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May 2008

Online at <https://mpra.ub.uni-muenchen.de/8728/>  
MPRA Paper No. 8728, posted 13 May 2008 01:31 UTC

# **New challenges and opportunities for Italian exports of table wines and high quality wines**

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## **1. Introduction**

Competition in international wine market has recently become more intense due to several factors and, in particular, the progressive reduction in world-wide consumption, the addition of new producing countries such as Australia, Chile, the USA and South Africa (the so called New World wine producers) and the increasing trade liberalization.

As regard wine consumption, it is necessary to specify that, while the total world-wide consumption has been declining, the demand for high quality wine is increasing. In fact, wine consumption, traditionally linked to the nutritional aspects of eating habits, has been adapting with changes in life-styles (urbanization, decreasing caloric needs, increasing importance of leisure time and social activities, etc.). Thus, sensorial pleasure, symbolic value and psychological attitudes are becoming the most important determinants for wine consumption.

The New World countries have quickly entered the international arena, challenging the market share held by traditional wine exporters such as Italy, France and Spain (Old World wine producers). The growth of exports from New World has its legitimate causes: in fact, these countries, combining appropriate technologies, optimal climate and growing conditions, effective marketing strategies, have recorded a rapid success in the international wine market.

International competition on the wine market is also characterized by a considerable disparity of strategies used by producers and wine producing regions. Beyond the various marketing practices, there is still indecision between a label related to the origins of the products and a label related to a brand name. Of course, the two strategies are not totally exclusive: in fact, a certain number of producers tried to adopt brand strategies in a context of geographical indications.

Although the label is an important marketing tool to create an image of quality and uniqueness, it is not enough to provide a real competitive advantage in the international marketplace, especially if the product is not effectively promoted using a targeted marketing strategy. The ability of a producer, a region or a country to provide effective communication and promotion actions plays a strategic role in international trade, but yet this is often neglected, or not executed using sufficient financial resources (Carbone, 2003).

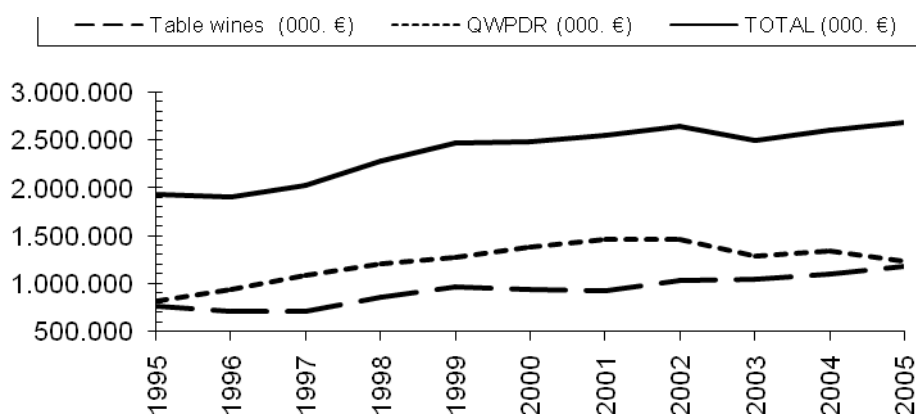
This paper will elaborate and estimate an econometric model which will explain the size of wine trade flows from Italy to its main importing countries using the “gravity model” approach. Both the results obtained and the model itself are useful for predicting potential trends in the exportation of Italian wines, taking into consideration some macro-variables, such as wine production, GDP per capita, population, distance, etc. In particular, this model provides useful information that can help to identify the main growing markets where all participants in the wine supply-chain, such as private wineries, joint-ventures, regional and national agencies, and producers’ associations, can unite to concentrate product communication and promotional efforts.

The remainder of this paper is structured as follows: Section 2 provides a general overview of Italian wine exports during recent years; Section 3 discusses the theoretical framework of the gravity model; Section 4 examines a specific extended version of the gravity model; Section 5 discusses the estimation results; and Section 6 presents final considerations.

## 2. General background

During the last decade, the value (at constant prices) of Italian wine exports has increased significantly. Nevertheless, in 2003 there was a considerable reduction in exports, followed by only moderate growth in 2004 and 2005 (**Graph 1**).

