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The Chilean Wine Cluster

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26.1 Introduction

In a few years, the Chilean wine industry became an example of success and a serious competitor for the European and international wine producers. The success of the wine industry can be explained by the way it is organized as a ‘cluster’, through horizontal and vertical linkages, where the main stakeholders in the industry are simultaneously in competition and cooperation, that is to say, ‘coopetition’ (Nalebuff and Brandenburger 1996). Contrary to the dominant organization of the European wine industry, the Chilean model is more ‘relational’ (i.e. driven by relationships across the cluster).

The Chilean wine industry achieved unexpected performances in the last few decades. The industry demonstrated an extraordinary capacity to produce, export, and compete in international markets. Those achievements are related to natural conditions (quality of the soils, climate, land, water availability, etc.) but also to the way the industry is organized. Following the pioneering work of Alfred Marshall in 1890, in the last few years there was a

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prolific literature about the organization and success of ‘cluster’ organizations.¹ Despite such important number of publications, there is not a unified theory allowing to explain the diversity of those institutional arrangements (Bell et al. 2009). In this perspective, the success of the Chilean wine industry has been described in the professional publications as ‘the Volvo of the wine industry’ and attracted a considerable amount of academic research (cf. Visser and Langen 2006; Giuliani and Bell 2005).

This chapter is structured in three parts. The first part describes and explains the organization of the wine cluster as an institutional arrangement and introduces the uniqueness of public-private partnerships in Chile. The second part introduces the key elements of the cluster architecture: trust, the role of the leading firms, intermediaries, and the capacity of the cluster to solve problems related to collective action. Finally, the third part presents some performance achievements and risks and discusses resilience of the wine cluster.

26.2 The Wine Cluster as an Institutional Arrangement

26.2.1 On the ‘Cluster’ Concept

Clusters are ‘geographic concentrations of interconnected companies and institutions in a particular field’ (Porter 1998, p. 78). The pioneering work of Marshall (1890) introduced the concepts of agglomeration economies and positive externalities induced through a collective organization in clusters. Clusters include a mix of linkages (knowledge, inputs, competencies, resources, etc.) and supporting institutions (financing, standard setting, education, etc.) within a wine region or country (Porter 1998). Clusters are collective projects focused on the long-term survival and development of an industry or region. Inter-firm cooperation in wine clusters is essential to ensure long-term focus and competitiveness. The main elements describing the anatomy of a cluster are the following: trust, the leadership of the main wine firms, the ability to solve collective action problems (CAPs), and the availability of efficient intermediaries (grape and wine brokers, importers, distributors, etc.). Porter applied this concept to the Californian wine cluster (Porter and Bond 1999).

¹ Frequently used as a synonym of ‘industrial district’.

Another stream of literature on ‘business models’ describes ‘clusters’ as valuable intangible assets (Teece 2010). This concept is also discussed in the literature on industrial economics as the ‘third Italy’ (Becattini 1992).

The literature on international business and economics also identifies other wine clusters in Latin America and highlights the importance of government-sponsored institutions such as Mendoza (Argentina) (McDermott 2007; McDermott et al. 2009), Serra Gaucha (Brazil) (Fensterseifer and Rastoin 2013), and Baja California (Mexico) (Trejo-Pech et al. 2012).

26.2.2 The Role of Public-Private Partnerships to Promote Efficiency

Public-private partnerships have been pointed out as essential arrangements to explain the success of several industries and countries.

Innovation priorities in the cluster are decided by common agreement between firms, associations, public bodies, and other stakeholders. Those priorities integrate the national innovation system. Innovation priorities and goals were defined through *Strategic Plan 2020* (a new strategic plan that sets up directions for 2025) for the Chilean wine industry. The strategic plan sets up targets at \$3 billion in exports by 2020, through an average interannual growth rate of 9.2%.

The four main pillars defined in the strategic plan include diversity and quality, sustainable development, innovation, and country image.

Clonal and sanitary selection of varieties illustrates this strategy. A close partnership between ENTAV (*Etablissement national technique pour l'amélioration de la vigne*), a French institution in charge of improving the quality of vine plants, and the University of Talca was promoted for the benefit of Chilean nurseries.

26.2.3 A National Innovation Strategy Adapted to the Regions

In recent years, Chile implemented projects and programs to reinforce the participation of the regions in the definition of regional innovation and economic development policies. An example of these programs was the creation of Regional Development Agencies (ARDP). In 2005–2007, the Chilean government established regional agencies to foster development in production in an integrated manner. This process was promoted through Corfo, the Chilean Economic Development Agency. Corfo is the state agency for the

advancement of economic and regional development in Chile. The agency finances innovation projects—including wine—through a branch dedicated to innovation (InnovaCorfo).

