Competitiveness of Brazilian fruit exports to the European market

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ABSTRACT

This study aims to evaluate the competitiveness of Brazilian fruit exports to the European market, through the *Constant Market Share* model and the Revealed Comparative Advantage, in the period from 1990 to 2009 and from 2000 to 2009, for the two models, respectively, using the following crops: mango, grape, papaya and melon. The result obtained through the applied model showed that in the first and second periods Brazil was competitive in the exports of grapes, melons and mangoes to the European market and that this competitiveness is due to quality; As for papaya, it was found that, to the detriment of the destination market, it was exported in the first and second periods without distinction. The country has a Comparative Advantage in all the fruits that make up the analyzed basket, however, even with this advantage in the production and generation of surplus, there are other determining factors in Brazilian fruit exports. Although national companies in this sector have shown a good performance, Brazilian exports are affected by systemic competitiveness that adds the costs of energy, internal transport, exchange rate and precarious infrastructures, which includes roads, ports and airports.

Keywords: Competitiveness, Comparative Advantage, Exports, Fruits.

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INTRODUCTION

The international fruit market points to figures above US$ 29 billion/year and the growth is 5% per year. To a large extent, this market is made up of temperate climate fruits, typical of production and consumption in the Northern Hemisphere – although the market potential for tropical fruits is high –, and when the values of processed fruits are added, the figures exceed US$ 100 billion dollars (ANDRIGUETO; NASSER; TEIXEIRA, 2008).

Over the last few years, the international fruit market has been growing at significant rates and this growth has been accompanied by a significant increase in production. Some countries with vast territories such as China, India and Brazil had a strong productive participation. In the Brazilian case, the Northeast region stood out, having excellent performance in the production and export of fruits. Despite this, the Food and Agriculture Organization of the United Nations (FAO, 2010) found that in 2008 the sum of the production of mangoes, melons, grapes and papayas was 125,753 (one hundred and twenty-five million, nine hundred and fifty thousand) tons, thus showing a slight decrease of 0.35% in relation to the previous year.

The world's top three fruit producing countries, China, India and Brazil, hold more than 40% of all world production (FAO, 2010). These three countries are privileged by vast territories and each one has a large domestic market, however, this does not justify the weak participation of these nations in the international market, since fruit exports are conditioned by several factors. For example, according to Galvão (2010), with regard to the world's main fruit producing countries, Ecuador occupied the seventeenth position in 2008. However, in 2007, this country was the world's first exporter of fruit among the main exporting countries.

Among the fruits that make up the analysis basket studied here, grapes, in relation to the others, are the most produced, followed by mangoes, melons and papayas, as illustrated in Table 1, below:

Table 1: World production of grapes, mangoes, melons and papayas in the period 2004-2008 (Ton.)

Types of fruits	2004	2005	2006	2007	2008
Grape	59.556.350	59.387.981	59.293.871	57.101.503	59.013.092
Manga	26.900.991	28.932.198	30.636.179	31.459.632	31.934.668
Melon	23.043.606	24.386.028	25.333.705	25.664.112	25.746.395
Papaya	8.260.919	7.724.553	8.566.564	8.846.516	8.723.050

Source: Prepared by the author based on FAO data (2010).

Ecuador's participation is due to the presence of five multinational companies[3] that operate in this South American country and in others throughout Latin America, including in the Brazilian Northeast, as well as in several nations on the African continent. These five companies alone together

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[3] As empresas são: Dole Food Company, Chiquitita Brands International, Del Monte Fresh Produce ou Fresh Del Monte Produce and Fyffes and Noboa.

dominate more than 70% of world exports, establishing themselves based on locational advantages and in areas where labor is quite cheap (ALBANO, 2009).

Table 2: Main world fruit exporting countries (in volume and %) - 2007

Country	Quantity (Ton.)	% Total
Ecuador	5.330.868,00	9,24
Spain	4.851.648,00	8,41
Chile	4.069.311,00	7,05
Costa Rica	3.889.293	6,74
United States	2.902.312,00	5,03
Belgium	2.333.996,00	4,04
Italy	2.279.046,00	3,95
Mexico	2.137.313,00	3,70
South Africa	2.111.166,00	3,66
China	2.103.559,00	3,65
Philippines	2.101.040,00	3,64
Holland	2.045.952,00	3,55
Guatemala	1.894.217,00	3,28
Colombia	1.652.356,00	2,86
Argentina	1.473.277,00	2,55
France	1.177.084,00	2,04
Turkey	962.376,00	1,67
Brazil	918.307,00	1,59
Honduras	845.754,00	1,47
Panama	840.946,00	1,46
Other 153 Countries	11.784.105,00	20,42
Total	**57.703.926,00**	**100,00**

Source: Prepared by Galvão (2010), based on FAO data (2009).