*Graph 1 - Italian wine export trends from 1995 to 2005 (at constant prices)*



(Source: ISTAT)

With respect to Italian QWPDR exports, the trend resembles the one for the general category except for the period after 2003. During that period, exports dropped and they have not returned to previously registered levels. As regards table wine exports, the trend grew up constantly.

Furthermore, the last decade faced a modification of the composition of Italian wine exports: in 1995 high quality wine exports represented almost 40 percent of total wine exports and by 2001 they reached the 57 percent. Starting from 2002, the proportion of high quality wine in total exports has declined.

Relatively to the international trade (**Table 1**), Italy exports its wines to almost all countries in the world; however, 5 countries account for 70 percent of Italy's total wine exports (the USA, Germany, the United Kingdom, Switzerland, and Canada).

*Table 1 - Italian QWPDR and table wines exports towards main importing countries*

<i>QWPDR</i>			<i>Table wine</i>		
<i>Countries</i>	<i>Value*</i>	<i>Share</i>	<i>Countries</i>	<i>Value*</i>	<i>Share</i>
USA	337,181	26.14%	Germany	287,961	25.94%
Germany	297,417	23.06%	USA	286,607	25.81%
United Kingdom	114,135	8.85%	United Kingdom	151,866	13.68%
Switzerland	103,050	7.99%	Canada	44,853	4.04%
Canada	76,516	5.93%	Switzerland	41,854	3.77%
Japan	46,267	3.59%	France	39,443	3.55%
Denmark	33,054	2.56%	Sweden	31,255	2.82%
Austria	27,356	2.12%	Japan	31,010	2.79%
Belgium - Lux	23,046	1.59%	Austria	30,568	2.75%
Netherlands	20,464	1.45%	Denmark	25,851	2.33%
France	18,703	1.45%	Netherlands	24,303	2.19%
Sweden	17,270	1.34%	Spain	17,667	1.59%
Norway	11,264	0.87%	Belgium - Lux	16,776	1.51%
Russian Fed.	7,262	0.56%	Czech Republic	10,530	0.95%
Ireland	6,352	0.49%	Norway	9,568	0.86%
Brazil	5,289	0.41%	Brazil	5,757	0.52%
Finland	4,980	0.39%	Finland	5,560	0.50%
Spain	2,914	0.23%	Russian Fed.	5,329	0.48%
Australia	2,777	0.22%	Greece	4,994	0.45%
Poland	2,709	0.21%	Ireland	4,108	0.37%
<i>World</i>	<i>1,289,904</i>	<i>100.00%</i>	<i>World</i>	<i>1,102,440</i>	<i>100.00%</i>
<i>UE(15)</i>	<i>566,845</i>	<i>43.94%</i>	<i>UE(15)</i>	<i>640,599</i>	<i>57.70%</i>
<i>UE(25)</i>	<i>575,354</i>	<i>44.60%</i>	<i>UE(25)</i>	<i>663,342</i>	<i>59.75%</i>
<i>North America</i>	<i>413,698</i>	<i>32.07%</i>	<i>North America</i>	<i>331,461</i>	<i>29.85%</i>

\* *The value is expressed in thousands of Euros at constant prices (mean from 2003 to 2005)*  
(Source: ISTAT)

In the European market, Germany is the main importer (absorbing 23 percent of Italian QWPDR and 25 percent of table wines exports); the United Kingdom and Switzerland detain a relevant share of total Italian wine imports. During the past few years, these European importing partners have registered a reduction of their demand for high quality imported wine, but the new country additions to the EU compensated for this reduction. Contrary, European Members demand for Italian table wines was stably increasing, except for France and other Mediterranean countries (Spain, Portugal and Greece) in which imports decreased considerably.

In recent years, the import rate for Italian QWPDR also increased in North America. In particular, the USA leads the importing countries of Italian high quality wines, absorbing the 26 percent of the total Italian wine exported. Canada and Mexico continue to increase their demand for Italian wines, as well. Similarly, North American countries increased their imports of Italian table wines.

South America shows heterogeneous trends: Argentina and Brazil reduced their imports while Brazil presents a decreasing imports for QWPDR and an increasing one for table wines.

In recent years, the most dynamic Asian partners such as China and India registered a considerable growth of the demand for Italian high quality wines, and less stressed one for

table wines. On the other hand, Japan, which has historically been Italy's sixth largest importer, has shortened its consumption.

