

Role of EPZ on Kenya's Manufactured Exports

By

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A research paper

**Submitted in partial fulfillment for the degree of Masters of Arts in
Economics, University of Nairobi.**

DECLARATION

This is my original work and has never been presented for any degree award in any other university.

Signed 

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APPROVAL

This research paper has been submitted with my approval as University Supervisor

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DEDICATION

This research work is dedicated to Ann, Lewin and Rodriguez. They are part of me.

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ABBREVIATIONS

ACP	-African, Caribbean and Pacific
ADF	-Augmented Dickey Fuller
AGOA	-African Growth Opportunity Act
BOP	-Balance of Payment
COMESA	- Common Market for Eastern and Southern Africa
EDP	- Export Development Program
ELG	- Export Led Growth
EPAs	-Economic Partnership Agreements
EPC	- Export Promotion Council
EPZA	- Export Processing Zones Authority
EPZ	- Export Processing Zone
FDI	- Foreign Direct Investment
GDP	-Gross Domestic Product
GOK	-Government of Kenya
KNBS	- Kenya national bureau of statistics
LDC'S	- Least Developed Countries
MX	- Manufactured Exports
OLS	-Ordinary Least squares
RER	- Real Exchange Rate
SEZ	-Special Economic Zones
UN	-United Nations
WB	- World Bank
WTO	-World Trade Organization

ABSTRACT

Since early 1990's, Kenya has implemented a number of trade and fiscal policy reforms that were partly intended to encourage increased export activity by manufacturing firms. This strategy to promote exports was in accordance with the principle that increased exports would enhance overall economic performance. The trade and fiscal policy reforms have been an integral part of Kenya's economic development strategic plan, a key policy instrument to spearhead rapid economic growth. In this paper, the question of the role of EPZ on manufactured exports in Kenya has been investigated. The study has used OLS technique to determine the level of increase of manufactured exports in Kenya as a result of EPZ investments and EPZ output growth. In line with this study's objective, the key findings are that there is a positive and significant relationship between EPZ output and manufactured exports. Further, there is a positive but insignificant relationship between EPZ investment and manufactured exports. Consequently, any policy measure that can help boost the output level of firms operating under EPZ is expected to go a long way in increasing the level of Kenya's manufactured exports.

1.0 INTRODUCTION

1.1 Background

1.1.1 Establishment of Export Processing Zones (EPZ) program in Kenya

According to World Bank (1992), an EPZ is a fenced-in industrial estate specializing in manufacturing for exports, offering firms free trade conditions and a liberal regulatory environment. The fundamental concept of an EPZ is that it is a trade policy instrument used to promote non-traditional exports hence becoming an engine of industrialization and growth. The primary goals of export processing zones are thus to provide foreign exchange earnings by promoting non-traditional exports, alleviation of unemployment and attraction of foreign direct investment (FDI) to the host economy. They have been regarded as a useful stepping stone from a closed economy to an open and integrated economy thus enhancing the investment climate for companies engaged in exporting and leveling the playing field with respect to competitors abroad. EPZ typically cover incentives for export-oriented manufacturing.

Kenya inaugurated her Export Processing Zones program in 1990 following the enactment of CAP 517 Laws of Kenya, as part of the Export Development Program (EDP) being undertaken by the Government to transform the economy from import substitution to a path of export led growth. The act also created the Export Processing Zones Authority (EPZA) as the regulatory body. Despite the inauguration of EPZ program in 1990, the commencement of production was not until 1993 when the government undertook several major reforms like eliminating exchange rate controls allowing for market determined rates, eliminating import controls and implementation of tax reforms.

The introduction of the program followed several studies which indicated the viability of EPZ, thus making Kenya one of the first African countries to adopt EPZ programme in the 1990s. The factors which favoured establishment of EPZs in Kenya included among others, relatively large and dynamic private sector, a low cost but well trained labour force and relatively good infrastructure. The establishment of EPZ in Kenya was aimed at ensuring that aggregate national productivity increased through boosting manufactured exports growth. This aggregate national productivity measures the amount of output produced with given amounts of factor inputs. The growth rate of productivity depends on capital accumulation, improvement in labor supply, growth of the exports among other key economic variables. These factors determine the value of a country's products and services, measured by the prices they can command in world markets.

The EPZ were to provide investors with a predictable, attractive and efficient operational framework for tackling regional and global markets for goods and services. The nation embarked on attractive

tax incentives, a facilitating operating environment, good physical infrastructure which has resulted in 83 firms from all over the world deciding to make the Kenya's EPZ their home. According to EPZA, EPZ in Kenya has contributed significantly with over 40 zones in place, close to 40,000 workers employed and contribution of 10.7 % of national exports. Production of garments is one of the major contributions from EPZs as it accounts for over 60% of the total garment output in Kenya. The manifestation of their initial success was additional investments and expansion of their operations.

The program has over the years witnessed a steady growth despite unfavorable local and international economic environment. The opening up of US market under the African Growth and Opportunity Act (AGOA) in 2000 which offered duty/quota free access for African goods triggered rapid expansion of investments, exports and employment within the EPZ. Over 70% of EPZ output is exported to the USA under AGOA.

1.1.2 Overview on Kenya's manufacturing and exports sectors

Kenya being a developing country, has adopted the policy of pursuance of the vision 2030 to be realized through sound macroeconomic policies. In the early 1990s, Kenya embarked on a wide range of structural and macroeconomic reforms encompassing all the key sectors of the economy including exports promotions, FDI, revenue collection and expenditure planning to establish a more growth-conducive economic environment. The Kenyan economy has remained predominantly agricultural, with industrialization remaining an integral part of the country's development strategies. High oil price, high electricity cost and high infrastructure utility cost have continued to be the main factors affecting rapid industrial development.

According to GOK (2010), Kenyan economic growth momentum was slowed from 7.1% in 2007 to 1.6% in 2008 following post election violence, global financial crisis, and high fuel and food prices among other factors. The economy then showed signs of recovery registering a growth rate of 2.6% in 2009 and 4.1% in 2010.

According to GOK (2011), the manufacturing sector grew by 4.4% in 2010 as compared to 1.3% in 2009. The sector has contributed by an average of 10.1% to the total GDP between the year 2005 and 2009. It also recorded the average growth rate of 4.6% over the same period. GOK (2010) further asserts that manufacturing sector recorded a lackluster performance in 2009 as the global financial crisis continued to unwind recording a decelerated growth of 2% as compared to 3.6% in 2008. Manufacturing sector output rose by 5.1% to KShs 738829 million while value added increased by 6.3% to ksh216833 million in 2009. In 2007 and 2008 the sector recorded KShs. 626173m and KShs

717217m in output respectively. During the period 2005 to 2009, the average manufacturing sector output was KShs 625772 million and value addition of KShs 185453 million.

The main industries in the Kenya's manufacturing sectors are; food manufacturing, beverages and tobacco, textile and clothing, leather, furniture, petroleum, paper, metal products among others. Agro-processing has the largest share amongst the manufacturing sector with the ample background supply of raw materials mainly of domestic origin and rural labor force. The major manufacturing subsectors targeted for FDI in Kenya are petroleum and other chemicals, clothing, electric machinery & equipment, food processing and metallic products.

Capital accumulation and exports promotion among other factors are the driving forces in the quest to ensure that the manufacturing sector grows. The sector is very important for economic development in terms of its contribution to the total output, export earnings, and employment creation. According to GOK (2010), manufacturing sector performance should be enhanced through: removing barriers in investment; enhancing infrastructural growth; facilitating use of technology; exports promotion, benchmarking in key industries and markets among other factors. Also, domestic sources of industrial growth highly depend on the availability of development expenditure which in turn depends on revenue collection. For this to be achieved concerted efforts to ensure meeting of tax targets through formulation and implementation of appropriate tax policies is crucial for the Kenya's economy.

Kenyan government has a number of reasons to focus its attention on exports. Policymakers recognize that interventions can influence factor advantage either across the economy or in specific sectors. A country's economic development strategic plan as a key policy instrument should strive to positively influence investment, job creation and support exports. The Kenyan Government thus needs to sustain policies designed to improve comparative advantage by reducing the relative factor costs or improving factor quality of the country's firms compared with those of its trading partners. Investment in production for export markets is likely to be of greatest potential as it would make it possible to exploit economies of scale and attract foreign exchange which is crucial in countering BOP deficits. Ram (1982) rationalized the notion that exports are a production input in the sense that the level of exports affects aggregate output for given level of labour and capital. Successful export development therefore requires supporting infrastructure investments, support capital accumulation and thus make Kenyan goods cost competitive. In terms of the concepts of comparative advantage and production efficiency, exports lead to a better allocation of resources.

According to GOK (2010), balance of payment position recorded a surplus of KShs 75180 million in 2009 compared to a deficit of KShs 33161 million in 2008 attributed mainly to increased net capital inflows and improvement of current account balance from a deficit of KShs 137147 million in 2008 to 124446 million in 2009. Between the years 2001 and 2010, the value of manufactured exports averaged at KShs. 75,392 million per year. The share of manufactured exports in Kenya declined drastically from a peak of 40% in early 1960's to about 11.75% of total exports in the 1980's (Mwega, 2002). For Kenya to enjoy favorable BOT, an increase in the net capital inflows and widening of merchandise exports are crucial. Average exports from year 2004 to 2008 was KShs. 269 billion with an average of KShs. 272 Billion as the balance of trade over the same period.

Kenya has signed a number of bilateral trade agreements with various countries thereby boosting its level of international trade. As a member of EAC and COMESA, Kenya enjoys economies of proximity for the majority of its exports. According to GOK(2010), majority of Kenya's manufactured exports goes to Uganda, Tanzania, USA, Sudan, Congo Dem. Republic, Rwanda, Zambia, Burundi, Ethiopia, and Malawi. Under ACP Partnership Agreement exports from Kenya entering the European Union are entitled to duty reductions or exemptions from quota restrictions thus enabling Kenya to benefit through exporting industrial and agricultural products. Under the Generalized System of Preferences (GSP), a wide range of Kenya's manufactured products are entitled to preferential duty treatment in the USA, Japan, Canada, Switzerland, Scandinavian Countries, Australia, Austria, New Zealand, and most European countries. Under African Growth and Opportunity Act (AGOA), Kenya benefits from duty /quota free exports to USA especially on textiles, apparels and handicrafts.

1.1.3 Policies and incentives to diversify EPZ exports demand and supply

From theory, many policies have been developed to help increase the supply of EPZ exports and their demand. Majority of the policies derives their basis from comparative advantage theory especially in the current economies characterized by changing demand and supply conditions. Competitive advantages of EPZs may be explained within the framework of the cluster approach (Porter 1990). EPZs are industrial clusters of companies that are concentrated in a geographic region. These companies share economic infrastructure, a pool of skilled human capital, and other institutions that provide education, specialized training, information and technical support. Also, these companies may co-operate to create joint companies, distribution agreement, technology transfer agreements and common manufacturing agreements. External economies of scale and other advantages of the cluster help the operating firms in reducing costs, acquiring competitive advantages and attracting foreign direct investment and consequently positively influence exports.

Incentives may be defined as any measurable advantages accorded to specific enterprises or categories of enterprises by a government, in order to encourage them to behave in a certain manner. They include measures specifically designed either to increase the rate of return of a particular investment undertaking, or to reduce its costs or risks. Hence EPZ incentives coupled with other broader policies, such as infrastructural development, improvement of the general legal & regulatory regime and a stable socio- political environment are key to manufacturing exports growth.

According to the GOK (2000), the key economic incentives for EPZ investors are fiscal incentives, procedural incentives and infrastructural incentives.

