Determinants of Italian agri-food exports in non-EU Mediterranean Partner Countries: an empirical investigation through a gravity model approach[1]

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1. Introduction

The Mediterranean Sea is considered as being one of the most important ocean areas in the world; in fact, as everyone knows, some of the richest civilizations mankind has ever known sprung from its shores (Abbadi, 1984). This area, situated at the crossroads of three continents, Europe, Asia and Africa, has always been of great strategic interest for many geo-economical powers. The EU in particular, has made the Mediterranean Sea one of the main protagonists of its foreign policy, not only because of its physical proximity to the countries which border it, but also on account of trade and colonial bonds that some EU countries still have with their old colonies (LaForce, 2011). Since the signing of the Rome Treaty in 1957, the EU has maintained and strengthened a variety of special relationships with several Mediterranean countries, firstly through the Yaoundé Conventions (1963-75), then through the Lomé Convention (1975) and subsequently within the framework of specific political and economic relationships which have characterized the past forty years. In this complex political back-

Abstract

The aim of this paper is to lay emphasis on the main factors (economic, historical, structural, etc.) that affect Italian agri-food exports in the non-EU Mediterranean Partner Countries (MPCs). The authors estimate a gravity equation including some of the main variables found in the reference literature useful to highlight the main factors which influence the bilateral exchanges. The results show that the variables traditionally included in the gravity equation present the expected sign. In particular, Italian agri-food exports towards its neighbouring Mediterranean countries are positively affected by income of partner countries, colonial and historical ties, geographical proximity and the lack of importance of the agricultural sector in some partner countries.

***Key words:** Euro-Mediterranean partnership, Italy, Agri-food exports.*

Résumé

L'objectif de cette étude est de passer en revue les déterminants (économiques, historiques, structurels, etc..) des exportations italiennes de produits agroalimentaires dans les Pays partenaires méditerranéens (PPM) non-membres de l'UE. A cette fin, les auteurs vont évaluer une équation gravitaire qui comprend un certain nombre de variables repérées dans la littérature, capables d'expliquer les principaux facteurs qui peuvent influer sur les échanges entre Pays. Les résultats indiquent que les variables traditionnellement retenues dans l'équation présentent le signe attendu. En particulier, les exportations agro-alimentaires de l'Italie vers les PPM ont une corrélation positive avec le revenu du Pays de destination, les liens coloniaux ou historiques, la proximité géographique et le développement limité du secteur agricole dans certains Pays partenaires.

Mots-clés: Partenariat euro-méditerranéen, Italie, Exportations agroalimentaires.

ground, sometimes contradictory and often far from the strategic interests of this important geo-political area, agricultural issues have always represented one of the most interesting themes within the bilateral relationships between the EU and the non-EU Mediterranean partner countries. As suggested by Dell'Aquila and Velazquez (2004) the reasons for the importance of the agricultural sector are related, on the one hand, to the significant role of the agri-food sector in the economic structure of a lot of countries which overlook the Mediterranean Sea (Hervieu, 2006), and, on the other hand, to the weight of the agri-food production in the exchange between the two shores of

the Mediterranean. The latter aspect in part justifies the strong trade protection structures both parties have adopted, whereby barrier prices have been imposed on a number of agricultural goods. Bessaud and Petit (2009) maintain that, as regards the agricultural sector, there are significant differences between the North African countries and the EU Mediterranean countries in terms of the share of gross domestic products, working population employed in the main sector, and infrastructure.

In this scenario, the role of Italy is strategic both because it is located in the heart of the Mediterranean and because it produces, together with other Mediterranean countries, some agricultural and food productions, such as olive oil, citrus fruits, wine and other fruits and vegetables that represent typical Mediterranean products. However, Italy shows a structural deficit and a trade de-specialization in the global agri-food sector. This is also true for the southern

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and eastern Mediterranean countries in spite of the fact that they benefit from a comparative advantage as a result, in particular, of the climate and low-cost manpower (Mulazzani and Malorgio, 2009). This trade de-specialization is more marked for primary products than for processed products. In fact, for this latter, over the last few years, Italy has consolidated its position in the global agri-food markets thanks to the Made-in-Italy products, today widely recognized and appreciated abroad (Ismea, 2012; Antimiani and Henke, 2007).

