



**GOVERNMENT SUPPORT AND EXPORT: A DID
APPROACH**

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List of Acronyms

ADLI	Agricultural Development Led Industrialization
ARDL	Auto Regressive Distributive Lag
BEFELEX	Benefits for Special Export Programmes Program
DID	Difference-In-Difference
FDRE	Federal Democratic Republic Of Ethiopia
FOB	Free On Board
IMF	International Monetary Fund
OLS	Ordinary Least Squares
WB	World Bank
WLS	Weighted Least Squares
MOFED	Ministry Of Finance and Economics Development

Abstract

The government of Ethiopia have been trying to create a good environment for investors and exporters of non-traditional product by providing different export and investment incentives. Among these are the Export Trade Duty Incentives and Export Credit Guarantee Scheme. This study investigates the impact of these schemes on export. A Difference -in-Difference methodology was used to estimate effects of the two export incentives adopted in Ethiopia. With data for individual exporters of the year 2000 and 2002 , the DID estimation shows significant impact of export incentives on export .But this should not be over emphasised ,one has to look at the costs for the government either in terms of foreign exchange or opportunity cost of the funds to the country. The government have been providing substantial amount of support to exporter up on their demand to hit the intended target with out no cross checking of whether the subsidy have been used properly or not as long as the firm export the targeted amount. Hence thinking of what this funds could do in other sector or areas of investment. As well thinking of how little variation of export is explained by subsidy as it shown in the DID methodology. The government should consider the cost of subsidy hand in hand with the gain from this subsidy.

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1. Introduction

1.1 Background

In the past half century the world has shown a trade reform that involve a shift from import substitution to export promotion strategy. A various literature indicate or suggest that trade plays an important role in economics development. The experience of Turkey which have resulted a boom in the export sector and the Asian countries experience for their wide use of out ward oriented strategy are a few examples.

There has been a wide spread acceptance in policy makers that developing countries should pursue more out ward oriented trade strategy and use of export subsidy .The experience of the Asian's success story is being put as a model for the use of outward oriented strategy in developing countries. On the other hand various arguments are being forwarded against the use of export subsidy Bahgwati (1988).

Both import substitution and export promotion strategy has been adopted by the governments of Ethiopia to achieve economic growth in the past half century. The imperial regime which lasted from 1930 to 1974 has adopted export promotion strategy in the late 1950's and import strategy in the early 1960's. During the Derg military regime which came to power over throwing the imperial regime redirected the economy along the socialist line and adopted import substitution strategy.

The then military regime came to an end when the Federal Democratic Republic of Ethiopia (FDRE) took power in 1992. Since then the country have adopted market oriented economic policy and undertaken different economic reform programs. As well in recognizing the major role that exports can play in the economic growth the government of Ethiopia as part of its

core strategic development which is Agricultural Development Led Industrialization (ADLI) adopted export promotion strategy Samson and Tadele (2002).

Accordingly different programs and plans were designed to increase and diversify the countries export and investment in major exporting and potential exporting areas .This reforms measures range from macro economic to sector specific policies. Now day's non traditional products are gaining much attention from government for the intention of diversifying the countries export. There are non traditional products appearing in the countries export which are believed to have a considerable potential to draw a significant foreign exchange in the future.

Hence in this perspective the government have been trying to create a good environment for investors and exporters of non-traditional items or product by providing different export and investment incentives. Among these are the two schemes adopted in the year 2001. These are the Export Trade Duty Incentives Schemes and Export Credit Guarantee Scheme. The former scheme allows to tackle input cost problem which allows the refund of duty paid on imported input that are used for the production of exported goods. And the later helps or allows potential markets to be realised by guarantying exporters for the possible risk of default in payment they may face and providing guarantee for exporter so that they can get credit from different Banks who offer export credit.

Government support to exporters is not only accumulated to these two schemes. It starts with facilitating the processes of getting investment license to finding of markets for exporters product .It is a miracle now days compare to the previous period that it takes at most 3 hrs to get a license at the investment authority provided all the necessary documents. However this paper investigates the impact of the two policies implemented by the government of Ethiopia

1.2 Statement of the Problem

Most of the support programs for exporters that are designed and implemented around the world are various in type. Incentives could be direct cash payments per export sale, duty draw backs, cost sharing, export financing, domestic tax incentives, preferential rates on public utility, subsidized interest rates and so on.

Most of the study done so far focused on some categories of countries or regions either on countries from developed nations (Europe and United States), Asian (Korea) or Latin America (Brazil, Argentina and Costa Rica). Like thus studies by Hoffmaster (1992) on Costa Rica, Helmers and Trofimenko (2007) on Columbia, Desia and Hemes (2003) on America, and Nogues (1989) on Latin America.

However analyses on the impacts or effectiveness of incentives given to exports are limited or non existence for Africa. One study by Low (1982) on the analysis of export subsidy effectiveness in Kenya as it is cited on (Helmers and Trofimenko, 2007; Rodrik, 1993) stand alone for Africa. When it comes to Ethiopia such studies are non existences. Hence this research paper will try to see the impact of the two major incentives that are being used in the country.

Policies are pursued in attending some objectives hence in some way an evaluation should be under taken if the policy in deed hit the intended target or not. In the same token the different export and investment incentives given to exporters should be evaluated. Well this being this developing country's experience with evaluating their policy and strategy has been a different story.

For example in the study of Haque and Kemal (2007) state that Pakistan has been applying export subsidies to exporter for about 3 decades. Until this particular study by Haque and

Kemal (2007) there was no systematic evaluation of the programs. This study found that the subsidy schemes that were implemented have not achieved their objective in increasing export, but it took 3 decades to find that.

Even though it is recently that incentives have been implemented in Ethiopia the country shouldn't wait decades to see their effectiveness in achieving their objective, which is most of the time increasing exports and diversification. So it is about time to start gathering information and data to analyze the impact of these incentives on export. This research paper will try to do so.

Hoffmaster (1992), Helmens and Trofimenko (2007) and Haque and Kemal (2007) pointed out in their respective studies that export promotion schemes or programmes are often complex and are open to potential misuse and abuse which may lead to their ineffectiveness in fostering exports. And these schemes are costly and are financed by government. Hence a proper handling and follow up is needed or required so to make sure that the money goes where it suppose to go and avoid a rent seeking behaviour. Hence evaluating the policy through their effectiveness would be one way to go.

In addition it has been stated by different publication that most developing countries especially Africa have gone and still going different trade policy reform. Usually countries like Ethiopia have just started giving due attention to non-traditional product export. Their respective government keeping in mind that this sector could bring in high foreign exchange earning have started giving different kinds of support. So far to my knowledge no study has been done evaluating the different government support given in Africa.

More over the studies done so far have not yet analysed effects of subsidies on export by comparing the actual export with the counter factual export if the subsidy had had not existed. Hence the central contribution of this paper will be its usage of difference-in-difference methodology to investigate the effect of the two schemes on export.

In sum though export and investment incentives in Ethiopia are a recent phenomenon an attempt will be made in this paper to evaluate the different incentives given by the government to exporters.

1.3 Objective of the Study

The general objective of the study is to investigate the government support given to exporters.

The research as well has specific objectives these are

-To investigate the impact of the most widely used government incentives on export performance that are export credit guarantee and export trade duty incentives.

-To briefly over look the performance or handling of the two government incentives by institution that concern them.

1.4 Data Source and Methodology

Difference-in-differences (DID) methodology is going to be used in this study to investigate the impact of the two programmes on export. A brief overview of the methodology as given by Ashenfelter (1978), Ashenfelter and Card (1985), Abadi, 2003; Buckley and Shang (2003) is that out comes are observed for two group for two periods before and after a treatment is given to one of the group. Then only one group is affected by the treatment in the second period while the other group is not in both periods. Then the unaffected or untreated group is

used as a comparison to identify the variation in the out come that is not due to the policy or program being evaluated. DID methodology reveal changes or effect that are indeed or believed to be due to the program or some treatment.

DID have been famous in applied economics to evaluate the effect of a policy or programs specially around public interventions and other policies .So far DID have been applied on employment effect of a raise in the minimum wage by Card and Krueger (1994), in estimating the effect of training programs on earning by Ashenfelter (1978), by Blundell, Duncan and Meghir (1998)in estimating labour supply responses using tax reforms and in studying the association between imprisonment and employment rates for female ex offenders by Cho(2007).

Few as well have tried to apply this methodology on international economics .These are Slaughter(1998) in analysing international trade and per capita income convergence and Gorge et al (2006) in analysing effect of government support on export .

In the model there are two groups these are treatment and control groups .As it was tried to mention in the introduction the two policies i.e. export trade duty incentives and export credit guarantee schemes are explicitly for non coffee exporters. Here the treated group becomes the non coffee exporters and the controlled group are coffee exporters. The treatments are the two schemes and the out come is export of the individual firms export.

