzania imports. This is an endogenous variable to be used in the model of this study and it is measured as the import growth index with 2000 being the base year.

DATA TESTS

Distribution of the Data

The results in table 3 below indicate that the mean and median of all variables are close to each other; therefore the data are approximately distributed normally. Using the Jacque-Bera test, two variables, which are construction industry imports (InIMPCITZ) and productivity in the construction industry (InPCITZ), are greater than 5.99, which is

a critical value of Chi^2 at 5 percent level with 2 degrees of freedom. Hence the two variables fail the Jacque-Bera test, though they agreed with the first test of degree of closeness of the mean and median. However, this test is only valid asymptotically, so it relies on having a large sample size. Users with data sets smaller than 100 observations should be wary about using this test.

Table 3: Summary of Descriptive Statistics of the Variables (1985-2008)

Stats	**lnIMPCITZ**	**lnCIFDIGDP**	**lnGDPTZ**
Mean	4.718917	-0.2441521	8.905037
Median	4.80676	0.3707067	8.966572
Minimum	1.695616	-3.218876	8.254529
Maximum	6.231347	1.11678	9.546169
Standard Deviation	0.9222443	1.361207	0.4230515
Skewness	-1.188814	-1.077755	0.0521966
Kurtosis	6.099387	2.685479	1.569606
Jarque-Bera	15.2593147	3.9542890	2.0569250
Probability	0.000486	0.138464	0.357556
Observations (N)	24	20	24
Stats	**lnCOCTZ**	**lnPCITZ**	**lnIMPTZ**
Mean	5.518553	-0.849326	4.667529
Median	5.730797	-0.898945	4.600145
Minimum	4.271095	-0.980829	3.988984
Maximum	6.063413	-0.41855	5.517453
Standard Deviation	0.5601579	0.1515384	0.4467597
Skewness	-1.025142	1.633468	0.5041686
Kurtosis	2.882517	4.709727	2.628858
Jarque-Bera	4.21746674	13.5960372	1.1544903
Probability	0.121392	0.001116	0.561443
Observations (N)	24	24	24

Source: Author's computation using data from different sources (2009)

Correlation Analysis

The results in table 4 below show that most variables are correlated to each other, with the exception of almost no correlation between total country imports (lnIMPTZ) and construction industry production (lnPCITZ). Though most exogenous variables are highly correlated with the endogenous variables, it is difficult to detect multi-colinearity in the series because among these one is dependent (lnIMPCITZ) and the rest are explanatory variables. Therefore, firm conclusions are drawn from the model estimation.

Table 4: Summary of Correlation Test for the Variables

	Inimpcitz	Incifdigdp	Ingdptz	Incoctz	Inpcitz	Inimptz
Inimpcitz	1.0000					
Incifdigdp	0.5107	1.0000				
Ingdptz	0.7547	0.7487	1.0000			
Incoctz	0.6372	0.8762	0.6236	1.0000		
Inpcitz	0.0944	0.493	0.3164	0.3866	1.0000	
Inimptz	0.8808	0.7045	0.7583	0.7891	0.0038	1.0000

Source: Stata 10 output

Unit Root Test

The unit root test results for variables at all levels are presented in Table 5 below.

Table 5: Results of Unit Root Test at all Levels

Variable	ADF Test Statistics	Order of integration
InIMPCITZ	-1.088	I(1)
InCIFDIGDP	-4.364	I(0) ***
InGDPTZ	-0.668	I(1)
InCOCTZ	-4.650	I(0) ***
InPCITZ	-1.813	I(1)
InIMPTZ	-0.155	I(1)

Note:

(i) McKinnon (1991) critical values are used to reject the null hypothesis of the unit root
(ii) I(0) indicates the variable is stationary
(iii) I(1) indicates the variable is integrated at order one
(iv) Critical values for ADT are ***1% = -3.750; **5% = -3.000 and *10% = -2.630

The ADF statistics tests for InCIFDIGDP and InCOCTZ confirm that the variables are ideal for regression analysis, while the rest show acceptance of the null hypothesis of the unit root test at levels. This suggests the need for a further test for stationarity of

variables at first difference from the hypothesis, which states that in the first difference none of the variables is stationary or has unit roots. Table 6 below gives the results.