The aim of this paper is to lay emphasis on the main factors (economic, historical, structural, etc.) that affect Italian agri-food exports in the non-EU Mediterranean Partner Countries (MPCs) through a gravity model approach which, even if simple enough in its formulation, is particularly effective in the analysis of international trade.

In the economic literature there is a high number of empirical approaches which have used the gravity model to explain the determinants of bilateral trade and the impact of free trade agreements on the Euro-Mediterranean region. On the one hand the results show an increase in EU exports towards Mediterranean partners after the Association Agreements became effective, while on the other hand, the exports effected by the Mediterranean partners showed less significant results after the implementation of said Agreements, which, sometimes were even negative. This highlights a profound asymmetry in the exchanges and a low differentiation of the exported products on the part of the Mediterranean partners towards EU countries (Hagemejer and Ciselik, 2009; Ruiz and Villarubia, 2007; Bensassi et al., 2010). Through the formulation of a gravity model, Ferragina et al. (2004) estimated the volume of trade produced following trade liberalization after the signing of the agreements in 1995; they also predicted a further increase in trade integration, thus indicating the existence of a non-exploited trade potential between EU countries and their Mediterranean partners. Furthermore, the gravity model was used to provide a quantitative assessment of the Euro-Mediterranean partnership and to evaluate the influence of said partnership on the ASEAN countries' new regional policy (Peridy, 2005). With specific reference to the agri-food sector, this approach has been widely used to: analyse the influence of Association Agreements on the fruit and vegetable trades between southern Mediterranean countries and the European Union (Castellini and Pisano, 2009; Emlinger et al., 2008; García-Álvarez-Coque and Martí Selva, 2006); to examine the impact of Turkey's possible integration into the European Union on the country's agricultural exports (Atici et al., 2011), and to quantify the effects of trade liberalization between Morocco and the European countries (Idir, 2004).

This paper has been organised as follows. In the second section we present a brief analysis of the structural and normative aspects of the agri-food trade between Italy and MPCs. The third section shows the foundations of the gravity model and the model specification. The results of the analysis are presented and discussed in chapter four. This paper ends with some closing remarks in section five.

2. Normative and structural aspects of agri-food trade

Italy's relationship with the MPCs is based on the Euro-Mediterranean Association Agreements of the Barcelona Declaration[2] (Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Occupied Palestinian Territories, Syria and Tunisia) and the Stabilisation and Association Agreements with the western Balkans, potential EU candidates[3] (Albania, Bosnia Herzegovina, Croatia, Montenegro and Turkey). These bilateral agreements, negotiated from 1995 onwards, have a double goal. On the one hand, they pursue the ambitious aim of fostering greater collaboration in political, economic, social and cultural fields, also through the creation of a Free Trade Area (FTA). On the other hand, these agreements bring the Balkan countries, characterized by strong heterogeneity linked not only to the countries themselves but also to the kind of product exchanged, closer to the EU with a view to their future accession. Concerning the agri-food trade, the EU countries and their partners have built a well-structured protection system that provides reciprocal trade concessions. For the Southern Mediterranean countries this preferential treatment consists of applying ad valorem and specific duties only on some typical productions such as fruit and vegetables, durum wheat and meat (Garcìa-Alvarez-Coque, 2002). The amount of these duties depends on import prices, which are based on an entry price system used for fresh fruits and vegetables. In the association agreements, depending on the product, the total removal of customs tariffs were negotiated, as was the elimination of the ad valorem duty for those products to which a system of entry prices is applied. These tariff concessions are, moreover, subject to a number of seasonal constraints of a quantitative nature, that make EU agricultural preferences very similar to those that characterized the agreements of the 70s (Dell'Aquila, 2005). In the southern countries, the protection level towards agri-food imports from EU countries continues to maintain high levels, especially in Egypt, Jordan, Syria and Morocco (Crescimanno et al., 2013). In addition, there are non-tariff barriers which reach

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[2] Within the Euro-Mediterranean partnership, signed in Barcelona in November 1995, the EU signed Association Agreements of a bilateral nature with all the Mediterranean partners. The first agreement that came into effect was that between the Palestinian Regions (1997) followed by Tunisia (1998), Israel (2000), Jordan (2002), Egypt (2004), Algeria (2005), Lebanon (2006). The Agreement with Syria, signed in 2004, is still to come into effect.