Fiscal incentives are geared towards reducing start up and operational costs thereby making exporters internationally price competitive. They include ten years tax holiday, exemption from all withholding taxes during the first 10 years, exemption from import duties on machinery, raw materials and inputs, no restrictions on management or technical arrangements, exemption from stamp duty, exemption from Value Added Tax, liberalized rates are also allowed for depreciation of assets based on book value; remission from Customs Duties is also offered and manufacturing under bond (MUB) Programme is given to encourage investors to manufacture for export. Enterprises operating in the MUBs enjoy the following benefits; exemption from duty and Value Added Tax on imported plant, machinery and equipment and raw materials and other imported inputs, 100% investment allowance on plant, machinery, equipment and buildings. Also, goods produced under MUB are exempted from all export taxes and levies.

Procedural incentives are designed to reduce bureaucratic procedures involved in establishment of an enterprise, as well as providing an efficient and enabling environment for industrial operations. The investor benefits from no restrictions on foreign capital repatriation, a one stop shop service project approval and licensing, logistical support for imports and exports, work permits for technical and managerial staff; and clearance of cargoes at the zones rather than at the port.

Infrastructural incentives strive to ensure that an investor has access to high quality infrastructure designed to cater for all industrial needs. These includes; serviced plots with pre-built go downs with water, electricity and telecommunication connections, garbage collection, sewerage facilities, landscaping and office services.

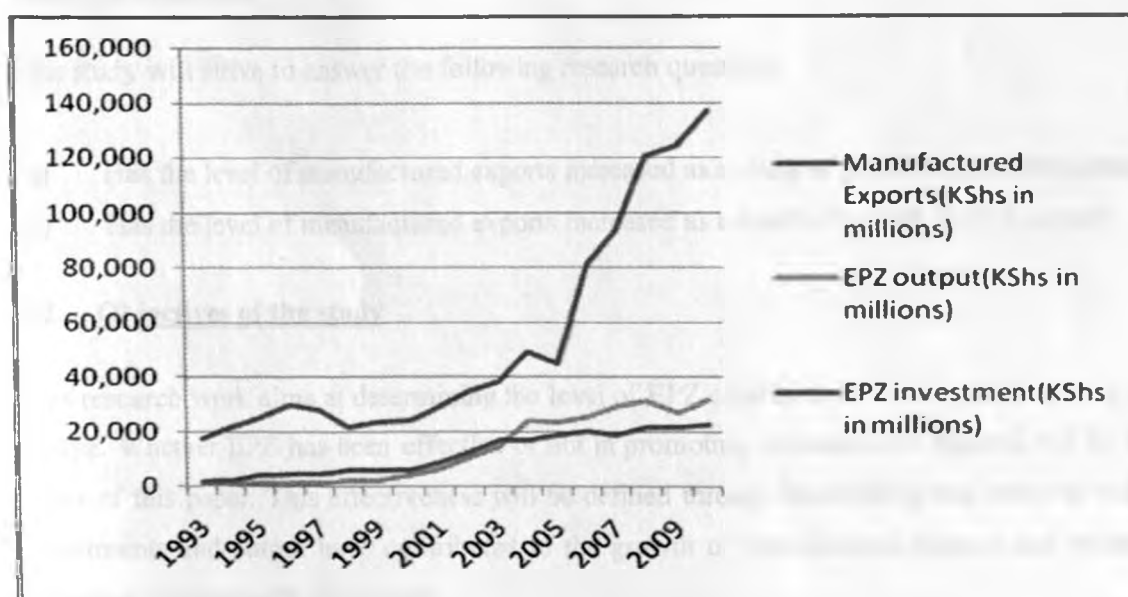
Breaking the vicious circles of poverty both from the demand side and supply side in any underdeveloped economy is very substantial. Jhingan (2005) opines that capital formation leads to the expansion of market by removing market imperfections through creation of economic and social overhead capital and thus breaking the vicious circles of poverty both from the demand side and

supply side. Under this premise, granting an incentive implies that the capital stock—either of some type or in aggregate—is considered too low and that either the tax system is the obstacle or other obstacles exist that can be compensated through offering incentives. Taxation has direct effects on investment. In theory, a high (low) effective tax rate on domestic source income could be expected to discourage (encourage) investment. The taxation of profit derived from investment may directly affect the amount of investment undertaken by influencing after-tax rates of return on investment.

1.1.4 Trend on manufactured exports , EPZ output and EPZ investments in Kenya

Year	Manufactured Exports(KShs in millions)	EPZ output(KShs in millions)	EPZ investment(KShs in millions)
1993	17,534	1,147	1,667
1994	22,043	946	2,097
1995	25,131	1,337	3,899
1996	29,769	1,596	4,370
1997	28,035	1,596	4,370
1998	21,862	2,499	5,747
1999	23,659	2,439	5,747
2000	24,142	4,392	6,108
2001	29,415	6,499	8,950
2002	34,930	11,040	12,728
2003	38,300	14,817	16,716
2004	49,417	24,217	17,012
2005	45,160	23,774	18,682
2006	81,262	25,353	20,320
2007	93,586	29,400	19,027
2008	120,458	31,262	21,701
2009	124,252	26,798	21,507
2010	137,143	31,723	22,660

Source: EPZA databank and KNBS statistical abstracts and surveys.



1.2 Statement of the problem

One of the challenges facing Kenya today is on how to establish and maintain mechanisms for sustained quantitative increase in the country's per capita output, reduce unemployment and BOP deficits through exports promotion. The nation is also aiming at maintaining low poverty levels, achieving institutional growth and improvement of the infrastructural system. Kenyan economy is characterized by sizeable unemployment estimated at 40% of the labour force, underdeveloped resources, low capital formation, sizeable underdeveloped infrastructure, low technologies and weak socio-economic and political institutions.

The research problem of the study is that despite EPZ program being in place for the last two decades, many analysts still question the program's contribution to the exports sector especially the manufactured exports as was envisaged during its establishment. Thus, Kenyan manufactured exports are believed not to have acquired the desired growth rate as a result of establishment of EPZ. Consequently, as a policy and development problem, the study therefore seeks to examine whether this is a fact/or not and if so/ not so, ascertain its extent and the reasons why.

Consequently, addressing the research problem will greatly inform future Kenyan development policies and strategies towards achievement of key macroeconomic targets. One such policy is to ensure a shift and growth of exports of processed goods other than primary products. The government therefore has a responsibility of ensuring an appropriate link between growth of manufacturing export sub-sector and overall aggregate income in a stable macroeconomic environment.

Research questions

This study will strive to answer the following research questions;

- a) Has the level of manufactured exports increased as a result of growth of EPZ investments?
- b) Has the level of manufactured exports increased as a result of growth in EPZ output?

1.3 Objectives of the study

This research work aims at determining the level of EPZ contribution to the manufactured exports in Kenya. Whether EPZ has been effective or not in promoting manufactured exports, will be the main focus of this paper. This effectiveness will be defined through establishing the extent to which EPZ investments and output have contributed to the growth of manufactured exports and whether their influence is statistically significant.

The specific objectives of the study are;

1. To determine the level of increase of manufactured exports as a result of EPZ investments growth.
2. To determine the level of increase of manufactured exports as a result of EPZ output growth.
3. On basis of 1 & 2 above, make policy recommendations.

Thus, this paper will strive to ascertain the extent of association between manufactured exports and EPZ investments & output.

1.4 Significance of the paper

By striving to answer the research questions highlighted above, key social- economic, scientific, and development relevancies of the problem being investigated will be addressed both at sectoral and national level. Policy recommendations, with a special emphasis on EPZ, will definitely be a useful ingredient in promotion of export –led industrialization vital for sustainable economic growth. It is expected that many developing economies with macroeconomic situations like Kenya will find the study relevant to their economic situations.

According to GOK (2007), high economic targets set forth by Vision 2030 calls for an urgent improvement of the EPZs in order to make them attractive place for FDI. For this to be achieved, empirical analysis of the situation since establishment of EPZ is critical. According to GOK (2009), the process of transforming EPZ into SEZ is in the final stages. Hence, having adequate historical and economic background on functionality and achievements of EPZ becomes fundamental while laying down the operational framework for the commencement of SEZ.

1.5 Organization of the Paper

This paper has been organized into seven chapters namely; Chapter one, which has covered the background information on EPZ in Kenya, overview on Kenya's manufacturing and export sectors, policies and incentives to diversify EPZ exports demand & supply and trend on manufactured exports, EPZ output and EPZ investments in Kenya. The same chapter has proceeded by highlighting the problem statement, objectives of the study and the significance of the study.

Next is chapter two which highlights theoretical literature, empirical literature, and overview of the literature. Chapter three is on theoretical framework, model specification, working hypotheses, data type and sources and the limitations of the study. Chapter four is on results and discussions. Chapter five has covered the summary, conclusions and recommendations. Chapter six is on bibliography and lastly chapter seven on appendices.

2.0 LITERATURE REVIEW

2.1 Theoretical literature

This section foremost investigates what the theory says about the determinants of exports supply and demand.

The World Bank's position on EPZ finds its source in neoclassical economic theory, and particularly within the confines of welfare economics. The classical and neo classical economists attached so much importance to international trade. According to Ricardo (18th century), a country's pattern of trade and specialization is determined by its comparative advantage. The neo-classical school is based on a Heckscher-Ohlin two goods - two factors -two countries model. In the Heckscher-Ohlin model of trade, countries have comparative cost advantage in products that make use of the factors they possess in abundance. These are the products they export, and they import those products for which they have a comparative factor disadvantage. The principle of comparative advantage stipulates that a country's international trade success in various industries is explained by how relative costs of production differ from those in the rest of the world.

Under the Heckscher-Ohlin theory, international and interregional differences in production costs occur because of differences in the supply of production factors. Commodities requiring for their production abundant factors of production and little of scarce factors are exported in exchange for goods that call for factors in the opposite proportions. Thus indirectly, factors in abundant supply are exported and factors in scanty supply are imported (Ohlin, 1933). Assuming the small country has a comparative advantage in labor intensive industries and protects its capital intensive sector, the EPZs reduce the country's welfare. EPZ means that capital is imported while labor is drawn from the domestic sector to work on it. Production of the capital intensive good will increase, while that of the labor intensive domestic good will decrease. This will distort the production away from its factor-based comparative efficiency. The neo-classical analysis suggests that EPZs have a negative welfare effect on the country.

Another theory is the new growth theory which argues that the neo-classical approach does not take into account the EPZ spillovers on to the host nations. It highlights the impact of spill-overs from FDI and EPZ activities on the host economy. These spill-overs are like human capital formation and may accelerate the process of industrialization of developing countries. In light of the human capital enhancement and demonstration and catalyst effects of the zones, it advocates amending the

originally negative neo-classical assessment of the EPZs. According to Johansson (1994), the new growth approach provides three key additions to the neo-classical analysis. It points out that domestic firms lack the capacity to package technical, marketing and managerial know-how with the resources available to them.

According to Branson (2000), as unit costs for exports production decline with increased output, a country could acquire a comparative advantage in an expanding industry. Branson (2000) gives the balance of payments surplus equation as below;

$$B=(X-M) -F-R$$

Whereby B is the balance of payment surplus, $X-M$ is the net exports F are the net private capital outflow and R is the net transfer to foreigners. Thus, any policy led initiative that increases X will automatically lead to BOP surplus. The rationale for EPZ incentives may be argued on the basis of increasing X and for correcting for the failure of markets to reflect the gains that can accrue over time from declining unit costs for production of exports.

In an open economy the export function is given as;

$$X=X(p, e)$$

The above function implies that for any given level of aggregate foreign demand and prices, real exports X is negatively related to the domestic price level p and the exchange rates e . Real exchange rate helps to indicate the relative profitability of producing tradables versus non- tradables and is specified as follows;

$$RER=P_T/P_{NT}$$

Where P_T is the price of tradables and P_{NT} is the price of non- tradables.

According to Romer (1996) exports are a function of real exchange rates i.e.

$$X=X(P_f/p)$$

Whereby P_f is the foreign prices and p is the domestic prices. The relationship between real exchange rates and exports is negative. Helleiner (1986) postulates that the keys to successful expansion of exports seem to have been realistic and stable exchange rates and sustained government support, not import substitution and laissez faire.