The model requires at least two observations that are before and after the treatment .Hence the data that will be used are secondary data .Export data of different exporters before and after the implementation of the two policies that is the year 2001 is collected from Ethiopian Custom Authority. Government incentives or support are collected from different government

institution that offers these incentives .DID is estimated by simple ordinary least square(OLS) estimation technique .

1.5 Significance of the Study

This study is hoped to open doors in the evaluation of different subsidy schemes that are being implemented in the country and believed to hold policy implications as well. If the different government support given to exporter contributed to an increase in non-traditional exports then the government can continue what it is doing so far. Other wise the resource used should be diverted to other ways to boost or diversify the export sector.

2. Literature Review

International trade policy stretch from Greek and Roman thought on international trade to modern understanding of comparative advantage of trade of David Ricardo and to the very recent Brander and Spencer strategic trade policy .Trade policy is in general referred to policies directed to level, pattern or structure of trade .(Spencer and Brander)

There are various trade policy instruments or tools .Among the widely used trade instrument are tariff, quota and subsidy. Thus that are getting much attention now days are VER(Voluntary export restrain) ,anti dumping ,dumping and countervailing(Krugeman and Obstfeld,2006; Suranovic,1997-2008).Among all this instruments the interest of this study will be on export subsidy .This part of the paper will try to touch the different theories and arguments surrounding export subsidy.

2.1 Survey of the Theoretical Literature

Export subsidy is a government policy to encourage exporters. Simply it is a payment by government to exporters(Krugman and Obsefeld,2006) .Export subsidies takes different forms .The widely used export subsidies are direct cash payments per export sale mostly used by developed countries due to it's high cost, duty draw backs or rebate, export financing, domestic tax relief ,preferential rates on public utilities ,interest rates on loan export guarantee The widely used subsidy particularly on agriculture are market support guarantee and subsidization of inputs etc (Suranovic,1997-2008)

2.1.1 Debates on Effectiveness of Export Subsidy

Does export subsidy increase exports or increase welfare? Well theories provide different answer. There is an elongated trade policy debate in international economics concerning use of export subsidy .It is argued that export subsidies expand the value of trade and enhance consumer welfare and considered as it is the best policy .on the other hand it is argued that export subsidies is not a best policy because it creates unfair advantages distortion markets that is increasing domestic price above world price and hence should be prohibited (Bagwell and Staiger, 2001).

Most international trade theory and analysis literature using partial equilibrium analysis shows that in a perfectly competitive market set up welfare effect of export subsidy is always non positive resulting in a reduction in world production and consumption efficiency .But if the country imposing export subsidy is large it may raise national welfare of the imposing (Suranovic, 1997-08; Feenestra, 2002; Krugman and Obstfeld, 2006).

Bhagwati and Ramaswami (1963) argue that in the presence of domestic distortion export subsidy is a much superior policy than any other policy (free trade or tariff).They also state that export subsidy is difficult to proceed for infinite time or indefinite time because of its high cost requirement hence easier to abolish than tariff which is a source of revenue in most developing countries and requires no cost to government other than administrative cost.

Mostly markets don't full fill the perfect competition assumption and it is phrased as market imperfection or distortion .It is argued in international trade policy analysis that in the presence of imperfection or distortion trade policy can be used to raise national welfare that were considered as non friendly with welfare in a perfectly competitive market .These gave

rise to a lot of protection or support intervention argument these are infant industry argument ,optimal trade theory and strategic trade theory (Suranovic, 1997-08).

Infant industry argument is an argument for protection or support or intervention to assist infant industry while they compete with firms that are more established and equipped with information and knowledge .They are two infant industry arguments, infant industry argument in the presence of external markets and capital markets imperfection, stated by most international economics books or literatures like thus Krugmen and Obstfeld (2006) and Feenstra (2002).

Some business requires high cost at early stages due to their nature of economics scale (learning by doing) and as time goes they recover their cost. This type of business needs some sort of funds or loans at early stage to make up for their cost and proceed .If the market is imperfect then the government can intervene to provide the loan or fund .This refers to as infant industry argument in the presence of imperfect capital markets.

The second argument is infant industry argument in the presence of externality which is explained by Pangarya (1995) as follows. Starting a new venture can be a pretty cost job that is developing a name, reputation finding suitable markets and so on. Hence the starter incur considerable cost while the next entrance in the business face less cost since now the road is some how paved. The first firm will fail to internalize its cost as a result investors may fail to under take new business that may be important to the nation development. Hence government can provide support to firms which are investing in new business and help them internalize their cost .Pangarya (1995) refuted this argument in that externality is vaguely defined and it can be attributed to many thing hence failure to identify which is and is not externality .

So far export subsidy has been justified in the existence of market distortion (imperfect markets) but Itoh and Kiyon (1987) shows that even under a perfectly competitive market export subsidy can be welfare enhancing .By using a 3 good and 2 country trade model Itoh and Kiyon (1987) show that export subsidy given to marginal goods export can in deed increase the countries welfare .But if export subsidy is given to non marginal goods export it will do other wise that is decrease the welfare of the country .

Bahgwati (1988) tried to explain the evolution of the argument against export promotion in general by dividing the argument in to old and new arguments.

The old argument is based on terms of trade and elasticity pessimism. The former is emphasized by Perpish (1952) and (1964)sited on Bahgwati (1988) state that despite different policy adopted by developing countries due to their content of trade (commodity goods)the terms of trade will decline and hence export promotion become unnecessary. The later pessimism as it is explained by Bahgwati (1988) mentioning Norkse (1959) is that foreign markets are insufficient to accommodate imports from developing countries that is the elasticity of developing countries export is low .So even if export is increased through export promotion markets will not absorb it.

The so called new argument against export subsidy state that developing countries export face a lot of hindrance that is high protection .In conclusion Bahgwati(1988) state that despite all this pessimism export promotion s still stands as most favoured way if developing countries and developed countries joined to hill the protection issue allowing trade to go on more.

The recent debate in support of export subsidy is Strategic trade policy. In simple words the idea of strategic trade policy is that “trade policy can increase domestic national welfare by

moving profit from foreign firms to home country firms.” Brander and Spencer (), Brander (1995)

Eaton and Grossman (1986) state that most of the time interventions are justified by the existence of distortion in the market implicitly the existence of oligopoly markets .Eaton and Grossman (1986) emphasised the importance of export subsidy in increasing nation welfare (domestic firms benefits in their own words)but it effects depends on markets structure . If the market structure is some thing else other than oligopoly set up export subsidy may not be the best policy.

In conclusion there are list of arguments for and against export subsidy .stretching from perfect competition to imperfect competition markets set up .Pangarya (1995) state that like thus arguments forwarded in support of import substitution strategy the now export promotion strategy arguments still face the same flows and critics . This part of the paper solely tried to cover some of the argument for and against surrounding export subsidy.

2.2 Reviews of Empirical Literatures

There are a number of empirical studies that analyse the effectiveness of exports subside. Among thus studies that are targeted at developing countries are Nogues (1989) in Latin America, Hoff master (1992) in Costa Rica, Arselan and Wijnbergen (1993) in Turkey, Faini (1994) in Turkey and Morocco, Helmers and Troformento (2007) in Colombia and Haque and Kemal (2007) in Pakistan. The outcome results of the aforementioned studies are mostly not on the favour of export subsidy. Which have a common characteristic that all lack close government follow up. While few shown success stories that are the case of Brazil, Korea and China each have their unique and common characteristic that contributed for the success of export subsidy.

As cited in Rodrik(1993),Jung and Lee(1988)in their study of the effectiveness of export promotion policies in Korea have put down an econometrics evidence that subsidies highly affects exports. Even compare to real exchange rate export of the country were more sensitive to subsidy rather than real exchange rate.

Korea is one of the well known success story of export subsidy in the early 1960's. The Park government which took power overthrowing the Rhee government in 1960's has put down export enhancement as its main emphasis in the country's development .The Korean subsidies took different forms. In the early 1960's there were direct cash grants later on replaced by tax and imported duty exemption, subsidized credit and different type of loans provision.

Korean export subsidies had unique features which are believed to contribute to the Korean export success as well to the whole economy development. The government played an incredible role in the granting of subsidy and follow up of the performance of the beneficiaries. The government went to the extent of using arms and threats to administrate the export subsidies handed over to ensure that the firms were hitting their targeted outcome and not wasting or abusing the subsidies given. As well punishing thus who do otherwise.

The government literally follow up the exporters on day to day bases and held a monthly export promotion. Surprisingly this monthly export promotion was led by the president Park himself .This shows to how much extent the government was dedicated to enhance the export sector of the country and in making sure were the many goes and how it is handled .Rodrik(1993)

The subsidies given were not only given to exporters but also to those who supply the intermediate material or inputs to exporters. Hence the government of Korea was watching over the markets and the firms like hock in the sky.

