
desarrollo productivo

A **Chilean wine cluster?
Governance and upgrading in the
phase of internationalization**

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**Division of Production, Productivity and
Management**

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based Strategies Development” (GER 99/128)**

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Contents

Abstract	5
Introduction	7
I. Conceptual framework	9
A. Value chains, value systems, networks and clusters.....	9
B. Cluster governance	11
II. Structure and performance of the Chilean wine industry	15
A. Planted area	15
B. Production	17
C. Regional structure.....	18
D. Exports.....	20
E. Industry structure.....	24
F. Foreign direct investment (FDI).....	25
III. Competitive and strategic challenges	27
IV. Importance and quality of cluster governance	29
A. Importance of issues restraining competitiveness and the relevance of collective action problems (CAPs) in each issue.....	30
B. Quality of cluster governance.....	32
C. Trust.....	33
D. Leader firms.....	34
E. Intermediaries	35
F. Example effects of effective collective action in the past	37
G. Quality of solutions to CAPs	
H. Comparing Chile and Australia.....	41
I. Importance of governance in the Chilean wine cluster: past and future	42

V. Development prospects	45
VI. Conclusion	49
Bibliography	51
Annexes	53
Serie Desarrollo productivo: numbers published	63

Tables

Table 1 Evolution of vine area in Chile 1985-2001	16
Table 2 Evolution of vineyard area in Chile 1996-2001	16
Table 3 Regional distribution of vine acreage	18
Table 4 Export share in value of the main exporting countries in 1986 and 2000	22
Table 5 Destination of Chilean wine in 2002	23
Table 6 Evolution of the average prices in the main export markets (in US\$ fob/liter, percentage)	23
Table 7 Location of exporting wineries in Chile, 2001	24
Table 8 The world's largest winemakers in 1998, in terms of turnover	25
Table 9 Direct foreign investment in the Chilean wine industry 1974-1998	26
Table 10 Joint Ventures between Chilean and foreign wineries (1974-1998).....	26
Table 11 Relative importance of five issues currently restraining the competitiveness of the Chilean wine industry, and relevance of caps in each area.....	30
Table 12 Main factors determining the quality of wine cluster governance	33
Table 13 Overview of variables contributing to solutions to caps in the Chilean wine industry	38
Table 14 Quality of five regimes to provide solutions to caps in the Chilean wine industry.....	39
Table 15 Evaluation of the quality of basic and advanced factors in the Australian and Chilean wine industry	41
Table 16 Ranking of five factors determining the performance of the Chilean wine industry, before and after 2000 (expert opinions).....	42

Graphics

Figure 1 Complementary concepts: value chains, networks and clusters	11
Figure 2 Variables influencing the quality of cluster governance.....	14
Figure 3 Evolution of Chilean wine production 1991-2003.....	17
Figure 4 Regional distribution of production in 2002 and 2003	19
Figure 5 Geographical distribution of vine acreage by valley, 2003	19
Figure 6 Chilean wine exports in volume (1000 hectoliters, dark green bars), value (millions of current US dollars, light green bars) and average sale price per liter (blue line), 1988-2002	21
Figure 7 Geographical diversification of exports markets (1980-2002)	22
Figure 8 Structure of the Chilean wine industry, by export value, in 2001	24

Abstract

The Chilean wine industry performed remarkably well over the past decades. Wines from Chile have found their way to consumers all over the world. This paper explores the factors that have supported the successful performance. In particular, through a questionnaire to key informants it tries to measure to what extent conscious collective action by local stakeholders to solve common problems of the industry in Chile and thereby create a shared basis for upgrading, have been relevant.

The conclusion is that natural endowments, commercial and technological impulses from abroad and a favorable business climate do go a long way to explain past successes. It also concludes that these factors will not suffice to sustain continued success. The paper analyzes the issues that present collective action problems for the Chilean wine industry and assesses the capacity of local actors, their organizations and institutions to meet these challenges.

Introduction

Over the past decade, the Chilean wine industry has shown a remarkable performance. Chile currently ranks 5th in the global league of wine exporting countries, ahead of countries like Germany, Portugal and the USA, satisfying 4.6% of global demand.

In their explanations of this performance, some analysts emphasize external factors such as changes in the global wine market, whereas others point at particular strengths, both natural and man-made, of Chile and its wine producers. This paper explores to what extent regional clustering, including co-operation between firms and certain types of collective actions, played a part in shaping the Chilean wine industry's success. We measure the quality of local cluster governance in the Chilean wine industry, to observe whether and how its recent export success and integration in global distribution systems stimulate joint action and local governance initiatives

In other words, the central question underlying this case study is whether globalization stimulates cluster development or vice versa.

The paper is structured as follows. Chapter I clarifies the conceptual framework. Chapter II describes the regional structure and performance of the Chilean wine industry, considering also the role of foreign investors in the development of the industry. Chapter III summarizes competitive and strategic challenges for industry. Chapter IV deals with the quality of cluster governance, focusing on several themes in collective action: innovation, training & education, internationalisation, marketing and promotion, and infrastructure development. Chapter V deals with the development prospects of Chile's wine industry. Chapter VI suggests implications for policy and draws conclusions.

I. Conceptual framework

First we define key concepts central in current analyses of competitiveness: value chains, value systems, networks and clusters. In so doing, we explain why the focus of this paper is on issues of governance and collective action. Next, factors determining the quality of governance and the effectiveness of solutions to collective action problems in regional clusters are analysed. Together, the chapter provides a conceptual framework for the case study.

A. Value chains, value systems, networks and clusters

Value chains comprise firms that add value by manufacturing, marketing, and distributing goods or services towards final consumers (Nootbook and Klein-Woolthuis 2002). Manufacturing refers to the technical process of transforming inputs into output. Marketing refers to the art of selling goods, matching supply with demand, or vice versa. Distribution includes stabilisation activities —the logistic process of speeding up or slowing down flows of intermediate products (inventory control and warehousing)—, and transposition activities (transportation).

Value systems in addition include actors providing strategic advice, financial, R&D and other services to the firms that are focused on manufacturing, marketing or distribution. From a value chain or system perspective, individual firms are no longer the main source of competitiveness. Improving competitiveness requires fine-

tuning of the relations between firms involved in a value system, including exchanges and flows of goods, services, money, information, ideas, and knowledge. This is called 'supply-chain management' (SCM).

Networks are different from value chains and systems. Networks may include actors from different value chains and systems, thus cross-cutting their borders. Networks often comprise actors who aim at exchanging ideas and knowledge so as to improve their respective business, e.g. co-developing a new technology or a new product. The more complex and sensitive the purpose of a network, the smaller the number of participants, and the more selective these will be when forming the network (Nootboom and Klein-Woolthuis 2002).

Clusters, in turn, differ from networks. A cluster can comprise multiple value systems, and may, but need not, include inter-firm networks. Clusters thus comprise the vertical dimension of inter-firm relationships in value chains (often multiplying within the cluster due to increased specialisation, outsourcing and subcontracting), the horizontal and lateral dimension of inter-firm relationships in networks (which may develop insofar as transaction costs decrease due to clustering), and the diagonal dimension of linkages between value systems and networks (hence including connections between sub sectors and sectors).

The cluster concept above all differs from value chains and networks, in that clustering processes often take place in a specific geographical and institutional setting. The clustering of firms may be in line with, or provide an answer to, region-specific sets of informal and formal 'rules of the game' (North 1994) that operate as 'enabling constraints' (Nootboom 2000) for actors engaging in novel and thus seemingly risky developments. These actors need to share, to some extent, an institutional background, so as to align mental models, reduce risk perceptions at both sides of a (public-private, inter-firm or another) relation, enhance understandability in a setting of knowledge exchange, etcetera. We may also say that clustering of firms helps to solve governance problems.

Another reason to conceptually separate clusters and networks is that they have complementary effects for competence: learning and innovation. Networking enhances the dynamic efficiency of innovation, by solving or reducing a series of dynamic market failures: cognitive lock-in, dynamic uncertainty (Camagni 1991), specificity of investments in joint learning and innovation processes, and dynamic transaction costs (Nootboom 2002). Geographical concentration enhances static and allocative efficiency, by mitigating a series of static market failures (incomplete information, static uncertainty, and information externalities), reducing transaction and logistic costs, and allowing for some external economies. Maskell (2001) argues that geographical concentration promotes learning through a fine-grained process of 'variation, monitoring, comparison, selection and imitation of identified superior solutions', but this refers to an evolutionary process of 'first-order' learning: enhanced efficiency to perform existing practices. Networks, however, stimulate the critical communication activities of understanding and explanation, which support 'second-order' learning and innovation (Nootboom 2000). In a specific type of regional clusters, e.g. Italianate industrial districts, these effects mingle, producing synergy between the knowledge effects of geographical concentration and networks. These clusters combine the best of both worlds. In other clusters, however, local and international network relationships do not develop. Here, the mere geographical concentration of firms may produce lock-in that can jeopardize, rather than stimulate, the competitiveness of firms (Visser and Boschma 2003). In line with this, Visser (2000) proposed the following definitions of networks and clusters:

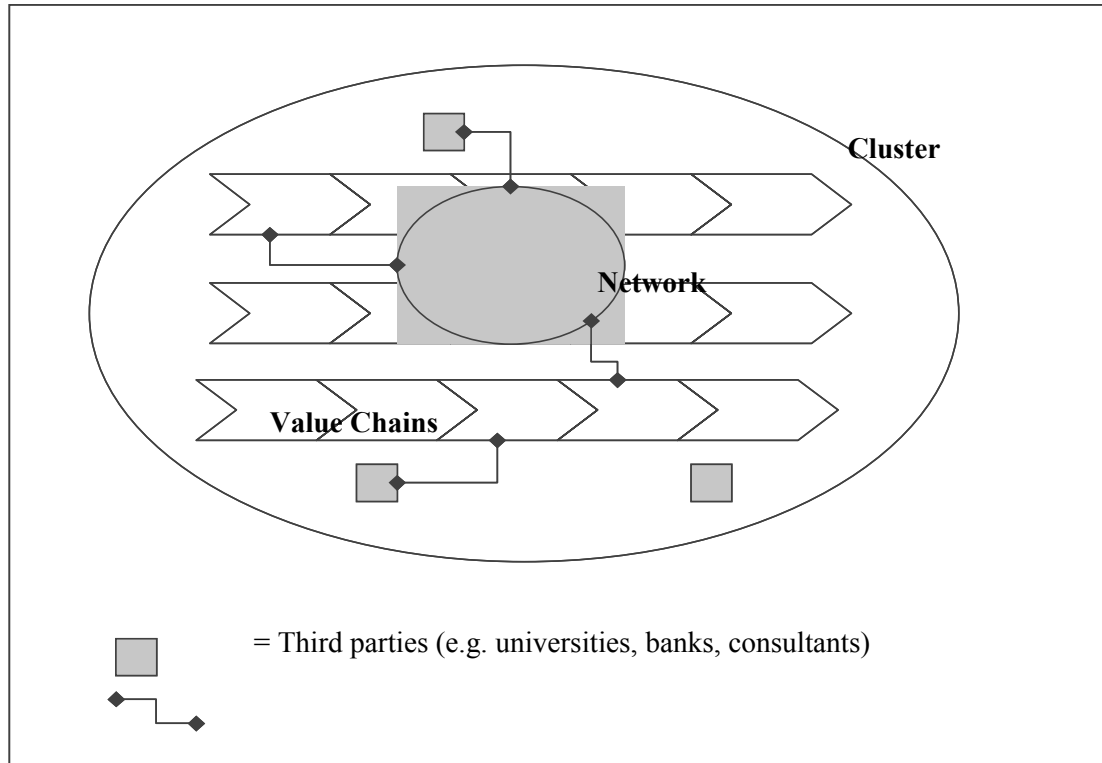
- Networks comprise strategic, purposeful, preferential, repetitive and co-operative interactions between business firms and other organizations, which may, but need not, operate in close vicinity.
- Clusters are geographical concentrations of firms involved in the same, similar, or related activities, which may, but need not, co-operate with one another, e.g., in the

setting of ongoing specialisation, inter-firm division of labour, and mutual subcontracting.

Only in the more developed clusters, actors interact with strategic purposes, co-operate, and learn to do so, institutionalising their collaborative efforts. In these cases, a local or regional support infrastructure may also develop (see figure 1). Hence, Cooke (in Nooteboom and Klein-Woolthuis 2002) defines clusters as geographically proximate firms involved in vertical, horizontal, lateral or diagonal relationships, developing a localised support infrastructure and sharing a developmental vision, based on competition and co-operation in a specific market field’.

Figure 1

COMPLEMENTARY CONCEPTS: VALUE CHAINS, NETWORKS AND CLUSTERS



Source: Nooteboom
Klein-Woolthuis

= Link to another network, another value chain etc.

and
2002.

B.

Cluster governance

The issue of governance of various forms of joint action in clusters is important, for several reasons. First, buyers may be interested in a certain variety or a combination of goods and services produced in an industry or cluster, which no firm can produce on its own. Hence, a collective challenge and task emerges to upgrade production, warrant quality, and maintain or expand diversity. This is so in dutch floriculture (where global buyers thus provoke the centralization of commercial and distribution functions), port clusters (see De Langen 2004) and in the wine industry, where average sale prices of wine produced in a certain country of origin may fall due to lack of variety and differentiation, or due to image problems that can only be solved by joint action, involving other industries as well as public agencies. All this means, however, that individual firms benefit from being part of a competitive industry, or a nation, while these benefits are largely external to the firm. Hence, investing in upgrading generates problems of appropriability, and

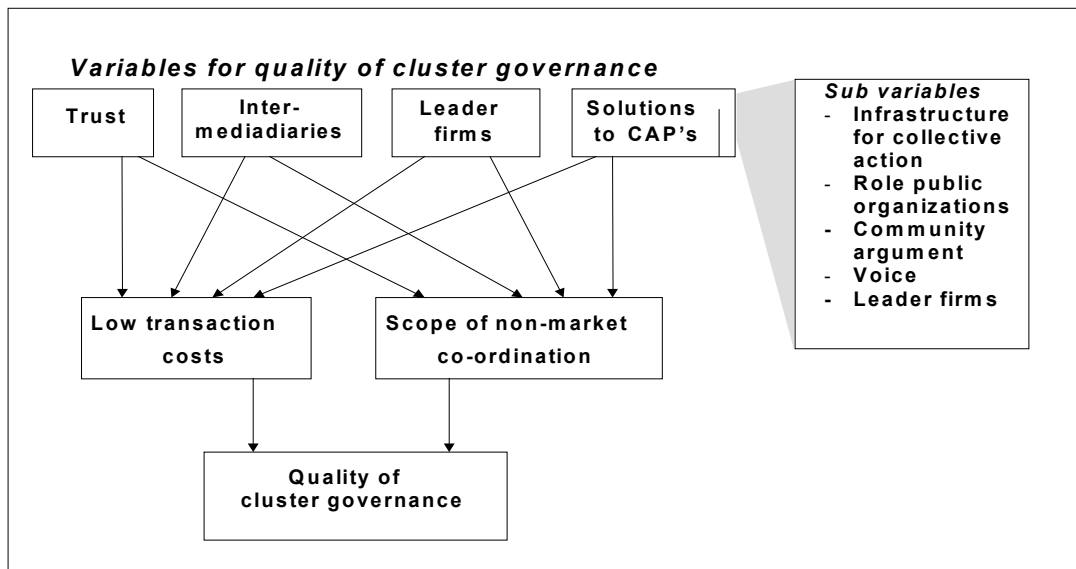
effective governance will be required so as to increase investments in the long-term interest of all firms in a particular industry.