Table 1: Results for Unit Root Test at First Difference

Variable	ADF Test Statistics	Order of integration
d.InIMPCITZ	-5.548	I(0) ***
d.InCIFDIGDP	-2.653	I(0)*
d.InGDPTZ	-6.439	I(0) ***
d.InCOCTZ	-2.509	I(1)
d.InPCITZ	-2.568	I(1)
d.InIMPTZ	-3.428	I(0)**

(i) McKinnon (1991) critical values are used to reject the null hypothesis of the unit root

(ii) I(0) indicates the variable is stationary

(iii) I(1) indicates the variable is integrated at order one

(iv) Critical values for ADT are ***1% = -3.750; **5% = -3.000 and *10% = -2.630

Table 6 above shows the results for two variables (d.InCOCTZ) and (d.InPCITZ) and so the null hypothesis of the unit root test at first difference is accepted, while the rest are rejected. This suggests the need for a further stationarity test of variables at second difference from the hypothesis, which states that in the second difference none of the variables is stationary or has unit roots. Table 7 below gives the results where all variables reject the null hypothesis; therefore all variables are integrated at order zero and now become ideal for regression analysis.

Table 2: Results for Unit Root Test at Second Difference

Variable	ADF Test Statistics	Order of integration
d2.InIMPCITZ	-6.538	I(0) ***
d2.InCIFDIGDP	-3.893	I(0) ***
d2.InGDPTZ	-6.351	I(0) ***
d2.InCOCTZ	-4.635	I(0) ***
d2.InPCITZ	-3.923	I(0) ***
d2.InIMPTZ	-5.400	I(0) ***

Source: Stata 10 output

Note:

(i) McKinnon's (1991) critical values are used to reject the null hypothesis of the unit root
(ii) I(0) indicates the variable is stationary
(iii) I(1) indicates the variable is integrated at order one
(iv) Critical values for ADT are ***1% = -3.750; **5% = -3.000 and *10% = -2.630

Co-integration Tests

The results are provided in Table 8. Where eigen value statistics reject the null hypothesis that there are zero co-integrating vectors or three common trends. The test suggests that there are four long-run relationships. Also, residuals generated from long-run equations on non-stationary variables were tested for stationarity using the ADF test. Like the other variables, residuals were found to be stationary at second difference, with ADF statistic test of -6.568 which falls within 1 percent of the critical value. This suggests that the variables in the model are co-integrated.

Table 8: Johansen Co-integration Test

Maximum rank	Eigen value	Trace statistic	5% Critical value
0	.	310.3426	104.94
1	1	112.0993	77.74
2	0.96682	64.4163	54.64
3	0.85487	37.3942	34.55
4	0.76325	17.2235*	18.17
5	0.56909	5.4377	3.74
6	0.32186		

Source: Stata 10 output

When performing a sequence of trace tests at a given significance level to produce an estimate of the number of co-integrating equations, the ***** indicates that this estimator has selected the number of co-integrating equations corresponding to this row of the table. Also ***** denotes rejection of the hypothesis at 5 percent significance level. The trace statistic indicates one co-integrating equation at 5 percent significance level.

