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Andrea Morrison
and Roberta Rabellotti

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Gradual Catch Up and Enduring Leadership in the Global Wine Industry

Andrea Morrison – URU – Utrecht University and CRIOS – Bocconi University
andrea.morrison@unibocconi.it
Roberta Rabellotti – DSPS – University of Pavia
roberta.rabellotti@unipv.it

1. Introduction

Recent studies about catching up are often focused on the emergence of high-tech sectors such as electronics, software, pharmaceutical and telecommunications. These industries are indeed globally known for having sparked economic growth in some selected countries, such as Japan and South Korea in the eighties and nineties, and India and China in more recent years. Nevertheless, there is little doubt that in a large number of emerging countries the agro-food industry still significantly contributes to GDP. Though often depicted as low value-added and with little innovation content, the agro-food industry is a sector with considerable opportunities for technological and rent upgrading. UNCTAD (2009) has identified a group of dynamic and competitive middle-income countries, including Argentina, Brazil, Chile Thailand and Malaysia, which have become exporters of high-quality processed primary products. Some authors have envisaged an undergoing process of *de-commodification* of primary commodities, which are increasingly transformed from standardized staples into high-quality, diversified, processed goods, with raising barriers of entry, high knowledge intensity and technological dynamism, increasing value added content and high export price per unit (Farinelli, 2012; Kaplinsky and Fitter, 2004; Kaplinsky, 2005; Perez et al, 2009).

Among the most dynamic primary industries there is wine, which is an extremely interesting case from a catch up point of view because the latecomers in the international market have changed how wine is produced, sold and consumed and in doing so they have challenged the position held by the incumbents (Giuliani et al, 2011). Until the end of the 1980s without a

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doubt, European countries, and particularly France and Italy, dominated the international market for wine. Subsequently, significant changes into the market, namely the decrease in consumption in traditional consuming countries, the entry of new inexperienced consumers and the increasing importance of large distribution have put under attack this supremacy. Initially the USA and Australia and later emerging countries such as Chile and South Africa have gained increasing market shares in terms of both exported volumes and values at the expense of the incumbents.

More recently, due to the higher involvement of consumers and the increasing attention to variety and regional specificities in some market segments a new comer as Australia has slowed down its growth, opening up opportunities to newer entrants such as Argentina and New Zealand. At the same time, innovation has also interested the incumbents, in particularly Italy, which has challenged the leadership of France in some key markets such the USA (Mariani et al., 2012).

Finally, some further future changes can be envisaged in the new rapidly growing Asian markets, still representing a small share of the global demand but with a lot of potentialities of becoming a new key scene in the wine industry.

In this paper we aim at investigating the different catch up cycles occurring from the 1960s until 2010 in the global wine sector through a detailed analysis of exports in volume, value and unit price. This analysis allows addressing issues related with the increasing share in the global market of latecomer countries and the relative decline of the incumbents, as well as possible changes in the market leadership within these two groups.

In the next section after a brief account of the literature on catch up we focus on catch up in the wine industry since the 1960s. Then, in the Section 3 we present an analysis of the evolution of the industry investigated based on trade data. Section 4 provides a detailed analysis of the entry of the New World (NW) producers explaining how market changes opened up a window of opportunity and then followed transformations in the innovative and knowledge base and in the institutional settings. The following section focuses on the resurgence of Old Word (OW)[1] countries in the international markets. In Section 6, we discuss about the rise of new actors among the latecomers. Section 7 puts forward the hypothesis of a new cycle following the emergence of Asia both as a rapidly growing market and as a new production source. Section 8 concludes.

[1] The terms *Old World* and *New World* are commonly used for the purpose of distinguishing between the traditional European wine producers and the latecomers in the international market.

2. The theoretical framework

2.1. Catch up and windows of opportunities

According to Abramovitz (1986), catch up is a process going far beyond the mere adoption of new technologies, and depends on the ability of countries to build some 'technological congruence' with leaders as well as on their own 'social capabilities'. The first concept indicates the conditions that latecomers need to share, at least to a certain degree, with leaders, in order to adopt their models. These might refer to economic factors such as market size, availability of inputs and consumer tastes. The latter concept concerns issues such as technical competence as well as educational infrastructure and more broadly institutions supporting the building up of technological capabilities.

Following Abramovitz's pioneering contribution, the literature on Innovation Systems in developing countries has contributed to shift emphasis in the catch up debate from resource endowments and comparative advantages to institutional variables, capabilities, and dynamic creation of competitive advantages (Lundvall et al, 2009). In this literature, catching up is more than simply copying new technologies; it requires creative adaptation and innovation along and beyond the model followed by forerunners. Therefore, in their catching up effort, latecomers do not simply follow the technological path of the advanced countries but they may skip some stages or even create their own individual path (Lee and Lim, 2001).

Late entrants build on existing knowledge, but they would eventually depart from it by following their own trajectory of development. As suggested by Perez and Soete (1988) and Lee and Malerba (2013), this occurs when windows of opportunity open up. These windows can appear because there are changes in the prevailing techno-economic paradigm, because of a business downturn cycle characterized by abrupt changes in market demand and by the rise of new consumers or because there is some key modification in government regulations or policy interventions (Lee et al, 2011). At such turning points, taking over is possible since incumbents are locked in existing technologies, management practices, labour skills, markets and institutional routines. The burden of previous investments makes it difficult for them to fully recognize changes taking place in the external environment and endorse them. This eventually hampers and slow down the adoption of new technologies, the adaptation to new market characteristics and to new regulations and institutional frameworks among the leaders, while

reactions could be quicker elsewhere, in countries not bounded to the old technology, the traditional market and the related institutional context.

Due to the opening of windows of opportunities, across countries and sectors a large variety of catch up experiences may be detected. The Sectoral System of Innovation (SSI) approach provides a useful framework for the empirical investigation of these experiences. It stresses the need to take into account of the coevolution of markets, technologies, production modes, and organizational forms, whose determinants and influences cut across national boundaries as well as idiosyncratic elements, which might explain the capacity of specific latecomers to take advantage of technological and/or market windows of opportunities (Malerba, 2002; Malerba and Mani, 2009). A sectoral perspective is relevant to analyze the determinants of the catch up process because it identifies the key elements that are different and specific to each industry, and emphasizes the international, national and local conditions that can amplify or hinder the sector specific evolutionary mechanisms.

This is the perspective adopted in this paper to investigate what has happened in the global wine industry presenting a case of catch up in which the latecomers follow a path-creating strategy and the incumbents, instead of disappearing, react to the challenge and creatively adapt to the new path created.

2.2 Catch up in the wine industry

In the wine industry the catch up process has begun in the mid-1990s, when latecomers, such as Australia and USA, followed by some emerging economies including Argentina, Chile and South Africa, took advantage of the changing needs in the international market. These countries experimented new pathways of technological modernization, product standardization and marketing innovation, which were largely diverging from the established business models characterizing for a long time the OW countries. Differently from what has been envisaged by Lee and Ki (2013) for a very diverse sector such as the steel industry, in the wine case the initial competitive advantage of latecomers was not primarily on costs, but rather on innovation in products and processes and on the establishment of a conducive institutional set up (Giuliani et al, 2011). Costs advantages have also played a role, though they were complementary to innovation and technological change in a successive stage of catch up, when firms from latecomer countries consolidated their position in the international markets. Indeed, wine production in countries such as Australia, Chile and South Africa has certainly benefited from large inputs availability

(e.g. land), economies of scale and, in some cases, cheap labour. Successively, the new paradigm in the wine industry, based on a market-driven scientific approach to wine production has also impacted on the industry knowledge base and on the relevant industry actors (for example universities, regulatory bodies, companies) among Old World producers. In fact in the wine industry, differently by Lee and Malerba's (2013) prediction that no one could last forever and despite their decline in the market shares occurred in the last 30 years, the incumbents (i.e. the top EU producers) have been able to sustain their leadership.

To understand why in this particular industry, newcomers are still in the stage of a gradual catch up and incumbents have not yet lost their market leadership, we can suggest a number of idiosyncratic reasons. First and foremost, the wine industry like agriculture in general, can be classified as a typical 'supplier dominated' sector (Pavitt, 1984), characterized by slow and gradual technical change. Typically, in agriculture very few firms carry out R&D activities, and when they do, their R&D expenditures are hardly comparable to those of the manufacturing sector. Most of the innovation and research efforts are conducted either by the supplier industry (e.g. equipment manufacturers and suppliers of fertilizers, seeds, pesticides) or by public research organizations and the results are diffused to farmers via the public extension services (Pardey et al. 2010). Competitive advantages derive mainly from the capabilities that firms accumulate over time and there is limited space for radical discontinuities to be exploited by latecomers, inevitably slowing down the catch up process.

