

Italian viticulture: A multi-faceted model of development and regression

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Abstract. Wine can be considered a niche product on the drinks market, due to the annual turnover it generates and the dispersion of the productive matrix which controls its production. However, it takes on a symbolic value compared to other drinks and boasts a unique link with the territory. Typicity translated into territorial values has brought about the success of winemaking regions of great national and international fame. However, it is necessary to communicate the values and adopt the consequent measures for other areas in a secondary position or with an intermediate development. The value of wine ex-cellars, unbottled and before vat has been analyzed taking into account production in different market segments, a basic element for estimating the value of the GSP per hectare of vineyard. This paper is based on the study of physical, economic and motivational parameters that determine the primary value, the cause for consolidating or abandoning winegrowing. Decisions made by the vinegrower translate into nursery demand which, in turn, determines the varieties and surface areas of the future vineyard.

1. Introduction

Wine is the oldest drink in the world. It originated in the Caucasus and developed in the territories of the “Fertile Crescent”; it soon conquered the European continent and, centuries later, America and the southern hemisphere, arriving more recently in Asia.

Its peculiarity of being an alcoholic drink strongly conditioned by the natural and anthropic system in which it developed, has been enriched by symbolic and hedonistic values that have influenced its development and consequently its economic importance.

This paper focuses on the value that winegrowing has taken on in Italy, where strong territorial and entrepreneurial differences remain. These are the reasons for success as well as the cause of a possible regression in many of the areas involved.

1.1. The development of the Italian system

Vinegrowing in Italy has ancient origins and this has favoured and conditioned typicity by linking its fate to the various territories and their historic traditions.

Its development was strongly influenced by the launch of the European agricultural policy and the specific CMO wines that followed later [1].

Another conditioning element of the winegrowing system has been cooperation [2]. It has brought together a very fragmented social basis per territory (today represented by less than 50% of the 310,428 farms

with vineyards) and has transferred added value from processing and marketing to the vinegrowers.

This cooperation lies within an extended supply chain, which contrasts with the system of valorising grapes of the private winegrowing estates (integrated supply chain) and industrial wineries. The latter thrive on the limits of the supply chain, which are accentuated over time by changes induced by EU winegrowing policies, which can be summarised in four distinct stages:

- 1960s, 1970s development of productivity;
- 1980s reduction of supply;
- 1990s control of supply;
- 2000s shift towards markets and sustainability.

This evolution has conditioned the efficiency of our supply chains on a regional level, accentuating territorial differences. A positive element occurred with the launch of the appellation policy (law 164/92), which has generated a third supply chain over time, that of the districts, where companies pursue a common aim represented by the valorisation of territorial DO and IG wines, under the guiding and valorising action of the Consortia.

To date, the top positions of the wine quality pyramid have increased significantly (our processing of AGEA, ISTAT and FEDERDOC data referring to wine production in 2017):

- DOCG wines 6%;
- DOC wines 23%;
- IGT (*Indicazione Geografica Tipica*) wines 18%;
- General wines indicating the variety 1%;
- General wines 52%.

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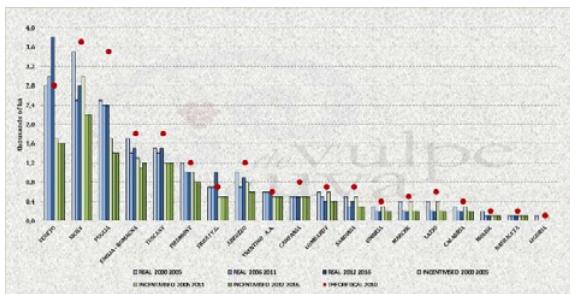


Figure 1. Vineyard renewal in Italy on a regional level.

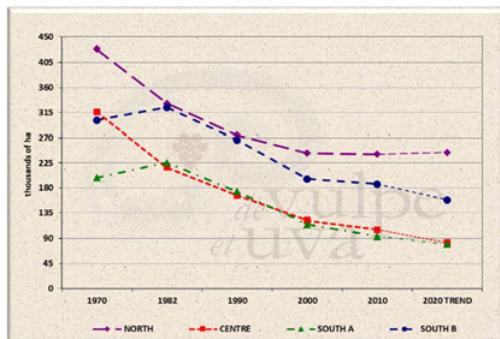


Figure 2. Evolution of vineyard surface areas in Italy.