### 3. Theoretical Framework of the Gravity Model

Many economists believe that the gravity model is a very powerful tool for international trade analysis. Tinbergen (1962) and Pöyhönen (1963) were the first to propose the idea, and later it was extended by several other researchers. After these decisive contributions, the gravity model was used in many empirical studies for bilateral trade analysis (Prentice et al., 1998) and for the estimation of the impact of a variety of policy issues relating to, for example, free trade blocs (Martinez-Zarzoso et al., 2003), multilateral commercial agreements (Rose, 2002), migration and tourism flows (Karemera et al., 2000), and foreign direct investments (Brenton et al., 1999).

The basic concept of the gravity model for trade analysis borrows the gravity equation from physics: the volume of trade between two countries is proportional to their economic "mass" and inversely proportional to their respective distance.

The analytical relation of the basic gravity model is expressed as follows :

$$(1) \quad F_{ij} = G \frac{M_i^\alpha M_j^\beta}{D_{ij}^\gamma}$$

where,  $F_{ij}$  is the export flow from origin country  $i$  to destination country  $j$ , usually measured by its economic value;  $M_i$  and  $M_j$  are the economic size of the two countries, usually measured by Gross Domestic Product (GDP);  $D_{ij}$  is the distance between the two countries, measured as physical distance between their first cities;  $G$  is a constant that depends on the units used to measure the other variables.

The multiplicative nature of the gravity equation means that it is possible to take natural logarithms and obtain a linear relationship between the log of trade flows and the log of economy sizes and distances as follows:

$$(2) \quad \ln F_{ij} = \alpha_0 + \alpha \ln M_i + \beta \ln M_j - \gamma \ln D_{ij} + \varepsilon_{ij}$$

This equation could be estimated by the Ordinary Least Square (OLS), assuming that the error term  $\varepsilon_{ij}$  is normally distributed.

Linnemann (1966) was the first to include several additional variables to the basic gravity model, obtaining what has been successively called the "Augmented Gravity Model". In fact, empirical estimations may add other variables like population, income per capita, exchange rates, and dummy variables for the presence of common language, colonial links or commercial agreements among the trading countries (Deardorff, 1995; Head, 2003).

At the empirical level, the gravity model gives very robust estimates and provides a good fit to the observed data. In fact, most of the estimations for bilateral trade volumes with respect to GDP, distance and other explanatory variables, have given values for the determination index ( $R^2$ ) ranging between 0.65 and 0.95, depending upon the specification of the equation (Harrigan, 2001).

### 4. An Augmented Gravity Model to analyze Italian Wine Exports

In this work, the investigation about the features of Italian wine export flows is conducted through the estimation of two different econometric models; the first one is related to QWPDR and second one is related to table wine.

Both the models derive from an expanded version of the basic gravity model where dummies for groups of countries have been added. In particular, the models are expressed by the following equations:

$$(1) \ln \text{ExpQw}_{jt} = \alpha_0 + \alpha \ln \text{QwProd}_t + \beta \ln \text{PcGDP}_{jt} + \gamma \ln \text{Pop}_{jt} + \delta \ln \text{Dist}_j + \lambda_k \text{Group}_k + \varepsilon_{jt}$$

and

$$(2) \ln \text{ExpTw}_{jt} = \kappa_0 + \kappa \ln \text{TwProd}_t + \theta \ln \text{PcGDP}_{jt} + \eta \ln \text{Pop}_{jt} + \rho \ln \text{Dist}_j + \tau_k \text{Group}_k + u_{jt}$$

where:

**ExpQw<sub>jt</sub>** = value of QWPDR exports from Italy to country *j* in the year *t*, expressed in Euro at constant prices;

**ExpTw<sub>jt</sub>** = value of table wine exports from Italy to country *j* in the year *t*, expressed in Euro at constant prices;

**α<sub>0</sub>** and **κ<sub>0</sub>** = constant terms;

**QwProd<sub>t</sub>** = Italian QWPDR production in the year *t*, expressed in hectoliters;

**TwProd<sub>t</sub>** = Italian table wine production in the year *t*, expressed in hectoliters;

**PcGDP<sub>jt</sub>** = GDP per capita of importing country *j* in the year *t*, expressed in U.S. dollars at constant prices;

**Pop<sub>jt</sub>** = population of importing country *j* in the year *t*, expressed in millions of inhabitants;

**Dist<sub>j</sub>** = distance between Italy and country *j*, expressed in kilometres;

**Group<sub>k</sub>** = dummy variable that assumes the value of 1 if the country *j* is included in the group *k*, 0 otherwise.