A second reason for the importance of governance is that all individual firms are part of a value chain or system, while some may be involved in a network and/or regional cluster context. Global competition often means that firms, as parts of value chains, have to co-ordinate operations (SCM) so as to effectively compete with other chains. For the same reason, firms may develop external relations and network linkages or adopt a cluster approach to improve their competitiveness. All this requires learning to co-operate, finding ways to co-ordinate, and ensure an effective governance of joint actions and collective investments.

The quality of governance differs across clusters. It depends on four variables: trust, leader firms, knowledge intermediaries, and solutions to collective action problems (see De Langen and Visser 2003, De Langen 2004, and figure 2).

Figure 2

VARIABLES INFLUENCING THE QUALITY OF CLUSTER GOVERNANCE



Source: De Langen 2004

Trust (in the ‘benevolence’ of people) lowers transaction costs, which in turn can be defined as the costs of managing two types of risks associated with external (production, logistic, or strategic investment) relations with other firms: opportunistic behavior and knowledge spillover. By limiting these risks, trust facilitates cooperation—especially in the case of dynamic ventures, when control alternatives are not sufficient. Trust is a complex notion, involving multiple aspects (Nootboom 2002), which we will not deal with here.

Leader firms have both the ability and incentive to invest in collective sources of competitiveness. Hence they make investments with positive external effects for other firms in the cluster. They may encourage upgrading and innovation in specific business networks, explore new markets and enable the internationalisation of other firms in the cluster, or invest in the quality of the labor market. So, leader firms create positive external effects in two ways, by creating network externalities (upgrading, innovation and internationalisation effects), and by enhancing cluster externalities (labor market, knowledge and organizational infrastructure) (*ibid.*). Perhaps, the notion of leader firms can be expanded towards that of leadership, of whatever actor in the cluster, as long as it has superior strategic insight, is able to collect funds for joint investments, contributes the

reduction of risks and transaction costs, and take care of often difficult distribution issues associated with joint actions.

Knowledge intermediaries, such as training centers, universities, R&D institutes, business associations and public agencies may also enable cooperation. On the one hand, they diffuse information that can enhance strategic insight and capabilities of firms, thus stimulating joint action. On the other hand, they may act as brokers in cluster coalitions.

Finally, collective action problems (CAP's) may arise in clusters. This is due to transaction costs and to the classic CAP of free riding, which arises in a setting of positive externalities (causing a difference between social and private costs and benefits) and non-excludability (of private agents not investing nor contributing). Solutions for these CAP's require non-market coordination (Olson, 1971), e.g. in a setting of business associations, public-private partnerships, alliances with R&D or training institutes, inter-firm networks focused on solving production or innovation problems, etcetera.

These non-market coordination arrangements do not arise spontaneously, not even if the benefits exceed costs for all and every member of a business community. Reducing transaction costs and free riding requires the earlier mentioned mechanisms of trust, associations, leader firms, and knowledge intermediaries, along with a legitimate community argument and an effective use of 'voice' by individual firms (cf. Hirschman 1971). A community argument convinces decision-makers in a certain industry or region to contribute to a collective action with a view to shared problems within the community. Such an argument is often strategic in nature, and unifies actors belonging to the community. Voice is exerted by individual firms that are not happy with the lack or quality of a solution to a CAP.

In a situation where the above variables lead to a low quality of governance, collective problems may not be solved, e.g. in the areas of innovation (products, processes, organization, services), training & education, internationalization (geographical spread and penetration of final markets), marketing & promotion (collective and individual, in line with the purchasing decision of consumers), and infrastructure (external to the firm, physical and digital). Hence, an industry or cluster may decline.

II. Structure and performance of the Chilean wine industry

Chile has a long history in winemaking. In 1551, a Spanish conqueror managed to make wine at a location 500 kilometers north of Santiago. During the colonial period, wine was made for religious purposes. In the 18th and 19th century, rich families in Chile made wine imitating French Chateaux and thus importing classical grape varieties and technology from France. The outbreak of Phylloxera in Europe at the end of the 19th century stimulated the export of quality wines. In the 20th century, wine production slowed down, as import-substitution policies did not favor exports and wine-makers depended on a small domestic market. In the 1980s, changes in macroeconomic policies and national law joined crucial developments in the domestic and international wine markets, boosting vineyard area, wine production and exports in the 1980s and the 1990s.

A. Planted area

The area planted with vines in Chile was decreasing before 1995 but picked up afterwards and in six years almost doubled (table 1).

Table 1
EVOLUTION OF VINE AREA IN CHILE 1985-2001
(Hectares)

Year	Grapes for wine
1985	67 132
1990	65 202
1995	54 393
1996	56 003
1997	63 550
1998	75 388
1999	85 357
2000	103 876
2001	106 971

Source: SAG 2003.

It takes about three years before new vines are in production, so the growth of wine production is likely to increase at least until 2004, as a result of the accelerating increase of the planted area in 1999/2000. In international perspective, only China and Australia surpass Chile regarding the speed of increase in the vineyard area during 1995-2000, with a 57 and 73% respectively (Heijbroek and Rubio 2003).

Despite the fast increase of the vineyard area after 1995, Chile ranks 11th in the world on this count (*ibid.*), holding a share of 1.3% in 2001. Spain is first on the list, with a 15.5% share of the global vineyard area. France (11.9%), Italy (11.5%), Turkey (6.7%), and USA (5.2%) follow, while Argentina had a 2.6 % share in 2001.

The industry's main focus is red vines. Important grape varieties are Cabernet Sauvignon and Merlot. Syrah and Carmenère are relatively new additions to Chilean wine. The planted area of these four wine grape varieties increased considerably (table 2). The Carmenère grapes will continue to increase in importance during the following years, as this variety disappeared in Europe (where it comes from), due to the world wars and several plagues. At the moment, Chilean wine producers aim at expanding Carmenère production, branding it as a typical Chilean vine, like Shiraz reds for Australia or Malbec for Argentina.

Table 2
EVOLUTION OF VINEYARD AREA IN CHILE 1996-2001

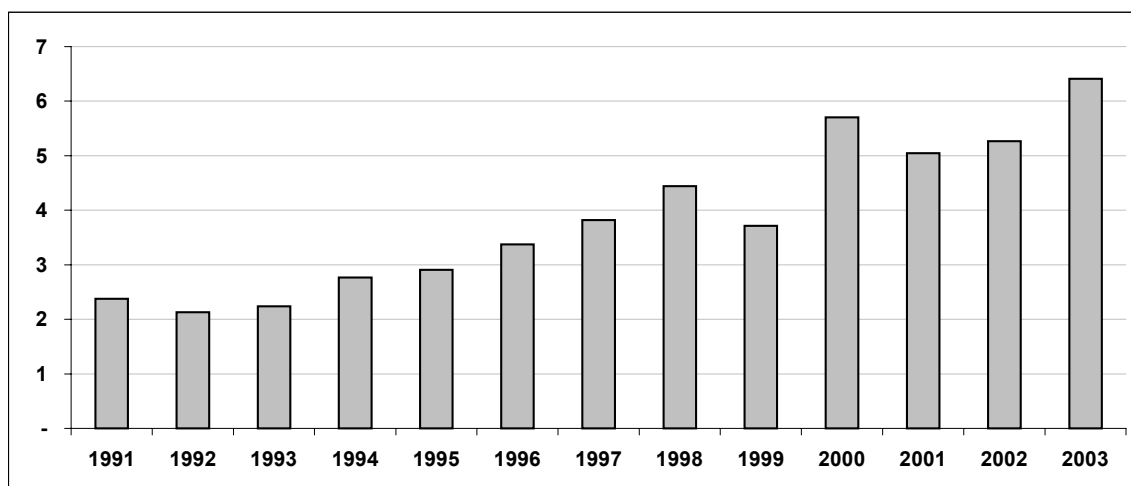
Variety	Annual evolution of acreage						Annual change (%)				
	1996	1997	1889	1999	2000	2001	96/97	97/98	98/99	99/00	00/01
Cabernet Sauvignon	13 094	15 995	21 094	26 172	35 967	38 227	22.1	31.8	24.1	37.4	6.2
Merlot	3 234	5 411	8 414	10 261	12 824	12 887	67.3	55.5	22.0	25.0	0.49
Chardonnay	4 503	5 563	6 705	6 907	7 672	7 567	23.5	20.5	3.0	11.1	(1.36)
Sauvignon blanc	6 172	6 576	6 756	6 564	6 790	6 673	6.5	2.7	-2.8	3.4	(1.72)
Chanin blanc	93	98	104	95	76	49	5.4	6.1	-8.7	-20.0	(35)
Pinot Noir	287	411	589	839	1 613	1 450	43.2	43.3	42.4	92.3	-10.1
Riesling	317	338	348	286	286	286	6.6	2.9	-17.8	0.0	0.0
Semillón	2 616	2 427	2 425	2 355	1 892	1 860	-7.2	-0.08	-2.9	-19.7	-1.7
País	15 280	15 241	15 442	15 457	15 179	15 070	-0.2	1.3	0.1	-1.8	-0.7
Carmenere		330	1 167	2 306	4 719	5 407		253.6	97.6	104.6	14.5
Syrah	19	201	568	1 019	2 039	2 197	957.9	182.6	79.4	100.1	7.7
Cabernet Franc	17	64	138	316	689	823	276.5	115.6	129	118.0	19.4

Source: SAG, 2003

B. Production

As a result of the fastly increasing vineyard area in Chile since 1995, wine production also increased during much of the 1990s. Volume more than tripled in ten years time, comparing 1992 with 2003 (see figure 3). During the same period, the world's wine production grew 3.3% (Heijbroek and Rubio 2003). Countries such as New Zealand, Australia, Japan and China more than doubled production during this period (*ibid.*).

Figure 3
EVOLUTION OF CHILEAN WINE PRODUCTION 1991-2003
(Millions of hectoliters)



Source: SAG 2003

One may observe that the level of production reached in Chile by the end of the 20th century was about the same as those prevailing at the end of the 1970s, before it started declining throughout the 1980s due to falling domestic demand (Agosin *et al.* 2000). Production growth in the 1990s is closely linked with increasing foreign demand for Chilean wines, however, which makes it notable, as it *must* have gone hand in hand with changes in technology, production, marketing and distribution so as to supply a coherent product matching prevailing trends in retailing and consumer demand in importing countries.

Despite the fast increase of production during the 1990s, Chile is still a relatively small player; with a 2.1% share in global wine production (in volume terms). This score gives the country the 11th rank on the list of the world's largest wine producers. France (19.9%), Italy (19%), Spain (11.4%), the USA (7.4%), Argentina (5.9%), Australia (3.8%), Germany (3.4%), Portugal (2.9%) and South Africa (2.4%) all have a higher share than Chile in the global volume of wine production. Of these countries, France, Spain and Italy are traditional producers, involved in the production of wine for centuries. They are still dominant in volume terms, but newcomers such as the USA, Argentina, Australia, South Africa and Chile are trying to close the gap. Australia's market share in the UK, for instance, is currently approaching that of France (Heijbroek 2003) or already surpassed it (Coelho 2003).

C. Regional structure

Grape production for wine is concentrated in the central regions of Chile (table 3 and figure 4¹ and wine-producing valleys within these regions).

This is above all due to the favorable climate and availability of appropriate soils in these regions. A Chilean association of wine producers describes Chile's natural advantages as follows: "the Mediterranean climate in Chile prevails longitudinally from the tip of the Andes Range and the valleys of the Coastal Range. Summers are often hot, with no clouds and low atmospheric humidity, which favors full ripeness of the grape (...). Winter sees successive weather fronts providing large amounts of rain and a mild drop in temperatures. Periodic waves of cool temperatures normally only appear while the vine is in its dormant phase" (Chilevid 2003). The south north passing of the Humboldt current also helps to explain the regional structure of wine production in Chile. In the central regions, this current prevents rain and generates refreshing winds during summertime. Clear skies and high solar radiation also contribute, causing temperature variations of up to 70°F, which favors the concentration of color, aroma and flavor in the resulting wine (*ibid*).

Table 3

REGIONAL DISTRIBUTION OF VINE ACREAGE*(Hectares)*

Regions	Total vine acreage	% of Total
Maule	46 400	43.4
L.B. O'Higgins	29 809	27.9
Biobío	13 662	12.8
Metropolitana	10 063	9.4
Valparaíso	4 965	4.6
Coquimbo	2 067	1.9
Other regions (7)	5	0
Total national	106 971	100

Source: Nuevos Mundos 2002.

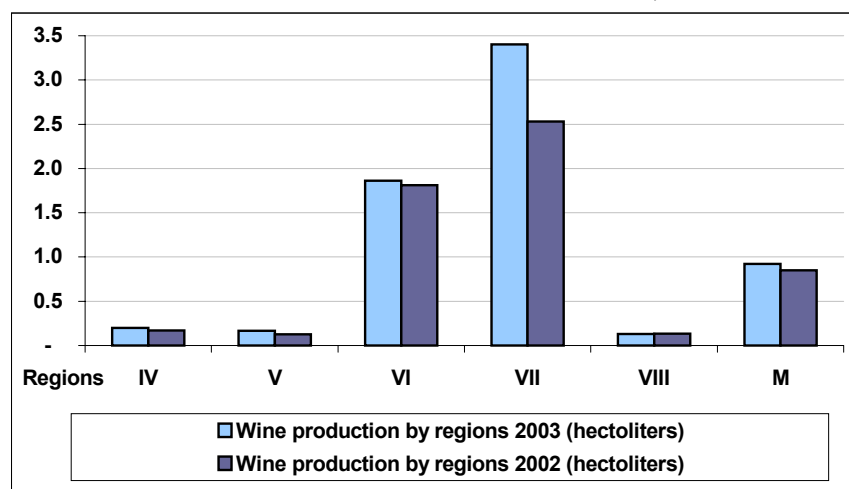
Table 3 shows that the Maule and the Libertador Bernardo O'Higgins regions include 72% of the planted surface. Figure 4 shows that these two regions are also dominant in terms of production volume. These are administrative regions, however. Considering the distribution of wine grape activity at the level of valleys, we find that the Maule valley (covering the central and South of the Maule region), the Colchagua valley (in the L.B. O'Higgins region), the Curicó valley (in the Northern part of the Maule region, bordering L.B. O'Higgins), the Biobío & Itata valley (in the Biobío region), the Maipo valley (in the Metropolitan region), and the Cachapoal valley (also in L.B. O'Higgins) are good for 95% of the total vine acreage (see figure 5). Some of these valleys appear to specialise in wine making, at the expense of other economic activities (oral communication 20 Sept. 2003).

¹ Chile uses a political-administrative structure with 13 regions, numbered from Region 1 in the North to Region 12 in the South, plus an unnumbered Metropolitan Region comprising Santiago and surroundings.