Corfo was also involved in the attraction of foreign investments—green-field, mergers and acquisitions, and joint-ventures—related to wine and supporting industries (suppliers, tourism, etc.). Such actions included the organization of an international forum targeting overseas investors. Several editions of the forum were quite successful as it attracted a diversity of investors (Italy, Spain, the USA, China, etc.) to strengthen cluster activities: grape nurseries, barrel makers, and so on.

A key role of regional ARDP consisted in the implementation of a bottom-up approach to facilitate regional innovation agendas and the development of new projects and programs to enhance competitiveness—Programs for Modernization and Competitiveness (PMCs)—based on regional assets, strengths, and opportunities. PMCs defined agendas for the local development in each subregion. Three main regions were concerned by those wine-related programs (see list in Table 26.1 hereafter).

In the programs, the region and stakeholders—public and private organizations, universities, and civil society—became responsible for defining and implementing a long-term strategic vision. The ARDP is an important example on how to strengthen the participation of regions and implement private-public partnerships in Chile.

Another major initiative consisted in the allocation of funds for innovation at the regional level through the Innovation Fund for Competitiveness (FIC) and regional science and technology centers of CONICYT, the national agency in charge of R&D projects.

The FIC was established in 2006 as a fund created on the basis of the resources built on a percentage of sales of copper worldwide (note: Chile is the world's largest copper producer). The FIC is the main instrument to allocate new and more significant resources to the efforts of the Chilean State agencies in innovation. The two main agencies that benefit from the Chilean State

Table 26.1 Main wine-related Programs for Modernization and Competitiveness (PMCs)

Region	Program	Goals
Coquimbo	PMC Pisco Spirit (grape wine, spirits)	Grape vines, distilled spirit
O'Higgins	PMC Vitivinicola del Valle de Colchagua	Quality wine
	PMC de Turismo Valle de Cachapoal	Wine tourism
Maule	PMC Vinos de Maule	Carmenère grape
	PMC Turismo, Vino, Gastronomía	Wine and food tourism

Source: Corfo

resources are Corfo (InnovaCorfo) and CONICYT. The Foundation for Agrarian Innovation (FIA) is also responsible for the implementation of projects in viticulture, agriculture, and food.

FIC management is allocated through performance-based agreements involving the discussion, consultation, and implementation through various stakeholders of the wine cluster (public and private). This instrument aligns the priorities of the agencies with the strategic objectives defined by the Council of Ministers.

26.2.4 An Innovation Strategy Driven by the Wine Industry

Beyond the architecture of the national innovation system extended to the regions, the Chilean wine industry has established its own innovation system through the foundation of innovation consortia. The joint work between producer associations, research centers, universities, and suppliers included the creation of innovation consortia for the agriculture and food sector (including wine).

The creation of consortia initiative began in 2004 under the leadership of CONICYT and support of the World Bank, Corfo, and FIA agencies. Initially, 11 consortia were established in Chile with public resources of approximately 25 million pesos (2200 million pesos/consortium).

Among those consortia, the wine industry founded two consortia dedicated to the cluster—Vinnova and Tecnovid (Santelices et al. 2013). Funding is usually shared between public and private operators. The first projects financed (five years) reached \$10 million and were financed by public (60%) and private (40%) sectors and universities. Later, the industry launched a new wave of medium-term projects co-financed in 2012. These research initiatives were supported by the Chilean State, moving to a more proactive engagement in the development of the economy.

In order to develop strategic innovation projects, the industry established two consortia dedicated to research and development. Both consortia consist in a public-private partnership whose goal was to bring together industry and universities to meet the challenges of exporting. The consortium brings together about a 100 wineries. Close collaboration with UC Davis (California) and the Australian Wine Research Institute (AWRI) was developed.

Both consortia were grouped into a new entity called *I+D Vinos de Chile S.A.* in charge of managing the new wave of projects approved in 2012. This new consortium is in charge of improving the competitiveness of Chilean

wines in particular through the efforts of quality and sustainable development. It brought together various R&D initiatives dedicated to improving the competitiveness of the wine cluster and is integrated with the national association of Chilean wineries (*Asociación Gremial Vinos de Chile*). The governance of the consortium is administered by a dozen members from the industry and Chilean universities.

This entity complemented R&D efforts made by individual firms. This consortium has inter-institutional cooperation with universities and research centers as well as public agencies and private organizations in Chile and abroad (UC Davis, Liquor Control Board of Ontario (LCBO), Société des Alcools du Québec (SAQ), Vinmonopole, etc.).