Also Omori (2006) contends that a country's international competitiveness changes in response to the domestic macroeconomic environment and that important variable that explain the movements of the level of exports are policy related variables.

According to Geoffrey and Reny (2001), the firms profit function depends only on input prices and output prices and is defined as a maximum –value function indicated below;

$$\Pi(p, w) \equiv \max_{(x, y) \geq 0} p \cdot y - w \cdot x \quad \text{s.t. } f(x) \geq y$$

The key properties to the profit function are increasing p and decreasing w . Thus, the success of EPZ policy incentive in the manufacturing sector should be geared towards in increasing p and decreasing w for the industries in the sector.

Geoffrey and Reny (2001) assert that the producers' surplus is the firm's revenue over and above its variable costs. Since markets are imperfectly competitive, the market equilibrium generally involves prices that exceed marginal cost. Competitiveness at the industry and firm level depends on relative costs like; trade facilitation services(documents, port and terminal handling, customs and inspection, domestic transport and warehousing);Costs and quality of other infrastructure(electricity, communications, and water);Labor costs and labor regulations ;financing costs and credit availability. Reducing the most severe indirect costs faced by firms is very crucial.

2.3 Empirical literature

Majority of the empirical studies have concentrated on the linkage of exports and economic growth (a phenomenon usually described as Export Led Growth Hypothesis (ELGH). Other studies have concentrated on successes and/or failures of EPZ to achieve the desired outcomes to the overall national economy. This paper deviates from such by concentrating on EPZ contribution not to the overall national economy but to the manufactured exports subsector. There has not been any study on the role of EPZ in this subsector in Kenya hence addressing this knowledge gap is quite crucial. However, there is substantial empirical literature on various related studies.

Munga (2001), sought to review the macroeconomic aspects that impede and /or aid the supply response of manufactured goods and points out that price is important for the demand of Kenya's manufactured exports after finding an export demand price elasticity measure close to negative one. He uses cointegration and error correction modeling approach to determine micro economic

determinants of manufactured exports in Kenya and one key finding is that the coefficient of the relative price of manufactured exports to the manufactured exports in world market has the appropriate sign and is highly significant. Export supply is significantly influenced by domestic capacity. Munga (2001) advises that we must get prices right and improve on product quality to boost demand. Export demand specification assumes that external buyers make their decisions on the basis of relative prices and growth of external demand. The importance of domestic capacity suggests that adjustment programmes designed to encourage exports should promote domestic investments, improve quality of infrastructure and provide other services essential for exports.

Kudhi(1996) using augmented Cobb- Douglas production function, export demand function and export supply function found out that manufactured exports did not significantly contribute to economic growth and therefore recommended for an outward –oriented trade regime which would enhance growth of manufactured exports and reduce dependence on primary exports. He attributed the negative effects of manufactured exports to adverse effects of import substitution strategy (ISS) trade regime that caused Kenya’s manufacturing sector to lag behind in competitiveness. Kudhi (1996) attributed this to vulnerability of manufactured exports to changes in world prices and recommended adoption of an outward oriented trade regime which would enhance growth of manufactured exports and diminish negative effects of fluctuations of prices for the primary exports.

Too (2005), in his analysis of manufacturing exports and economic growth in Kenya, points out that policies to raise private investment in the manufacturing sector are important and there is need to increase external competitiveness of the exports. He tested the causal relationship between manufacturing exports and GDP growth. Using Engle-granger cointegration analysis and error correction model he estimated a neoclassical type of growth equation and found negative contribution of the manufacturing exports to economic growth. Exporting generates economy wide externalities and permits exploitation of economies of scale. He further concludes that the link of incidence of exporting and overall productivity is particularly efficacious when the composition of exports includes a large share of manufactured exports.

Ngumi (2009), using Engle- Granger method to test cointegration, concluded that manufactured exports have not had significant impact on Kenya’s economic growth. He however notes that manufactured exports are important in the matrix of growth as has been demonstrated by many world economies. It is therefore critical for government of Kenya to work towards initiating and accelerating policies that will improve quantity, quality and value of manufactured exports like strengthening the role of EPZ in enhancement of manufactured exports. There is need to focus on the

manufacturing sector in order to cushion the economy from adverse effect associated with fluctuations of primary products. He further recommends a detailed analysis of sectoral level.

According to Moyi and Kimuyu (1999), domination of resource based products in the composition of exports was making Kenya lose its exports position in the international market arena. Their paper titled Revealed Comparative Advantage and Export Propensity in Kenya concluded that exports promotion incentives would have greater impact if they targeted food processing and metal working enterprises- an assumption or impression of achieving higher economic growth there after. The study found out that export performance was deteriorating and called upon measures by stakeholders to rejuvenate exports performance and bring meaningful development. In order to reap maximum benefit from an export-led growth strategy there is urgent need for other incentives that boost export.

Kibua and Nzioki (2004) examined the current policy platform and evaluated the performance of the EPZ showing that there has been a melt-down of the wall of both fiscal and administrative barriers and Kenyan manufacturing firms have increasingly gained access to international markets and are under pressure to abandon the regime of subsidies and to produce efficiently in order to compete in the international markets. They stress that there seems to be weak evidence to support the continued operation of incentive packages for foreign investors and that substantive evidence to determine the costs of incentives to EPZs and associated benefits is crucial.

Considering empirical literature outside Kenya, a comprehensive study by Riedel, Hall and Grawe (1994) investigates quantitatively the determinants of export performance in India on the basis of time-series analysis. The study analyses the effects of relative price of exports, relative domestic demand and domestic profitability on export performance. The dependent variable used is the ratio of indexes of constant price exports to industrial production. Exports are expressed as a ratio to output in order to account for the effect of expansion of production capacity. The results support the view that domestic market conditions strongly influence export behavior. The variable measuring domestic profitability or relatively domestic demand is found to be statistically significant in explaining export behavior in 23 of 30 sectors. Relative price, incorporating export policy incentives and the exchange rate turn out to be statistically significant in only 10 of the 30 sectors. However, relative prices tended to be significant in those sectors where comparative advantage is presumed to be strongest, for example, ready-made garments, carpet weaving, handicrafts and metal products. The study has the loophole of using short period. It requires a long period for better estimates.

Sharma and Dhakal (1994) used six variable Granger causality on natural logarithm of real GDP and exports, with testing for unit root and choosing lag lengths based on Akaike's Final Prediction Error (FPE) criterion. They found support for the Growth Led Export (GLE) hypothesis in the case of Tunisia, Egypt, and Morocco, but no casualty for Turkey. Reizman et al. (1996) found support for ELG when using bivariate Granger casualty test in the cases of Algeria, Egypt, and Tunisia but no evidence of casualty in the case of Israel, Jordan, Morocco, Sudan or Turkey. However, with the inclusion of imports as an additional variable in the trivariate system they obtained different results. ELG was supported only in the cases of Jordan and Sudan while no casualty was detected for the test of the MENA countries in the sample.

Smith (1999) analyzed the case of Costa Rica using annual data for the period 1950-1997 to ascertain the export-led growth hypothesis (ELGH) that postulates that export growth is one of the key determinants of economic growth. The study went beyond the traditional neoclassical theory of production by estimating an augmented Cobb-Douglas production function and included exports as a third input to provide alternative procedure with a view to capturing total factor productivity (TFP) growth. The study equally went beyond the traditional time series and examined empirically the short-term as well as the long-run relationship between trade and growth. In testing the hypothesis using several procedures (mainly econometric techniques and time series data), the study found that ELGH was valid for Costa Rica; however, the empirical results showed that physical investment and population mainly drove Costa Rica's overall economic performance from 1950 onwards. The study concluded that the relationship between trade and growth was not that robust but observed that exports have positive effect on the overall rate of economic growth and could be considered an "engine of growth" as advocated by the ELGH proponents.

The cost-benefit approach is also a tool used to evaluate the performance of export processing zones. According to Warr (1987), the methodology calls for calculations of all costs and benefits associated with the zones. According to Hamada (1974), the approach involves discounting and calculation of net present values of streams of revenues and costs for the government, the workers and the society at large. Though a painstaking process, this methodology provides an opportunity to think rigorously about costs and benefits. The main draw-back to this approach is the lack of adequate data for the cost benefit calculations. Assumptions regarding rates of returns to capital, social discount rate and social benefits may also be easily questioned. More generally, while costs maybe more readily observable, the extent of the benefits may not be. The assumptions made in order to estimate the benefits may affect the outcome of this analysis.

1.1 Overview of literature

From the literature it is evident that there is knowledge gap in terms of the contribution of EPZ to the manufactured exports. Majority of the empirical studies have concentrated on either the manufacturing sector and the overall growth or exports and growth. This paper deviates from such by deeply examining the role of EPZ on Kenya's manufactured exports but still using similar technique of OLS.

The theoretical literature is very clear on the key determinants of exports growth. Reduction of a firm's relative costs, favorable real exchange rates, and sustainability of high levels of GDP growth rate are particularly important. In conclusion most new theories developed since the 1980s pinpoint that EPZs plays a crucial role in the development of national industrial capacity and promoting exports. The EPZ in the new theoretical framework is both a catalyst for fast learning for all major national stakeholders and a pioneer in the attraction of FDI and promoting exports.

In reference to the specific objectives in chapter one above, this paper will primarily focus on neo classical school of thought especially on the role of EPZ in promoting manufactured exports. It will also focus on World Bank (1992) opinion that EPZs should be evaluated not only by their static contribution to foreign exchange earnings and employment but also by their dynamic contribution to continuing policy reforms. Due to unavailability of cost and benefit streams data on EPZ, cost benefit approach is a challenge but future studies needs to really focus on it. However, the available data will be rigorously subjected to economic analysis in order to ascertain whether manufactured exports has benefited from the establishment of EPZ.

Thus, this paper will explore the substantial potential for Kenya to benefit from manufactured exports oriented growth based on the continued investments and growth of EPZs.

3.0 THEORETICAL FRAMEWORK

3.1 Theoretical Framework

In this chapter, a framework of analysis to determine the effects of various factors influencing manufactured exports in developing countries is formulated. The underlying objective is to explain the rationale behind manufactured exports. In the export function, we consider all those factors that can potentially play a meaningful role in the determination of exports in the developing countries. The section will foremost present simple structural models that will identify export function, exports demand and supply equations. Eventually, specified equation for manufactured exports will be given.

Although economic theories do not explicitly state a relationship between manufactured exports and EPZ investments & output, this study will draw theory mainly from the export, exports demand & supply functions as highlighted below.

The export function in an open economy is given as;
 $X=X(p, e)..... (1)$

Whereby p is the domestic price level and e is the exchange rate such that a relative increase in price of domestically manufactured exports to the world market prices will lead to a reduction in demand of manufactured exports. An increase in e implies that foreign market will find manufactured exports as expensive hence a reduction in their supply in the international trade.

The export demand function is specified as follows;
 $X_t^d=AY_t^{\beta_1} [P_t^X /P_t^W]^{\beta_2}e^U..... (2)$

Whereby;

- X_t^d is real value of export demanded.
- Y_t is the world GDP index used to represent foreign income. It is the real scale variable which captures growth of external demand for each country.
- P_t^X /P_t^W is the ratio of domestic export prices P_t^X to world export prices P_t^W
- A is the efficiency parameter.
- e^U is the error term.
- β_1 and β_2 are foreign income and relative prices elasticities respectively.

The demand for exports assumes that external market buyers will consider relative prices (P^X /P^w) and growth of external demand(Y) in order to make their trade decisions. $\beta_1>0$ implies that there is

positive relationship between X_t^d and Y_t . $\beta_2 < 0$ implies a negative relationship is expected between X_t^d and P_t^X / P_t^W .