Figure 4

REGIONAL DISTRIBUTION OF PRODUCTION IN 2002 AND 2003

(Millions of hectoliters)

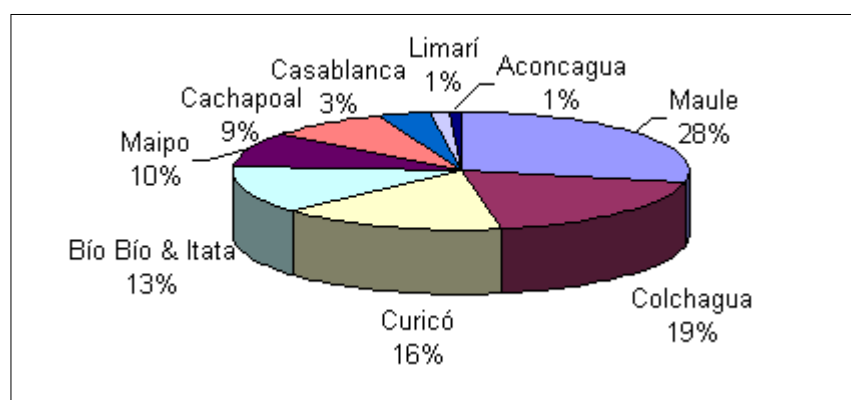


Source: SAG 2003.

Figure 5

GEOGRAPHICAL DISTRIBUTION OF VINE ACREAGE BY VALLEY, 2003

(percentages)



Source: Ben Allouch 2003.

The Colchagua and Cachapoal valley together constitute an official "denominación de origen" (DO, certificate of origin) with the name 'Rapel Valley'. The Maipo Valley also has a DO, while it includes relatively old, large and export-oriented wineries such as Concha & Toro, San Pedro, Santa Rita, Santa Carolina and Undurraga, along with a few small, quality-focused wineries selling wines at relatively high export prices (e.g. Almaviva, El Principal, Antiyal, and Quebrada de Macul). The Colchagua valley appears to agglomerate relatively new, small, quality-focused and export-oriented wineries, such as Casa Lapostolle, Montes, and Errázuriz. The Casablanca valley is specialized in the production of white wine, which some wineries (e.g. Villard and again Casa Lapostolle) sell at above-average prices.

On the whole, wine grape production in Chile takes place in a territory covering about one third of the nation. In this setting, the 7th region (Maule) and 6th region (L.B. O'Higgins) are dominant, in terms of planted area and production volume, while a few valleys seem to specialize in wine making, with Casablanca focusing on white wines, and Maipo and Colchagua lodging an above-average number of export-oriented wineries managing to sell at relatively high prices. Of

course, wineries may have various establishments (vineyards, bodegas and offices, e.g. for marketing, administration or strategic activities) at different locations. For example, Chile's largest wine exporter Concha & Toro has vineyards in Casablanca, Rapel, Maipo, Maule and Curicó, as well as offices in Santiago. Firms select locations for different activities according to their marketing, production and/or logistic strategies. It appears that Santiago, the capital city of Chile, agglomerates marketing, administrative and strategic decision-making functions in the Chilean wine industry. Twenty-five of the twenty-eight experts interviewed in the setting of our empirical work (see section 5), are located in this city, where we find several national wine associations, specialized university research institutes, public agencies involved in the wine industry, and other relevant actors. Of course, Santiago may well concentrate a few key activities within the wine cluster, but as part of its overall function as a capital city fulfilling various social, economic, strategic, public and political functions for different sectors and groups.

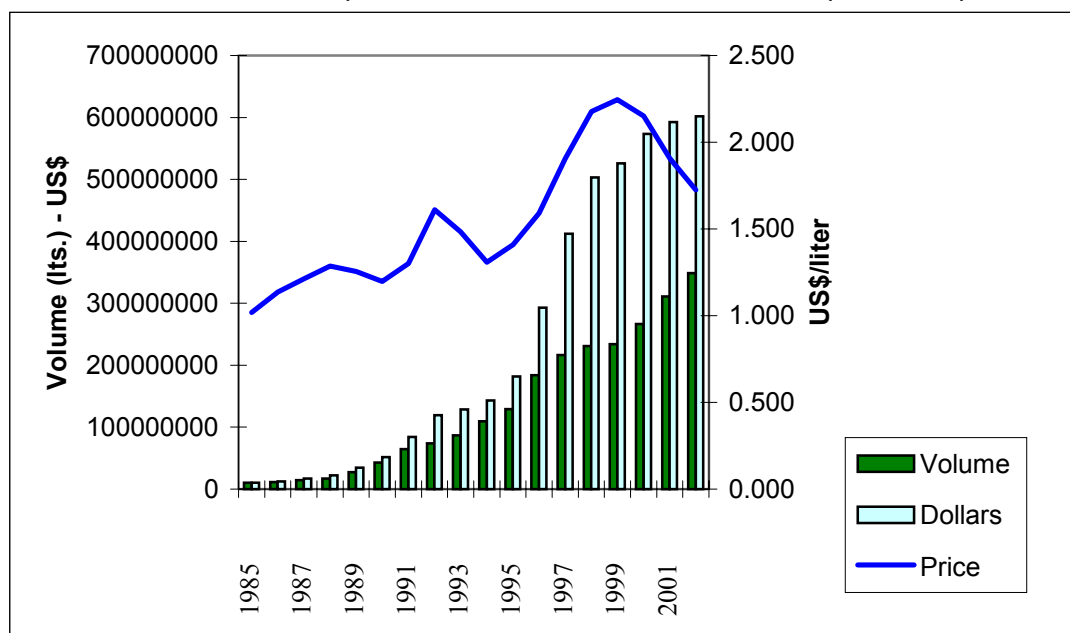
D. Exports

Chile's wine industry is an example of an effective turnaround from a focus on domestic towards export markets. Several indicators can be used to sustain this point, e.g. the share of wine sold abroad; export sales volume, value, and share in global markets; the geographical diversification and penetration of markets; and the number and location of exporting firms.

The share of Chilean wines sold abroad increased from 7% in 1989 to 63% in 2002. In volume terms, only 8,000 hectoliters were exported in 1984, a figure rising to 185 thousand in 1988, and then accelerating throughout the 1990s, so that in 2002, more than 3.5 million hectoliters of Chilean wine found their way to the world market. This is the fastest growth recorded for New World wine producers during the period under review (Coelho 2003). With this, Chile's share in global wine export volume rose from about zero in 1984 to over 4% in 2000. Export value rose from a meager 10 million US-dollars (FOB) in 1984, to 145 million US-dollars (FOB) in 1994 and a dazzling 602 million US-dollars (FOB) in 2002 (figure 6).

Figure 6

CHILEAN WINE EXPORTS IN VOLUME (1000 HECTOLITERS, DARK GREEN BARS), VALUE (CURRENT US DOLLARS, LIGHT GREEN BARS) AND AVERAGE SALE PRICE PER LITER (BLUE LINE), 1988-2002



Source: www.chilevid.cl

The turnaround of the Chilean wine industry has been supported by an increase in sales abroad of bottled wine, which in 2002 were good for 58% of the total volume of wine exports and 87% of its value (Ben Allouch 2003). According to SAG (2003), wine with a denomination of origin is also supportive of the good export performance of the Chilean wine industry. Wine with a DO accounted for about 80% of the total volume of production in 2002 and 2003 (January-August), while the tendency seems to be on the rise.

From a global perspective, Chile ranked 13th in the world league of wine-exporting countries in 1986. In 2000, however, it stood at the 5th place, surpassing the traditional wine exporters Germany and Portugal along with new wine-exporting countries like the USA (table 4). Ranking 11th on the list of the world's largest wine producers, the degree of internationalization of the Chilean wine industry is the highest in the world, amounting to 45.5% during 1996-98, against a global average of 2.3 % (Coelho 2003).

Table 4
EXPORT SHARE IN VALUE OF THE MAIN EXPORTING COUNTRIES IN 1986 AND 2000
(percentage)

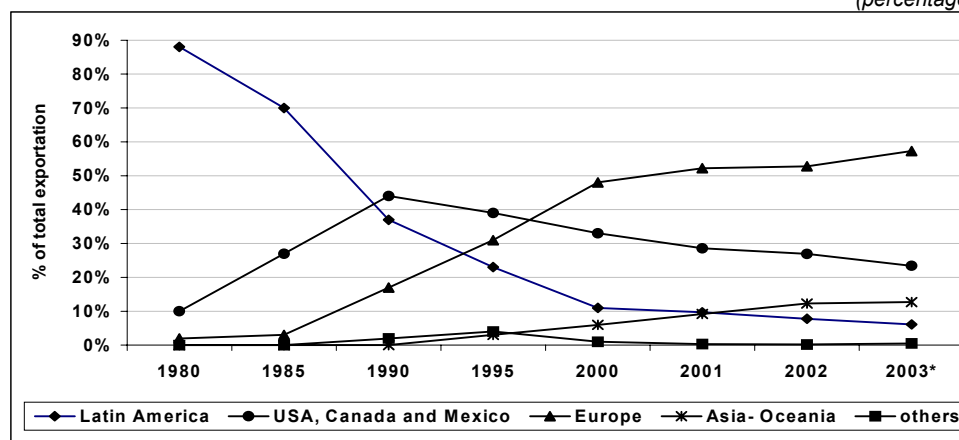
Country	1986	Country	2000
France	51.17	France	40.93
Italy	19.83	Italy	18.64
Spain	8.24	Spain	9.56
Germany	7.89	Australia	7.13
Portugal	5.49	Chile	4.56
Greece	0.89	USA	4.52
Yugoslavia	0.72	Portugal	3.50
Belgium & Luxemburg	0.70	Germany	3.15
The United States	0.63	Argentina	1.15
Australia	0.54	South Africa	1.01
Hungry	0.39	New Zealand	0.73
Bulgaria	0.32	The United Kingdom	0.69
Chile	0.28	Bulgaria	0.54

Source: Buitelaar, in Ben Allouch 2003.

In a setting of an increasing number of wine-exporting countries—from 49 in 1988 to 105 in 2001 (Ben Allouch 2003), the world’s largest wine exporter France significantly lost market share, while the position of Germany, Portugal and Italy also weakened. Gains in market share have been especially large for Australia (which was even absent on the 1986 list), Chile and the USA, and, to a lesser extent, Argentina, South Africa and New Zealand.

The Chilean wine industry managed to diversify its exports to different geographical markets. In 1980, Latin America still absorbed 88% of Chilean wine export, but this figure dropped to 8% in 2002 (figure 7).

Figure 7
GEOGRAPHICAL DIVERSIFICATION OF EXPORTS MARKETS (1980-2002)
(percentage)



Source: Chilevid

Throughout the 1980s, the USA, Canada and Mexico became Chile’s main buyers. Sales to the USA, Canada and Mexico peaked in 1990 at 44% of total exports, after which this figure started decreasing due to the fact that in the 1990s, European importers took over, absorbing more than 50% of Chilean wine in 2002. More recently, Chilean wineries have started to export to Asian-Oceanic countries, whose share increased from 3% in 1995 to 12% in 2002. On the whole, the number of buyer countries rose from 36 to 96 between 1984 and 1999 (Agosin *et al.* 2000). At the level of individual countries, the USA and the UK are the principal markets for Chilean wine exports. In terms of volume, the UK was most important in 2002; in terms of sales value, the USA was the main market (table 5).

Table 5
DESTINATION OF CHILEAN WINE IN 2002
(Millions of US dollars and liters)

Country	Millions of US dollars	Millions de liters
USA	130.40	54.80
Great Britain	117.90	60.20
Canada	37.80	32.80
Denmark	31.00	25.30
Germany	30.00	25.30
Japan	28.70	12.50
Ireland	26.70	9.00
Sweden	25.40	12.70
Netherlands	20.70	9.50

Source: SAG 2003.

Table 5 also shows that in some countries (Canada, Denmark, Germany), the relation between volume and value is almost 1 to 1, whereas in Japan, Ireland, Sweden, The Netherlands and the important US and UK markets, there is a 1 to 2 (or even 3) relation between volume and sales. Table 6 shows the evolution of average sale prices per market in the period of 1995-2001.

Table 6
EVOLUTION OF THE AVERAGE PRICES IN THE MAIN EXPORT MARKETS
(in US \$ FOB/liter)
(percentage)

Country	1995	1996	1997	1998	1999	2000	2001
USA	1.69	1.65	1.91	2.17	2.34	2.28	2.43
Great Britain	1.88	1.83	2.14	2.32	2.43	2.34	2.07
Canada	0.83	1.04	1.32	1.52	1.61	1.50	1.22
Germany	2.52	2.36	2.33	2.22	2.05	1.89	1.43
Denmark	1.78	1.55	1.73	1.99	2.09	1.88	1.41
Japan	0.91	1.77	2.48	2.78	2.78	2.75	2.60

Source: Nuevos Mundos 2002.

In most countries except Germany, average prices increased until 1999, and then stabilized or even started falling. Despite the short period of observation (7 years), this fact has not gone unnoticed among Chilean wine exporters. The idea is that sale prices in popular and premium segments of the market will fall due to fierce competition related with a surplus of investment and supply during much of the 1990s in various countries.

Wineries realizing a relatively high sale price for export wines produced in Chile have in common their location, production strategy (small quantities of high-quality wines), and ownership (foreign involvement). Almaviva, El Principal, Antiyal, and Quebrada de Macul are 1st, 2nd, 3rd and 4th on a ranking of wineries by export sale price, and all produce these wines in the Maipo valley. The other six of the top-10 list of firms selling expensive in export markets can be found in the Casablanca, Rapel, Maule and Malleco valleys. On the basis of a count of the most traditional vineyard of exporting firms, five valleys lodge 78% of the total. These are the Maule, Colchagua, Curicó, Maipo and Cachapoal valleys (table 7).

Table 7

LOCATION OF EXPORTING WINERIES IN CHILE, 2001

Valley	Number of wineries	Percent
1. Maipo	27	20,6
2. Colchagua	25	19,1
3. Curicó	21	16,0
4. Maule	16	12,2
5. Cachapoal	13	9,9
6. Casablanca	8	6,1
7. Other valleys (6)	29	25,1
Total	131	100,0

Source: Chilevid, 2003.

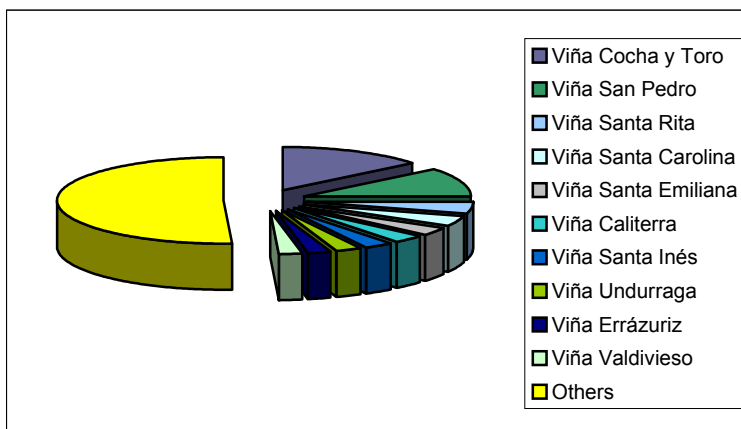
E. Industry structure

In the 1990s, growing demand for New World and Chilean wines attracted newcomers to the Chilean wine industry. Hence, the total number of wineries recently increased as from 1990, reversing a 20 year old trend of decline. The number of exporting wineries equally increased. Precise figures regarding the total number of firms and the number of exporting wineries are not available, due to methodological problems; different institutes follow different count rules, making that the available data for different periods are incomparable, while they sometimes have to be taken as proxies for the abovementioned numbers. Yet, the available data suggest a fast increase in both the total number of firms, and the number of exporting wineries, which may have intensified local competition.