The Brazilian agricultural sector has contributed positively to the growth of production and exports in the national economy as a whole and has contributed with a significant portion in the performance of the Brazilian trade balance, especially in the generation of employment in the countryside, especially in the irrigated fruit growing segment (GALVÃO, 2010).

Data from FAO (2010) and COMTRADE (2011) show a growth in the international fresh fruit market, thus giving possibilities of inclusion in this context to countries with extensive territories, and Brazil is inserted in this reality with the possibility of increasing its participation and productivity. The Northeast region of the country has a fundamental role, and over the last few years, it has been seeking to articulate regional public policies in order to develop productive and commercial efforts, with the aim of expanding its insertion in the international fruit market (MARTINELLI; CAMARGO, 2002).

However, entering the highly demanding and highly competitive European market, which imports fruit from all continents, is not a simple, banal task. It is an international fruit market that is far from being easy to master, due to phytosanitary barriers, trade preferences and significant changes related to production, marketing, legislation and logistics.

This paper analyzes the competitiveness of Brazilian fruit exports, seeking to answer the following question: as a result of the dynamism of the international fruit market, how do Brazilian fruit producing and exporting companies position themselves to compete in the international market? In addition, as a specific objective of the study, it seeks to evaluate the competitiveness of Brazilian fruit exports based on the *Constant Market Share indicators*.

METHODOLOGY

MODELO *CONSTANT MARKET SHARE*

To achieve one of the objectives of the present work, the *Constant Market Share* (CMS) method was used, which enables the understanding of the determining factors that influence the performance of exports of a given product, from the destination market and in relation to total world imports.

According to Leamer and Stern (1970), (1) exports can be concentrated in *commodities* whose demand is growing relatively slowly; (2) exports may be going primarily to relatively stagnant regions or (3) of the country in question, which may have been unable or able to compete effectively with other sources of supply.

Once again, it is worth noting that the CMS model analyzes the growth of the share of exports in the following indicators: growth of international trade, composition of the export basket, destination of exports and competitiveness determined by the residue of other exports.

According to Sereia, Nogueira and Câmara (2002), the CMS model has as its main advantage the possibility of analysis by component and by the behavior of the product in the destination market, thus indicating the markets where the country is more competitive. Leamer and Stern (1970) developed the CMS model as follows:

VI = total value of exports of product i of country A, period I;

ri = increase in world exports of product i from period I to period II. Vij = total value of exports of product *i* from country A to country B in period I;

V^*_{ij} = total value of exports of product *i* from country A to country B in period II; rij = increase in world exports of product *i* to country B from period I to period II.

This time, the resulting equation can be gathered into:

$$V^* - V' \equiv \Sigma\Sigma \text{ rij Vij} + \Sigma\Sigma(V^*_{ij} - Vij - rij \text{ Vij})$$

$$V^* - V \equiv rV + \Sigma\Sigma(rij - ri)Vij + \Sigma\Sigma(V^*_{Ij} - Vij - row \text{ Vij}) \qquad (1)$$

$$\qquad\qquad (a) \qquad\quad (b) \qquad\qquad\qquad (c)$$

According to Leamer and Stern (1970), considering the equations above, we have effects (a) and (b), associated with external factors, and effects (c) in which:

(a) = represents the effect of the growth of world trade – whether the increase or decrease in the exports of country A had the same rate of growth or decrease in relation to world trade;

(b) = destination effect of exports – changes as a function of the exports of products to the market with more or less effective growth;

(c) = residual effect, representing competitiveness – implies the difference between the current increase and the growth that would have occurred in the exports of country A if the export share of each good to the country had been maintained.

- $r_i V_i$ = growth of the i-market;
- $\sum (r_{ij} - r_i) V_{ij}$ = destination of exports of i;
- $\sum (V^*_{ij} - V_{ij} - r_{ij}V_{ij})$ = Competitividade[4]

COMPARATIVE ADVANTAGE REVEALED

Another element to measure competitiveness that several authors have already used is the Revealed Comparative Advantage indicator. This indicator measures the share of a certain product in the total exports of a given sector of a country in relation to the share of the same product in the total world exports of the same sector (TURINA; BURNQUIST, 2005).