In a similar manner and time in the 1960's but definitely in a different context the Brazilian government shifted its attention to export enhancement and adopted different forms of export incentives. Prior to 1964 the Brazilian government was following an import substitution. And starting in 1982 Brazil was hit by a debt crisis. But in between that is in the 1960's and 1970's Brazil was the only country that have shown a success story in export subsidy among thus countries in Latin America stated in the study of Nogues (1989) .

The export subsidies in Brazil in the 1960's and 1970's were duty draw backs, for fiscal benefits for special export programmes program (BEFLEX), tax credit premium, credit subsidies and income tax exemption. These subsidies were valuable for the export success of the country at that period. The one that is unique and highly contributed for the success of export growth in Brazil's export enhancement was the BEFLEX subsidy. This was the signing of the export commitment contract by firms in order to get a basket full of subsidies. Rodrik (1992) have listed this subsidy being the effective one among the Brazilian subsidies listed above or implemented in the 1960's and 1970's.

Unlike Brazil in most cases of Latin America countries who applied or implemented different export subsidy scheme in the 1970's and 80's failed to bring export diversification and better export performance which were their intended targets. Nogues (1989) in his study of Latin America experience with export subsidies concluded that export subsidies have failed to reach its target in most of these countries. Nogues (1989) concluded that even though considerable amount or sum of money was invested on export subsidies in Latin America particularly Argentina the export subsidy schemes further created fraud, corruption, and rent seeking behaviour which entails other additional costs to the society.

Among the Latin's countries export has increased Nogues (1989) shows that only Brazil export supply increase is induced by export subsidies .and uniquely Mexico have shown an increase export supply with minimum or no subsidy.

In the case of Turkey what went on was in 1980's Turkey under goes a measure policies changes among this were an export enhancement incentives and flexible exchange rate policy .while the president of Turkey top priority was export enhancement .Due to this the government have tried to clear the roads for exporter so that they can have easy access to different export subsidy provided then. But the draw backs was lack of administration to follow up which created fraud and miss use of the funds .Rodrick (1993)

Arselan and Wijnbergen (1993) in assessing factors that may contribute to Turkish export miracle in 1980's found that exchange rate policy were the deriving force behind the Turkish miracle rather than the export subsidies implemented in the country. This is to say that most of the increases in Turkish export were traced back to the real depreciation that prevailed during that time rather than the different export subsidies given to exporters.

Arslan and Wijnbergen (1993) estimated both export supply and demand equation using a two-stage least squares to see the contribution of exchange rate policy and export subsidy to Turkish export boom. Even though the government main priority was export enhancement by giving export subsidy the boost in the export sector was due to the exchange rate policy of the country.

In the case of Costa Rica Hoffmaster (1992) estimated a supply equation model that is very similar to the original Goldstein and Khan (1978) to show the effect of export subsidy specifically tax credits scheme on export supply and evaluate the costs of the subsidy .the study shows that export subsidy due indeed increase export supply. But it was found that it

introduce distortions (high cost) that is greater than the benefits it offers. In conclusion in Hoffmaster (1992) study export subsidy found to be not worth while way of promoting trade.

In the case of Pakistan Haque and Kemal (2007) evaluated the two export subsidy scheme were implemented for more than 3 decades in the country they used a simple export demand model and estimated by Auto Regressive Distributive Lag (ARDL) approach .The result found shows that both schemes have insignificant impact on export in the long run while in the short run only the rebate/refund schemes shows a positive impacts that is very small. Despite the fact that this scheme where in function for 30 years they have been infective in increasing export supply.

In all the case country mentioned above except Brazil and Korea evidence to support export subsidy schemes is weak or negative .Nogues (1989) pointed out two main reasons for the failure of exports subsidy particularly in Latin America countries. These are high import protection and unstable real exchange rate. What makes Brazil unique is according to Nogues (1989) this country liberalizes trade and managed to stabilize real exchange rate. Hence export subsidies have been effective to boost the export of Brazil due to thus conducive environment that prevailed unlike the rest of the Latin America countries that experienced high import protection and very unstable exchange regimes.

The dedication of the government to follow up the subsidies given and providing different assistant for export so they can hit the intended target were the qualities of the Korean export enhancement program which most of the countries case mention above lack. Due to this thus country Export subsidies were either abused, neglected and didn't hit the main objective unlike Korea.

Helmets and Trofimenko (2007) have also put down reasons for the lack of positive evidence or convincing evidence for the effectiveness of export subsidy. They stated that lack of convincing evidence may be due to the fact that most of the studies used country and industry level data in their analysis. Therefore the studies ignore the firm specific nature of export subsidy. (Export subsidy given to firms different according to different condition)

Hence as a results Helmets and Trofimenko(2007)analyzed effectiveness of export subsidy by modelling future exporting behaviour of a firm as function of current government support and firm specific characteristic. The study use annual manufacturing survey from Colombia. The result shows that export subsidy was found to encourage plants to increase their export .but what the study found as well was that it was the smallest subsidy receiver firms that respond well to the subsidies given. While those firm who received large and disproportional large subsidy either fail to export or produce at all. Helmets and Trofimenko (2007) interpreted this or explained it as miss use of government resource.

Other studies that analyse export subsidy at firm level for developing countries are non-existence but there are few on developed countries. These are Bernard and Jensen (2004) sited in Helmets and Trofimenko (2007) in US and Gorge et al (2006) in Ireland .Both study analysed or investigate the effect of export subsidies on export. However the results were conflicting. In case of Bernard and Jensen2004 as it is sited in Helmets and Trofimenko (2007) found that export subsidies is insignificant in affecting export .on the other hand Gorge et al (2006) by combing difference-in-difference methodology with non parametric procedure reached a conclusion that export subsidy or government support do indeed motivate exporting firms to export more .But it is only when the subsidy is substantially large. Gorge et al (2006) used a firm survey data.

So far only one study on Africa repeatedly mentioned on a number of export subsidy literatures the study is by low (1982) on Kenya as it cited by (Helmers and Trofimenko,2007; Rodrik,1993) .low (1982) carried out a survey to investigate whether export subsidy has induced an export growth or not and attributes the failure of export subsidy scheme in Kenya to the poor performance bureaucrats in charge of government grants allocation.

In general a lot has been said on the importance of using export subsidy to boost exports. However the empirical evidences fail to support the use of this policy rather subsidies were found to add another costs to the societies using them except in the case of Korea and Brazil where the government has a close follow up .This paper will try to investigate the effect of the two incentives schemes implemented in Ethiopia on export.

3. Natures of Export Incentives in Ethiopia

This section describes what types of incentives are provided for exporters. This section is based on documents from export promotion department of Ministry of Trade and Industry and the Federal Negarit Gazeta Proclamation No249/2001.

3.1 Export Incentives in Ethiopia

A number of factors affect the export performance of firms. One among the factors that is external to the firms but domestic is government support or incentives. This kind of incentives is important especially for firms in developing economies. These firms compete against technological well established firms from developing countries and face competitive world price. As well these firms face high import duties and tax paid on primary inputs that will increase their production and marketing cost structure. This is the current situation for country like Ethiopia Berhanu and Kibre (2002).

Ever since the overthrow of the military regime in 1991/92 Ethiopia has been undertaking a series of economic reforms adopting Structural Adjustment Program (SAP) under the support and supervision of international financial institutions the International Monetary Fund (IMF) and World Bank (WB). Under this new policy regime the central element is a market oriented strategy. As well in recognizing the major role that exports can play in the economic growth the government of Ethiopia as part of its core strategic development which is ADLI (Agricultural Development Led Industrialization) adopted export promotion strategy Samson and Tadele (2002) and Berhanu and Kibre (2002).

Accordingly different programs and plans were designed to increase and diversify the countries export and investment in major exporting and potential exporting areas. This

reforms measures range from macro economic to sector specific policies. Now day's non traditional products are gaining much attention from government for the intention of diversifying the countries export. There are non traditional products appearing in the countries export which are believed to have a considerable potential to draw a significant foreign exchange in the future.

Hence in this perspective the government in order to improve and enhance exports provides different export and investment incentives particularly to non-traditional exporters. Export trade duty incentives schemes and export credit guarantee scheme are some of the incentives given to exporters. The government of Ethiopia as well provides different investment incentives like exemption from income tax, exemption from payment of custom duty, and granting of loan up to 70 % of the investment needed while the investor come up with only 30% of the investment. More over the government have made life easier to thus who wishes to get investment and export trade licenses by illuminating bureaucratic procedures .It is surprising that now days it takes at most 3 hrs to get a license at the investment authority provided all the necessary documents.