Another factor of importance to domestic competition is the degree of industry concentration. In 2001, the four largest wineries in Chile in terms of export value, contributed 33% to total Chilean wine exports (figure 8). These firms were Concha y Toro (14.2%), San Pedro (10.7%), Santa Rita (4.7%) and Santa Carolina (3.9%). Considering the consolidated group figures of these firms, their share was found to be even larger: 45% (Heijbroek and Rubio 2003).

Figure 8

STRUCTURE OF THE CHILEAN WINE INDUSTRY, BY EXPORT VALUE, IN 2001



Source: Nuevos Mundos 2002

Note: the precise figures for Concha y Toro, San Pedro, Santa Rita and Santa Carolina are in the text. For Santa Emiliana, the score was 3.88%; for Caliterra: 3.03%; for Santa Inés: 2.61%; for Undurruga: 2.52%; for Errázuriz: 2.37%; and for Valdivieso: 2.21%

The Chilean wine industry is less fragmented than in Europe (France, Spain and Italy), comparable with that of Argentina, and more fragmented than the wine industries of Australia and the USA. In Europe, the combined export value market share of the top 4 (consolidated group figures) is lower than 20%. In Australia and the USA, the combined export value market share of the top 4 (consolidated group figures) in 2002 was about 60% in both countries (*ibid*).

Despite the more fragmented European market, the average turnover of the largest European winemakers is higher than the Chilean top 4. In fact, the Chilean giant Concha y Toro—with total revenue of 152 million US dollars in 2002, only occupies the 30th place on the global list of leading wine companies, excluding traders (Heijbroek and Rubio, 2003). Table 8 shows that French, USA, German and Australian companies dominate the world wine business. This is surprising in the case of German, Australian and US companies, as in 2001 their countries of origin held a 3.7 (Germany), 3.8 (Australia) and 7.4 (USA) per cent share in global volume, against a 20% share for France. At the global level, horizontal concentration (through mergers and takeovers) and vertical integration (of primary and secondary production, along with marketing and distribution) appears to be the trend as from the 1980s (Coelho 2003), when New World wine producing countries starting roaring. Yet, the global wine industry remains characterized by fragmentation, despite this trend and the presence of a few giants. The largest three wine companies in the world only account for 7% of global output, while this is about 25% in the beer and spirits industry (*ibid*).

Table 8

THE WORLD'S LARGEST WINEMAKERS IN 1998, IN TERMS OF TURNOVER
(Million of US dollars)

Company name	Origin	Turnover
LVMH	France	1 462
E&J Gallo	United States	1 428
Seagram	Canada	800
Castel Freres	France	700
Canandalgua	United States	614
Henkell & Sohnlein	Germany	521
Reh Gruppe	Germany	500
Diageo	United Kingdom	500
Wein International	Germany	480
The Wine Group	United States	426
Val d'Örbieu	France	400
Grands Chais de France	France	390
Southcrop	Australia	376
R. Mondavi	United States	325
Freixenet	Spain	318
BRL Hardy Ltd.	Australia	292
Beringer Wine Estates	United States	260
Mildara Blass	Australia	260
Brown-Forman	United States	260
Pernord Ricard	France	250

Source: *The Economist* 1999

F. Foreign Direct Investment (FDI)

The Chilean wine industry attracted foreign investors due to unique climate and soil characteristics, a regulatory framework warranting the availability of (new) land, a low disease burden, relatively low labor, land and real estate costs, and a stable macroeconomic environment. The arrival in 1980 of the Spanish wine maker Miguel Torres is considered to have had a significant impact on local wine makers, both in technological (e.g. introduction of stainless steel tanks) and commercial (exports) aspects. During the 1980s and especially the 1990s, other foreign companies followed suit, investing directly in the creation of own vineyards or in Chilean companies (see table 9), or setting up joint ventures with a Chilean company (table 10).

Table 9

DIRECT FOREIGN INVESTMENT IN THE CHILEAN WINE INDUSTRY 1974-1998*(Thousands of US \$)*

Company name	Origin	Turnover
HAC Investment Ltd.	United States	16 700
Marnier Investissement S.A.	France	5 559
The Robert Mondavi Corp y R.M.E. Inc.	USA	5 925
Les Domaines Barons de Rothschild	USA	5 925
European Wine Company B.V.	Netherlands	2 411
Miguel Torre Carbó y otros	Spain	2 107
Baron Phillippe de Rothschild S.A.	France	1 989
C.N. Mariani y otros	USA	2 352
Magnota Winery Corp	Canada	1 277
Stimson Lane Ltd./Int. Wines & Spirits Ltd.	USA	1 066
Other	various	7 224
Total		50 135

Source: Agosin *et al.* 2000

Table 10

JOINT VENTURES BETWEEN CHILEAN AND FOREIGN WINERIES (1974-1998)

Name of the joint-venture	Names of the foreign/Chilean parts	Country
Almaviva	B. Phillipe de Rothschild-Mouton / Concha y Toro	France
Aquitania	F. Solminihac / B. Prats, P. Pontallier	France
Caliterra	Robert Mondavi / Viña Errázuriz	USA
Casa Lapostolle	Marnier Lapostolle / Rabat family	France
Dallas Conte	Mildara Blass / Santa Carolina	Australia
De Larose	Larose Trintaudon/ AGF/ Familia Granella	France
Los Vascos	B. Phillipe de Rothschild-Lafite/ Viña Santa Rita	France
Mapocho	BRL Hardy / Viña Cánepa	USA
Veramonte	Franciscan State/ A. Huneeus	USA
Villard Estate	Thierry Villard/ Santa Emilliana	France
Willian Fèvre	W. Fèvre/ Victor Pino	France

Source: Agosin *et al.* 2000

During 1974-1989, investment through joint ventures amounted to 5 million dollars; between 1990-94, this increased to 8 million, after which the figure accelerates to 38 million US dollars during 1995-98. Between 1974 and 1998, investments by foreign companies in own vineyards or Chilean companies amounted to 50.1 million -dollars. Hence, total foreign investment in the Chilean wine industry during the period under review amounts to 101 million -dollars. USA investors account for more than 50 % of investments, with French and Canadian investors also being important (Agosin *et al.* 2000). Recent figures for 1999-2001 suggest that foreign investments are leveling off (Ben Allouch 2003).

Besides financial resources, foreign investors also bring along technical expertise, marketing know-how, consumer market information, prestige, and scale economies (e.g. in distribution costs). This appears to have had a positive impact on the Chilean wine industry. Wineries with foreign involvement were among the first to export to a wide range of markets. In 2002, they took care of 15% of the export value of Chilean wines, and 12 % of the total export volume. They also served as an example for local, often relatively small and young wineries, thus promoting the internationalization of the Chilean wine industry.

III. Competitive and strategic challenges

The Chilean wine industry fared well over the past two decades: “a story of tremendous success with an unprecedented turnaround” (Heijbroek and Rubio 2003). The rise in export has been sustained by enhanced sales of bottled wine. Until 1999, per unit sale prices have been increasing, albeit not as fast as in other countries (Ben Allouch 2003). Recently, however, unit sale prices tend to stabilize and evenfall, while sales of bottled wines are also under pressure, due to excess supply in the world market for popular premium and premium wines (Heijbroek and Rubio 2003). Yet, the acceleration in planted surface in Chile and the 3-year delayed supply response implies that exports of Chilean wines will have to increase with 65% over the period 2003-05 (Heijbroek and Rubio 2003). How to reconcile falling prices and increasing output in Chile, against a background of: a) a growing global excess supply, especially in lower market segments, b) falling worldwide consumption of wine (minus 7,8% comparing 1996-98 with 1986-1990; Coelho 1993), c) shifting consumer demand, which traditionally is highly diversified across countries and regions, but currently tends to emphasize value for money, novelty, clarity, along with simple and transparent product characteristics (which in turn is related with the supermarket-led ‘democratization’ of wine consumption), d) increasing retail power, e) the rising importance of branding, f) enhanced investments in marketing, g) horizontal concentration (through mergers and takeovers) in the global wine industry, inducing economies of scale in distribution and of scope in production, h) vertical integration (from the primary production of excellent grapes to the marketing task of offering a distinguishable

product and the logistic task of bridging ‘the last and most difficult mile’ to spatially flexible on-trade wine consumption, i) large MNOs competing and co-operating so as to increase their share in still growing markets, and j) a constructive role of governments elsewhere strategically investing or helping to coordinate investments in the industry, e.g. in R&D and/or training (Heijbroek 2003, Heijbroek and Rubio 2003, Coelho 2003, Anderson, Norman and Wittwer 2001)? The task in this paper is not to provide an answer to this complex question. Strategy development is the industry’s responsibility. We refer to other studies in this area (see the above references). One quote specifies the key strategic issue at stake, however:

“Chile has been very successful in the international markets, with decent New World wines at reasonable prices and a few strong international brands. However, its limitations are starting to catch up. Known in particular as a reliable supplier of basic and premium wines, Chile is finding it hard to break away from this image. If competitors become more innovative in content and branding, many brands from Chile run the risk of becoming ‘tired’, in particular because there is too little distinction amongst the wines” (Heijbroek 2003).

Our fieldwork indicates that currently, a number of actors in the industry work hard to clarify issues, set an agenda for a strategic discussion, provide an answer to the above question, and implement a collective strategy to develop the industry. Our task is to measure the quality of governance of any of the joint actions and collective investments specified in this process to solve current competitive problems of the Chilean wine industry. Below, we present the views of industry experts regarding the nature of these problems, collective action requirements, collective action problems (CAPs), and ways of solving CAPs in the Chilean wine industry.

A final clarification regarding the nature of our work is that we part from a cluster perspective (see section 2), and focus on various network and collective action initiatives in the cluster. We do so at the subnational level, as wine production in Chile extends across a vast territory (one-third) of the country, which suggests that neighborhood effects (e.g. easier coordination of inter-firm division of labor, or Maskell’s first-order learning effects of geographical concentration) are less important. For an analysis of this type of clustering effects, we refer to the work-in-progress by Ben Allouch (2003)—on the organization of production at the firm and inter-firm level, and by Giuliani (2003)—on knowledge sharing at the local level (in the Colchagua valley). Our work focuses on the question whether a mix of formal and informal ‘enabling constraints’ develops in the Chilean wine cluster, so that actors can engage in strategic but risky ventures that produce second-order learning effects (annex 2). Such would complement the natural resource based advantages of Chile’s wine industry.

IV. Importance and quality of cluster governance

During September and October 2003, we interviewed 28 key experts involved in the governance of the Chilean wine cluster (annex 1). Only one expert was not involved in cluster governance. The experts were selected on the basis of their knowledge of the Chilean wine industry, the organizations (associations, public institutes, universities) or (large, leader, small, and foreign) firms they represent, their position in these organizations or firms, or a recommendation by other experts (condition: a minimum of two independent recommendations). During the interview, we clarified, whenever necessary, the concepts used in different questions, ensuring that the nature and intention of the questions were clear to respondents. We asked them to provide answers to a set of structured questions, but also and explicitly requested additional explanations—views and opinions. Hence, we collected both quantitative and qualitative information—important for the later process of sense making of data. The interviewing was done face to face (except for three respondents at remote locations from Santiago: Talca, Casablanca, and London, who received the questionnaire by e-mail and replied by fax).

A. Importance of issues restraining competitiveness and the relevance of collective action problems (CAPs) in each issue

We first discussed with the experts five areas where currently problems may restrain the competitiveness of the Chilean wine industry: innovation, education & training, internationalization, marketing and promotion, and infrastructure (section 2). Next, the experts determined the relevance of CAPs in each area. Table 11 summarizes the findings.

Table 11

RELATIVE IMPORTANCE OF FIVE ISSUES CURRENTLY RESTRAINING THE COMPETITIVENESS OF THE CHILEAN WINE INDUSTRY, AND RELEVANCE OF CAPS IN EACH AREA

Issue	Relative importance of problems in this area		Relevance of CAPs?	
	Mean	SD	YES	NO
Innovation	4.61	0.63	17	11
Education and training	4.43	0.63	15	13
Internalization	4.54	1.00	22	6
Marketing and promotion	4.75	0.59	23	5
Infrastructure	3.46	1.04	10	18

Source: survey September-October 2003

Notes: a) relative importance was measured on a scale from 1 (not important) to 5 (very important); b) ^{*}: problems in this area are less significant than in other areas (paired t-test); c) ^{**}: CAPs in this area are less significant than in other areas (paired t-test); d) ^{***}: problems in this area are also more significant than in education & training.

Table 11 shows, in order of importance, that marketing & promotion, innovation, internationalization, and education & training are areas where specific problems currently restrain the competitiveness of the industry, and have to be solved, through private, collective, public, or public-private interaction. Infrastructure is considered a significantly less important area, although opinions seem to differ in this respect (see the relatively high SD). The table also shows that CAPs are especially relevant in marketing & promotion and internationalization, and to a lesser extent in innovation, education & training, and, once again, infrastructure. The number of experts considering that CAPs are not relevant in the problem area is high compared with measurements in other clusters (De Langen and Visser 2003, De Langen 2004). This may mean that experts in the Chilean wine industry either consider a lesser need to co-operate to solve the respective problems, or that they consider that CAPs are not so much of an obstacle. We carefully guided respondents in the process of, firstly, analyzing the nature of the problem, secondly, answering to what extent its solution requires joint (private-private or private-public) action, and thirdly, whether CAPs obstaculize such joint action. Below, we present the additional qualitative information of respondents concerning their answers.

In the area of marketing and promotion, the current image of Chile as a low-cost producer of ‘nice wines’ for popular premium and premium market segments is increasingly felt as a constraint to the future growth of the industry. The need is felt to build up a ‘brand of Chile’, so that some wineries may move up the stairs in the wine-purchasing decision of consumers. One expert analyzes the purchasing decision of consumers as if they ask the following three questions: a) what is the ‘occasion’, and how much will I spend?; b) what is the origin of the wine, and what do I know about this country?; c) what grape variety, flavors, brand, decorations and other characteristics does the product have, and do they fit with the occasion? Influencing the second part of this chain of decision-making is a collective challenge for the Chilean wine industry. It may even require earmarking Chilean wines with a national symbol (that can compete with the Australian kangaroo and ‘Art of Africa’), according to a second expert. The current image of the Chilean wine industry entails a risk of being locked in the lower segments of the markets, which not necessarily is a

problem if it were not so that “Chile appears to be more vulnerable than others, [as] it loses market share even when it drops prices, or increases bulk exports. Low prices—or a low-cost strategy alone, appear not to be enough to maintain competitiveness in the wine industry”. So, the super and ultra premium market segments need to be penetrated, and some Chilean wineries are certainly capable of doing that (Chile won 8% of awards and 7% of all medals at the London International Wine Challenge Rewards 2003; Heijbroek and Rubio 2003). The question is how to combine a low-cost strategy of some wineries and high-end market focused strategies of other wineries, considering the image effects of the former for the latter?