[3] Within the Balkan region, the first Stabilization and Association Agreement which came into effect is the one signed with Croatia (2001), followed by that with Albania (2009) and Montenegro (2010). Turkey, one of the candidates to join EU, is linked to the latter by a customs union.

40% of the ad valorem equivalent, which, when added to the standard tariff protection, provide a level of protection that achieves, in some cases, even 60% (Galal e Reiffers, 2010).

On the other hand, the agreements signed with the potential candidates of the European Union provide reciprocal trade concessions (which do not, however, take into consideration all the agri-food products) that encompass from the total removal of customs duties and measures having equivalent effects, to the removal of only the ad valorem duty, as in the case of EU fruits and vegetables, and to the reduction of the duty either within tariff quotas or according to a specific calendar.

The analysis of the bilateral trade between Italy and MPCs from 1996 to 2010 shows a positive trend both as regards total trade and agri-food trade. In particular, the Italian agri-food trade absorbs on average 5.2% of the total exchanges with the MPCs (3.2 % of exports and 7.8 % of imports). This weight is important, especially in the relationships between Italy with Morocco (10.2%), Albania (9.2%), Tunisia (7.5%) and Croatia (7.1%). From the analysis of the agri-food trade data it can be seen that there is a deficit in the Italian trade balance with the MPCs which reaches a value of $ 474.9 billion in 2010 and a negative normalized balance (-17.7%). In more detail, Italian exports towards the Mediterranean partners register an average annual increase in the reference period of 5.0%, reaching a value of $ 1,104.6 million in 2010. However, the growth rate of imports (7.2%), which reached a value about $ 1,579.5 million (Figure 1),was more lively. In particular, the analysis shows a clear asymmetry in the exchanges. In fact, on average Italy exports 3.0% of its total agri-food export value to the MPCs, whereas the products imported by these countries represented about 3.7% of Italian imports calculated on a world-wide basis. On the contrary, Italy, for the MPCs, represents a privileged partner, absorbing more than 8.5% of their total agri-food exports; in particular, it represents an important end market for Albania's agri-food products (35.2% of the total agri-food exports end up on the Italian market) and for Tunisia (33.3%), although we can't overlook the importance of Italy as an end market for Croatia (10.3%), Egypt (8.8%), Morocco (7.2%) and Turkey (6.1%).

The results of the analysis show a clear delimitation of the reference markets towards Italy, both as regards supply and sale of agri-food products. More specifically, Italy exports its agri-food products mainly to the Balkan markets, and to Croatia (24.5%), Turkey (11.8%) and Albania (11.4%) in particular, and to Turkey (32.7%), Tunisia (25.0%) and Morocco (13.7%).

3. Materials and methods

The gravity model has been used extensively over the past 50 years in the analysis of bilateral trade between home and partner countries to explain the determinants, the potential and the direction of bilateral flows, and to explain and predict the effects of free trade agreements on trade flows in various sectors, including agri-food.

Tinbergen (1962) and Pöyhönen (1963) were the first authors to apply the gravity equation to analyse bilateral trade between two countries. Previously, this model had been used by other authors to analyse migration (Somermeyer, 1961), and telephone and airline traffic between cities (Hammer and Ikle, 1957).

Gravity models have been criticized a lot for the absence of strong theoretical foundations and many studies have tried, over the past few years, to bridge this gap. The first explanation was developed by Linnemann (1966); he asserts that the gravity model is the reduced form of a four-equation partial equilibrium model in which the trade flow between two countries is a function of export supply and import demand. Anderson (1979) used a linear expenditure system, wherein he assumed that preferences for a country's products are homothetic and uniform; he further assumed that the products are differentiated by origin of production. Bergstrand (1985, 1989), starting

