

The competitiveness of the Italian flower and ornamental plant sector¹

ANTONIO ASCIUTO, ROSARIO CARAPEZZA,
ANTONINO GALATI, EMANUELE SCHIMMENTI*

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1. Introduction

The flowers and ornamental plants sector, as well as other sectors of the agri-food system, is still going through the effects of globalisation, technological progress and new factors affecting domestic and international market trends.

In the last ten years, the world flower and ornamental plant sector has recorded an increase in the international competitiveness due to the entrance of new competitors, particularly numerous among the Less Developed Countries (LDCs). The market globalisation process has given rise to the gradual delocalisation of flower and ornamental plant productions (also carried out by some Italian entrepreneurs) towards countries with favourable climatic conditions, plenty of natural resources and low-cost labour supply, all factors producing considerable competitive advantages.

The flower and ornamental plant market, which includes a wide range of product categories, is quite different from the agri-food products market, due either to the existence of looser trade ties or to the kind of demand.

Abstract

Italian flowers and ornamental plants sector has been playing a remarkable role within the agricultural sector both in productive and employment terms. As regards the competitiveness, over the last few years, Italy has been confronted with a growing flowers supply at world level and with recurring market crises, sharpened also by an inadequate Common Market Organization which has not issued an adequate legislation giving financial guarantees to the sector operators.

Nevertheless, the empirical analysis carried out on the Italian competitiveness in the flowers and plant sector has shown, in the comparison between 1994-1995 and 2004-2005, an apparent improvement of the comparative advantage thanks to an export growth rate far higher than the correspondent import rate. In detail, the analysis proves that, on the one hand, Italy has improved its advantage with respect to the Middle-Eastern European countries and Turkey and, on the other hand, it has kept on showing a stable despecialization level with respect to Israel, Thailand, Peru, South Africa and to the Netherlands.

Keywords: competitiveness, flowers and ornamental plants sector, Italy, trade.

Résumé

Cette dernière année, le secteur des fleurs et des plantes a montré une importance croissante dans le secteur agricole en ce qui concerne aussi bien la production que l'emploi. De tout façon, l'Italie a dû faire face aux fréquentes crises de marché, mais surtout à une offre croissante de fleurs et de plantes sur le marché mondial. Dans ce cadre, on rappelle des problèmes qui découlent d'une insuffisante Organisation Commune du Marché des plantes vivantes et de la floriculture qui a défini des normes de qualité sans offrir aux entrepreneurs aucune assurance normative et monétaire, nécessaire afin d'améliorer les conditions de l'offre et de la commercialisation.

L'analyse empirique sur la compétitivité de l'Italie dans le secteur des fleurs et des plantes, montre l'existence, entre les années 1994-95 et 2004-05, d'une augmentation de l'avantage comparatif italien suite à une forte croissance des exportations par rapport aux importations des fleurs et plantes. En particulier, l'analyse montre que, d'une part, l'Italie a amélioré son avantage par rapport aux pays de l'Europe centrale et de l'est et que, d'autre part, elle a vécu une déspecialisation stable par rapport à Israël, à la Thaïlande, au Pérou, à l'Afrique du Sud et aux Pays Bas.

Mots-clés: compétitivité, secteur des fleurs et des plantes, Italie, commerce.

In such a liberalised market, where a firm competitive strength plays an important role, price formation is a direct consequence of market mechanisms.

Furthermore, flowers and ornamental plants are considered as luxury goods, whose consumption is closely linked to the economic development of the civil society. In developed countries, such as Italy, purchases of flowers and ornamental plants are no longer exclusively linked to special occasions, which yet represent an important incentive to purchase, and consumption is more and more spread throughout the year, especially with regard to certain segments of the population.

Over the last few years, Italian flowers and ornamentals are becoming increasingly important in the agricultural sector due to both favourable climatic conditions and specific economic situations which

have positively influenced the economic returns of the firms operating in some productive sectors of the market, among which the ornamental plants sector.

In terms of competitiveness, Italy has recently coped with frequent market crises and, in particular, with a growing world supply of flowers and ornamentals.

Several problems have also arisen in relation to the current Common Market Organization (CMO) for the sector, which has just set out quality standards without sufficient

* Dipartimento di Economia dei Sistemi Agro-Forestali, Università degli Studi di Palermo, Italy

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guarantees both in financial and prescriptive terms, therefore turning out to be totally inadequate in improving the supply and commercialization conditions.

Market operators have also to face numerous problems as a consequence of recent bilateral and multilateral agreements between EU and Third Countries.

As far as this subject is concerned, it is important to point out that this sector is more and more characterized by transnational processes of concentration and integration among firms, which would require more attention by private and public operators.

In Italy, in 2004-2005, output at basic prices with regard to flowers and ornamentals has reached on a whole an average value of around 2.7 billion euros, i.e. 5.8% of the total Italian agricultural output at basic prices. As for the two sub-sectors of flowers and ornamentals, flowers and potted plants represent the main categories with 57.7% of Italian flowers and ornamentals output at basic prices. From the analysis of the latter, the comparison between 1994-1995 and 2004-2005 shows an increase by 16.1% at basic prices, due to the positive trend of ornamentals (+138.0%), which has more than offset the reduction recorded by flowers and potted plants (-15.6%).

In recent years, the sector has been characterised by a rapid growth on the international market, where it has experienced a positive value of around 63 million euros, even more significant when thinking that, until the mid-1990s, flowers and ornamental plants constantly recorded a negative balance.

Italy has therefore improved its commercial position on the international market, playing an important role in the EU mainly, where it is the second exporter behind the Netherlands.

The present study aims at analysing the international competitiveness of Italian flowers and ornamentals, in order to obtain the mapping of traditional and mainly new competitors.

2. Evolution of the concept of competitiveness

A study on competitiveness implies the preliminary knowledge of the meaning and of the main theoretical studies carried out over the last few years by economists who have been showing an interest in the mechanisms governing international trade, thus allowing to outline the concept of a particularly complex phenomenon.

In 1992, the Organisation for Economic Cooperation and Development (OECD) proposed a definition of competitiveness which is widely accepted at world level: "*competitiveness is the degree to which a nation can, under free trade and fair market conditions, produce goods and services which meet the test of international markets, while simultaneously maintaining and expanding the real incomes of its people over the long-term*".

Competitiveness thus becomes a key factor for the success of the economic system in the world market, and it is a concept that holds its effectiveness also at the level of the

economic units operating in a specific territory; at a micro-level, it represents the ability of a firm to dominate the market, gaining wide market share through the diversification and valorisation of its productions.

The phenomenon of competitiveness has always aroused the interest of economists, whose studies have allowed identifying the main variables affecting the capacity of a country to dominate foreign markets.

One of the earlier approaches comes from the school of classical economists: Adam Smith in his "*An Inquiry into the Nature and Causes of Wealth of Nations*" (1776) established for the first time a connection between growth of national wealth and trade, getting through the limitations of Mercantilist Theories which analysed the advantages of international trade by considering only the needs of an individual country, disregarding any repercussion on other countries. Smith, whose thought was essentially based on the improvement of labour organisation as a means for satisfying everyone's needs and increasing income and wealth of countries, had a definitely static standpoint where in his system each market component is independent from the others.