A complication for Chilean winemakers is that their product is the first consumer product that Chile sells in world markets. Chile is largely unknown to consumers in many markets. Hence, building up a ‘brand of Chile’ not only tackles some problems of the Chilean wine industry, but may also help other parts of the Chilean economy exporting consumer products (e.g. salmon, fruit). Considering the thus potentially path-breaking effect of promoting Chilean wine for the rest of the nation’s export sector, investment in the area of marketing and promotion may attract public support, along with associations from other industries.

There are links between collective marketing and innovation efforts. For example, Chile has a clear opportunity to develop and brand the unique Carmenère grape variety, according to several experts. Others state that the Chilean wine brand may include environmentally clean processes and health-promoting impact of, say, the Cabernet Sauvignon produced in the Colchagua valley. Such elements of branding would not only imply coordinated efforts to streamline practices along and across value chains, but certainly would also require training of lower and medium-level field staff, next to investments in information and communication technologies (ICT) so as to create a transparent supply-chain for downstream actors: wine importers and final consumers.

Innovation is second in importance for the competitiveness of the Chilean wine industry. An often-heard point made by experts is the need to differentiate products, away from or at least complementing oak-based processing. Differentiation means increasing variety. To this, one may add a series of other problems and needs. One is to improve the quality and consistency of wines, e.g. of the ‘new’ Carmenere or the newly established Denomination of Origin (DO’s) in Chile. This requires a more effective diffusion of available know-how along with gradual improvements based on a better control of daily operations, finding solutions for short-term problems, optimizing vinification processes, promoting environmentally clean production, ensuring a visibly healthy product, etc. Information technology is useful to step up monitoring and control both in the field and in the bodegas, while sophisticated logistic (JIT, SCM) and organizational approaches (e.g. ISO 9001 procedures) also need to be addressed. These are opportunities for the Chilean wine industry, to be seized through a collective approach. Finally, for differentiation, it will be necessary to develop new technology in Chile, so as to reduce dependence on technology imported from and made by competitors (e.g. France, Italy, Spain, Portugal, Germany, and more recently Australia). This challenge clearly represents a collective task, as product innovations are uncertain, require indivisibly large investments, produce positive knowledge spillovers, etcetera.

In the area of internationalization, the Chilean wine industry made a lot of progress. Yet, one expert told us to be looking forward ‘with a lot of concern’. This may relate with the twofold challenge to move from traditional export markets in Europe and the United States to emerging markets such as East-Asia and Russia, and to move up into super premium and ultra premium market segments. In fact, this was the definition of internationalization that we used in the interview: geographical diversification of markets and deeper penetration of those markets. Continuing Chile’s export success would require a thorough ‘study of markets’, or, as another expert put it: ‘tracing, tracking and analyzing all information about products, channels, buyers, and consumers; we have to build up relevant marketing know-how, and invest in language and social skills’. Moving into new markets, such as Russia or China, brings along similar needs, e.g. to gain

insight in consumer behavior, channels and importers in specific countries, to offer variety and consistency, etcetera. The collective dimension of these efforts resides in that effects of scale, scope and reputation are critical. Hence, no Chilean winery can go for it alone. Large firms will need other, smaller firms to offer variety, and every firm entering a new market requires other firms to behave responsibly, with a view to country-level reputation effects. Hence, co-ordination in the area of further internationalization is required against a background of excess supply and falling prices, making firms eager to sell, no matter where and how. So, the concern of the above-quoted expert appears to be in place.

In the area of education and training, three levels of human resources are relevant: field workers, oenologists/production managers, and strategic management (owners, sales, export managers). Starting with the last, it is important to start up a discussion within the industry concerning the tasks that individual firms can or should perform, and what problems are to be solved on a joint basis. An economic analysis of the optimal mix of competition and co-operation between firms and other actors in the cluster is required as a basis for formulating convincing ‘community arguments’. Next, managers on both old and new firms may need (additional) training in international marketing. At the level of oenologists, the starting point is that Chilean oenologists are trained in agricultural sciences. Hence, they have the advantage of possessing general agricultural knowledge. Also, oenologists are involved in an international labor market; after finishing their studies, they may go to France, Australia, or elsewhere, to gain experience and bring it back to Chile. According to some experts, however, Chilean oenologists still miss relevant industrial and chemical knowledge. At the level of field workers, the situation is most chaotic. At this level, specific training is currently practically non-existent. During the harvest, inexperienced people are hired through intermediaries with access to remote labor markets. Meanwhile, as one expert observed, ‘80 % of the quality of wine is being determined at this level’. Given the scale of the problem and the positive externalities involved, improving the above situation is clearly a collective task.

Infrastructure (which we defined in our interview as ‘external to the firm, facilitating physical transport and virtual information and communication flows’), is not considered to be important, nor are collective actions in this area. However, experts may underestimate this problem. The Corporación Chilena del Vino (CCV) is the only organization linking marketing and innovation challenges with infrastructure requirements. It appears to be the only organization with an explicit supply-chain perspective (competition occurs between supply chains, not firms). Optimizing vinification processes, promoting clean production, ensuring a visibly healthy product to final consumers, ensuring quality in line with ISO 9001 norms requires infrastructure enabling proper flows of information (with a view to the development of SCM) and physical goods (for JIT).

A final observation concerning table 11 is that collective action problems—relevant especially in marketing & promotion and internationalization, predominantly reside in the problem of free riding. According to experts, many wineries would prefer a ‘wait, see and copy attitude’ above undertaking efforts to turn joint actions into a success. Hence, a weak point of the industry would be the ‘hesitation to co-operate’. Other problems that experts mention refer to a lack of strategic capabilities at the level of top management, and problems with trust, the role of leader firms, associations and state involvement. Below, we present data concerning these aspects of the quality of cluster governance.

B. Quality of cluster governance

Above we saw that problems in several areas keep the Chilean wine industry from using its full potential in export markets. Next, we saw that CAPs are relevant, in varying degrees. In this section, the question is whether, to what extent and how these CAPs are being solved.

A first comment is that the Chilean wine cluster seems to be rather complete, despite a few structural weaknesses (see annex 1). Exporting wineries often have their own vineyards, so that they can control the quality of grapes. If they need additional grapes, they can rely on a large number of primary producers, either on the (spot) market or through long-term contracting. The last mechanism becomes more important, in line with the quality requirements of most exporting wineries. Next, most suppliers of primary producers are locally available. This is not always so in the case of the secondary wine production, however. Caps and corks are imported from Portugal; stainless steel processing equipment is bought from Italy, Australia, Germany; oak barrels are sourced in the United States and France; and state-of-the art warehousing materials originate from companies like DuPont. So, the Chilean wine industry may be technologically up-to-date, partly as a result of the influence of foreign investors over the past two decades, but its dependence on foreign technology of its (main) competitors increased likewise. Better news is that the cluster can count with a number of support institutes however, both public and private. Their quality will be discussed below. Leader firms are also present, including large and traditional wine makers such as Concha y Toro, relatively new and local firms such as Montes SA, joint ventures or firms that are fully foreignly owned such as Casa Lapostolle. Their role will also be discussed below. Table 12 presents the evidence collected in line with our theoretical framework (figure 1), where trust, intermediaries, leader firms, and the quality of solutions to CAPs are the principal variables determining the quality of cluster governance.

Table 12
MAIN FACTORS DETERMINING THE QUALITY OF WINE CLUSTER GOVERNANCE
(percentage experts)

Proposition	Agrees	Disagrees	No opinion
The presence of trust facilitates the co-ordination of collective action in the Chilean wine industry	64 ^a	36	0
The presence of (knowledge) intermediaries improves the co-ordination of collective actions	82	14	4
The presence of leader firms in the Chilean wine industry improves the co-ordination of collective actions	64	29	7
Effective collective actions in the industry triggered other collective actions	72	21	7
Improving the quality of coordination of collective actions will significantly enhance the (export) performance of the Chilean wine industry	96	4	0

Source: survey September-October 2003

^a the number of experts agreeing that generalized trust facilitates co-ordination is significantly lower (paired t-test).

Table 12 shows that almost all experts believe that the quality of governance is currently a bottleneck preventing the Chilean wine industry to reap its full potential. This is in line with conclusions of other observers of the industry (see e.g. Heijbroek and Rubio 2003: 39). Next, the table shows that trust and leader firms cause more disagreement among experts than the other two variables: intermediaries and the quality of past solutions to CAPs. Below, we deal with the qualitative comments of experts explaining their answers.

C. Trust

We asked respondents if the presence of trust facilitates the co-ordination of collective actions in the Chilean wine industry. We explained that trust refers to a general assumption about the ‘benevolence’ of actors ‘across the board’, i.e., not pertaining to a particular group that one may be familiar with. Our aim was to measure trust based on general values, norms and beliefs about legitimacy, identification with other people across the board, and empathy (the extent to which people are willing and capable of understanding each other).

With regard to this kind of general trust, Chile is not in a good position, according to one third of the respondents, and a significantly lower number of experts agreeing with the respective statement (table 12). Explaining his viewpoint, one expert refers to the difficult relation between two winery associations throughout the 1990s (see below, intermediaries), and to the finding that speakers at a seminar that will be held soon ‘preferably be foreigners, as local participants are not willing to listen to each other’. Other experts stress the (‘extremely’) individualist attitudes of Chilean winemakers, who disregard the supply chain(s) of which they are part, along with collective problems of the industry. In line with individualist attitudes, Chilean wine entrepreneurs would be ‘short-term minded’, and biased towards ‘understanding better the utility of inter-firm competition than that of inter-firm co-operation’. Asked why these attitudes prevail, some experts mention political and economic conditions during 1973-90, while others go further back in history and mention ‘failures with cooperativism’ (elsewhere) in Latin America.

Interestingly, some experts note that some people in the industry get along very well with each other. As one of them put it: ‘in Chile, we know each other. It is like an extended family with different levels of intensity of linkages. If you are an outsider, you don’t get credit. Trust is reserved for insiders’. Another expert maintains that contacts between wineries are very ‘informal’, based on ‘long-standing personal relations between owners of firms’ and ‘a sense of similarity’—both socially and professionally, and even ‘pleasant’, e.g. in the context of increasing collaboration between two winery associations at the end of the 1990s (see below). These opinions indicate that trust in the Chilean wine industry may be of a more particularistic kind, constrained to certain (groups of) people. Joint travels to participate in trade fairs around the world activated this type of trust involving some winery owners.

The arrival of new firms and managers in the Chilean wine industry over the past decades revealed the particularistic nature of trust, but may simultaneously, through time, change this situation. On the one hand, we noticed a perception among experts that some entrants are ‘opportunistic prestige seekers not taking seriously the art and business of winemaking’. So, new entries appear to have caused tensions between old, established businesses and younger, smaller firms. On the other hand, current market developments in the wake of the Chilean wine industry’s internationalization make that the two groups start to co-operate (see below, intermediaries), as a result of the emerging insight that maintaining the export success of the Chilean wine industry requires collective marketing and promotion efforts, to start with.

Some experts mention distrust between the private and public sector, which also affects the wine industry. In Chile, it is common to consider successful enterprises with suspicion; their success is thought to be due to ‘tricks’, not entrepreneurial talent. Politicians—concerned about the number of votes during the next elections, therefore keep distance from private interests, officially at least. Unofficially, there may be some state support, but in ‘hidden, less transparent ways’, as one expert put it. This may in turn produce two outcomes: a scandal confirming general suspicion, or frustration among private firms perceiving a lack of strategic capability in the Chilean public sector, whereas in other countries, e.g. Australia, the state is active in developing the wine industry, while in China the state is even omnipresent in steering the nation’s development process.

On the whole, the trust issue causes some disagreement among experts. On the one hand, generalized trust does not appear to reduce transaction costs or enhance the scope of collective action. Hence, current problems, e.g. of surplus capacity in the industry, are not being solved. On the other hand, there are signs that current market trends provoke a ‘conversation’ (dialogue) among actors in the Chilean wine industry, who were not on speaking terms before. This may imply that the expert who told us that ‘imitation, not dialogue’ is common in the Chilean wine industry, has to adjust this point of view soon, and that other experts focusing on the extent to which a few problems are under collective scrutiny (see below) are right to arrive at a more rosy conclusion regarding trust.

D. Leader firms

We asked respondents if the presence of ‘leader firms’ in the Chilean wine industry contributes in positive ways to the co-ordination of collective actions in the cluster. In the Spanish translation of the definition of ‘leader firms’ in our questionnaire, we stressed that such firms can be either relatively young and small firms or large and old conglomerates, as long as they push towards certain changes in the industry and invest in that direction. We thus avoided that respondents would merely think of large wine exporters.

Table 12 shows that the experts interviewed lack consensus regarding the role of leader firms. Some are positive, others also point out negative aspects concerning the role of these firms. Some experts repeat the problems discussed above in the case of trust. It would thus be difficult for leader firms to promote and invest in collective actions because they are part of a (Latin American) history characterized by failures with co-operative action. Leader firms would also suffer from individualist attitudes and practices. They would be reluctant to ‘share information and work together with small wineries’.

On the other hand, it is recognized that international market developments provoke a change for the better. Some leader firms e.g. have sufficient resources to enter new export markets (e.g. Concha y Toro conquering China), but found out that they need to offer a variety of products they cannot produce themselves. Here, small firms may help, while leader firms may accommodate the financial and human resource constraints of smaller firms when entering new markets. With this, a need arises to coordinate production and marketing strategies of a larger number of firms in the wine industry. So, the internationalization process induces leader firms to reconsider their individualist attitudes and practices, as can be witnessed in the case of the emerging co-operation between Viñas de Chile and Chilevid.

One expert noted that leader firms have not shown any leadership in the development of a shared vision for the Chilean wine industry. They do not part from a supply chain or a cluster perspective. In the area of public-private interactions, they may still lobby their private interests, not of the industry as a whole. So, we may conclude that their leadership is incipient, and that the direct and network effects of their investments are so far greater than the broader category of indirect cluster effects. This may change, once joint efforts in the sphere of marketing, promotion and technological development prove to be effective, and the gaps between large and small wineries, and between wineries and wine grape producers, are closed. So far, the glass is both half full and half empty.

E. Intermediaries

We next asked respondents if the presence of knowledge intermediaries (research institutes, consultancy firms, information brokers, and business associations fulfilling these and other roles) improves the co-ordination of collective actions in the cluster. Compared with trust, this variable provoked more unanimity among the respondents, who seem to evaluate the role of intermediaries in relatively favorable terms. Below, we describe the main intermediaries of relevance for the Chilean wine industry, with a focus on business associations and technological institutes.