Second, agriculture reacts more slowly to changes than manufacture due to social and geographical specificities as well as economic and profitability issues. Agricultural activities are strongly rooted in territory and communities, because of soil, climatic and morphological characteristics as well as historical traditions and accumulated pool of informal knowledge. Some of these conditions are fixed and others can hardly be changed in just a few decades (unless a major crisis would occur). Therefore, the disappearance of farmers and their activities, especially those typical of a given territory, cannot occur in the same vein and at the same rate as for example the decline in steel or car production. In other words, besides economic considerations, non-economic factors also matter in this context. This latter argument applies in particular for those European countries where wine production is strongly rooted in hundreds if not thousands of years of history and tradition.

Third, some contingent factors do also play a relevant role (see Section 5.3). Wine production and more broadly agricultural activities have always been heavily subsidized in the European

Union. Since the inception of the European Common Market in 1957, top wine producers such as France, Italy and Spain have taken advantage of subsidies and incentives to domestic activities as well as protection of their internal markets from foreign competition.

It is also important to notice that rents generated by the regulatory protection have recently decreased and harassed by the increasing competition of NW latecomers in third markets (i.e. the USA) as well as in the EU wine importing countries such as the UK and the Scandinavian countries. World producers have also been able to innovate and adapt to the challenges posed by the newcomers (see Section 5). Such a pro-active reaction of the OW has made harder for newcomers to consolidate overtime their positions, even in non-traditional markets (e.g. USA, UK, China).

Despite that the OW still maintains the leadership position in the international market, the wine story is not necessarily one of aborted catch-up. It can still be argued that in the long run New World producers might be able to overcome European countries and that a long phase of gradual catch up process is still in place, as suggested by new latecomers such as New Zealand, successfully entering into the international scene. Moreover, although OW countries are still at the top of world wine consumption ranking, there is an undergoing clear shift towards non-traditional consuming countries, such as China – and more broadly Asia- and the USA. In general terms Asian countries might be more sensitive to price and quality issues, and less used and interested to import from countries with an established tradition (i.e. Europe). Moreover as argued in Section 7, some Asian countries, and among them China in particular, might also become sizable exporters themselves, further challenging the position of the current leaders.

In rest of the paper after presenting the evolution of the global wine industry, we provide a detailed analysis of the three cycles presented in Figure 1: 1) the still unaccomplished New World rise with a focus on the entry phase and on the gradual catch up (Section 4); 2) the Old World revival with emphasis on their sustained leadership (Section 5); 3) the successive rise of new leaders (Section 6). Then we conclude introducing the hypothesis of a fourth prospective Asian cycle (Section 7), characterized by new actors both on the demand and supply side.

3. The evolution of the global wine industry

As a result of centuries of tradition, in the 1960s the main European producers - France, Italy, Spain, Germany and Portugal - dominated the wine industry accounting for 63% of the world wine production in volume, with France and Italy alone representing almost half of it (47%)

(Table 1). The industry was strongly based on a large and stable domestic market, which absorbed the most of the local production. In that period wine per-capita consumption was as high as 124 lt. in France and 108 lt. in Italy, well above the world average (7,2 lt.). The globalization of wine was still far to come and a mere 11% of world wine production was exported with France, Italy, Portugal and Spain having almost 40% of the total global market (Anderson and Nelgen, 2011b).[2]

In the same period, the share of wine production in New World countries, such as the USA, Australia and Chile was respectively 2,9 %, 0,7 % and 1,7 % (Table 1). The only sizable producing country was Argentina, with 7,4% of the world wine production in volume and a considerably large domestic market corresponding to 8% of the world total consumption (Table 2) and a per capita consumption as high as 83 lt.

Since then we have observed a steady decline of domestic wine consumption in France, Italy and Spain, a slowdown in demand which has accelerated since the mid-seventies, with a cumulated decrease in per capita wine consumption summed up respectively to -50%, -59% and -14% for the period from 1961 to 2009.[3] With regard to the domestic market in the New World we can observe a mixed trend with Australia and USA experiencing a sharp increase, while Argentina and Chile going through a decline in consumption similar to the Old World countries (-45% and -43% respectively).

In non-producing countries since the end of the 1970s, there has been a steady increase in demand. Wine has increasingly become a popular beverage in the UK and among North European consumers in Scandinavian countries and in the Netherlands (Anderson and Nelgen, 2011b). Then recently, demand for wine is also impressively surging in Asia: Japan has experienced a growth of about 2000% during the period 1961-2009 – though it has now stabilised - and in the same period China has gone from nil to 7.6% of world wine consumption (Table 2).

Consequently, the sluggish domestic demand in producing countries has partly been counterbalanced by a rise in imports from non-producing countries, allowing both OW and NW

[2] During the 1960s North Africa, and particularly Algeria, also had a high share of world export equal to almost 47 %. This was the heritage of French colonization and of the boom of wine production in North Africa as a consequence of the spread of phylloxera devastating French vineyards in the last third of the 19th century. In the 1980s North African share of world exports was less than 4 % and it was almost nil since the 1990s (Anderson and Nelgen, 2011b).

[3] In 2009 in France wine per capita consumption reached 39 lt., in Italy 43 lt. and in Spain 23 lt. (from 61 lt. in 1961) (Anderson and Nelgel, 2011a)

to pour large part of their oversupply in the international markets. The volume of exports as a percentage of world wine production has tripled from 1961 to 2009, going up from 11% to 32%. NW countries have contributed the most to such increase, with the volume of exports as a percentage of wine production doubling from 20% to 40% between 2001 and 2007. Also OW countries have experienced an increase in the export share of domestic production, though to less extent (from 30% to 35%) (Anderson and Nelgen, 2011b).

The rapid catch up process of NW is depicted in Figures 2a and 2b, which clearly illustrate how new producing countries have started to gain market shares at the expenses of the OW producers. The steady convergence is particularly evident when only extra-EU trade is considered, as appeared in Figure 2a showing that in 2000 the NW countries have surpassed the OW. Furthermore Figure 2b illustrates that in value a gap still exists but it is rapidly closing.

The frontrunners of such catch up process are the USA, namely California, and Australia, then followed by Chile, South Africa and more recently by Argentina and New Zealand (Figure 3). Until the end of the 1980s, the share of world wine export of NW countries was barely sizeable but since the 1990s their presence in the wine global market has increased at spectacular rates of growth (Table 3 a and b). Australia is the undisputed leader among the NW countries. It has experienced a growth rate of exports higher than 2500% in volume over a fifty years' time span (1961-2010). As a matter of fact, its export share in volume has jumped from a mere 0,3% in 1961 up to 2.3% in the mid-eighties, reaching a peak in 2006 (9,1%) to slightly decrease in volume down to 8.16% in 2010 (see Section 6 for an explanation of this slowdown) (Table 3a). Similarly, with nil exports in the 1960s the USA have reached a 3% in the 1990s and nowadays they are around 4,5% of the world total exports (Table 3a).

Following Australia and the USA, Chile and South Africa have also considerably increased their presence in the international market reaching respectively 5.1% and 2.7% of the world total exports. Finally in more recent times, Argentina and New Zealand came to the fore as the fastest growing exporters in the last decade (Tables 3a and 3b) and in some markets (i.e. USA) they were even able to challenging the position of some established OW and NW producers such as Spain and Chile (Figure 4) (see Section 6 for an explanation of their success).

As for the OW countries, the main loser seems to be France, whose world export shares have declined as compared with the peak of the late eighties (see Section 5 for an explanation of the changes among OW countries). On the contrary both Spain and Italy have maintained their positions, and in particular Italy has gained some percentage points at the expenses of both

France and NW producers (Table 3a and b). If we focus on the top two producers and exporters, France and Italy, we observe a steady convergence in export shares in both volume and value. In particular, Italy, which in the past has been a large producer of table and popular premium wines, in the last two decades has shifted its production towards quality wines, as shown by the increasing unit value of exports (Table 4).[4] Italy has overcome France in some key markets such as the USA (Figure 4), consolidated its leadership in large markets such as Germany and gained positions in the UK, the largest market for imports (see Figure 5). Nevertheless, France still holds firmly its leadership in value of exports, with a world share (31.5%) that is twice as much as the one of Italy (18.5%) (Table 3b).

The dynamics of the catch up process appears even clearer by focusing on the relative position of NW vs. OW in some key markets. The case of the UK is emblematic, being the largest importer of wine in the world. Traditionally, OW producers, especially France, used to dominate this market; nevertheless since the reform of the wine licenses system in the late seventies (Anderson and Negel, 2011b), local supermarkets and large retailers began to increasingly source wine from NW countries, most notably from Australia (see 4.1), which at the end of the 1990s became the second largest exporter to the UK after France (Figure 5). Similarly in the US market, the second largest in value and volume, at the end of the 1990s Australia overtook Spain, which in 2008 was surpassed also by Chile, becoming the fourth largest exporter to the USA.