The export supply function is specified as follows;

$$X_t^s = B Y_t^{\alpha_1} [(P_t^X . E_t) / P_t^D]^{\alpha_2} e^w \dots\dots\dots(3)$$

Whereby;

- X_t^s is real value of export supply.
- Y_t is the GDP used to represent domestic production of exportables.
- E_t is the index of real exchange rate.
- P_t^X / P_t^D is the ratio of index of export prices p^X to the domestic price level p^D
- B is the efficiency parameter
- e^w is the error term
- α_1 & α_1 are the domestic income and relative price elasticities respectively

The supply for exports depends on domestic capacity output y and relative profitability of producing manufactured exports and producing other goods. Domestic capacity is proxied by the GDP used to represent domestic production of exportables while relative profitability is given as $(P_t^X . E_t) / P_t^D$. $\alpha_1 > 0$ implies a positive relationship is expected between export supply and GDP. $\alpha_2 > 0$ implies a positive relationship between X_t^s and P_t^X / P_t^D (i.e. a higher P_t^X / P_t^D would indicate export prices are higher than domestic price level). If data on P_t^X and P_t^D is unavailable, a suitable proxy for RER can be used i.e.

$$RER = e^* WPI / CPI$$

Whereby;

e^* is nominal exchange rate, WPI is the wholesale price index and CPI is the consumer price index.

The log-linear version of equations (2) and (3) above is given as follows;

$$\ln X_t^d = \ln A + \beta_1 \ln Y_t + \beta_2 \ln (P_t^X / P_t^W) + U \dots\dots\dots(4)$$

$$\ln X_t^s = \ln B + \alpha_1 \ln Y_t + \alpha_2 \ln [(P_t^X . E_t) / P_t^D] + W \dots\dots\dots(5)$$

The equilibrium in the export sector is satisfied when;

$$X_t^d = X_t^s = X \dots\dots\dots(6)$$

This research paper will therefore investigate how EPZ investments & output have affected manufactured exports. The study will adopt a linear model to examine the impact of EPZ investments and EPZ output on the manufactured exports.

3.2 Model Specification

Increase in EPZ investment and EPZ output are expected to positively influence GDP growth hence will be considered as variables influencing export supply function. On export demand side, an EPZ policy is geared towards a reduction of input prices hence a relative decrease in price of domestically manufactured exports to world market prices would therefore stimulate demand for manufactured exports. Geoffrey and Reny (2001), asserts that the key properties to the profit function are increasing output prices and decreasing input prices.

Specified equation for manufactured exports is as follows;

$$MX_t = f(EPZ_t^I, EPZ_t^Y, MX_{t-1}, RER_t, GDP_t^D, GDP_t^F, TIME, U_t)..... (7)$$

The linear form of the equation (7) above is indicated as follows;

$$MX_t = \beta_0 + \beta_1 EPZ_t^I + \beta_2 EPZ_t^Y + \beta_3 MX_{t-1} + \beta_4 RER_t + \beta_5 GDP_t^D + \beta_6 GDP_t^F + \beta_7 TIME + U_t.....(8)$$

Whereby;

- MX_t is the manufactured exports in year t. This comprises the total manufactured exports in Kenya at year t measured in million KShs.
- EPZ_t^I is the EPZ Investments in year t measured in million KShs. As highlighted in literature above, Investment is as an important component of GDP and hence EPZ investments are expected to increase growth of manufacturing sector exports.
- EPZ_t^Y is the EPZ output in year t measured in million KShs. Growth of EPZ output levels is expected to boost exports of manufactured goods.
- MX_{t-1} is the lagged manufactured exports. Lagged manufactured exports will be important to capture convergence. This is because EPZ investment and EPZ output are expected to influence manufactured exports with a lag. It will capture the previous level of manufactured exports that is affected by both private and public investment as well as terms of trade. It will thus help to distinguish between short-run and longrun responses of the dependent variable (MX_t) to a unit change in the value of explanatory variable. Lagged variables have proved extremely useful in empirical analysis because they make the otherwise static economic theory a dynamic one. Lagged variables achieve this by explicitly taking into account the role of time. This is measured in million KShs.
- RER_t is the real exchange rate in year t. Exchange rate policies influence the amount of resources available to the private sector especially in the manufacturing (Too, 2006).

A fall in the relative domestic prices due to exchange rate depreciation makes exports cheaper in international markets resulting in increased demand for exports. It will thus be used to capture the external competitiveness of the economy, price effects (inflationary tendencies) and macroeconomic instability.

GDP_t^D is the Kenyan GDP used to capture the domestic production capacity- including that not related to the EPZ. Domestic capacity which is an export supply variable is proxied by the GDP and is used to represent domestic production of exportables. This is measured in million KShs.

GDP_t^F is the world GDP index used to represent foreign income. It is the real scale variable which captures growth of external (world) demand for a country's exports. This is measured in million KShs.

TIME is the dummy variable that has been included in the model to capture the element of time prior to and after the commencement of EPZ programme. It is also expected to capture the effects of policies that were instituted in early 1990's that culminated in the commencement of EPZ programme in 1993.

U_t is the error term in year t. It is a surrogate for all those variables that may have been omitted from the model above, but they collectively affect **MX**.

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ and β_7 are random variables(estimators or regression coefficients). They will show how the dependent variable **MX** alters when one unit of the independent variable increases. Relating them to their true values will require finding out their probability distributions (Gujarati 2004).

3.2.1 Working hypotheses and expected signs

The study will test the following hypotheses;

- EPZ_t^I** is positively and significantly related to the manufactured exports.
- EPZ_t^Y** is positively and significantly related to the manufactured exports.
- RER** is negatively and significantly related to the manufactured exports.
- MX_{t-1}** is positively and significantly related to the manufactured exports.
- GDP_t^D** is positively and significantly related to the manufactured exports.
- GDP_t^F** is positively and significantly related to the manufactured exports.
- TIME** is positively and significantly related to the manufactured exports.

If the model above does not refute the hypotheses as described, then it will be very useful to predict the future values of **MX_t** on the basis of the known or expected values of **EPZ_t^I** and **EPZ_t^Y** as well as those of the other variables.

3.2.2 Estimation procedure

The statistical technique of OLS is the tool that has been used to obtain the estimates. Eviews statistical package has been used for the analysis.

3.3 Data type, Source and collection.

Annual time series data from 1970 to 2010 has been used for the analysis. The data on all the variables indicated in equation (8) above, has been collected from secondary sources. Data on EPZ output and investment has been sourced from EPZA database. Data on manufactured exports & domestic GDP has been sourced from KNBS statistical abstracts & surveys. RER data has been sourced from central bank of Kenya.

World/foreign demand has been proxied by the trade weighted incomes of 10 selected African countries and USA (due to its partnership with African countries in bolstering manufactured exports through AGOA) that jointly import approximately 97% of Kenya’s manufactured exports. According to GOK(2010) ,the East African regional markets absorb a large proportion of Kenya's manufactured exports due to economies of proximity while the European Union is Kenya's most important market for other exports mainly tea, coffee and horticultural products. These countries are ; Uganda 31%, Tanzania 21%,USA 11%,Sudan 9%, Congo Dem. Republic 8%,Rwanda 9%, Zambia 4%,Burundi 3%, Ethiopia 3% and Malawi 2%.

Data on world incomes has been sourced from Worldbank databank specifically from world development indicators. Computation of the world income has been done using the following equation;

$$Y_w = \sum_{i=1}^{10} \alpha_i y_i$$

Whereby;

- Y_w** is world income
- α_i** is Percentage import share of country **i** in Kenya’s manufactured exports
- y_i** is income of country **i** in million Kenya KShs.

3.4 Limitations of the Study

Foremost, obtaining pertinent information through interviews and admission of questionnaires to the major stakeholders such as directors of the export promotion agencies like Export Processing Zone Authority, Export Promotion Council & officials of trade associations like Kenya Association of Manufacturers, exporters and importers, have not been feasible due to time and financial constraints. Consequently, the study has been limited to the use of mainly secondary data obtained from secondary sources. At times, elements of accuracy may be compromised in such secondary data.

Secondly, the time period considered for the variables EPZ investments and EPZ output is only eighteen years beginning in 1993 when EPZ programme commenced in Kenya. Many statistical analyses using time series data requires a relatively longer time-period inorder to make the best long-run inferences and predictions. Inorder to address this challenge and thus improve the accuracy of the results of this study, data for EPZ investments and EPZ output has been enhanced to run from 1970 but with zero values between 1970 and 1992 , data used for the other variables runs from 1970 upto 2010 (40years), and lastily a dummy variable has been added to capture the element of time before and after the commencement of EPZ programme with values of zero between 1970 and 1992 and values of 1 thereafter.

4.0 RESULTS AND DISCUSSIONS

4.1 Descriptive Statistics

Foremost, descriptive statistics have been analyzed inorder to manage the data, describe its basic features and present it in summary table. Table 4.1 and Figures 4.1 upto 4.7 shows the summary statistics and graphs of the variables used in this study.

Table 4.1: Descriptive statistics

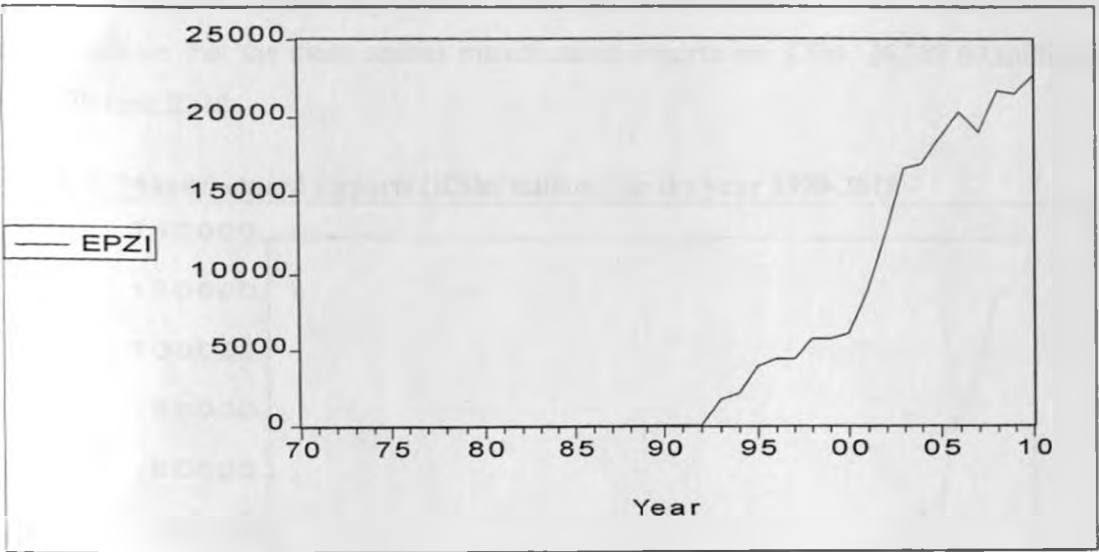
	EPZI	EPZY	GDPD	GDPF	MX	RER
Mean	5332.700	6020.875	751779.4	40270762	26289.69	88.38693
Median	0.000000	0.000000	809612.2	25532231	5663.790	92.26413
Maximum	22660.00	31723.00	1470517.	1.04E+08	137143.0	106.8700
Minimum	0.000000	0.000000	141528.9	2857473.	508.5400	62.86632
Std. Dev.	7858.153	10542.70	376027.2	36834453	37732.51	12.87502
Skewness	1.189568	1.529999	-0.013655	0.431012	1.683787	-0.493444
Kurtosis	2.788997	3.649478	2.090229	1.528440	4.786916	1.969962
Jarque-Bera	9.508024	16.30902	1.380716	4.847627	24.22272	3.391547
Probability	0.35062	0.316673	0.501397	0.088583	0.155400	0.183457
Observation	40	40	40	40	40	40

Source: Computation from Eviews software

From the descriptive statistics which has been generated by annual data running from 1970 to 2010, the mean annual EPZ output (KShs 6020.875 Million) is larger than the mean annual EPZ investment (KShs 5332.7 Million). The observation implies that the EPZ output is rising faster than the EPZ investment. In addition, the standard deviation of the mean EPZ output (EPZY) is larger than that of mean EPZ investments (EPZI). This implies that EPZ output is more sensitive to shocks compared to EPZ investment.