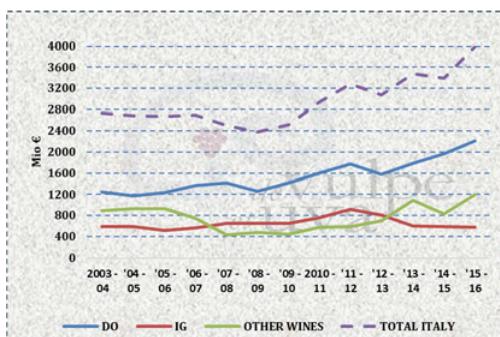


Figure 3. The value of wines ex-cellars, unbottled and before VAT per category.

Table 1. The value of wines ex-cellars, unbottled and before VAT, per category (Mio €).

	'03 - '04	'04 - '05	'05 - '06	'06 - '07	'07 - '08	'08 - '09	'09 - '10	'10 - '11	'11 - '12	'12 - '13	'13 - '14	'14 - '15	'15 - '16
DO	1.249	1.169	1.231	1.375	1.420	1.255	1.417	1.597	1.770	1.578	1.787	1.964	2.210
IG	594	593	512	570	652	654	646	765	920	804	607	591	583
OTHER WINES	892	928	926	753	434	475	448	579	588	694	1087	836	1198
TOTAL ITALY	2.734	2.690	2.669	0.698	2.507	2.383	2.512	2.941	3.277	3.076	3.481	3.392	3.991

However, different causes have favoured an uneven development in the territories, creating supply chains with different efficiencies [3].

The current scene has witnessed a consolidation of winegrowing in some areas in recent years, while in others it is declining, as illustrated in Fig. 1.

Vineyard renewal with a recovery quota estimated at 3.3% as a physiological value, shows a lack of uniformity due to the success of some regional viticulture. The positive difference of Veneto and Friuli Venezia Giulia can be largely explained by the success of Prosecco.

Three regions stand out with renewal values that are nearer to the physiological data: Emilia Romagna, Tuscany and Piedmont.

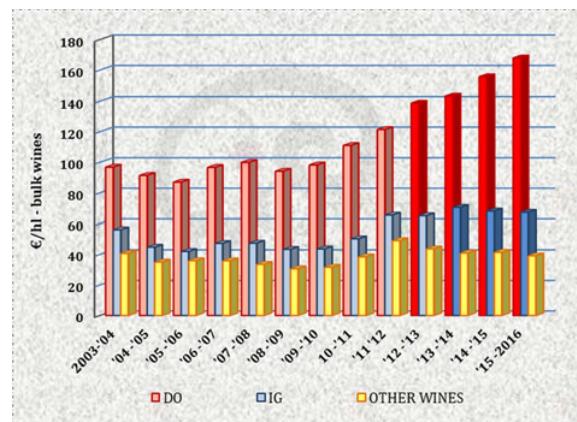


Figure 4. Territory values and wine market segmentation in Italy.

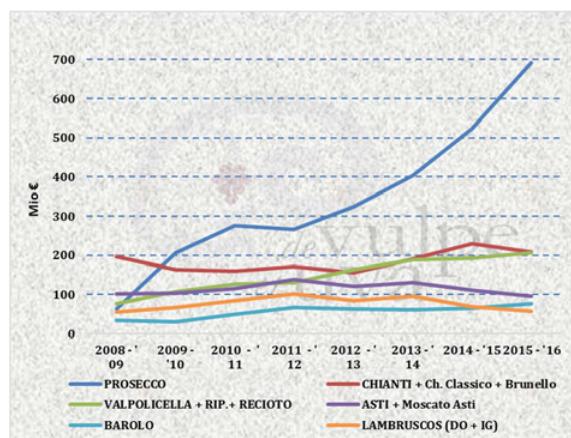


Figure 5. The value of the main DO wines ex-cellars, unbottled and before VAT (Mio €).

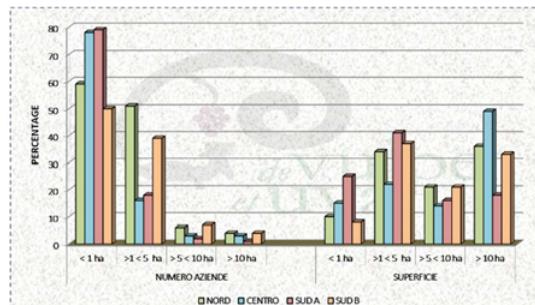


Figure 6. A comparison between the number of wineries and the vineyard surface area per macro area.

Regions with higher surface areas (Sicily and Puglia) are further from the ideal threshold, below which there is a decline in viticulture. The discriminant lies in differences in the profitability of viticulture.

This also explains the different evolution of vineyard surface areas per macro area, which only shows a positive trend for those in the north of the country (Fig. 2).

