

Diagnóstico de la Competitividad regional de Exportación de Espárrago de Sonora a Estados Unidos

Diagnosis of regional exporting competitiveness of asparagus from Sonora to United States

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Resumen

Se analiza el comportamiento de las exportaciones mexicanas a la luz del modelo propuesto por Vollarth (1991), específicamente en la comercialización de espárragos con respecto al mercado de Estados Unidos, con el propósito de analizar las competitividad mediante la aplicación del método del Índice de Ventaja Comparativa Revelada de Exportación (a partir de este momento IVCRE), que consiste en la medición de la ventaja comparativa revelada a nivel de productos específicos. Los niveles de exportación de espárrago hacia Estados Unidos han aumentado en términos de toneladas y en millones de dólares, por lo que se consideró necesario el uso de una metodología que revele si, efectivamente, el nivel de competitividad de las exportaciones de espárrago por parte de México ha disminuido o aumentado. Es por ello que se procedió a analizar este sector desde el enfoque del IVCRE propuesto por Vollarth en 1991. Se puede comparar la competitividad de este sector exportador en varias dimensiones: con respecto a otros países exportadores internacionales; con respecto a otros productos agrícolas nacionales y mediante la comparación entre la competitividad nacional versus la del sector exportador del estado de Sonora. Lo anterior permitió realizar un análisis y medir la competitividad del espárrago.

Palabras clave: competitividad, TLCAN, exportaciones, espárrago.

Abstract

It analyzes the behavior of Mexican exports in the light of the model proposed by Vollarth (1991), specifically in the marketing of asparagus to the United States market, with the purpose of analyzing the competitiveness through the application of the method of the Index of revealed comparative advantage of export (now on IVCRE), which consists of the measurement of comparative advantage revealed at the level of specific products. The levels of exports of asparagus to the United States have increased in terms of tons and millions of dollars, by what was considered necessary to the use of a methodology that reveal if, indeed, the level of competitiveness of the exports of asparagus from Mexico has decreased or increased. This is why that proceeded to analyze this sector from the perspective of the IVCRE proposed by Vollart in 1991. You can compare the competitiveness of the export sector in several dimensions: with regard to other international exporting countries; with regard to other domestic agricultural products and comparison between national competitiveness versus the exporter sector of the State of Sonora. This allowed an analysis and measure the competitiveness of asparagus.

Key words: competitiveness, NAFTA, exports, asparagus.

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Introduction

This paper examines the potential of the Mexican agri-food sector, its production, exportable offer and the generation of trade flows arising mainly from exports of Mexican asparagus. In addition the productive branches with a high export potential are identified, based on the products in which Mexico has competitive advantages. Discusses the behavior of the production and marketing of certain products of the branch of vegetables in which

there are competitive advantages, in order to find areas of opportunity for Mexican producers in the international market. Describes the evolution and behaviour of imports and exports in the period 1996 to 2012 of main agro-food products, as well as the impact of the various free trade agreements signed by Mexico and particularly the diversification of exports of the country, promoted from the entry into force of these treaties. It analyzes the behavior of Sonora, and Mexican exports in the light of the model proposed by Vollart (1991), specifically in the marketing of asparagus to the United States market, with the purpose of analyzing the competitiveness through the application of the method of the Index of Revealed Comparative Advantage of Export (now on IVCRE), which consists of the measurement of comparative advantage revealed at the level of specific products. At the end the conclusions are presented based on the analysis of the results generated, which can be grouped into three levels: the first, allowing to analyze the evolution of the competitiveness of the export sector of Mexican asparagus before and after NAFTA; the second, where the indices of competitiveness of Mexican asparagus with United States are compared and finally, compares the competitiveness of the Sonoran export sector with respect to the national.

MATERIALS AND METHODS

This study is descriptive correlational where behavioral data production and marketing of asparagus by a longitudinal analysis and quantitative methodologies are studied. For the development of this research project it was required a consultation of statistical data and information from various sources, especially from the databases of the World Trade Organization, which is available electronically, like the World Bank and Economic Information of the National Institute of Statistics, Geography and Informatics (INEGI).

For the construction of Revealed Competitive Advantage Index Export (IVCRE), first you need to generate the index of relative export advantage, for calculating the value of exports of asparagus (in thousands of dollars) of Mexico was taken, with the rest of the world. The review period was from 1993 to 2010, thereby obtaining 17 IVCRE, each corresponding to one year, allowing the evolution of the relative advantage of Mexico's exports during this

period. To calculate this indicator spreadsheet program Excel was used, the value of the index revealed competitive advantage in exports of asparagus from Mexico, United States and Peru, as well as the graphic presentation for interpretation was generated. Likewise, the index of competitiveness revealed in the case of exports of asparagus Sonora and analyzed so compared with the national situation in recent years was built. By mentioning the term productivity and competitiveness, it can not detach the agricultural production of the human factor, so it is preceded analyze a set of data that demonstrate the competitiveness of the agricultural sector from Mexico and how employment generated sector is carried out under very different from United States, especially in regard to production schemes using technologies.