Some years later, David Ricardo (1817) was one of the first economists who believed in the existence of interdependences among the different components of economic system, and at the same time, he stated the importance of technological differences in the development of trade models and of the international specialisation of a country. Ricardo provided a remarkable contribution to the understanding of mechanisms governing free trade among countries: two essential requisites for the occurrence of a trade between two countries are the existence of a difference in terms of comparative costs, on the one hand, and the inclusion of the international trade rate in an interval comprising the trade rates of the two countries, on the other hand. Should these assumptions occur, each country will specialize in the production of the good for which it has relatively greater advantages.

The Ricardian theory is well-suited to represent an economic model where countries do not have absolute advantages on both goods. Nevertheless, the Ricardian basic assumptions received some criticism: the same economic and technological development levels and identical productive organisation of firms are very far from the real situation and do not consider that the competitiveness of a country is dependent on different resources endowment - relative availability of production factors - and on the technological innovation which directly affects the degree of employment of the same factors.

Whereas Ricardian model considers just one factor (labour), Heckscher (1919) and Ohlin (1933) present a two-factor model, where also capital is taken into account. In particular, according to this approach, productive areas differ in terms of productive factors endowment: countries where labour is abundant will specialise in the export of *labour-intensive* goods, whereas countries with capital

availability will export *capital-intensive* goods. As well as in Ricardo model, also in Heckscher and Ohlin theory the basic assumption is that market forces operate in a system of perfect competition, characterised by capital immobility, absence of transport costs and of whatever protection and by constant returns to scale.

Since the 1970s, economists have started to analyse the economic system in a more dynamic way with respect to classical theories.

A noteworthy contribute to the evolution of competitiveness theories was given by Schumpeter (1977) who based his studies on cyclical development and innovation, marking the transition from a static to a dynamic vision of economy.

With Schumpeter, a new concept of competitiveness arises according to which being competitive means being innovators; in other words, Schumpeter argues that it is important to anticipate competitors through innovation.

With the evolutionary approach, the analysis context is totally different, as economy is considered as a constantly changing system due to the changes whose regulating mechanisms have still to be understood. The comparative advantage of a country does not exclusively depend on a factor's relative abundance but on the strategies carried out by each country to increase productivity; such an advantage depends on the capacity of a country to introduce innovation. Technical advances are actually able to affect the commercial outcome of a country: a country characterised by adequate levels of innovation has a higher probability to maintain or increase its international competitiveness (Dosi *et al.*, 1990).

From that time, new factors capable to affect international trade, and therefore a country's competitiveness, are included in the analysis. This is the *New Growth Theory* or *Endogenous Growth Theory* that introduces other factors in the model, such as human capital, public goods, development and the institutions producing them.

Among the main advocates of the *Endogenous Growth theory*, Grossman, Helpman, Krugman and Lucas are to be mentioned; the first two (Grossman G. and Helpman E., 1991, 1993) state that technical advances are the result of the allocation of resources in R&D activities, and try to explain the differences in the growth rates of per-capita production among countries. Krugman (1987), Lucas (1988) and Young (1991), on the other hand, focus their studies on the relation existing between innovation and *learning by doing*; the latter becomes the fundamental factor to understand the progress of knowledge as a consequence of the learning of practice.

Another contribution to the study of comparative advantage is given by Porter (1990), who claims in his work that it is not simple to provide a definition of country competitiveness, as the factors able to affect such a phenomenon are several and some of them are bound to external conditions not perfectly explicable.

Supply abundance and low labour cost are not sufficient to make a country more competitive in comparison to an-

other, as well as the only abundance of natural resource or national policy interventions.

According to the Author, it is not correct to affirm that a country is competitive just because its balance of payments is positive, labour cost are moderate and exports are high, as contingent situations which cannot easily be explained can often take place.

3. Methodological Approach

After a short description of the main economic theories which have contributed to competitiveness comprehension, some methodological approaches able to indicate the degree of competitiveness of a country and the variables able to modify its status are here briefly reported.

In the literature, there are several methods used to assess the competitiveness of a country, depending on both data typology and data collection methods.

As to the first criterion, some indices on specific factors potentially affecting competitiveness can be adopted, concerning elements on which government may intervene through targeted policies, such as GDP per capita, employment rate and exports patterns. In relation to data collection methods, indices can be grouped into two categories: objective indicators, such as the import/export flows, provided by the most reliable statistical sources, both at national and at international level (UNCOMTRADE, EUROSTAT and ISTAT), and subjective indicators, based on the results of direct surveys.

ISTAT data referred to 1994-95 and 2004-05 were collected concerning export and import flows of flowers and ornamental plants and of agricultural and agri-food products. The aim was to analyse the commercial specialisation and competitiveness of Italian flower and ornamental plant sector in a world context.

From these data, it was possible to deduce the weight of flower and ornamental plant sector within the agricultural sector and the whole agro-food system.

In a second phase, the main commercial partners of Italy were first identified according to import and export quotas of "Flowers and Ornamental Plants" and only considering those countries whose shares were higher than 0.5% of the total; on this basis a set of 38 countries has been sorted out, including the 27 EU member states.

After this phase, the analysis on the competitiveness of the national flower and ornamental plant sector was carried out, based on the values of specific indicators found in the literature, whose calculation procedures and correspondent meanings are described as follows. In particular, in relation to the comparative analysis of the Italian competitive position with respect to its main partners at international level, UNCOMTRADE data for 2001-2005 were used, whereas as for the comparative advantage of Italy in trade relations with main partners, ISTAT data concerning 1994-1995 and 2004-2005 have been adopted.

The first index calculated in the current study - very used to highlight the specialisation degree of a country - is the

Revealed Comparative Advantage Index (RCAI), more commonly named Normalised Trade Balance, which expresses the relative situation of trade balance for an individual or for a group of products in relation to the overall trade between two countries.

Index values above zero show a marked growing specialisation and a competitiveness on both international and domestic markets; indeed, a value equal to 100 means that the country is a net exporter of the considered product and, therefore, it is characterised by a comparative advantage, whereas an index value equal to -100 is indicative of a net importer, which consequently will be de-specialised.

The RCA index is calculated as follows:

$$RCAI = ((X_i - M_i) / (X_i + M_i)) * 100$$

where X_i indicates the exports of the i sector; M_i reveals the imports of the i sector.

The Contribution to the Trade Balance (CTB) Index is calculated by weighing the Specialisation Index (SI) with the incidence of the sector on the overall agri-food import-export movements (Lafay J., 1992).

Specialisation Index points out that if the sector under analysis has a better or worse performance than the national average, the country is specialised or despecialised in that sector.

$$SI_{ij} = S_{nij} - S_{nitot}$$

$$CTB_{ij} = S_{pij} \frac{X_{ij} + M_{ij}}{X_{tot} + M_{tot}}$$

where: X is current value of exports; M is current value of imports; i and j respectively indicate the country and the product; tot is the complete set of products in the country i .

The BCI allows quantifying the contribution provided by a sector (or by a product) to the normalised trade balance of the sector. This index measures comparative advantages of a country: when it is positive (negative), the country has a comparative advantage (disadvantage) in the sector under investigation.