2. Territory values

The value of wines ex-cellars, unbottled and before VAT, and therefore the profitability of vinegrowing, stems from the success of DO wines, due to the evolution of

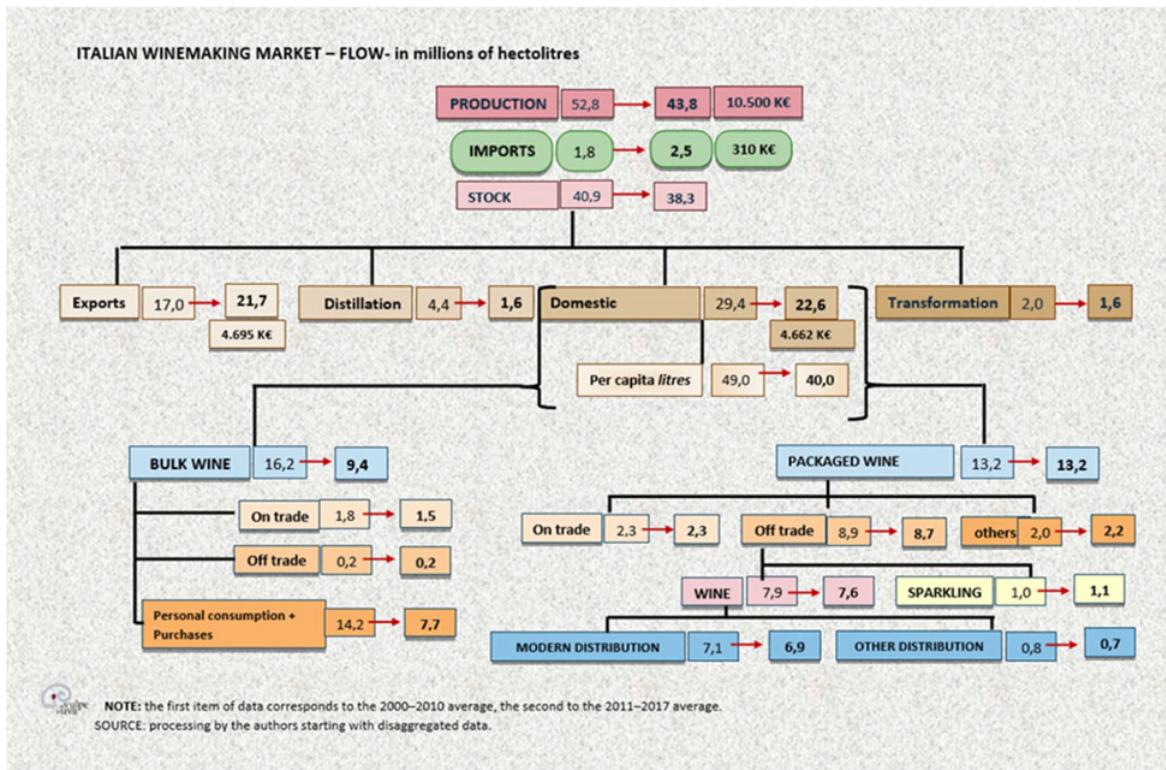


Figure 7. Italian winemaking market – Flow in millions of hl.

Table 2. The value of the main DO wines ex-cellars, unbottled and before VAT (Mio €) in Italy.

	Mio €									
	2008 - '09	2009 - '10	2010 - '11	2011 - '12	2012 - '13	2013 - '14	2014 - '15	2015 - '16	2016 - '17	2017 - '18
PROSECCO	62	205	277	267	324	404	523	691		
CHIANTI + Ch. Classico + Brunello	196	165	160	171	157	192	230	208		
VALPOLICELLA + RIP.+ RECIOTO	77	107	127	131	165	188	192	206		
ASTI + Moscato Asti	101	103	115	138	121	132	112	96		
BAROLO	34	30	50	66	62	62	65	77		
LAMBRUSCOS (DO + IG)	55	67	85	102	85	96	68	58		
SIGNIFICANT DO WINES	525	677	814	874	914	1.072	1.190	1.335		
%	22.1	26.9	27.7	26.6	29.7	30.7	35.1	33.5		
TOTAL ITALY	2.380	2.514	2.942	3.282	3.077	3.492	3.393	3.986		

life styles, consumption patterns and increased consumer awareness [4].

This translates into an increase in packaged wines, which are subject to a higher added value and profile compared to IG wines and bulk wine (Table 1, Figs. 3 and 4).

