

Exploration about the Relationship Among Agricultural Exports and Economic Growth in Mexico

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Abstract

Since always the general assumption about the relationship of the agriculture with economic growth is that is positive. It means that agriculture is source of economic growth. In this order the main aim of this paper is analyze the relationship between agricultural exports and economic growth in Mexico. In order to reach this aim a regression analysis was applied due to the measure the causal relationship. In addition the variable agricultural exports was operationalized with tomatoes exports, and important commodity in Mexico. The results suggests any relationship however this not represent a strong influence in the economic growth. Afterwards a future researching about this relationship is suggested.

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1 Introduction

The last 20 years have been related with an increase in the number of countries opting for export orientation (Francis, Iyare & Lorde, 2007). This fact suggests that the exports have been an important source of benefits for the firms and the societies of a large number of countries around the world. In this regard, is important to point out that the agricultural sector historically has been the support of the economies.

In this regards, the most important and crucial aim of the developing countries as Mexico is to achieve a rapid economic growth and development. The exports are generally associated to this aim and for consequence are assumed that positively affect the economic growth (Gilbert, Linyong & Divine, 2014).

In the case of Mexico the agrarian sector is the basis of the Mexican economy. According with SAGARPA (2012) during the August from 2012 the agricultural exports (including agricultural and livestock) registered an increase of 11.2 % compared with the first eight months of the previous year. This fact is an important indicator about the relevance of the agricultural exports in the Mexican Economy.

According with WTO (2014) Mexico is one of the most import agricultural exporters around the world. Mexico as agricultural exporter is ranked in 15th place together with the most important agricultural exporters as European Union, USA, Brazil and China. With these facts result relevant to understand the agricultural exports and its impact with the economic growth in Mexico.

In this regard the harvest of tomatoes in Mexico is an important economic activity in some States. Likewise Mexico in 2012 was the first exporter of tomatoes around the world with a value of exports of \$1,553, 325 USD (FAO, 2014). Due to the relevance of role of Mexico as exporter of tomatoes around the world is important to understand if this leadership internally impact the economic growth of the Mexican economy.

Due to the above this paper is organized as follow: first a statement of the problem is development; second, a literature review was carried out; third is shown the methodological design, and fourth a conclusions and future researching is developed.

2 Statement problem

Since there is no country which is self-sufficient, this fact makes necessary to trade with many others. This is the case of Mexico a country that its production is divided as follows: service sector with 61.9%, industry sector 24.1 % and agriculture sector 13.4% (CIA, 2014). As we can see the agricultural sector represents the minor part of the Mexican economy production, hence this data has

made that to satisfy the needs of the population is necessary import and export agricultural goods.

In this regard, the exports are relevant due to generate incomes to the firms and with this contribute to the social welfare creating jobs and infrastructure in the country. Likewise these incomes are used for investing, pay labor forces and increase the production. The mentioned facts are assumed generate an important impact in the economic growth of a specific country.

Besides from the growth-theory perspective, export expansion is a factor increasing the economic growth. Lee & Huang (2002) give some clarifications of this phenomenon. First, the growth of exports has a stimulating effect on total factor productivity growth through its positive impact on higher rates of capital formation. Second, the growth of exports helps relax the foreign exchange constraints, thereby facilitating imports of capital goods and hence faster growth. Third, competition from overseas ensures an efficient price mechanism that fosters optimum resource allocation and increases the pressure on industries that export goods to keep costs relatively low and to improve technological change, thereby promoting economic growth.

The arguments quoted above support that exports contribute positively to economic growth. Likewise an important element is that a great number of countries have implemented commercial openness policies in order to increase the exports of several economic sectors (Rodrik, 2006). The case of agricultural sector is not the exception; traditionally this sector has been an important engine of economic growth (Dawson, 2005).

In a specific way, Mexico has been an important producer of vegetables as: lemon, cucumber, avocado and coffee (SAGARPA, 2012). Likewise Mexico is one of the most important producer of an important vegetable as tomatoe. In this regard, the tomatoe is one of the most important vegetables around the world. China is the main producer of tomatoe worldwide, followed by USA (Borbon-Morales, Arvizu-Armenta & Verdugo-Morales, 2012). Likewise in this context Mexico is the most important exporter of tomatoe around the world (SAGARPA, 2012). The main Mexican states producers of tomatoes are:

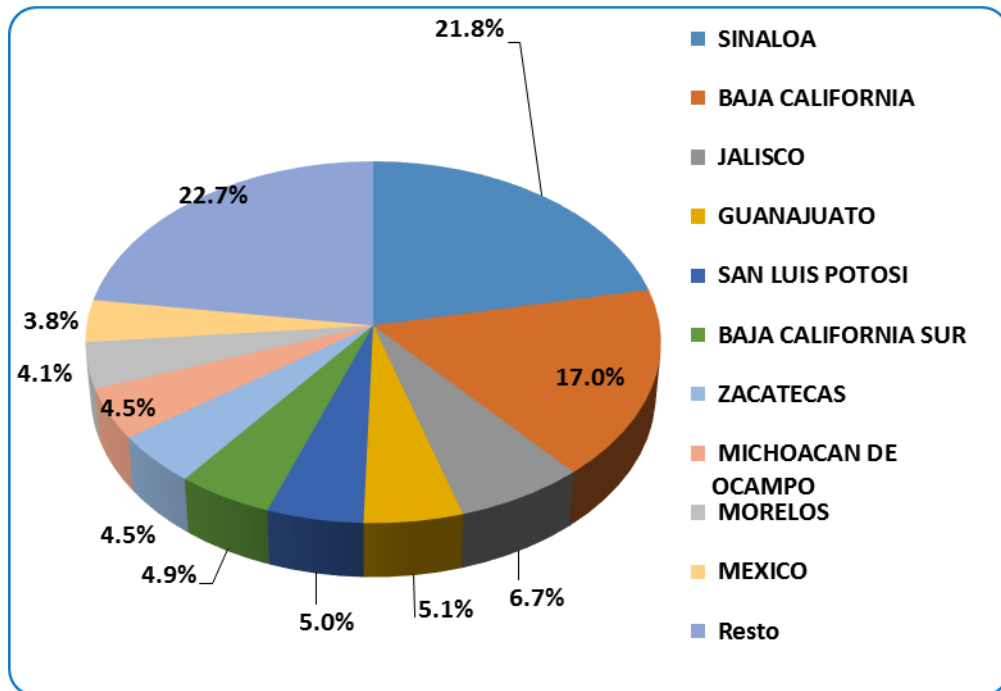


Figure 1. Structure of the Mexican production of tomatoes.

The Figure 1 shows the producer of tomatoes in Mexico. It is important to point out that Zacatecas in the period 2006- 2010 is the principal exporter, followed by Sinaloa and Baja California. In these states the production of tomatoes represents an important engine of economic development due to a great number of people is involved in the productivity chain of this commodities.

After the discussion about the importance of agricultural sector and the economic growth an important gap in the literature is study of the agricultural exports-economic growth relationship in emerging countries as Mexico. According with this issue we state the main research question of this paper: How is the relationship between agricultural exports (tomatoes exports) and economic growth in Mexico?

3 Literature Review

The literature about the agricultural exports and economic growth relationship assumes that this relationship is positive (Lee & Huang, 2002; Feder, 1983). Likewise, the general assumption asserts that exports are an important component of Gross Domestic Product (GDP), and the increasing in the exports necessarily affects in a positive way the GDP. However there are potential positive externalities created by exporting. A huge body of literature is available on the role of exports in economic growth. During the last years a bulk of empirical

studies around the world has been led to explore the effects of exports on economic growth.

The classical economist David Ricardo stated in century XIX that exports play a vital role in the growth of any economy pointed out that foreign trade is highly beneficial for a nation. Likewise, the neo- classical school states that competition in international markets prompt economies of scale and increases the efficiency in some areas (Misrha, 2002). These positive facts influence in a positive way the economic growth. Some literature about this topic supports this idea.

In this regard, the empirical investigation into the relationship between agricultural export and economic growth has primarily taken two different, but related, forms. These studies have been carried out in individual country and multi- country studies.

Table 1. Literature review

Author	Country	Results
Adenugba & Dipo (2013)	Nigeria	-Findings from the study reveal that non – oil exports have performed below expectations giving reason to doubt the effectiveness of the export promotion strategies that have been adopted in the Nigerian Economy. -The study reveals that the Nigerian Economy is still far from diversifying from crude oil export and as such the crude oil sub – sector continues to be the single most important sector of the economy.
Gilbert, Linyong & Divine (2013)	Cameroon.	-Agricultural exports have mixed effect on economic growth in Cameroon. -Coffee export and banana export has a positive and significant relationship with economic growth -Cocoa export was found to have a negative and insignificant effect on economic growth
Lee & Huang (2002)	Five Asian countries: Hong Kong, Japan, Korea	-Hong Kong shows relation between agricultural exports and economic growth. -Japan, Korea, Phillipines and Taiwan no