The Relative Trade Advantage Index (RTA) (Vollrath, 1991) is calculated by difference between the Relative Export Advantage Index (RXA) and the Relative Import Penetration Index (RMP), or:

$$RTA_{ij} = RXA_{ij} - RMP_{ij} = \left[\frac{\frac{X_{ij}}{\sum_{i,i \neq j} X_{ij}}}{\frac{\sum_{K,K \neq i} X_{kj}}{\sum_{K,K \neq i} \sum_{l,l \neq j} X_{kl}}} \right] - \left[\frac{\frac{M_{ij}}{\sum_{i,i \neq j} M_{kj}}}{\frac{\sum_{k,k \neq j} M_{kj}}{\sum_{K,K \neq i} \sum_{l,l \neq j} X_{kl}}} \right]$$

In the above equation, X refers to exports and M to imports, i and K indicate product typologies, whereas j and l the countries.

The first term, RXA_{ij} , indicates the import share of i product of j country in the world market compared to the

correspondent share for the other products. If the index is over 1, then the area has a competitive advantage in the export of i product, vice versa if the index is lower than 1.

RMP_{ij} illustrates the import share of the “ i ” product of the “ j ” country from the world market compared to the correspondent share held for the remaining products. The index is greater than 1 if the country analysed has a disadvantage in the imports of “ i ” product, while it holds a comparative advantage should the index be lower than one.

RTA is calculated from the difference between RXA and RMP, thus being higher or lower than zero; positive values indicate a competitive advantage in the product trade, whereas negative index values are the expression of a net competitive disadvantage.

Moreover, two indices of relative specialisation were calculated. They allow the standardization of the product structure of agri-food exports with respect to the main trade partners of Italy, firstly in comparison with the correspondent product structure of Italian imports from the rest of the world (S_1) and, secondly, in comparison with the Italian imports from the EU members only (S_2).

The calculation of the export normalised shares, referring to the main trade partners towards Italy compared with the Italian imports from the rest of the world (S_1), allows us to highlight the role of the agri-food exports of the most significant trade partners towards Italy, in comparison with the Italian agri-food imports from the rest of the world. The index is calculated as follows:

$$S1 = \frac{(X_{pj} / X_p)}{(M_{UEj} / M_{UE})}$$

where:

X_{pj} = exports to Italy by the partner country with regard to the J sector;

X_p = overall agri-food exports to Italy by the “ p ” country;

M_{UEj} = imports by Italy from the rest of the world (with the exclusion of those from the “ p ” country) referred to the “ j ” sector;

M_{UE} = overall agri-food imports by Italy from the rest of the world (with the exclusion of those from the “ p ” country under analysis).

When the index takes on a value higher than one for the sector object of the analysis, the partner country is more important in terms of exports towards Italy compared to the whole foreign countries; in other words, the index provides a measure of the relative specialisation of the considered partner country for a specific sector and compared to all the countries.

Through the S_2 index of relative specialisation, or through the normalised export market shares of the EU countries towards Italy with respect to the overall imports from the EU area, we have tried to identify the EU countries with a competitive advantage compared to Italy; unlike the

previous index, in this case baseline is represented by the Italian agri-food imports from EU and not by those from the rest of the world.

Index is calculated as follows:

$$S2 = \frac{(X_{pj} / X_p)}{(M_{UEj} / PTM_j / M_{UE} / OTM)}$$

where:

X_{pj} = exports towards Italy of the “p” country relatively to the “j” sector;

X_p = overall agro-food exports of the “p” country towards Italy;

M_{UEj}/PTM_j = imports of Italy coming from the whole member countries (net of those from the “p” country partner) relatively to the “j” sector;

M_{UE}/P_{TM} = overall agro-food imports of Italy from the rest of the EU member countries (with the exclusion of those coming from the “p” partner under investigation).

4. Trade specialisation and Italian competitiveness in the flower and ornamental plant sector

4.1. General aspects of the Italian agri-food trade

The comparative analysis of foreign agri-food trade in the two biennia (1994-1995 and 2004-2005) points out significant changes occurred in the meantime. In 2004-05, the Italian agri-food exports accounted for 20.3 billion euros, recording a 64.2% increase in comparison with 1994-1995. Imports showed a more moderate growth rate (+44.6%), rising to just over 28 billion euros in 2004-2005.

As a consequence of the above trend, the Export-Import Coverage Ratio (exports/imports x 100) in the same time interval has changed passing from 64% to 73%.

The Italian agri-food balance of trade is still negative, although it has markedly improved, as it can be observed from the comparison with the normalised trade balance between the 1994-95 and 2004-05 biennia, equal to -22.0 and -15.8 respectively. From the analysis of the normalised trade balance by product category, it comes out that Italy has positive indices, and therefore, a comparative advantage, mainly in sectors including processed agri-food products, and as for agricultural products, it has showed a surplus just for “Edible fruits and nuts, peeled citrus fruits and melons” and “living trees and other plants – flowers products”. In particular, Italy has nevertheless lost part of its trade specialisation in the sector of edible fruits and nuts, peeled citrus fruits and melons, highlighting a 20.3% decline. The flower and ornamental plant sector is on the contrary characterised by a positive performance of the normalised trade balance, which has turned from a negative value (-2.8) into a positive value (+5.9) in the investigated period (1994-1995/2004-2005).

In 2004-2005, flower and ornamental plant exports were equal to 564.0 million euros (corresponding to 2.8% of a-

agri-food exports in value terms), far higher than 301.6 million euros recorded in 1994-1995, which means a growth rate by 87% in the considered period; during the same period, imports have recorded a 56.9% increase rising to 501.0 million euros in the last biennium. Such a positive performance has produced on a whole a growth of the Coverage Ratio that passed from 94% to 113%.

The calculation of the Contribution to the Trade Balance (CTB) Index has allowed us to highlight the changes occurred in the comparative advantages structure of the Italian agri-food system in the investigated period.

Italy is generally characterised by a strong specialisation in processed goods for which it presents a comparative advantage, still further strengthened in the mentioned period; the only exception is represented by the “Preparation of vegetables” category, for which a negative performance has been recorded.

It also emerges that Italy has a comparative disadvantage for nearly all agricultural products, apart from three groups, “Living trees and other plants, bulbs, roots, etc.”, “Edible vegetables and certain roots and tubers” and “Edible fruits and nuts, peeled citrus fruits and melons”.

Although horticultural products maintain a significant weight in the agri-food export-import trade, with positive values of normalised trade balance and of the Contribution to the Trade Balance (CTB) Index, they show lower comparative advantages, gradually reduced when compared to 1994-1995. It is interesting to observe that the flower and ornamental plant sector is the only one, among the agriculture-related sectors, to be characterised by a favourable performance with improvement of comparative advantage.

4.2. Italy and main commercial partners in the world plant and flower products trade

The *Relative Trade Advantage Index (RTA)* has been calculated in order to locate Italy in the world context and to be therefore aware of its advantage (or disadvantage) in the trade of flowers and ornamental plants. As already mentioned in section 3, RTA index is obtained by a difference between the *Relative Export Advantage Index (RXA)* and the *Relative Import Penetration Index (RMP)*, which expresses the competitive advantage in exports and the imports penetration degree respectively. UNCOMTRADE is the source of data used in the analysis, concerning the 2001-2005 import and export flows.