The oldest association of wineries is Viñas de Chile. Founded in 1949, it currently groups 48 wineries, including large wine exporters such as Concha y Toro, San Pedro, Santa Carolina, Santa Rita, Undurraga and Valdivieso, but also smaller firms exporting high-quality wines like Montes and Casa Lapostolle. Viñas de Chile traditionally focused on government policies and regulatory frameworks influencing domestic market development. Today, lobby activities also point at policies and regulations relevant for export market access. Hence, Viñas de Chile participates in negotiations about free trade treaties, most recently with the EU. Other current activities are the training of field workers in vineyards with the financial incentive of the state program SENCE (Servicio Nacional

de Capacitación y Empleo), to step up co-operation with the Catholic University so as to stimulate endogenous research and technology development, and to work with another wine business association (Chilevid) in the area of international promotion of Chilean wines.

A second association of wineries is Chilevid ('asociación de productores de vinos finos para la exportación'). Founded in 1993, this association groups 42, relatively young and small wineries—many of which emerged during the boom years of the 1990s. Chilevid focuses on the acquisition of projects and external financial resources to develop the business of their members, the provision of information and advice on legislative, technical, and commercial aspects of wine exports, the organisation of trade fairs abroad, and the development of relations with wine journalists. At the beginning of the 1990s, Chilevid's membership was eager to export but missed the know-how to do so. Hence, it challenged and sought co-operation with the older winery association Viñas de Chile, where some members were more experienced selling to distant export markets.

In the 1990s, Chilevid departed from a threefold mission to overcome a) the individualist attitude of Chilean wineries, b) its domestic market focus, and c) its bias towards inter-firm competition at the expense of mutually beneficial co-operation to conquer world markets where, firstly, origins of wine (countries) compete with each other, following which individual firms compete after consumers made their choice for a certain origin. Viñas de Chile was initially reluctant to co-operate with Chilevid, whose membership consisted of new entrants in the Chilean wine industry and thus was perceived as new competition. The (cognitive) development taking place in the wake of the interaction between two associations is the still emerging and contested insight that winning market share in world markets is firstly a matter of intra-cluster (and maybe even across the board) co-operation between Chilean wineries (and fruit exporters, mining businesses, salmon producers). International wine market developments have been supportive of the above developments, with the popular premium and premium segments of the market suffering price competition, and higher segments requiring a series of measures that we discussed above: promoting brands, differentiation and consistency.

Co-operation between Viñas de Chile and Chilevid is key for the further development of the Chilean wine industry. It breaks with the fundamental problems of individualism and the one-sided reliance on competition, which make room for a more subtle balance between inter-firm competition and co-operation. This is a very important development in the Latin American context (Buitelaar 2003). It is equally difficult, considering the results of a first attempt to step up co-operation in the area of the promotion of Chilean wines through a new organization: 'Wines of Chile', founded in 1996. This attempt failed, presumably because of lack of balance in terms of ownership and decision-making power between the two associations. However, a second attempt to revive Wines of Chile is underway as from the year 2000. In March 2003, an office of this organization (official name: Promotora Wines of Chile) was opened in London. The Promotora Wines of Chile has four functions: to organize lunches (with wine experts and journalists), to participate in fairs, to collect consumer information in the various and different countries, and to establish a 'brand of Chile'. Expectations are high at both sides of the partnership, including the experts we consulted in September and October 2003. Skeptics may argue that the re-emergence of Wines of Chile in 2000 was a simple response to the requirements of the Chilean government to co-fund joint marketing and promotion activities of the wine industry. Such will have played a role, certainly, but we hypothesize that the fast internationalization of the Chilean wine industry provoked a strategic discussion among the two most important associations about a key issue of how much and where to co-operate so as to compete more effectively in world markets. Newcomers played a key role in this regard; 'they were more aggressive', said one expert.

Another key development is the enhancement of vertical supply-chain awareness in the Chilean wine industry. In this regard, the role of CCV (Corporación Chilena del Vino) merits

attention. Founded in 1997, its membership includes both primary (grape) and secondary producers (wineries), as well as suppliers at both sides of the value chains of primary and secondary producers. Activities of CCV include the diffusion of technical and market information through special publications, the organization of training courses, and representing members in negotiations about new policies, treaties and regulations. Next, CCV acts as an intermediary for CORFO—the main channel of the Chilean government to provide public support (in the form of revolving funds) to the private business sector. CORFO has various programs in place, in the areas of technical assistance, SME development, supplier upgrading (oriented towards suppliers of large firms), production management and business administration. CCV says to identify projects on a demand basis, comparing buyer requirements and supply capabilities before proposing projects to CORFO. CCV's work thus results in the solution of pressing technological problems, while stimulating the diffusion of available know-how. CCV's work to develop supply chain awareness about environmental, health and quality issues is a more long-term nature.

Next, we mention Viñas de Chile's recent initiative to create a center for fundamental research and technology development in co-operation with a specialized research center at the Catholic University (CEVIUC). All members of Viñas de Chile make a fixed and variable financial contribution to the budget of this new initiative to develop unique technology in Chile. A board of advisors consisting of representatives of Viñas de Chile and CEVIUC evaluates research project proposals to be executed. It is too early to consider results, as this initiative focuses on long-term technological development. What is interesting is that this long-term focus is emerging, which tends to counteract another traditional weakness in the Chilean wine industry: its orientation towards short-term gains.

Another point is that different technological institutes (of the Catholic University, the University of Chile, and the University of Talca) started to coordinate their research projects, exchange knowledge and work together, with a threefold objective: a) to avoid duplication in research work; b) to improve external relations and communication and c) to strengthen their position *vis-à-vis* clients. The above institutes received positive evaluations, albeit regarding technological aspects of the winemaking process.

A final intermediary is Nuevos Mundos SA: an information broker, specialized in the wine industry. It collects information on the wine cluster as a whole, including (state) support institutions. The emphasis is on structural and performance data of private wineries: sales, markets and prices. Foreign buyers make use of these data, so as to make decisions on whom to contact for possible trades. So, we could suppose that Nuevos Mundos provides foreign buyers with access to the Chilean wine industry, by enhancing its transparency. On the other hand, the question can be raised what role Nuevos Mundos really plays. It has to strike a balance between effectively providing foreign buyers with the information they require, but not too much, as this would close the doors of domestic wineries. This is still part of a market efficiency-increasing role of Nuevos Mundos. The question whether it is an instrument of control of foreign traders is unanswered.

F. Example effects of effective collective action in the past

Table 12 shows that 72% of the experts consider that there have been examples of collective action in the Chilean wine industry that triggered other collective actions. Almost all agreeing with the proposition explained, however, that so far collective actions are incipient in the Chilean wine industry, and relatively unimportant to explain its thus far good export performance. Yet, there are signs of increasing co-operation and better co-ordination of collective efforts, which is the reason of the high score in the table for this variable, despite the incipient nature of collective actions itself. At present and in the near future, the co-operation between Viñas de Chile and Chilevid is decisive. Expectations of the Promotora Wines of Chile are high. Its results will be closely watched, and may determine the perception of the feasibility and effectiveness of future co-operation elsewhere in the industry.

G. Quality of solutions to CAPs

Collective action problems (CAPs) can be reduced and managed on the basis of positive contributions by leader firms, associations, knowledge intermediaries, public organizations, effective community arguments and voice (see section 2). Here, we discuss the views of respondents regarding these contributions (see table 13 for an overall assessment), in the context of five regimes for solving CAPs: the innovation, marketing & promotion, internationalization, training & education, and infrastructure regimes (see table 14).

Table 13 shows that the contributions of business associations and leader firms are considered to be relatively positive by the experts. There is little differentiation between the six variables, however. None gets a score lower than 3, implying that this variable would ‘not at all’ or contribute just ‘a bit’ to the effectiveness of solutions to CAPs in the Chilean wine industry. Overall, experts seem to be quite positive on the quality of solutions to CAPs.

Table 13

OVERVIEW OF VARIABLES CONTRIBUTING TO SOLUTIONS TO CAPS IN THE CHILEAN WINE INDUSTRY

Variable	Mean ^a	SD
The presence and rol of leader firms	3.82	1.12
The presence and role of associations	3.93 ^a	1.05
The presence and role of knowledge intermediaries	3.25	1.11
The presence and role of public organizations	3.39	0.96
The current content and legitimacy of community arguments	3.22	1.05
The current use of voice by individual firms	3.32	1.09

Source: survey September-October 2003

^a score of 1 means that a variable contributes nothing; 2 = contributes a ‘little’; 3 = contributes; 4 = contributes a lot; 5 = contributes very much. ^a: leader firms contribute significantly more than other variables, except associations (paired t-test, $P < 0.10$) while the same holds for associations (P value < 0.05)

Table 14 shows that business associations are especially seen to contribute positively to the marketing & promotion and the internationalization regimes. The table also shows that leader firms are also important, contributing to the improvement of the marketing & promotion, internationalization and innovation regimes. They are said to have a strong example effect within the industry. For example, a leader firm may conquer a new export market (e.g. Concha y Toro starting to sell in China), signaling to other firms that this is indeed possible. Also in terms of product innovation, they may show the way to other producers. These are spillover effects, however, not network or cluster effects proper. Next, example effects can be due to individual skills and excellence of firms, not so much visionary leadership regarding cluster development or strategic investment in that direction. In fact, the role of leader firms in the Chilean wine industry is subject to debate, as we saw above. Hence, we see relatively high standard deviations in the case of leader firms and their contribution to the different regimes.

Table 14

QUALITY OF FIVE REGIMES TO PROVIDE SOLUTIONS TO CAPS IN THE CHILEAN WINE INDUSTRY

Variables influencing the quality of the innovation regime	Mean	SD
Leader firms	2.85	2.61
Associations	1.54	2.50
Knowledge intermediaries	2.58	1.68
Public organizations	0.77	2.34
Community arguments	1.04	2.41

Voice	1.54	2.73
Overall	1.72	2.38
Variables influencing the quality of the marketing & promotion regime	Mean	SD
Leader firms	2.88	2.63
Associations	3.40	1.35
Knowledge intermediaries	1.60	2.45
Public organizations	2.00	1.74
Community argument	2.24	2.39
Voice	2.12	2.03
Overall	2.37	2.10
Variables influencing the quality of the internationalization regime	Mean	SD
Leader firms	2.89	2.28
Associations	3.12	1.56
Knowledge intermediaries	1.31	2.24
Public organizations	2.19	1.66
Community argument	1.77	2.25
Voice	1.85	2.20
Overall	2.19	2.03
Variables influencing the quality of the training and education regime	Mean	SD
Leader firms	1.92	2.55
Associations	2.44	1.56
Knowledge intermediaries	3.12	1.82
Public organizations	1.76	2.52
Community argument	2.12	2.07
Voice	1.00	1.73
Overall	2.06	2.04
Variables influencing the quality of the infrastructure regime	Mean	SD
Leader firms	1.15	2.34
Associations	1.15	1.54
Knowledge intermediaries	0.77	1.70
Public organizations	0.73	2.39
Community argument	0.42	2.53
Voice	0.15	1.78
Overall	0.73	2.05

Source: survey September-October 2003

^a score of -5 in the table implies a very negative influence of a variable on the solution to CAPs/quality of the regime; +5 means that its influence is very positive. Note 2: we still have to do the usual statistical tests.

The Chilean State, on the other hand, receives a mixed evaluation. Its role is considered positive regarding internationalization and marketing & promotion. This is largely due to the role of ProChile in helping wineries on their way in export markets. ProChile has offices around the world in the Chilean Embassies, and provides wineries with information on (the quality and track record of) importers, retailers, etc. There appears to be consensus among experts that this is a valuable contribution. Next, the Chilean state provides funding for the Promotora Wines of Chile, which may be another reason for the positive evaluation of the role of public organizations in the area of marketing & promotion and internationalization.

In the context of the wine business, 'the Chilean State' mainly refers to the following organizations that play an active role (we thus disregard INIA, considered as ineffective by the experts interviewed, and other public institutes that occasionally interfere with the industry). Firstly, SAG (Servicio Agrícola y Ganadero) handles legislative issues for wineries (licensing, ownership rights, etc.). Secondly, ProChile promotes exports of Chilean products around the world. Thirdly, CORFO is an organization founded in the first half of the 20th century so as to promote investments in state enterprises, but which currently dedicates itself to support the private sector by means of revolving funds that may cover part of the costs of technical assistance, R&D, collaborative

projects, etc. In the wine industry, CORFO supports the so-called ‘Rutas del Vino’—regional associations of wineries promoting tourism in their neighbourhood by enabling visits of tourists to their vineyards, and a number of technology projects through CCV. It appears, however, that this last contribution is not effective, considering the relatively low average score that experts give public organizations regarding the innovation regime. One expert told us that CORFO even has a ‘separating effect’ in the cluster, due to the static nature of its support mechanisms and the administrative-bureaucratic ways of allocating funds in the industry.

Another point is that the Chilean state is not considered to play an active, strategic role in the development of the wine industry, nor in other industries and sectors. Besides a possible lack of capability to play an activist role (which is a very good reason not to intervene, to avoid that ‘government failure’ replaces ‘market failures’, see World Bank 1997), Chilean governments also seem to unwilling and reluctant to get involved with the private sector. Its reliance on liberal policies and its ‘free market’ orientation apparently serves to calm down public suspicion about ‘clientelismo’—a problem discussed above in the section on trust. Here, the upshot is that public hesitation to get involved with the private sector ignores coordination requirements arising in a setting of inter-firm networks and clusters. A cluster perspective of the economy and economic development goes beyond markets and beyond traditional ‘market failure’ arguments. From a cluster perspective, ‘system failures’ may be relevant, next to with ‘market failures’. Both may be a basis for public action. The problem is that the idea of ‘system failures’, and what the government may do about it, appears to be largely new in (the public opinion: media and voters) in Chile. A simple example of a system failure is the problem that private firms have trouble levying contributions and enforcing payments of other firms, e.g. when establishing a fund for joint R&D to develop new technology. This is highly relevant in the case of the Chilean wine industry, which needs to differentiate products and develop own technology, but current law does not provide the private sector with an enforcement mechanism to fulfil this strategic need.

The marketing & promotion, internationalization, and training & education regimes in the Chilean wine industry are considered to be relatively well-developed, whereas the innovation and infrastructure regimes appear to be the weak spots in the cluster governance. The low score of the innovation regime is especially interesting, as the experts interviewed are aware of the importance of innovation, while this seems hardly the case for infrastructure. Hence, the weakness of the latter regime may be due to a lack of attention for the theme, whereas in the case of innovation, experts are aware of its importance but yet consider that means are insufficient to promote collective action in this area. In our view, the main problem is a lack of understanding to what extent, and how, joint action may stimulate innovation.

Compared with other clusters, it seems that experts are relatively positive regarding the quality of the five regimes to solve CAPs in the Chilean wine cluster. Scores regarding the effectiveness of the above regimes in port clusters where we applied the questionnaire before (see De Langen and Visser 2003 and De Langen 2004) are somewhat lower than in the current case study.

H. Comparing Chile and Australia

A final way to assess the quality of governance in the Chilean wine cluster is to compare it with one of its most important competitors—Australia. Between 1990 and 2000, Australia also performed very well, along with Chile and other New World wine producers. Australia by 1997 was the world’s 4th largest exporter in value terms (Anderson and Berger 1999); it is still the largest among New World wine exporters, although the others (Argentina, Chile, New Zealand, and South Africa) are catching up. In certain markets, however, both Australia and Chile were well positioned to increase exports and their market share, e.g. in the UK. However, while Australia managed to

boost its market share from 1.6 to 19.5 % during 1990-2000, Chile's rose from 1 to 6 %.² Where does this difference come from? May this be due, at least to some extent, to a difference in the quality of coordination of collective actions in both countries?