Error Correction Model (ECM)

Following the Engel and Granger theorem, the original model was reparameterised into an error correction model. An error correction term (ECT_1) was introduced in the model and hence the final model ready for regression analysis becomes;

$$d2.InIMPCITZ_t = \mu + \mu_1 d2.InCIFDIGDP_t + \mu_2 d2.InGDPTZ_t + \mu_3 d2.InCoCTZ_t + \mu_4 d2.InPCITZ_t + \mu_5 d2.InIMPTZ_t + \mu_6 \mathbf{ECT_{\_1}} + \Omega_t$$

The model with its associated lags was estimated using Ordinary Least Square (OLS) for time series data covering the years from 1985 to 2008. Thus, an error correction term lagged once (ECT_1), which is the residual from the long-run equation of non-stationary variables, is included as one of the explanatory variables in the general over-parameterized error correction model of determinants of the import performance equation. This term captures the long-run relationship, by attempting to correct deviations from the long-run equilibrium path. Its coefficient can be interpreted as the speed of adjustment from short-run behaviour to long-run equilibrium.

EMPIRICAL RESULTS

This section reports on the econometric results of import determinants in the Tanzania construction industry from 1985 to 2008. Table 9 below presents the estimation of the over- parameterised model.

Table 9: Estimated OLS Results with d2.InIMPCITZ as the Dependent Variable

Variable	Coefficients	Std Error	t-value	p-value	95% CI	
d2.InCIFDIGDP	-0.5393688	0.1075003	-5.02	0.001***	-0.7872649	-0.2914726
d2.InGDPTZ	1.36668	1.130655	1.21	0.261	-1.240615	3.973976
d2.InCOCTZ	-1.341537	0.6586154	-2.04	0.076*	-2.860307	0.1772326
d2.InPCITZ	1.155324	0.566397	2.04	0.076*	-0.1507895	2.461438
d2.InIMPTZ	1.455877	0.5887013	2.47	0.039**	0.0983291	2.813425
ECT_1	-2.071576	0.4805386	-4.31	0.003***	-3.179701	-0.9634524
Constants	-0.0376446	0.0510639	-0.74	0.482	-0.1553982	0.080109

Source: Stata 10

'd2' and **'In'** at the beginning of the variables are second difference and natural logarithm

R squared	= 0.8629	Probability (F-statistics) = 0.0042
Adjusted R squared	= 0.7600	F-Statistics (6, 8) = 8.39
Durbin-Watson d-statistics	= 2.19	Number of Observations = 15

*, ** and *** indicates significance at 10%, 5% and 1% respectively

Diagnostic Tests

The regression results in table 9 show that the goodness-of-fit is satisfactory (adjusted R squared is equal to 0.7600), meaning that the explanatory variables in the model explain about 76 percent of the changes in the level of imports in the construction industry of Tanzania from 1985 to 2008. Moreover, the F-statistic of 8.39 with probabilty of 0.0042 confirms that the overall model is statistically significant at second differences and hence the null hypothesis that right hands variables except constants have zero parameter coefficients is rejected. The model also proved that there was not a serious serial correlation among the variables, as confirmed by the Durbin-Watson statistics of value 2.19 being greater than the conventional mark of 2.0.

Interpretation and Discussion of Results

Construction industry FDI

From the OLS results in table 9, FDI flows into construction industry are negative and statistically significant at 1 percent level, with a probability value equal to 0.001. The result rejects the null hypothesis of this study that FDI has a positive relationship with construction service imports. Carmem et al (2007) say that the main reason for this could be the presence of robust contemporaneous and lagged complementarity of FDI and service import, which are corroborated by a long-run approach.

An interesting result is that the substitutive effect arising when the dynamic accumulation of FDI is taken into account. Such complementary and substitute effects are robust on average, but they also depend on the specific group of countries considered.

Therefore changes in FDI flows in the to construction industry have an impact on construction service imports because a unit increase will reduce construction service imports to Tanzania by 53.94 percent. This consequence is in line with the study done

by Domician (2007), which tested the impact of FDI on export performance with lessons from Tanzania for the period 1976 to 2005. The result shows that a unit increase in present FDI stock results in a proportionate 13.7 percent fall in export earnings. This implies that FDI has a negative effect when considering either import or export earnings.