From the RXA analysis, it seems that the Netherlands present a strong competitive advantage, further grown in the 5-year period under examination (from 12.7 to 14.3). The Netherlands, besides satisfying domestic market demand, produce considerable volumes of flowers and ornamental plants for foreign market, which makes it the world leading country in terms of flower and ornamental plant exports.

The logistics efficiency, especially in terms of road and air infrastructures, is the factor which has more affected the

improvement of the competitive position of the Netherlands at an international level. The widespread diffusion of auction sales, now representing an important model for many other flower-producing countries -particularly for Italy-, has also produced several benefits in terms of competitiveness, as well as the low energy costs, related to a high gas availability, which have direct repercussions on productive level and, consequently, on sales.

Columbia is just behind the Netherlands, with an index value of 13.2 that shows a slight decrease compared to 2001; this country exports around 95% of its domestic production (ISMEA, 2004). The export trade advantage of Columbia depends, in particular, upon remarkable volumes of flowers (approximately 38% of national production value) towards the USA, thanks to subsidized transport rates.

On a world scale, the competitive advantage held by Israel is quite remarkable, and this has also grown over the considered quinquennium (2001-2005), although in 2003 the index was lower due to the value increase of Euro relative to the New Israel Shekel.

Favourable climatic conditions and low labour cost, around 15\$ per day, represent crucial factors for the strengthening of such an advantage: moreover, Israel has adopted backup policy measures in favour of sea transportation in order to cut down distribution costs and to make more competitive local firms.

Ecuador has a remarkable competitive advantage in this sector, strengthened in the course of the considered quinquennium (from 8.8 to 10.1).

Together with Columbia, it shows to be among the main world competitors despite of the fact that they are very disadvantaged because of high transportation costs. In order to compensate for that, these countries have recently adopted a system of sea transportation, by means of containers under controlled atmosphere, which allows them to cut down nearly 80% of transportation costs, if compared with the air one (ISMEA, 2004).

A strong contribution to the trade specialization in Latin American countries is not only given by favourable climatic conditions and low cost labour, but also by enterprises of local governments supporting exporting firms.

Denmark is among the countries with index value higher than one (i.e. with a trade advantage on exports), although its competitive advantage has decreased (from 2.1 to 1.9); it is followed by Italy, which has held its competitive advantage with an index value equal to 1.4, Belgium, which has maintained its competitive position, and Portugal, which has improved its performance in the considered quinquennium.

The remaining countries have values lower than one and they are therefore characterized by a trade disadvantage in

the sector.

As to import penetration, the high index values of Switzerland, Germany, the Netherlands, Austria and Great Britain point out a trade disadvantage in the considered sector.

Switzerland has an index value equal to 3.2, slightly lower than it was in the past.

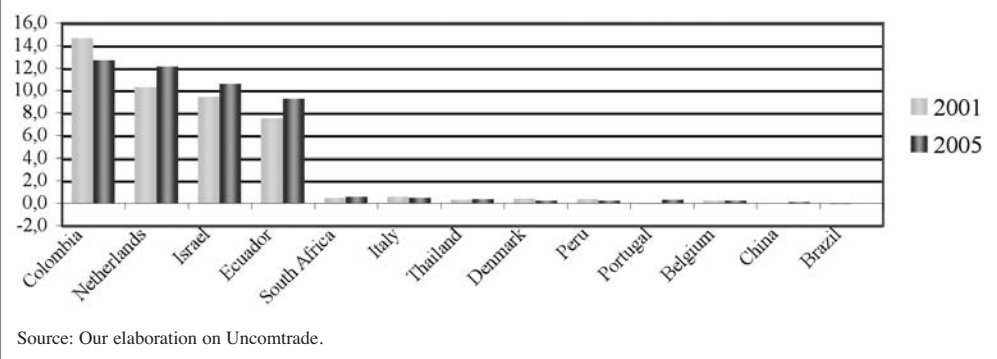
In the analysed five-years period, the disadvantage has remained essentially unchanged in Germany, while it emerges a reduction of the competitive disadvantage in the Netherlands and in Austria. The value is higher than one in several other countries, showing a strong dependence on imports.

Flowers and ornamental plants are imported through auctions and come from either European (Germany, Belgium, France and Spain) or non-European (Brazil, United States and Malaysia) countries.

The *Relative Trade Advantage Index (RTA)*, obtained as the difference between *Relative Export Advantage Index (RXA)* and *Relative Import Penetration Index (RMP)*, assumes particularly high values for Columbia, the Netherlands, Israel and Ecuador that have in fact a net competitive advantage in the world trade of "Living trees and other plants, bulbs, roots and the like, etc." (figures 1 and 2).

The highest index value is recorded for Columbia (12.7),

Figure 1 – Evolution of the Relative Trade Advantage Index in 2001-2005 of the main competitors.



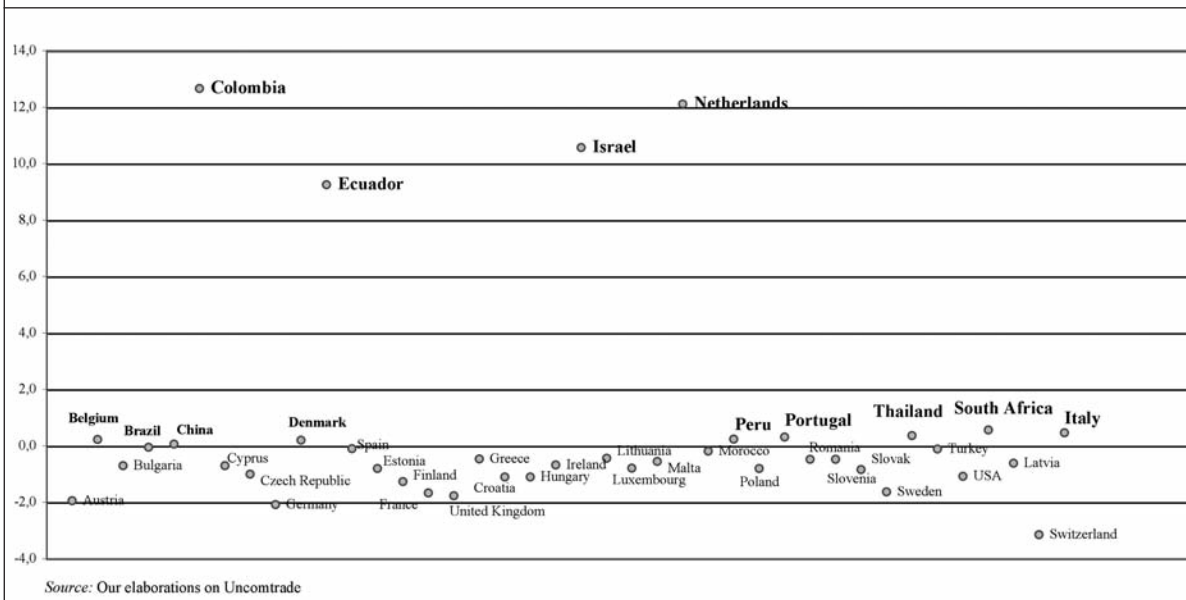
even though it has decreased with respect to 2001 (14.7); the Netherlands has, on the contrary, further strengthened its competitive advantage with an index value that passed from 10.3 to 12.1 in the considered period.