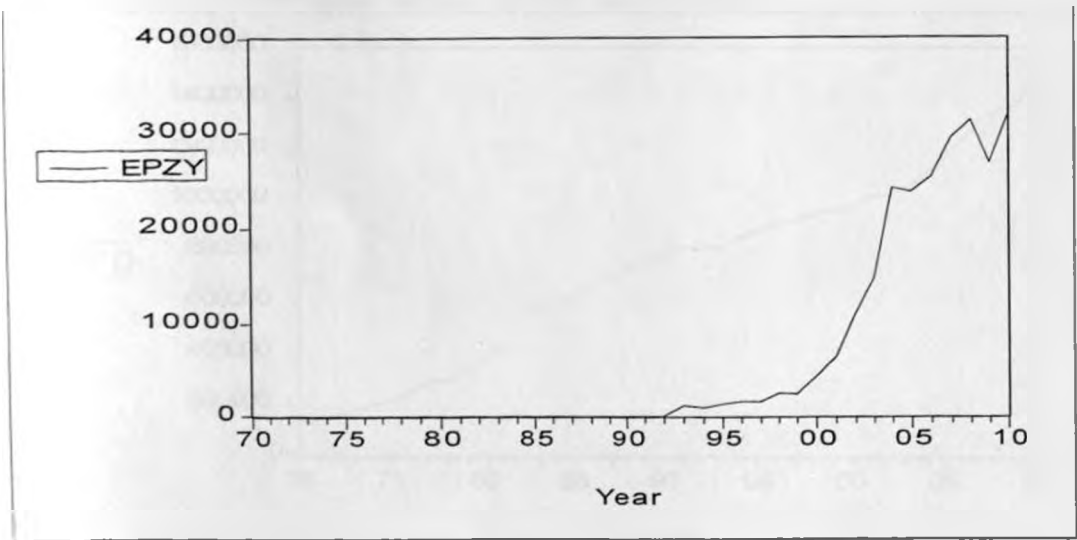
Figure 4.1 below represents the trends in EPZ investments and it is apparent that there has been a general increase in EPZ investments from 1993 to 2010. This is consistent with the original expectations that the preferential treatment accorded to EPZ would attract more investment leading to increased output and growth. The study findings indicate that the mean annual EPZ investment is KShs. 5,332.7 million for the years 1970 to 2010.

Figure 4. 1: EPZ Investment (KShs in million) for the years 1970-2010



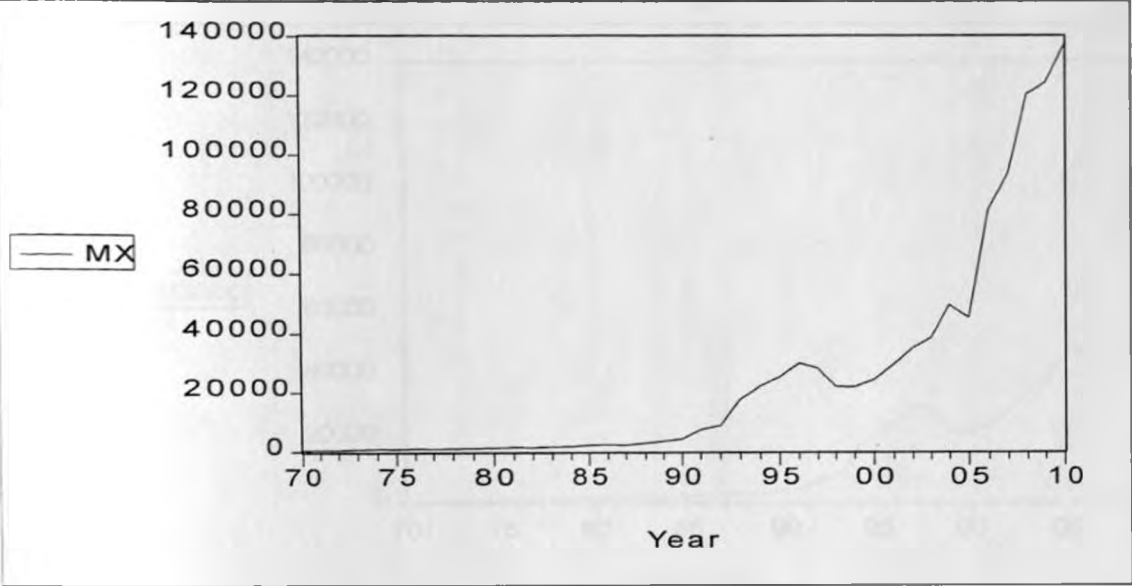
Graphic representation of EPZ output in Figure 4.2 below indicate that that there has been a general increase in EPZ output since inception of the EPZ programme in 1993 .This is consistent with the original expectations that the preferential treatment accorded to EPZ would lead to increased output due to attraction of more investment .Results further reveals an annual mean of 6,020.9 million KShs in EPZ output for the years 1970 upto 2010.

Figure 4. 2: EPZ Output (KShs million) for the years 1970-2010



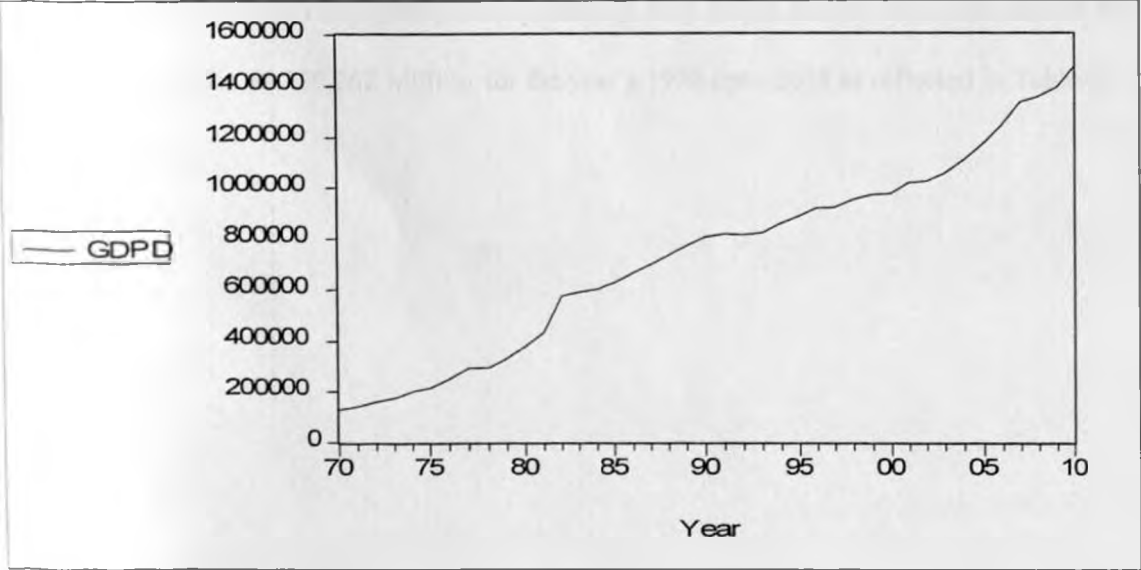
From Figure 4.3 below, it is clear that manufactured exports from 1990 to 2010 exhibited a rising trend. This trend may be explained by the reenergized government's focus on export promotions, incentives towards manufacturing sector, liberalization and reforms in the external-trade sector. Findings indicate that the mean annual manufactured exports are KShs. 26,289.69 million for the year's 1970 upto 2010.

Figure 4. 3: Manufactured Exports (KShs million) for the year 1970-2010



From a visual look, Figure 4.4 portrays a general gradual rise in the domestic GDP trends. Such gradual rise may be explained by positive impacts of various macroeconomic changes continuously being instituted by the government and absence of very major shocks. Descriptive statistics indicate the mean annual domestic GDP as KShs 751,779.4 million for the year's 1970 upto 2010.

Figure 4. 4: Domestic GDP (KShs million) for the year 1970-2010



From Figure 4.5 below, lagged manufactured exports from 1990 to 2010 exhibited a rising trend. As experienced with manufactured exports, the rising trend in lagged manufactured exports may be explained by the reenergized government's focus on export promotions, incentives towards manufacturing sector, liberalization and reforms in the external-trade sector.

Figure 4. 5: Lagged Manufactured Exports (KShs million) for the year 1971-2010

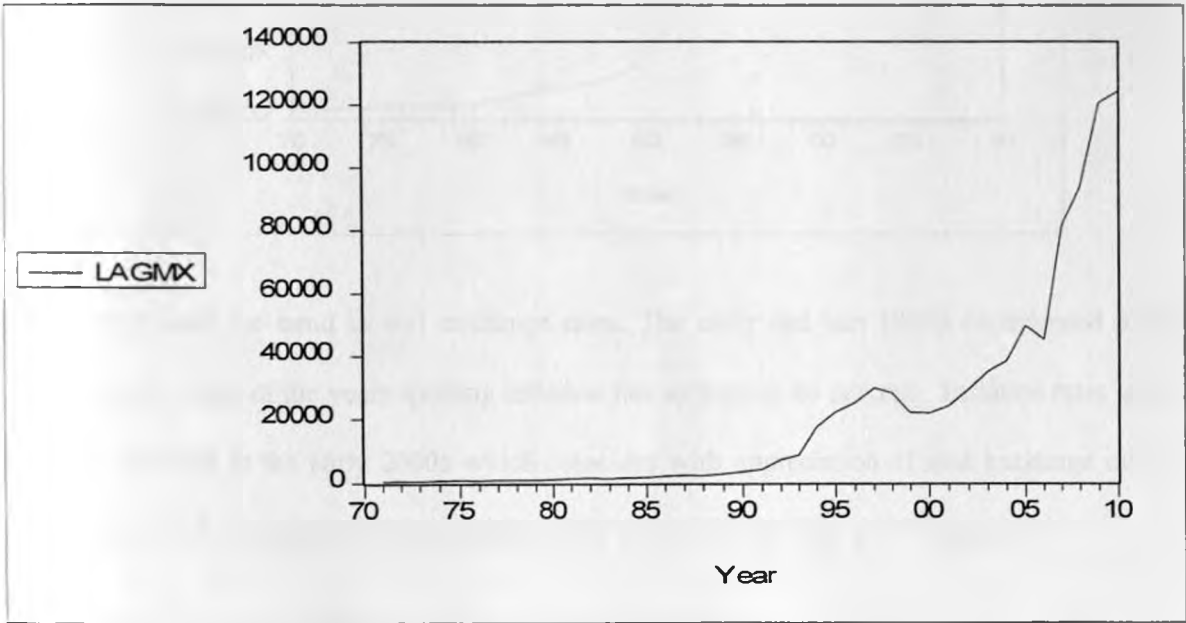


Figure 4.6 represents the trends in the foreign GDP. It is clear from the graph that there has been a general gradual rise in foreign GDP despite some minor stagnation. This may be explained by the positive impacts of various macroeconomic changes instituted by the governments of the Kenya's key trading partners from early 1990's and absence of very major shocks. The mean annual foreign GDP per year is KShs 40,270,762 Million for the year's 1970 upto 2010 as reflected in Table 4.1.