Cost of Construction or Affordability

From the OLS results in table 9, the cost of construction is negative and statistically significant at 10 percent level with the probability value equaling to 0.076. The result agrees with the null hypothesis that the cost of construction or affordability has a negative relationship with construction service imports. Hence changes in the costs of construction have an impact on service imports because a unit increase will reduce construction service imports to Tanzania by 134.15 percent. The study on the behaviour of construction costs and affordability in developing countries, the case of Yemen conducted by Kajewski and Sultan (2002), concluded that, despite international awareness of sustainable construction, the costs of construction activities and resources have been continually increasing. Construction costs have registered an increase year after year at rate much faster than inflation. In view of the increase in the cost of basic input materials like steel, cement bricks, timber and other materials, as well as the cost of and constructing labour, building costs increased on average by 13.35 percent annually, even when inflation was in single digits. It stated by Ofori (2000) that the economies of many developing countries are currently confronted by severe difficulties owing to a combination of lower commodity prices, higher energy costs, falling exchange rates and rising inflation. Therefore the performance of the construction sector will always be hindered by price fluctuations.

Productivity

From the OLS results in table 9, productivity is positive and statistically significant at 10 percent level, with the probability value equaling 0.076. The result rejects the null hypothesis that productivity has a negative relationship with construction service imports. Both domestic and international factors influence productivity in the country. Among international factors, openness to trade is one of the important factors affecting productivity.

Therefore changes in productivity have an impact on construction service imports because a unit increase of productivity will increase the construction service imports to Tanzania by 115.53 percent. The result is supported by the study conducted by Garrik (2006) who provided strong evidence that Indonesian productivity benefits from downstream imports. The 0.117 coefficient on downstream imports suggests that factory output increases by approximately 0.12 percent as the proportion of

downstream materials imported rises by 1 percent. Given that the level of downstream imports increased by about 10 percent from 1988 to 1996 in many industries, the realized gain is about a 1 percent increase in output in many sectors. When weighted by firm output, the overall level of downstream imports increased by 5 percent, suggesting about a 0.6 percent (0.12 times 5) increase in productivity from 1988 to 1996. Since the increase in productivity in the relevant period is 19 percent, the effect of downstream imports represents roughly 3.15 percent of the gains in productivity.

Total Country Imports

From the OLS results in table 9, the variable is positive and statistically significant at 5 percent level, with the probability value equaling 0.039. The result agrees with the null hypothesis that total country imports have positive relationship with construction service imports. This is due to the fact that the total country imports depend also on construction industry imports and others.

Therefore changes in total country imports have an impact on construction service imports, because a unit increase will increase construction service imports to Tanzania by 145.6 percent. Greenaway et al (2003) in their study applied a dynamic panel approach to investigate the impact of imports of services on economic growth with a panel of 82 countries. The results suggest that imports of services have a significant positive impact on economic growth in developed countries and a negative impact in developing countries. The result also suggests that imports of other services have a significant positive effect in developed countries, while imports of transport travel services have no significant effect.

National GDP

From the OLS results in table 9, the variable is statistically insignificant because it possesses a probability value of 0.261, which has exceeded the critical value of 0.1. In spite of its insignificance the variable has a positive coefficient which means a positive determinant. This result rejects the null hypothesis that national GDP has a negative relationship with construction service imports. This might be caused by the insignificance of the variable due to data problems.

The result shows that a unit increase in GDP will increase construction service imports by 136.67 percent. Han and Ofori (2001) suggested that unless the capacity of the construction industry of any country grows faster than its GDP, the industry could constrain overall national socio-economic development. Also the proportion of GDP contributed by construction industry in developing countries ranges between 3 and 5 percent. The construction industry is a main contributor to the national economy, and so the more developed the industry is the greater its contribution to the economy.

Error Correlation Term

The coefficient of lagged once error correlation term (ECT_1) is negative and statistically significant at 99 percent confidence level, with a p-value equalling 0.003. The result agrees with the null hypothesis that the sign should be negative for equilibrium to be restored. The magnitude of the coefficient is (-2.071576) which implies that it will take two years after a shock which had attacked the construction industry's performance to restore it to equilibrium. The significance of the coefficient associated with the (ECT_1) further supports the acceptance of the co-integration hypothesis (Harris, 2000).