3.1.1 Export Trade Duty Incentive

Export trade Duty incentive was established by the Federal Democratic Republic of Ethiopia (FDRE) on July 2001 .this scheme refund duty paid on raw material used in the production of commodities up on its exportation and fulfilment of certain condition that will be discussed below .In practice the scheme is limited to non-coffee exporters even though it is not stated explicitly on the proclamation. With in this scheme there are three duty incentive schemes .These are duty drawback, voucher and bounded manufacturing ware house scheme.

The duty draw back incentives is a refund of 100% of indirect taxes and duties paid on imported or locally produced input used for production of exported goods. Any person or organization who are engaged in exporting or re-exporting commodities (reason for re-exporting could be due to damage, short delivery or misspecification) are eligible up on fulfilling certain condition .These condition are, first the product produced using the imported or locally produced input should be exported with in a year and the duty to be refund should be at least 1000 birr worth. Second exporters should present some supportive document and declare to custom authority up on exporting .The document contains identification of exporters, duty paid receipts .types and quantity of input used.

Thus exporter who fulfilled the above condition are entitled to get the refund of the duty paid on the input used .The execution of the duty draw back though supposed to be paid by Ministry Of Finance and Economic Development (MOFED) according to the declaration, currently this task is performed by Export Promotion Department of Ministry of Trade and industry together with Custom Authority .How much to be refund is determined using the input out put coefficients to be prepared by Ministry of Finance and Economic development if it's not provided by this entity the exporters are supposed to present input out put coefficient as one of the supporting document mentioned above. It will be revised and be in use.

Under the voucher scheme , individual or organization are given a document called voucher which has a monetary value equal to the amount of taxes and duties payable on input that exporter acquire . Unlike the duty draw back there is no refund instead they are given a voucher. There are number of condition that any exporters who tend to be beneficiary of the scheme need to full fill. One important requirement is the individual or organization should

have an eligible certificate issued by ministry of trade and industry. For details of the different condition see proclamation 246/2001

The third scheme is bonded manufacturing warehouse. This scheme requires the exporter to have a ware house that meet the standard set up by the custom authority .whatever raw material necessary for production of exported goods are imported and stored in this ware house and locked up by both parties, the exporter personal and the government official. Hence up on the request of this material the exporter can withdraw this raw material for usage at that while both parties are present. Like in the case for both schemes here as well the input should be used and exported with in one year. The beneficiaries of this scheme are thus who are not licensed to use voucher scheme.

Thus an exporter that doesn't complies or full fill any of the condition stated under the three schemes tend to loss the privileges and will be demanded to pay the duty accordingly. In the case of duty drawback no refund will be made, while in the case of voucher and bonded manufacturing warehouse scheme the exporter will be forced to pay tax and duty with interest.

Thus exporters who misuse and abuse the incentives in any way are subject to penalty by court .for example if an individual exporter provide a false document or refuse to provide the true document then the exporter is subject to imprisonment and fine payment. However the number of imprisonment and the amount of fine differs according to the reputation of the exporter.

Another case could be selling of raw material that is brought for production of export purpose free of duty is subject to imprisonment and fine payment.

In addition to the 3 schemes provided under export trade duty incentive for exporter the government recognizing the need for different foreign experts issued a cost sharing directive on June 2004 to share their cost on salaries paid to foreign experts .this is exempt income tax

3.1.2 Export Credit Guarantee Scheme.

This scheme is part of the export financing incentive along with foreign exchange retention and foreign credit scheme.

Foreign exchange retention scheme allows exporters to retain 20 % of the foreign exchange they generate from export and to use the 90% with in 28 days for different transaction .The foreign credit scheme e is the authorization of the National Bank of Ethiopia for foreign partner to send foreign credit .So it can be used to finance capital goods, raw material, for production of export.

When we come to export guarantee scheme, when exporters demand loan for pre and post shipment financing of export the National Bank provide guarantee so that they can have access to the loan provided by different banks. The National Bank provide 100% guarantee for already existing exporter and for the new exporters the National Bank provide guarantee with 20% collateral requirement This scheme is explicitly for non- coffee exporters. If the credit fails to be repaid then the national bank will pay the financing bank who gave the export credit .Currently the task of issuing guarantee is transferred to Development Bank of Ethiopia.

3.2 Other Government Support

Government support does not only start and end here at the two schemes. Government provide other number of export and investment incentives. It can be said that the government

support start with providing or facilitating the process of getting investment and export licenses. Now days it is really a miracle that the government had made the provision of license easier than ever taking out most 3 hrs to get licence either for investment or export. As well the government keeps a close follow up with exporters providing necessary government support to make sure that exporters are hitting the projected target.

Keeping the objective of boosting export sector, diversifying export and increasing the foreign exchange generated from export the government provided the aforementioned incentives and put dawn a strategy to follow up thus firms on monthly and some time on a daily bases so to make sure that they are not facing obstacle to hit the intended target .This seems a familiar case.

The Ministry of Trade and Industry is performing the task of following individual firms export performance on daily and monthly bases. Experts from ministry of trade are assigned to have a close follow up of firms that are both producer and exporter. On average one expert is assigned to follow up 5 to 6 exporters. Export performance is evaluated every month providing explanation for each change that may occur to there performance.

The scope that the government is involved with these firms is wide. It went to the extent that if individual exporters face a little delay at customs the experts from Ministry of Trade and Industry may even go in person to execute the problem .Each firm has some one from ministry of trade to have a contact and share there problem with . The expert tends to look at what the government can possibly do to solve the given problem so to help that particular firm. The ministry may go also to the extent to supply the necessary raw material in case the exporters are unable to acquire and search markets for their products.

There are no systematic selection criteria for a firm to be under the supervision of the government other than being an exporter. But the firms expected to submit their feasibility study of the project with their export plan. The government will assemble individual export plans with the overall target the government had set. Then the government side by side with the exporters provide any possible support that is believed to contribute to the process of producing and exporting.

Every six months for leather and leather product sub sector and every three months for the other sectors the Ministry of Trade and Industry holds a forum where it gathers stakeholders, exporters and some times the minister himself and discusses problems, success, solution and needed improvement.

So far there are no reports of misuse or abuse of government support except one or two cases which are being dealt with by withdrawing that particular firm from any privileges they were entitled. But still there is potentiality of misuse and abuse of resources since there is no technical crosschecking of exporters if they used the incentives accordingly or not.

This may bring a bell when it comes to the world experience with export subsidy. It has been stated in the empirical literature that most failure cases of export subsidy are due to lack of follow up by the government which lead to misuse and abuse. On the other side the key success case of Korea and Brazil can be traced to the government close follow up.

One may ask were Ethiopia fit in all this. It can be said that Ethiopia experience with export subsidy is something in between the two aforementioned countries case. The Ethiopian government do indeed show priority and commitment which can be seen from the supervision of firms who receiving export subsidy so to make sure they hit the intended target. And making the provision of different incentive as clear as possible. But the government is not

selective in choosing which firm to be supervised rather all exporters are entitled which takes up high resources from the government. As well there are no clear cross checking weather the incentive is directly or indirectly used for the intended target rather than being misused or abused.

The next section will try to look at the magnitude of export incentive under voucher and investment loan given to exporters

3.3 Cost of Government Support

This section presents export subsidy mount that has been given out to exporters so far by different government bodies particularly under voucher scheme and investment incentives.

Different institution of government have been assigned to provide number of incentives .Export Promotion Department of Ministry of Trade and Industry provide the export trade duty incentive together with Ministry of Finance and Economic Development, Development Bank of Ethiopia handles provision of export credit guarantee scheme. Up to recently this specific task was carried out by National Bank of Ethiopia and in addition to this task the Development Bank of Ethiopia provide investment loan to new and existing exporters.

Export promotion agency has been assigned to handle the export trade duty incentives of which exporter tend to use mostly voucher and duty draw back schemes. The ware house scheme hadn't been applicable most. This is because it requires more procedures than the other two schemes. These are availability of ware house that meet the standard of custom authority, payment for custom official and provision of security for the ware house. Due to these numbers of procedures or process the exporters choose rarely or never apply for such type of scheme.

When it comes to the provision of the other incentives the procedure to get this incentive are clear and encouraging at the Export Promotion Department. For example Table 3.1 shows the issuance of voucher for hundreds of firms for the past 6 years.

Table 3.1 Voucher Scheme Beneficiaries from July 2002 to June 2007

Economic Activity	Amount allowed in Birr	Value of Export Plan in Birr
Flower	25,600,512	888,426,900
Food	24,551,131	215,700,350
Leather products and Tannery	58,279,451	840,099,083
Textile and Garment	135,302,560	570,560,635
Others	140,898,693	1,640,251,857
TOTAL	384,632,347	4,155,038,825

** Source Export Promotion Department of Ministry of Trade and Industry*

Table 3.1 shows that the government have handled out a voucher value of about 400 million Birr to hundreds exporters with export plan worth of 4 billion Birr. If the exporters met their plan with out delay the total incentive amount to be 9 % of the export plan. From Table 3.1 it can be seen that a large amount of incentive goes to textile and Garment all together. One may ask if the government is attaining the intended target while providing all this sort of government support.