RESULTS

By calculating the performance indices of competitiveness illustrated over 17 years and a series of considerations about their predictable trend coming years ago. To calculate the index revealed competitive advantage Exports (IVCRE), first building the index of relative export advantage, that for purposes of this explanatory example take agricultural exports (Vrea) is required, which are represented algebraically It follows in the case of Mexico:

$$VREa_{Méx} \equiv [(Xa_{Méx} / Xt_{Méx}) / (Xa_{W-Méx} / Xt_{W-Méx})] \quad (\text{equation 1})$$

Where:

$Xa_{Méx}$, is the value of Mexican agricultural exports reported over a period of one year;

$Xt_{Méx}$, is the value of total exports of Mexico during the same period;

$Xa_{W-Méx}$, It represents the value of world agricultural exports, excluding agricultural exports from Mexico;

$Xt_{W-Méx}$, are total exports excluding the world from Mexico.

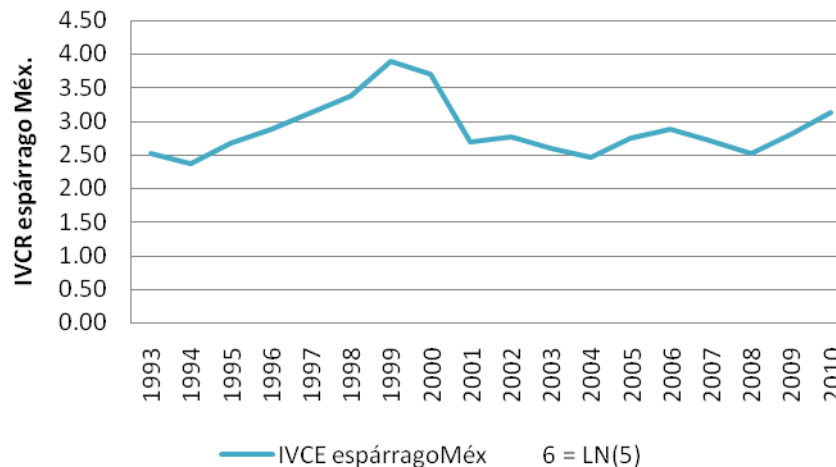
Continuing the development of the formula for the calculation of Revealed Competitive Advantage Index, in algebraic terms is required to obtain the natural logarithm of VREa

$$IVCREa_{Méx} = \text{Ln} (VREa_{Méx}) \quad (\text{Equation 2})$$

If the value of $IVCRE_{Méx}$ is greater than zero or a positive value, you can say that Mexico has a competitive advantage "revealed" in that sector; if the value is less than zero or a negative value, there is a disadvantage in that sector, or there is no competitive advantage disclosed according to this analysis.

Similarly, one can say that if $IVCRE_{ai} > 1$ indicates that the country has revealed comparative advantage in the product in question, while higher the value of this index is the greater degree of specialization of the country in this product, thus revealing be more competitive. In calculating the index of export revealed comparative advantage in the case of Mexican asparagus during the period 1993-2010, it was found that its value is positive throughout the period. The value of this indicator in 1993 was 2.52, while for 2010 it totaled 3.13, which is higher than that recorded 17 years ago, before starting commercial transactions within the framework of NAFTA.

Figure 1. Evolution of IRCA exports asparagus Mexico



Source: Construction with information from the Interactive database of FAO (<http://faostat3.fao.org>).

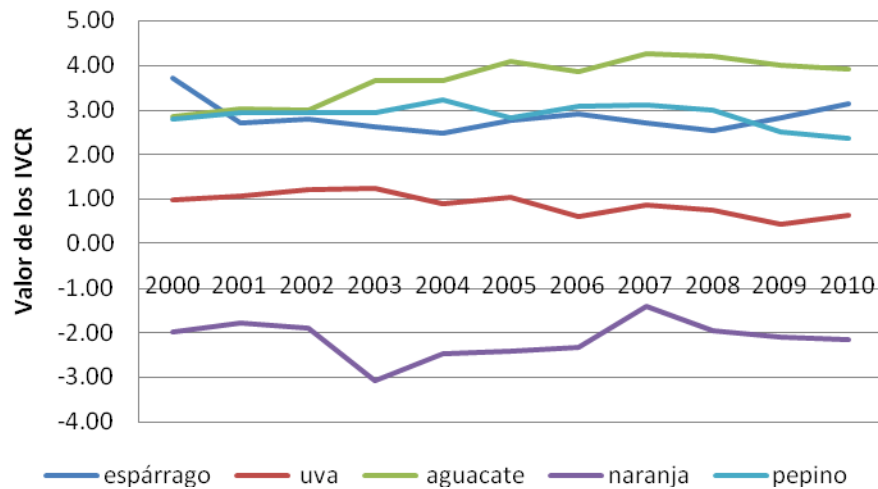
And original data to calculate values IVCRE.