The classic gravity model uses total GDP as a proxy for output capacity of the exporting country. Nevertheless, while total GDP is appropriate for studies using aggregated export data, in the case of specific agro-food products, such as table or quality wines, this variable could overestimate the country's output capacity. For this reason, the physical production of the specific good analyzed (or alternatively its monetary value) was considered as the most suitable proxy of the output capacity for the exporting country, which is Italy in this case. This variable is expected to show a positive effect because, *ceteris paribus*, the higher the production of wine the higher the volume of its exportation, especially in the case of Italy where wine production exceeds internal consumption.

At the same time, the purchasing capacity for the importing countries is considered by including total GDP in the standard gravity model. However, the countries that import Italian wine have substantial differences in terms of their market size and income per capita. Therefore, GDP per capita has been included in this model as it is a stronger variable to explain the income effect in importing countries. We expect a positive parameter for GDP per capita since the higher the individual income, the higher the demand for wine. In addition, population of importing countries is also included in the model because, although GDP per capita controls for the income effect of one individual, it does not consider the size of the market; by including population, total purchasing capacity of importing countries is captured. As regards the population, a positive coefficient is also expected because it is assumed that the larger the population, the more the country will import.

Finally, the distance between Italy and each importing country has been included as a proxy of transport and transaction costs. According to the theory, a negative coefficient is expected because the longer the distance, the higher the costs and so the less trade will occur.

It is important to underscore that, with respect to a specific good, the volume of trade between two countries may be simultaneously influenced by historical, cultural, ethnic, political or geographical factors that are often difficult to observe and quantify. Because of this a list of dummy variables were included in the standard gravity model in order to control these factors. More precisely, each dummy variable identifies a group of countries that shows a strong "affinity" referred to historical, cultural, ethnic, political or geographical factors. These groups of countries are following illustrated:

1) **Anglo-Saxon countries** (Australia, Canada, Ireland, Malta, New Zealand, the United Kingdom, the United States of America, South Africa): this is a group of Anglophone nations which have similar political and cultural characteristics attributed to the historical experience as colonies of the United Kingdom.

2) **Latin American countries** (Argentina, Brazil, Columbia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Mexico, Peru, Venezuela): this is a group of countries where Spanish and Portuguese are primarily spoken; the rich mosaic of Latin American cultural expressions is the product of many diverse influences such as “native” cultures of the peoples that inhabited the continent prior to the discovery of America, European cultures owing to the region's history of colonization, and finally, African cultures whose presence derives from the long history of New World slavery.

3) **Southeast Asian countries** (Philippine, Japan, Malaysia, Southern Korea, Thailand): this is a group of countries that are nowadays interested by similar processes of industrialization and westernization.

4) **Central and North European countries** (Austria, Belgium, Luxembourg, Denmark, Finland, Germany, Norway, Netherlands, Sweden, Suisse): this is a group of countries with similar gastronomic tradition (continental diet) and, moreover, most of them are members of European Union, they have been signed the Schengen agreements and they use the same currency.

5) **East-European countries** (Czech Republic, Cyprus, Estonia, Russian Federation, Latvia, Lithuania, Poland, Slovak Republic, Slovenia, Ukraine, Hungary): this is a group of countries that are linked by recent historical and political events; in particular, after Second World War, these countries were under soviet influence and control and they had a communist regime imposed upon them; since 1989, with the fall of “Iron Curtain”, these countries have started a process of integration in the European Union.

6) **Mediterranean countries** (France, Greece, Portugal, Spain) have similar gastronomic tradition (Mediterranean diet) and they are, conjointly to Italy, the most important wine producers of Old World.

7) **China** is a country with a large population very heterogeneous in terms of ethnic groups, language and culture; for this reason, it is considered as a group of different cultures with the same political system.

8) **India** is a country for which it is possible to make the same considerations for China.

