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AMERICAN ASSOCIATION OF WINE ECONOMISTS

AAWE WORKING PAPER
No. 185
Business

**STRENGTHS AND GOVERNANCE:
THE ARGENTINE GRAPE-WINE
INDUSTRY AT THE CROSSROADS**

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Oct 2015

www.wine-economics.org

STRENGTHS AND GOVERNANCE: THE ARGENTINE GRAPE-WINE INDUSTRY AT THE CROSSROADS

ALDO BIONDOLILLO ^a AND JUAN PEDRO BRANDI ^b

Abstract

Over the last years there has been a debate about the “structural change” in emerging economies and their impact on the understanding of development. New types of structuralisms are discussed using the concept of value chain in certain production sectors that have undergone significant changes.

The objective of this paper is to contribute to the debate about the structural change of the Argentine grape-wine growing sector using the dual analysis of “Strengths and Governance”.

First of all, we wish to point out that viticultural production is carried out in imperfect markets where prices are the result of an asymmetric negotiation between the purchasing power of a demand that is concentrated in a few firms and an atomized supply that is in the hands of thousands of producers. We analyze the strengths resulting from the interaction between the internal factors characteristic of the production unit and the external forces that operate within a given business organization. We describe the manner in which the supplier is related to the resources and the markets. We combine the above analysis with the governance approach, which refers to the manner in which the relationship among the several actors engaged in grape-wine growing is governed. We also analyze the relationships between firms and institutional mechanisms through which coordination actions are implemented outside the market. Emphasis is laid on the importance of explicitly incorporating institutionality into the analysis of the grape-wine growing sector chain so as to make sure that enforcement agencies comply with decisions reached by “consensus”.

One first conclusion of the study refers to the complementariness of both approaches and, in both cases, there is a continuous segment that spans from “decentralized coordination to a more centralized one”. By learning how value chains are governed, it is possible to know how they affect suppliers’ “upgrade” (increasing the added value of the chain through innovation). The upgrade is illustrated with a case study in which the knowledge acquired by the innovative firm is spread within the grape-wine growing sector, giving rise to a positive externality that may be internalized by means of suitable public policy instruments.

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1. INTRODUCTION

The Argentine grape-wine growing chain has been widely recognized as a “successful” sector and has attracted the interest of academics, entrepreneurs and public-policy makers. There is broad consensus on the fact that the great development achieved in the 1900’s and 2000’s was based on a structural change that involved conversion of vineyards, technological modernization of wineries and development of a high management level, together with unprecedented risk investments. On the other hand, in analytical terms, the grape-wine growing sector shows a dense historical plot with is a set of well-identified economic actors with territorial characterization, this being the reason for which this sector has been often analyzed from an interdisciplinary perspective.

Though several indicators show that the Argentine grape-wine growing sector has undergone a significant structural change over the last 25 years, emphasis must be laid on its strong export performance. Late in the 1900’s exports amounted to less than 100 million US dollars; by the end of the first decade of the 21st Century the sector achieved exports for more than 1 billion US dollars. There was a shift from a business model devoted exclusively to the domestic market to a model in which one fifth of the total production is exported to foreign markets.

The new paradigm made it possible to achieve a substantial quality improvement in a context of increasing productivity, and this in turn led to a decline in total production aimed at increasing quality and price. This change in paradigm was not only associated with a new business model but also with improvements and innovations, such as vine varieties, trellis systems, hail control infrastructure, drip irrigation, etc., that led to changes in the Argentine grape-wine growing industry.

Today the sector is at a new crossroads. Over the last years, the crisis pervaded most of the actors. Sluggish demand from international markets and lagging exchange rates in Argentina call for the need to understand the structural change that will help to devise a positive trend in the near future.

The objective of this study is to contribute to the current debate about the structural change of the Argentine grape-wine growing sector using a dual analysis of the Strength and Governance approaches. The following section presents a conceptual framework on the basis of which we develop the main aspects of our approach through strengths and governance. Then we include a case study in which through research and development we can differentiate the product and internalize a small and medium-scale grape and wine growing firm (PyMe for its acronym in Spanish). This in turn makes it possible to show that a small-scale family enterprise can develop its own strengths and

shift to a different governance model based on its production and commercial promotion. Finally, we provide some general considerations related to public policy and supplier's empowerment.