All in all, the evolution of the global wine industry over the last 50 years suggests that the leadership of incumbent producers, though weakened by a disparate group of highly competitive countries and producers, remain still undisputed. In particular the two top producers, exporters and consumer countries, namely Italy and France, invariably occupy the first two positions in the aggregate global wine market as well as in the most dynamic national markets. In the next sections we discuss how the NW was able to challenge the OW, which factors allowed the OW to retain the leaderships and some changes undergoing among the new comers in global wine market.

4. The gradual, unaccomplished, catch up cycle of the NW countries

4.1 The window of opportunities: changes in market

[4]The increase of unit value of French wine was higher than Italian one. However this is partly explained by the decrease in the denominator (volume of export) rather than only by an increase in the numerator (value of exports). On the contrary, Italy experienced a significant increase in unit value, despite that exports in volume have grown. Hence, the numerator (export value) has increased more than the denominator (export volume).

Since the late seventies, a quantitative shift in demand accompanied by a qualitative transformation of consumers' tastes represented a major turn-around in the world wine industry, which overall has favored the expansion of the New World countries. The emblematic historical event that stigmatizes a radical shift in the world wine market is the so called *Judgement of Paris*, an international wine competition held in Paris in 1976, when French judges carried out blind tasting comparisons between French and Californian wines and, with great general surprise, Californian wines were rated best.

What triggered the initial success of New World wine producers is a combination of changes in the international market concerning the main traditional consumers, the opening of new opportunities in countries where wine had never been a traditional beverage and a revolution in the distribution system. This blend of market related elements created a window of opportunity, which has facilitated the entry of latecomers in the wine global market.

We have seen in Section 3 that wine production in countries such France and Italy was traditionally mainly directed to satisfy a large internal demand. In fact in these countries, as well as in other European producers such as Portugal and Spain, wine was generally consumed as a staple food, at every meal in every family with more attention to price than quality, very often bought directly from local producers as bulk wine. Since the 1970s, all the traditional European producing countries experienced a drastic reduction of wine consumption in quantity, driven by lifestyle changes with wine becoming a beverage for special occasions, selected with much more attention to quality than before. In fact, the reduction of volume consumption has been matched with an increase in unit value, as a shift occurred in the type of consumption from bulk to premium wines (see Section 3 for details).

The increasing popularity of wine as a beverage opened up market opportunities in countries with little tradition as wine consumers. As shown by Anderson and Nelgen (2011b), a first significant window of opportunity in the sector appeared in the 1970s, as UK regulations changed and allowed supermarkets to retail wine, giving rise to a new market dominated by post-war baby-boomers by then adults. Given Australia's close historical ties with the UK, the Australian wine companies rapidly recognized and responded to this new market opportunity. UK supermarkets required large volume of consistent, low-priced branded premium wines and this new trend boosted Australian wine production and exports, competing with more expensive, low quality Italian and French wines, typically sold in the UK market.

From Britain, a radical transformation in wine demand spread to other non-traditional markets such as the USA and the European Nordic countries, involving consumers with no prior experience in wine consumption, such as younger generations and women. These new consumers lacked the experience to appreciate differences from wine regions and had no knowledge about European appellations. Therefore, "easier-to-drink" fruitier, lighter and more affordable wines from the NW easily captured their preference (Muhammad, 2011).

The quality upgrading of wine demand coincided with an increase in wine purchases made in supermarkets and the rising importance of large-scale distribution. To exploit the new rapidly growing markets, supermarkets required large volumes of good quality, easy to drink, international variety of wines such as Sauvignon, Cabernet, Chardonnay. Since the 1990s, supermarkets also began to source and ship wine directly from NW producers, with great reduction of costs allowing for low retail prices (Muhammad, 2011).

Australia, as seen above, and California were the first to step into this new widening segment of the international market, taking advantage of their favourable factor endowments in terms of land and capital (Anderson and Nelgen, 2011b). US wine experts played a major role in changing the established patterns of perception, thus altering the reputation and media recognition of wine regions traditionally associated with low quality segments and low status in international markets. Taking note of this market evolution and in order to send a clear and strong message to consumers, Australia chose to promote '*Brand Australia*', putting aside differences among wines and regions in a bid to target the 'popular-premium' (US$ 2.5-7.5) segment of the world market (Aylward, 2006).

Due to these pervasive changes in the market, the definition of wine quality ceased to be exclusive domain of producers[5], strongly influenced by the characteristics of *terroir*, and its control shifted to consumers, becoming the value perceived by the market (Petrorius, et al. 2006: 408). Furthermore, the capacity to build the reputation of a specific wine became a major competitive advantage in a market characterized by a large and increasing share of relatively inexperienced consumers. Quality ratings provided by wine experts and guides increasingly played a key role in shaping the perception and behavior of potential consumers (Odorici and Corrado, 2004).[6]

[5] Besides producers, in France wine merchants have also traditionally played a key role in influencing the perception of quality in the market (Patchell, 2011).

[6] Besides the sheer increase in market shares, to validate the increasing importance of NW countries as leading global players, other qualitative indicators such as the awards obtained in international competitions and tastings can

Following the way opened by California and Australia, other New World producers changed their positions in the international market. The latecomers include Chile and South Africa, whose wine industries began to surge in the late 1990s and more recently, in the second half of the 2000s also Argentina and New Zealand (see Section 6).

In the NW, the fast penetration in many different markets worldwide has been also certainly facilitated by the presence of large corporations with a differentiated portfolio of wine brands.[7] In fact, the branding and volume capabilities of the leading global wine firms and their ability to produce wines of an even quality satisfy the requirements of supermarket channels, which prefer to buy from a few large suppliers in order to reduce their procurements costs. Since late 1990s, NW countries have been protagonist of an intense process of international acquisitions, which has been driven, among other reasons by the opportunity to source grapes at competitive prices from multiple areas and the opportunity to acquire key brands (Anderson et al., 2003).

4.2 *Changes in the innovative and knowledge bases*

To take advantage of the market opportunities, in NW countries, with USA and Australia leading the way, large investments were directed to modernize and improve viticulture and oenological techniques (Cusmano et al, 2010).

Although the tenants of advanced knowledge remained located in the OW, NW countries have also exhibited an impressive commitment to set up new research institutions, as well as other institutional arrangements supporting the development of their wine industry. In a recent book Giuliani et al (2011) suggest that the successful strategy of the NW in 'building up' wine products fitting with the new international tastes is based on a mix of factors: domestic scientific and technological capability accumulation aligned with market objectives, openness and access to foreign knowledge and technologies, strong linkages between local research communities and the industry.

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be taken into account. For instance, in the international ratings provided by Wine Spectator, one of the most influential and reputed international wine magazines, Australia and also Argentina, Chile and New Zealand have all increased the number of their wines estimated at the top, although France, followed by Italy, maintains the leading position.

[7] Among the top wine companies in the world market (as measured by turnover in 2011), *Constellation Wines*, a branch of the US group *Constellation Brands*, is the largest, the third largest is *Treasury Wine Estates* from Australia, the *Distell Group* from South Africa is the fourth and *Vina Concha y Toro* from Chile is 6thlargest (Mediobanca, 2013). To be thorough the second is *LVHM,* part of the namesake French luxury group, which is specialized in champagne and the fifth is *Yantai Changyu Pioneer Wine* from China, entered for the first time in this ranking in 2011.

As concerns scientific advancements, several authors (Cassi et al., 2013; Glänzel and Veugelers, 2006) provide evidence suggesting that emerging countries, such as Chile, Argentina and South Africa, are catching up rapidly in terms of knowledge production, as shown by their increasing share in international scientific publications in wine related disciplines.

Moreover, some recent empirical evidence shows a growing trend in the degree of openness of research and industry communities in the NW. Chilean and particularly South African scholars have substantially increased their international scientific collaborations, while Australia has recently emerged as key scientific player on the side of the USA, France and Italy (Cassi et al., 2011).

Researchers employed in universities and research institutes have proved to be important gateways of international scientific knowledge for the domestic industry (Giuliani and Rabellotti, 2012). The significant proximity between science and industry has been facilitated by the fact that nowadays most wineries employ highly qualified workers as agronomists and/or oenologists, whose language and codes of communication is very proximate to that of their peers working at universities.

Indeed, a further prominent role played by universities has been in training and educating a whole new generation of experts, specialized in different fields spanning from agronomics, oenology, chemistry, engineering and biotechnology, whose skills have been critical to promote technical change in the industry. Such highly qualified professionals, also denominated as *flying winemakers,* working as consultants for wine companies around the world have played a key role in transferring massive amount of tacit knowledge flows and contributing to the diffusion of a new more rigorous approach to winemaking (Giuliani and Bell, 2005; Farinelli, 2012).