These regression models have been estimated by Ordinary Least Squares.

In this study, the gravity model estimation is made using panel data that are data-sets formed by repeated observations of the same cross-sectional units over time. The use of panel data provides several advantages and, in particular, more variability in the data-set.

The data-set used for estimation of the first model (Italian QWPDR exports) has 605 observations over a period of 11 years (1995–2005). There are 55 countries included in the analysis and they encompass the largest importers of Italian QWPDR. The volume of Italian QWPDR exported to these countries in 2005 accounted for more than 90 percent of the total.

The data-set used for estimation of the second model (Italian table wine exports) has 418 observations over a period of 11 years (1995–2005). There are 38 countries included in the analysis and they encompass the largest importers of Italian table wine. The volume of Italian table wine exported to these countries in 2005 accounted for more than 90 percent of the total.

Data on Italian table wine and QWPDR exports (dependent variable) was extracted from the database of the Italian Institute of Statistics (ISTAT); exports are expressed in thousands of Euros at current prices. This data was deflated using Italian Consumer Price Indexes (CPI) given by ISTAT. Data for Italian table wine and QWPDR production was also obtained from the ISTAT database in thousands of hectoliters. Data for “GDP per capita” was obtained from the World Economic Outlook Database of International Monetary Fund and it is expressed in current U.S. dollars which were deflated using U.S. Consumer Price Indexes (CPI) from the U.S. Bureau of Labor Statistics. Finally, data for distance between Rome, the Italy’s capital, and the first cities of the others countries is obtained using the Haversine formula that was applied on the coordinates from the CIA’s The World Factbook; distance is expressed in kilometers.

## 5. Estimation Results

Estimation results for Equation 1 (Italian QWPDR exports) are reported in **Table 2** that includes the most important performance indicators for the empirical model. In particular, the F-statistic is 328.145 with a p-value that is less than 0.01, which means a good overall significance of the model, while the R-squared measure is 0.848, which indicates a good fit to the observed data. Estimation results for Equation 2 (Italian table wine exports) are reported in **Table 3** that shows, also in this case, a good overall significance of the model and a good fit to the observed data (F-statistic is 180.411 with a p-value that is less than 0.01 while the R-squared measure is 0.840).

*Table 2 - Regression results for Equation 1 (Italian QWPDR Exports)*

<i>Variable</i>	<i>Coefficient</i>	<i>Std Error</i>	<i>T-Statistic</i>	<i>p-value</i>	<i>Significant</i>
Const	-15.540	4.313	-3.60	0.000	***
ln_QwProd	2.099	0.439	4.78	0.000	***
ln_PcGDP	1.231	0.057	21.51	0.000	***
ln_Pop	0.846	0.029	28.82	0.000	***
ln_Dist	-0.491	0.069	-7.11	0.000	***
<i>Dummies for groups of countries</i>					
CentralNorthernEu	1.659	0.172	9.64	0.000	***
Anglo-sax	1.374	0.155	8.85	0.000	***
Latin American	0.739	0.195	3.79	0.000	***
SouthEstAsiatic	0.634	0.188	3.38	0.001	***
EastEuropean	-0.413	0.208	-1.98	0.048	**
Mediterranean	-1.056	0.212	-4.97	0.000	***
China	-1.251	0.312	-4.01	0.000	***
India	-2.054	0.360	-5.70	0.000	***

*Dependent Variable = ln\_ExpQw<sub>jt</sub>*

*Number of observations = 605*

*F-Statistic (12, 592) = 328.245 (p-value < 0.00001)*

*R<sup>2</sup> = 0.848448*

*Adjusted R<sup>2</sup> = 0.845376*

*Log-likelihood = -812.422*

*Akaike Information Criterion (AIC) = 1650.84*

*Schwarz Information Criterion (BIC) = 1708.11*

*Hannan-Quinn Information Criterion (HQC) = 1673.13*

*Significant: \*\*\* at 1% ; \*\* at 5% ; \* at 10%*

In the two models, both the explanatory variables of the “basic gravity model” (production, GDP per capita, population and distance) and the dummies for specific groups of countries result significant at a level of 5%.