Figure 4. 6: Foreign GDP (KShs million) for the year 1970-2010

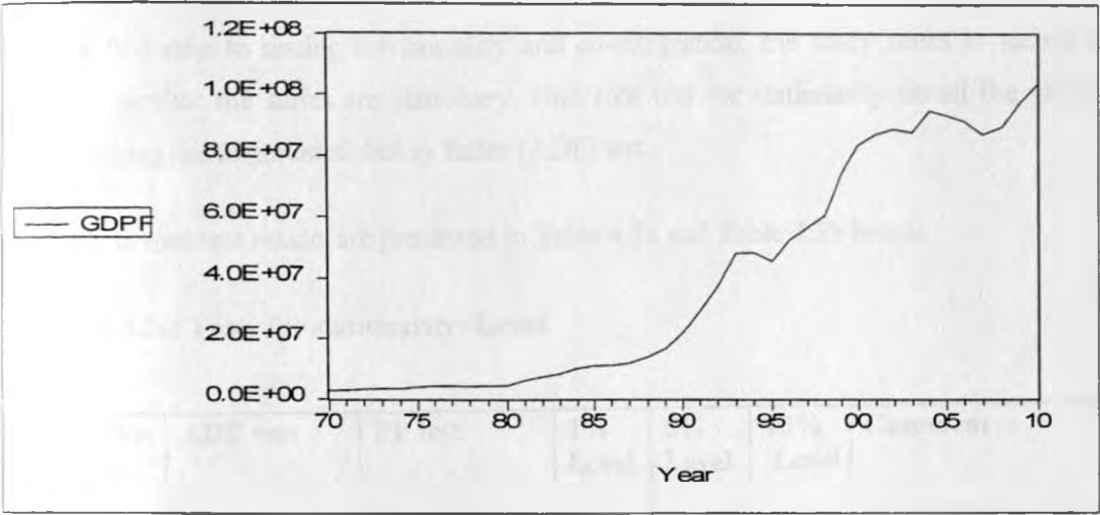
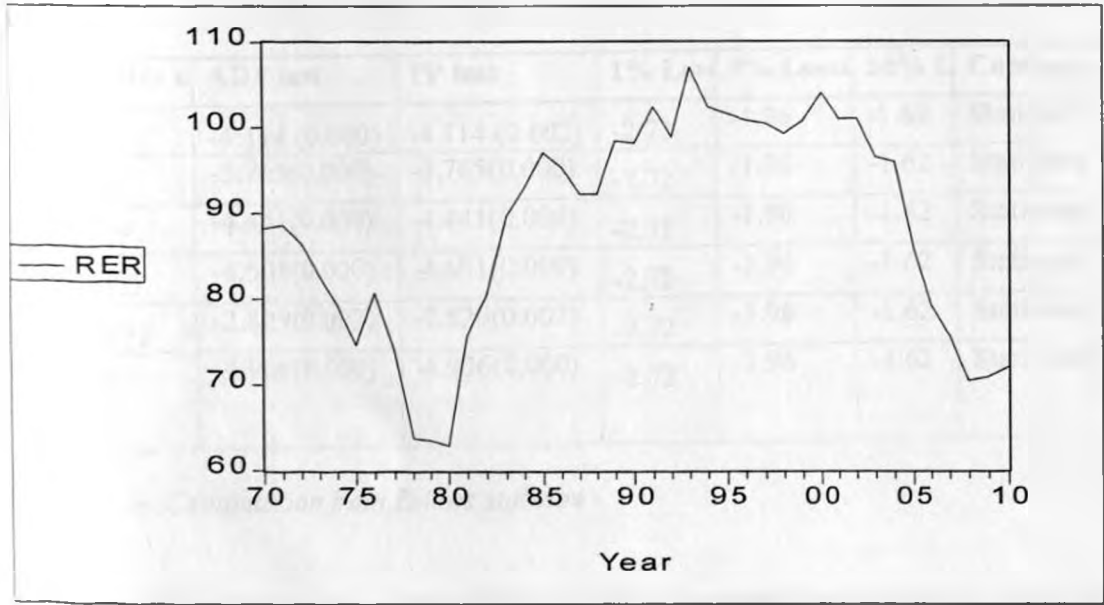


Figure 4.7 represents the trend in real exchange rates. The early and late 1990s experienced high inflation rate with some of the years spotting inflation rate as high as 46 percent. Inflation rates later significantly declined in the early 2000s which coincides with appreciation of real exchange rates. Table 4.1 indicates the mean annual real exchange rate as 88.4 for the year's 1970 upto 2010.

Figure 4. 7: Real Exchange Rate trend for the year 1970-2010



Lastily from Table 4.1, test results using skewness and kurtosis indicate that all variables are normally distributed. All skewness coefficients range from -2 to +2. The Jarque-Bera statistic also indicates that the variables are normally distributed.

4.2 Unit Root Tests

As a first step to testing for causality and co-integration, the study seeks to satisfy the necessary condition that the series are stationary. Unit root test for stationarity on all the variables has been done using the augmented dickey fuller (ADF) test.

The unit root test results are presented in Table 4.2a and Table 4.2b below.

Table 4.2a: Tests for stationarity: Level

Variable name	ADF test	PP test	1% Level	5% Level	10% Level	Comment
MX	5.108 (0.000)	3.301(0.004)	-2.71	-1.95	-1.62	Non Stationary
EPZI	3.783(0.005)	3.783(0.005)	-2.71	-1.95	-1.62	Non Stationary
EPZY	2.819(0.007)	2.819(0.007)	-2.71	-1.95	-1.62	Non Stationary
GDPD	7.022(0.000)	7.022(0.000)	-2.71	-1.95	-1.62	Non Stationary
GDPF2	3.789(0.005)	3.789(0.005)	-2.71	-1.95	-1.62	Non Stationary
RER	-0.635(0.528)	-0.635(0.528)	-2.71	-1.95	-1.62	Non Stationary

Table 4.2b: Tests for stationarity: First Difference

Variable n	ADF test	PP test	1% Lev	5% Level	10% L	Comment
MX	-4.114 (0.000)	-4.114 (0.002)	-2.72	-1.96	-1.62	Stationary
EPZI	-3.765(0.000)	-3.765(0.000)	-2.72	-1.96	-1.62	Stationary
EPZY	-4.441(0.000)	-4.441(0.000)	-2.72	-1.96	-1.62	Stationary
GDPD	-4.501(0.000)	-4.501(0.000)	-2.72	-1.96	-1.62	Stationary
GDPF2	-2.829(0.007)	-2.829(0.007)	-2.72	-1.96	-1.62	Stationary
RER	-4.906(0.000)	-4.906(0.000)	-2.72	-1.96	-1.62	Stationary

Source: Computation from EvIEWS software

Clearly from the results in Table 4.2a and 4.2b all the series have a unit root but on first differencing the series become stationary. The first step for conducting the other tests is thus satisfied.

4.3. Co-Integration results

After ascertaining the stationarity properties of the series, cointegration analysis has been done. The first step is to generate the residuals from the long run equation of the non-stationary variables. Then stationarity of the residual was tested using ADF. Results are presented in Table 4.3 below.

Table 4.3: ADF test for residuals

ADF Test Statistic	-8.457233	1% Critical Value*
		5% Critical Value
		10% Critical Value
*MacKinnon critical values for rejection of hypothesis of a unit root.		

Source: Computation from Eviews software

From Table 4.3 above, the residuals were stationary at the level which leads to the conclusion that the non stationary variables have a long run relationship. An alternative test for cointegration is the Johansen test. The test in Table 4.4 compared the log likelihood ratios with the t statistics at 5% critical values.

Table 4.4: Cointegration test results

Likelihood		5 Percent	1 Percen	Hypothesized
Eigen value	Ratio	Critical Value	Critical Value	No. of CE(s)
0.960294	166.1596	124.24	133.57	None **
0.881115	111.3131	94.15	103.18	At most 1 **
0.845912	75.10988	68.52	76.07	At most 2 *
0.655078	43.31599	47.21	54.46	At most 3
0.567495	25.22055	29.68	35.65	At most 4
0.421827	10.97181	15.41	20.04	At most 5
0.092915	1.657831	3.76	6.65	At most 6
*(**) denotes rejection of the hypothesis at 5%(1%) significance level				
L.R. test indicates 3 cointegrating equation(s) at 5% significance level				

Source: Computation from Eviews software

From the results in Table 4.4 above, the null hypothesis of no-cointegration is rejected whereas the null hypothesis of at most three cointegrating equations cannot be rejected. This implies that in the long run, all the variables (Manufactured Exports, EPZ Investments, EPZ Output, Domestic GDP, World GDP and Real Exchange rates) converge to equilibrium.

4.4 Regression Results

After establishing that the variables are stationary at different levels and that they are cointegrated, regression results as presented in Table 4.5 can be interpreted as long-run results.

Table 4.5: Results of the Regression Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4053.259	9994.589	0.405545	0.6878
EPZI	0.583730	0.979688	-0.595833	0.5555
EPZY	1.219374	0.564421	2.160398	0.0383
GDPD	0.010241	0.007573	1.352349	0.1857
GDPF	0.000126	0.000145	-0.870162	0.3907
LAGMX	0.813896	0.083547	9.741730	0.0000
RER	-82.38487	136.3413	-0.604255	0.5499
TIME	8371.911	5351.077	1.564528	0.1275
R-squared	0.980556	Mean dependent var		24789.69
Adjusted R-squared	0.976303	S.D. dependent var		36652.08
S.E. of regression	5642.191	Akaike info criterion		20.29079
Sum squared resid	1.02E+09	Schwarz criterion		20.62856
Log likelihood	-397.8158	F-statistic		230.5370
Durbin-Watson stat	2.686241	Prob(F-statistic)		0.000000

Source: Computation from Eviews software

Consequently, the linear form of equation (8) as spelt out in model specification in chapter 3 becomes:

$$MX_t = 4053.259 + 0.584EPZ^I + 1.219EPZ^Y + 0.814MX_{t-1} - 82.385RER + 0.010GDP^D + 0.0001GDP^F + 8371.911TIME$$

The overall goodness of fit of the model is satisfactory as reflected by R-squared of 0.981. This indicates that 98.1 percent of the variations in manufactured exports (MX) are explained by the variables included in the model. The F-statistic measuring the joint significance of all regressors in the model is statistically significant at 5 per cent level. Hence, the model variables are able to jointly explain the variations of manufactured exports in Kenya.

The results in Table 4.5 shows the extent to which EPZ investments and EPZ output have contributed to the growth of manufactured exports and whether their influence is statistically significant.

EPZ output (EPZY) has a positive and statistically significant coefficient at 5% level of significance (as indicated by a p value of 0.038). This implies that the study rejects the null hypothesis that EPZ Output is a not significant determinant of manufactured exports. Therefore in the long-run, EPZ output is a significant determinant of manufactured exports. The coefficient of EPZY (1.219) suggests that in the long-run, an increase of one percent in the EPZ output is associated with an

increase of 1.219 percent in manufactured exports. Conversely, a drop in EPZ output would be associated with a decrease in manufactured exports. The finding compares with the findings of the study by Kibua and Nzioki (2004) that investigated whether the EPZs are relevant in a liberalized economic environment and concluded that there has been a meltdown of both fiscal and administrative barriers and Kenyan manufacturing firms have increasingly gained access to international markets.

EPZ investment (EPZI) has a positive but statistically insignificant coefficient at 5% level of significance (as indicated by a p value of 0.555). This implies that the results fail to reject the null hypothesis that EPZ investment is not a significant determinant of manufactured exports. Hence, EPZI is not a significant determinant of manufactured exports. The coefficient of EPZI (0.584) suggests that in the long-run, an increase of one percent in the EPZ Investment is associated with an increase of 0.584 percent in manufactured exports. Conversely, a drop in EPZ Investment would be associated with a decrease in manufactured exports. This finding leads to concurrence with the recommendations by Ngumi (2009) who opined that it is critical for government of Kenya to work towards initiating and accelerating policies that will strengthen EPZ in order to enhance manufactured exports.

The coefficient of the lagged manufactured exports (LagMX) is positive (0.814) and statistically significant at 5% level of significance as shown by a p value of 0.000. This implies that lagged manufactured export is a significant determinant of manufactured exports. In the long run, an increase of one percent in the lagged manufactured export is associated with an increase of 0.814 percent in manufactured exports. On the other hand, a drop in lagged manufactured export would be associated with a decrease in manufactured exports.