The main R&D programs endorsed by the consortium cover the following areas:

- A quality program dedicated to the vineyard (genetic improvements).
- A sustainable development program (wine conservation, *terroir* and vineyard zoning, climate change, disease in the vineyard, biodiversity, irrigation, energy and greenhouse gas emissions, social responsibility, codes of good practice, suppliers). In 2016, more than 60 vineyards and producers have been formally certified as *Sustainable wine of Chile* (www.sustentavid.org).
- A technology transfer program (positioning and differentiation, absorptive capacity).

Both government-sponsored initiatives combine an approach connected to the national innovation system (region-based) and another one associated to the consortium of *I+D Vinos de Chile S.A.* stimulates innovation and promotes the creation and transfer of knowledge within the cluster. These public-private partnerships complement the efforts of wineries dedicated to R&D and innovation.

In general, Chile's innovation system is often cited by international organizations (The World Bank, OECD) as a model for other developing countries. This is a third-generation public-private partnership and includes the joint participation of members from the private sector and public agencies. Third-generation partnerships raise new problems for the Chilean State as it does not have a direct control over the assets covered by the partnerships.

26.2.5 An Inter-organizational Structure

The Chilean wine cluster appears as an inter-organizational arrangement that contributes to a better coordination and boosts competitiveness. Relations

between stakeholders are characterized simultaneously by situations of competition and cooperation. Clusters include public and private institutions and horizontal, vertical, and transversal relationships. The frequency and intensity of the relationships define the strengths of the linkages.

These arrangements and their advantages were described by Porter (1998), in particular increasing productivity, processing and structuring of innovation efforts, stimulating new projects, and contributing to the development of entrepreneurial projects. The Chilean wine cluster is represented synthetically in Fig. 26.1.

The cluster structuring objectives are defined in conjunction with those defined in *Strategic Plan 2020*. The pattern of inter-organizational relationships within the cluster goes beyond the wine cluster itself because relationships with other clusters are possible (e.g. cluster of tourism, food processing cluster). It should be noted that for several years Chile established a new food policy ‘Chile: food power’ (*Chile, Potencia Agroalimentaria*) and actions on export promotion and attraction of foreign investments, which include the wine cluster. Those actions integrate the strategic objectives defined in this policy framework.

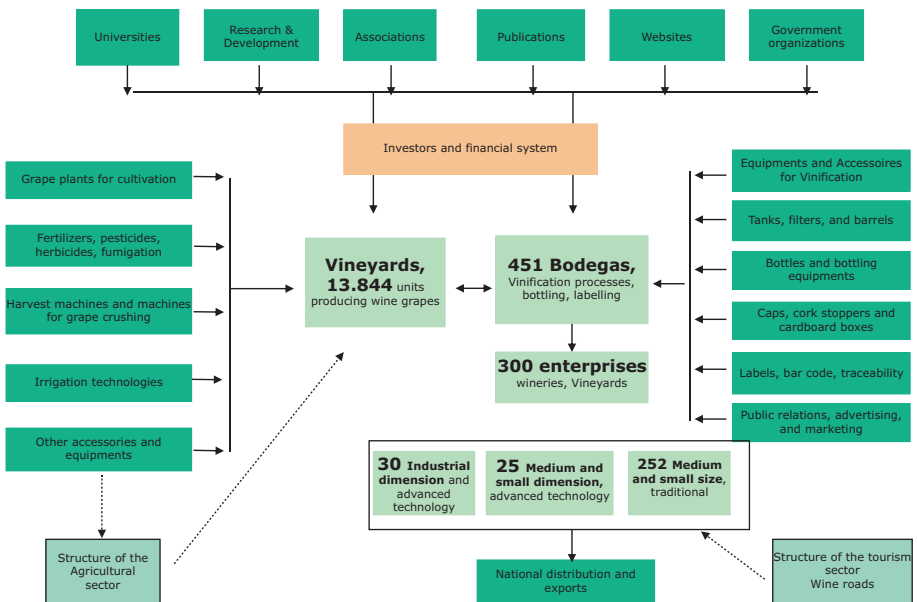


Fig. 26.1 An overview of the Chilean wine cluster. (Source: Adapted from Wines of Chile)

In recent years, efforts have been made to strengthen the weak links in the cluster through innovation and R&D projects (Vinnova, Tecnovid, CONICYT), an active policy to attract foreign investments to meet the needs and overcome the weaknesses of the cluster (Prochile, Corfo).

26.3 The Architecture of the Wine Cluster

26.3.1 Trust and the Ability to Solve Collective Action Problems

A set of trust relationships between the stakeholders stimulates cooperation in the cluster. Trust relationships limit opportunism, facilitate coordination, and contribute to solve CAPs (see, e.g. Visser and Langen 2006). Social capital and trust are two essential elements for the implementation of a third generation of public-private partnerships.