2. CONCEPTUAL DEVELOPMENT: “STRENGTHS AND GOVERNANCE”

The framework of analysis is that of the logic of structural change and of the new meaning that such change is given in the global debate. Over the last 30 years emerging countries have faced several crises in the context of a never solved “international financial architecture”; the economies of developed countries have also been facing crises since 2008 (United States of America, European Union, Japan). This situation has ratified the conceptual idea of structural change and the role that industrial growth plays as a political strategy.

We uphold Lin's¹ theory on structural change in the sense that it is not possible to rely only on the comparative advantages of a nation, based on the fact that the production (and export) capacity of a country is determined by its natural resources endowment, as dictated by the neoclassical economic theory, and proposes to favor the industrial “*promotion*” of an economy and accompany the natural comparative advantages. Instead of accepting the dichotomous “rural vs. industry” approaches - so much used in the traditional structuralism literature - Lin rather proposes to encourage a policy that fosters a country's industrial “promotion” in a world where economic activities coexist. What lies behind such statement are **the spillover effects**, the existence of **network externalities**, *coordination* economies, the **idea of the discovery cost**, **market failures**, and the need for proper coordination between the State and the private sector to correct them. **It is an endogenous structuralism very far removed from the old exogenous structuralism.**

Despite the fact that to date the debate is not finished and that different conceptual viewpoints² still coexist, when defining the framework of analysis of the grape-wine growing industry in Argentina we decided to adopt Lin's vision. The grape-wine growing sector has clear comparative advantages: great changes in productivity during the 1990s, fast entry into the global wine market, sustained export growth and hard currency earnings.

¹ Justin Yifu Lin, *New Structural Economics – A Framework for Rethinking Development and Policy*, The World Bank, Washington, D.C., 2012.

² Though Chang adopts comparative advantages as a baseline, he questions Lin's strategy by stating that it is not possible to wait that long to achieve a resource accumulation process for a new industry to emerge in a country; what's even worse is that given the nature of the accumulation of technological capacities, no one can ensure that a country will follow the steps towards industrialization by simply accompanying the comparative advantages instead of challenging them.

The idea of *promotion from comparative advantages* provides a gradual, but not less structural, vision and makes it possible to analyze the factors that promote or hinder sector development. Our approach is also based on a pragmatic interpretation of the reality of the country's regional economies: agricultural and food production in general, and grape-wine growing in particular, take place in imperfect markets where prices result from an asymmetric negotiation between the purchasing power of a demand concentrated in a few firms and an atomized supply in the hands of thousands of suppliers.

For the analysis of the grape-wine growing sector and before presenting the case study, we developed the dual Strength and Governance approach. First we analyze the strengths arising from the interaction between the factors within the production unit and the external forces operating in a given business organization framework. We combine this analysis with the Governance approach, which refers to the way the relationships among the different actors that participate in the grape and wine growing industry are governed.

2.a. The strength approach

We begin by identifying the supplier's strengths (S) and weaknesses (W): the greater the strength, the weaker the weakness and viceversa. Such attributes are the result of the interaction between the internal factors of the production unit and the external forces that operate within a certain market. In order to frame the debate, the underlying causes of such attributes should be classified as structural, that is, associated with an initial supplier's endowment of natural and contextual resources, the last one related to the external factors that escape his control.

Another way of differentiating strengths and weaknesses in the grape-wine growing sector is by referring to the ways the supplier is related to the resources and markets. Thus, by expanding the number of possible combinations, there will be greater flexibility to categorize different firm typologies, so typical of the heterogeneity that characterizes the country's agricultural and food conglomerate.

Resources are classified into natural, human, technological and financial. Markets are classified into output, input and service markets. It is thus possible to identify business units that regardless of their size or scale may exhibit strengths (S) on the basis of their initial allocation of resources, and weaknesses (W) if they find it difficult to gain access to the market, or viceversa. We will also find other intermediate and more complex forms. With this classification in mind, Chart No.1 shows the different links of a given chain. We drew a box where each quadrant is identified with two letters (S and W), the S referring to resource endowment and the W to the degree of market integration. The four pairs of letters identify the same number of possible categories.

