IMPACT OF TRADE OPENNESS ON
ECONOMIC GROWTH IN KENYA

Umulkher Ali Abdillahi ✉

Department of Economics, Masinde Muliro University of Science and Technology, Kenya

aumulkher@mmust.ac.ke

Muganda Munir Manini

Department of Economics, Finance and Accounting, Kibabii University, Kenya

Abstract

Countries around the globe are liberalizing their trade policies because trade is considered as one of the primary tools to increase economic growth. The paper empirically analyzes the impact of trade openness on the economic growth in Kenya over the period 1970-2014. The empirical result shows that trade liberalization has positive and significant impact on economic growth. The coefficient of sum of total exports and total imports as a ratio of Gross Domestic Product which was used as a proxy for openness was positive and statistically significant (β=.151853, p-value=0.0042).The regression coefficient (β) value of the scores of FDI was (0.077276) with a t-test of 1.530526 and was statistically significant with a (p-value=.0134).The log of portfolio investment as a ratio of Gross Domestic Product was positive (β=0.015372, p-value=0.6405), but statistically insignificant. On the other hand the coefficient of gross domestic capital formation as a ratio of Gross Domestic Product as the proxy for financial development was negative and statistically significant (β=-0.382785, p-value=0.0031).The coefficient of secondary and tertiary institutions enrolment as a ratio of the total population which was used as a proxy for human capital was negative and statistically significant (β=-0.513306, p-value=0.0039).The coefficient of inflation as a proxy for macroeconomic stability was negative and statistically significant (β=-.077303, p-value=0.0419). The paper recommends that Kenya should speed up the process of trade openness to accelerate the rate of economic growth and improve the living standard of the masses. The focus should be on imports of new technologies and capital goods instead of consumable items. Efforts are required to ensure stable

macroeconomic environment which will encourage other stakeholders to play their part in the growth process. The country should invest both in physical and human capital for the growing labour force. This could be done using domestic sources as well as encouraging foreign direct investment.

INTRODUCTION

As economies are striving hard to achieve high economic growth, it becomes more important to answer the question what actually determines their economic growth. Trade openness has recently been considered as an important determinant of economic growth. It has been witnessed during the past couple of decades that international trade openness has played a significant role in the growth process of both developed and developing countries. International organizations such as World trade organization, International Monetary Fund and World Bank is constantly advising, especially developing countries, to speed up the process of trade liberalization to achieve high economic growth. High economic growth is the ultimate goal of all economic activities because it improves the standard of life of people which is desirable. The general perception is that high trade openness leads to high economic growth (Tahir and Azid, 2015).

Africa as a whole has even lost export market share, which was down from 6 per cent of world exports in 1980 to about 3 per cent in 2007. Hence, it is clear that the recent substantial rises in African countries' export earnings have not allowed Africa to recover its lost market share. In view of the continued deterioration of Africa's economic performance since the 1970s, the overarching objective of economic reforms was to achieve higher rates of economic growth by increasing the efficiency of resource allocation, in particular by aligning domestic prices more closely with international prices. African countries needed to dismantle import controls, such as foreign exchange rationing due to short-run balance-of-payment deficits, as well as long-term protection measures, including tariff and non-tariff barriers. The measures to liberalize imports revolved around three key policies: reducing the overvaluation of African currencies and eliminating foreign exchange rationing; dismantling non-tariff measures by reducing the list of products requiring import licensing and reforming the tariff system by reducing tariff dispersion and lowering the overall level of tariffs (World Bank, 1994). Additionally, regulatory barriers such as the granting of monopoly privileges were addressed in some cases of trade liberalization.

In theory, trade liberalization was expected to have a positive influence on the long-term growth of the economy in several ways. First among these is the "substitution effect", according to which trade liberalization should reduce the price of imported inputs and remove barriers to export, thereby shifting the incentive structure towards greater production in the tradable sector and improved export performance. This sector is expected to be more efficient than the non-tradable sector as it is more exposed to competition. As a result, total factor productivity in the economy is improved. Second, there is the expectation that greater emphasis on the production of tradables will encourage greater investment. This should expand production and confer positive externalities on the economy, particularly if the investment comes from abroad. Third, increased production for trade means that output volumes rise, allowing for greater specialization and "learning by doing". Finally, it is expected that trade will lead to technology transfer and that with more efficient technology total factor productivity in the economy will improve (World Bank, 2014).

Trade Openness and Export Performance Trends in Africa: A historical Perspective

Seen in a historical context, Africa's trade has gone through three distinct phases. Prior to the early 1960s, when many African countries gained independence, African trade policy was defined by the colonial Powers. Trade was essentially a two-way relationship between African countries and their metropolis, whereby primary commodities were exported and manufactured products imported. The trade structure of African countries during this period was driven by the interests of the colonial powers. In the period from the 1960s to the 1980s, the trade policies of many countries in Africa were informed by the doctrine of import-substitution industrialization. For example, Burundi, Ethiopia, Ghana, Madagascar, Nigeria, Senegal, Sudan, the United Republic of Tanzania, and Zambia all adopted inward oriented policies with significant trade restrictions. This strategy advocated the protection of the domestic market from foreign competition in order to promote domestic industrial production. Import-substitution industrialization was widely accepted in the 1960s and 1970s as a viable policy package to help developing countries achieve structural transformation and lessen their dependence on primary products (UNCTAD, 2008).

As a result, trade policies in most African countries during this period were characterized by extensive State involvement in the economy, both in production and in marketing. Additionally, the domestic market in these countries was shielded from foreign competition through a number of policy measures. Nontariff measures (NTMs) such as quantitative import restrictions and government licenses were used profusely to restrict imports. Tariff structures were often highly complex, with a large number of tariff rates, and tariffs were high. Exports

were often restricted by a number of export taxes and strict rules and regulations. The exchange rates of countries outside the CFA franc zone were often highly overvalued and access to foreign exchange was rationed.

Kenya's Economic Performance and Trade Openness

Kenya is emerging and transforming politically and economically after 50 years of independence marked by mixed political and economic performance. The initial period of rapid growth to the mid-1970s was followed by a period of stagnation until the turn of the millennium, and then modest growth over the last decade. While Kenya has the potential to be one of Africa's best-performing economies, the country has been following, not spearheading, Africa's growth momentum: with around USD 840 (2012), Kenya's average per capita income is still only about half of Africa's average of USD 1,600. Africa's growth momentum has already propelled 22 economies above the USD 1,000 middle-income threshold, yet Kenya is only ranked 24th continent-wide and remains in the low income group, with almost half of the people living below the poverty line and high unemployment (Africa Development Bank, 2014).