Competitive situations of Israel (10.6) and Ecuador (9.2) are both of great importance; these countries have increased their competitive advantage, together with South Africa, which is specialising in rose high quality production to be destined abroad. As for Italy, it has recorded a slight deterioration of its trade advantage (passed from 0.6 in 2001 to 0.5 in 2005).

In 2005, RTAI was also positive for Thailand, Portugal, Peru, Denmark, China, Brazil and Belgium.

An increase in the competitive advantage was recorded for China, thanks to a growth in exports value; should this trend continue, China could become one of the main com-

Figure 2 – Relative Trade Advantage Index - 2005.



petitors for the future, even if outflows are negatively affected by a product quality which is not much appreciated on foreign markets.

China mainly exports to the Asian neighbouring countries, among which Japan (which absorbs about 26% of Chinese exports), Hong Kong (12%) and Korea (10%) are the most important importers. Currently, due to the low purchasing power, the Chinese market does not nevertheless represent a centre of attraction for flowers and ornamental plants.

Among the Latin American countries, Brazil has improved its competitive position in the international market: in recent years, considerable investments for the cultivation of ornamental plants have been made, positively affecting both domestic production and sales abroad.

4.3. Evolution of Italian trade framework concerning plant and flower sector

4.3.1 Competitive Advantage Analysis of trade between Italy and its main partners

As for the living plant and flower sector, Italy is characterized by a positive balance of trade, with a value of RCA Index that, in 2004-2005, was equal to 5.9%, showing an increase of 8.8% compared to 1994-1995. The positive performance is due to a growth rate of exports that, in the considered period, has turned out to be higher than imports rate: the former have increased of 87.0%, equal to about 564 million euros, in comparison with 56.9% of import increment, 501 million euros in the 2004-2005 period.

With regard to the trade outflows within and out of the EU community, it emerges a net improvement of trade balance, especially as for extra-EU countries; these ones have shown an increase of 27 percentage points, compared to 6.5 percentage points characterizing EU countries. As for the main

trade partners, the RCA Index implies quite different trends. The data analysis regarding the 2004-2005 period shows index values strongly negative with respect to Peru (-100%); apart from being a net importer of flowers and ornamental plants from this Latin American country, Italy has increased its dependence on the products in the considered period. Peru is followed by Thailand with an index value of -99.7%; here, imports have been gradually reduced and compensated for by a slight increase in exports.

Italy appears to be despecialised in the trade relations with South Africa (-98.9%) and Ecuador (-99.4%); with regard to this latter, the unfavourable result is due to a reduction of the exports value (-79%) and to a more moderate decrease of the imports value (-10.6%). Then, there are China (-89.6%), Israel (-84.1%), Brazil (-81.8%) and the Netherlands (-69.2%); with all the above mentioned countries but Ecuador, Italy has nevertheless reduced its trade deficit.

A net improvement is to be noticed especially with Bulgaria, with an index going from -87.4% in 1994-1995 to +76.6% in 2004-2005; during these years, exports have risen no less than 434 times.

As far as Morocco is concerned, an index growth of 123.1 percentage points may be recorded, with a 384 times increase in exports, and a contextual fall-off of the imports value equal to 79.4%.

Deficit reductions have also been recorded towards Colombia, with an index increase of 77.9%, and Czech Republic (+87.7%); Italian exports to the new partner have increased 37 times in the considered period.

Our trade position has also improved towards the United States, with an index going from 18.2% to 82.1%, and Ireland (from 42.1% to 100%). Moreover, positive performances have been recorded with Hungary (+59.1 percentage points), Denmark (+48.3), Romania (+46.2) and Slovakia (+42.1).

Conversely, a deficit growth in the trade relations with Portugal can be noticed, with a loss of 25.5 percentage points, the index going from 94.5% to 69.0%, as a consequence of an about twenty times increment in imports and of a more moderate increase in exports.

Austria records a deficit growth of 12.1 percentage points. A worsening can be also noticed with Germany (-

11.4%), Slovenia (-10.3%) and Greece (-9.1%); less remarkable reductions can be noticed as to Ecuador (-1.8%), Sweden (-1.6%), Malta (-0.7%) and Switzerland (-0.4%).

The analysis of the Contribution to the Trade Balance Index values as for the sector of "Living plants and flowers", with regard to the main trade partners, allows us to identify the countries towards which Italy has either improved its performance or lost some competitive advantages.

The analysis of the value regarding the 2004-2005 biennium shows how the index is negative with respect to Israel (-2.0), Thailand (-1.0) and, more moderately, with respect to Peru (-0.6), South Africa (-0.5) and the Netherlands (-0.3), highlighting a despecialization of Italy in the considered period (table 1).

Conversely, Italy holds comparative advantages in its relations with Turkey (+3.2), Romania and Croatia (+1.8 respectively), Slovakia (+1.6) and Austria (+1.4), so that a positive contribution from this sector to the overall normalised trade balance can be pointed out. As regards the main trade partners, it emerges that Italy has improved its competitive position towards Turkey (+1.9%), but above all towards the new EU partners such as Bulgaria (+1.8%), Romania and Slovakia (+1.6%) and Hungary (+1.2%). Conversely, compared to 1994-1995, Italy has undergone a process of despecialization in its relations with Switzerland (-1.2%), Finland (-0.6%), Germany (-0.3%), Slovakia (-0.3%), Spain (-0.4%) and Malta (-0.1%); with respect to

these countries, the contribution of the flower and ornamental sector to the overall normalised trade balance has gradually decreased in the considered period.

In comparison with imports from the rest of the world, some aspects of remarkable interest as to the Italian competitive position in the sector, can be pointed out from the

analysis of the normalised trade balance of the main Italian partners' exports of flowers and ornamental plants.

The index assumes high values for the Netherlands (19.55), revealing the strong relative specialization of this country in the sector in comparison with the group of countries taken into consideration; in particular, it can be noticed that the relative importance of the country has increased in a tremendous way, if compared to 1994-1995.

The Netherlands is followed by Thailand and Peru, with index values respectively of 4.04 and 3.03, which show a good specialization of these countries in comparison with the remaining world partners; nevertheless, it is possible to notice an involution trend in both countries, with a reduction of the relative specialization which appears more evident for Thailand (-3.9) than for Peru.

Israel and Ecuador appear to be less specialised (respectively 2.5 and 1.2), if compared to the main partners, showing a gradual reduction of the relative specialization over time. As for the

Table 1 – Contribution to the trade Balance Index of the "Living trees and flowers" sector (CTB).