CATEGORIZACIÓN DE EMPRESAS

FF Fortaleza de Recursos y Fortaleza de Mercados FD Fortaleza de Recursos y Debilidad de Mercados
 DF Debilidad de Recursos y Fortaleza de Mercados DD Debilidad de Recursos y Debilidad de Mercados

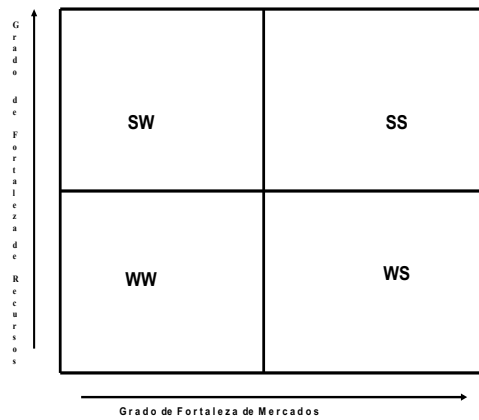


Chart No. 1. Box of Strengths. Categorization of Firms

Within the universe of possibilities, there are situations with suppliers or firms with marked strengths from the point of view of resource endowment, which are offset by weak market integration where they participate as buyers of inputs or suppliers of intermediate or end products. The same holds for small and medium-size production units. Though they made great efforts to restructure their productive system, such restructuring process was not accompanied by investments aimed at developing marketing channels. This diagnosis of a given firm's positioning can be applied to the search of different evolution strategies aimed at developing strengths to offset the weaknesses identified in each link of the chain.

Naturally, the size of the Box will depend on the maximum potential strength likely to be achieved, both in terms of resources and of markets. From a given initial situation, any shift towards the northeast would be ideal because it follows the **“more is better”** principle.

As shown in Chart No.2, and depending on the initial location of each production unit (WW, SW, WS, SS), it is possible to define alternative intervention strategies to improve their initial positioning. The question is: which strategy should be followed first? Should priority be given to strengthen resources or to market integration? The obvious answer is that, if possible, both objectives should be met simultaneously. But since the resources available are limited and vertical integration processes occur gradually, it is necessary to set investment and management priorities that will lead to the double strengths goal.

In line with this reasoning, and analyzing the case of a **small-scale producer that is not fully integrated into the value chain**, we suggest that the first step should be association, though other supplementary measures may be adopted at the same time. Horizontal integration will make it possible to tackle both weaknesses by achieving the necessary scale for a better positioning in input and output markets. Besides, this greater

scale will allow him to obtain, on an individual or associative basis, technical advisory services and human resources training, such as family labour force, to offer mutual joint financial guarantees and to gain improved access to institutionalized loans. This greater availability of funds will also allow him to finance investments to meet structural needs which up to that moment he was fulfilling under poverty and extreme risk conditions.

Once the integration strategy, whether horizontal or vertical, is determined, the next question is: with whom should a supplier with the characteristics described in the WW or SW category enter into a partnership? The answer is also obvious: with firms that have market strengths such as those falling into the WS or SS group. But in the case of the grape and wine growing industry, why would a winery in the SS category be willing to enter into a partnership with a WW or SW supplier? Among other reasons, simply to ensure the availability of sufficient good quality grapes. Besides, as the winery can get the supplies from different production regions, it will be able to plan ahead grape purchases and reach an optimal compromise solution between freight costs and the impact that adverse climate events may have on the suppliers' vineyards. It is at this point that long-term contracts for the purchase and sale of a perishable product like grapes, in which quality is crucial for price determination, are specially useful. Special clauses that provide additional reassurances to the contracting parties will help small-scale suppliers overcome the recurring fear of being absorbed by the industrial counterpart.

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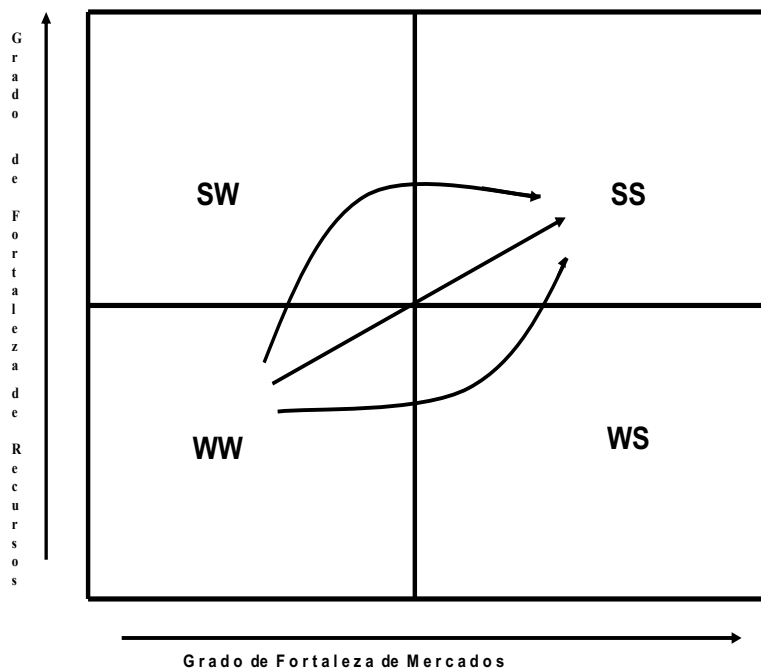