According to Holanda (2002), a country benefits from comparative advantage when its insertion in international trade is efficient in terms of allocation of its factors of production, that is, conceptually, the country presents Comparative Advantage when it effectively dedicates itself to sectors/products that are only more efficient in comparative terms and this efficiency makes it more advantageous in international trade.

According to Vitti (2009), in the real world the distribution of factors happens differently and for this reason the opportunity costs are different. Countries should focus on the production of products in which comparative advantages are presented, and this is the case of Brazil, which, roughly speaking, exposes it in the production of fruits in relation to the countries of the European Union (EU) bloc.

Thus, the Revealed Comparative Advantage indicator is defined by:

$$VCR_K = (X^{\text{país}}/X^{\text{país}})/(Y^{\text{mundo}}/Y^{\text{mundo}}) \qquad (2)$$

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[4] Detailed demonstrations of the model can be found in Leamer and Stern (1970) and Rodrigues (2012).

Where: [Wki]

VCRKj = Revealed comparative advantage of product k of country j;

$X_{kj}{}^{country}$ = exports of good k from country or region j;

$X_{zj}{}^{country}$ = total exports of the country or region j;

$Y_k{}^{world}$ = exports of the good k in the world;

$Y_z{}^{world}$ = total world exports.

Therefore, when VCRkj > 1, it is concluded that product k presents the Revealed Comparative Advantage; if VCRkj < 1, then product k has a Comparative Disadvantage Revealed. If VCRkj = 1, the country or region j will have no advantage or disadvantage in the production of the product, in this case, local production meets the needs of domestic consumption, and it is stated that there is no surplus to be exported, as characterized by Silva (2006).

FACTORS OF COMPETITIVENESS IN THE FRUIT EXPORT SECTOR

Competitiveness stood out between the mid-1980s and 1990s through debates on industrial policy. According to Farina (1999, p. 149), "competitiveness does not have a precise definition, on the contrary, it comprises so many facets of the same problem that it is difficult to establish a definition that is both comprehensive and useful". The author went even further to define competitiveness as the ability of the company to remain in the market and, preferably, to grow in competing markets or in new markets.

The term *competitiveness* is applied to both nations and companies. According to Di Serio and Vasconcellos (2009), one of the most accurate definitions of competitiveness is the share of the world market that a country has for its products, which makes it become a game in which the gains of each country occur as a function of other countries. For Porter (2004), the success or failure of any company depends on its competitive advantage, and competitive strategy is the search for a privileged strategic position in a company, the important arena where competition occurs.

Benites and Valério (2004) clarify that the company is competitive when it is efficient in the performance of its activities and the final value created can be measured by the willingness of consumers to pay for the products it offers.

In the view of Santos (2006), competitiveness relates the company and its market. Conceptually, competitiveness is a positive result of this direct relationship, that is, the ability of the company to create and efficiently conduct relationships that generate favorable results for it, which means that an organization is only competitive if it has the ability to produce products and services of superior quality and at lower costs than its competitors.

THE DETERMINANT FACTORS OF COMPETITIVENESS IN THE BRAZILIAN FRUIT EXPORT SECTOR

In the last decade (2001-2010), the Brazilian fruit growing sector has improved a lot with the participation of different actors, especially the Ministry of Agriculture, Supply and Livestock, as well as other state agencies, since being competitive in the foreign market requires joint effort and competence. However, despite the efforts made, the country has bottlenecks that hinder competitiveness and affect the sector, such as the high cost of freight, problems in ports and the devaluation of the dollar.

The quality of Brazilian fruits as a determining factor for competitiveness in the international market The global concern with the type of food to be consumed makes quality an important factor for the competitiveness of fruit producers/exporters on all continents.

According to Souza and Amato Neto (2006), the expansion of *fast food* chains, which sell foods rich in fats and carbohydrates and low in fruits, has generated serious health problems in most developed countries. In the specific case of England, studies have proven that poor diet is related to heart disease, and it is estimated that the British government spends around US$ 7 billion to treat them.

As a result of these facts, the concern about consuming healthy foods arose. In developed countries, experts have been recommending the intake of at least five servings of fruits and other vegetables a day for a balanced diet. The concern, however, does not only concern consumption, but also the quality of these foods.