	1994/95	2004/05	Variations (points)
Austria	1.9	1.4	-0.5
Belgium - Luxembourg	-0.4	0.5	0.8
Brazil	0:00	0.0	0.1
Bulgaria	-0.1	1.7	1.8
Czech Republic	-0.1	0.7	0.8
China	0.0	-0.1	0.0
Cyprus	0.1	1.5	1.4
Colombia	0.0	0.4	0.4
Croatia	0.7	1.8	1.2
Denmark	-0.2	0.4	0.6
Ecuador	-0.2	-0.1	0.1
Estonia	0.0	0.6	0.6
Finland	0.9	0.3	-0.6
France	0.8	1.6	0.9
Germany	1.7	1.4	-0.4
Greece	1.1	1.5	0.5
Ireland	0.0	1.6	1.5
Israel	-2.6	-2.0	0.6
Latvia	0.0	0.3	0.3
Lithuania	0.0	0.2	0.2
Malta	0.5	0.4	-0.1
Morocco	0.0	0.9	0.9
Netherlands	-0.7	-0.3	0.4
Peru	-0.4	-0.6	-0.2
Poland	0.1	0.6	0.6
Portugal	0.8	1.4	0.6
United Kingdom	0.8	0.8	0.0
Romania	0.2	1.8	1.6
Slovakia	0.0	1.6	1.5
Slovenia	0.9	0.6	-0.3
Spain	0.5	0.9	0.4
United States Of America	0.0	0.1	0.1
South Africa	0.0	-0.5	-0.5
Sweden	0.8	0.4	-0.4
Switzerland	2.2	1.0	-1.2
Thailand	-1.2	-1.0	0.3
Turkey	1.3	3.2	1.9
Hungary	0.2	1.4	1.2
Extra-EU27	0.2	0.4	0.2
EU27	0.4	0.6	0.1
World	0.4	0.5	0.1

Source: Our elaborations on ISTAT data.

remaining countries, index values are just over one, with different performances varying from country to country (table 2).

Table 2 – *Export Normalised Share of the main commercial partners towards Italy compared to the Italian imports from the rest of the World (S1).*

	1994/95	2004/05
Austria	0.03	0.09
Belgium - Luxembourg	1.34	0.77
Brazil	0.12	0.15
Bulgaria	0.12	0.14
Czech Republic	0.36	0.02
China	0.69	0.58
Cyprus	0.06	0.00
Colombia	2.08	0.22
Croatia	0.19	0.01
Denmark	1.86	0.58
Ecuador	3.61	1.22
Estonia	0.00	0.00
Finland	0.52	0.23
France	0.18	0.24
Germany	0.12	0.19
Greece	0.01	0.11
Ireland	0.01	0.00
Israel	3.44	2.50
Latvia	0.00	0.00
Lithuania	0.02	0.00
Malta	0.00	0.04
Morocco	1.11	0.14
Netherlands	11.50	19.55
Peru	1.56	3.03
Poland	0.03	0.38
Portugal	0.04	0.23
United Kingdom	0.06	0.02
Romania	0.08	0.03
Slovakia	0.04	0.01
Slovenia	0.28	0.24
Spain	0.36	0.40
United States Of America	0.32	0.08
South Africa	0.00	0.72
Sweden	0.00	0.01
Switzerland	0.01	0.04
Thailand	7.94	4.04
Turkey	0.05	0.02
Hungary	0.08	0.08

Source: Our elaborations on ISTAT data.

If the imports from only the 27 EU member states are analysed, then a marked relative specialisation of the Netherlands (21.01) comes out, which has also been

strengthening in comparison with 1994-1995 (+13.8%). It seems that the relative importance of the Netherlands in the framework of flowers and ornamentals imports has decidedly increased over the considered period (table 3). Among the other EU countries, left far behind the Netherlands, it is necessary to mention Belgium and Luxembourg (0.64), Denmark (0.47), Spain (0.32) and Poland (0.31).

The data analysis points out that Italy is gradually improving its relative specialisation, despite the apparent difficulties in the business relations with the Netherlands.

Table 3 – *Export market share of each EU-member state towards Italy compared to the overall Italian import from the EU-area (S2).*

	1994/95	2004/05
Austria	0.02	0.08
Belgium - Luxembourg	1.16	0.64
Bulgaria	0.10	0.12
Czech Republic	0.31	0.01
Cyprus	0.05	0.00
Denmark	1.62	0.47
Estonia	0.00	0.00
Finland	0.46	0.19
France	0.15	0.19
Germany	0.10	0.15
Greece	0.01	0.09
Ireland	0.01	0.00
Latvia	0.00	0.00
Lithuania	0.01	0.00
Malta	0.00	0.03
Netherlands	13.85	21.01
Poland	0.02	0.31
Portugal	0.03	0.19
United Kingdom	0.05	0.02
Romania	0.07	0.03
Slovakia	0.03	0.01
Slovenia	0.24	0.20
Spain	0.31	0.32
Sweden	0.00	0.01
Hungary	0.07	0.07

Source: Our elaborations on ISTAT data.

4.3.2. Product Category Analysis

The evolution of CTB index of the various products included in the “Living trees and flowers” chapter has been analysed referring to 1994-1995 and 2004-2005 periods, aiming at pointing out the changes occurred in the structure of comparative advantages.

The source of data was SH4 ISTAT product classification, which includes five sub-categories within chapter 6 “Living trees and flowers”, the first of which (0600)

² The exact denomination of chapter 6 of the SH4 classification is “Living Trees and Other Plants; Bulbs, Roots and the Like; Cut Flowers and Ornamental Foliage”. The categories which will be analysed in this section

Table 4 – Contribution to the flower and ornamental plant sector trade balance Index relative to the various categories.

	Chapter 06 goods below the assimilation threshold 2004/05	Products relative to sub-chapter 0601		Products relative to sub-chapter 0602		Products relative to sub-chapter 0603		Products relative to sub-chapter 0604	
		1994/95	2004/05	1994/95	2004/05	1994/95	2004/05	1994/95	2004/05
		Austria	1.2	0.0	-0.1	-0.3	1.2	0.7	-0.3
Belgium - Luxembourg	-6.3	-0.9	-0.3	-12.9	-0.1	6.5	1.9	7.3	4.8
Brazil		1.6		0.3	1.8	-0.7	-0.6	-1.2	-1.3
Bulgaria		-0.4	0.2	-4.7	4.5	11.6	0.1	-6.5	-4.8
Czech Republic	-0.9	2.6	0.0	-6.9	0.5	3.4	0.1	1.0	0.3
China			-0.2	0.1	2.3	0.0	-0.3	0.0	-1.7
Cyprus	0.0			3.8	0.0	-4.6		0.8	0.0
Colombia		0.2	10.7	4.2	27.9	-4.4	-40.6	0.0	2.0
Croatia		0.0	0.0	-1.8	0.0	2.8	0.0	-1.0	-0.1
Denmark	-11.1	-0.1	-0.7	-11.5	1.7	4.5	4.9	7.0	5.2
Ecuador			0.0	2.2	0.2	-2.2	-0.2	0.0	0.0
Estonia	0.0				0.0	0.0	0.0	0.0	0.0
Finland	-0.9			0.3	0.2	7.4	0.8	-7.7	-0.1
France	-4.6	-3.7	-0.6	6.1	6.2	-2.6	-1.1	0.2	0.0
Germany	-2.7	-0.4	-0.3	-4.6	-1.4	2.8	1.6	2.2	2.9
Greece	0.5	0.0	0.1	0.1	-1.9	-0.2	1.2	0.1	0.0
Ireland	0.0		0.0	-0.8	0.0	0.6	0.0	0.1	0.0
Israel		-0.2	2.7	2.5	-3.3	-2.8	1.6	0.5	-1.1
Latvia	0.0				0.0		0.0		0.0
Lithuania				-23.9	0.0		0.0	23.9	0.0
Malta	-0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Morocco		0.5	0.1	14.4	1.1	-14.9	-1.0	0.0	-0.1
Netherlands	-3.3	-5.5	-2.3	1.2	4.8	-1.3	-5.7	5.6	6.4
Peru			0.0			0.0	0.0	0.0	0.0
Poland	-0.6		0.1	6.7	-18.9		7.7	-6.7	11.7
Portugal	-2.8	0.0	0.0	3.5	4.5	-3.9	0.0	0.4	-1.6
United Kingdom	-0.2	-1.3	0.0	1.6	0.4	-0.5	-0.2	0.2	0.0
Romania			0.0	-20.9	-0.1	30.7	0.8	-9.8	-0.7
Slovakia	-0.4			-15.4	0.6	15.4	0.0		-0.3
Slovenia	-6.3	0.3	0.1	-1.9	5.9	2.7	1.2	-1.0	-0.9
Spain	-6.8	-2.0	0.0	10.6	8.5	-9.7	-1.7	1.2	0.1
United States Of America		-0.7	-0.7	-36.6	-10.4	11.7	3.8	25.6	7.4
South Africa	17.7	0.0	0.0	0.6	0.0	-0.3	-6.2	-0.3	-11.4
Sweden			0.0	-0.1	0.3	0.1	0.4	0.0	-0.7
Switzerland		0.0	-0.1	-0.1	-0.3	0.1	0.2	0.0	0.1
Thailand	7.7	0.0	0.2	0.0	0.0	0.0	-7.8	0.0	0.0
Turkey	-8.4	0.0	0.0	3.0	8.4	-3.7	0.0	0.7	0.0
Hungary	-4.0	1.0	0.0	13.1	3.4	-8.1	0.3	-5.9	0.3
World	-6.0	-9.9	-3.1	0.2	13.7	0.2	-10.3	9.5	5.8