Figure 1 - *Dynamic of agrifood trade between Italy and MPCs (*Source: Our calculation on UN Comtrade data).
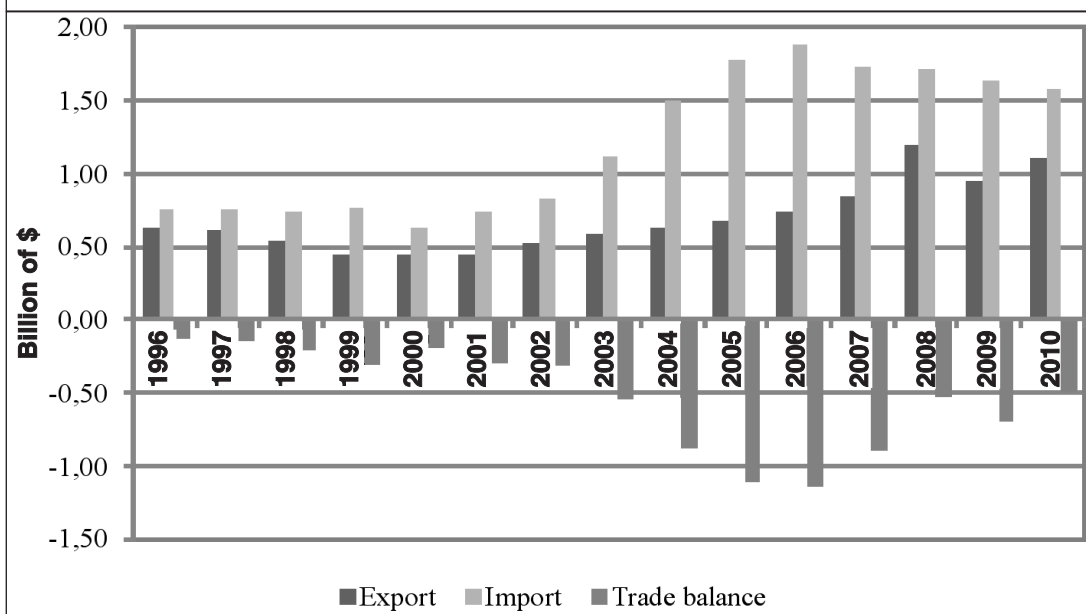
from Hecksher-Ohlin's theoretical model (H-O), deduced an equation of bilateral exchange flows as a function of national income, per capita income and distance. At a later stage Deardoff (1998) discovered how to derive the gravity model starting from the H-O model. In fact, for the author himself, the classic model of international trade reproduces gravity principles and leads to the same results as the monopolistic competition models, in which each country specializes in certain varieties of the product thus becoming the only exporter. An important issue in estimating gravity equations is namely the selection bias that occurs when a subset of the data, for example zero trade flows, is systematically excluded; this influences the statistical significance of test results and produces biased findings (Haq et al., 2013).

A large number of empirical applications, which can be found in the literature of international trade, have contributed to the refinement of the explanation of the variables considered in the analysis and to the addition of new variables (Martines-Zaroso, 2003). The first gravity models didn't include the distance between the trade determinants so that they couldn't really be defined as gravitational models. Only later did Bergstrand (1985) introduce the role of transport costs as a proxy of distance. The integration of distance into the equation was justified in some works, among which Lipsey's and Weiss's (1974), which demonstrated that distance is positively associated with the levels of transport costs, but with more unexplained variations than one would expect (Frankel, 1997). At a later stage, Kalirajan (1997, 2010) argued that all costs affecting trade resistance can be grouped into various categories: natural transport costs, behind the border costs, explicit beyond the border costs and implicit beyond the border costs. Later still new variables were introduced into the gravity equations, such as price and exchange rate, because: they had plausible and significant effects on aggregate trade flows (Bergstrand, 1985, 1989); there were cultural and historical factors involved (Fontagné et al., 1998); they were part of an agreement both as dummy variables and as explicit measures of customs and non-tariff barrier rights (Emlinger et al., 2008; Fontagné and Péridy, 1995; Frankel and Wei, 1993); they were infrastructure variables and public capital stock (Bougheas et al., 1999).

In its basic formulation, the gravity model applied to bilateral exchanges between two countries is an empirical relationship based, as said before, on Newton's Law of Universal Gravitation, in which the attraction strengths correspond to the income of the two countries, whereas the repulsion strengths correspond to the geographical distance which separates the two countries. This relation is expressed as follows:

$$T_{ij} = A \frac{Y_j Y_i}{D_{ij}} \qquad [1]$$

where, T_{ij} is the value of the trade flows between countries i and j; Y_j and Y_i are the national incomes; D_{ij} is a measure of the distance[4] between them and A is a gravitational constant and depends on the measure unit of the other parameters.