Figure 1. Kenya's GDP Growth (1970-2014)

Source: http://unctadstat.unctad.org/Tableviewer/tableview
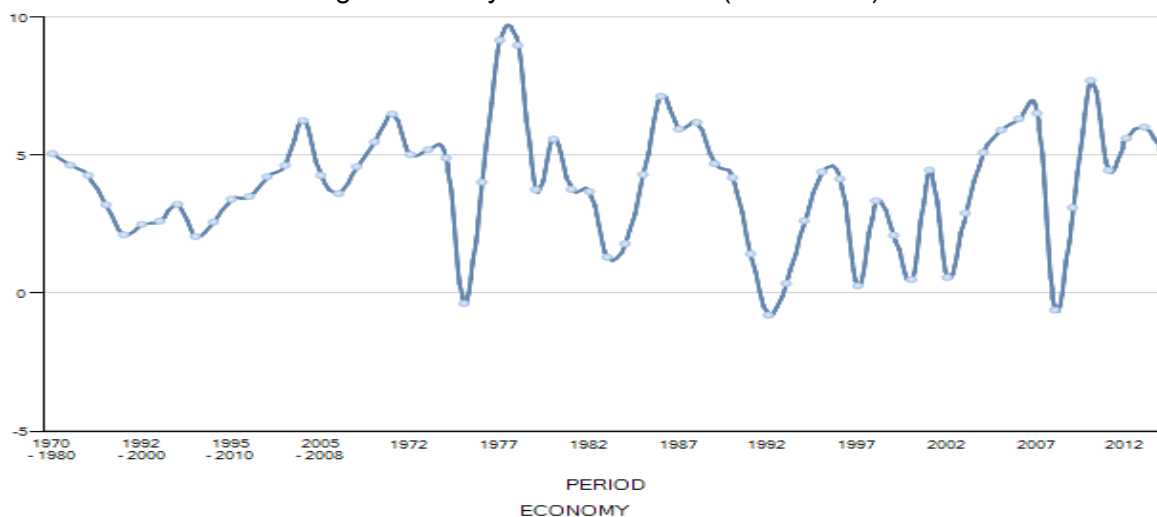
According to WTO (2000) press release, Kenya's trade policy objectives include moving towards a more open trade regime, strengthening and increasing overseas market access for Kenyan products, especially processed goods, and further integration into the world economy. These policy objectives have been pursued through unilateral liberalization, and regional and bilateral trade negotiations, in particular within the African region, as well as through its participation in the multilateral trading system.

Kenya inherited trade and industrial policies from colonial rulers aimed at import substitution Gertz (2008). The import substitution policy drove towards protection of domestic industries at the expense of their competitiveness, which in turn enabled manufacturers to make profits even in cases off under utilized capacities. Kenyan manufacturers thus became inward oriented and failed to venture into international markets. Kenya signed its first Structural Adjustment loan with the World Bank 1980, on the condition that government was to adopt more liberal trade and interest regimes and more outward oriented industrial policy but in practice a few of the changes were adopted. In 1982 the government promised to pursue greater liberalization while asking for IMF funding (Gertz,2008).

Export processing zones was introduced in 1990; by 2004 there were 36 EPZs in operation, International Chamber of Commerce ICC (2009). Its aim was to provide an attractive investment opportunity for export oriented business ventures within designated areas and regions. Kenya offered incentives to attract new firms manufacturing for exports. The Kenya Export Processing Zone has been in the forefront of initiating; promoting and providing investment opportunities for export oriented business ventures in the country, it also allows for duty and VAT exemption on imported machinery and raw materials (Republic of Kenya 2007). EPZ's have since employed many workers and increased the number of exports goods outside the country.

According to WTO (2000) press release, Kenya's external trade policies are designed to create an environment conducive to promoting its products in international markets, especially those of the developed countries of Europe, America and Japan without forgetting the promotion of intra-African trade. Trade policies are formulated with the view to speeding up Kenya's industrialization process and make access to foreign markets easier for Kenyan products. In pursuing, Kenya has entered into Multilateral, regional, bilateral and preferential trade arrangements. It is a signatory to the Lome convention, which is a trade and aid agreement between the European community and developing ACP countries and also member of African Economic Community, Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC) and Inter-Governmental authority of Development (IGAD), Republic of Kenya (2007). The government has also undertaken key economic reforms with a view to promote both domestic and import licensing, rationalizing and reducing import tariffs, liberalization of foreign exchange and price controls and partial liberalization of capital markets among other measures. It has also committed to gradual reduction of tariff and non-tariff barriers and progressive liberalization of trade. In 1992 an Investment Promotion Centre was established to promote investment in the country.

Kenya intends to actively pursue its trade liberalization and structural reforms to consolidate the re-orientation of its economy and complete its transition to an outward-oriented economy.These measures should facilitate the efficient allocation of resources reflecting Kenya's comparative advantages. Improvement of the low level of its multilateral commitments, the transparency and predictability of existing legislation, as well as its enforcement, would create confidence in the irreversibility of its reforms and render them more credible, thus improving Kenya's ability to attract the needed foreign investment and enhancing the country's adherence to WTO principles. Kenya has reduced the overall level of protection of its economy since 1993. It has dismantled most of non-tariff restrictions. The policy on International Trade is anchored on liberalization and globalization and driven by competitiveness. Industrialization and rapid economic growth in developed and newly industrializing countries has been mainly attributed to international trade through export-led strategies, Republic of Kenya (2007). The trade policy also aims at transforming the country into a more open, competitive and export-led economy but it is still a process thus making Kenya not yet liberalized.

Objectives of the study

The general objective of this study was to establish the the impact of trade openness on economic growth Kenya between the period, 1970-2014.

The study was guided by the following specific objectives;

    (i) To investigate the impact of trade openness and economic growth.

    (ii) To assess the effect of macroeconomic variables on economic growth.

Justification

African countries and especially Kenya have been implementing trade liberalization measures for a long period now, so it is perhaps time to take stock of trade performance after liberalization in order to propose remedial actions where needed. If trade openness really matters for achieving high economic growth, then the process of trade liberalization should speed up to grow fast.

LITERATURE REVIEW

Theoretical foundation: The Endogenous Growth Models

In the endogenous growth models, the steady-state growth is determined endogenously. In these models, one of the determinants of growth (Technology and labour employment) is assumed to grow automatically in proportion to capital. These models result in a production

function of the form Y = AK and are thus called the AK models. Among the AK models are the Harrod- Domar and the Frankel-Rommer models.

The Harrod-Domar Model

The Harrod-Domar model, points out that output depends on the investment rate and the productivity of that investment. In an open economy, investment is financed by savings which is a sum of domestic and foreign savings. This model explains economic growth in terms of a savings ratio and capital-output coefficient (Chowdhury,1998).The model (as cited in Easterly,2009) is expressed as follows,

$g = (I/Y) /\mu$ ……….. (2.1) and

$I/Y = A/Y + S/Y$ …………. (2.2)

where I is required investments,

Y is output; g is target GDP growth,

A is aid, S is domestic saving and μ the incremental capital-output ratio (ICOR).

The Neoclassical Growth Theory

The neoclassical growth theory predicts that an economy will converge to its steady-state growth and that the rate at which it converges depends inversely on its distance from the steady-state growth. This concept of conditional convergence implies that once the determinants of the steady state are controlled for, a country with an initial lower real per capita income will grow at a higher per capita growth rate (Barro&Sala-i-Martin, 1995). The empirical framework of the neoclassical growth theory relates per capita growth rate to two variables: initial levels of state variables such as the stock of physical capital, and to control or environmental variables such as government policies, terms of trades and so on. The control or environmental variables have the effect of increasing the level of per capita variables with the framework. The inflow of foreign capital enters into the framework as one of these environmental variables that increases the level of per capita output. Following Age'nor (2005), the model is extended to account for other externalities associated with telecommunication infrastructure; Output (Y) is produced with private physical capital (Kp) and public infrastructure services (GI), consisting of spending on roads, power plants and telecommunication infrastructure among others. This extension of the neo-classical model and introduction of telecommunication infrastructure has been supported by Levine and Renelt (1992), Mankiw, Barro and Sala-i-Martin (1992), Barro and Sala-i-Martin (2003) and Waverman, Meschi and Fuss (2005).