Figure 4 illustrates the above, highlighting how the average value of DO wines in 2016 was 1.68 €/l compared to 0.67 €/l for IG wines and 0.39 €/l for general wines.

Table 2 and Fig. 5 analyse some Designations of Origin, confirming the Prosecco phenomenon and the consolidation on markets of designation wines produced in the centre and north of the country.

3. Vinegrowing wineries

According to the 2010 census, the average (see distribution per class of surface area, Fig. 6), was 1.7 hectares of vineyards per winery, while ISMEA (Institute of Services for the Agricultural Food Market, Rome, Italy) data for 2017 [5] talks of 2.08 ha, with a loss of just over 70,000 wineries. This shows that many areas are destined

to abandonment due to generational change and low profitability.

4. The wine market

Figure 7 summarises the main wine flows, comparing the latest averages (2011–2017) with the previous period (2000–2010). It shows how the supply chain feeds a market where, faced with a drop in production, there has been a significant increase in exports, a drop in bulk wine sales and a strong segmentation of the distribution system. These phenomena are positive overall, but they are not able to reward the winegrowing system in a balanced way.

This situation is clearly linked to the strengths or weaknesses of the system in the different territories (critical mass, the fame of wines in Italy and abroad and the ability to interact with the national and international distribution system).

In 2017 we recorded wine production equal to 45.6 Mio hl, 35.4% of which certified DOC or DOCG, which generated an industrial turnover of just over 13 billion €, equal to 9.8% of that of Italy's agri-food industry.

This situation is influenced by the different GSP/ha calculated on a territorial level and shown in diagram form in the maps (Figs. 8 to 11), which illustrate how many of the districts in the north exceed the vital threshold of 5000 €/ha.

In the central district, with the exception of Tuscany, values fall below 5000 €/ha. This is also the case in southern Italian regions, where there are some marginal wineries with incomes decidedly below 5000 €/ha.

The statistical error, derived from several marginal vineyards observed mainly in central or southern Italy, is clear.

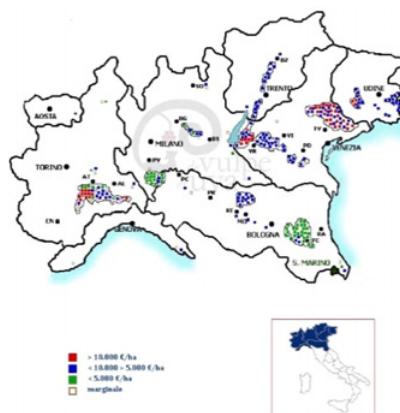


Figure 8. Italian wine districts GSP/ha – north.

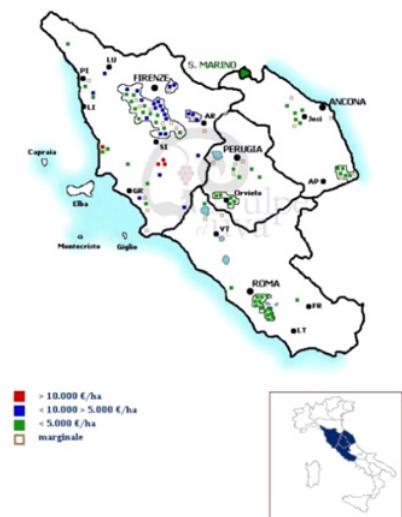


Figure 9. Italian wine districts GSP/ha – centre.



Figure 10. Italian wine districts GSP/ha – south A.

5. Wine production

As for wine production, ISMEA records 45,733 wineries making wine in Italy in 2015, however 34,166 of these handle volumes between 0 and 100 hl. On the other hand, the Observatory created by the 4 main cooperatives indicates that just 498 cooperatives guarantee 92% of the total turnover.

Table 3 only takes into account the most significant wineries and divides Winemakers (total and cooperatives)

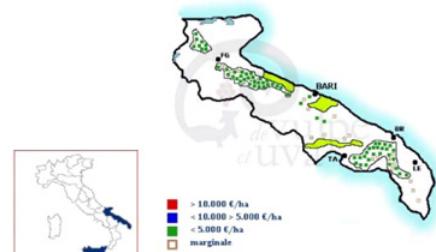


Figure 11. Italian wine districts GSP/ha – south B.

Table 3. Winemaking industry in Italy.