Leading firms may contribute to solve CAPs because they have a direct control over strategic resources and incentives. On the other hand, the quality of cluster governance and the resolution of CAPs depend on the institutions, such as associations, the availability of public or private institutions, and the pressure exerted by the dominant stakeholders ('voice' and 'exit').

26.3.2 New Firms Entering into the Industry

Over the last few decades, the cluster attracted a great number of new firms, particularly new wineries and grape nurseries (see Fig. 26.2). The number of new wineries increased particularly in two decades (1990–2009). The establishment of new firms was significant during the expansion of Chilean wine exports backed through government initiatives.

A significant number of grapevine nurseries were established after 2001. Twenty-two new grape nurseries were established after 2001 to supply *Vitis vinifera* plants. According to ODEPA (2015), the volume of *Vitis vinifera* plants marketed in Chile (7.2 million plants in 2014) is considerably higher than the plants supplied for the production of table grapes (approximately 3.3 million of plants in 2014). The establishment of a new wave of wineries increased the needs for the supply of certified vine plants. Therefore, the number of domestic and international grape nurseries expanded likewise.

Some of the main leading wineries established their own grape nurseries in the early 2000s: Viña Concha y Toro (Lourdes, 2000) and Viña Santa Rita

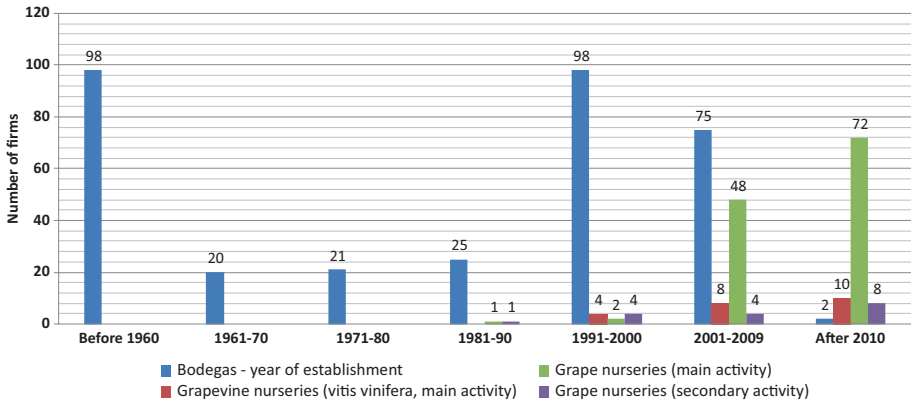


Fig. 26.2 Establishment dates of grape nurseries and *bodegas* in Chile. (Note 1: new wineries include both the *bodegas* producing more than 300,000 liters and the *bodegas* with an export activity. Data includes established wineries until 2011 (Source: INE); Note 2: grape nurseries include the suppliers of *Vitis vinifera* plants and the suppliers of table wine plants. Some of the grape nurseries supplying plants for table grapes may also supply *Vitis vinifera* plants. Data includes established firms in 2015 (Source: SAG))

(Santa Rita, 2000). Other wineries launched their own nurseries in a later phase: Viña Undurraga (La Rioja, 2009), Viña Almaviva (2009), and Viña Santa Carolina (2014). The cluster attracted foreign grape *Vitis vinifera* nurseries quite early. Two French nurseries established production facilities in Chile: Pepinières Guillaume in 2001 and Pepinières Richter in 2009.

26.3.3 Concentration and Role of the Leading Wine Firms

Leading firms must ensure leadership and demonstrate a capacity to adapt and innovate (R&D efforts, etc.). In export markets, leading firms may act as entrepreneurial ‘icebreakers’ creating opportunities for small and medium firms in the cluster (e.g. the penetration of distribution networks and marketing channels).

Further, the leading wine firms are members of a national association of wine producers accounting for more than 95% of the country’s wine production. Within the public-private partnership, the main public agencies provide support (technical, financial, administrative, legal, etc.) to the wine cluster either at the regional, national, or international levels.

The Chilean wine industry is highly concentrated, with the four leading firms accounting for more than 88% of volumes sold on the domestic market.

Table 26.2 Concentration of the market shares in the domestic market of the leading wine firms in Chile (% of the total volumes)

	2005	2008	2010	2013	2015
Concha y Toro	27.1	29.7	30.7	28.5	28.1
Santa Rita	24.4	28.7	29.4	29.5	31.6
San Pedro Tarapacà	21.7	23	24.4	27.3	28.4
Santa Carolina	3.2	2	1.8	1.4	0.6
Others	23.6	16.6	13.7	13.4	11

Source: Concha y Toro

In addition, concentration of leading firms increased over time (see Table 26.2 hereafter). For example, one of the major operations concerned the merger of San Pedro Wine Group with Tarapacà in 2008 to establish one of the top four leading firms in the cluster.