It is obvious that export is not only determined by export subsidy or different government support but as well as by numbers of determinates or factors for example world price, world demand and supply factors like weather conditions. So to take the whole export plan which is 4 billions birr worth to be the result of the 400 million duty exemption is far from the truth. Hence it can be inferred that the cost of the export incentive specifically voucher scheme of the export trade duty incentive has cost the government over 400 million birr.

Even more when we look at the approval of investment loan by Development Bank of Ethiopia it can be seen from Table 3.2 that it cost government 5 billion birr.

Table 3.2 Loan Approval for Exporters from July 2002 to June 2007

Economic activity	Value of Loan Approved(in Birr)
Flower	939,703,984.5
Food	320,883,481
Leather products and Tannery	275,427,378
Textile and Garment	1,265,786,290
Others	2,052,113,041
TOTAL	4,853,914,174.5

**Source Development Bank of Ethiopia*

Table 3.2 shows that value of loan approved to flower exporters alone amount to over 900 million birr .while for textile and garment all together amount to 1 billion birr while the rest are even less. This shows that the government allocated substantial loan to cut flower exporters.

Even though there is no selectivity in providing government support and follow up the government seems to incline the different support it provided to flower exporters.

This sector is one of the sectors in Ethiopia that are getting a substantial government support and attention not only in investment loan as it shown in Table 3.2 but as well in other number of incentives.

This particular sector has got a number of incentives from government .Cut flower exporters are given the privilege of duty free import of vehicles, tax holiday and exemption from payment of income tax. As well they are getting easy access to land for new or expansion projects .This makes the sector a very attractive investment area which leads to the booming of flower projects. From 1993 to 2000 they were only 23 newly licensed flower projects .But from 2001 to 2007 the total project approved for license have more than quadrupled to 316 following the different government support forwarded to this sector.

If we just look at this sector and the substantial incentive that goes in to it .One may ask the question will the foreign exchange generated from this sector be grate the foreign exchange injected in to it.

Due to the advantage that the country believed to have on this sub-sector the government have been trying to create a good environment for investors and exporters of cut flower by providing different export and investment incentives. Based on the study by Sisay (2001) the first cut flower production was in 1980's but its development and export was never heard of till recently. What has changed now is the government attention given to this sector. In short the different incentive that exporter are entitled have derived a number of investor to this sector both local and foreign investors. Exports of cut flower have shown considerably increase in the past years. For the past 10 years cut flower export amount to more than 1 billion Ethiopian Birr.

What makes this sector unique is from the construction material to the seed that going to be planted and the chemical used, all in all the inputs of the sector are imported which requires foreign exchange. Duty free and export trade duty incentives scheme had made life easier for flower exporter to import the necessary material to start up or expand hence the sector use up substantial foreign currency . For the past six years the exports from this sector increased from 3 million in 2000 to 600million in 2007. However this shall not be taken totally as all the result of the support since this could be the result of world price increase instead of quantity change. But it is obvious that the export and number of investors on this sector and the export of this has show an increase following 2001 .This year is characterised by introduction of different government support to export sector particularly to cut flower sub sector.

If we just look at this sector and the substantial incentive that goes in to it .One may ask the question will the foreign exchange generated from this sector outweigh the foreign exchange injected in to it.

In sum the whole purpose of looking at the cost of government support is to have some view or indication about the possible cost that had been incurred in providing the subsidy. But what has been presented so far is the actual the next section will show how much of the export increase can actually be attributed to the subsidy given .or how much of the variation in export can be explained by government support given to exporters.

4. Methodology and Data Source

Measuring the effect of a policy reform or a program is referred as program evaluation. A number of methods of program evaluation have been put forwarded. Blundell and Dias (2000) in reviewing evaluation methods for non experimental data have listed down a number of approaches. These are pure randomized social experiment ,matching method ,selection or Hickman approach ,structural simulation model and the last but not least natural experiment mostly referred as Difference-in-Difference .

Pure randomized social experiment is unusual in social science particularly in economics because it's too costly to pursue since it requires doing some sort of experiment on selected group by letting them participate on programs to be evaluated. The matching approach is the identification of the observable variable and matching of this variable on individual who are affected by the policy or program with thus who are not exposed .This enables to measure the effect of the policy or program. But it requires an exact number of control groups with the treatment group. On the other hand the Heckman type selection model unlike matching approach emphasized on a variable that affects the involvement of individual in the program rather than the out come .Requiring additional information like specific factor that affect individual participation in the program .The fourth approach is structural model requires proper behavioral model for individual which makes it more sophisticated than the others method or approach. Blundell and Dias (2000)

Of all the aforementioned methodology DID methodology seems less sophisticated easy to apply, requires less data and the size of the control group need not necessarily be the same size as the treatment group unlike matching method.

In this study given the available data of individual exporter with the particular items they export no other specific characteristic and limited number of control group the DID methodology had become an appropriate methodology to estimate the programs effect.

4.1 The Difference-In-Difference Model

According to Ashenfelter and Card (1985), Meyer (1994), Blundell and Dias (2000), Wooldridge (2000a), Buckley and Shang (2003) and Abadie (2003), the DID frame work is explained as follows. Let say There are two groups of exporters coffee and non coffee exporters denoted by $G=0, 1$ Where 0 is for coffee exporters and 1 stands for non coffee exporters. Non coffee exporters are the treatment group that means they are exposed to the programs in the second period. The coffee exporters are called the control group. Control in a sense that they are not being treated for any of the two programs in both periods. The two programs are provided by the government exclusively for non coffee exporters.

The outcome variable X is the export of individual exporters .It is observed for the two groups for two periods before and after 2001. The two time period are denoted by $T=0,1$ where 0 indicate in general a time period before the program started or proclaimed that is before 2001sepcificaly the year 2000 and 1 indicate a time period after the programs where implemented that is after the year 2001 specifically 2002.

Each individual exporters has two observation for pre and post period and indicated or indexed by $j=1, \dots, N$. Sample average outcome variable of the treatment group for the first period is denoted by X_0^{nc} and for the second period it is indicated by X_1^{nc} .Control group's sample average outcome variable for the first period is denoted by X_0^c while the second period average out come variable is denoted by X_1^c .

One may choose to investigate the effect of the policies or program by simple treatment versus control analysis. That is estimating the following equation with 2002 data that is using only the second period outcomes

$$x_j = \gamma_0 + \gamma_1 G_j + e_j \text{-----} (1)$$

Dependent variable x_j is individual outcome variable. γ_0 Denote average export of coffee exporters While γ_1 is a program effect estimator that denotes changes or differences in the average export of both groups of exporters.

Wooldridge (2000a) in his exact words refer this type of analyses as naive analysis. Since it is not a sure thing to say that the programs are causing the outcome variable to increase or decrease by γ_1 .

Similarly Ashenfelter and Card (1985) suggest that in a changing economy a change in one outcome (in this study export) can be brought by a change in different factors. This factor could be unobservable individual heterogeneity and permanent differences Blundell and Dias (2000) and Buckley and Shang (2003) state that individual may not respond the same way to a policy or program. Hence policy effect vary across individual this is refer as unobservable individual effects. If this effect exist (which is mostly does) the coefficient estimator γ is biased. As well since the two groups are not identical unlike scientific experiment the two groups may already have some permanent difference that exists between them Wooldridge (2000a). In sum the estimator γ is biased since the difference or change in the export may be due to either the permanent change between the two groups or the unobserved individual effect or both..

Then if that is that how can one tell from equation (1) that the outcome variable export changed due to the particular government support provided.

Wooldridge (2000a) suggest that the focus should be not only on the relation ship between the two groups in post period but how their relation ship changed across the two time period. This is to say that not only the coefficient of post period that is γ_{j2002} matters since it is biased and all but how the coefficient γ changes across the two time period (2000 and 2002).

In order to see how the coefficient changes across time estimate equation (1) using 2000 data for all individual so to get the pre period coefficient γ_{2000} . Then take difference of the two coefficients across the two periods that will give the sole effect of policy or program on export.

$$\delta = \gamma_{j2002} - \gamma_{j2000} \text{-----} (2)$$

γ_{j2002} and γ_{2000} changes or differences in the average export of both groups of exporters in 2000 and 2002 respectively. Hence δ can also be rewritten as

$$\delta = (X_1^{nc} - X_0^{nc}) - (X_1^c - X_0^c) \text{-----} (3)$$

Rearranging equation (3) will give the following

$$\delta = (X_1^{nc} - X_0^{nc}) - (X_1^c - X_0^c) \text{-----} (4)$$

$$\delta = \Delta X^{nc} - \Delta X^c \text{-----} (5)$$

The intuition behind this methodology specifically equation (5) according to Blundell and Dias (2000), Wooldridge (2000a) and Buckley and Shang (2003), is to take the difference of the out comes of the treatment groups across time (ΔX^{nc}), this will help to get or grasp the general change in the out comes of the treatment group. Similarly taking the difference out comes for the second or the control group across time (ΔX^c) will on the other hand give the counter factual out come that is the export of non coffee exporters if the program had had not been implemented .