	ITALY				thousands of hl wine			
	2006	2009	2011	2015	2006	2009	2011	2015
<100 *	59,084	51,500	51,145	34,166	860	590	550	536
101 - 1.000	10,414	8,413	8,380	8,023	3,200	2,750	2,800	2,827
1.001 - 10.000	2,992	2,394	2,375	2,853	7,500	5,950	6,500	7,652
10.001 - 50.000	589	441	440	468	12,400	9,570	9,500	9,894
> 50.000	230	252	185	223	23,157	24,564	21,282	27,833
TOTALS	14,225	11,500	11,380	11,567	46,257	42,834	40,082	48,206
ITALY	73,309	63,000	62,525	45,733	47,117	43,424	40,632	48,742

NOTE: * wine producers producing less than 100 hl operate for self-consumption or informal markets. **Cooperatives below 1,000 hl are closing or not operating.

	COOPERATIVE WINERIES			
	2009	2015	No. Wineries	thousands of hl
<100 *	46	0		
101 - 1.000	94	30		
1.001 - 10.000	139	570		
10.001 - 50.000	187	4,660		
> 50.000	159	19,540		
TOTALS	485	24,770		
ITALY	625	743	24,800	24,500

by Production Class to represent the evolution of the Italian system.

The presence of wineries below 100 hl of production is significant. They are a remnant of a manorial economy strongly linked to the territory (1% of wine produced). Also significant is the plethora of 8023 wineries between 100 and 1000 hl (5.6% of production) that can only live by supplementing their income in tourist areas such as Tuscany, Piedmont, Trentino Alto Adige and Veneto.

Our analysis considered the wineries with the following classification:

- Wineries structured in networks (44): with vineyards and cellars in the main Italian winegrowing areas.
- Bottling and wine-producing wineries (66): linked to and often replacing cooperatives.
- Winegrowing wineries (168) with over a million bottles or significant turnovers.
- Wineries with fewer than a million bottles.

The table shows the sample under observation concerning 90% of bottled wine and 84% of the turnover (13 billion euros).

Table 4. Summary of wineries and groups structured in networks with production over a million bottles.

No. of companies	COMPANY	2003 ha bottles x 1000	AVERAGE 2011 - 2016 ha bottles x 1000	2017 ha bottles x 1000	TURNOVER Mil€ average 2011-2017
28	Structured north	87,947	554,936	95,499	944,938
13	Structured centre	4,571	50,163	7,238	71,685
3	Structured south	7,733	16,100	7,936	36,127
44	GR. A -STRUCTURED COMPANIES	100,252	621,199	110,663	1,052,751
49	bottling companies north	3,354	433,950	4,236	736,874
10	bottling companies centre	369	55,500	506	78,200
7	bottling companies south	459	21,200	798	25,150
66	GR. B -BOTTLING AND WINEMAKING COMPANIES	4,182	510,650	5,540	80,224
96	Winemaking companies north	35,308	184,619	43,251	282,584
36	Winemaking companies centre	14,897	87,480	11,840	91,101
36	Winemaking companies south	17,309	66,370	17,233	74,583
168	GR. C -WINEGROWING COMPANIES	67,451	338,402	70,051	2,481,0
1,055	total north	30,051	182,082	34,028	42,267
1,240	Others centre	31,621	128,140	38,912	171,591
878	Others south	56,518	122,567	73,521	210,660
4,073	WINERIES WITH <1000 BOTTLES	119,090	421,389	156,461	624,923
2,128	total north	157,560	1,344,187	187,015	2,207,069
1,299	total centre	51,458	321,283	58,436	412,577
924	total south	82,020	226,237	99,506	346,519
4,351	TOTAL ITALY	291,038	1,891,707	345,008	2,966,165
40,649	WINERIES WITH A MANORIAL ECONOMY OR NOT INCLUDED IN THE ANALYSIS			366,427	3,346,452
45,000	ISMEA WINERIES				9,685,2
	NOTEAnna di Martino has kindly allowed the use of her data: http://www.annadimartino.it/				10,881,5
					13,004

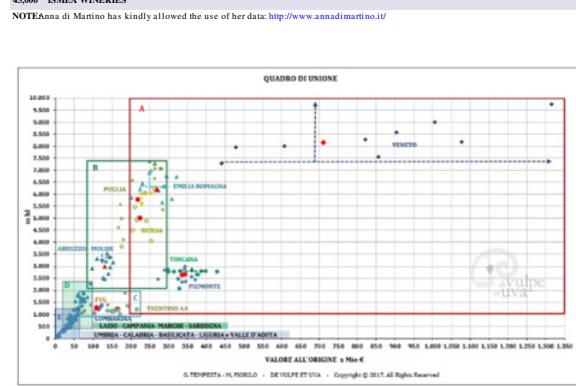
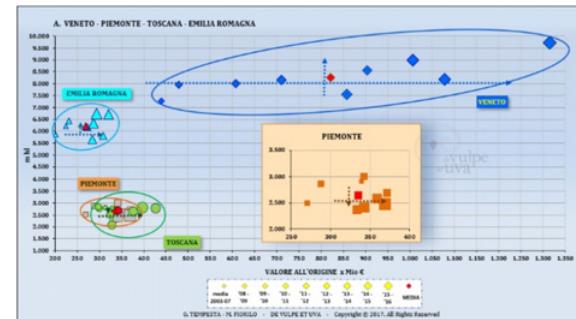


Figure 12. Volumes and economic value of wines ex-cellars, unbottled and before VAT in the different Italian regions.