Table 15 displays information regarding the perceptions of key experts in the Chilean wine industry regarding the quality of basic and advanced factors of relevance for the competitiveness of the wine industry in both Australia and Chile.

Table 15

EVALUATION OF THE QUALITY OF BASIC AND ADVANCED FACTORS IN THE AUSTRALIAN AND CHILEAN WINE INDUSTRY

Basic and advance factors	Chile		Australia		Advantage	Cover A
	Mean	SD	Mean	SD	Mean	SD
Quality of top-level management	2.46	1.45	3.89	0.96	-1.43 ^a	0.49
Technical know-how of wine-making & field personnel	2.44	1.83	3.67	0.73	-1.23 ^a	1.10
Quality of local suppliers	2.36	1.7	3.75	0.74	-1.39 ^a	0.96
Quality of land and other natural resources	4.68	0.61	3.00	1.63	1.68 ^a	-1.02
Intensity of local competition	2.73	2.41	3.10	1.09	-0.37	1.32
Role of the state	1.19	2.14	4.31	0.62	-3.12 ^{a,b}	1.52
Role of knowledge intermediaries	1.59	1.55	4.12	0.65	-2.53 ^{a,b}	0.90
Role of market leaders	2.74	1.65	3.78	0.80	-1.04 ^a	0.85
Quality of solutions to collective action problems in the area of innovation	0.81	2.3	4.08	1.13	-3.27 ^{a,b}	1.17
Quality of solutions to collective action problems in the area of marketing and promotion	1.37	1.94	4.43	0.92	-3.06 ^{a,b}	1.02
Quality of solutions to collective action problems in the area of training: top-level managers	1.63	2.1	3.65	0.83	-2.02 ^a	1.27
Quality of solutions to collective action problems in the area of training: wine-making/field personnel	1.69	1.98	3.67	0.92	-1.98 ^a	1.06

Source: survey September-October 2003

Note: the mean figures in the table are average scores of expert's evaluation of the quality of the factors in the rows, on a scale between -5 (very poor) and +5 (very strong). We explained that 0 means 'neither strong, nor weak', etcetera.

^a: the difference between Chile and Australia is statistically significant (paired t-test, $P < 0.05$);

^b: the differences between Chile and Australia regarding these four factors are significantly more negative than for other factors (paired t-test, $P = 0.05$)

There are three ways to read the table. Firstly, considering only the scores of Chile, it is striking that experts give relatively low scores for the quality of collective action regimes, along with the role of the Chilean state and knowledge intermediaries. So, according to our experts, Chile scores relatively high on basic factors, and relatively low on advanced factors. Secondly, comparing Chile with Australia (rowwise), it seems that Australia outperforms Chile in all factors but one: the quality of natural resources, where Chile is perceived to have an advantage over Australia. All this differences are significant, except for the 'local rivalry' factor. Thirdly, the difference between Chile and Australia is more pronounced in the case of the quality of solutions to collective action problems in the areas of innovation and marketing & promotion, along with the role of the state and knowledge intermediaries. The difference between Chile and Australia regarding these advanced factors is significantly more negative for Chile than for the other factors.

² Not everywhere, however, is the picture rosy for Australia; while it performed well in the UK, Ireland, Southeast Asia and New Zealand, it has had more difficulty in North America and East Asian countries incl. Japan. Also the development of unit sale prices has been slightly less favourable in the case of Australia (1987-1997), compared with some other wine producers, including Chile (Anderson and Berger 1999).

Explaining his answers, one expert pointed out that in Australia, a strategic decision was made at the industry level to focus on a minimum product quality, to safeguard the wine industry's image as a whole, and to make collective investments in marketing (see also Anderson 2001). Next, efforts to promote endogenous technological development would have been more effective in Australia, due to the concentration of financial, marketing and R&D power in a limited number of large firms, next to superior self-organization and state-reinforced financing schemes for R&D, training and education. Thirdly, the Australian state adopted a more active and strategic role in establishing an adequate normative and regulatory framework, thus helping the private sector to solve market and system failures. So, in the words of Anderson (2001, 13): "the Australian wine industry during the past decade has enjoyed a high and envied degree of collaboration (...). Maintaining and expanding those activities requires a non-stop flow of deliberate and skilful leadership, something that the Australian wine industry has been fortunate to have in relative abundance compared with both other Australian industries and the wine industry abroad".

I. Importance of governance in the Chilean wine cluster: past and future

Above we have seen that cluster governance seems to be a (relatively) weak spot in the functioning and performance of the Chilean wine industry. Such does not matter, as long as collective action and governance of collective action is not required. But in the Chilean wine industry, this is not the case, not any more, considering the above empirical evidence regarding present competitive problems, collective action requirements, CAPs and the quality of solutions to CAPs and cluster governance as a whole, and also according to the next table.

Table 16

RANKING OF FIVE FACTORS DETERMINING THE PERFORMANCE OF THE CHILEAN WINE INDUSTRY, BEFORE AND AFTER 2000 (EXPERT OPINIONS)

Variables	Before 2000		After 200		Change mean
	Mean	SD	Mean	SD	
Structural features	2.11	1.1	2.79	1.23	-0.68
Quality of coordination	4.11	0.96	2.39	1.10	1.72 ^a
National and international policies	2.96	0.88	3.61	0.99	-0.65
Development of domestic markets	4.11	1.26	4.36	1.16	-0.25
Developments in international markets	1.71	0.9	1.86	1.11	-0.15

Source: survey September-October 2003.

^a mean score of 1 implies that the factor be ranked as the principal one by *all* industry experts. A mean of 5 implies consensus across experts that the factor is least important. Scores between 1 and 5 reflect various levels of consensus as to a factor's importance; the closer to 1, the higher the consensus that the factor is most important, and the closer a score is to 5, the higher the consensus that the factor is least important.

This change is larger and more positive than in the case of the other factors (paired t-test, $P = 0.00$)

This table brings a couple of messages to the forefront: a) international market developments continues to be the most important factor in the eyes of the experts; b) collective action, coordination and cluster governance has so far been relatively unimportant to explain the good performance of the Chilean wine industry; but c) from now on, the quality of cluster governance will be crucial to safeguard and expand Chile's position in world wine markets. In fact, the evidence in table 16 shows that the quality of coordination is the only factor that significantly moves up in the ranking, at the expense of other factors, whose relative (not absolute) importance therefore slightly decreases. With this, experts reveal their understanding of the importance of cluster governance in connection with the tasks specified before: building up a 'brand of Chile', moving up to super premium and ultra premium market segments, enhancing product differentiation and improving consistency of wines. Governance is also becoming more important because Chile's

increasing importance as a wine exporter enhances its visibility and provokes (defensive) reactions of the larger trade blocks (EU, NAFTA), e.g. about quality (ISO 9001, D.O's), environmental issues (the promotion of clean production systems), and health (supply-chain transparency). Finally, Chile's main competitors (e.g. Australia and South Africa) compete on the basis of a cluster approach, superior coordination mechanisms and a more advanced role of the state, among other factors.

Table 16 also shows that structural characteristics (the number and size of firms, ownership, vertical integration, foreign investment, availability and quality of production factors, etc.) will continue to be important for the Chilean wine industry. There is a need of consolidation (business scale enlargement through mergers and takeovers) in the industry so as to be able to make large investments in technological development, production and marketing. Next, foreign investors have in the past been quite important in terms of technology, prestige, marketing know-how, diversification of markets and learning-by-reciprocation (Nooteboom 2000), but they are likely to remain that important, e.g. when sustaining the move to super premium and ultra premium market segments.

To sum up, external factors were in the past decisive to enable and explain Chile's wine export success, but domestic factors at the cluster level are crucial during the present and upcoming period of time.

V. Development prospects

At the end of our interview, we asked experts to tell us which critical opportunities they perceive for the Chilean wine industry to improve its (export) performance and/or the coordination of collective actions in the cluster. Their answers are summarized as follows:

- a) A clear vision and long-term strategy for the development of the wine industry should be developed...
- b) ...based on an economic analysis of what individual firms should do, and what tasks require joint action, collective investments and coordination at the network, supply-chain or cluster level.
- c) Large firms should become 'real' leaders, substituting a shared vision for the long-term development of the cluster for their individualistic, short-term and self-reliant attitudes.
- d) Industry consolidation facilitates the formulation and implementation of strategic projects, including indivisibly large investments in marketing, technology development and production, and may improve the coordination of collective actions (depending on the strategic and leadership capabilities of the larger firms).
- e) One business association could be responsible for implementing this strategy, i.e., Chilevid and Viñas de Chile can merge, under the condition that 'new and/or diverging voices' continue to be heard.
- f) The Promotora Wines of Chile has to succeed. Individual wineries should not expect gains in the short run, abandon individualist 'tit for tat' attitudes, and need to be prepared to

make investments with positive externalities for the networks of which they are part, for the wine cluster or for the Chilean export sector as a whole, also when these effects are uncertain and/or delayed.

- g) We need to develop the 'brand of Chile', on the basis of an accurate analysis of strengths and weaknesses of the Chilean wine industry. This complements branding at the level of regions (valleys with a DO) and individual wineries. A national symbol could fit this purpose of joint marketing.
- h) We have to move downstream, into distribution channels close to consumer markets, and make real work of marketing, knowing consumers, tracking and tracing their preferences and responses to new products.
- i) Continued internationalization is key; we need to diversify into new, emerging and non-traditional markets that are growing.
- j) We should discuss how to sell our excess production during the following years, ensuring that bulk sales do not affect the (efforts to build up a) brand of Chile as a fine-wine producer, and hence the sale of fine wines.
- k) We should expand the coordination of, and perhaps even integrate the efforts of various academic R&D institutes.
- l) We have to accumulate a fund for basic and applied research, so as to solve short-term technological problems (clusterwide diffusion of know-how, vertical coordination of supply chains) as well as to stimulate long-term technological development in Chile.
- m) We have to promote social, environmental and health responsibility of the wine industry. This requires supply-chain management, i.e., effective coordination of information and product flows among all actors in the chain, and thus investing in (ICT and physical) infrastructure.
- n) We have to invest in massive training at lower levels of field staff to enhance the quality of grape growing, as well as in focused training of medium-level managers (industrial and chemical skills) and top-level management (strategy development, economic analysis of when, with whom and in which business areas to co-operate).
- o) We should involve the Chilean government in the development of the industry, making sure that public-private co-operation takes place in an atmosphere of trust between public and private parties, not the current distrust.

This agenda poses a challenge for public policy. What role could the Chilean government play in the long-term development of the industry, why, and how? The remainder of this section is devoted to these three questions.

In my view, the Chilean government, through its various institutions and ministries, could consider the following issues. First of all, it could sponsor a participatory analysis of the pros and cons of inter-firm competition vs. co-operation (the 2nd issue mentioned above), taking into account various inter-firm linkages (see figure 1 in section 2), and with input from *a priori* economic analysis of what clusters are about, how they complement markets in promoting dynamic economic development and (structural) change, what market and system failures can be relevant, and how these can be managed or solved. Such a participatory project would not only help to develop the strategic capabilities of top management in the Chilean wine industry, but would also spill over to other industries and clusters, as a result of an example effect and/or the mobility of top managers in their segment of the labour market. Moreover, it would constitute a change in the relation between private and public sector agents (the 15th issue mentioned above), because public agents commissioning the analysis would only do so on the basis of their own learning about how clusters complement markets in promoting development, and how public agencies may handle cluster

(system) along with market failures. In turn, such public learning is more likely if high-ranking government officials would invest in this direction, retraining public staff at lower levels, with the strategic aim to embed state support programs and policies in ongoing development processes occurring in clusters. The outcome could be more flexible, responsive, embedded and yet generic development policies.

A second area where public policy can play a role is strategy development, integration of joint action in the private sector, and industry consolidation (the 1st up to the 6th issue mentioned above). Stimulating efforts in specific industries and clusters to formulate a strategy to enhance their competitiveness is evidently of public interest, considering the implications of these strategies for the collective image of a nation in world markets, and their socio-economic impact, e.g. on labour market conditions, regional development, environmental and/or health issues. In line with this, public agents could require more coordination between different private organizations, e.g. in the sphere of R&D or industry representation, e.g. as a prerequisite for certain types of public support (as already seems to be happening in the case of the Promotora Wines of Chile). They could also use their relationships with top-level managers of large firms, changing the tone of the dialogue away from short-term issues of direct importance to individual firms (taxes, tariffs, etc), towards issues of long-term relevance to an industry, cluster or the export sector as a whole. Finally, such public involvement would imply that the state adopts a more subtle mix between anti-trust policy (with a view to static efficiency concerns) and the promotion of intra-industry collaboration (with a view to dynamic capabilities; see Nootboom 1999).

A third area of public interest concerns private investments generating positive externalities, for a network of firms, a cluster, an industry or export sector as a whole. Associations or leader firms making these investments do so to enjoy the benefits, hence their contribution. Insofar as the benefits are external to the firms making the investments, and spill over to other firms, other networks, other clusters or industries, and even a sector as a whole, public co-funding is effective from a social point of view. The Chilean wine industry is a pioneer for the Chilean export sector, in being the first to sell a consumer product around the world, reaching the Russian ‘nouveaux riche’, Danish and Dutch young urban professionals looking for ‘value for money’, UK families substituting French for Australian and Chilean wines, etc. This first contact is key, and justifies, in my view, a public interest in most of the issues raised above by the respondents to our interview (from the 7th up to the 14th issue). This could take the form of legislative adjustments enabling certain collaborative efforts, e.g. to create (private) funds for basic research or applied R&D.

Above, we develop a plea for a more active government and for public policies to be more sensitive, flexible, specific and above all more embedded in cluster developments. This would reverse a long-term trend in Latin America of national, static and even bureaucratic policies that give rise to public suspicion regarding their legitimacy and effectiveness, at a moment when public-private trust and co-operation is crucial to prevent the stagnation of (potential) clusters. The main justification for a more active public role is that such can boost the competitiveness of industries, foreign investment in these industries, and the socio-economic impact of these industries. The main risk, however, is that government failure replaces or, worse even, adds to cluster (system) and market failures—a repetition of history. In this regard, we refer to Nootboom’s (1999, p. 803) advice to the Dutch Ministry of Economic Affairs to “limit itself to the (legal) enabling and facilitation of the role of cluster brokers to be played by others, and then focus on the monitoring and control of possible misuses in the form of exclusion of outsiders and corruption”. Here, Nootboom refers to the roles of so-called go-between’s, i.e., third parties whose roles are to reduce transaction costs in the case of relatively small and infrequent transactions, to serve as a guardian of hostages, to yield information on the competence of partners in collaborative projects, to reveal opportunistic behavior and build intentional trust, to connect networks once appropriate, and to help to disentangle networks once required, mediating opposition of dependent parties, enabling other parties to get away with maximum damage control (1999, pp. 801-803).