The importing market evaluates the quality of fruits from two perspectives; one is extrinsic quality, in which the attributes of the product can be visualized through prices, appearance, shape, color and size, while intrinsic quality is related to damage to the environment in its production process, absence of additives and preservatives, absence of chemical residues, adequate nutritional values and consumer confidence in products or companies (SOUZA; AMATO NETO, 2006, p.404).

The certification seal enters precisely into the intrinsic quality, which is the one that cannot be seen by consumers. Through certification, however, it is possible to make certain attributes of the product known, thus ensuring its quality. For Souza and Amato Neto (2006), the main certification standards required by the fresh fruit importing market are global and private.

According to FAO (2010, p. 22) "nowadays consumers are increasingly concerned with consuming healthy food and respecting the environment and the well-being of workers". Due to this concern, Good Agricultural Practices (GAP) and Hazard Analysis and Critical Control Points (HACCP) were created, the latter being a system recommended by international organizations, such as the World Trade Organization (WTO), World Health Organization (WHO) and MERCOSUR, in addition to the European Community and the United States. Maia (2011, p. 13) states that, "in the

case of Brazil, the Ministry of Health and the Ministry of Agriculture, Supply and Livestock already have actions aimed at adopting the HACCP System".

The nominal exchange rate as a determining factor for competitiveness in Brazilian fruit exports

The nominal exchange rate is one of the variables that determine the volume of a country's exports. In Brazil, the contracts between the national fruit exporting companies and the European import market are signed in foreign currencies (euro and US dollar) and the expenses in the fruit production chain are made in reais (national currency), which, obviously, demonstrates how much exports depend on the exchange rate.

The disadvantage comes primarily from the low production costs of competing countries. For example, the labor of a worker on a mango farm is US$ 100.00 in Peru and Ecuador, while in Brazil the salary of a person with the same function is US$ 500.00; another advantage is organic production in those countries, as Brazil still produces with the help of chemical fertilizers and pesticides. In short, the high cost of Brazilian production ends up making the country less competitive compared to its competitors in the international market.

Brazilian infrastructure as a determining factor in the competitiveness of fruit exports

According to studies by the Institute of Applied Economic Research (IPEA, 2010), the road sector is of great importance for cargo transportation in Brazil and, throughout the 1990s and 2000s, the road modal corresponded to more than 60% of the total cargo transported in the country. This means that, with the inclusion of iron ore, which is transported by railroads, highways have a share equivalent to 70% of general cargo.

The problems of the Brazilian road modal are reflections of a long process that has been consolidated for several decades, although there has been a rapid expansion of the road segment in relation to the set with the other modalities. The strong dependence of Brazilian cargo transport on highways is more evident when compared to other countries of continental dimension: in the United States, the share of highways in cargo transport is 26%; in Australia, it is 24%; in China, this dependence is only 8% (BARTHOLOMEU, 2006, *apud* IPEA, 2010).

IPEA (2010) also states that the dependence on Brazilian highways is greater in the agricultural sector, either for the receipt of inputs or for the flow of production. For this reason, the inefficiency of road transport has a direct impact on the income of agricultural producers, who, consequently, suffer a strong negative influence on the profitability of their exports, since the prices of exported products, especially fruits, are determined by the importing market, regardless of the costs generated in production and transportation.

ANALYSIS AND DISCUSSION OF THE RESULTS

Through the results obtained through the *Constant Market Share* model, it is possible to analyze the three indicators, which are: market growth, destination of exports and the residual effect, that is, competitiveness, and how each of these indicators contributed to the growth of Brazilian fruit exports.

RESULTS OF THE APPLICATION OF THE *CONSTANT MARKET SHARE MODEL*

Table 3 shows that, in the first period, the decomposition of the sources of growth shows that the main culprit was the competitiveness effect, which boosted Brazilian exports, and to a lesser extent is due to the growth effect of the world market.

Table 3: Results of the *Constant Market Share*, using data on the quantity exported from Melon, for the following effects: market growth, destination of exports and competitiveness.

Melon	1990/91/92	1999/00/01	2007/08/09
Effect	Effective growth	Effective growth	Effective growth
Variation Of Exports	62%	59,62%	-7,52%
Growth of the market	0,92%	1,56%	-2,88%
Destination of exports	-87,62%	-3,45%	-0,87%
Competitiveness effect	149,53%	61,50%	-3,77%

Source: Survey results, 2012.