Source: Our elaborations on ISTAT data.

refers to goods flows below the assimilation threshold (table 4).

The analysis shows that just categories 0602 and 0604 contribute to the balance more than proportionally to their weight on the overall flowers and ornamental plants exchanges. This situation indicates a comparative advantage and therefore the international specialisation of Italy.

Here we will analyse more in detail the changes in the structure of comparative advantages as to the sub-categories of the aggregate "Living plants and flowers" with regard to the main commercial partners of Italy.

As for the 0601 class, in 2004-2005, Italy on a whole shows a trade despecialization (-3.1) which, nevertheless, has been mitigated in the course of the period under investigation, since in 1994-1995 the index value was equal to -9.9.

are the following: 0601 "Bulbs, tubers, tuberous roots, corms, crowns and rhizomes, dormant, in growth or in flower, chicory plants and roots (excluded bulbs, tubers and tuberous roots used for human consumption and chicory roots of the variety *Cichorium intybus sativum*)"; 0602 "Live plants included their roots, cuttings and slips; mushroom spawn (excluded bulbs, tubers, tuberous roots, corms, crown and rhizomes, and chicory plants and roots)"; class 0603 "Cut flowers and flower buds of a kind suitable for bouquets or for ornamental purposes, fresh, dried, dyed, bleached, impregnated or otherwise prepared"; 0604 "Foliage, branches and other parts of plants, without flowers or flower buds, and grasses, masses and lichen, of a kind suitable for bouquet or for ornamental purposes, fresh, dried, dyed, bleached, impregnated or otherwise prepared".

From the analysis carried out on each partner, we can notice that Italy is markedly specialised towards Columbia (10.7) and Israel (2.7), whose indexes have been rising over the period under examination.

In the trade relations with the Netherlands, Italy has positively performed: in comparison with the 1994-1995 period, the contribution to the balance, even though negative, has highlighted a clear improvement with a recovery of the comparative advantage. This dynamics has been also observed in the commercial relations with France and Spain.

As to the category 0602, Italy turns out to be quite specialised, having a high comparative advantage that has risen in the period under examination.

From the analysis of CTBI values by individual country, some interesting elements are to be pointed out about the

variations of the Italian competitive position. The highest index value is the one which refers to Columbia (27.9), but also Turkey (8.4) and France (6.2) are characterised by positive values.

Conversely, Italy shows a comparative disadvantage towards Poland (-18.9), Israel (-3.3) and USA (-0.4). It is maybe more useful to analyse the evolution of the structure of comparative advantages during the period of interest, by comparing the two biennia, 1994-1995 and 2004-2005, with respect to the main business partners.

Italy has increased its comparative advantage towards USA (+26.2 in the comparison with 1994-1995), Lithuania (+23.9), Columbia (+23.7), Romania (+20.9) and Slovakia (+15.9).

On the other hand, comparative advantage has decreased in the trade relations with Poland (-25.6), Morocco (-13.4), Hungary (-9.6), Israel (-5.8) and, to a lesser extent, with other countries.

As to class 0603, Italy appears to be despecialised and its competitive advantage has dropped in time, passing from +0.2 in 1994-1995 to -10.5 in 2004-2005.

The analysis of the 2004-2005 data shows a despecialization of our country in the trade relations with Columbia (-40.6), Thailand (-7.8), South Africa (-6.2) and the Netherlands (-5.7).

From the comparison between the two biennia under analysis, it emerges that Italy has heavily worsened its com-

parative advantage with Columbia (-36.2), Romania (-29.9), Slovakia (-15.3) and Bulgaria (-11.5).

On the other hand, Italy has improved its competitive position towards Morocco (+13.9), Hungary (+8.4), Spain (+8.0) and, more slightly, towards other countries.

Finally, with regard to class 0604, Italy has a general comparative advantage and, therefore, a contribution which is more than proportional to the weight of the overall trade exchanges of flowers and ornamental plants.

More in detail, from the analysis on commercial partners, it turns out that Italy has a comparative advantage with Poland (+11.7), the Netherlands (+6.4) and the United States (+7.4), whereas it is strongly despecialised in trade relations with South Africa (-11.4) and Bulgaria (-4.8).

The comparison of the indices across time (1994-1995/2004-2005) shows a loss of trade specialisation for Italy with Lithuania (-23.9), the United States (-18.2) and South Africa (-11.4); Italy has quite positively performed in the trade relations with Poland (+18.4), Romania (+9.1), Hungary (+6.3) and, to a lesser extent, with other countries.

5. Conclusions

The Italian flowers and ornamental plants sector has so improved in the last few years that it can be considered as one of the few countries, within the primary sector, with a positive trade balance, even showing a remarkable dynamism that made it one of the most important sectors of the Italian agricultural economy.

At an international level, Italy is quite important, although less important than other traditional producers and exporters, like the Netherlands and Latin American countries, such as Columbia and Ecuador, and Israel, that have kept, and sometimes strengthened, their *leadership*. Furthermore, over the last five years, Italy has lost part of its trade advantage, due to the entrance of new countries in the world flower and ornamental plant market with extremely competitive products (China, Eastern Middle European countries, etc.). The international competitiveness of the sector has been enlarged by the process of market globalisation, with a proliferation of Free Trade Areas and Customs Unions in the last few years. The EU itself has signed several agreements, either bilateral and multilateral, with Third Countries, in many cases exempting them from the payment of duties on flowers and ornamental products; this fact has obviously favoured the competition with EU production which has to face products from countries having competitive advantages, natural and not.