Then comparing the two differences or in other word taking the difference of the differences avoids any time trend or unobserved heterogeneity and reveal the program effect or the out come change due to policy change in the year 2001. Due to this the estimator δ is refereed as Difference-in-Difference estimator. Buckley and Shang (2003) called this estimator DID moniker.

According to Ashenfelter and Card (1985), Meyer (1994), Wooldridge (2000a), Buckley and Shang (2003) and Abadie (2003) the DID estimator can simply be estimated by regressing the following equation

$$X_{jt} = \theta + \beta G_j + \alpha T_t + \delta T_t G_j + U_{jt} \text{----- (6)}$$

X_{jt} = is the export out come of individual j at time period t

θ = a constant term or an intercept term that is the same or common for both observation of each individual exporter.

β =measures the effect that is not due to the programs under evaluation. It captures possible difference between the two groups prior to the policy changes so to capture or take in to account the permanent difference between the two groups

α =measures change in all individuals export across or through the two time period

-It captures general factor that would change or affect export even in the absence of a program. Commonly it refers by most program evaluation literature as a time trend.

δ =is the difference –in –difference estimator, measures the change in export due to the policy change and it referred as true effect of the treatment .

U_{jt} = error term or disturbance term capturing omitted variables

T_iG_j =interaction term that is the product of the two dummy variable or indicator

The coefficient in interest is δ which is the DID estimator or the policy effect so the main concern or objective of this study is to get an unbiased estimator for δ .

By referring to equation (6) the individual out come for post and pre time period can be put as:

$$X_{j2000} = \theta + \beta G_j + U_{j2000} \text{-----} \quad (7)$$

$$X_{j2002} = \theta + \beta G_j + \alpha + \delta G_j + U_{j2002} \text{-----} \quad (8)$$

Taking the difference of the two equation or the outcomes of individual for the two periods gives the following equation

$$X_{j2002} - X_{j2000} = \alpha + \delta G_j + U_{j2002} - U_{j2000} \text{-----} \quad (9)$$

$$\Delta X = \alpha + \delta G_j + u_j$$

Alternatively according to Buckley and Shang (2003) to get the difference -in- difference estimator δ equation (9) Can be estimated .The dependent variable(ΔX) is the difference

between the out comes of individuals for the two periods .It is regressed on a constant and a dummy variable 1 if individual or the exporter is non coffee exporter 0 other wise . u_j is the error term that is the change between error term of the two periods which gives another random variable .

The DID estimator can be estimated using either three approach as it is discussed above .The first is estimating equation (1)and equation(2) then taking the difference of the coefficients .The second alternative is to estimate equation (6) by constructing the two dummy and the interaction term .The last but not the least option is to estimate equation (9). Either of the approaches will give the same estimator for the policy or program effect. To estimate the DID estimator the standard ordinary least squares (OLS) estimation is applied .The assumptions required for the consistence of the estimator in OLS is discussed in the next section.

4.2 Basic Assumption and Tests

Linear OLS regression is used to estimate the DID model hence there are number of assumption required for the estimators to be unbiased. These are

$$\begin{aligned}
 E(U) &= 0 \\
 COV(T,U) &= 0 \\
 COV(G,U) &= 0 \\
 COV(T.G,U) &= 0
 \end{aligned}
 \tag{11}$$

The first assumption in equation (11) is that the expectation or mean of error term or unobservable term is zero. This assumption is plausible assumption since there is an intercept in equation (6).Wooldridge (2002) and Buckley and Shang (2003)

The other three assumptions state that the error term is uncorrelated with the explanatory variables in the equation. The last of these assumptions is referred to by most DID literature as a parallel-trend assumption; it is the basic assumption in DID methodology.

Referring to equation (6), the parallel-trend assumption states that the error term (U_{it}) is uncorrelated with the interaction term (T_iG_j). This means that in the absence of the treatment, policy, or program, the average outcome of the treatment and control groups would have followed parallel paths over time. This is a strong assumption to hold in reality since individuals in each group may react differently to the same macro effect. Hence, most literature refers to this as a critical assumption (Ashenfelter and Card (1985) and Abadie (2000)).

There is a sufficient condition for the assumptions listed in equation (11) that is a zero condition mean, expressed as follows:

$$E(U | T, G, T.G) = 0 \text{ ----- (12)}$$

This assumption is called the homoskedasticity assumption. It assumes that the variance of the error term is the same for different explanatory variables. But in reality, participants are selected by some criteria, hence participation may not be random. There may be some other factor that may affect the participation of individuals in the program, hence not included as one of the explanatory variables. As a result of omitted variables, the $COV(T.G,U)$ may be different from zero.

In this study, acknowledging the possibility of other factors that may affect the participation of individuals in the program, we suspect heteroskedasticity, which is a violation of the assumption in equation (11). Hence, an attempt to correct for this heteroskedasticity will be carried out.

There are two approaches suggested to correct for heteroskedasticity by Wooldridge (2002) and Verbeek (2000). These are weighted least squares (WLS) and heteroskedasticity-robust standard error. Verbeek (2000) suggested as well a third approach that is revising the specification of the model. The first approach is computing error variance and weighted each variable including the intercept with the inverse of the error term variance and regress the adjusted variable. Heteroskedasticity is violation of homoskedasticity that is to say heteroskedasticity does not affect the consistency of the estimator rather it is the standard error and t statistic that become invalid. Hence the second approach suggests that one can go a head and estimate the parameters with OLS .while adjusting the standard error and t statistic for heteroskedasticity.

The approach to adjust the standard error is called heteroskedasticity- robust standard error. Using this adjusted standard error the t statistic can be calculated and this approach is called heteroskedasticity-robust statistic. In this study we follow the later approach to correct for heteroskedasticity. The third approach described by Verbeek (2000) suggests that the presence of heteroskedasticity could be from misspecification hence revising the model may do the trick. The software used for both approach is Stata 9.0

4.3 Data Sources and Type

The data used in this study is export data of individual exporter of the Ethiopian custom authority .This data is collected from 1997 to 2004 for more than 800 exporter .It contains exported items, destination, and amount in quantities and export value in FOB birr.

The information available from this source that is relevant to the current paper is 2000 and 2002 value of export in FOB birr of individual exporter and the types of product exported. One

should note that the level of the export data is given by FOB birr hence it is adjusted to dollars by the exchange rate for respective years.

In this study 69 exporters were used while the selection criteria are nothing but data availability. Thus exporters whose data is available on thus particular year are included. These are in sum 69 exporter of which 50 are the non-coffee exporter or the treatment group. The rest are coffee exporter which are the control group off which the 6 exporter actually have a reported export data on 2002 while the rest either due to non reporting of export data or not exporting 2002 export data is unavailable .Hence 2003 data is taken as post treatment observation .

5. The Impact of Export Subsidy on Export

This section discusses the main finding of the study with respect to various approaches described in the previous chapter. First section presents descriptive statistic and then explains regression results.

5.1 Descriptive Statistics

In this study individual export data for 2000 and 2002 was used retaining 69 observations. 50 of which are non-coffee exporter (treatment group) while the rest 19 observation are coffee exporter (the control group).It is only for the 6 observation for coffee exporter or control group that 2000 and 2002 data is available while for the rest 13 exporters it is their 2003 export outcome that was used as a proxy for the 2000 or post treatment outcome. The data are unavailable either due to non- reporting or no export. And in this section the result of the estimation for both sample size is presented.

The sample size contains 50 non coffee exporter of which 18 are engaged in export of different oils seed and pulses ,10 are hide, skin, ,leather and leather product exporter and there are 3 textile and 3 agro processing exporter and the rest are mix exporter of either textile ,leather and leather product and oil seeds .

Table5.1Summary Statistics

Variable	Observation	Mean	Std.Dev	Min	Max
X	112	34200000	124000000	270.15	1180000000
LX	112	14.40948	2.991382	5.598978	20.89151

The descriptive statistic for export and logarithm of export is presented in Table 1 for sample size 56 .Individual export shows high variation in export or in the outcome variable. The

maximum export(X) registered is 118000000 birr while the minimum is 270.15 birr in the year 2000 and 2002 for both sample size .However as it can be seen from Figure 4.1 for all exporters except few there export amount is less than 10 million leading to a mean of 34200000 .This unsymmetrical distribution may possibly lead to Heteroskedasticity.