Figures 12a. Volumes and economic value of wines ex-cellars, unbottled and before VAT for the Veneto, Piedmont, Tuscany and Emilia Romagna.

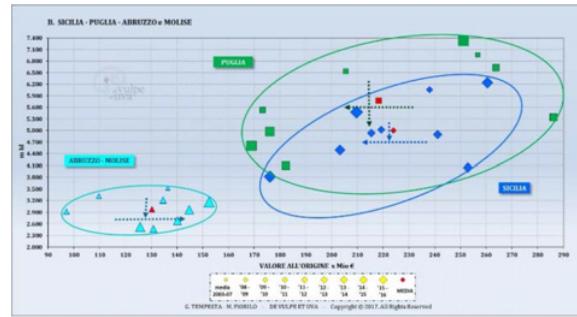
6. Economic performance on a regional level

The following figures explain how some areas (regions), such as the Triveneto, have seized the opportunity and latched onto markets; others, such as Tuscany and Piedmont, aim for quality production or stand out for their productive efficiency and organisation, like Emilia-Romagna.

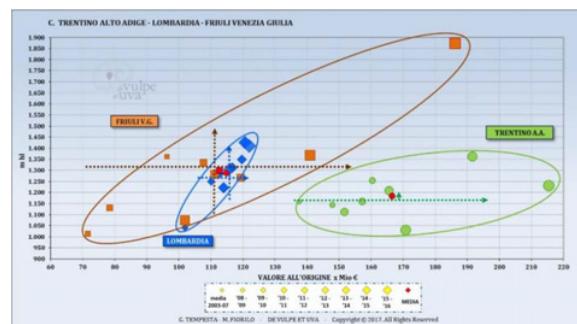
Most of central and southern Italy, headed by Sicily and Puglia, aims at commodities.

The overview is illustrated in Fig. 12, while Fig. 12a compares the best-performing wineries dedicated to exports (Figs. 13 and 14) and highlights the extraordinary development of the Veneto over the years.

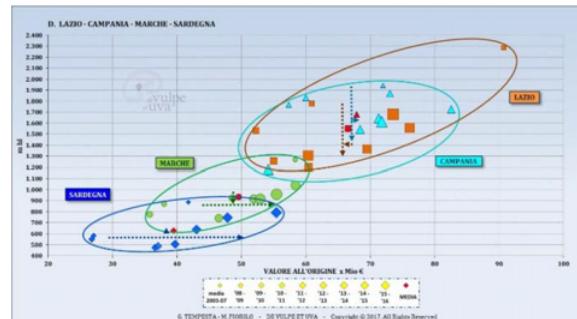
Figure 12c compares smaller wineries per volume, but they are comparable to those in Fig. 12a in terms of performance.



Figures 12b. Volumes and economic value of wines ex-cellars, unbottled and before VAT for Sicily, Puglia, Abruzzo, and Molise.



Figures 12c. Volumes and economic value of wines ex-cellars, unbottled and before VAT for Trentino Alto Adige, Lombardy, Friuli V.G.



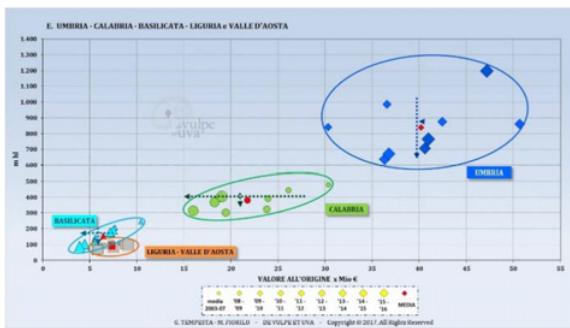
Figures 12d. Volumes and economic value of wines ex-cellars, unbottled and before VAT for Lazio, Campania, Marche and Sardinia.

The significant gap between these two groups and those contained in Fig. 12b is clearly shown by the comparison between high volumes and turnovers that highlight the low unitary valorisation. This is linked to the fourth group (Figs. 12d and 12e) with unrewarding performances due to different situations: crisis for little known wines, business shortcomings, uneven development of the territory.