The study findings indicate that real exchange rates (RER) is negatively related to manufactured exports as indicated by a coefficient of -82.385. However, the relationship is statistically insignificant as shown by a p value of 0.5499. This finding on RER compares with the findings of Riedel, Hall and Grawe (1994) who found that coefficient of exchange rate was insignificant in 20 out of 30 Indian sectors in explaining exports behavior. The coefficient of real exchange rates (RER) suggests that in the long-run, a decrease in the real exchange rates by one percent is associated with an increase of 82.385 percent in manufactured exports. Conversely, an increase in real exchange rates would be associated with a decrease in manufactured exports. A fall in the relative domestic prices due to exchange rate depreciation makes exports cheaper in international markets resulting in increased demand for exports.

Other factors that were found to have a positive relationship with manufactured exports included Domestic GDP (coefficient of 0.010) and World GDP (coefficient of 0.0001). However, the coefficients of both Domestic GDP and World GDP were statistically insignificant as shown by p values of 0.186 and 0.390 respectively. This finding on the domestic capacity differs with that of the study by Munga (2001) who found that domestic capacity to be statistically significant in explaining manufactured exports supply behavior.

The dummy representing time period before and after operationalization of EPZ programme has a positive but statistically insignificant coefficient (coefficient of 8371.91 and p value of 0.1275). This suggests that EPZ policies took time to realize the envisaged effects. However, in reference to the positive and significant coefficient of EPZ output, it can be concluded that EPZ policies are now bearing fruits.

4.5 Error Correction Model

If variables are cointegrated, then an error-correction model can be specified to link the short-run and the long-run relationships. Residuals from the cointegrating regression are used to generate an error correction term (lagged residuals) which is then inserted into the short-run model. Under ECM, the change of one of the series is explained in terms of the lag of the difference between the series possibly after scaling the lags of the differences of each series (Ghosh, 2002). The estimates of the error-correction model are presented in Table 4.6 below.

Table 4.6: ECM Estimation results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1094.395	1953.821	0.560131	0.5795
DEPZI	0.815072	1.187630	-0.686302	0.4978
DEPZY	0.817565	0.480700	1.700779	0.0993
DGDPD	0.033957	0.041387	-0.820482	0.4184
DGDPI	0.000294	0.000325	-0.904400	0.3730
DLAGMX	0.776191	0.215702	3.598434	0.0011
DRER	-85.84412	214.4273	0.400341	0.6917
TIME	3646.327	3161.542	1.153338	0.2579
LAGRES	-1.332842	0.281050	-4.742362	0.0000
R-squared	0.600300	Mean dependent var		3501.947
Adjusted R-squared	0.493714	S.D. dependent var		7750.410
S.E. of regression	5514.711	Akaike info criterion		20.26740
Sum squared resid	9.12E+08	Schwarz criterion		20.65130
Log likelihood	-386.2143	F-statistic		5.632044
Durbin-Watson stat	1.906525	Prob(F-statistic)		0.000213

Source: Computation from Eviews software

The R-squared of 0.60 implies that 60% of variations in the manufactured exports are explained by the explanatory variables in the model. Consequently, 40 % of the variations are unexplained. The only variable that was found to have a positive and significant relationship to the manufactured exports in the short run was lagged manufactured exports (coefficient of 0.776 and p value of 0.0011).

The error correction term (Lag res) measures the speed of adjustment to the long run equilibrium in the dynamic model. The error term is negative (-1.332) and statistically significant at the 5% level. This result implies that there is a gradual adjustment (convergence) to the long run equilibrium. The coefficient of -1.332 indicates that 13% of the disequilibria in manufactured exports achieved in one period are corrected in the subsequent period.

4.6 Causality results and interpretations

After testing for stationarity, establishing the order of integration and establishing that the variables are co-integrated, it is now possible to determine whether there is Granger causality between variables used in the model to determine whether manufactured exports have causality with other study variables.

The null hypothesis that EPZ output (EPZY) do not granger cause manufactured exports (MX) and EPZI was rejected as evidenced at p value of 0.000 and 0.042 in Table 4.7 below. This shows that there is a low probability that the null hypothesis is true and hence EPZ output (EPZY) granger cause manufactured exports (MX) and EPZ investments (EPZI). Reverse causality was found between EPZ investments (EPZI) and EPZY. However, there was no evidence of reverse causality between manufactured exports (MX) and EPZ output (EPZY).

Granger causality tests indicate that the null hypothesis "GDPD does not granger cause GDPF" may be rejected as reflected by a p value of 0.030. Therefore, GDPD granger causes GDPF. However, there was no evidence of reverse causality between GDPF and GDPD.

The null hypothesis that GDPF does not granger cause MX, EPZI, EPZY and TIME is rejected at p values of 0.007, 0.000, 0.001 and 0.04 respectively. These results imply that there is a very low probability that the null hypothesis is true. Therefore, GDPF granger causes MX, EPZI, EPZY and TIME. However, there was no evidence of reverse causality between MX, EPZI, EPZY, TIME and GDPDF.

Table 4.7: Granger Causality Test Results

Null Hypothesis:	F-Statistic	Probability
EPZI does not Granger Cause MX MX does not Granger Cause EPZI	4.9453; 2.5883;	0.01303 0.08988
EPZY does not Granger Cause MX MX does not Granger Cause EPZY	13.126; 0.7390;	6.0E-05 0.48511
GDPD does not Granger Cause MX MX does not Granger Cause GDPD	2.3024; 1.1269;	0.11540 0.33584
GDPF does not Granger Cause MX MX does not Granger Cause GDPF	5.5976; 2.4615;	0.00792 0.10038
RER does not Granger Cause MX MX does not Granger Cause RER	1.5071; 0.6951;	0.23597 0.50596
TIME does not Granger Cause MX MX does not Granger Cause TIME	0.1284; 0.0398	0.87988 0.96102
EPZY does not Granger Cause EPZI EPZI does not Granger Cause EPZY	3.4727 16.378;	0.04243 1.0E-05
GDPD does not Granger Cause EPZI EPZI does not Granger Cause GDPD	1.5060 2.5684;	0.23622 0.09145
GDPF does not Granger Cause EPZI EPZI does not Granger Cause GDPF	13.461; 0.1745;	4.9E-05 0.84056
RER does not Granger Cause EPZI EPZI does not Granger Cause RER	2.6934 1.3919;	0.08207 0.26240
TIME does not Granger Cause EPZI EPZI does not Granger Cause TIME	3.2656; 0.0000;	0.05043 1.00000
GDPD does not Granger Cause EPZY EPZY does not Granger Cause GDPD	1.0442; 2.5538;	0.36297 0.09262
GDPF does not Granger Cause EPZY EPZY does not Granger Cause GDPF	8.4800; 1.1025;	0.00103 0.34360
RER does not Granger Cause EPZY EPZY does not Granger Cause RER	1.4849; 2.7088;	0.24083 0.08098
TIME does not Granger Cause EPZY EPZY does not Granger Cause TIME	2.2584; 0.0000;	0.11997 1.00000
GDPF does not Granger Cause GDPD GDPD does not Granger Cause GDPF	0.7791; 3.8568;	0.46681 0.03093
RER does not Granger Cause GDPD GDPD does not Granger Cause RER	5.2513; 0.0006;	0.01029 0.99936
TIME does not Granger Cause GDPD GDPD does not Granger Cause TIME	0.0794; 2.8607;	0.92377 0.07108
RER does not Granger Cause GDPF GDPF does not Granger Cause RER	0.1952; 1.2804;	0.82355 0.29098
TIME does not Granger Cause GDPF GDPF does not Granger Cause TIME	1.8532; 3.3445;	0.17221 0.04721
TIME does not Granger Cause RER RER does not Granger Cause TIME	1.0299; 1.5994;	0.36790 0.21683

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The objectives of this study were to determine whether EPZ investment and EPZ output has contributed to the increase in manufactured exports in Kenya. Owing to the results, the study also aimed at suggesting policy options that can generate desirable development outcomes in the EPZ program and the entire manufacturing exports subsector.

In line with the study's objective, results from annual data running from 1970 to 2010 indicates that there is long run relationship between manufactured exports and EPZ output. EPZ output has been found to be positively and significantly related to the manufactured exports as hypothesized. However, EPZ investments has been found to be positively but insignificantly related to the manufactured exports.

Results further shows that domestic GDP is positively but insignificantly related to the manufactured exports. Foreign GDP is positively but insignificantly related to the manufactured exports. Lagged manufactured exports are positively and significantly related to the manufactured exports. RER has been found to be negatively but insignificantly related to the manufactured exports. Lastly, the dummy variable has been found to be positively but insignificantly related to the manufactured exports.

The findings further indicate that the model variables have been able to jointly explain the behavior of manufactured exports in Kenya.

5.2. Conclusions

From the findings of this study, it can be concluded that the answer to the research objective on whether the manufactured exports have increased as a result of growth in EPZ output is that there has been an increase. This implies that policy options that can ensure output for EPZ firms' increases are a welcome. Further, the answer to the research objective on whether the manufactured exports have increased as a result of growth in EPZ investment is that there has been an increase but not in statistically significant terms. This implies that further review of incentives package for EPZ firms is critical inorder to attract more investments.

Although the dummy variable capturing the overall effects of the entire EPZ policy package was positively but insignificantly related to the manufactured exports, it can be concluded that it took time for the EPZ policy to bear fruits. Also, some policy options within the entire EPZ policy may be quite effective since EPZ output has been found to be positively and significantly related to the manufactured exports, but other policy options need to be reevaluated and reenergized in order for the whole EPZ policy package to be statistically significant.

From the findings of this study, it can be further concluded that increase in foreign demand for the Kenya's manufactured exports has not really met the required threshold. This is an indication that Kenya may not have done enough to increase demand of its manufactured exports in those countries such that the propensity for those countries to import manufactured exports from elsewhere or produce them domestically is still high. This then leads to the conclusion that Kenya's manufactured exports have not fully gained that comparative advantage hence the need to reevaluate the relative costs of production for the Kenya's manufactured exports to those in the rest of the world.

Results from RER leads to the conclusion that RER has not had very huge effects on manufactured exports. Kenya's exchange rate policies thus need to be constantly reevaluated so that fall in the relative domestic prices due to exchange rate depreciation will make manufactured exports cheaper in international market resulting in their increased demand.

From the results on domestic GDP it can be concluded that overall domestic production capacity has not had very huge effects on manufactured exports. This can be attributed to the fact that manufactured exports do not target local market hence any increase in domestic production capacity has not stimulated demand for the manufactured exports in external market.

Lastly from the findings on the lagged manufactured exports, it can be concluded that the previous level of manufactured exports has a great bearing on the level of the current manufactured exports. Variables are expected to influence manufactured exports with a lag hence an indication that the lagged manufactured exports has explicitly taken into account the role of time. Lagged variables are extremely useful in empirical analysis because they make the otherwise static economic theory a dynamic one.

All in all, the EPZ programme as envisaged during its establishment that it would serve as an engine of boosting exports of manufactured exports in Kenya is being realized.

5.3 Policy recommendations

Drawing from the results highlighted in chapter 4 above, this study proposes the following policy recommendations;

Foremost, competitiveness in foreign markets is a critical determinant of manufactured exports performance. Under EPZ, an incentive plays a central role in ensuring that new firms are attracted, existing firms are retained & are profitable and that exported goods are competitive in the world market. The Kenyan government through EPZA and EPC thus needs to continuously support and review existing EPZ incentive package in order to continuously reduce relative factor costs or improve factor quality of the country's firms hence improve comparative advantage of manufactured exports in relation to Kenya's trading partners. Kenya has a relatively abundant cheap labor & good infrastructure which can be harnessed to create comparative cost advantage. There is need to inject further dynamism into manufactured exports production. The government needs to sustain and improve dynamic locational advantages so as to continuously attract high quality FDI in EPZs.

The eventuality is that, as unit costs for firms under EPZ decline with increased output, the country could acquire a comparative advantage in an expanding industry and export more. This is so because commodities requiring for their production abundant factors of production and little of scarce factors are exported in exchange for goods that call for factors in the opposite proportions.