4.3 Changes in the institutional settings

Institutional changes have played an important role in the catch up of New World producers. The successful experience of Australia has become best practice for adoption by latecomers, in particular South Africa and later Chile. However, the implementation has proved more difficult in those contexts, such as the South African one, characterized by political instability or incipient institutional capital.

The Australian experience in institutional building is a case of successful centralization and co-ordination at the national level of industry and research organizations, setting export-oriented priorities and targets, and promoting and socializing a vision for the industry at large, rather

demanding in terms of governance capacity and co-ordination across institutions and levels of government (Aylward, 2006).

Among the latecomers, South Africa was the first to adopt a similar institutional strategy. A national system of market-oriented R&D institutions has been in place since the late 1990s. Stimulated by the government, in 2002 the South African Wine and Brandy Corporation (SAWB) was established to enhance the industry competitiveness. Technological innovation and market development were among its main areas of intervention along with training of human resources, social promotion and provision of information about the industry.

A process of institutional renewal has also taken place in Chile where in 2007 the two major winery associations in Chile, *Viñas de Chile* and *Chilevid*, have merged to form *Vinos de Chile* to provide a single voice, in a bid to achieve a more coherent strategy to guide the entire industry. With regard to research, there has been some collaboration since 2006 with the establishment of two consortia, *Vinnova* and *Tecnovid* involving the two industry associations in partnership with the main research institutions and universities.

As a whole the institutional settings, which have become common in many NW countries play a key role in the catch process because they enhance the participation of the different stakeholders of the industry along with the public sector, in particular research organizations. The design and implementation of participatory systems, involving companies at different levels, even small growers, have been effective in favoring the construction of a shared vision for the future of the industry. These mechanisms also proved to be rather successful in setting research priorities that met industry needs, for closing the gap and for reinforcing the linkages with academia.

5. The Old World cycle of sustained leadership

After more than two decades of decline in markets shares, since the mid 2000s the resurgence of OW countries in international markets has become apparent.[8] During this decade, though both NW and OW have increased their exports, it is this latter group that has experienced a growth in the unit value of their exports, while the former, apart from New Zealand and Argentina, hardly had any change (Anderson and Nelgen, 2011b).

This reverse in the growth trend is even more evident when looking at the disaggregated data by typology of wine (Table 5). For example, Italian and Spanish exports of bottled wine grew more than the Australian ones, and Italy's growth rates were comparable with those of Chilean wines.

[8.] It has to be noted that production and export grew in absolute terms over the period.

In particular, Italy represents a success case: its world market share has increased approximately by 1.7%, which is among the highest growth rates experienced by any wine country over the last decade, with a significant share of this increase coming from both bottled and sparkling wines. In the latter group, the growth rate of the Italian wines (288%) is much higher than all the other top OW and NW producers (with the exception of South Africa).[9]

Although the emergence of Italy as a world export leader is not news in itself, indeed Italy was at the top of the world export ranking already in the eighties (see Tables 3a and 3b), nevertheless, the performance of the Italian wine industry is an illustrative example of how a traditional OW producer has reacted successfully to the challenges posed by NW latecomers. This achievement has been the result of a deep transformation in its domestic industry, which has set the basis for reversing the decline of an OW leader.

It may be worth to notice that not all OW countries have been able to reverse their declining trends. A case in point is France, which continues to loose market shares worldwide (see for example Figure 3 and 4). The enduring loss of competiveness of the French wine industry is illustrative of the difficulties that incumbents experience when challenged by newcomers. In particular, the French decline in market shares can be ascribed to structural weakness of some parts of its industry. Differently from Spain and Italy, the French wine industry is strongly polarised between two broad types of wine regions: on the one hand, regions specialised in the production of high volumes of mid-low priced wines (e.g. Languedoc), which have suffered the most from external competition; on the other hand, regions that host prestigious vineyards (e.g. Burgundy, Bordeaux, Champagne just to mention a few), which instead have strengthened their international reputation and contribute the most to the French worldwide leadership. The main factors behind the resumption of the OW are investigated in what follows.

5.1 The modernisation of the Old World wine industry

Despite a first inertial reaction, the OW industry entered a major process of modernisation following the strong penetration of NW in the global competition arena. The Italian wineries, along with the Spanish and to a less extent the French ones, have embraced the new market-driven model of production (see Section 4) and shifted away from the traditional supplier-driven approach that dominated the industry in the past. In the OW, this shift has implied that many

[9] This surge in export is mainly driven by the success of the *Prosecco* sparkling wine, which has become a top seller in key markets such as the UK (see http://www.thedrinksbusiness.com/2013/01/prosecco-outperforming-champagne-in-uk/).

non-competitive wine farmers have abandoned the production and some unspecialised grape growers have turned themselves into professional winemakers and full time entrepreneurs. Very often, idiosyncratic behaviours have been replaced by a focused attention to quality and customer needs both in terms of quality and price (Pomarici, 2008). These latter changes have aligned the domestic industry of OW countries to the international standards of production and marketing required by large buyers and importers.

Such a shift of attention toward quality can be observed in several activities carried out by winegrowers, viticulturists and oenologists both in the vineyard and in the cellar. For example, innovation in the form of experimental activities, such as testing clones and replanting those that work better has become a common practice among many winegrowers. Environmental as well as efficiency concerns have pushed wineries to adopt precision viticulture and advanced technologies, such as infrared, are employed in the vineyards to optimise canopy management procedures and give uniformity and consistency to grapes. Cellars have turned from being dusty to be full of modern equipment ranging from widely used steel tanks and electric grape sorter, to more contested ones, such as cooler machines. In some cases, cellars have even become touristic attractions built by archi-stars.[10] All in all, though to a different extent, new technological developments and scientific discoveries have found their ways into wineries, either through the direct initiative of the winemakers or via the consultancy of oenologists or viticulturists working for the firms or the inter-professional organisations that support their activity (Morrison and Rabellotti, 2011).

Besides the adoption of new technology, the modernisation of the industry has also meant more attention to marketing and branding. For example, screw caps have made their appearance on bottles of European wines and wine in boxes is now common for table wines. Increasingly more individual wineries and also consortia have contracted communication and marketing agencies to advertise their products, especially to enter international markets (often supported by national voucher under the EU wine policy as explained in Section 5.3).[11]

Notwithstanding the wine industry in the OW countries is still characterized by a fragmented structure dominated by a majority of small independent winemakers, it has to be noted that the remarkable process of consolidation taking place worldwide since the late '90s has also engaged

[10] Calatrava's Ysios and Hadid's Tondonia cellars in the Northern Spanish wine region of La Rioja are cases in point.

[11] A success case is Sopexa, a former French public agency, which provides a full range of services in strategic marketing to promote wine and wine territories, along with other agro-food products, all around the world.

countries such as Italy, where for instance two cooperatives have merged becoming the 7th largest companies in the world (Mediobanca, 2013).

The above examples show that in a whole range of activities concerning production, organisation and distribution, the gaps and differences between OW and NW producers have narrowed if not disappeared. The OW countries have renewed their fortunes introducing a successful mixed strategy based on a market driven approach, coupled with a strong differentiation of brands and wines, tightly connected with their territorial and historical specificity. This is the case of countries such as Italy and Spain, which have been successful in renewing their competences both in popular as well as in top quality wines (e.g. sparkling), being able to innovate in order to address new consumers' requirements, while keeping the industry well rooted in the local *terroir*. Similarly, world-renowned French wines (e.g. Champagne, Bordeaux) have reinforced their competitive advantages based on the uniqueness of their territories, so gaining market shares in both traditional and emerging markets (e.g. China). On the contrary French producers of popular wines, in particular cooperatives, lack of market knowledge, and their unaltered adherence to the *terroir* model has not been very successful because some of these regional appellations are not immediately recognisable by foreign consumers (Hussain et al. 2007).[12]

5.2 Changes in demand and the role of terroir

Since the early 2000s, a new qualitative change of consumers' tastes has occurred in the global market, this time mainly favouring OW producers. This new class of consumers is more sophisticated and educated than before and pays more attention to variety and also to some intangible features, such as history and authenticity besides the intrinsic quality of wine. These sophisticated and demanding consumers belong to the emerging wealthy and middle classes in both developed (e.g. UK) and emerging economies (e.g. China) and search mainly for high-status goods (Charters, 2006; Goodman, 2003). The extraordinary growth of unit value in some markets, such as Hong Kong and Singapore testifies the emergence of such sophisticated demand (see Anderson and Nelgen, 2011a: Table 202).

[12] This argument finds support in the interviews we undertook with two French wine experts. However, it is also worth mentioning that some changes are recently occurring also among these more traditional producers. For example, after the 2008 European reform of the wine sector (see 5.3) the wines from Languedoc have adopted the brand 'Sud de France' (instead of relying on an appellation of origin system), in an attempt to make the regional identity more easily identifiable to foreign consumers.