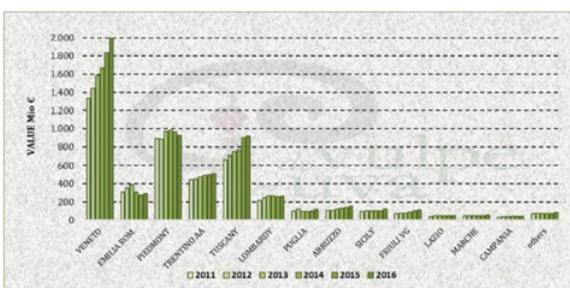
The more or less accentuated diffusion of volumes and values from 2003 to 2016, with the average (red diamond) at the centre of the vectors.

In addition to differences ascribable to a higher capacity for global turnover and a tendency to exports, it must be underlined how some regions owe their success to the efficiency of wineries operating in their territories. The two phenomena are obviously the result of a synergic stimulus.

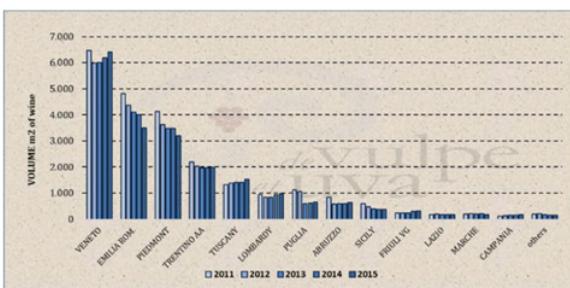
This is confirmed by Mediobanca's [6] yearly analysis on the national winegrowing system which assesses the financial reports of 155 of the main Italian limited



Figures 12e. Volumes and economic value of wines ex-cellars, unbottled and before VAT for Umbria, Calabria, Basilicata, Liguria and Valle d'Aosta.



Figures 13. Wine exports per region in value.



Figures 14. Wine exports per region in volume.

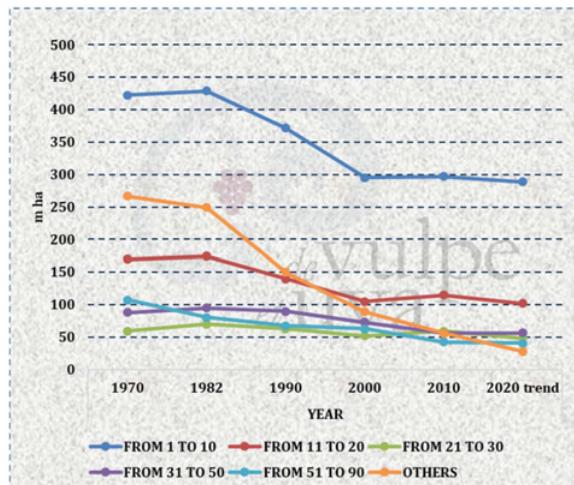
Table 5. Performance indicators on a regional basis (2015).

Regione	Margine Op. Netto / Valore aggiunto	Valore aggiunto / Capitale Investito	Roi	Export in %
Veneto	37,3	23,7	9,2	59,2
Emilia Romagna	16,3	17,4	3,5	36,3
Piemonte	32,8	21,0	7,1	61,5
Toscana	45,7	18,0	8,7	65,3
Trentino A. A.	30,6	18,5	5,8	65,1

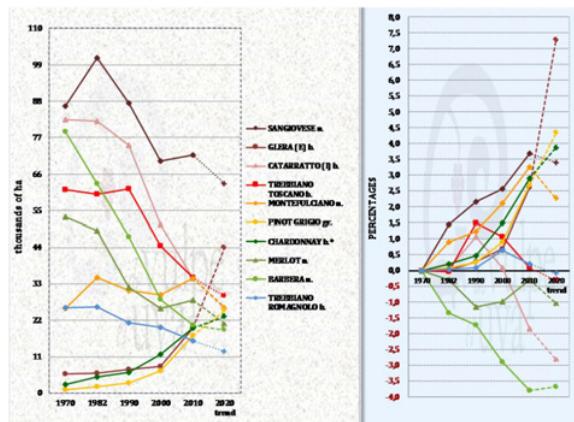
companies (49 cooperatives, 94 joint stock and limited liability companies, 12 foreign controlled) working in the sector who invoiced over 25 million euros.

A comparison of these values on a regional level (Table 4) confirms the north-south divide: in 2015 the companies belonging to the regions indicated in Table 5 exceed the others when it comes to profitability (ROI: Return on Investment) and vocation for exports.