RECOMMENDATIONS AND POLICY IMPLICATIONS

Performance of Construction Service Industry

Though the construction industry is performing well, the main interest concerns the overall participation of local construction service providers, which is very low. Most local construction service providers are small or medium enterprises (SMEs). The SME development policy was formulated in 2003 to serve as guidance to all stakeholders involved in development. The overall objective of the policy is to foster job creation and income generation through the creation of new SMEs and improving the performance and competitiveness of existing ones to increase their participation in and contribution to the Tanzanian economy.

Foreign firms used to win about 80 percent of government tenders for construction services. Currently the government is implementing measures contained in the PPA 2004 in order to increase the participation of local firms in tender processes. The three measures are packaging (splitting) of contacts in sizes which allow the participation of many small firms; allocating jobs up to a certain value to local firms only and granting a margin of preference in favour of local firms in the tender process where they compete with foreign firms.

Existing policies adequately address the needs of local service providers in LDCs, but generally do not cover how they should deal with specific issues like capital formation and market access. The marketing of construction services needs firms to have adequate capital and be sure of market conditions. Therefore the Government should put in place a support mechanism for local service providers from the formation stage to the marketing stage. In favouring local service providers, the Government should also be very careful not to violate the national treatment principle found in all three WTO agreements (Article 3 of GATT, Article 17 of GATS and Article 3 of TRIPS). The principle states that imported and locally produced goods should be treated

equally, at least after having entered the market, which should also apply to foreign and domestic services, as well as foreign and local trademarks, copyrights and patents.

Import Determinants in Construction Services (1985-2008)

FDI in Construction Industry

The policy for investing in the country is the National Investment Policy of 1996 from the Tanzania Investment Centre (TIC). The policies aim to initiate and support measures that will enhance the investment climate in the country for both local and foreign investors. The Government's attitude to investment is to increase the amount of FDI in the country. Institutional support for priority investment projects is readily available from the TIC and other Government institutions.

The problem with the existing policy is that great efforts have been made to promote and to invite investors to the country without specifically addressing what exactly are the types, limitations and modes of investments that the country is demanding. FDI remains the engine for a reduction in imports if channelled to reduce dependence. The main focus should be enhancing capacity building and the ultimate benefits to be gained.

Therefore FDI in the construction industry of Tanzania should follow the same trend and overall modes of service as defined by GATS, and policies should strongly emphasize the commercial presence, where a service is provided, by establishing a presence in the country where the service is consumed. The emphasis on this mode will ultimately enhance technology and skills transfer to Tanzania, hence eradicating the demand for construction service imports.

Cost of Construction

In Tanzania the monetary policy of the Bank of Tanzania is used for controlling inflation. The objective of the monetary policy is to achieve a low and stable rate of inflation. The Bank of Tanzania focuses on the Consumer Price Index (CPI) to measure inflation. The rate of change in the overall CPI is referred to as the headline inflation rate. The inflation rate excluding food prices is often referred to as the non-food inflation rate. It is a measure of price movements, which are largely influenced by policy factors, but can also be frequently affected by external factors. Though there are initiatives to reduce inflation in the Tanzanian market, its gradual increase experienced recently has been brought about by uncontrolled external factors.

To allow the execution of efficient and sustainable construction activities under affordable conditions, construction costs should be reduced or alternatively the per capita is increased. Per capita GDP must reach a certain level so that construction firms lead to the satisfactory and sustainable purchasing power development of construction

activities. Any reduction in purchasing power will similarly affect the construction industry. The development of the construction industry should lead to affordable construction activities and materials, which is one of the main issues of sustainability in developing countries. The development of the construction industry in order to achieve efficiency, quality, affordability and sustainability is strongly tied to the economy. Since economies fight for a reduction in costs their achievements will result in increased construction service imports. Because consumers are cost sensitive, they will benefit greatly from the services of local providers, as many will be able to afford them.