CHART No. 2. Box of Strengths. Example of a small-scale non-integrated grape and wine supplier WW)

Even though it is difficult to summarize in only four categories such an heterogeneous conglomerate of firms, the Strengths approach establishes in a very simple and practical manner a first horizontal section in the production universe of the grape and wine growing sector to identify similar problems and common solutions, regardless of region or specific grape use.

To supplement this first approach, we describe the conceptual framework to analyze the forces that govern the relationships among the actors involved in the grape and wine growing industry.

2. b. The Governance approach

The analysis of strengths is followed by an approach that makes it possible to understand the rules and relationships in the grape and wine growing chain, especially those factors that show the asymmetries typical of an imperfect and concentrated market, that diminishes the bargaining power of the producer when he is negotiating price and sale conditions with the industry.

This approach derives from the concept of **governance**, a term that refers to **the manner in which the relations among the actors and production segments involved in a same chain are governed**. We will use the characterization made by Gary Gereffi, John Humphrey y Timothy Sturgeon³ for the analysis of Global Value Chains, adapted here to the grape-wine growing chain.

The term refers to inter-firm relationships and institutional mechanisms that are used to devise coordination actions of value chain activities outside the market. This approach presents a governance typology that can be construed as a continuum segment ranging from the most decentralized (market) to the most centralized (hierarchy) coordination. These are analytical, not empirical, types, though they derive in part from empirical observation.

Market linkages do not have to be completely transitory; they can persist over time, with repeat transactions. The essential point is that the costs of switching to new partners are low for both parties.

³ Gary Gereffi, John Humphrey y Timothy Sturgeon, The governance of global value chains; Massachusetts Institute of Technology, Review of International Political Economy 12:1 February 2005: 78-104

Modular value chains. Typically, suppliers in modular value chains make products to a customer's specifications, take full responsibility for competencies surrounding process technology, use generic machinery that limits transaction-specific investments, and make capital outlays for components and materials on behalf of customers.

Relational value chains. In these networks we see complex interactions between buyers and sellers, which often creates mutual dependence and high levels of asset specificity. This may be managed through reputation, or family ties. Many authors have highlighted the role of spatial proximity in supporting relational value chain linkages (cluster), but trust and reputation might well function in spatially dispersed networks where relationships are built-up over time or are based on dispersed family groups.

In the fourth place, there are “**captive value chains**”, where small suppliers have a relatively important role and are totally dependent for their transactions on their much larger and more powerful buyers. Faced with **significant transaction costs**, suppliers are literally “captive” to their buyers. Such networks are usually characterized by a high degree of monitoring and control by lead firms.

Finally, “**Hierarchical**” relationships are the most centralized ones. The governance form is characterized by vertical integration and the dominant form is managerial control from managers to subordinates, or from headquarters to subsidiaries and affiliates.

The relevant aspect of this approach is not the governance *typology per se*. Its relevance lies in understanding which factors determine the type of relationship among the actors.

In order to demonstrate the application of this methodology to the analysis of a case of interest to Argentina's grape-wine industry, we will consider that the three factors described above can express two types of qualifications (high or low).

Market governance is expected to prevail when product specifications are relatively simple, vintners can produce their grapes with little input from wineries, and the latter accept the specifications and the prices set by growers. As the complexity of information exchanged is relatively low, transactions can be governed with little explicit coordination.

In the grape-wine sector, this type of governance is found for example, when the grape quality is linked to *genetics* (clone) and a specific *terroir*, and the combination of which yields a unique product with little or no input from buyers, who accept the producer's terms of trade, even the price. The grape grower is highly competent in transaction codification so there is little need for monitoring and direct control of production by the winery.