Figure 5.1 Export Value in Birr for 56 Exporters

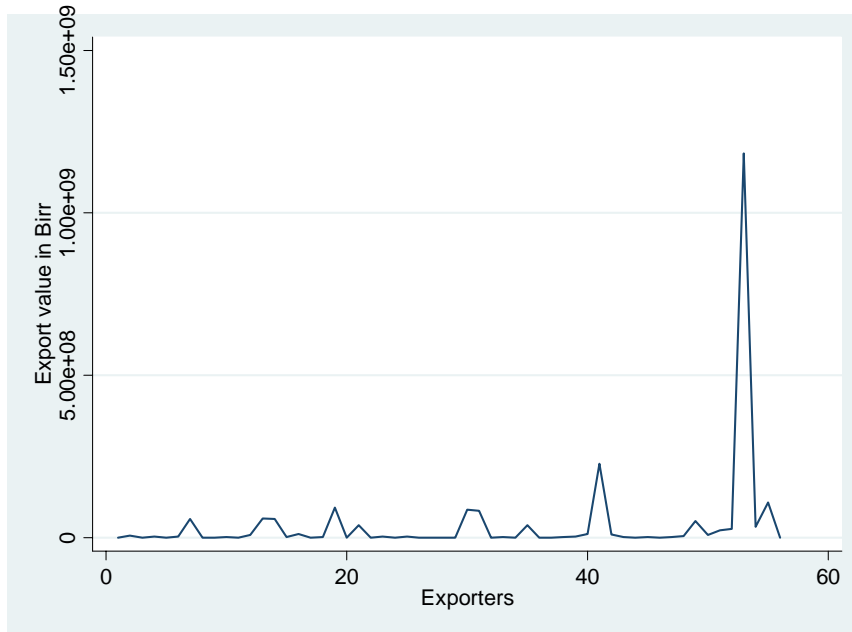
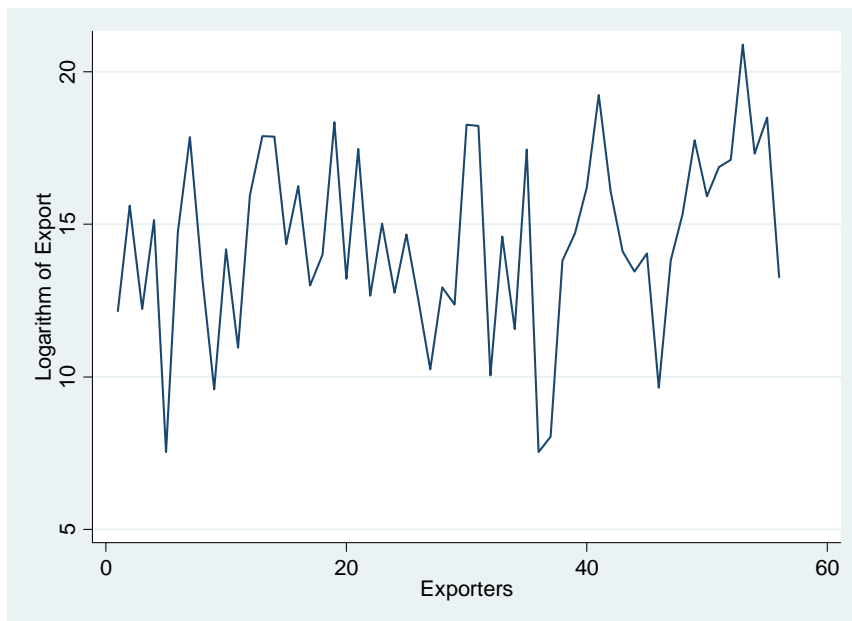


Figure 5.2 Logarithm of Export for 56 Exporters



Regarding the logarithm export it varies from a low of 2.99 to a high of 5.59. Looking at the Figure 4.2 the logarithm of export seems to be symmetrically distributed between 20 and 5 with a mean of 14.40948. Hence in estimating the DID model the logarithm values of export is used to correct skewed distribution and for possible Heteroskedasticity.

5.2 Estimation Results

Equation (1) was estimated using 2000 and 2002 data so to get pre and post treatment difference between the two groups which will be used to construct the DID estimator following equation (2). The result of the estimation and the DID estimator for both sample sizes is presented in Table 4. 2. as it was tried to present in the descriptive statistic logarithm of export is taken. The difference of the coefficient (post and pre treatment difference) which is the DID estimator or treatment effect is 1.76 when the sample size is 69 and 3.47 in case of the 56 sample size, as it is presented in Table 4.1. The DID estimator shows a positive effect of government support on export that is considerably large.

Table 5.2: Difference-in-Difference Estimator

Sample size	γ_{12002}	γ_{12000}	DID Estimator
56	.2380199	-3.235791	3.4738109
69	-.9152026	-2.67806	1.7628574

Even though the magnitude and sign of the estimator is known, it is unable to test if the DID estimator is significantly different from zero since the estimator is constructed instead of being estimated hence the standard error for the estimator is not presented in Table 4.1. As a result equation (6) is estimated using both the time period outcome or the data pooled over both years which provides the magnitude of the effect as well in addition the standard error

of the DID estimator which makes it possible to test the significance of the estimator. Beside time and group effect are also estimated .The result of this estimation is presented in Table4.3

The whole idea of estimating equation(6) is to get the standard error so to test if the coefficient is significantly different from zero or not .But since the estimation is an OLS estimation it is worth while to think of the violation of Homoskedasticity and test for hetroskedasticity. Hence the standard Breusch-Pagan test is used which is a Lagrange multiplier test for hetroskedasticity under the null hypothesis of Homoskedasticity.

The test statistic for Breusch-Pagan test for sample size of 69 is and for sample size of 69 less than the chi square distribution at 3 degrees of freedom. That is we fail to reject the null hypothesis of Homoskedasticity. But there was even a possibility of hetroskedasticity looking at the descriptive of the dependent variable export even before the estimation that is the dependent variable export has high variation between the max and min .according to Verbeek (2000) for such variable taking the log will do the trick .hence we had taken the logarithm of export . But doing just only this tends to correct the hetroskedasticity due to misspecification. Hence the robust regression is estimated to correct for possible Hetroskedasticity. The results for both estimations are presented in Table 4.4

Table 5.3: Difference-in-Difference Estimation

LX	Sample size 56		Sample size 69	
	Coefficient	Pvalue	Coefficient	P value
Constant	17.3285	0.000	16.77078	0.000
G	-3.23579	0.012	-2.67806	0.001
T	-3.16148	0.066	-1.45053	0.127
T.G	3.473811	0.056	1.762858	0.115
R squared	0.0569		0.0891	
N	112		138	

Results in Table 4.3 show that the average export is increased by about 3.47 due to the change in government support which is significant at 10% confidence interval in case of 56 sample size. The third column shows that taking the sample size of 69 changes the magnitude and significance of the DID estimator, The DID estimator for the sample size of 69 becomes 1.763 which implies that the average export increased by about 176% due to the change in government support which is insignificant at all levels. One has to note that this particular estimation for 69 observation has high uncertainty because 2003 data is used as proxy for 2000 missing or no export data. Hence we can go ahead and rely on the sample size of 56 estimation.

The dummy variables equation (6) for sample size of 56 and 69 explain only 5 % and 8 % of the variation in export value, respectively. The explanation for this is that it's too obvious that export is determined by different factors other than these dummies for example exchange rate, world income, weather condition and especially world price which are the basic standard determinants. In past years world price have shown a considerable increase hence since we are taking export value as unit of analysis this may be the case.

The DID estimation shows significant impact of export incentives on export. But this should not be over emphasised, one has to look at the costs for the government either in terms of foreign exchange or opportunity cost of the funds to the country.

And also one has to note that the analysis took only two period observation of individual exporter's. More or less what has been done in this study is to find a methodology that can utilize the available data and measure the program effect. Fortunately the data used helps to get a significant result for the program effect.

6. Conclusion and Recommendation

There is an elongated trade policy debate in international economics concerning use of export subsidy .It is argued that export subsidies expand the value of trade and enhance consumer welfare and considered as it is the best policy .on the other hand it is argued that export subsidies is not a best policy because it creates unfair advantages distortion markets that is increasing domestic price above world price and hence should be prohibited (Bagwell and Staiger, 2001).