Seeing the growth or development of the relevant Mexican asparagus IVCRE, it is clear that there has been an improvement in the competitiveness of this sector, however, it can

not say whether this competitiveness is higher or lower than what is presented in the production other Mexican agricultural products.

Avocado, orange, grape and cucumber, during the same period: Therefore, the calculation of this index but for other agricultural products was necessary. Allowing a comparison between the different levels of competitiveness or IVCRE throughout this period. The following chart shows the evolution of that calculated for the various agricultural products mentioned indicator.

Graph 2. IVCRE evolution of asparagus, grapes, avocado, orange and cucumber Mexico (2000 - 2010)



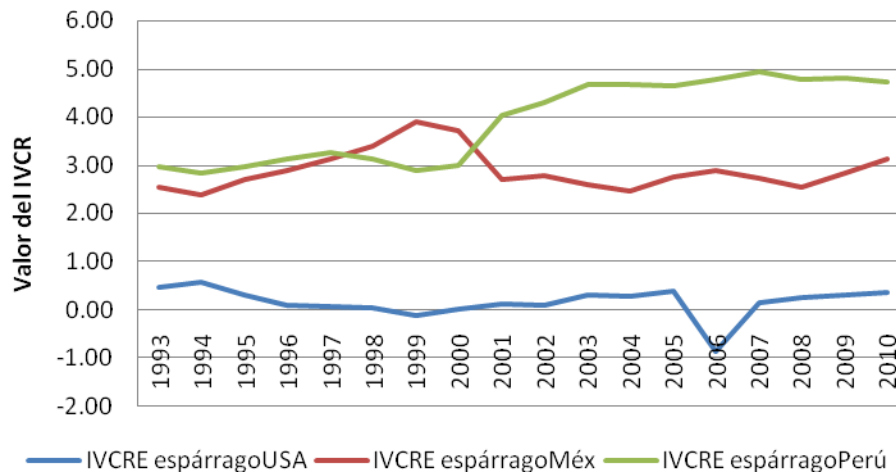
Source: Construction with information from the Interactive database of FAO (<http://faostat3.fao.org>).

And original data to calculate values IVCRE.

As shown at the beginning of this millennium the greatest comparative advantage of these five food products was the asparagus. The product with less advantage since then and to date is orange, that is, this seems to be a productive sector that has failed to improve their competitiveness, and their comparative advantages. This is not the case of avocado, cucumber and asparagus, which have evolved in their level of competitiveness and benefit similarly. However, avocado is the Mexican agricultural product, according to the methodology of this exhibition is the one with the highest level of comparative advantage

in the export sector. Returning to the case of asparagus, it can be said that the production and export of this it is more advantageous and productive than other Mexican products. And in these terms, you can not claim that their competitiveness has declined after the entry into force of the FTA. Peru, Mexico and the United States: to supplement this statement IVCRE calculation for the three main world producers of asparagus was performed.

Figure 3. Evolution of IVCRE asparagus for countries in US, Mexico and Peru (1993 - 2010)



Source: Construction with information from the Interactive database of FAO (<http://faostat3.fao.org>).

And original data to calculate values IVCRE.

In this sense unlike the growth rates of production of these countries, revealed comparative advantage index shows that Peru and Mexico have been more productive in recent decades the United States. In the nineties Mexico had an increase in their IVCRE that took him until 2000 to be more competitive than Peru, unfortunately for the period of 2001 to 2009 Mexico has shown a tendency to keep close to 3 and only IVCRE until 2010 it was possible to break that barrier, which is expected to be a result of a new upward trend of this indicator. Mexican asparagus production is supported by the participation of three states: Sonora, Baja California and Guanajuato. For purposes of the objectives of this thesis, the IVCRE was calculated for the case of asparagus produced and exported (the United States) for the State of Sonora. Assuming that the proposed methodology for calculating the