Regarding the first model, it is possible to observe that the size of Italian QWPDR production is a variable with a significant effect on Italian quality wine exports and its coefficient is positive, as expected. Considering the logarithmic form of the equation, this coefficient can be read directly as elasticity. Therefore, a coefficient higher than one (2.099) can be interpreted that an increase or a decrease in Italian quality wine production will lead, respectively, to a more proportional increase or decrease in Italian quality wine exports. This has two important implications: first, Italy shows an export-oriented nature regarding the high quality wine and, second, there is a real possibility that a strong increase in Italian quality wine production could be absorbed by the international market.

Contrarily, the second model shows that Italian table wine production is also a variable with a significant effect on Italian table wine exports but its coefficient is surprisingly negative (-0.857). Consequently, a one percent increase of Italian table wine production could



have as a consequence a decrease of 0.85 percent in the value of Italian table wine exports, if other variables remain constant. An explanation of this result can be that the international market is not able to absorb further quantity of table wine and so an increase of production provides a rapid fall of prices and, consequently, a reduction of exports value.

*Table 3 - Regression results for Equation 2 (Italian Table Wine Exports)*

<i>Variable</i>	<i>Coefficient</i>	<i>Std Error</i>	<i>T-Statistic</i>	<i>p-value</i>	<i>Significant</i>
Const	12.235	3.705	3.30	0.001	***
ln_TableW_Prod	-0.857	0.331	-2.59	0.001	***
ln_Pil_proc	1.505	0.072	20.84	0.000	***
ln_Pop	0.977	0.034	28.73	0.000	***
ln_Dist	-0.854	0.070	-12.12	0.000	***
<i>Dummies for groups of countries</i>					
Anglo-sax	2.056	0.199	10.32	0,000	***
SouthEstAsiatic	1.838	0.240	7.61	0,000	***
CentralNorthernEu	1.765	0.247	7.14	0,000	***
EastEuropean	1.717	0.232	7.41	0,000	***
Latin American	1.692	0.276	6.11	0,000	***
Mediterranean	1.304	0.299	4.35	0,000	***
Cina	1.242	0.450	2.75	0,006	***
India	-1.344	0.399	-3.36	0,000	***

*Dependent Variable = ln\_ExpTw<sub>it</sub>*

*Number of observations = 418*

*F-Statistic (12, 405) = 180.411 (p-value < 0.00001)*

*R<sup>2</sup> = 0.840409*

*Adjusted R<sup>2</sup> = 0.83568*

*Log-likelihood = -583.399*

*Akaike Information Criterion (AIC) = 1192.8*

*Schwarz Information Criterion (BIC) = 1245.26*

*Hannan-Quinn Information Criterion (HQC) = 1213.54*

*Significant: \*\*\* at 1% ; \*\* at 5% ; \* at 10%*

GDP per capita in importing countries also has a significant effect both on quality wine and table wine imports from Italy. This variable is a measure of demand in the importing countries and its effect is positive, as expected. More precisely, a one percent increase of GDP per capita in a given importing country could have as a consequence an increase of 1.23 percent in the value of quality wine imports from Italy, if other variables remain constant. At the same time, a one percent increase of GDP per capita in a given importing country could have as a consequence an increase of 1.5 percent in the value of table wine imports from Italy. Therefore, according to these results, both Italian quality wine exports and Italian table wine exports are income elastic. Income elasticity greater than one is predictable for a luxury good such as quality wine while it is a surprise for table wine. Evidently, in most countries where wine consumption is not very diffused, Italian table wine is also considered as a luxury good.

Population in importing countries also has a significant effect on quality wine and table wine imports from Italy. This variable is a measure of the purchasing capacity in the importing countries and its effect is positive as expected. More precisely, according to the estimation results, the value of Italian quality wine exports is inelastic with respect to population variation, while the value of Italian table wine exports and population are almost directly proportional. Consequently, population variations in the Italian trade partners would have minor consequences on the volume of Italian wine exports with respect to income variation.

The distance variable is also statistically significant and it has a negative coefficient, as expected, both on quality wine and table wine exportations. Our results suggest that an increase of 1% in physical distance could lead to a less proportional reduction both of Italian high quality

wine exports (-0.49%) and Italian table wine exports (-0.85%). This could be explained taking into account that bottled wine is a low perishable good. However, the effect of the distance on Italian high quality wine exports is lower than the effect referred to Italian table wine exports. This difference could be explained considering the higher value per volume unit that characterizes quality wine and that involves a low incidence of transport costs.