Heckscher Ohlin theorem

Eli Hekscher and Bertil Ohlin develops the Ricardian framework further and this time the comparative advantage that countries have is in terms of their endowments like for example different amounts of natural resources. The model sets the comparative advantage in terms of factor endowments. Let us assume that country A has plenty of resources from (resource 1) and less of (resource 2) the country produces (good 1) using (resource 1) and (good 2) using (resource 2) now as (resource 1) is easily found in the country it is cheaper than the price of (resource 2) and thus the production of (good 1) will be cheaper than (good 2) that uses more expensive resources. This indicates that country A has a comparative advantage in production of (good 1) and the same applies for country B in terms of producing (good 2) caused by its abundance of (resource 2). The theory suggest that a country is always better of when it trades with another country to which it has comparative advantage in either factor productivity or resource endowments. Through trade the countries can realize economic gains and thus increase the level of growth that can contribute to development. Considering how trade could provide growth there are four advocated hypotheses about the relation of international trade and economic growth and the first one is the export led growth. According to it a country becomes richer only after opening its policy for trade and increased the volumes of its imports and the opposing theory is the one supporting the endogenous growth theory and thus growth led exports. The hypothesis says that a country can increase its exports only after reaching a certain level of development and that the reasons for growth can only come from factors within the country. The third theory for growth is the import led growth theory that advocates how an increase in economic growth comes after raised imports of new technology and resources from abroad. The last suggest that imports increase only after an increase of the welfare of the country and is known as growth led imports hypothesis.

Empirical Literature Review

Trade Openness and Economic Growth

The term "trade openness" can be defined as the world's integration among countries. According to Osabuohien (2007), openness is likened to a situation where nations of the world join together so that they have free movement of labor, capital and free trade. Furthermore, the effect of trade is commended on that it increases competition and enhances efficiency. Trade openness is, therefore, assumed to be an important source of economic growth. The gain from trade liberalization has not been achieved by the developing countries due to protectionist trade policies of the developed nations (Spanu, 2003). But a significant amount of empirical literature has shown the trade led growth for a single developing country analysis.

Hozouri (2016), investigated the combined effects of international trade on economic development deals and tariff rates. A sample of12 countries (selected countries MENA) during the period of2000-2013,and the dynamic panel data model was used for this purpose. Their results show that the sensitivity of economic growth has significant and inverse relationship with tariff changes, though its relationship with trade volume is positive.

Jadoon, Rashid, and Azeem,(2015) using data range from 1981 to 2012.,for the selected Asian countries (India, Indonesia, Japan, Malaysia, Pakistan, Singapore, South Korea and Sri Lanka countries investigated the impact of trade liberalization on the human capital and economic growth by using panel data analysis. The countries were grouped as lower income countries (India, Indonesia, Pakistan and Sri Lanka) and higher income countries (Japan, Malaysia, Singapore and South Korea) for comparative analysis. The results show that both developed and developing countries enjoy the trade led growth for the selected period. The impact of trade openness on human capital has been found positive for both groups but found significant only for the developed countries due to well-trained human capital. The fruits of trade openness in form of increased productivity of human capital have not been achieved in developing countries due to their less trained and less skilled workers. The investment in human capital is the dire need of the time for the developing countries to enjoy more beneficial effects of trade openness.

Shaheen, Ali, Kauser and Ahmed (2013) empirically analyzed the impact of trade liberalization on the economic growth of Pakistan over the period 1975-2010. Trade openness (proxy of trade liberalization), Gross Fixed Capital Formation (GFCF), Foreign Direct Investment (FDI) and Inflation are important explanatory variables, while Real GDP is dependent variable used for the model specification. The study used Johensen Co-integration approach developed by Johensen & Jeslius (1990) for long run relationship. The result shows that trade liberalization and Gross Fixed Capital Formation have positive and significant impact on economic growth. Foreign Direct Investment and inflation negatively affect growth of economy. Residual test were used to check the overall fitness of model.

The study by Villaverde and Maza (2011) conducted for a sample of 101 countries during the period 1970-2005 also showed that economic globalization (for which trade openness is one of the main indicators) leads to a higher economic growth and simultaneously, to worldwide income convergence. More recently, Busse and Königer (2012) argued that the effect of trade in dynamic panel estimations depends crucially on the specification of trade. But finally, they concluded that openness has a positive and highly significant impact on economic growth, especially for developing countries.

Further Chang, Kaltani and Loayza (2009) after their examination of the impact on trade openness to economic growth, among 82 countries (22 developed and 60 developing) during 1960-2000, concluded that trade openness affects positively economic growth, especially in developing countries rather than developed ones.

Gurgul and Lach (2014) examined the linear and non-linear causalities between the international trade and economic growth in the Polish economy using quarterly data for the periods 1996-2008 and 1996-2009 separately to capture for the effect of the 2008/2009 financial global crisis. The authors estimated a restricted VAR model involving GDP, exports and imports. The findings of linear Granger causality tests revealed existence of a relationship between the export growth rate and growth in GDP in both time periods, while no direct causality was found between GDP growth rate and imports growth rate. In addition, the impulse response analysis performed revealed that a shock from exports caused a positive response in GDP over the next three quarters.

Safdari and Mehrizi (2011) studied the causality relationship between exports and economic growth for thirteen (13) Asian Developing Countries for the period 1988 to 2008. Applying Panel Vector Error Correction Model based on Wald test, they found that there was sufficient evidence to accept the null hypothesis that export did not Granger cause economic growth, while Wald test statistics showed that economic growth Granger cause exports, hence an indication of unidirectional causality from economic growth to exports, supporting the growth-driven exports (GDE) hypothesis.

Chaudhry *et al.* (2010) checked the relationship between human capital, trade openness and economic growth of Pakistan. The authors checked the causal relationship between the above stated three variables by using Granger Causality. The short-run and long-run relationship of three variables had been checked by applying Johansen's cointegration and Vector Error Correction Model. Time series data of range 1972 to 2007 was used to obtain the results. The results suggested a positive and significant relation between trade openness and economic growth for the selected period of study.

Matadeen, et. al (2011) examined the nexus between trade openness and economic growth in Mauritius. The authors applied time-series data using bi-annual data for the period 1989-2009, through a Vector Error Correction Model (VECM) to investigate the causal links between trade liberalization and economic growth of Mauritius. They found that openness enhances growth and also trade openness indirectly promotes economic growth by boosting private physical capital in the short-run.