	Philippines and Taiwan.	relation is shown.
Francis, Iyare & Lorde (2007)	Eight Caribbean countries: Barbados, Belize, Costa Rica, Dominican Republic, Guyana, Haití, Jamaica, Trinidad y Tobago.	-In short run agricultural exports causes economic growth in Barbados and Belize. -In the long run causes economic growth in Dominican Republic. -Non- causality in other countries.
Dawson (2005)	Different countries.	-Results provide evidence that there are significant structural differences in economic growth between low, lower-middle, and upper-income less developed countries.
Mishra (2012)	India.	-The results indicate the existence of the cointegration between exports and real GDP. -The two variables of the study have a long-run equilibrium relationship between them, although they may be in disequilibrium
Henenberry & Khan (2000)	Pakistan.	-The estimation results show that a favorable relationship exists between agricultural exports and growth in GDP.
Ekiran, Awe & Ogunjobi (2014)	Nigeria.	-The study indicated that agricultural export, net capital flow, agricultural output and world price of Nigeria's major agricultural commodities are long run determinants of economic growth in the country.

The Table 1 shows different studies about agricultural exports and economic growth. The results in general terms the agricultural exports are important for the economic growth. In addition, the economic growth is influence by other factor, such as: net capital flow and world price of commodities. It is important to point out that these studies were carry out in countries with high levels of agricultural goods.

Moreover, it is important to say that the literature about this phenomenon have been scarcely addressed in Latin America. This region is one of the most important producer of agricultural goods, such as: coffee, potatoes, soya and so on.

For this reason this paper is relevant to the body of knowledge about this topic.

4 Research Objective

The main objective of this study is to determine the relationship between agricultural exports and economic growth in a specific agricultural sector from Mexico. In a specific way the research is focused on the effects of tomato exports on economic growth in Mexico. This is due to the relevant role of Mexico as an exporter of tomatoes around the world.

5 Hypothesis

In order to reach the objectives of the research a main hypothesis was developed:

H1: There is a significant relationship between agricultural exports and economic growth in Mexico, specifically in the tomato production.

6 Methodology Design

This research is non-experimental, descriptive and correlational. The data used were obtained from secondary sources and therefore, no sampling was necessary. The collection of data was made by a review of different data sources online. After a review of some data sources, we concluded that the most reliable and complete data sources are the web page of Instituto Nacional de Estadística Geografía e Informática (INEGI), which is the most important source of official data from Mexico, this page is managed by the Mexican Federal government.

Likewise, we select the data source of the Food and Agriculture Organization of the United Nations (FAO). This is the most important organization worldwide that studies the food issues and holds an important data source about the situation of the food and agriculture around the world.

The period of the collected data is from 1990 to 2011. This period was selected because it is a big period of years (21 years), and with this it is possible to obtain more robust conclusions. In addition, some data sources have been used in the literature (Gilbert, Linyong & Divine, 2013; Mishra, 2012)

Table 2. Variables and Operationalization

Variable	Operationalization
Agricultural Exports	Value Exports (1000\$) of tomatoes
Economic Growth	%GDP Growth of Mexico

Source: World Bank and INEGI.

7 Statistical Treatment

The data collected for the purpose of this study are shown below:

Table 3. Structure of the used data

Year	Value of Exports of Tomatoes (1000\$)	% of GDP Growth of Mexico
1990	428855	5.18
1991	261739	4.21
1992	202091	3.54
1993	394964	1.94
1994	394568	4.46
1995	585608	-6.22
1996	539447	5.14
1997	523400	6.78
1998	638145	4.89
1999	534783	3.88
2000	462608	6.6
2001	540802	-0.17
2002	632375	0.83
2003	868454	1.35
2004	909388	4.18
2005	983018	2.8
2006	1104221	4.81
2007	1219875	3.29

2008	1205392	1.19
2009	1210757	-5.95
2010	1595315	5.28
2011	2093141	3.89

Source: Own elaboration, with data of FAO and INEGI (2014).