In this regard, it should be noted that, according to FAO (2010), almost 100% of Brazilian melon exports are directed to Europe, therefore, in this period, the European market has regressed and the world market has grown at a slight rate. Therefore, the drop of -87.62% is explained by the lack of access of Brazilian producers and exporters to other markets, remembering that the US has the world's largest melon market, so the country has no participation in this area. Although in the first and second sub-periods Brazil was very competitive in the European market, it is believed that if Brazilian exporters had access to other markets, national exports of melon could grow by about 149.53%. It is worth noting that the destination effect of exports will only be positive if the country has concentrated its exports in markets that experienced greater dynamism in the period analyzed, and negative if concentrated in more stagnant regions.

In the second period, Brazilian melon exports grew 59.62%, and the determining factor of growth was the competitiveness effect, with 61.50%, followed by the growth of the world market, with a modest rate of 1.56%. Once again, the destination effect of exports did not contribute to Brazilian melon exports due to the lack of access of Brazilian producers and exporters to markets with a high growth rate such as the USA, Canada and Japan. It is important to note that in this period

the European market imported below the world import, that is, the European market imported below the main melon-importing countries that are outside the European continent.

Also as shown in Table 3, in the last period, especially in 2009, Brazilian exports fell by -7.52%, and the determining factor of this decrease was the competitiveness effect, followed by the decrease in the growth effect of the world market and also, finally, the destination market effect, which showed a retraction. According to the Brazilian producers and exporters interviewed, in this period the nominal exchange rate or fall in the dollar was a factor that made competitiveness unfeasible. FAO data (2010) show that, in this same period, and due to the crisis in Europe, the European market decreased the import of melon significantly and other potential importers, such as the USA and Canada, increased their imports in the same year of 2009, remembering that Brazilian exporters of melon practically do not participate in the North American market.

In the case of grapes, for the first subperiod analyzed (Table 4), Brazilian exports grew by 190%, and this growth was driven by the competitiveness effect, which developed by 166.83%, followed by the growth of the world market and the destination of exports. It is important to remember that in this period, despite the high growth rate of Brazilian grape exports, Brazil had not entered the list of the top twenty grape exporters according to FAO statistics, which only happened from 2001 onwards.

Table 4: Results of the *Constant Market Share*, using data on the quantity exported of grapes, for the following purposes: market growth, export destination and competitiveness

Grapes	1990/91/92	1999/00/01	2007/08/09
Effect	Effective growth	Effective growth	Effective growth
Variation that Exports	190%	346%	-36%
Growth of the market	12,41%	26,50%	7,55%
Destination of exports	11,57%	-1,38%	-4,40%
Competitiveness effect	166,83%	321%	-39,84%

Source: Survey results, 2012.

In the second period, Brazilian exports grew 346%, and the competitiveness effect was the determining factor of growth, with 321%; Another factor that contributed positively was the growth of the world market (26.50%) and the destination of exports did not contribute to the exports of Brazilian grapes in this period.

In the last period analyzed, Brazilian grape exports fell by -36%, remembering that, among all the crops that make up the analysis basket studied here, grape production is the most expensive and, therefore, in case of crisis, the drop can be abrupt. The competitiveness effect was the main responsible for the decline in Brazilian grape exports, and it is important to remember that, since 2008, the competitiveness of Brazilian fruit exports has been affected by the nominal exchange rate,

that is, the devaluation of the "US dollar", since the sector's expenses are made in national currency. The growth of the world market was the only effect that contributed positively, but even so, it could not compensate for the losses in exports in this period. With regard to the growth of the world market, according to FAO data (2010), despite the significant drop in the volume of grape imports by European countries, some others – such as Canada; China, Hong Kong; China; Bangladesh; Thailand; Pakistan, etc. – increased their exports in the period from 2008 to 2009, and Brazil does not export to these countries or has an insignificant share in some, as is the case with the USA.

As seen in Table 5, the world mango market in the first sub-period (1990/1991/1992) grew 48.63%, and during this time Brazil exported a large volume of the fruit due to the growth effect of the world market, which developed 37.73%, followed by the competitiveness effect, 10.89%, and the destination effect of exports, which contributed negatively. Traditionally, Brazil is a country known as one of the main producers and exporters of mangoes to the international market, therefore, over the past few years, the country has been configured in FAO statistics as one of the top five exporting countries.