A study by Bajwa and Siddiqi (2011) investigated the casual link between trade openness and economic growth for four South Asian countries, that is, Bangladesh, India,

Pakistan and Sri-Lanka using panel cointegration and fully modified ordinary least squares (FMOLS) technique for periods 1972 to 1985 and 1986 to 2007. The motive was to determine what happened before and after the implementation of South Asian Association for Regional Co-operation (SAARC). The results showed that from 1972 to 1985 there existed a short-run unidirectional causality and from 1986 to 2007 a short-run bi-directional causation existed. Finally, a positive long-run causality existed between the variables.

Obadan and Okojie (2010) used annual time-series data covering the period 1980 to 2007 to examine the effects of trade on economic growth and development in Nigeria. Variables used included growth rate of GDP, openness, exchange rate, foreign direct investment, domestic investment and political stability. The results showed that trade openness had a positive impact on economic growth in Nigeria and a strong negative impact on growth due to political instability. It was concluded that Nigeria's export base which solely depend on petroleum should be diversified to include agricultural and solid minerals export.

Marelli and Signorelli (2011) used panel data model from 1980 to 2007 with an instrumental variable approach for two countries namely; China and India by focusing on trade dynamics, degree of openness, FDI flows and specialization patterns and also estimate the links between openness and growth, for the two countries in terms of their integration in the global economy. Results showed that both countries in the short-run had high degree of openness despite being hit by big economic shocks like the 2008-09 global crisis, but concluded that there was a positive and statistically significant growth effects of opening up and integrating in the world economy. The robust growth of the two "giant" nationals is currently helping the entire world economy recovery because they experienced a small deceleration in their growth paths during the first global impact of the crisis.

A study by Yeboah, Naanwaab and Saleem (2012), used alternative panel models from 1980 to 2008 to examine the relationship between trade and productivity. The Cobb-Douglas production function estimated the impact of FDI, exchange rate, capital-labour ratio and trade openness on GDP for 38 African countries. The results showed that 17 countries growth was above average while majority countries were below average returns-to-scale. This confirmed a positive relationship between trade openness and GDP.

A study by Ahmadi and Mohebbi (2012) examined the effect of trade openness on economic growth in Iran using OLS method for estimation parameters from 1971 to 2008. Results indicated significant positive effect of trade openness on economic growth in Iran and concluded that oil revenue and investment growths have a significant positive effect on economic growth in Iran.

METHODOLOGY

The Data

The data range for the present study is from 1970 to 2014.This period was selected to investigate the impact of trade openness on economic growth, because trade policies in Kenya have evolved over time, changing from an inward looking import substitution policy regime to the existing one whose primary objective is the promotion of exports of consumer and intermediate goods, while at the same time laying the base for eventual production of capital goods for both domestic and export markets. In addition most of the data for this period was available to investigate the impact of the economic reforms that Kenya had put in place since independence. The panel data has been taken from World Bank's World Development Indicators and African Development Indicators and from the Kenya National Bureau of Statistics, economic reviews and statistical abstracts.

Model Specification

A log-linear relationship can be estimated by taking the natural logs. Mankiw et. al (1992) model has been in several research to measure the effect of trade openness on economic growth in different countries, such as a study carried out by Chatterji et al.(2014),Ulasan,2012,Olasode et. al.(2015), Muhammad(2012) and Yanikkaya (2003). An econometric model used in this study is represented. Thus the effects of trade openness, foreign direct investment, portfolio investment, cross-border interbank borrowing, financial development, macroeconomic stability on economic growth were captured by running an ordinary least squares estimation of the following equation

$$\ln g_t = \alpha 0 + \alpha_1 \ln NX_t + \alpha_2 \ln FDI_t + \alpha_3 lnPI_t + \alpha_4 lnIBB_t + \alpha_5 lnG_t + \alpha_6 lnFD_t + \alpha_7 lnMS_t + \alpha_8 lnHC_t + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3.1)$$

Where, α's are parameters, lng, lnNX ,lnFDI, lnPI, lnIBB, lnG, ln FD, lnMS, and lnHC were log of economic growth, log of foreign direct investment as a ratio of GDP, log of portfolio investment as a ratio of GDP, log of cross-border interbank borrowing as a ratio of GDP, log of government expenditure as a ratio of GDP, log of financial development as a ratio of GDP, log of macroeconomic stability, log of trade openness as a ratio of GDP, log of human capital, and $\square_t$ was white noise. The logs of the variables were stationary at levels and there was no multicollinearity, thus the OLS estimators were consistent. The errors were homoscedastic and serially uncorrelated making the OLS estimators optimal.

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Operationalization and Measurement of Study Variables

Each research variable was operationalized according to parameters established from earlier researchers.

GDP is measured as total market value of goods and services produce in a country with in a given period of time. GDP growth rate measures the growth rate of a country output within a given period of time or a change in output from one period to another**.** It is the average annual growth rate of real gross domestic product in percentage. Data was collected from the World Bank's African Development Indicators and the Kenya National Bureau of Statistics' economic reviews and statistical abstracts.

Trade openness is the measure of the volume of trade between Kenya and the rest of the world. It was measured as the sum of exports and imports as a percentage of gross domestic product. Data was collected from the World Bank's African Development Indicators and the Kenya Bureau of Statistics' Economic Surveys and Statistical Abstracts.

Macroeconomic stability: a measure of macroeconomic performance of the country. Inflation measured in percentage terms was used to capture this. Data was collected from the World Bank's African Development Indicators and the Kenya Bureau of Statistics' Economic Surveys and Statistical Abstracts

Human capital: the measure of skills and training of the country's labour force. It was measured by the ratio of secondary and tertiary institutions enrolment in the population. Data was collected from the Kenya Bureau of Statistics Economic Surveys and Statistical Abstracts.

Foreign direct investment: an investment to acquire a lasting management (normally 10 percent of voting stock) in a business operating in Kenya by no- Kenyan investors. It was measured as a percentage of gross domestic product. The data was collected from the World Bank's African Development Indicators.

Portfolio investment: portfolio equity flows (the purchase of stocks by a foreign Enterprise) and portfolio bond flows (the purchase of bonds issued by a domestic enterprise or government

by a foreigner). It was measured as a percentage of gross domestic product. Data was obtained from the World Bank's African Development Indicators.

Cross-border interbank borrowing: The expansion of international banking activity in Africa is reflected in the significant increase in foreign bank penetration into the region, thus foreign bank loans from other countries will be used to represent this variable. Loans that were given by foreign banks to domestic banks. This study used net external debt (private) as a proxy for cross-border interbank borrowing. This was measured as a ratio of gross domestic product. Data was collected from the World Bank's African Development Indicators.

Financial development measured the development of the financial markets. It was captured by the level of gross domestic capital formation as a ratio of gross domestic product. Data was collected from the World Bank's African Development Indicators and the Kenya Bureau of Statistics' Economic Surveys and Statistical Abstracts.

Public expenditure measured the government's participation in development process. It was captured by the government's expenditure on goods and services as a ratio of gross domestic product. Data was collected from the World Bank's African Development Indicators and the Kenya Bureau of Statistics' Economic Surveys and Statistical Abstracts.