The empirical literature indicates that subsidy seems to be successful in a country where the government follow selectivity, discretionary and high supervision .like in the case of Korea and Brazil. On the other hand in most developing countries subsidy have been ineffective or not in a good term due to abuse and misuse of the different funds available for exporters case of Latin America and Kenya .These country's government lack an appropriate administration of funds and follow up as well as not suitable economic conditions which led to the later result

Although export incentives is a recent phenomena one may ask were Ethiopia fit in all this. Ethiopia under gone a major change adopting a market oriented economic policy and program ever since the over through of the military regime. As well in recognizing the major role that exports can play in the economic growth the government of Ethiopia as part of its core strategic development which is Agricultural Development Led Industrialization (ADLI) adopted export promotion strategy. Samson and Tadele (2002)

In this study we have tried to investigate the effect of the government support on export particularly the effect of the two schemes, export trade duty and export credit guarantee schemes on export. Using export data set of 56 and 69 exporters for two period 2000 and

2002 estimated the DID estimator using the two different approaches. The DID methodology tend to illuminate any time trend and unobserved heterogeneity and reveals the change in the outcome due the program or policy.

The econometrics investigation shows that the schemes have a significant impact on export .But this should not be over emphasised Since subsidy explain a very small variation in export which is indicated by small R squared .Hence other factors seems to determine export a great deal than subsidy. As well one has to look at the costs for the government either in terms of foreign exchange or opportunity cost of the funds to the country.

In this study following the result obtained from the DID estimation and the discussion with government officials supervising the different export incentives Ethiopian case can be put as something in between of the two world experiences, the successful and failure country cases of export subsidy.

What makes Ethiopia similar to successful country case like Korea is that the government gave high priority to export sector ,follow up firms at close radar and provide almost all the support the firms are demanding to hit the intended target .But Ethiopia as well has a characteristic of failure country cases of Latin America .Even though There are one or two case of misuse of subsidy reported so far there is high potential of misuse or abuse of resources .The government is providing substantial amount of support to exporting firms .Any thing the exporting firms demands and propose is being provided by the government up on agreement that the firms will export the intended target. Currently the government is using no kinds of cross checking of misuse or abuse of resources as long as the firm is exporting the targeted amount no question asked by the government.

How much to inject in to the sector and how much to expect in return is not dealt hand in hand .Yes the government indeed set a targeted export that the exporting firms as individual and as whole should meet .But how much is costing the government to hit this target is never dealt with . It can be said that any thing the exporters demanding the government provides.

The government is taking the achievement of the export target as mission accomplish with out considering the cost of subsidy and the opportunity cost of the subsidy that is what these resources could do if it had had been used for other purpose.

This study tries to bring attention to the evaluation of different government program especially the different export subsidy being implemented in Ethiopia. Hence the government should consider the cost of subsidy and as well the gain from this subsidy whether they help in reaching there intended target or not hand in hand with the opportunity costs of the subsidy for the country. As well since the available resources are limited including both funds and lands how the reshuffling taking place should be dealt by the policy makers. All in all the government has to look at these different but linked issues.

Currently the government is indeed doing some effort at Ministry Of Trade And Industry that is experts are being assigned to individual sector following up exporting firms performance at close radar. The clear, non bureaucratic and positive attitude of the provision of the two schemes by Export Promotion and Development Bank of Ethiopia should be encouraged as well.

One has to note that the analysis took only two periods and 56 exporters to investigate the effect of export subsidy using the DID methodology due to lack of appropriate data. If this can be elongated to the 7 years and larger sample size it may provide a more tangible result.

For now with the available data and information what we have reached is just the tip of the ice berg.

Last but not least researching in the following area may bring in a better understanding when it comes to where Ethiopia's experience with export subsidy fit in all this mix result of the world.

- One may try to include other incentives and use a longer time period.
- Second one can try to extend sample size so to include as well major export sector that are getting a substantial government support for example cut flower export.
- Third investigating how much incentives generated how much exchange currency so far. That is taking a close look at the cost of subsidy and the again from subsidy.

● Reference

- Abadie, Alberto (2000). "Semi parametric Difference-in-Differences Estimators," Working Paper, Kennedy School of Government, Harvard University.
- Arslan, Ismail and Wijnbergen, Sweder Van (1993). "Export Incentives, Exchange Rate Policy and Export Growth in Turkey." Review of Economics and Statistics. Vol. LXXV, No.1 (February), 128-133.
- Ashenfelter, O. (1978). "Estimating the Effect of Training Programs on Earnings." Review of Economics and Statistics, 60(1), 47-57.
- Ashenfelter, O., & Card, D. (1985). "Using the Longitudinal Structure of Earnings to Estimate the Effect of Training Programs". Review of Economics and Statistics, 67(4), 648-660.
- Bagwell, Kyle and Straiger, Robert (2000). "Strategic Trade, Competitive Industries And Agricultural Trade Disputes", Economics And Politics, Vol. 13(2),
- Bernard Andrew and Jensen Bradford (2004). "Why Some Firms Export", Review of Economics And Statistics, Vol. 86(2), Pp. 561-569.
- Bhagwati Jagdish and Ramaswami V. K. (1963). "Domestic Distortions, Tariffs and the Theory of Optimum Subsidy", Journal of Political Economy, Vol. 71(1), pp. 44-50.
- Bhagwati, Jagdish, (1988). "Export-Promoting Trade Strategy: Issues and Evidence," Research Observer 3(1), January 27-57.
- Blundell, R. Duncan, A. and Meghir, C. (1998). "Estimating Labour Supply Responses Using Tax Policy Reforms." Econometrica, vol. 66, pp. 827-61.
- Brander James (1995). "Strategic Trade Policy", in Gene Grossmann and Kenneth Rogoff (eds.), Handbook of International Economics, Vol. 3, pp. 1395-1455, North-Holland.
- Buckley, Jack & Yi Shang (2003). "Estimating policy and program effects with observational data: the 'differences-in-differences' estimator". Practical Assessment, Research & Evaluation, 8(24).
- Desai, M. A. and Hines, J. James R. (2003). "Market Reactions to Export"
- Eaton Jonathan and Grossman Gene (1986). "Optimal Trade and Industrial Policy under Oligopoly", Quarterly Journal of Economics, Vol. 101(2), pp. 383-406.
- Faini, Riccardo (1994). "Export Supply, Capacity, and Relative Prices", Journal of Development Economics. Vol. 45, No. 1 (October), 81-100.
- Feenstra Robert (2002). "Advanced International Trade: Theory and Evidence", Princeton University Press

- Goldstein, Morris and Khan, Moshin (1978). "The supply and demand for exports: a simultaneous approach", Review of Economics and Statistics, Vol 60, pp.275-286
- Görg Holger, Henry Michael and Strobl Eric (2006). "Grant Support and Exporting Activity", University of Nottingham Research Paper 2006/44 Forthcoming in Review of Economics and Statistics.
- Haque Nadeem Ul and Kemal M. Ali (2007). "Impact of Export Subsidies on Pakistan's Exports", Pakistan Institute of Development pp. 148-174.
- Helmers Christian and Trofimenko Natalia (2007). "Size Matters? Counter intuitive Findings on Export Subsidies", Columbia
- Hoffmaister, Alexander (1991). "The Cost of Export Subsidies: Evidence from Costa Rica", IMF Working Paper WP/91/94.
- Itoh Motoshige and Kazuhara Kiyono (1987). "Welfare-Enhancing Export Subsidies", Journal of Political Economy, Vol. 95, pp. 115-137.
- Krugman Paul R. and Obstfeld Maurice (2006). "International Economics Theory and Policy", Seventh Edition, Pearson Education inc. Boston United State.
- Low Patrick (1982). "Export Subsidies and Trade Policy: The Experience of Kenya", World Development, Vol. 10(4), Pp. 293-304.
- Meyer, D. B.(1995). "Natural and Quasi-Experiments in Economics", Journal of Business and Economic Statistics, 13, 151-161.
- Nogués, Julio (1989). "Latin America's Experience with Export Subsidies", World Bank Working Paper No. 182.
- Rodrik Dani (1993). "Taking Trade Policy Seriously: Export Subsidization as a Case Study in Policy Effectiveness", NBER Working Paper No. 4567
- Samson G/Michael and Tadele Ferede (2002) "Ethiopian Economy", 12 Grade Text Book, Mega publishing Enterprise, Addis Ababa Ethiopia
- Sisay Habte (2001), "Ethiopian Cut Flower Export Industry and International Market" Ethiopian Export Promotion Agency Product Development and Market Research Directorate, Addis Ababa, Ethiopia.
- Suranovic Steven M. (1997-2008). "International Trade Theory and Policy"
- Wooldridge, J. M. (2000a), "Introductory Econometrics: A Modern Approach", Cincinnati, OH: South-Western.
- Wooldridge, J. M. (2002). "Econometric Analysis of Cross Section and Panel Data", MIT Press Cambridge, Massachusetts, London, England

Declaration

I, the undersigned that thesis my original work and has not been presented for a degree in any other university, and that all source of materials used for the thesis have been duly acknowledged.

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