In this mutated competitive environment, OW producers seem to be particularly well positioned as compared to NW ones, since their industry is generally regarded as both highly differentiated and rooted in old if not ancient traditions linked to highly variegated territories. The concept of *terroir* captures such diversity coupled with history and tradition (Charters 2006), and confers to OW wines a unique competitive advantage over NW producers (Wilson, 1998; Vaudour, 2002; Barham, 2003). In order to reinforce such competitive factor, wine producing countries, along with the EU commission, have introduced several schemes and legislation protecting the place of origin of wines (i.e. Appellation of Origin Control system-AOC) and regulating its production in many aspects ranging from maximum yields per hectare, oenological practices, grape varieties and labelling of wine among others (more details are presented in Section 5.3).

Although it might be questionable whether wines from *terroir* regions are intrinsically better than those from NW, consumers tend to attach a higher value to such wines, which stems mainly from the status they confer to buyers (Beverland, 2005). For these wines a country-of-origin bias has been detected (Brooks, 2003) and it has been shown that they have a quite inelastic demand (Stasi et al. 2011). Therefore, the diffusion of quality wines has increased overtime in OW countries. For example, in Italy AOC wines contribute to more than 70% of the total Italian production while the production of 'wines without geographical indication' has dropped from 42% in 2005 to about 29% in 2011 (ISTAT, 2012).

Therefore, the AOC system constitutes a pillar of the OW wine industry and has also been largely influential worldwide. However, it has also been regarded as responsible for the loss of competitiveness of OW countries (most of them part of the European Union). Therefore since the late 1990s, the EU policy makers have started questioning the foundations of the EU wine policy, also supported and stimulated by industry lobbies of large firms and cooperatives in non-AOC areas, and they attempted of changing the policy framework, which has been finally reformed in 2008. We discuss the implication of this major institutional change in the next section.

5.3 A changing regulatory environment: the EU wine regulations

The wine sector in the European Union has been historically regulated by very stringent codes and rules[13], which were largely drawn from the French regulatory system (European Council, 2008; Meloni and Swinnen, 2012; Pomarici and Sardone, 2009). Until the 2008 reform, broadly speaking the EU legislation pursued two main objectives: on the one hand the preservation of quality, which was further regulated by stricter norms at national and sub-national level; on the other hand the reduction of structural oversupply in the sector., which was achieved via market intervention policies[14], similar to those adopted for other crops under the Common Agriculture Policy.

However, despite long lasting attempts, the structural problems of the industry were still largely present in 2008, when the latest reform of the Organisation of Common Markets was adopted. [15] According to the EU reformers, the strict regulations in the oenological practices and in labelling also discouraged experimentation and innovation in the industry. Therefore, aimed at addressing the loss of competitiveness in the EU wine industry the 2008 reform tackled the distortions in the wine market (also those generated by previous policy interventions) by endorsing a more market-driven approach. In other words, the main aim is to let consumers decide what wine quality is with the idea that market selection mechanisms would allow the most efficient wineries to prosper, while marginal producers would drop-off from the market. Consequently, the new policy framework has shifted from regulating the supply towards incentives to promotion, marketing and structural investments (European Commission, 2008). [16]

All in all, the new set of supporting policies and the overarching inspiring principles of the new regulatory framework have been successful in responding to the challenges posed by NW countries with a mixed strategy that try to inject more efficiency into the system, mainly

[13] EU producers had to comply with specific oenological (e.g. recommended varieties) and agricultural (for instance in some cases vineyards cannot be irrigated) practices technical parameters (e.g. alcoholic volume allowed, total acidity) and labelling rules (e.g. until 2008 it was prohibited to indicate the grape variety and the harvest year).

[14] Three main sets of instruments were in place: minimum prices for distilled wine, distillation or storage of surpluses with government subsidies, grubbing-up schemes and plantation rights.

[15] About structural imbalances, in the early nineties, 22% of the total production was distilled. This percentage was halved at the 2000s, though it still represented 11% of the total production (Meloni and Swinnen, 2012: Table 5). In 2013, five years after the reform, the situation has completely changed and the EU wine industry suffers from shortages (Pomarici, 2013).

[16] More in details, the reform leads to abandoning the financial support for distillation as well as plantation rights, to lifting the ban on specific oenological practices, reducing the vineyard areas with subsides for grubbing out vines. More importantly, the reform introduces a reorganisation of the European wines and it simplifies the labelling rules to improve the communication to final consumers and to make it easier the comparison between European and NW wines. For example, European wines can now report the grape variety and the year of harvesting on the label, which was not possible in the past for table wines, while NW countries have always provided this information.

accompanying the exit of inefficient and marginal producers, and support individual (e.g. wineries) or collective actors (e.g. consortia and cooperatives) to promote their production. At same time, though simplifying the appellation of origin system, the reform does not truncate the link existing between wine and its territory, so keeping largely intact the peculiarity of *terroir*, a major distinctive character of the EU wine industry.

6. A new catch up cycle: the entry of the NW latecomers

Since the mid 2000s, there is a new group of countries, most notably New Zealand and Argentina, gaining positions in the global market at the same time when Australian wine export growth has slowed down, recently becoming negative. To explain this reshuffling within the NW there are complex reasons, partly ascribed to contingent factors, such as the changes in the exchange rate and the 2007 financial crisis and partly attributable to structural features.

As far as Australia is concerned, the main contingent factor is the appreciation of the exchange rate, a key pushing element at the beginning of the export boom in the eighties and on the contrary since 2007, a strong curbing determinant due to the primary commodity boom (Anderson, 2013). It has to be noticed that the real exchange rate appreciation has impacted in particular on the prices of popular premium wines in markets such as the UK and USA, strongly affecting the competitiveness of the Australian wine industry in this key segments of the market.

Nonetheless, the recent deceleration of the Australian wine industry is also explained by some structural weaknesses of the domestic model of wine production, based on R&D, centralisation, on rather standardised and homogeneous products and on the dominance of large firms (Aylward, 2008). The recent changes in the demand patterns, calling for increasing differentiation and sophistication (see Section 5.2) have caught unprepared the Australian wine industry, which has got stuck into once successful routines and practices (Aylward, 2006 and 2008) These structural problems have been confirmed by the key informers interviewed for this study, who have also suggested that a more regionalised research system is being put in place and accordingly, marketing strategies have started to be more tailored to the needs of small-scale and fine-wine producers. Overall, a pledge for decentralisation and differentiation is clearly in the agenda of the main industry governing bodies that might set the seeds of a new strand of future growth (AWBC, 2007).

Differently from Australia, New Zealand and Argentina have recently and successfully come to the fore in the global market, mainly targeting the upper segment of the market. In particular,

New Zealand has concentrated its production in the premium and super premium segments of the market, also taking advantage of a recent change in consumer preferences favouring wines produced in cooler climate than those prevailing in countries such as Australia.

Thanks to well-functioning supporting organizations such as the Wine Institute of New Zealand (WINZ) and a positive role played by foreign investments, New Zealand has promoted and exploited the association of its best wines to their *terroir*, introducing a system of geographical appellations (Overton and Heitger, 2008). As a result of this strategy, in 2009 New Zealand ranked third in the category of top exporters of super-premium still wines with 7% of the world total market, ahead of Australia and Spain with only 3%, and just behind France and Italy (Anderson and Nelgen, 2011c). To be noticed that in the last decade New Zealand experienced the highest growth in value (1,8%), followed by Italy.

To conclude with another newcomers in the global wine market, Argentina has also recently successfully shifted from the production of low cost wines for the domestic market to export quality wines, overtaking both Spain and Chile in the US market in 2010 (Figure 4). Also in this case, the reasons for the success are manifold: the large inflow of foreign capital following the financial crisis in 2002, the favourable exchange rate but also a profound institutional renovation in the two main producing regions (i.e. Mendoza and San Juan) (McDermott 2007).

7. The new emerging Asian markets: Is there a new window of opportunity and a next catch up cycle?

Asian markets are the new frontier for both OW and NW wine producers but Asian countries, and in particular China, might also become potential competitors in the near future. Recent figures indeed indicate that China domestic consumption grew at faster rate than any other country in the world in the last decade (Table 2). Though still low in per capita terms, the total amount of wine consumed in China is nowadays close to traditional wine countries (Figure 6). The wealthy middle class who has emerged in China in the recent decades has become more and more sophisticated and westernised. Such an affluent group of consumers searches for high-status goods such as imported wines (Charters, 2006; Goodman, 2003). Therefore, demand has been particularly high for luxury French iconic wines and Australian branded super premium wines. The unit values ($/litre) of these two latter producers, who ranked first and second in 2011 (Figure 6) have indeed grown substantially over the last few years (Table 4).