Time Series Properties

Stationary Tests

Time series analysis was central to empirical modeling of the effects of private capital flows and financial development on economic growth. The non-random behaviour of the time series data could undermine the usefulness of the standard econometrics methods if it was applied directly without considering time series properties of the data (Russel & Mackinon, 2004; Gujarati, 2004).Using non-stationary series could yield spurious results. It is for this reason that this study conducted stationarity tests for the series. The stationarity tests on the variables were done using the Augmented Dick-Fuller (ADF) and Phillips-Peron (PP) tests. This was due to the fact that, the data generating process was not an AR(1) process. The ADF assumes that the error terms are independently and identically distributed. The PP test is non-parametric and corrects the statistic to conduct for autocorrelation and heteroskedasticity (Gujarat, 2004).

The ADF procedure attempts to retain the validity of the tests based on white – noise errors in the regression model by ensuring that the errors are indeed white- noise. On the other hand, (PP) procedures correct for serial correlation through a parametric correction to the

standard statistic (Stock, 1994). The Augmented Dickey Fuller (ADF) test is more preferred to the Dickey Fuller (DF) test since the later has critical values that are bigger in absolute terms and may sometimes lead to a rejection of a correct null hypothesis (Brooks, 2004).

The ADF tests the null hypothesis that / λ / = 0 against an alternative that / λ / < 0 in the autoregressive equations:

(i)   ADF without intercept and trend

$$\Delta y_t = \rho y_{t-1} + \sum_{i=1}^{K} \delta_i \Delta y_{t-1} + u_t \qquad \text{...(3.2)}$$

(ii)   ADF with an intercept but no trend

$$\Delta y_t = \alpha + \rho y_{t-1} + \sum_{i=1}^{K} \delta_i \Delta y_{t-1} + u_t \qquad \text{..(3.3)}$$

(iii)   ADF with both the intercept and trend

$$\Delta y_t = \alpha + \beta_t + \rho y_{t-1} + \sum_{i=1}^{K} \delta_i \Delta y_{t-1} + u_t \qquad \text{....................................(3.4)}$$

A time series data is said to be stationary if it's mean, variance and autocovariance remain the same no matter at what point we measure them. The ADF is a higher level of the Dick Fuller (DF) test. The DF test involves the estimation of the regression equation:

$$Y_t = \alpha + \rho Y_{t-1} + \varepsilon_t \text{..} \qquad (3.5)$$

Where, α and ρ are parameters and Y_t is white noise. Y is stationary if -1< ρ < 1. If

ρ = 1, Y is non-stationary. If the absolute value is greater than 1 (ρ > 1), the series is explosive. Subtracting Y_{t-1} from both sides of 3.5, the DF equation of estimation becomes:

$$\Delta Y_t = \alpha + \lambda Y_{t-1} + \varepsilon_t \text{..} \qquad (3.6)$$

Where λ = ρ -1.

The null hypotheses are: $H_0: \lambda = 0$

$H_1: \lambda > 1$

The assumption of the DF test is that the error terms are uncorrelated, homoscedastic as well as identically and independently distributed (iid). The ADF corrects the higher order serial correlation by adding lagged differences on the right hand side. Thus:

$$\Delta Y_t = \alpha + \lambda Y_{t-1} + \sum \delta_i Y_{t-i} + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \tag{3.7}$$

This specification is then tested for:

$H_0: \lambda = 0$

$H_1: \lambda > 1$

In 3.7 $\square_t$ is I(0) and may be heteroskedastic.

The Phillips-Perron (PP) unit root test corrects any serial correlation and heteroskedasticity in the errors $\square_t$ non-parametrically by modifying the Dickey-Fuller statistics. The evolution of the Phillips-Perron test came about to overcome the weaknesses of the Augmented Dickey Fuller (ADF) test which assumes that residual errors are statistically independent and have a constant variance. However, the main advantage behind the Phillips- Perron test is that it allows the error disturbances to be weakly dependent and heterogeneously distributed and that it is nonparametric, as no generating model for the time series needs to be specified. This is in contrast to its chief competitor, the (Augmented) Dickey-Fuller test, which is based on an autoregressive specification, at least as an approximation to the underlying model. Phillips and Perron developed this more comprehensive theory of unit root non stationarity. The tests are similar to ADF tests, but they incorporate an automatic correction to the DF procedure to allow for autocorrelated residuals. The first form of the Phillips-Perron unit root test assumes that a zero drift unit root process underlies the observed time series. Under the null hypothesis, the assumed underlying process is shown by the equation below: The basic equation used in the PP test remains the same as the one used in the ADF test. Thus the PP test involves fitting the regression:

$$y_i = \alpha + \rho y_{i-1} + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \tag{3.8}$$

And the null hypothesis is $\rho = 0$ against the alternative that $\rho \neq 0$. The advantage of the PP tests over the ADF tests is that PP tests are robust to general forms of heteroskedasticity in the error term $\square_t$. The second advantage is that the user does not have to specify a lag length.

The PP test deals with potential serial correlation in the errors by employing a correction factor that estimates the long–run variance of the error process with a variant of the Newey–West formula. Similar to the ADF test, the implementation of the PP test involves specification of a lag order; in the latter case, the lag order selects the number of lags to be included in the long– run variance estimate. The PP tests allow for dependence among disturbances of AR form, but have been shown to exhibit serious size distortions in the presence of negative autocorrelations. Despite the fact that the PP tests should be more powerful than the ADF alternative, they also exists some critics for instance, the tests can suffer quite severe distortions even in moderately large samples. The same critical values are also used for both the ADF and PP tests. Generally, both the ADF and PP tests have very low power against I(0) alternatives that are close to being I(1). This means that unit root tests cannot distinguish highly persistent stationary processes from non-stationary processes very well.

Cointegration

Cointegration refers to the existence of a long-run equilibrium relationship between variables. The idea of long-run equilibrium implies that two or more variables may wander away from each other in the short-run but move together in the long-run (Enders, 1995). The use of cointegration technique allowed the study to capture the equilibrium relationship between non–stationary series within a stationary model following Adams (2009). It permitted the combination of the long-run and short-run information in the same model and overcame the problem of losing information which could have occurred when attempting to address non stationary series through differencing (Adams, 2009). Cointegration technique made it possible to capture the information of non-stationary series without sacrificing the statistical validity of the estimated equation (Stock and Watson, 1988).

Two main tests for cointegration, namely Johansen cointegration test and the Granger two-step methods were used. Johansen's methodology, which was expressed as a vector autoregression (VAR) of order P, is given by:

$$y_t = u + A_1 y_{t-1} + \ldots + A_p y_{t-p} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots(\ (3.9)$$

where, y_t is a $nx1$ vector of innovations.