Using the log linear form it is possible to transform equation 1 into the following formula:

$$\ln T_{ij} = A + \alpha \ln Y_j + \beta \ln Y_i - \theta \ln D_{ij} + \varepsilon_{ij} \qquad [2]$$

We included error term by using the Ordinary Least Squares (OLS) model. The above given model ([2]) combines the Hecksher-Ohlin (H-O) Theorem on comparative advantage and the theory started by Helpman and Krugman (1985). The first explains trade between two countries based on the differences in resources and shows that the larger the difference between two countries the higher the level of trade. The Helpman and Krugman (1985) theory links bilateral trade to the countries' political situations, thus drawing a relationship between the monopolistic competition model and the gravity model; this theory was validated later by Helpman (1987) through a gravity equation, and also, more recently, by theoretical developments regarding trade costs (Anderson and van Wincoop, 2003, 2004).

The present study examines, through a gravity model approach, the main factors affecting Italian agri-food exports to non-EU Mediterranean Partner Countries (MPCs). Therefore, on the basis of the objectives of this paper, we have developed the following hypotheses:

H_1. Geographical distance is still a barrier to trade, despite technological developments;

H_2. Association agreements have a positive influence on the growth of Italian exports to MPCs.

H_3. Economic size is positively associated with Italy's propensity to export.

H_4. Cultural and historical ties affect trade relations positively.

H_5. MPC's agricultural specialization is negatively associated with Italy's agri-food exports to said countries.

To answer the purpose of this research a gravity model has been estimated which includes some of the main variables found in the reference literature, which have been used to identify the main factors thought to be able to influence the level of the bilateral exchanges in a significant way. The estimated gravity equation is specified as:

$$\ln EXP_{ij} = \beta_0 + \beta_1 \ln GDP_j + \beta_2 \ln D_{ij} + \beta_3 \ln ISA_j + \beta_4 \ln Area + \beta_5 \ln AA_{ij} + \beta_6 \ln His_{ij} + \varepsilon_{ij} \qquad [3]$$

The dependent variable is represented by Italy's agri-food exports to MPCs (EXP_{ij}). The explicative variables take into account the standard variables of the gravity model, -i.e. the economic variables linked to the country's economic

size, such as the Gross Domestic Products of countries j (GDP$_j$)-, and the cost of the flows themselves -e.g. the distance between countries i and j (D$_{ij}$)-. Finally, ε_{ij} is normally the distributed error component which captures any random influence. Other explicative variables, such as the incidence of the agricultural surface on the territorial land of countries j (ISA$_j$), the presence of Association Agreements between countries i and j (AA$_{ij}$), and the variable which represents the presence of colonial links (His$_{ij}$), have been inserted in the proposed model. The last two variables are expressed in dummies and are equal to 1 if there are trade agreements or colonial links between the two countries, or, otherwise, 0. Finally the variable "Area" has been introduced, in which case the partner country is in the Maghreb Region (Algeria, Morocco or Tunisia), Machrek Region (Egypt, Jordan, Lebanon or Syria) or Balkan countries and Near East (Albania, Croatia, Serbia and Montenegro, Turkey and Israel).

As regards the variable which expresses income, there are two different formulations in the literature. The first formulation uses the country's total GDP, and causes a dimension effect[5], while the second, which uses the per capita GDP, causes an income effect. In Linder's hypothesis (1961), the latter variable can either have a negative or a positive coefficient. It will have a negative coefficient depending on which countries, with different per capita income levels, have similar preferences (which differ however according to the typology of product), whereas it will have a positive coefficient, in accordance with the H-O hypothesis, depending on which countries, with different per capita income levels, deal with countries with similar per capita income levels. Even though the two formulations are equivalent (Castellini and Pisano, 2009), in this paper we have decided to consider the GDP as a whole. In fact, the per capita GDP is usually chosen to estimate bilateral exports for specific products, while total GDP is often used when estimating aggregated exports (Martinez-Zarzoso, Nowak-Lehmann, 2002). In particular, we have chosen to refer to the values expressed in the equality of spending power, as this form is the one that is generally favoured (Frankel, 1997; Boisso and Ferrandino, 1993, 1996) when depurating the GDP value from the exchange rate of the currencies taken into account.

The colonial variable has been inserted in the model to verify whether or not cultural and historical bonds

can still influence the exchange structure; in this case we expect to obtain a positive coefficient. Furthermore, a positive variable coefficient is expected when an Association Agreement and/or an Association and Stabilization Agreement between the two parts is present, given that these latter were signed to intensify the exchanges and to favour Euro-Mediterranean integration.