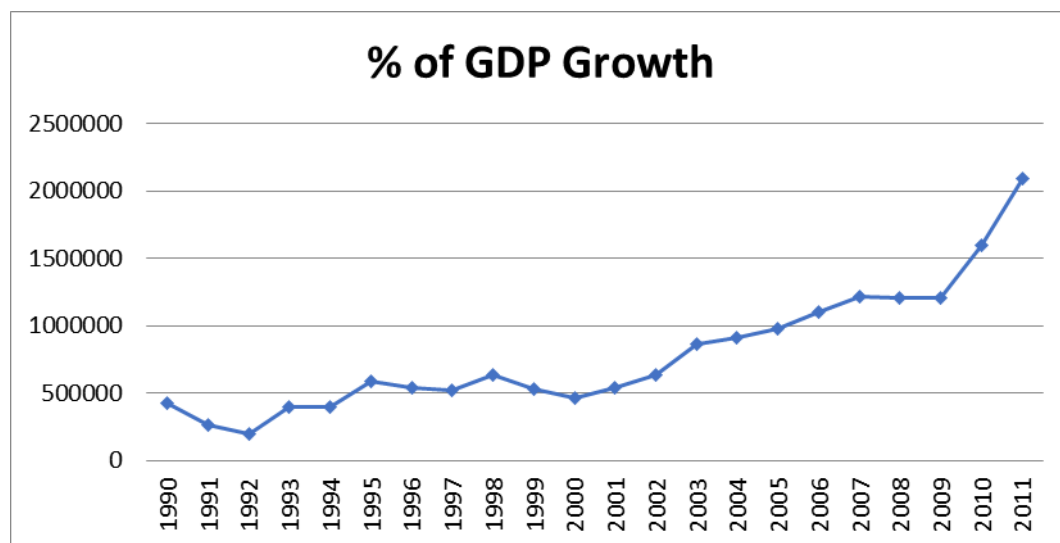


Figure 1. % of GDP Growth.

Source: Own elaboration, with data of INEGI

The Table 2 and Figure 1 show the data used for this study. In this regard we can infer that the behavior in general terms of the value of the exports of tomatoes is stable due to shows a trend to increase his value even though some years (e.g. 1991 and 1992) it shows a negative trend. On the other hand, Figure 1 shows the % of growth of GDP shows an unstable trend with high peaks of growth and significant falls (e.g 1994 and 1995). According with these analysis both variables show an increase in the value and %.

In order to test the hypothesis a lineal regression was used due to the aim of this paper is test the causality of the agricultural exports in the economic growth. Hence, the lineal regression is the most suitable statistical technical to reaching the aim of the paper.

8 Results

The SPSS software was used in order to test the hypothesis, the result is showed in the Table 2.

Table 4. Model Resume

Model	R	R Squared	R cuadrado corregida	Error típ. de la estimación
1	.090 ^a	.008	-.042	3.46317

a. Variables predictoras: (Constante), EXPTOT

Source: Own elaboration, using SPSS.

The Table 2 shows the obtained result, after the regression. It shows that the agricultural exports of tomatoes presents a correlation with the economic growth. This means that the agricultural exports affects (R^2 .008) 0.8% of the economic growth, however this results do not shows a practical significance, this indicates that economic growth is explained in a 99.2% for other variables different to the agricultural exports (tomatoes). It will therefore be concluded that agricultural exports contribute to the GDP, however they do not contribute “significantly”.

9 Conclusions and Future Researching

The main aim of this paper is determine the influence of the agricultural exports in the economic growth in Mexico. The results suggest that the agricultural exports influence in the economic growth, however this influence is not significant, at least using tomatoes exports. In addition, it is important to point out that the used data was only for the tomatoes exports, in this regard even if the tomatoes exports are important in the agricultural exports in Mexico; it does not represent a significative influence in the economic growth for the entire Mexican economy.

According with the obtained results, the tomatoes industry have been involved in the common way of the Mexican agriculture: lack of public policies for develop the agricultural sector. It implies that the tomatoes industry presents problems as: lack of economic resources, a poor harvest equipment and the production without added value. All of these bring in the isolating of the sector and with this the no integration to the rest of the Mexican economy.

Likewise as recommendations according with the results it is important that the Mexican government make programs to promote the agricultural exports and development ways to include the tomato sector to a productive chains. Likewise diversify the agricultural exports toward a different markets, as Europe and Asia.

As recommendation in the future is important to test this model using a major source of data, maybe using a mixed data of several agricultural exports from

Mexico. Likewise is important to study the influence of the government policies in the agricultural exports and the economic growth.

Additionally is important to test the model by Mexican states due to each state in Mexico present different levels of development and produces different agricultural goods. Moreover, it is important to study the impact of the agricultural exports not only in the economic growth but in specific indicators of human development as: education, housing and wages.

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