Nevertheless, in the future China might also become a main competitor of established wine producers. Recent figures indicate that the Chinese domestic production is increasing, albeit consumption grows at faster rate. Moreover, domestic companies have significantly scaled up in international ranking with Yantai Changyu Pioneer Wine suddenly climbing up to the fifth position among the largest wine companies in the world. Moreover, the Asian and in particular the Chinese wine industry is attracting international capital[17] and it is also expanding internationally. There are a number of acquisitions of French *châteaux* as well as investments in the USA or in Australian wine companies.[18] As a whole, these are tangible signals of a growing interest in the wine industry within the Asian business community.

Overall, a new catch up cycle can be envisaged, whose main features seem to suggest that the global wine industry may shift its barycentre towards the East. This change, albeit still incipient, might generate in the near future a new window of opportunity for wine producers. It is yet speculative to say who will gain the most from such a shift. However, besides OW and NW countries, who will certainly play a prominent role in such a new context, it is very likely that we will observe the rise of a new player, namely China, who has the potential to challenge both OW and NW wine producers.

8. Concluding remarks

The conventional catch up model, which has been tested in a number of sectors and countries (Lee and Ki, 2013; Malerba and Nelson, 2011), suggests that latecomers will follow a gradual catch up process in which latecomers become leaders along the technological-product life cycle, then in a successive phase new leaders will be further challenged by new entrants. All in all, the theory predicts that leaders will not last forever. This paper provides an original contribution to this growing strand of empirical literature presenting the case of the global wine industry characterised by a sustained leadership of the OW. Our evidence illustrates a catch up narrative in which the latecomers are gradually catching up with the leaders via a path-creating strategy

[17] Ilva Saronno, an Italian group in the spirit business, is among the main shareholders in Yantai Changyu Pioneer Wine.

[18] In 2012 it has raised many concerns and upheavals among locals the acquisition of the prestigious Château de Gevrey-Chambertin from the Mitterand family in Burgundy's Côte de Nuits, acquired by an entrepreneur in the Macao gambling business (http://www.winespectator.com/webfeature/show/id/47207). Similarly in 2005, Lee Hi-sang, president the DongA One Group, acquired Dana Estates in the Napa Valley, California. Chinese investors have also helped to revive several Australian wineries that were close to bankruptcy due to the falling vineyard prices (see http://www.bloomberg.com/news/2011-10-25/china-s-wealthy-wine-drinkers-help-revive-australian-vineyards.html).

and the incumbents have indeed lost some market shares but instead of disappearing, they have been able to retain their leadership by adapting to the new path created.

The first catch up cycle starts in the late seventies when for the first time ever a NW wine overcame a French one in an international tasting competition. However, till the end of the 1980s the international market for wine was still dominated by European countries, and particularly by France and Italy. A number of factors contributed to open up the first window of opportunity: the steady decrease in consumption in traditional consuming countries, the entry of new inexperienced consumers, mainly from the UK and the USA, and the increasing importance of large distribution. At this stage, OW producers were locked in existing technologies, practices and institutional arrangements. On the contrary, NW countries, not bounded to the old technology and institutions, immediately reacted and rode on those changes adapting their wine to the new market conditions. Since the mid-1990s, thanks to the new pathways of production and marketing promoted by latecomer countries, early entrants such California and Australia and later on countries such as Chile and South Africa gained significant market shares at the expenses of the OW countries. It is worth noticing that contrary to what envisaged by Lee and Ki (2013) in the steel industry, in the wine case the initial competitive advantage of latecomers is not primarily on costs, but rather on innovation in products and processes and on the adoption of a conducive institutional set up. Moreover, though gradually catching up with the leaders, so far the latecomers have not able to overcome them. Sector specificities might explain why this is the case, in fact agricultural sectors react more slowly than the manufacturing industry to economic and technological changes because of sectoral, social and geographical idiosyncrasies.

As a matter of fact, the incumbents in the wine sector have been able to reacting and adapting to the challenges posed by the newcomers innovating along a new path, which seems to be aligned with the current demand patterns. Indeed, since the early 2000s, a new qualitative shift in consumers' tastes has characterised the global wine industry, this time mainly favouring OW producers. A new class of affluent consumers, who are more sophisticated and educated in drinking wine than before asks for higher variety and quality of products.

Due to the higher involvement of consumers and their increasing attention to variety and regional specificities, a new comer such as Australia has began to decline, opening up a new window of opportunities to newer entrants such as Argentina and New Zealand.

Despite the temporary decline of some latecomers, the wine story is not necessarily one of aborted catch-up. As suggested above, changes in agriculture are very slow; therefore in the long

run NW producers have still opportunities to challenge European producers and some recent market developments seem to support this consideration. In particular, we observe an undergoing clear shift of wine consumption towards non-traditional consuming countries, such as Asian countries– and more specifically China- and the USA. Australian wines have performed particularly well in these markets. Besides, a new regulatory environment has been recently implemented in the EU, whose consequence is not yet clear and might weaken some OW producers traditionally founding their competitive advantage on *terroir* and geographical origin. For sure, the wine catch up cycles will be affected in the next future by a new challenge coming from China which might become a key market but also a sizable producer and exporter. If in the future China will become a major player in this industry, than we can expect a new catch up cycle.

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Table 1 - World wine production (% volumes)

	1961-1970	1971-1980	1981-1990	1991-2000	2001-2007	2007-2009	Rate of change 1961-2009
France	23.13	21.55	21.29	20.84	18.72	16.92	-21.6
Italy	24.16	22.65	21.90	21.80	17.32	17.32	-26.8
Spain	9.52	10.09	10.73	11.18	13.44	13.28	49.9
Germany	2.19	2.63	3.38	3.83	3.39	3.26	61.4
Portugal	4.18	3.08	2.77	2.60	2.54	2.28	-21.5
USA	2.93	4.75	5.77	7.42	8.91	9.35	188.9
Argentina	7.41	7.41	6.53	5.42	5.30	5.41	-18.7
Australia	0.69	1.05	1.32	2.26	4.38	4.41	519.3
South Africa	1.50	1.81	2.42	2.83	3.05	3.68	153.2
Chile	1.72	1.74	1.42	1.56	2.48	3.48	58.1
New Zealand	0.04	0.10	0.15	0.19	0.36	0.72	3584.2
World Total	100.00	100.00	100.00	100.00	100.00	100.00	

(*) From 1978
Source: Faostat

Table 2 - World wine consumption (%)

	1961-1970	1971-1980	1981-1990	1991-2000	2001-2007	2007-2009	Growth rate 1961-2009	Average annual growth rate
France	23.40	18.89	16.73	15.65	13.69	11.61	-50.4	-52.6
Italy	24.37	19.99	15.69	14.73	11.88	9.96	-59.1	-62.3
Spain	7.96	7.58	7.06	6.82	6.48	6.84	-14.1	-25.1
Germany	3.86	5.49	7.02	8.78	8.80	8.46	119.2	155.6
Portugal	2.91	2.65	2.57	2.45	2.19	1.78	-38.8	-36.5
USA	3.25	5.27	7.93	8.94	9.36	9.52	192.9	226.0
Argentina	8.35	7.60	7.29	6.46	5.00	4.62	-44.7	-42.8
Australia	0.29	0.62	1.22	1.54	1.90	2.19	655.2	810.4
South Africa	1.66	2.00	1.95	1.87	1.72	1.57	-5.4	20.1
Chile	1.94	1.80	1.59	1.10	1.04	1.10	-43.3	-49.9
New Zealand	0.04	0.10	0.16	0.17	0.15	0.15	275.0	502.7
China	n.a.	0.05	0.85	3.43	5.87	7.61	15120.0*	145541.4*
Netherlands	0.17	0.49	0.82	0.93	1.25	1.51	788.2	10.90
Denmark	0.08	0.19	0.38	0.64	0.72	0.67	737.5	9.09
Sweden	0.16	0.24	0.38	0.51	0.61	0.64	300.0	3.66
UK	0.58	1.19	2.24	3.44	4.80	4.68	706.9	8.14
Japan	0.06	0.19	0.42	0.95	1.15	1.17	1850.0	20.44
Russia	0.00	0.00	0.00	2.26	3.56	4.34	92.0	42.5
World Total	100.00	100.0	100.0	100.0	100.0	100.0		

(*) From 1970
Source: Faostat

Table 3 - World wine export

a) Volumes (%)

%	1961-1970	1971-1980	1981-1990	1991-2000	2001-2007	2007-2010	Rate of change 1961-2010
France	13.64	16.69	25.30	23.95	19.69	14.44	-1.3
Italy	7.74	29.69	30.77	25.91	20.62	21.22	293.8
Spain	8.40	11.26	11.17	14.31	15.81	17.90	224.2
Germany	0.78	2.50	5.78	4.67	3.67	3.97	604.7
Portugal	8.20	4.48	3.23	3.71	3.47	2.81	-56.6
USA	0.06	0.21	1.01	3.08	4.50	4.60	10137.6
Australia	0.30	0.16	0.43	2.63	7.91	8.27	2500.3
South Africa	0.59	0.28	0.22	1.44	3.53	4.58	503.0
Chile	0.20	0.22	0.40	3.59	5.96	7.28	8980.8
Argentina	0.04	0.52	0.50	1.62	2.65	3.69	357419.6
New Zealand	0.00	0.01	0.03	0.23	0.58	1.66	26329.1 (**)
World	100.00	100.00	100.00	100.00	100.00	100.00	-

b) Values (%)