The variable related to the agricultural specialization of the partner country, expressed as a percent ratio between agricultural area and total territory, was inserted to verify its relationship to exportation flows. The first hypothesis is that countries in which agriculture has only a modest weight use imports to satisfy domestic demand; therefore a negative coefficient is expected.

Finally, the distance expressed in miles between the capitals of the considered countries should relate negatively to the dimension of the agri-food flows, as Lipsey and Weiss demonstrated (1974). In fact, the distance between two countries is positively related to the level of transport costs and influences the capacity to create personal contacts and other forms of communication which, in turn, influence trade.

The gravity equation is referred to 11 Mediterranean countries (Albania, Algeria, Croatia, Egypt, Israel, Lebanon, Morocco, Serbia and Montenegro, Syria, Tunisia and Turkey). As regards the origin of the data necessary to implement the model, the bilateral trade data was obtained from the United Nation Commodity Trade Statistics (UNComtrade) database, for the 24 product groups pertaining to the agricultural and food sector (two-digit classification of harmonized system). The distance expressed in miles between the capitals was obtained from the City distance Tool (www.geobytes.com). The data concerning the GDP of the partner countries were extracted from the World Bank data, while the ones concerning agricultural areas and the total surface are FAOSTAT data. The reference period is 1996-2010.

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[5] The bigger the countries, the more goods and services they produce and put on the market, but at the same time they produce more income from the sale of these goods and services and so, their inhabitants are able to import more.

Table 1 - *OLS Results for the Gravity equation.*

	β	Standard error	Significance level
Constant	11,420	2,051	0,000***
GDP importing countries (GDPj)	0,401	0,079	0,000***
ISA partner countries (ISAj)	-0,164	β 0,072	0,023***
Distance (Dist)	-0,495	0,080	0,000***
Association Agreement (AA)	-0,023	0,140	0,867
Area	0,808	0,282	0,005***
Colonial link (His)	0,201	0,074	0,007***
Adjusted R square 0,628. F-Test = 17,179***			
*** indicate that the estimated coefficients are statistically significant at 1 percent. Reference period: 1996-2010.			

4. Results and discussion

The results of the estimation of the gravity equation, carried out using the SPSS software, obtained through Ordinary Least Square (OLS), are presented in Table 1. As can be seen, the model has got a relatively low explanatory power with an R^2 of 0.628, i.e. 62.8%; this variation in export is explained by our selected specification of the gravity model. The results of the model show that most of the coefficients of the basic gravity equation are statistically significant at levels of less than 1% and have, in most cases, the expected signs.

The coefficient of the economic dimension variable of the country is positive and statistically significant with a value of 0.401; this shows that the trade flows are positively influenced by the variable associated with economic size. Moreover, this result confirms, as other authors previously highlighted, that bigger economic dimensions of the partner countries can lead to a wider opening to imports (Canavari et al., 2007). This is especially true for Italy whose exports to foreign markets and also to neighbouring Mediterranean partners are prevalently made up of high value-added processed products (e.g. Made in Italy products).

Italian exports towards the MPCs are positively affected by the fact that Italy belongs to a specific geographic area, identified by the "Area" variable and Colonial link. As regards the first variable, its coefficient is statistically significant and its sign is positive, highlighting that Italian agri-food exports are increasing, starting from southern Mediterranean areas to the Balkans. This further highlights that Italy has a modest ability to integrate with the Maghreb and Machrek markets. This can be justified both by the effect of the protection system that is less restrictive towards agri-food productions between the EU and potential European Community candidates, and also by the following: its geographical and cultural nearness to the countries themselves (e.g. Croatia); historical links (with Albania for instance, which was an Italian colony) and the agri-food specialization of some partners (Turkey in particular as the main Mediterranean agricultural power). As asserted by Crescimanno et al. (2013) in their work on the intensity of bilateral agri-food trade between Italy and the countries bordering the Mediterranean Sea, but also highlighted by other authors in different geographical scenarios (Edmonds and Li, 2010), distance is a primary factor that influences exchanges; they further observed that goods flows were more intense between geographically closer countries. Indeed, in the present paper, the distance variable appears as a "resistant factor", being negatively related to exports flows and with a statistically negative coefficient. The negative impact of geographical distance is due not only to transport costs, paid both for exports and for imports, but also to the inefficiencies inherent in the transportation system. These factors are very important for agri-food products and, in particular, for fresh products. As asserted by Mulazzani and Malorgio (2009), the relationship between Egypt and Italy suffers from problems caused by slow, irregular maritime transport services, which are inappropriate for perishable commodities such as fruit and vegetables. In spite of the technological improvements in logistics there is still a significant advantage for proximity to the destination markets related to the regularity requirements imposed by the retailing companies. (García-Álvarez-Coque, 2002).