The empirical analysis of the Italian competitiveness in the sector of flowers and ornamentals shows, in the comparison between 1994-1995 and 2004-2005, a marked improvement of the Italian competitive advantage due to a higher growth rate of exports in comparison to the one which has characterised imports. In particular, from the B-SC index it turns out that our country has enlarged its advantage towards Middle-East European countries and Turkey, on the one hand, and has maintained its despecial-

ization towards Israel, Thailand, Peru, South Africa and The Netherlands, on the other hand, which represent significant supplying market of flowers and ornamental plants for Italy.

At EU level, the analysis of Italian trade specialisation and competitive position, carried out through the calculation of the normalised market shares of flowers and ornamental plants exports by the main Italian partners, compared to the Italian imports from the rest of the world and from the EU partners, shows the prominent position of the Netherlands on other partners, both EU and non-EU members. This country is strongly specialised in the flower and ornamental sector: the incidence of Italian imports from this country is far higher than the weight relative to the imports coming from other partners and, furthermore, it has still been growing over the last few years. Within EU, the Netherlands actually represents an important transit market for flower and ornamental productions coming from the third countries which, thanks to the benefits deriving from favourable climatic conditions and to normative benefits, are gaining more and more considerable shares in the EU market. Thailand, Peru, Ecuador and Israel deserve as well a positive consideration, although their trade specialisation has gradually decreased in the considered period.

The Italian imports of flowers and ornamental plants from Third Countries or from other EU partners induce to foresee real opportunities of development for the sector, which currently resorts to considerable quantities of products from abroad in order to satisfy the domestic demand.

It is therefore essential that strategies aimed at increasing international and EU competitiveness of Italy for flowers and ornamental plants will be more and more oriented towards production quality, supply diversification, technological advance and a more efficient logistics management, that become key factors for increasing the chances of Italian firms to gain more significant market shares.

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References

- Calzoni G., Bacchettini V., 2005. Il concetto di competitività tra approccio classico e teorie evolutive. Caratteristiche e aspetti della sua determinazione, *Quaderni del Dipartimento di Economia, Finanza e Statistica*, 1, gennaio, Università degli Studi di Perugia, Perugia.
- Camanzi L., Malorgio G. and Regazzi D., 2003. Agri-food Turkish trade: structure, competitiveness and relations with the EU, *New Medit*, n.2/2003.
- Commissione Europea, Direzione Generale per l'Agricoltura e lo Sviluppo Rurale (2006). *The Commission staff on the situation of the flowers and ornamental plants sector*.

- Cosmina M., Marangon F., Prestamburgo S. and Segrè A., 2000. *Il settore agricolo del Friuli-Venezia Giulia - Analisi della competitività del settore agricolo dei PECECO*, ISDEE, Trieste.
- Dell'Aquila C. and Velazquez B.E., 2004. Euro-Med Agreements and Mediterranean Agri-food Trade, *New Medit*, n.1/2004.
- Dosi G., Pavitt K. and Soete L., 1990. *The Economics of Technical Change and International Trade*, Harvester Wheatsheaf, London.
- Fertő I. and Hubbard L.J., 2003. Revealed Comparative Advantage and Competitiveness in Hungarian Agri-Food Sectors, *The World Economy*, 26(2), 247-259.
- Gandolfo G. (2002). *Elementi di Economia Internazionale*, UTET, Torino.
- Grossman G. and Helpman E., 1993. *Innovation and Growth in the Global Economy*, MIT Press, Cambridge, Mass.
- Grossman G.M. and Helpman E., 1991. *Innovation and Growth in the Global Economy*. MIT Press, Cambridge, Mass.
- Grossman G.M. and Helpman E., 2002. Integration Versus Outsourcing in Industry Equilibrium, *Quarterly Journal of Economics*, 117, 85-119.
- Havrila I. and Gunawardana P.J., 2003. Analysing Comparative Advantage and Competitiveness: an Application to Australia's Textile and Clothing Industries, *Australian Economic Papers*, 42 (1), March, pp. 103-117.
- Heckscher E.F., 1919. *The Effect of Foreign Trade on the Distribution of Income*, in Ellis H.S. and Metzler A., *Readings in the Theory of International Trade*, Philadelphia, Blackiston.
- ISMEA (2004). *Filiera Fiori e Piante*.
- ISMEA (2005). *Fiori e piante in vaso*, Report economico-finanziario.
- ISMEA (2006), *Filiera fiori e piante in vaso*, in Rapporto annuale 2006 – Vol. I, Evoluzione del sistema agro-alimentare italiano, parte II, cap. 9.
- Krugman P.A. and Helpman E., 1987. *Market Structure and Foreign Trade: Increasing Returns, Imperfect Competition and the International Economy*, MIT Press, Cambridge, Mass.
- Krugman P.R. and Obstfeld M., 2003. *Economia Internazionale I – Teoria e politica del commercio internazionale*, Hoepli, Milano.
- Lafay J. (1992). *The measurement of revealed comparative advantages*, in Dogenoi M.G. and Muet P.A. (eds.), *“International Trade Modelling”*, pp. 209-234, Chapman & Hall, London, UK.
- Lucas, R.E., 1988. “On the Mechanics of Economic Development”, *Journal of Monetary Economics*, vol. 22, pp 3-42.
- Ministero delle Politiche Agricole e Forestali, 2005. *Piano specifico d'intervento per il settore florovivaistico*.
- Ohlin B., 1933. *Interregional and International trade*, Cambridge (Mass.), Harvard University Press.
- Porter M.E., 1990. *The Competitive Advantage of the Nations*, Free Press, New York.
- Ricardo D., 1817. *Principles of Political Economy and Taxation*.
- Schumpeter J.A., 1982. *L'essenza e i principi dell'economia teorica*, Laterza, Roma- Bari.
- Schumpeter J.A., 1977. *Teoria dello sviluppo economico*, Sansoni, Firenze.
- Scoppola M., 2003. *Il commercio internazionale dei prodotti agro-alimentari: la posizione e le prospettive dell'Italia in un'Europa allargata*, in Atti del XL Convegno SI-DEA “La liberalizzazione degli scambi dei prodotti agricoli tra conflitti e accordi: il ruolo dell'Italia”, Padova, 18-20 settembre 2003, pp. 141-196, Franco Angeli, Milano.
- Smith A., 1904. *An Inquiry into the Nature and Causes of the Wealth of Nations*, London: Methuen and Co., Ltd., ed. Edwin Cannan. Fifth edition.
- Utkulu U. and Seymen D., 2004. *Revealed Comparative Advantage and Competitiveness: Evidence for Turkey vis-à-vis the EU/15*, European Trade Study Group, 6th Annual Conference, ETSG 2004, Nottingham, September 2004.
- Vollrath T.L., 1991. A Theoretical Evaluation of Alternative Trade Intensity Measures of Revealed Comparative Advantage, *Weltwirtschaftliches Archiv*, 130, 265-279.
- Young A., 1991. "Learning by Doing and the Dynamic Effects of International Trade", *Quarterly Journal of Economics*, pp. 369-405.