The Chilean leading wineries are all publicly listed in the stock exchange and the founding families own significant shareholdings in the firms. For example, Concha y Toro has been listed in the Santiago Stock Exchange in Chile since 1933, but it is also listed on the New York Stock Exchange. These leading firms are also important wine producers and investors in Mendoza (Argentina). Concha y Toro operates through Trivento, its Argentinean-owned subsidiary and one of the top three leading wine exporters in Argentina.

The degree of concentration reflects greater bargaining power for the purchase of wine grapes and bulk wine. Despite the expansion of vineyard surfaces directly controlled by the leading Chilean firms, those firms are not completely self-sufficient.

Further, concentration facilitates investment, particularly in intangible assets and overall guidance of the Chilean industry. For example, the CEO of Concha y Toro, Rafael Guilisasti, has long been the chairman of the main Chilean wine association—*Asociación de Viñas de Chile*—and a Corfo advisor. Mr. Guilisasti was one of the main negotiators of the Free Trade Agreement between Chile and the European Union (EU). Following the agreement, Chilean wine exporters benefit from a unique tax advantage among New World wine producers (0% taxation for wine exports to the EU).

Corfo provides financing for product, process, and organizational innovation at the different levels of the wine cluster. The main mission of the agency is to transform Chile in a global innovation and entrepreneurial hub. The agency has representative offices in the Chilean regions but also a dedicated branch to attract foreign investors (nurseries, wineries, equipment suppliers, etc.). Corfo promotes investment and coordination among stakeholders in different areas, particularly in the less competitive linkages of the wine cluster.

Another government agency—Prochile—acting as Chile’s trade facilitator and promotion agency includes 15 regional offices and representatives in over 55 offices worldwide. The main activities of Prochile include boosting the Chilean export basis by engaging new firms in export activities. Further, the agency helps firms to foster the internationalization processes and promotes wine tourism. Wines of Chile are in charge of the wine promotion of Chilean wines. Promotions are co-founded through wine producers associations. The Chilean government contributes with 15% of the total amount, through Prochile. This agency also provides logistics and market information to wineries and sponsors other generic market campaigns such as ‘Taste of Chile’ (Hennicke 2015).

The main wine firms have the ability to absorb knowledge. Those firms are active in the acquisition, creation, and transfer of knowledge. Firms differ on their cognitive capacity (Giuliani and Bell 2005). The financial strength and strategic objectives facilitate investments in R&D. For example, in early 2015, Concha y Toro has invested \$5 million for the opening in Chile of a research facility dedicated to R&D in viticulture and oenology. Concha y Toro’s R&D partnerships include, among others, joint activities with UC Davis (California) and Mercier nurseries (France).

Further, those firms also influence coordination and control. This phenomenon is of particular interest when transaction costs are low and coordination is exerted through non-market-based mechanisms.

Intermediaries (grape and wine brokers, etc.) also play an important role in strengthening the relationships between stakeholders and in lowering transaction costs (Montaigne and Coelho 2012; Baritau et al. 2005). Wine brokers are important in revealing information (volumes, stocks, prices) not publicly available, particularly when prices and volumes for entry-level wines are quite important. Intermediaries can also play an important role in financing small and medium companies and reducing transaction costs.

26.3.4 The Influence of Strategic Alliances and Foreign Investments

Since the first foreign investment in the Chilean wine production by Miguel Torres (Spain) in 1979, many foreign investors were attracted by the Chilean wine cluster. These investments have taken two main forms: greenfield investments in production and strategic alliances (or joint-ventures).

Chile’s strengths as a wine producer are numerous: low disease pressure in the vineyard, diversity of climates and soils, lack of constraints for extending

vineyard plantings, a favorable ecosystem for innovation, and differentiation through the production of a high-potential grape variety Carmenère (red wine). However, it seems important to note the international image of Chile is of an international producer of entry-level varietal wines, at very competitive prices. For example, Cabernet Sauvignon is the most widespread grape variety, occupying nearly a third of the vineyard surfaces. The price for Cabernet Sauvignon in bulk can reach as low as 35 cents/liter on European markets. This price is below the average market prices for bulk wine in Castilla-La Mancha. This region is the lowest cost producer in Southern Europe. Chilean wine tends to be a good 'value for money' and a quite popular supplier among international bulk wine buyers. Those conditions necessarily attract foreign investors to the Chilean wine cluster.

Chile is not only a low-cost producer, but it also produces wines at different price ranges. In the country, many international joint-ventures were established with the objective of producing high-quality premium wines. For example, in 1997, Concha y Toro has signed a cooperation agreement with the Bordeaux-based winemaker Baron Philippe de Rothschild for the joint production of a Chilean wine—Almaviva—exported at an average price of \$80 per bottle.