The colonial variable is positively related to the value of Italian exports in the area, showing, as observed by other authors (Srivastava and Green, 1986; Aviat and Coeurdacier, 2007), that historical bonds between countries still play an important role in commercial flows and, as a result, in the strengthening of the economic bonds between countries.

Another resistance factor is the sectorial specialization level. The coefficient of the variable is negatively correlated to the dependent variable and statistically significant. In other words, when specialization in the agricultural sector in the partner countries increases, Italian exports to those countries decrease. These results can, in part, be justified by the high degree of specialization of the agri-food sector of certain Mediterranean partners, some of which are important Italian suppliers of primary products (Malorgio and Hertzberg, 2007).

Finally, the coefficient for the dummy Association Agreement variable is negative and it isn't statistically significant. This result, which differs from the basic hypothesis, shows that the signing of the Association Agreement between the European Union and partner countries has had a low significance impact on bilateral trade and hasn't achieved the aim of integrating the Mediterranean economies into the Euro-Mediterranean market. This result, combined with that found for the "Area" variable, shows that the association and stabilization agreements signed between the EU and potential candidates is more effective, thanks both to geographical proximity and to a more favourable preferential treatment for agricultural products.

The present model has been submitted to several diagnostic tests to verify the presence of collinearity and heteroskedasticity. As regards collinearity, we analyzed the Tolerance and Variance Inflationary Factor (VIF) values related to β parameters. The values of the former ranged between 0,426 and 0,833, thereby showing that the multiple correlations between the variable in question and the other repressors are low. Furthermore, the analysis of VIF values, which resulted in a range between 1.200 and 2.350, reveals that there are no signs which indicate the presence of collinearity between the independent variables of the model.

5. Concluding remarks

The objective of this research is to make a scientific contribution to the analysis of Euro-Mediterranean relationships, and seeks to highlight, through an empirical analysis carried out using a gravity model, the main factors which influence Italian exports towards its neighbouring Mediterranean countries.

The results of the model support the hypotheses (i.e. H1,

H3, H4, H5) which predicted that Italian agri-food exports are positively affected by, respectively: geographical proximity, income of partner countries, colonial and historical ties, and the lack of importance of the agricultural sector in some partner countries. As regards geographical distance, Frémont maintains (2010) that the effect of nearness hasn't worked much in favour of Mediterranean countries, and in particular in Maghreb countries on account of their inadequate infrastructures. From this point of view, today new opportunities for MPCs, including Italy, are offered in the framework of the Euro-Mediterranean policy for transportation, the aim of which is to modernize harbours, since transport by sea represents 75% of the volume of the Mediterranean countries' foreign trade (Frémont, 2010).

On the contrary, the hypothesis according to which Italian agri-food exports toward MPCs recorded an acceleration after the signing of the Association Agreements has not been demonstrated. Countries such as Morocco, Tunisia and Algeria (belonging to the Maghreb region), which first signed the Association Agreements with the EU during the Barcelona Agreement in 1995, are still today poorly integrated with EU and with Italy in particular, in spite of the strong protectionist structure created by the southern countries for agri-food productions. Furthermore, with the Balkan countries candidates for accession, trade relations are more intense, not only because of their geographical proximity but also because there is a system of border protection for agricultural products.

The proposed model, although it has provided interesting results, could be modified and/or integrated so as to obtain more information on partner countries' infrastructural systems, which represent, as previously stated, one of the factors which influence exchanges between countries.

An increase in Italian agri-food exports would therefore be linked both to a careful revision of the agreements in view of a total opening of exchanges in this area, also as regards agri-food products, and to more efficient logistics and infrastructure system of the countries in question. As shown by Crescimanno et al. (2011) in their work on the role of Sicily in the maritime trade of agri-food products in the Mediterranean basin, the lack or inadequacy of infrastructure is the major obstacle to the integration of the area. This will require an effort on the part of national institutions to implement the Euro-Mediterranean transport policy, so as to exploit the opportunities that this provides regarding the construction of infrastructure and the adaptation of the existing ones.

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