Table 5: Results of the *Constant Market Share*, using data on the quantity exported from Mango, for the following effects: market growth, destination of exports and competitiveness.

Manga	1990/91/92	1999/00/01	2007/08/09
Effect	Effective growth	Effective growth	Effective growth
Variation that Exports	48,63%	76%	-0,76%
Growth of the market	37,73%	25%	12%
Destination of exports	-2,56%	-14,86%	-18%
Competitiveness effect	10,89%	65,49%	5,25%

Source: Survey Results

Brazilian exports increased by 76%, and the decisive factor for this growth was the competitiveness effect, with 65.49%, followed by the increase in the market by 25%; The destination of the product did not participate in the exports of Brazilian mangoes, and, compared to others, the European market remained stagnant in this period, which implies that, although Brazil is competitive in this context, Brazilian exporters could earn more if they had the opportunity to trade in other markets.

In the last sub-period analyzed, Brazilian exports registered a slight drop of -0.75%, driven by the destination of exports. It is important to note that in 2009 European countries reduced imports drastically, and this reduction is due to the crisis that occurred on that continent. The growth effect of the world market increased by 12%, while the competitiveness effect increased by 5.25%. According to producers and exporters, the drop in Brazilian mango exports in 2009 is due to the devaluation of the nominal exchange rate, which made the competitiveness of the sector unfeasible.

Regarding papaya (Table 6), in the first subperiod analyzed (1990/91/92), the factor that most contributed to the increase in Brazilian exports was the destination effect of exports with 51.67%, in relation to the competitiveness effect, the country showed unfavorable in this aspect with a significant drop of -35% and also the world market effect registered a retraction of -11.25%.

Table 6: Results of the *Constant Market Share*, using data on the quantity exported from Papaya, for the following effects: market growth, destination of exports and competitiveness.

Papaya	1990/91/92	1999/00/01	2007/08/09
Effect	Effective growth	Effective growth	Effective growth
Variation Of Exports	5,42%	58,80%	-0,76%
Growth of the market	-11,25%	38,36%	12%
Destination of exports	51,67%	32%	-18%
Competitiveness effect	-35%	-11,56%	5,25%

Source: Survey results, 2012.

In the second sub-period analyzed, the important factor that contributed to Brazilian papaya exports was the growth effect of the world market, with 38.36%, followed by the destination of exports, which also showed an increase of 32%, so the competitiveness effect ceased to contribute -11.56%, it is important to note that in this sub-period Brazilian papaya exports grew to the world market at 58%.

In the last sub-period, the country recorded a slight drop of 0.76% in papaya exports, this drop was not worse only due to the world market that boosted Brazilian exports to 12%, followed by the competitiveness effect of 5.25%, the destination of exports retracted as a result of the crisis in the Eurozone.

According to FAO (2010), Spain is the largest exporter of melon in the world, and the Brazilian melon harvests coincide with the off-season of Spanish production, which greatly facilitates exports from Brazil to the old continent.

In 2010, the European Union (EU) was the largest importer of Brazilian melon: the countries of this economic bloc influenced more than 98% of the total volume exported from Brazil. Among the EU countries, the Netherlands alone imported 59.68% of all Brazilian melon exports, taking into account that most Brazilian fruits enter Europe through the port of Rotterdam, which is one of the largest and most important ports on the European continent. NAFTA emerges with the effective participation of the United States and Canada in the import of this fruit, and Mexico has its own production capacity; among the South American countries, Argentina, Uruguay and Paraguay stand out, which, together, imported only 0.12% of the volumes of Brazilian melon exports.

RESULTS OF THE APPLICATION OF THE REVEALED COMPARATIVE ADVANTAGE MODEL

The results of the application of the Revealed Comparative Advantages (VCR) of melon, grape, mango and papaya fruits are presented in Table 7. The data for the calculation of the RCVs were collected through FAO and the United Nations Statistics Division (COMTRADE). Initially, the intention was to make an analysis of this model for a longer period equal to that used in the application of the *Constant Market Share* model, but due to the unavailability of data, the analysis was restricted to a period of 10 years, which ranged from 2000 to 2009.

Of the four crops analyzed, papaya has the greatest advantage, despite the fluctuations over the years analyzed. In fact, all products presented indexes above the unit, demonstrating that they have comparative advantages in relation to their international competitors. Within the period analyzed, papaya presented an average of 4.74% of the Revealed Comparative Advantage, followed by melon with 3.87%, mango with 3.47% and grapes with 2.15%. Brazil stands out in the production and export of all these crops, thus occupying the prominent places in the world ranking of exporters based on the official statistics of FAO and COMTRADE.