In the case of ***modular product governance***, technical standards simplify interactions by unifying process and product specifications. For modular value chains, transactions based on codified knowledge provide many of the benefits of market linkages (speed, flexibility, and easy access to inputs); however, the exchange will never be as simple as the classic market exchanges based on price. An example of this type of governance could be that of a grape variety (for example, Malbec) grown in an agro-ecological region most favorable for its qualitative development. Here, the producer-winery interaction is more relevant because of its complexity, to the point that the winery often issues vineyard management specifications and provides some advance payments for agrochemicals and phytosanitary treatments.

In ***relational value chains***, highly complex transactions are coupled with poor codification skills and ***highly competent producers***. These are the attributes that define a relational value chain, in which the ***tacit knowledge*** to be exchanged between buyers and sellers is very important. The exchange of complex tacit information is most often accomplished by frequent *face-to-face interaction* and governed by high levels of *explicit coordination*, which makes the costs of switching to new partners very high. Highly competent suppliers provide a strong motivation for lead firms to outsource, which strengthens relational linkages. The mutual dependence that then arises between producers and buyers may be strengthened through reputation, spatial (clusters) and social proximity, and family ties. This is the case of the high-yield, white grape varieties of low enological value, which can be assigned to different uses, such as base wine for sparkling wines, white wines for bulk export, or concentrated must. The grape grower generates a relational linkage with the buying industry through trust built over time.

Governance is described as *captive* when the ability to codify and the complexity of product specifications are high *but supplier capabilities* to define the transaction *are very low*. This is because low supplier competence in the face of complex products and specifications requires a great deal of intervention and control on the part of the buyer. Lead firms seek to lock-in suppliers in order to exclude others from reaping the benefits of their efforts. Therefore, faced with significant switching costs, producers remain “*captive*” to their habitual buyers. This type of relationship is frequent in the grape-wine industry, and it is mainly generated by the asymmetry in negotiating power between grape growers and wineries. There is some regional geographic concentration which coincides with high-yield “criolla” varieties having no qualitative attributes of special value for commercial use. In this case, the grape producer remains captive of the buying winery or concentrated must industry.

The *hierarchical* form of governance is driven by a high need to exchange tacit knowledge between value chain activities, as well as by the need to effectively manage complex webs and to control strategic resources, especially intellectual property. In the case of complex products whose specifications cannot be codified, and highly competent suppliers are not easy to find, industrial firms will be forced to develop and manufacture products in-house. An example of this is the highly specific products of a winery making top-of-the-line signature wines for a discerning international niche market. For example the name of Paul Hobbs is practically a trade mark in many markets and the winery does not codify its knowledge as it has no competent grape-wine producers to whom it could be transferred –thus, the winery opts for a hierarchical relationship.

The table below shows linkages between *governance* and *determinants* as binary probability (Low and High).

GOVERNANCE TYPES	DETERMINANTS			Degrees of explicit coordination & asymmetries of power
	Complexity of the transaction	Hability to codify the transaction	Capabilities of the supplier	

MARKET	Low	High	High	Low
	1	2	3	
MODULAR	High	High	High	
	4	5	6	
RELATIONAL	High	Low	Hig	
	7	8	9	
CAPTIVE	High	High	Low	
	10	11	12	
HIERARCHICA				
L	High	Low	Low	High
	13	14	15	

Source: Author's own, based on Gereffi, Humphrey and Sturgeon (2005: 87)

CHART No. 3. *Grape-wine chain. Governance and determinants*

In this section we have seen the logic of the individual behavior both within the firm and in relations with other actors, particularly buyers (the governance). This scheme will allow us now to analyze the results of our case study.

3. CASE STUDY: TEMPUS ALBA

The following case study seeks to link the theoretical framework with a real life situation that illustrates our working hypothesis. A case study is a method for analysis and action regarding a particular situation.

The line of reasoning is neither inductive nor deductive just simply analogical: it connects the theoretical framework presented in the introduction with a real-life situation.