This VAR can be re-written as

$$\Delta y_t = u + \Pi y_{t-1} + \sum_{i=1}^{\rho-1} \Gamma_i \Delta y_{t-1} + \varepsilon_t$$ ....(3.92)

Where,

$$\Pi = \sum A_i - I \quad \text{and}$$

$$\Gamma_i = -\sum_{j=i+1}^{p} A_j \text{..............}$$

(3.92)

If the coefficient matrix $\Box$ reduced rank r < n, then there exist n x r matrices $\Box$ and β each with rank r ,such that $\Pi = \alpha\beta'$ and $\beta' y_t$ is stationary. r is the number of cointegrating relationships. The elements of parameters in the vector correction model, α are known as the adjustment and each column of β is a cointegrating vector. It has been shown that for a given r, the maximum likelihood estimator of β defined the combination of y_{t-1} that yielded the r largest canonical correlations of Δy_t with Δy_{t-1} after correcting for lagged differences and deterministic variables (Johansen, 1995). Johansen proposed two different likelihood ratio tests of the significance of these canonical correlations and thereby the reduced rank of the $\Box$ matrix. The trace test and maximum Eigen value test are shown in equation 3.93.

$$J_{trace} = -T \sum_{i=r+1}^{n} In\left(1-\lambda'\right).$$

$$J_{max} = -TIn\left(1-\lambda'\right)........$$ (3.93)

Where, T is the sample size and λ' is the ith largest canonical correlation. The trace test tested the null hypothesis of r cointegrating vectors against the alternative hypothesis of n cointegrating vectors. The maximum Eigen value test, on the other hand, tested the null hypothesis of r contegrating vectors against the alternative hypothesis of $r\Box 1$ cointegrating vectors. The residual based cointegration test introduced by Engle and Granger (1987) by analogy of equation (3.94) involves testing the significance of the coefficient in the Ordinary Least Squares (OLS) regression of:

$$\Delta u = \rho u_t + \varepsilon_t \qquad\qquad ....(3.94)$$

Where, u_t is the residual. The test postulates that if the residuals from the OLS estimation of the non-stationary variables are stationary, then the series are cointegrated. If the residuals, it exhibited a stationary trend implies that the error‑correction model (ECM) could not be run. Instead, estimation could be done on the variables at their first difference. However, the long-run characteristics of the data would be lost. Therefore, the study used the Johansen cointegration method to test for the long-run relationship between the variables.

Diagnostic Tests

This stage is essential in the analysis of the impact of private capital inflows on economic growth since it validates the parameter estimation outcomes achieved by the estimated model. Diagnostic checks test the stochastic properties of the model, such as residual autocorrelation, heteroskedasticity and normality, to mention a few. The multivariate extensions of the residual tests just mentioned were applied in this study; thus they are briefly discussed here.

Autocorrelation LM Test

Autocorrelation can be defined as relation between members of a series of observations ordered in time (Gujarati, 2004). It arises in cases where the data have a time dimension and where two or more consecutive error terms are related. The Lagrange Multiplier (LM) test used in this study is a multivariate test statistic for residual serial correlation up to the specified lag order. Harris (1995) argues that the lag order for this test should be the same as that of the corresponding VAR. The test statistic for the chosen lag order (m) is computed by running an auxiliary regression of the residuals (*µt)* on the original right-hand explanatory variables and the lagged residuals (*µt−m*). Johansen (1995) presents the formula of the LM statistic and provides detail on this test. The LM statistic tests the null hypothesis of no serial correlation against an alternative of autocorrelated residuals. Normality test checks for skewness (third moment) (Verbeek, 2008). Jarque-Bera normality test compares the third and fourth moments of the residuals to those from the normal distribution under the null hypothesis that residuals are normally distributed and a significant Jarque-Bera statistic, therefore, points to non-normality in the residuals.

White Heteroskedacity Test

Different error terms that do not have identical variances, such that the diagonal elements of the covariance matrix are not identical usually result in the occurrence of heteroskedasticity. The error terms are mutually uncorrelated while the variance of μ_i may vary over the observations.

The cost of using the usual testing procedures despite the heteroskedasticity is that the conclusions drawn or the inferences made may be very misleading,(Gujarati, 2004). The basis of this test checks whether there is any systematic relation between the squared residuals and the explanatory variables Mukherjee *et al.* (1998). It tests the null hypothesis that there is no heteroskedasticity in which the test statistic should not be significant in the absence of heteroskedasticity and misspecification. This test is an extension of White's (1980) test to systems of equations, as extended by Kelejian (1982) and Doornik (1995). The test regression is run by regressing each cross product of the residuals on the cross products of the regressors and testing the joint significance of the regression. The failure of any one or more of the conditions just mentioned above could lead to a significant test statistic. Therefore, under the null of no heteroskedacity and no misspecification, the test statistic should not be significant.

Residual Normality Test

The residual normality test used in this study is the multivariate extension of the Jarque-Bera, (1980) normality test which compares the third and fourth moments of the residuals to those from the normal distribution. One way of detecting misspecification problems is through observing the regression residuals.

RESULTS AND DISCUSSION

Correlation Analysis

The test for collinearity between independent variables was conducted and the results are presented in Table 1. The result showed that log of financial development as a ratio of GDP, log of openness as a ratio of GDP, log of foreign direct investment as a ratio of GDP, log of government expenditure as a ratio of GDP, log of human capital, log of cross-border interbank borrowing as a ratio of GDP, log of macroeconomic stability, and log of portfolio investment as a ratio of GDP as a ratio of GDP were not highly correlated (the absolute values of the coefficients were below 0.8).

Table 1. Correlation Matrix for the independent variables of log of economic growth

	LNGDP	LOGFD	LOGFDI	LOGG	LOGHC	LOGIBB	LOGMS	LOGNX	LOGPI
LNGDP	1.000000	-0.133199	0.048975	0.173562	-0.063235	0.004057	-0.368711	0.050998	0.099614
LOGFD	-0.133199	1.000000	0.075246	-0.516221	0.732029	0.064747	-0.044360	0.241205	-0.541477
LOGFDI	0.048975	0.075246	1.000000	-0.170109	0.009847	-0.150951	0.023351	0.236129	-0.159911
LOGG	0.173562	-0.516221	-0.170109	1.000000	-0.518981	-0.065656	0.113967	-0.130114	0.233800
LOGHC	-0.063235	0.732029	0.009847	-0.518981	1.000000	-0.213565	0.051668	-0.097016	-0.182960
LOGIBB	0.004057	0.064747	-0.150951	-0.065656	-0.213565	1.000000	-0.321438	0.048804	-0.134686
LOGMS	-0.368711	-0.044360	0.023351	0.113967	0.051668	-0.321438	1.000000	0.182620	0.059421
LOGNX	0.050998	0.241205	0.236129	-0.130114	-0.097016	0.048804	0.182620	1.000000	-0.283539
LOGPI	0.099614	-0.541477	-0.159911	0.233800	-0.182960	-0.134686	0.059421	-0.283539	1.000000

Table 1 represents the correlation matrix which represents the short run relationships amongst the variables. The sign of the correlation coefficient defines the direction of the relationship in the short run. A positive correlation coefficient means that as the value of one variable increases, the value of the other variable increases; as one decreases the other decreases. A negative correlation coefficient indicates that as one variable increases, the other decreases, and vice-versa. Taking the absolute value of the correlation coefficient measures the strength of the relationship. A correlation coefficient of r=.50 indicates a stronger degree of linear relationship. Likewise a correlation coefficient of r=-.50 shows a greater degree of relationship. Thus a correlation coefficient of zero (r=0.0) indicates the absence of a linear relationship and correlation coefficients of r=+1.0 and r=-1.0 indicate a perfect linear relationship.