Inter-firm cooperation agreements in the alcohol beverage industries are essential to improve efficiency and upgrade products and processes. These agreements facilitate sharing resources among partners (Coelho and Rastoin 2004). Thus, the 'partners' in the alcoholic beverages sectors can benefit from leverage effects and reinforce their strengths as well as limit their weaknesses. In addition, by putting together a pool of resources, raw material suppliers and wine producers in the cluster can benefit from the economies induced through the cluster ('size' effects). In the alcohol industries we can identify, at least, four types of inter-firm agreements:

- Agreements whose main motivation is to obtain raw materials (wine grapes, a specific type of grape or a particular geographical origin, bulk wine, etc.)
- Inter-firm agreements where the primary goal is to increase the crushing or processing capacity
- Inter-firm agreements where the main motivation is to get access to distribution networks
- Inter-firm agreements where the main objective is to target advertising and promotional objectives or a specific marketing goal

According to Torres et al. (2008), during the period 1998–2004, the average price of wine exported for wineries involved in international joint-ventures

projects (US \$4.9/bottle) was higher than average prices for the wines produced through foreign-owned subsidiaries (US \$1.6/bottle). Moreover, exports of wines associated with joint-ventures accounted for price ranging from 23% to 30% of the market for super-premium wines, while the same segment accounted only for 9% to 17% of the subsidiaries of foreign-owned firms.

Farinelli (2012, p. 204) explains the main interests of inter-firm agreements in the Chilean wine cluster:

- Joint-ventures were a combination of unique resources, combining local and international knowledge, and a learning opportunity for partners.
- Local partners see the joint-venture as a quick way to access international markets and to make fast technology changes. Local partners perceive inter-firm agreements as a way to reduce time and effort necessary to access to knowledge related to soils, climates, and grape-growing practices.
- This is a ‘win-win’ situation. It brings mutual benefits for partners as it is specific to the Chilean wine industry and cannot be replicated into the international wine industry. Joint-ventures are a set of unique factors related to the industry and include institutional benefits.

The main strategic alliances and foreign investments in the Chilean wine cluster are detailed hereafter (Fig. 26.3).



Fig. 26.3 Main joint-ventures and foreign investments in the Chilean wine cluster (1979–2018). (Source: World Wine Data 2018)

26.3.5 Penetrating International Markets Through Free Trade Agreements and Generic Promotion

Like New Zealand, Chile is an economy oriented toward agro-exports. The signing of free trade agreements with strategic trading partners offers the country a comparative advantage unmatched by the main international competitors.

The development of Chilean exports at the international level is ensured through reduction or elimination of trade barriers. Over the years, the Chilean government engaged on a trade liberalization process and signed many bilateral and multilateral agreements, including free trade agreements with the EU, the USA, China, and Japan. In the last decades, Chile signed 20 cooperation agreements, involving 57 countries.

Free trade agreements provide considerable advantages for bottled and bulk wine exporters to penetrate international markets. For example, following the free trade agreement between China and Chile, starting on 2015, Chile stopped paying any duties (0%) to export their wines to China. Also, Chilean bulk wine exporters do not pay any duty to export their wines to the EU. This provides a competitive advantage to Chilean wine producers when compared to other New World wine producers. Bulk wines being quite price-sensitive, it makes international free trade agreements a key advantage for the industry.

Generic promotion of Chile is also one of the strategic orientations for the competitiveness of the cluster in international markets. Three organizations are highly active in promoting the image of the country: Chile Foundation, Prochile, and Wines of Chile. Generic promotion of the country's image is also co-financed. *Strategic Plan 2020* forecasts a considerable increase in funds dedicated to the promotion of wines, starting on US \$7.50 million in 2010 to reach US \$19.02 million by 2020. This strategy will raise investments in promotion from US \$0.17/case to US \$0.24/case by 2020 (Cogea 2014, pp. 91–92).

26.4 Performances, Risks, and Resilience in the Chilean Wine Cluster

Collective management of the wine cluster offers significant competitiveness advantages. We can point out many indicators justifying the success of the Chilean wine cluster: expansion of production potential, increasing market

shares in key export markets (the USA, Canada, the UK, Japan, Brazil, etc.), international recognition (medals, green awards), attractiveness of the cluster to foreign investors, financial performance of the wine companies, offering quality wines at very competitive prices—particularly in the entry-level segments—and adaptability and innovation among industry firms.