VI. Conclusion

The Chilean wine industry performed remarkably well over the past decades. The effective turnaround from a domestic towards an export market focus is impressive. Foreign investors have been important in the process of technological upgrading and updating, and the subsequent internationalization of the industry. New entrants in the 1990s also served to dynamize the industry, not only by enhancing rivalry but above all by triggering social, attitudinal and strategic change in the industry. Collective actions are incipient in the industry; their coordination on the basis of effective local cluster governance has not played a significant role in boosting the industry's performance so far.

However, the issue of local governance is increasingly important, as the agenda for urgent collective actions and investments is expanding quickly, while the quality of local governance is insufficient to deal with the coordination problems they entail. This is the key problem to be solved by the industry, if it wants to continue growing. The backbone for stepping up co-operation and effective coordination of collective actions in the industry could be the improvement of the relation between two business associations: Viñas de Chile and Chilevid, which currently co-operate in launching the Promotora Wines of Chile. In the slipstream of this co-operation, large firms should align their role in the industry, turning into real leader firms. Next, the three university research institutes and CCV could continue working together to coordinate and integrate R&D, training and education efforts, at various levels of the labor force, with a short and long-term focus on industry development. All these actors have unique perspectives and contributions to make to a shared vision for

the development of the Chilean wine industry, based on a cluster perspective, strategic awareness (including the distinction between private and social interests and short and long-term effects of joint action and collective investments), leadership, and—a requirement to achieve any shared goal: an effective system of local cluster governance. Finally, there is scope for the Chilean government—through various public institutes, to play a role in the development of the Chilean wine cluster, with positive effects for other natural-resource based clusters and export industries. A transition towards cluster-embedded policies is possible and required, and can best occur along the lines of (legal) enabling, facilitating, monitoring and controlling third parties ('go-betweens') playing several roles in making clusters work for investment and innovation-based development.

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Annexes

ANNEX 1

WINE PRODUCING REGIONS AND VALLEYS IN CHILE



The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

ANNEX 2
MAP OF SOUTH AMERICA AND CHILE



The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

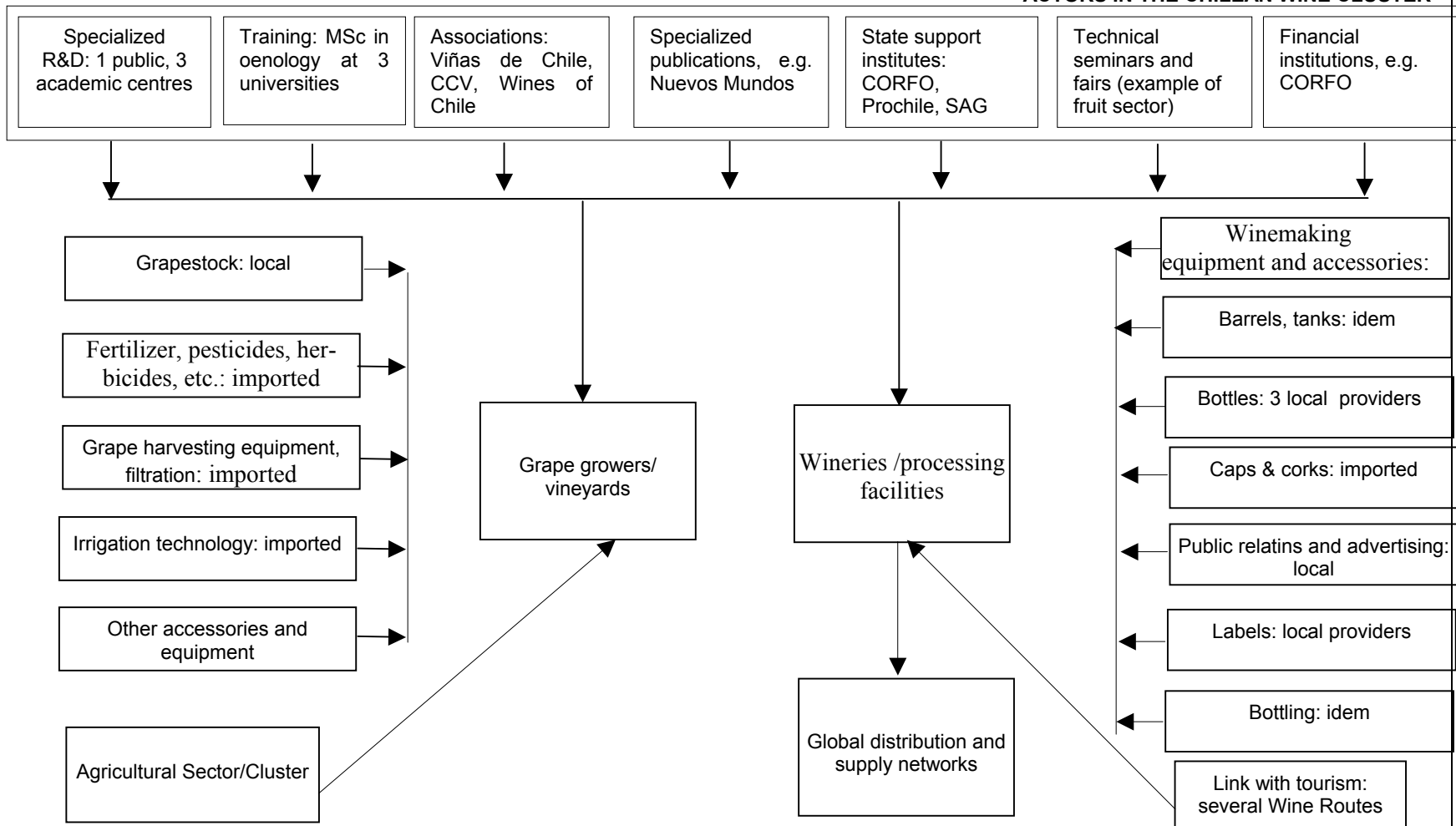
ANNEX 3

LIST OF RESPONDENTS

Organization	Name	Position
Nuevos Mundos (information broker)	Mr. Ramón Rada	General Manager
Chilevid (association)	Mr. Rodrigo Alvarado Moore	General Manager
Wine R&D center of the Pontificia Universidad Católica de Chile (CEVIUC)	M. Alvaro S. González R.	General Manager
Viña Anakena (winemaker)	Mr. Jorge Gutiérrez Pubil	General Manager
Viña William Fèvre Chile (winemaker, JV)	Mr. Cyril Chaplot	Sales Manager
CORFO (State Institution)	Mr. Andrés Parker	Director
Viñas de Chile (Association)	Mr. Matías Elton	Vice President (General Manager Viña San Pedro)
Corporación Chilena del Vino (Association)	Mr. Ricardo Zilleruelo Hozven	General Manager
Viña Montes (Winemaker)	Mr. Carlos Serrano	Export Manager
SAG (State Institution)	Mr. Antonio Aluanly	Agricultural engineer and oenologists
Viña Casa Lapostolle (Winemaker, JV)	Mr. José Manuel Roger	General Manager
Agro industrial and enology department of the University of Chile	Mr. Eduardo Loyola	Full Professor in Oenology
PROCHILE (State Institution)	Mrs. Paula Vasquez	Productor Manager
Rabobank, head Office Utrecht	Mr. Arend M.A. Heijbroek	Industry Specialist Wine and Spirits
Rabobank, Chile	Mr. Mauricio Rojas	Senior Credit Officer
Wine R&D Centre of the University of Talca	Mr. Yerko Moreno	Director
Asociación Ingenieros Agrónomos y Enólogos (professional association)	Mr. Victor Costa Barros	President
Viña Echeverría Limitada (Winemaker)	Mr. Roberto Echeverría (father)	General Manager
Cameo Marinetti S.A. (Supplier)	Mr. Aldo González	General Manager
Cristalerías Chile (Supplier)	Mr. Danilo Jordán Franulic	Export Manager
Viña Cousiño Macul (Winemaker, large firm)	Mr. Colin Rogers	General Manager
Promotora Wines of Chile (Joint action)	Mr. Ricardo Letelier	General Manager
Chilevid (Association)	Mr. Alejandro Hernández	President
Ruta del vino del valle de Casablanca (regional association)	Mr. Pedro Montesinos	General Manager
Ruta del vino del valle de Colchagua (Regional association)	Mr. Thomas Wilkins	General Manager
Viña Selentia (Winemaker)	Mr. Juan Pablo Heinsohn S.	General Manager
Viña Santa Rita (Winemaker, large firm)	Mr. Anibal Ariztía Reyes	General Manager
Embassy of Chile in London	Mr. Mariano Fernández A.	Ambassador
Viña Almaviva (Winemaker, JVV)	Mr. José Mingo Marinetti	Director Almaviva and Cameo Marinetti, General manager Terramater

ANNEX 4

ACTORS IN THE CHILEAN WINE CLUSTER



ANNEX 2
CLUSTER TYPOLOGY

Driving force	Regional cluster prototype	Structural features	Inter-firm interactions		Localization process	Firm-level effects	Other
			Nature	Direction			
Location decision based on a dominant , often natural or basic, location factor.	Formation	Spatial proximity to the location factor	None	None	None	Transport costs ↓	Local, external and static effect, that is due to the one-time location decisions of firms. Each firm in the area benefits. Passive attitude of entrepreneurs: effects fall into their lap.
Market imperfections, in terms of structure, geography, and information. Firms have difficulty with market access.	Marshallian districts (local markets)	Spatial proximity to a location factor and/or between firms; a high density of economic activity; a local history of specialization in a set of related activities; many, often small, independent firms; predominantly tacit knowledge; market governance.	Market linkages Informal contacts Chance encounters 'Buzz'	Vertical Horizontal, Lateral	External economies of experience, scale and scope induce a pool of skilled labor, and boost the supply of business information, producer and public services. Market exchange of products and spillover of information favor producers, tying the latter to the local area	Transport costs ↓ Transformation costs (labor productivity ↑) Transaction costs ↓ (purely search costs)	Local, external and internal, and mostly static effects, due to location decisions of firms, market interactions and spillovers. Each firm in the area benefits. Passive attitude of entrepreneurs: effects fall into their lap.

	Regional cluster prototype	Structural features	Inter-firm interactions		Localization process	Firm-level effects	Other
			Nature	Direction			
increased price competition requires cost cutting. Consumers demand quality.	Toyotian districts (local complexes)	Spatial proximity of specialized firms; inter-firm division of labor (specialization and outsourcing); semi-hierarchical governance in one-firm led complexes, and market governance in SME complexes.	Market linkages	Vertical (in one-firm led complexes) Vertical, horizontal and lateral in SME complexes	Economies of experience, scale and scope in the logistic and transformation sphere, joint quality management, and transaction sphere enhance the interdependence of firms. Sunk costs and specific investments prevent firms to relocate.	Transport and logistic costs ↓ Transformation costs ↓ (multiple causes) Transaction costs ↓ (contact, contract and control) Flexibility ↑	In one-firm led complexes, economies are internalized by the larger lead firm. Suppliers are required to locate nearby (enhancing site specificity). The lead firm actively creates JIT and TQM systems. Suppliers have to comply. In SME complexes, benefits are external, more evenly spread over firms, perhaps more static (cost-based), as there is no lead firm implementing its new strategy.

Driving force	Regional cluster prototype	Structural features	Inter-firm interactions		Localization process	Firm-level effects	Other
			Nature	Direction			
Consumers demand quality, differentiated products, and novelties. Flexible and responsive technologies required and available.	Neo – Marshallian industrial districts (local networks)	As above (in local markets and complexes) Mix of competition and co-operation between networking firms; associations and/or public-private partnerships; social ties, shared norms and values, mutual identification and empathy; repeated transactions, competence trust; spin-offs, start-ups and labor mobility; export orientation	Market and network linkages Informal contacts Chance encounters 'Buzz' Strategic networks and cluster initiatives	Vertical, horizontal, lateral and diagonal	As above (in local markets and complexes). Localization also and especially related with relatively easy co-ordination (governance) of inter-firm co-operation and collective investments. This governance advantage of certain locations (settings) is due to a specific history, culture, and institutional setting ('enabling constraints')	As above (local markets and complexes). Transaction cost ↓, here also related with joint actions, investments & learning 1 st order learning ↑ (Maskell's evolutionary selection of best practices; Nonaka/Takeuchi's internalization and socialization of external know-how; Capello's collective learning) 2 nd order effects of learning-by-interaction or lock-in (Visser/Boschma)	Multiple effects: external and internal, static and dynamic, due to a variety of factors and behaviors (location decisions, market interactions, spillovers, networking and collective investments). Active attitude of entrepreneurs, whose successes in networks feed back to the cluster. Renewal of the cluster's knowledge base, and another phase of positive externalities, to begin with. Equal opportunities and distribution of cluster benefits, although through time this may change due to structural change in the cluster (Boschma and Lambooy 2002).

ANNEX 2 *(conclusion)*

Driving force	Regional cluster prototype	Structural features	Inter-firm interactions		Localization process	Firm-level effects	Other
			Nature	Direction			
Globalisation: market liberalization and ICT-transport technology induce free space of flows and hyper-competition (costs, service and innovation)	Regional innovation system (local milieu)	As above (local networks). Co-evolution between local institutions, networks, (capital, labor and product) markets, and policies; responsive and smart government implementing cluster, place and phase-specific policies; flexibility regarding specialist positions in teams, variety of organizational forms in and beyond the cluster, and combination of 'buzz' and 'pipelines' (internal and external knowledge); ongoing renewal of cognitive distance so that P [novelty] ↑.	As above (local networks) + formal co-operation	As above (local networks)	As above (local networks). Localization also based on competence effects of an open yet regional learning system	As above (local networks). Sustained 2 nd order learning ↑, due to flexibility regarding positions in teams, variety of organizational forms in and beyond the cluster, and combination of 'buzz' and 'pipelines' (internal and external knowledge processes) Know-whom as important as know-what or know-how. Sufficient cognitive distance for P [novelty] ↑	Multiple effects: external and internal, static and dynamic, due to a variety of factors and behaviors (see above, local network), as well as changes due to co-evolution and policy learning. Active attitude of entrepreneurs and other actors, whose successes in networks, PPPs or global pipelines feed back to the cluster. Hence, renewal of the cluster's knowledge base. Equal opportunities and distribution of cluster benefits are likely, although through time this may change due to structural change.

Sources: Visser 1996, 1999, 2000a en b; Maskell 2001; Atzema and Visser 2002; Boschma and Lambooy 2002; Visser and Boschma 2003; van Dijk en Sverrisson 2003; Schmitz and Nadvi 1999; Capello 1999; Asheim 2002; Herrigel 2000, among others. 6th column: vertical relations between producers in a value chain; horizontal relations between producers making the same product (competitors); lateral relations between producers making complementary products but belonging to the same branch; diagonal relations between producers in a branch and entrepreneurs in other branches, often services, but also manufacturing. 9th column: static effects relate to efficiency and costs; dynamic effects refer to learning and organization. Economies can be external to the firm (public) or internal (available to one firm only). Distribution of effects: internalized by one or just a few firms (clans) versus external, decentralized, accessible to (m)any firm(s). Geographical scope of (mostly external) effects: locally concentrated or spreading over larger distances. Attitude of entrepreneurs: they may passively enjoy clustering benefits or actively pursue competitive advantage, e.g. through networking or investments with positive external effects for the cluster or networks in the cluster



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