There is a positive correlation between trade openness ,cross-border bank lending, and financial development with coefficients of (0.064747) and (0.048804), shows there is a positive correlation between real GDP and cross-border bank lending with a coefficient of (0.004057). Real GDP is also positively correlated to foreign direct investment with a coefficient of (0.048975). This is supported by the study carried out by Reisen and Soto (2001) who found that FDI and portfolio equity flows exert a significant impact on growth.

There is also a positive correlation between real GDP, trade openness and portfolio investment with coefficients of (0.050998) and (0.099614) respectively. Government expenditure also has a positive correlation with real GDP with a coefficient (0.173562). However, macroeconomic stability, human capital and financial development have a negative impact on growth with coefficients of -0.368711, -0.063235 and -0.133199 respectively. These results are supported by the study done by Macias and Massa (2009), their results showed that these variables have a positive relationship with real GDP except for government expenditure which has a negative yet significant impact on economic growth.

On the contrary, there is a negative correlation between cross-border lending and foreign direct investment, government spending and macroeconomic stability with coefficients (-0.150951), (-0.065656) and (-0.321438) respectively. There is a negative correlation between foreign direct investment, government expenditure and cross-border bank lending as indicated by the coefficients (-0.170109) and (-0.150951).

There is a positive correlation between portfolio investment, macroeconomic stability and also government expenditure with coefficients (0.059421) and (0.233800), respectively. On the same note, negative correlations with foreign direct investment, financial development, human capital and trade openness are indicated with the coefficients (-0.159911), (-0.541477), (-0.182960) and (-0.283539) respectively.

There is a positive correlation between foreign direct investment, financial development, human capital, trade openness and macroeconomic stability with coefficients (0.075246), (0.009847) (0.236129) and (0.023351), respectively. However, there is a negative correlation between foreign direct investment and government expenditure with a coefficient (0.170109).

The effect of trade openness on economic growth
An OLS estimation was carried out followed by an innovation accounting (impulse response and variance decomposition) to complement the ordinary least squares estimation. Because the logs of all the variables were stationary, an ordinary least squares regression model was estimated. The results of the regression analysis where log of economic growth was the dependent variable are summarized in table 2.

Table 2. OLS regression results for log of economic growth

Variable	Coefficient	Std. Error	t-statistic	Probability
LOGNX	0.151853	2.532414	3.061053	0.0042
LOGFDI	0.077276	0.122361	1.530526	0.0134
LOGG	0.086873	1.548920	-2.911625	0.0042
LOGHC	-0.513306	1.390931	3.085205	0.0039
LOGIBB	0.059199	0.076758	0.771238	0.4456
LOGMS	-0.077303	0.919345	-3.347277	0.0419
LOGFD	-0.382785	3.558873	3.174864	0.0031
LOGPI	0.015372	0.032639	-0.470967	0.6405
FITTED^2	3.524362	0.562707	1.567138	0.0103
R-squared	0.876400	Mean dependent var	3.935746	
Adjusted R-squared	0.873778	S.D. dependent var	0.176714	
S.E. of regression	0.028616	Akaike info criterion	-4.149808	
Sum squared resid.	0.022109	Schwarz criterion	-3.964777	
Log likelihood	68.32202	Hannan-Quinn criter.	-4.089492	
F-statistic	372.3579	Durbin-Watson stat	1.162582	
Prob(F-statistic)	0.000231			

Source: Eview's Output, 2017

From Table 2, log of openness has a positive and statistically significant coefficient. This finding is consistent with the findings of Bailliu (2000) that the volume of trade as a share of GDP was important for developing countries. Similarly, Ayanwale and Awolowo (2007) and Macias et.al (2009) found the coefficient of trade to be significant in Nigeria and Africa respectively. Anwar

and Nguyen (2010) using exports as a proxy for openness found a positive and statistically significant coefficient for exports in Vietnam. This meant that exports were important in the economic growth of Vietnam. This stresses the need for the Kenyan authorities to work with its trading partners, especially the East African Community, to remove any barriers to trade in order to accelerate economic growth.

The impulse response function of economic growth to openness is shown in Figure 1.

Figure 1. Response of economic growth to trade openness (%)
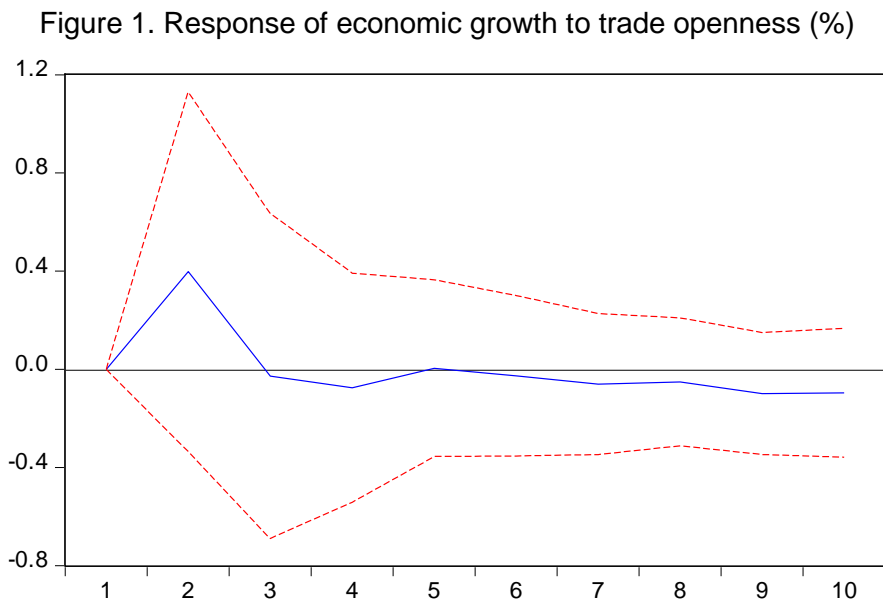
A shock in the ratio of imports and exports to GDP leads to an immediate increase in the rate of change of economic growth. The effect fizzles out in the third period. The impact of the shock in exports and imports on economic growth is minimal (leads to less than 2 percent fluctuation in economic growth) and is short lived (less than three periods). From the second period, openness accounts for about 2 percent of the variations in economic growth through the entire forecast period. Therefore, openness accounts for very little of the variations in economic growth.

Human Capital and Economic Growth

Human capital had a positive and statistically significant coefficient. A 10 percent increase in the ratio of those enrolled in secondary and tertiary institutions to total population would lead to a 6.1 percent increase in economic growth in Kenya. This study supports the work Borensztein, De Gregorio and Lee (1998) who found that the effect of FDI on economic growth is dependent on the level of human capital available. Similarly, Carkovic and Levine (2002) found that only countries with high levels of human capital can benefit from technological spillovers. Akinlo

(2004) also asserted that a well-educated labour force contributes meaningfully to the management of enterprises which translates to economic growth. Moreover, Anwar and Nguyen (2010) found that the coefficient of education was positive and statistically significant in the economic growth equation while, Ayanwale and Awolowo (2007) found a positive but statistically insignificant coefficient for human capital in the economic growth equation for Nigeria. Nevertheless, from these studies, it is evident that human capital plays an important role in the economic growth of a country. The policy makers in Kenya were right to introduce free primary and secondary education starting 2003 and to provide opportunities for higher learning through the expansion of existing higher education institutions and assisting the needy learners by providing funding for higher education through Higher Education Loans Board (HELB). The impulse response function of economic growth to human capital is shown in Figure 2.