In the past, grape plantings in Chile have been steady for many decades as the legislation established on 1974 banned grape plantings and replanting. Changes operated in the legislation in 1985 suppressed the barriers to new plantings and extended the possibility to produce wines from table grapes (González et al. 2014). In the following years, Chilean wine expanded considerably the surfaces planted with *Vitis vinifera* grapes. Nowadays, the production in the country remains highly dependent on the surfaces of Cabernet Sauvignon (see Fig. 26.4).

The expansion of surfaces did not spread homogeneously. The main wine regions remain Maule and O’Higgins, but on an attempt to diversify the supply of wines and adapt to climate change, the industry also expanded to new Northern in Southern non-traditional wine regions but which provide a potential to grow grapes adapted to the palates of international wine markets (e.g. the production of Riesling and sparkling wines) (see Table 26.3).

The particular case of the Bío Bío region contrasts with the general trend in Chile as the region shrank by 30.5% its grape surfaces between 2000 and

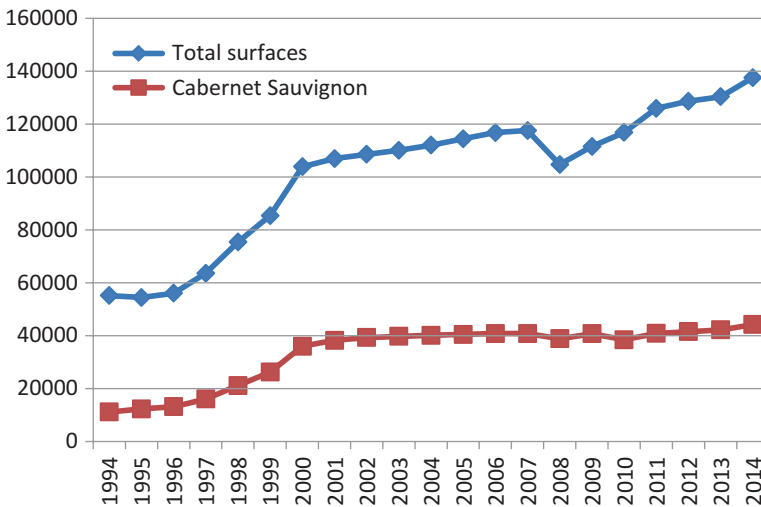


Fig. 26.4 Evolution of wine grape plantings in Chile (ha) (1994–2014). (Source: Elaborated by authors based on data from ODEPA)

Table 26.3 Evolution of wine grape plantings in the main regions in Chile (2000–2014) (ha)

	2000	2005	2010	2014	Var. 00–05	Var. 10–14	Var. 00–14
Maule	45,050	49,335	45,850	53,496	9.5%	16.7%	18.7%
O'Higgins	29,041	32,553	38,517	47,382	12.1%	23.0%	63.2%
Metropolitana	9450	10,783	12,432	13,398	14.1%	7.8%	41.8%
Valparaiso	4782	5524	9050	10,162	15.5%	12.3%	112.5%
Bío Bío	13,744	13,970	8085	9568	1.6%	18.3%	−30.4%
Coquimbo	1804	2197	2766	3383	21.8%	22.3%	87.5%
Other regions	60,630	67,307	79,557	87,469	11.0%	9.9%	44.3%
Total surfaces (ha)	103,876	114,445	122,641	137,582	10.2%	12.2%	32.4%

Source: SAG

Table 26.4 Evolution of grape variety plantings, wine production, and exports in Chile (2000–2015)

	2000	2005	2010	2015	Var. 00–05	Var. 10–15	Var. 00–15
Surfaces <i>Vitis</i> <i>vinifera</i> (ha)	103,876	114,448	116,831	135,582	10.2%	16.0%	30.5%
<i>Cabernet</i> <i>Sauvignon</i> (ha)	35,967	40,441	38,426	44,176	12.4%	15.0%	22.8%
<i>Carmenère</i> (ha)	4719	6849	9502	11,319	45.1%	19.1%	139.9%
<i>País</i> (ha)	15,179	14,909	5855	7653	−1.8%	30.7%	−49.6%
Production (million hl)	6419	7894	8844	12,867	23.0%	45.5%	100.5%
Wine exports (million hl)	2.65	4.14	7.25	8.75	56.2%	20.7%	230.2%
Wine exports (billion \$US)	0.569	0.872	1533	1826	53.3%	19.1%	220.9%

Source: ODEPA, SAG

2014. This region concentrates the highest percentage of small grape producers owning less than 1 ha (accounting for 70% of all Chile) and producers face considerable changes in competitiveness and bargaining power in the market for grapes.

Grape producers also showed an increasing interest for *Carmenère*, a traditional Bordeaux red variety with a high potential to target international markets (+139.9%). At the opposite, the surfaces of traditional *País* variety were cut but half (−49.5%) as it showed little interest for export markets. Therefore, Chilean wine producers adapted their production potential to the international wine demand (see Table 26.4).