The estimation results referred to the dummy variables that control for country groups allow to evaluate the effects that historical, cultural, ethnic, political and geographical factors can have on Italian wine exports. More precisely, a positive or a negative value of the dummy coefficients indicates, respectively, an increase or a decrease of the Italian wine exports with respect the other countries used as baseline.

In both the models (quality wine exports and table wine exports), the coefficients of dummies referred to Central-North European countries (1.659 and 1.765 respectively) and Anglo-Saxon countries (1.374 and 2.056) have been registered high values. Obviously, historical and strong linkages based on political and economic agreements between Italy and the other European countries facilitate conspicuously the trade. On the other hand, Anglo-Saxon countries are privileged partners of Italy probably because of the historical linkage between all countries with western culture; furthermore, the increasing spreading of English as the world commercial language of communication makes easier trading exchanges.

In both the models, the negative value of the dummy for India (-2.054 and -1.344) could be well explained taking into account the large differences in terms of culture, life-style, gastronomic traditions with respect to Italy and the other western countries.

As regard Latin American countries and Southeast-Asian countries, the coefficients of dummies are positive in both the models (respectively 0.739 and 0.634 in the first model; 1.692 and 1.838 in the second model). In fact, Latin American countries show a good similarity with Italy in terms of culture and gastronomic traditions and, moreover, the size of wine production in Latin American countries is not enough to satisfy internal demand. On the other hand, Southeast-Asian countries are facing processes of industrialization and westernization that support consumption of wine, undoubtedly a symbol of western life style and, more precisely, of Italian style. However, both Latin American countries and Southeast-Asian countries seem to prefer Italian table wine rather than Italian quality wine.

As regard Mediterranean countries, we have obtained negative coefficient for the dummy in the first model (quality wine exports) and a positive coefficient in the second model (table wine exports). These countries are important wine producers and, also, strong wine consumers. However, they seem to prefer domestic quality wine and to import table wine from Italy.

Finally, very interesting results have been obtained for dummies referred to East-European countries and China. In the first model (quality wine exports) the negative values of dummies (-1.251 for China and -0.413 for East-European countries) emphasize the historical closing of these countries towards western countries. It is right to remember the "Iron Curtain", the boundary which symbolically, ideologically, and physically divided Europe into two separate areas from the end of Second World War until the end of the Cold War. Nevertheless, in the second model (table wine exports) the dummies for China and East-European countries are positive (1.242 and 1.344 respectively). Therefore, these countries seem to show interest for Italian wine but only for cheaper categories because the income, although rapidly increasing, remain still moderate. It is important to highlight that at the end of the period considered in the analysis, the European Union has passed an historical enlargement: more precisely, in May 2004, ten new countries of Eastern Europe (Cyprus, the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Slovenia, Slovakia and Malta) have joined the fifteen existing member States; moreover, Bulgaria and Romania became EU members in January 2007. Beyond doubt, the recent process of European Union enlargement could lead to increasing Italian trade towards the East-European countries. Moreover, it is important to remember that China has been a member of WTO since December 11<sup>th</sup> 2001.

## 6. Conclusions and Final remarks

In this work it has been shown that the gravity model is a very useful analytical tool even when trade analysis is conducted on a specific product. In particular, this model which has been optimally adapted for these specific research purposes, is able to explain with great accuracy the size of trade flows using easily disposable data. Moreover, the gravity model may also be used to forecast potential trends in trade flows.

Examining the results of the analysis of exports of Italian wine, some points can be highlighted.

An important implication is that Italy should increase the production of high quality wine because there are favorable conditions in place which would increase exportation. At the same time, Italy should decrease the production of table wine because its international demand is declining. In particular, this change of production orientation should happen especially in the southern regions of Italy where a large share of wine production belongs to the table wine category, despite the existence of favorable factors (land, climate, know-how, institutional context, etc.) which would allow for the production of a higher quality wine.