Figure 2. Response of economic growth to trade openness (%)
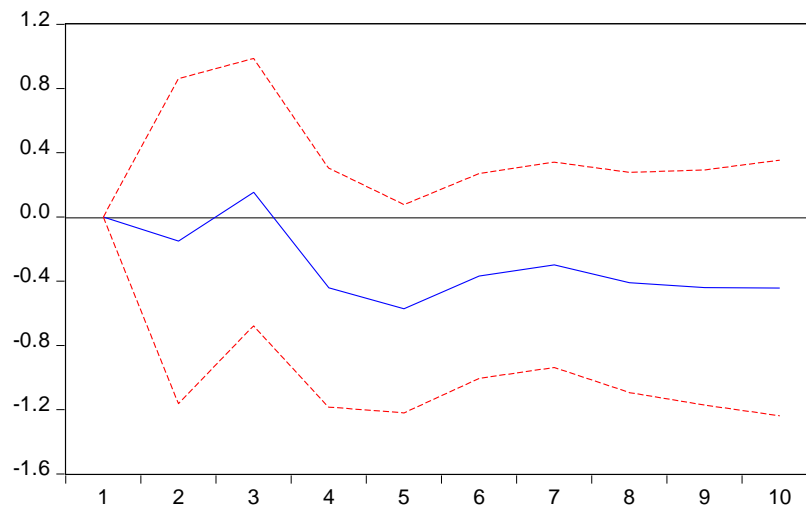
A shock in the ratio of enrolment in the secondary and tertiary institutions to the total population in the first period led to a decrease in economic growth in the third period, an increase in the fourth period before fizzling out from the fifth. The shock in human capital in the first period leads to a fluctuation of economic growth of at most 1.5 percent throughout the forecast period. The findings indicate that a shock in human capital has little impact in change in economic growth.

The variance decomposition shows that human capital accounts for about 3 percent of the variations in economic growth in the second, third and fourth period. For the remaining forecast period, human capital accounts for about 4 percent of the variations in economic growth. Thus, human capital accounts for a minimal of the variations in economic growth.

Macroeconomic stability and economic growth

Macroeconomic stability had a negative and statistically significant coefficient at 10 percent. This is an indication that an unstable macroeconomic environment discourages economic growth. An increase in inflation rate by 10 percent leads to a decrease in economic growth by 0.6 percent. The result is consistent with the findings of Borensztein, et.al.(1998), Ayanwale and Awolowo (2007) and Macias, et.al (2009). Anwar and Nguyen (2010) used real exchange rate as a proxy for macroeconomic stability and found the same result for Vietnam. The impulse response function of economic growth to macroeconomic stability is shown in Figure 3.

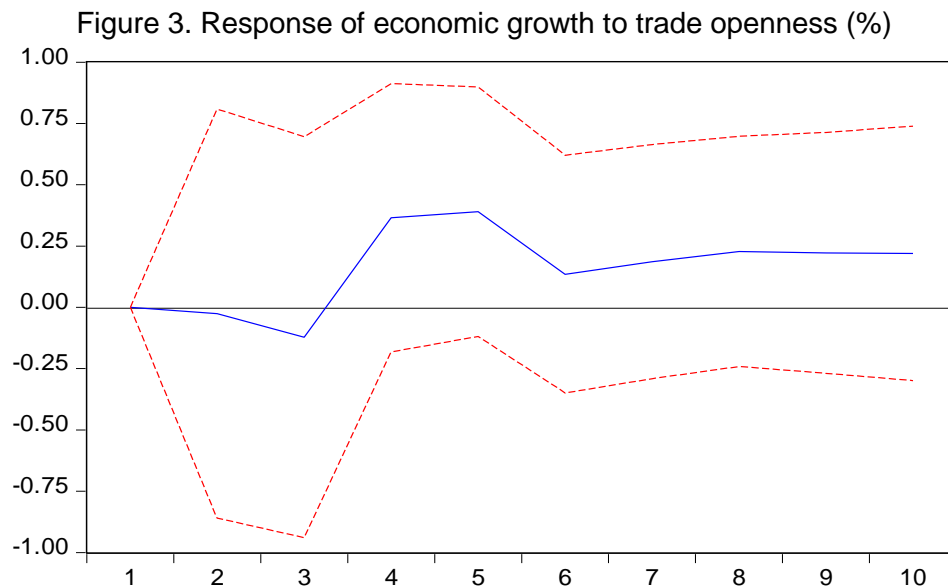Figure 3. Response of economic growth to trade openness (%)

Figure 3 shows that a shock in the rate of change of inflation has a mild impact on the rate of change of economic growth starting in the second period and fizzles out in the eighth period. An innovation in inflation in the first period has a less than 1 percent change in economic growth in the third up to the fifth period. This implies that a shock in inflation has no impact on the growth path of economic growth. Macroeconomic stability accounts for less than 1 percent of the variations in economic growth over the entire forecast period. A shock in macroeconomic stability explains little of the variations in economic growth.

CONCLUSION AND RECOMMENDATIONS

The current paper has demonstrated a positive and statistically significant relationship between trade openness and economic growth, over the period 1970-2014, using different measures of trade openness with the help of panel econometric techniques. Most of the empirical literature has tested the direct link between openness and growth. The analysis finds that labour force

and investment into the domestic economy are the key determinants of economic growth for Kenya. In addition, it is found that human capital has not contributed significantly to the economic growth of Kenya. Further, the study also found that inflation volatility has adversely influenced the economic growth, indicating that efforts are required on the part of policymakers to ensure that the macroeconomic remains stable to grow faster in the long run. Stable macroeconomic environment will encourage other stakeholders to play their part in the growth process. Economic instability can damage the whole structure of the economy and will shatter the confidence of all stakeholders leading to an overall economic decline. Frequent fluctuations are harmful indeed for a growing economy because of its adverse impact on the confidence level of all stakeholders of the economy. In other words, stable economic environment is a prerequisite for a growing economy.

Kenya should speed up the process of trade liberalization to accelerate the rate of economic growth and improve the living standard of the masses. However, the country should also focus on the imports of new technologies and capital goods instead of consumable items. Increased investment in the domestic economy would not only remove the deficiency of capita stock but would also provide jobs opportunities for the growing labour force. The fruits of the trade openness to increase the productivity of human capital have not been achieved in developing countries due to less groomed and less skilled workers. The investment in human capital is the dire need of the time for the developing countries to enjoy more beneficial effects of trade openness. The country should invest both in physical and human capital. Therefore, policymakers should generate employment opportunities for the growing labour force. The employment opportunities could be created using domestic sources as well as encouraging foreign direct investment. In normal circumstances, foreign direct investment brings employment opportunities to the host countries.

Finally, policy makers should speed up the process of trade liberalization if they want to grow faster in the long run. The remarkable growth experience of the Asian tigers over the years and the recent positive growth experiences of some of the developing countries, such as China and India, indeed indicate the superiority of outward-oriented policies over the inward-oriented policies. However, the process of trade openness could be enforced step by step.

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