Secondly, manufactured exports performance for a growing economy requires that national policies should address the issue of supply-side constraints e.g. internal transport costs, energy costs and other costs that shun away investments. Kenyan supply capacity for the manufactured exports needs to be enhanced by ensuring energy costs are low and that Kenyan competitive edge on infrastructural development as compared to that of key trading partners from Africa is sustained. Also, focusing on large firms which are not yet exporting is quite critical. For EPZ program to continuously influence growth of manufactured exports, there is the need to ensure that at any given time t , the returns on investment are high and can induce further EPZ investments and growth.

Thirdly, increase in foreign demand for Kenya's manufactured exports is quite crucial. Diverging trade relations to those countries which are not importing Kenya's products needs to be a priority so that catch of foreign demand is diversified. Outward oriented trade regime would enhance growth of manufactured exports and diminish negative effects of fluctuations of prices for the primary exports which at now encompass a huge percentage of Kenya's exports. Enhanced foreign demand for EPZ

exports can also induce a supply response by domestic firms shifting to production of manufactured exports. Other complementary policies that make trade reform successful as well as relentless reviewing of trade reforms are critical. Measures to reduce production costs for EPZ firms and participating in international trade fairs to create awareness for Kenyan goods can also go a long way in enhancing foreign demand. Causality results indicate that foreign GDP granger causes manufactured exports, EPZ investments and EPZ output.

Sound monetary policy framework that is adaptive to shocks is also key ingredient that influences manufactured exports. The real exchange rate, which reflects the underlying relative movement of prices at home and abroad, proves to have a negative effect as expected on the manufactured export performance hence the need to be well managed. An overvalued exchange rate impedes exports from EPZs just as it does from the rest of the economy. Monetary policy framework should be such that the propensity to export is high and exporters find it profitable to do so.

Last but not least, there is need to continuously benchmark exports & industrial zones models abroad with an aim of keeping Kenyan EPZs at par with international standards and emerging business trends. Integrating industrial areas with commercial areas, service areas, residential areas and social amenity areas is proving to be the modern fashion for many export oriented economies. There is need to provide one-stop shop and comfortable living environment to the EPZ investors. As a means towards this end, fasttracking operationalization of Special Economic Zones (SEZ) may help address the above key issues. Kenyan external sector reforms need to be credible and sustained over time inorder for the exporting firms to respond by increasing investment, production and exports.

Finally, application of the above recommended policies requires adequate policy space and flexibility inorder to realize their maximum benefits. Policies should have a differentiated approach by taking into account the diverge determinants of EPZs performance as well as those of manufacturing exports performance. As the first measure, enhancing the size of value addition and at least costs in comparison to the key trading partners is quite critical. EPZ remains at the pedestal in value addition hence constant management of EPZ's severe direct and indirect costs should always remain at the fingertips of any policy generating institution.

5.3.1 Areas for further study

There is need for further studies to focus on determinants of EPZ performance especially on the impact of incentives to the EPZ program. As recommended that constant review of EPZ incentives package is important, quantifying individual and/or collective benefits of the current incentives will go a long way in addressing this knowledge deficit.

It is also important to evaluate EPZs not only by their contribution to manufactured exports but also by their dynamic contribution to gainful employment and improvement in Kenya's labor and managerial skills (See Figure 7.2). EPZs are expected to accelerate and bring significant positive effects on Kenyan economy in terms of wages paid to the workers, human capital formation and improvement in managerial skills.

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7.0 APPENDICES

Figure 7.0; Trend on EPZ gazzeted zones & operational enterprises in Kenya

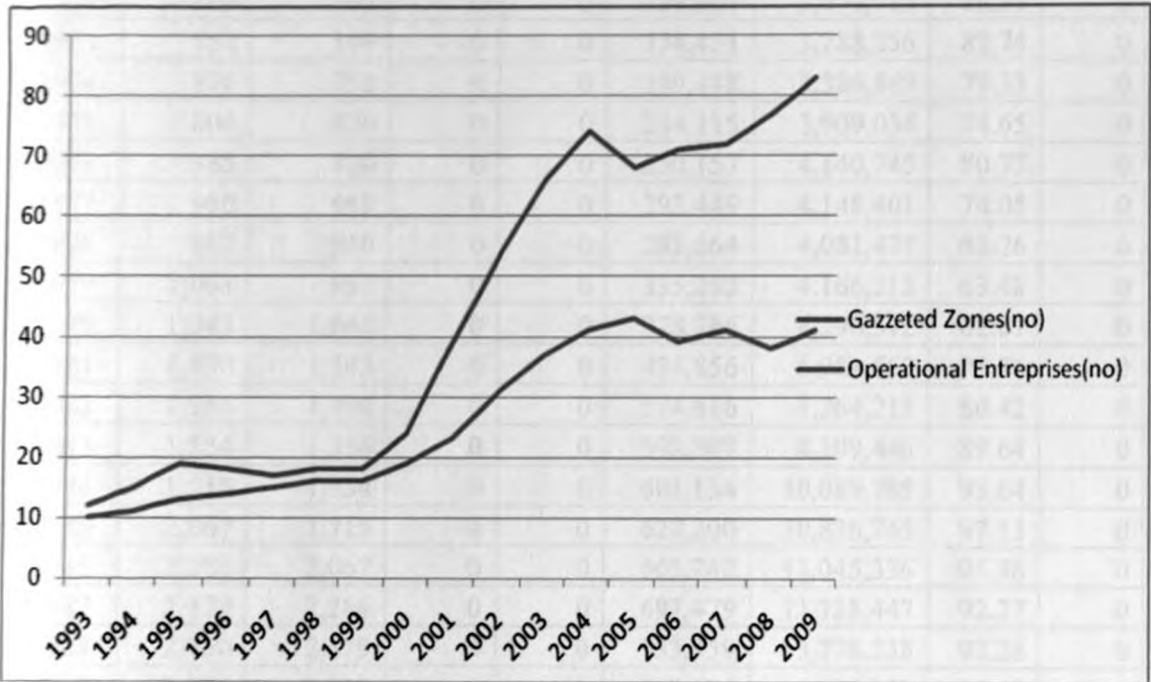


Figure 7.1; Trend on EPZ investments, output & employment in Kenya.

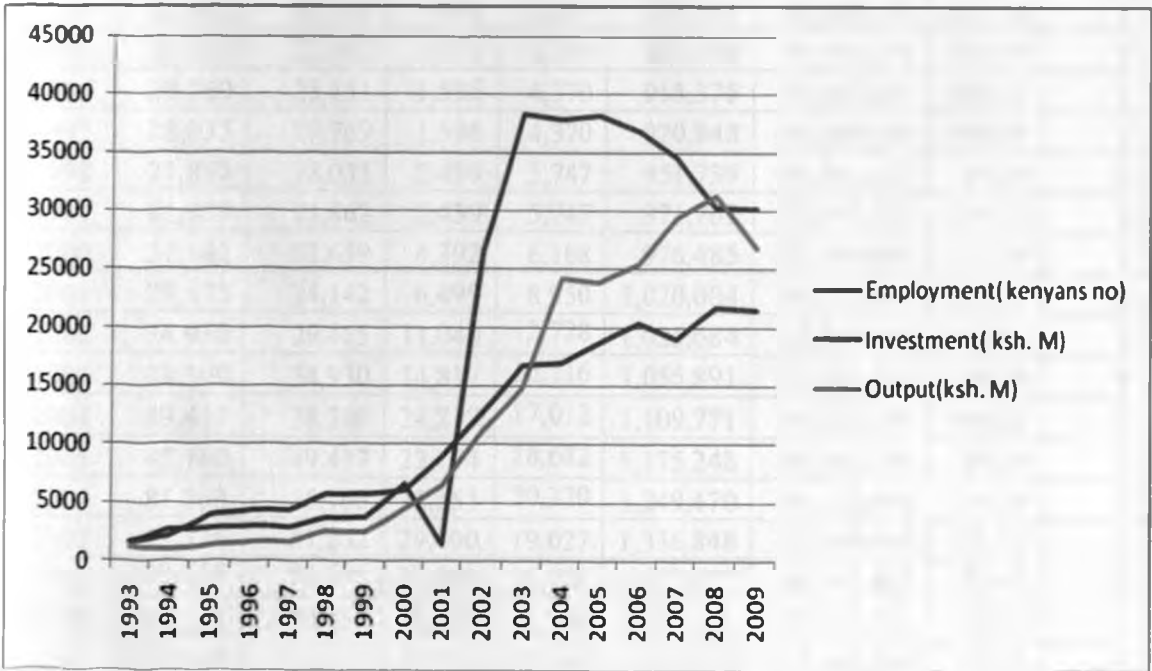


Table 7.0; Annual time series data used for the analysis

YEAR	MX	LAGMX	EPZ ^Y	EPZ ^I	GDP ^D	GDP ^F	RER	TIME
1970	408		0	0	128,164	2,679,494	88.18	0
1971	567	408	0	0	141,529	2,857,473	88.63	0
1972	509	567	0	0	159,361	3,059,783	86.38	0
1973	752	509	0	0	174,451	3,288,256	82.74	0
1974	876	752	0	0	199,448	3,386,849	79.33	0
1975	800	876	0	0	214,115	3,909,034	74.65	0
1976	985	800	0	0	250,157	4,140,745	80.77	0
1977	960	985	0	0	292,449	4,148,401	74.05	0
1978	967	960	0	0	293,664	4,081,477	63.76	0
1979	1,061	967	0	0	335,202	4,166,213	63.48	0
1980	1,343	1,061	0	0	378,786	4,290,572	62.87	0
1981	1,490	1,343	0	0	434,856	5,981,669	75.76	0
1982	1,356	1,490	0	0	574,616	7,264,215	80.42	0
1983	1,554	1,356	0	0	592,507	8,209,446	89.64	0
1984	1,715	1,554	0	0	601,134	10,089,785	93.04	0
1985	2,067	1,715	0	0	627,200	10,836,745	97.13	0
1986	2,286	2,067	0	0	665,742	11,045,336	95.38	0
1987	2,179	2,286	0	0	697,479	11,728,447	92.27	0
1988	2,720	2,179	0	0	733,959	13,776,238	92.26	0
1989	3,386	2,720	0	0	769,694	16,570,373	98.47	0
1990	4,147	3,386	0	0	804,823	21,880,978	98.19	0
1991	7,181	4,147	0	0	816,503	29,183,485	102.32	0
1992	8,589	7,181	0	0	814,401	37,241,018	98.90	0
1993	17,534	8,589	1,147	1,667	820,674	48,077,711	106.87	1
1994	22,043	17,534	946	2,097	857,531	48,363,556	102.36	1
1995	25,131	22,043	1,337	3,899	887,796	45,516,218	101.57	1
1996	29,769	25,131	1,596	4,370	918,378	52,467,268	100.82	1
1997	28,035	29,769	1,596	4,370	920,848	56,384,069	100.49	1
1998	21,862	28,035	2,499	5,747	951,739	60,504,021	99.26	1
1999	81,659	21,862	2,439	5,747	971,761	73,917,338	100.75	1
2000	24,142	81,659	4,392	6,108	976,485	83,499,896	103.98	1
2001	29,415	24,142	6,499	8,950	1,020,004	86,979,040	101.01	1
2002	34,930	29,415	11,040	12,728	1,025,684	88,839,192	101.03	1
2003	38,300	34,930	14,817	16,716	1,055,891	87,801,524	96.58	1
2004	49,417	38,300	24,217	17,012	1,109,771	94,837,189	96.02	1
2005	45,160	49,417	23,774	18,682	1,175,248	93,297,706	85.89	1
2006	81,262	45,160	25,353	20,320	1,249,470	91,452,404	79.18	1
2007	93,586	81,262	29,400	19,027	1,336,848	87,086,469	75.71	1
2008	120,458	93,586	31,262	21,701	1,357,277	89,541,823	70.46	1
2009	124,252	120,458	26,798	21,507	1,393,174	97,621,601	70.97	1
2010	137,143	124,252	31,723	22,660	1,470,517	103,506,906	72.08	1