Tempus Alba, the case

Tempus Alba is a winery located in the Coquimbito district, Maipú, just 30 minutes away from the capital city of the province of Mendoza. The landscape is typical of Mendoza's rural areas: vineyards, olive groves, cherry orchards and vegetable crops,

and the changing hues of the majestic Cordillera de los Andes. The grapes used in the winery are from their own vines grown in the “La Alborada”, “El Retorno” and “San Antonio” vineyards (110 hectares in all), located in the privileged areas of Luján de Cuyo, Maipú and Tupungato. Altitude ranges from 2,600 to 3,950 feet (800 to 1,200 meters) above sea level.

Because of the untapped quality potential of Malbec grapes, this variety was adopted as a strategic factor for the growth and sustainable development of Tempus Alba’s grape-wine business. To this end, based on the premise that genetic selection can be an important point of differentiation from the competitors, the winery has been working on the identification, evaluation, selection and in-vitro micro propagation of its own Malbec clones since 2000. Thus, although Argentina’s Malbec wines already are a “registered trademark”, it was thought that science could contribute to further improve the enological quality of this variety.

The initial requirement was to start with the maximum genetic diversity that *Malbec* can offer, and then select clones exhibiting superior enological quality for subsequent propagation. To a certain extent, Tempus Alba foresaw changes in the environmental, economic and market contexts, and evaluated the possible impact of innovation on product, process and marketing not only for itself but for the entire grape-wine sector from the point of view of its long-term sustainability. Specifically, its proposal consisted in investing in knowledge that could contribute to the adaptation of *Malbec* to the new and changing agro-ecological and economic macro- and meso-environments, with a unique and differentiated product in response to a commercial strategy of creating scarcity in a context of saturated markets.

In short, the company has bet on investing in research and technological innovation and on raising the value of human capital by stocking up on knowledge, and recognizing it as the engine of its future development and increased sectoral competitiveness. In transferring the knowledge gained to other grape growers, the company emphasizes a spirit of cooperation, a deeply-rooted value of Tempus Alba expressed in the motto of its dogma: “*to cooperate in order to compete*”.

Innovation

The journey of technological innovation proper begins by selecting a bud from a “genetically superior” mother vine, from which bits of green tissue are taken. The bits

will eventually sprout a root system and grow in a glass jar under completely sterile conditions. Once the new plantlet is some 10 cm tall, it is divided into small segments (micro-cuttings) that are replanted in another glass container; thus in-vitro micro-propagation continues until the desired number of plants is reached. After a rustication period, they can be taken outside and planted in the vineyard.

The economic importance of this technique lies in the fact that *from a single bud it is possible to obtain tens of thousands of genetically identical, virus-free grapevines in one year*: a woody cane obtained from the winter pruning of an adult plant will take the same time to give rise to a single plant.

It is important to note that this technique does not involve genetic manipulation; it consists simply in accelerating a process as natural as millenary. It replaces a climate-dependent production process with an industrial production process under controlled and completely sterile conditions, which ensures genetic uniformity, an exponential rate of multiplication, and absolute plant health and traceability.

Development

In 2000, the winery launched an ambitious program of genetic screening by implanting a 2.6 hectare vineyard (“El Retorno”, Coquimbito, Maipú) with 8,000 Malbec vines from massal selections coming from different areas in the province which, through time, have proved to be particularly well-suited to *Malbec*. This is the origin of a highly representative genetic bank of the different expressions of this variety in Argentina’s main grape-wine province.

In 2004, a phenotypic selection of plants was performed based on visual morphological features: length and diameter of the shoots; cluster size and weight, and cluster distribution; berry size and weight; vigor and yield in kilos per plant; susceptibility to millerandage; etc. The values obtained were checked against the ampelographic characteristics of Malbec described by noted Argentine specialists more than fifty years ago.

Also in 2004, a total of 589 plants - future clone heads - were selected and transplanted to a 1.5 hectare vineyard (“La Alborada”, Anchoris, Luján de Cuyo), where the winery’s mother vines remain. A small yet sufficient number of plants from the

same mother vine was planted to produce grapes for future physical and chemical analysis and for experimental micro-vinification.

In the meantime, from 2004 to 2007, the propagation of in-vitro plantlets, their subsequent rustication, and planting in the vineyards took place. During this period, there was a most fruitful exchange of experiences with Dr. Danijela Harlt, from *Croatia's Mediterranean Agronomic Institute*.