Wineries in Veneto and Tuscany also show more capital strength and higher efficiency (lower effect of labour costs per product unit).



Figures 15. Varietal evolution hectares per decile.



Figures 16. Italian vineyard, evolution of the top ten varieties.

7. Varietal evolution

As we have said above, vineyard surface area has decreased and we are likely to see a further drastic reduction: from 1,113,000 ha in 1970 to 626,400 ha in 2010, with a forecast of 565,000 ha for 2020.

At the same time there has been a gradual focus on major grape varieties and a sheer drop in minor ones, with a slightly growing trend for the other varieties (Figs. 15 and 16).

Of the top ten varieties, six (Sangiovese, Trebbiano toscano, Trebbiano romagnolo, Catarratto, Barbera and Montepulciano) are traditional varieties, which have been recently joined by a further four (Glera, Merlot, Chardonnay and Pinot Grigio), illustrating market trends.

The two Trebbianos, Merlot and Barbera are on the decline, with a decrease also expected for Sangiovese and Montepulciano [4].

However, the minor varieties are sustained by the vast number of cases of Designation wines (DO and IGT), through which national or native varieties are valorised. They follow the fate of the designations and the consequent regional fragmentation.

This has pinpointed groups of varieties that characterise the various regions, in addition to those already mentioned.

8. Conclusion

As we have shown, Italy maintains its well-deserved role as leader in the world winegrowing sector, due to the suitability of its territory, its production system able to create wealth, also thanks to the fame of its wines on an international level.

However, this hasn't come about in a uniform way, gradually rewarding viticulture more geared towards the market and with better production organisation.

This situation has created a rift between some regions in central-southern Italy and those in central-northern Italy. This is aggravated by the fact that the former, who assumed a subordinate attitude in the past compared to the economy of the latter, may compromise their future development.

The consequence is a different response to the positive evolution of latest EU policy, with the risk that the gap isn't bridged, but actually widens.

An uneven growth of territorial wineries is one of the main reasons behind fears of a regression of our winegrowing system; a risk stressed by the diffusion and difficulty in using official data on which to base the planning of the sector.

This makes decision-making by the key players in the chain (vinegrowers and their immediate representatives: the nurserymen) more uncertain.

We have briefly highlighted the main weaknesses of our system:

1. Risk of replanting and transferring vineyards between central-southern and northern Italy (hence the regulatory obstacles that have recently been issued: amendment to Ministerial Decree 15th December 2015 no. 12272, of 13/2/2018) which undermines the traditional basis of our viticulture.
2. Abnormal spread of a few leading varieties with serious consequences for the territory's endurance in the face of a market crisis.
3. Crises in the nursery industry which could compromise the fate of a sector suffering from a lack of cohesion and internal planning.
4. Erosion of the nation's set of grape varieties, one of the richest in the world with 504 varieties registered and a potentially higher number of unregistered varieties (at least another 300).
5. The integration of the supply chain has facilitated the development of large family-run wineries and cooperatives, as well as district supply chains geared towards precise wine types.

This has guaranteed an increase in quality and an improvement in economic performance.

However, we need to mention the development of bottling companies, at the top of the system today for turnover, which are not tied to the supply chain and not always linked to quality wines.

These businesses have made marketing and market aggressiveness their creed, regardless of the fate of the supply territory.

6. Family-run wineries (integrated supply chain) see their development conditioned by high financial

costs connected to higher capital equipping (vineyards).

Cooperatives reduce their possibility to invest capital in processing structures and marketing, owing to lower profitability linked to mutuality – transferring wealth to the vinegrower – often to the detriment of the winery's financial statement.

This imposes an industrial concentration in order to increase the efficiency of the main structures to the detriment however of marginal wineries, with a transfer of wealth from the more disadvantaged primary areas where there is a higher presence of inefficient wineries.

7. The individualistic view and suitability to gigantism of some businesses, slows down the network development of smaller businesses in terms of a diversification of their portfolio also with non-territorial products.
8. A system that is not integrated into the global context and often linked to products with foreign company brands or controlled by these.

In brief, a balanced development of the country needs to be stimulated, supported by precise information about the productive structure and diversified regional winegrowing policies.

Otherwise there is the real risk that one of the world's historic winemaking nations will step down from its traditions in order to follow new countries (with a recent or more long-standing development) on the road to globalization, where quality is an intrinsic concept to the product and variety, and less linked to a vocation to viticulture, the great source of our past successes.

The authors thank Jane Upchurch for the English translation.

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