%	1961-1970	1971-1980	1981-1990	1991-2000	2001-2007	2007-2010	Rate of change 1961-2010
France	28.89	35.80	46.04	44.46	35.92	31.46	10.9
Italy	8.07	17.89	17.55	17.53	17.84	18.53	242.9
Spain	7.28	8.88	7.48	9.32	8.96	9.18	61.6
Germany	2.71	5.61	7.64	4.24	3.16	3.97	72.1
Portugal	7.04	5.87	4.83	4.59	3.25	2.93	-41.8
USA	0.20	0.32	1.00	2.74	3.56	3.56	2973.4
Australia	0.56	0.29	0.61	3.75	9.21	7.16	1192.3
South Africa	0.79	0.29	0.19	1.13	2.37	2.74	210.7
Chile	0.15	0.27	0.34	2.54	4.36	5.18	7619.7
Argentina	0.03	0.22	0.18	0.70	1.30	2.44	128769.0
New Zealand	0.00	0.01	0.06	0.37	1.32	2.47	28759.4 (**)
World	100.00	100.00	100.00	100.00	100.00	100.00	-

(*) From 1986 (**) From 1973

Source: Faostat

Table 4 - Unit value of wine exports ('0000USD/tonnes) 1961-2010

Yearly average	1961-1970	1971-1980	1981-1990	1991-2000	2001-2010
France	0,50	1,30	2,15	3,60	5,22
Italy	0,24	0,37	0,68	1,34	2,32
Spain	0,20	0,48	0,81	1,30	1,45
Germany	0,81	1,39	1,49	1,75	2,41
Portugal	0,20	0,84	1,74	2,43	2,59
USA	0,79	1,03	1,23	1,71	2,07
Australia	0,44	1,07	1,79	2,77	2,81
South Africa	0,31	0,62	1,01	1,58	1,72
Chile	0,20	0,81	1,04	1,42	1,92
Argentina	0,31	0,37	0,47	0,96	1,51
New Zealand	0,96	1,23	2,20	3,26	5,45
World Total	0,23	0,61	1,18	1,94	2,64

Source: Faostat

Table 5 - Wine exports (thousands US$) by category

	All wines				**Bottled wine**				**Bulk Wine**				**Sparkling Wine**			
			World share				**World share**				**World share**				**World share**	
	Value	**Growth 2001-11 (%)**	**%**	**Δ 2001-11 %**	**Value**	**Growth 2001-11 (%)**	**%**	**Δ 2001-11 %**	**Value**	**Growth 2001-11 (%)**	**%**	**Δ 2001-11 %**	**Value**	**Growth 2001-11 (%)**	**%**	**Δ 2001-11 %**
France	9180.482	87	30.5	-8.6	5818.216	81	26.5	-7.3	345	20	13.6	-11.6	3015.912	114	62.8	-7.0
Italy	5660.365	148	19.3	1.7	4447.126	142	20.9	2.3	490	76	17.0	-9.8	676.1989	288	13.9	6.3
Spain	2792.042	139	8.6	-0.3	1740.375	131	7.8	0.1	499	130	14.2	-3.9	514.8022	137	9.5	-0.5
Australia	1859.746	96	7.1	0.2	1471.271	67	8.1	-0.8	317	610	9.5	6.5	71.19293	210	1.5	0.5
New Zealand	834.6974	793	2.5	1.8	722.6974	736	3.1	2.2	104	17966	2.2	2.1	7.728604	20	0.2	-0.1
Chile	1621.768	165	5.4	1.0	1352.066	156	6.2	1.0	246	208	8.2	2.0	13.82782	273	0.2	0.1
Argentina	793.9252	437	2.5	1.4	694.7165	459	3.0	1.7	78	418	2.2	1.0	18.81898	127	0.4	-0.1
USA	1223.549	134	3.5	-0.7	955.9188	107	3.4	-1.5	233	442	8.1	4.9	34.30052	94	0.7	-0.2
South Africa	767.5233	224	2.8	0.9	523.8678	156	2.8	0.5	212	655	6.7	4.3	31.66198	802	0.6	0.4

Source: our elaboration on data by Anderson and Nelgen (2011a)

Figure 1 Catch-up Cycles in the World Wine Industry

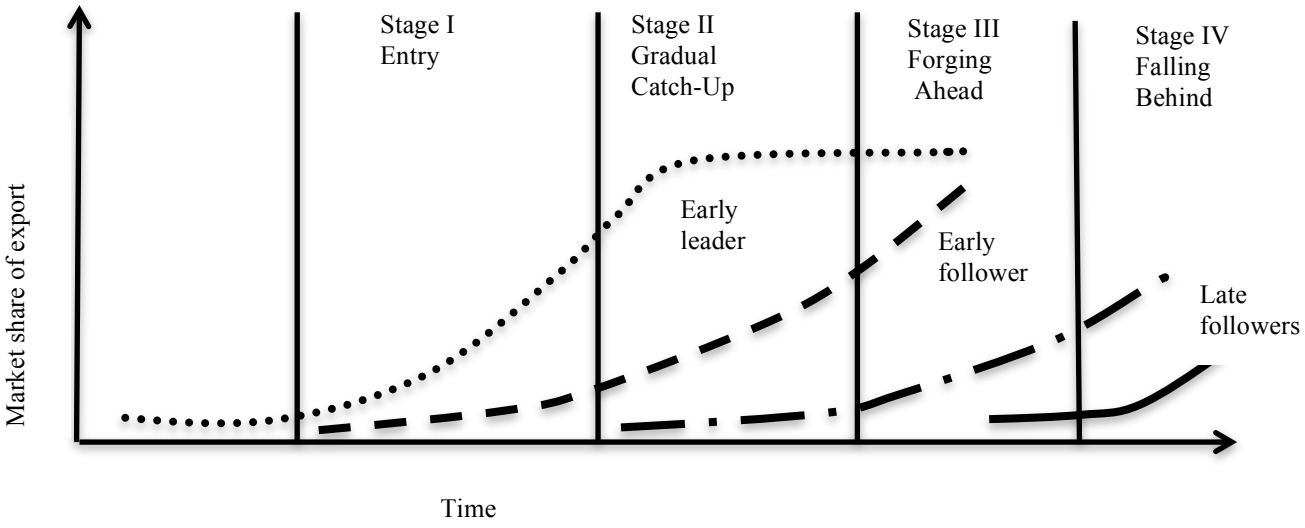
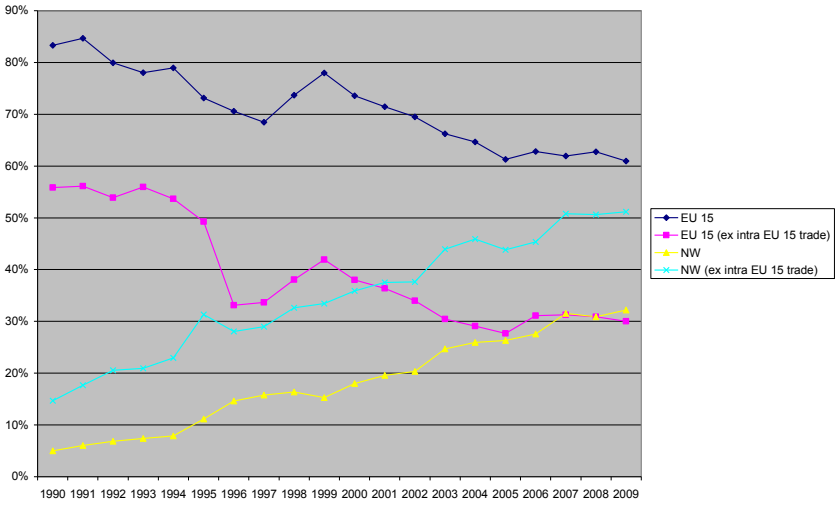
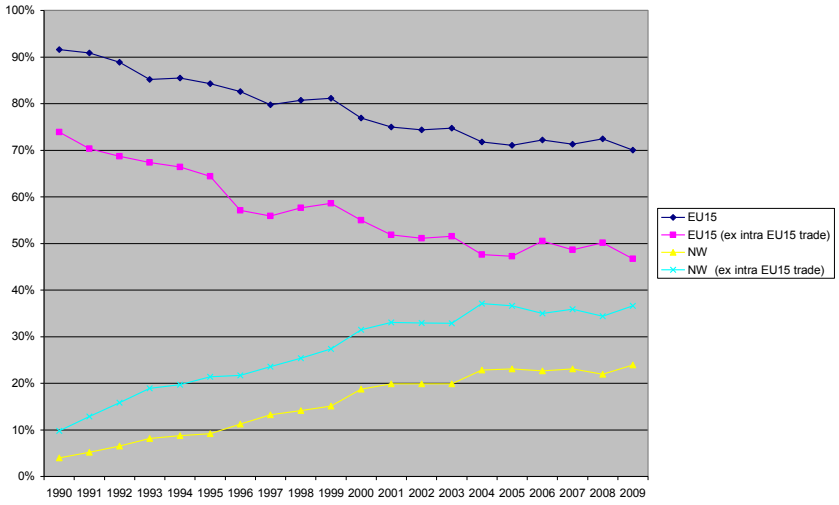