From 2007 to 2010, the vineyard was monitored every year, from shooting (bud break) to *véraison*, to study the agronomic and enological behavior of the clones during the selection process. A most useful non-refundable grant (ANR) from the *Fondo Tecnológico Argentino* (FONTAR) of the *Agencia Nacional de Promoción Científica y Tecnológica* (ANPCyT) made it possible to hire three prestigious local researchers during three consecutive agricultural cycles to conduct a scientific assessment of the enological potential of the mother vines. The assessment included the following: monitoring of agronomic behavior; calculation of the grape quality index (Iqy); sensory evaluation of grapes; calculation of the maturity and enological quality index (IMCE); micro-vinifications using 20-30 clones each year; and blind tasting of the wines. One of the consultants assisted the company in the field of tissue culture and micropropagation, especially during the rustication phase of the new plantlets and their transfer from in-vitro to ex-vitro (greenhouse) conditions.

All aspects of each clone were thus classified and by late 2010, as a result of the assessment, a second classification yielded a selection of 16 clones of a superior enological quality.

Although the main research output was the selection of 16 clones of superior enological quality, the comparative analysis of the genetic material under study made it possible to draw other relevant conclusions and validate some hypotheses about the impact of clonal selection on wine quality. The following are some of the most important:

- 2007/8: Existence of a “terroir” effect in favor of Anchoris (Luján de Cuyo) over Coquimbito (Maipú).
- 2008/9: Higher wine quality with grapes from clonal rather than massal selection.
- 2009/10: Higher wine quality of clonal blends over the single-clone wines in the blend.

Between 2010 and 2011, with the financial support of the Secretariat for Small and Medium-Scale Enterprises (SEPyME for its acronym in Spanish) of the National Ministry of Industry, and within the framework of its ***Programa de Acceso al Crédito y Competitividad*** (Credit Access and Competitiveness Program), the firm hired a renowned Argentine specialist in viticulture, who drafted a vineyard management protocol to grow Malbec grapes for high-end quality wine production.

Along 2013 two new studies were conducted, namely the ampelographic and genetic characterizations of the 16 selected clones. The first one was done following the parameters suggested by OIV for different varieties of *Vitis vinifera*, and observations were made on the plant, clusters and stems. For the DNA analysis molecular markers (S-SAP) were used, which made it possible to clearly and unambiguously distinguish all the clones. This technique can be used also in the future as a method for clonal selection.

From 2013 until now, within the framework of the ***Círculo VERO Malbec Program***, the new genetics of Tempus Alba began to be transferred to other grape growers on the basis of sharing a combination of three clone vines out of the 16 selected ones, so that the emblematic Argentine variety can find its own expression in the different *terroirs* where it is planted. A standard contract has been devised for any vitner from any grape-wine production region in Argentina who wishes to join the ***Círculo***, may have access to the improved genetics. New comers to the Circle are only required to furnish information on the agronomic performance of the clones and oenological quality of the grapes grown in their respective *terroirs*.

Thus, through the common efforts of all users involved, it will be possible for *Malbec* to achieve its maximum quantitative and qualitative expression under similar conditions of genetic material and vineyard management. The information collected by the *Círculo* is fed into a common data base shared by all its members.

We at Tempus Alba believe that this is the only way to isolate and assess the pure impact of *terroir* on the production of unique wines with genetic identity in a given geographic region. The final challenge is to produce a science-based national sensory map for Malbec.

The result

The narrative described above proves that the firm chosen as our case study has gone thru an structural change by optimizing its internal factors combination and improving its positioning in the prevailing governance. We should note that the whole process has lasted 10 years, which is the time required for the transformation of the company and the final achievement of satisfactory results.

By following the strengths approach and using the chart below, we may notice that in year 2000 the company moved from the initial position "A" to "B", when it began to strengthen its own resources through the creation of an in-house area of R&D, to start seeking for the best clones inside the genetic diversity of Malbec.