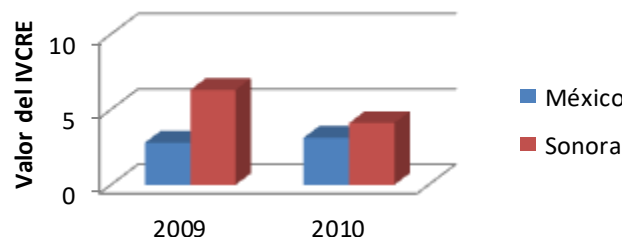
Vollrath IVCRE can adjust the domestic market, in the sense that the competitiveness of the States regarding the national total measured, were adjusted equation for this calculation.

$$IVCRE \text{ espárrago Sonora} = \text{LN} \left[\left(\frac{X_{\text{espSonora}}}{X_{\text{tSonora}}} \right) / \left(\frac{X_{\text{espMéx-Son}}}{X_{\text{tMéx-Son}}} \right) \right]$$

Where: $X_{\text{espSonora}}$, is the value of Sonora asparagus exports reported over a period of a year in terms of value or US dollars; X_{tSonora} , the value of total agricultural exports of Sonora during the same period, excluding the value of exports of asparagus. The term $X_{\text{espMéx-Son}}$, represents the value of exports of asparagus from Mexico, not including asparagus exports of Sonora. And finally $X_{\text{tMéx-Son}}$ are the total agricultural exports excluding Mexico Sonora. And LN represents the value of the natural logarithm of the result. For the calculation of this indicator it was necessary to use several sources of information, such as SAGARPA, Economic Information INEGI, FAOSTAT and agri-food and fisheries service information. In making that calculation, it was found that the value of the revealed comparative advantage index is higher than the national state level. And like the domestic case, the value is positive: 4.2 for 2011.

It is important to remember that the proposed methodology reveals a level of comprehensive competitiveness, in the sense that not only considers the country's output of analysis, it is a global and national environment. Thus, the Sonoran producer of asparagus export sector has performed well in recent years and in terms of competitiveness has grown faster than the national.

Comparison of Sonora IVCRE vs Mexico for the case of asparagus for export.



Source: Own Construction. Original data for calculation.

As shown in the graph above, the State of Sonora in recent years has had a rate greater than 4 comparative advantage, which involved a difference of 3.5 points from the national indicator for 2009. In addition, this difference was reduced to 1 point for the year 2010.

DISCUSSION

It can be concluded that the export competitiveness of asparagus and whole food industry is mainly determined by factors or inputs (cost, quality, coordination) derived from existing comparative advantages in Mexico. The change in the production structure of Mexican agriculture since the implementation of NAFTA and international demand for vegetables, favored the development of the cultivation of asparagus. In addition, the proximity of Mexico and its main producing area (located in the border state of Sonora) with the main consumer market: United States, was added to the list of comparative advantages that have led to increasing competitiveness, which is reflected through the VCR index calculated in this investigation. In making the review of data productivity of the Mexican agricultural sector, we can see that there is a lack of application of technology and innovation, leading to the conclusion that revealed competitive advantage has increased in recent years, by factors such as inputs, cost structure and international demand. During the study period, external demand for asparagus, mainly in the US market grew significantly and had a positive effect on the growth of Mexican exports, most likely driven by NAFTA and with the benefit of proximity Geographic with the world's top consumer of asparagus. However, when comparing some indicators of productivity, in terms of human capital and technological development applied in the Mexican agricultural sector, against the US, it is clear that the aggregate value of US agricultural employees is higher. For example, in 2005 and 2009, US agricultural employees generated nearly 16 times more value than a Mexican agricultural employee. Similarly, if the acreage worked per person in the case of Mexico it is less compared to 100, while in the case of the United States exceeds 250 hectares. This can be related to the fact that the United States had in 2007 with 271 tractors per 100 square kilometers of arable land, when there were only 97 in Mexico, it is easy to understand why the productivity of Mexican labor in this sector is at a disadvantage. However, this criterion is not the only determinant of productivity in the Mexican countryside and particularly remember that much of the competitiveness of this type of industry is presented by the

existence of comparative advantages, favorable natural resource endowments. The year that was generated greater IVCRE this product was 1999, when the value of this indicator was 3.9, while its lowest value was presented in 1994, when NAFTA began to operate, however this also You can be associated with the financial and currency crisis experienced at the end of this year for our country, which also affected the productive sector. Applying this same type of methodology, but for five different Mexican agricultural products, it was found that asparagus has a good level of IVCRE compared with grape, orange and cucumber, however, Mexican avocados has increased level of IVCRE the stud of Mexico, according to the indicators calculated for 2010. As can be concluded that the production of asparagus is more competitive than other traditional products of Mexican agriculture. Assuming that Vollarth methodology could be adapted for comparing the competitiveness among domestic competitors, the IVCRE was built for the export sector of Sonoran asparagus and compared with his counterpart at the national level, finding that competitiveness presented by the State of Sonora in this export sector it is higher than the national.

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