In addition, the exports in volume and value—in line with the goals defined in *Strategic Plan 2020*—had a strong increase (+230% in volume and +220% in value). These indicators demonstrate how successful Chile was in penetrating international markets.

In the long run, firms look to increase the average price per case of wine exported; however, wine exports remain concentrated in the price bracket US \$20–29.9/case (Fig. 26.5). Despite of an internationally attractive bulk wine market, it does not seem to be a priority for the industry as the average prices and margins in this market remain low. The bulk wine market is often an adjustment factor to help the industry to reach market balances (production, domestic consumption, stocks, volumes exported).

Based on studies on the perception of the actors, Lobos and Viviani (2010) and González et al. (2014) identified the main sources of risks in the wine cluster. Those sources include the exchange rate, wine prices, climate change, and the variability on the profit rates. According to the above authors, small vineyards attribute more importance to the following factors: wine prices, climate change, yields (productivity), and food security risks. Small vineyards attribute less importance to legal and environmental risks as well as the price of grapes. The coverage of agricultural risks in Chile through insurance or other derivatives is rare in the country.

Risk is included in the resilience scope (Bhamra et al. 2011). The concept of resilience was first introduced in the literature by Holling (1973) and led to an extensive literature (Coutu 2002; Hamel and Valikangas 2003; Bhamra et al. 2011). We can define resilience as ‘the capacity to continuous reconstruction’ (Hamel and Valikangas 2003). Sudden changes in the business environment—turbulences and discontinuities—may impact considerably the long-term performances of the Chilean wine cluster. Major disasters, such

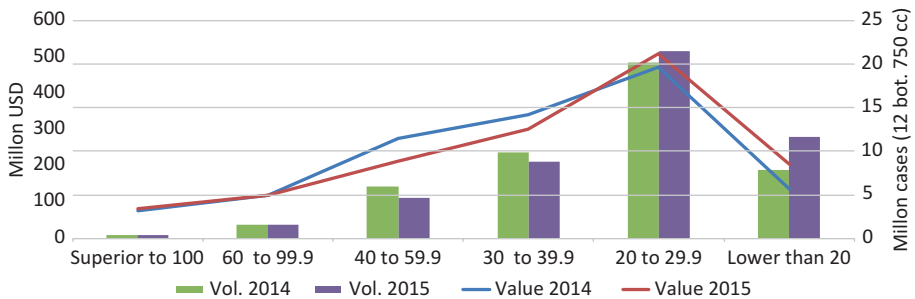


Fig. 26.5 Exports of bottled wine from Chile per price bracket (US\$/case) (2014–2015). (Source: ODEPA)

as the Chilean earthquake on February 2010, or institutional, economic, or political negative shocks may disrupt the wine cluster. Wine clusters are constantly exposed to external disruptions due to changes in the industry and in the market. The ability to adapt to these changes—that is, resilience—determines the evolution of the wine cluster after such disruptions (maintain momentum, cooperation among stakeholders, etc.). Over the last years, the Chilean wine cluster was able to adapt to external disruptions (e.g. political cycles, earthquakes, etc.) and to introduce minor and major changes without losing its own identity.

The Chilean wine cluster also demonstrated it is able to adapt in the long run. Indigenous and foreign-owned firms brought new knowledge to the industry. The leading Chilean wine firms filled institutional voids by creating an intra-firm market for innovation (Castellaci 2015). Collective initiatives and the interconnection of public-private partnerships reinforced the resilience of wine cluster (Castellaci 2015).

26.5 Conclusion

The Chilean wine cluster is an institutional arrangement that promotes competitiveness and strengthens firms' adaptability and resilience during wine and economic crises. The Chilean model is unique and difficult to reproduce due to conditions related to agro-export orientation, concentration of firms, and public-private partnerships in the cluster. This model is similar to the New Zealand wine cluster. Nevertheless, beyond the socioeconomic embeddedness and the specialization in typical grape varieties (Sauvignon Blanc and Pinot Noir), New Zealand has the highest world average prices for wines exported.

In recent years, Chile achieved significant progress in competitiveness. Substantial improvements are still needed to ensure the sustainability of the wine cluster in the long run (Lima 2015).

Efficiency and dynamic institutional arrangements are strongly influenced by the national and regional political cycles. The financing of innovation and R&D activities depends largely on the availability of funds provided by international sales and copper prices.

The asymmetry of power in the negotiations for the payment of wine grapes or bulk wine frequently challenges small- and medium-sized producers. Overproduction leads to market imbalances, national wine prices are subject to high variability, and the domestic demand is unable to absorb the excess of wines on the market. Those are some of the common challenges the wine cluster should address in the future.

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