*Table 4 - Annual percent change of Per capita GDP\**

<i>Countries</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>Countries</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>
China	9.6	9.5	9.5	Jamaica	0.9	2.3	2.6
Latvia	10.9	11.6	9.4	Brazil	0.8	2.2	2.5
Estonia	10.1	9.8	8.3	Spain	2.8	3.0	2.5
Slovak Republic	6.1	6.5	7.0	Jordan	4.5	3.4	2.4
Russia	7.0	6.9	6.9	Finland	2.8	3.3	2.3
Lithuania	8.1	7.2	6.9	Colombia	3.5	3.0	2.3
Bulgaria	6.3	6.4	6.8	United Kingdom	1.2	2.2	2.2
Romania	4.4	5.9	5.9	Australia	1.3	1.8	2.2
India	7.2	6.7	5.6	Norway	2.0	1.7	2.2
Argentina	8.0	6.8	4.8	Israel	3.0	1.9	2.2
Czech Republic	5.9	5.9	4.7	Japan	2.6	2.7	2.1
Hong Kong	6.4	5.1	4.6	Austria	1.4	2.6	2.1
Poland	3.5	5.1	4.5	Denmark	3.0	2.4	2.1
Ireland	3.3	4.4	4.2	Canada	2.0	2.2	2.0
Malaysia	3.2	3.7	4.0	Belgium	1.5	2.7	2.0
Thailand	4.4	3.4	4.0	Mexico	1.5	2.5	2.0
Slovenia	3.6	4.2	3.8	United States	2.3	2.5	1.9
Hungary	4.3	4.7	3.7	Ecuador	3.3	3.0	1.8
Ukraine	3.4	5.8	3.6	Sweden	2.3	3.6	1.8
Peru	4.9	4.5	3.5	France	0.6	1.8	1.8
Dominican Rep.	7.7	4.0	3.5	Switzerland	1.7	2.9	1.7
Greece	3.7	3.7	3.5	Venezuela	7.2	5.4	1.6
Korea	3.5	4.2	3.4	Portugal	0.3	1.1	1.4
Kenya	3.7	3.6	3.4	Guatemala	0.6	1.5	1.4
Philippines	3.0	2.9	3.3	Netherlands	1.3	2.6	1.2
South Africa	3.9	3.0	3.0	Germany	0.9	2.0	1.2
Luxembourg	3.6	3.1	2.9	Malta	1.8	0.9	1.0
Cyprus	3.7	2.6	2.9	Italy	-1.0	1.1	1.0
Costa Rica	4.0	4.7	2.8	New Zealand	1.3	0.3	0.5
Singapore	3.7	5.1	2.7	United Arab Emirates	0.8	3.6	-1.7

*\* Data for years 2006 and 2007 are IMF estimates*

*(Source: World Economic Outlook Database of International Monetary Fund)*

Considering that both QWPDR and table wine exportations are income elastic, as shown by the empirical models, if Italian wine producers intend to expand their exportations, it is natural to look at those countries where income growth is high but also constant and solid. In fact, it is important to underscore that any decrease in income for the trade partners, in other words an economic recession, would have serious negative consequences on the volume of Italian wine exports. Looking at **Table 4**, that shows the IMF estimates for annual percent change of GDP per capita, it is interesting to highlight that, among countries with the highest income growth rates, there are three very big countries, China, Russia and India, where expansion possibilities for Italian wine exports are very attractive. Currently, these countries import less than 1% of total exports of Italian wine. However, this share could increase exponentially if Italian exporters succeed in penetrating these markets and in consolidating their presence. At the same time, it is important to highlight that the main countries importing Italian wine (the United States, Germany, the United Kingdom, Switzerland, Canada, Japan and almost all western European countries) show a moderate but stable income growth (ranging between about 1 and 2 percent) and therefore it would be strategic to defend and consolidate Italian market shares against any possible aggressions by the new wine producing countries.

As mentioned before, the recent enlargement of the EU could represent a great opportunity for the exporters of Italian wine. In particular, it is interesting to note that all new EU members and, in particular, the Baltic Republics (Latvia, Estonia, Lithuania) show high income growth rates (ranging between about 4% and 9%). In addition, as is widely known, there are no customs barriers within the European Union but instead there is a common external tariff applied to imports from non-EU countries. Therefore, these countries represent very interesting, and as yet untapped, markets even if, in the next years, there are real possibilities to expand mainly table wine exports because the income, although rapidly increasing, remains still moderate.

## 7. References

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