Table 7: Revealed Comparative Advantages (VCR) in % for each product (2000-2009).

Period	Melon	Grape	Manga	Papaya
2000	1,17	1,72	2,83	4,61
2001	1,49	2,53	3,68	4,26
2002	1,36	3,40	3,69	4,36
2003	1,19	3,68	2,63	3,40
2004	7,86	1,93	1,37	1,55
2005	7,23	2,36	1,01	3,28
2006	5,04	1,96	7,49	1,03
2007	4,62	1,74	4,90	8,64
2008	3,60	1,07	4,12	6,85
2009	5,17	1,11	5,67	9,54

Source: Survey results, 2012.

The competitiveness in the export sector of Brazilian fruits is due to several factors, among which we can highlight the nominal exchange rate that in recent years has been hindering Brazilian exports, remembering that contracts, whether formal or informal, are signed in dollars or euros, and the cost of production of national companies is made in local currency; Therefore, any appreciation of these foreign currencies raises the costs of companies in the country.

The quality of fruits is one of the determining factors of competitiveness, remembering that in this sector quality is seen from two perspectives: both in the internal attributes of fruits (fundamentally related to damage to the environment in their production process, absence of additives and preservatives, absence of chemical residues, nutritional value and consumer confidence

in products or companies) and external attributes, referring to the color, appearance, shape of the products, etc. (SOUZA; AMATO NETO, 2006).

CONCLUSION

The work developed here proposed to evaluate the competitiveness of Brazilian fruit exports to the European market, based on the *Constant Market Share model*, emphasizing that this model shows whether the country in question is exporting as a function of the growth of the world market, export destination or competitiveness.

In terms of production, Brazil occupies the third position, behind only China and India; with regard to exports, the country still leaves something to be desired, since the commercialization of fruits to the international market does not reach 10% of its total production, therefore, the low volume of Brazilian fruit exports is explained not only by its large and potential domestic market, but by the lack of access to the international market of national producers and exporters (FAO, 2010).

Access to the international fruit market is costly due to several factors, such as the value of quality certification (seal) of fruits and the precariousness of the Brazilian modal infrastructure (highways, railways, ports and airports), which compromises the flow of agricultural production, that is, in the transport of fruit from the farms to the points of shipment, Often the cost of this displacement exceeds the expense of exporting by ship or plane.

Despite these obstacles, the country has the capacity to substantially increase its participation in international markets, through a compilation of specific investments from the public and private sectors.

The country has a Comparative Advantage in all the fruits that make up the analyzed basket. However, even with this advantage in production and generation of surplus for export, there are other determining factors in Brazilian fruit exports. Based on the results obtained with the application of the CMS model, Brazil is competitive in the European melon market, and it was observed that the growth of this market in the analyzed period exceeded that of the world market and influenced the commercialization of Brazilian melon in this context.

Exports of Brazilian grapes have grown at significant rates, and the country is competitive in the European market due to the quality of the production of this fruit. In fact, the Brazilian grape is widely accepted in the European market, especially in the United Kingdom.

Over the last few years, Brazil has been meeting the demand of the importing market in relation to the new production practice aimed at reducing the level of pesticides and preserving the environment. This means that the country currently produces quality fruits, remembering that Brazil is the only country in the world that produces mangoes all year round, and these two factors are responsible for the competitiveness of Brazilian mangoes in the European market.

Although Brazil is the second largest exporter of papaya (FAO, 2010), the country is not competitive in exports of this product, doing so only due to the destination market (European market) that grows at significant rates. In the last period analyzed, Brazil became competitive, despite having been a time of crisis that affected the import market.

In 2009, world exports increased while Brazil followed the opposite path due to the exchange rate. This made some producing and exporting companies give up supplying their fruits to the international market and decide to remain only delivering to the domestic market. In the same period, while producers and exporters of Brazilian fruits were facing exchange rate difficulties, the European market also decreased the demand for imports of Brazilian fruits, due to the crisis in Europe, especially in the so-called Eurozone.

Even so, the results point to ample possibilities for growth in the export of the fruits analyzed, provided that there are infrastructure improvements, sufficient policies to promote production and support for producers by the entities responsible for regulating the sector.

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