Productivity in Construction Industry

From an overall efficiency perspective, the focus of productivity measurement is usually on growth rates. This is analogous to the focus on GDP growth rates rather than the overall level of GDP. While the latter is important for overall welfare, the great policy concern should be whether overall welfare is improving or not. Previous measurements of construction sector productivity reveal a low level of labour and multifactor productivity within the sector, and poor growth in productivity over time.

An alternative, and more action-oriented approach, would be for the government to engage with the sector to jointly identify factors that hinder productivity improvement in the sector, and to develop strategies for addressing them. While research can form part of the information base for this, it will also make effective use of the knowledge that already exists in the sector. This is more likely to lead to concrete and tangible initiatives in the short to medium term. Also developing a joint public-private programme of initiatives for enhancing sector productivity is crucial. A variety of action-research initiatives should be implemented as part of the approach (e.g. initiation and evaluation of demonstration projects that promote modern construction methods).

The main interest is to increase the competitiveness of local construction service providers, but the study findings show that increasing productivity means increasing construction service imports. Although increasing productivity is crucial, discouraging imports is difficult because foreign firms will look for a favourable environment, including cheap labour, capital productivity and favourable conditions for multifactor productivity.

Total Country Imports

In reality construction service imports contributed to total country imports by 0.92 percent on average over the period 1985 to 2008, with a maximum contribution of 1.7 percent in 1990 and a minimum of 0.1 percent in 1987. The contribution is small and can be accommodated sometimes. Therefore the government should facilitate

investments based on construction service imports, which in the long run will reduce its contribution to total country imports.

Those investments based on imports should be directed at building the capacity of local service providers, so that they become competitive in the domestic market and finally in the external market which will be in line with the national trade policy. Also the National Construction Industry Policy of November 2003 provides policy directions for promoting the establishment of financing schemes that support export activities and create incentives for exporting. Therefore not only should promotion be encouraged but also a sustainable environment should create for local service providers.

Tanzania GDP

Tanzania's GDP is statistically insignificant in explaining the changes taking place, according to the model proposed by this research, but remains important in explaining changes when linked to the balance of trade. This is because GDP is a function of the balance of trade (exports-imports) and other factors including investments, Government expenditure and consumption. The National Trade Policy (2003) is used for ensuring that the balance of trade contributes significantly to the GDP. That policy emphasizes export-led growth and addresses mechanisms for facilitating exports with the objective of stimulating the entry of private sector service providers, especially banks and insurance companies.

Despite all the efforts made in relation to the balance of trade, according to the BOT reports of 2007/2008, the current account deficit widened to US$2,327.7 million from a deficit of US$1,553.2 million recorded in 2006/2007. The deterioration in the current account was largely attributed to an increase in imports of goods and services that surpassed the increase in exports. As a ratio of GDP, the current account deficit increased to 14.9 percent compared with 13.1 percent in the year ending June 2007.

Therefore, the policy has failed to achieve its objective of bringing about export-led growth due to poor performance in exporting goods and services following persistent problems of supply constraints and standards limitations. For example, the country is almost a net importer of construction services. Therefore Government policies should focus on overcoming the problems that hinder export performance.

Market Entry Strategies for Local Construction Service Providers

Competitive service delivery remains the best way for Tanzanian construction firms to enter the domestic market and compete with foreign firms in the short and long run. The business of the firm must be better than that of the competitor as regards competitiveness. This can be difficult for local construction firms, but it can be done

through working on five performance areas. The areas are making things right; making things fast; making things on time; changing what is to be produced or delivered; and finally making things cheap. Other strategies to follow are joint ventures or strategic alliances and partnerships.

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END NOTES

[i] Government of Kenya, Economic Surveys (1996-2000)

[ii] Reported by Rwanda Development Board (2008)