Figure 2 - EU 15 and New World share of world wine export

a) Exports in volume

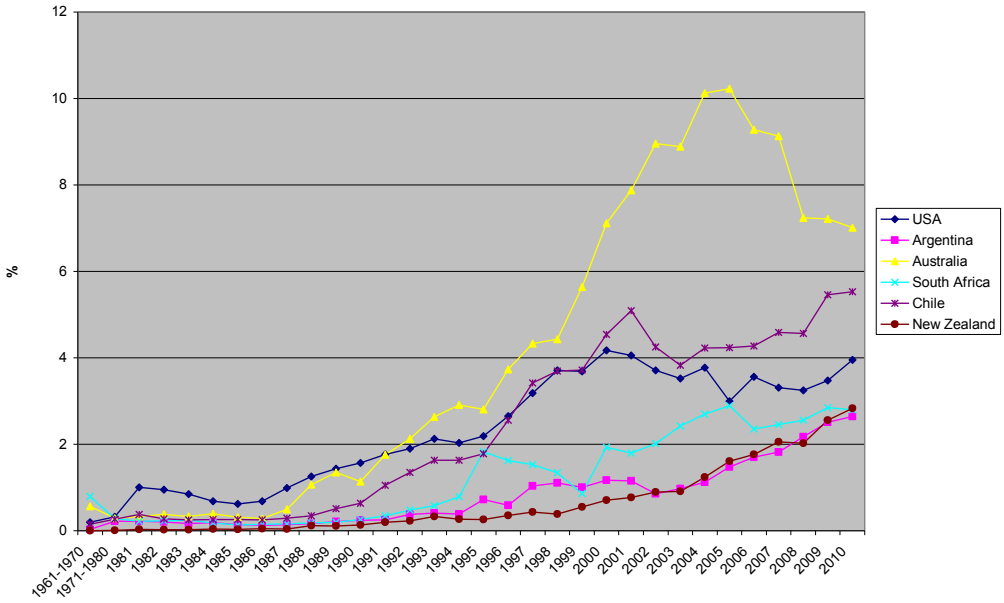


a) Exports in value



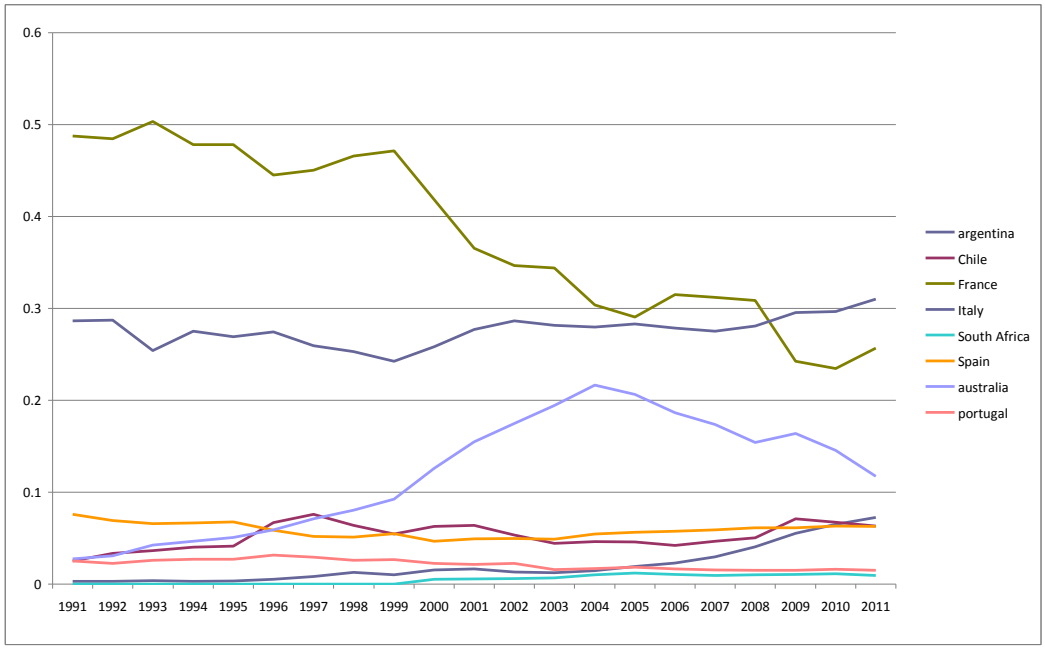
Source: Our elaboration on data by Anderson and Nelgen (2011a)

Figure 3 - New World export market shares (US$)



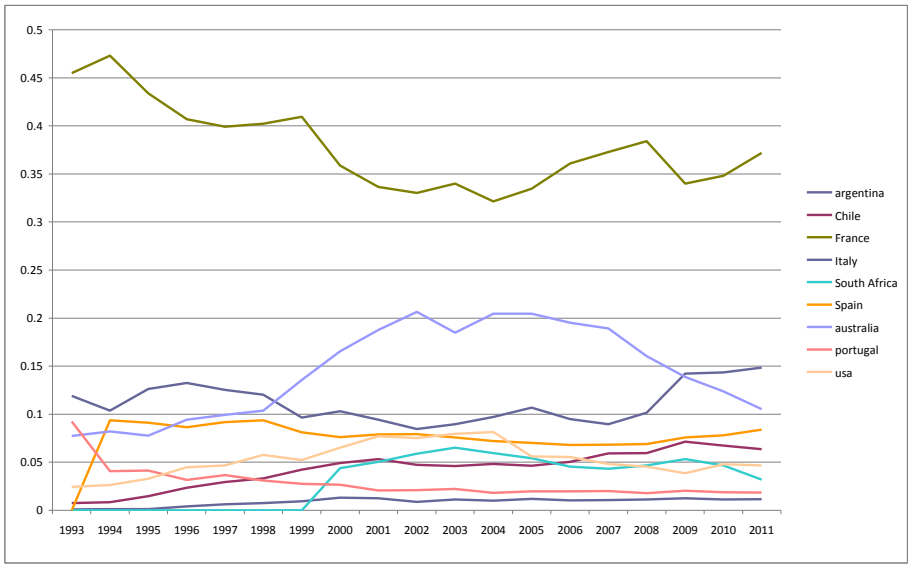
Source: Comtrade

Figure 4 - Exporting countries to the USA market (% share, value)



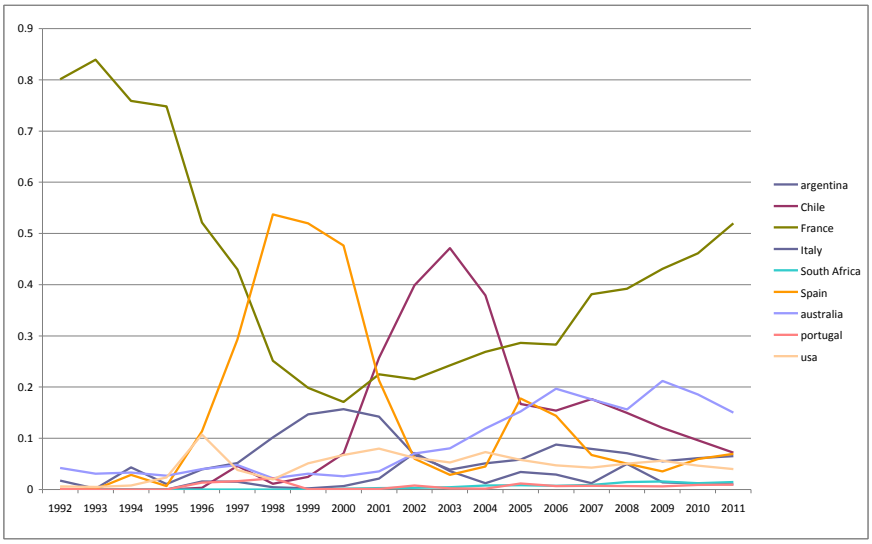
Source: Comtrade

Figure 5 - Exporting countries to the UK market (% share, value)



Source: Comtrade

Figure 6 Exporting countries to the Chinese wine market (% share, value)



Source: Comtrade