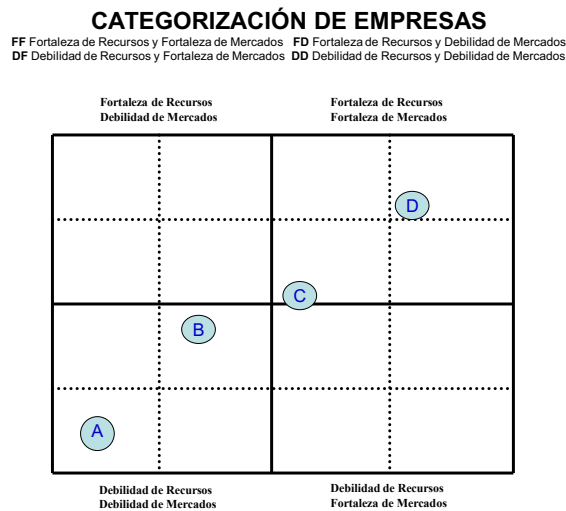


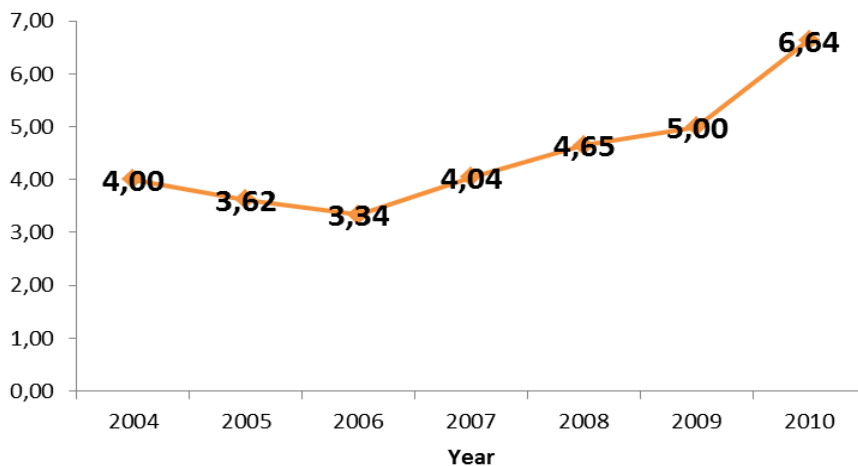
Chart No. 3. Box of Strengths. Caja de Fortalezas. Tempus Alba path for upgrading

In the period between 2004 and 2007 a second major movement ("B" to "C") is marked. This time it was more prominent on the axis of strengthening the market. Although the first vintage in Tempus Alba was in 2003, during that four years period a "reputation effect", won thanks to its work on clonal selection, served as a strong marketing tool that positioned the company in the market far above the traditional small family wineries. The innovative strategy of clonal selection in the upgrading of wine

quality it was not reflected until 2009 when the first “blend of 10 selected clones” Malbec wine (under the trade mark of VERO Malbec) arrived to the market.

It is precisely during this period when the average FOB price per bottle of wine exported went up steadily from u\$s 4.04 (2007) to u\$s 6.64 (2010), which meant a growth of 64%. This result is further highlighted by the fact that in this period the world market was suffering the impact of the global financial crisis unleashed in 2008.

Finally in this last phase of the program a further movement within the Box ("C" to "D") was accomplished and as a consequence of the 16 new selected clones of proven superior oenological quality, that later on were genetically identified and are in the process of being multiplied by the technique of in vitro micropropagation previously described.



The results of the genetic screening of Malbec have two main implications:

- 1) Using the approach of the “*Strengths*”, the intrinsic benefits for the firm can be seen graphically as an increase in the dimensions of the Box, where both axes have expanded after the point of inflection of the curve of the life of the project. Since the point of the double strengths (SS) has shifted outward from the origin of the Box, this implies a greater empowerment of the producer given by the greater availability of resources, including human capital now valued, and by the better opportunities for accessing markets.

- 2) In terms of “**Governance**”, the structural change allowed Tempus Alba, when facing its buyers, to be positioned on a decentralized market governance. Malbec specificationsthe clonal selection program allowed Temps Alba to obtain a clear position in a complete decentralized market. The specifications of the product are simple, clear and unambiguous; making it possible to have the ability to grow its Malbec grapes and craft its wines as unique products, where quality is directly linked to a terroir and a genetic profile (DNA) of the vineyard. After achieving the upgrade of the product and penetrating a new niche market, production and transactions are governed with little explicit coordination without participation of its buyers.

4. FINAL COMMENTS

Through our case study, we have analyzed the structural change carried out by a particular family type grape-wine producing company involving both its productive resources and its market position, through an innovative change in the production of Malbec wines.

The new positioning of the company has enabled it to achieve a **greater market power** as buyers accepted product specifications and prices set by the winery within market standards for a product of similar quality attributes.

Referring to the **prices** at which the winery marketed its products before and after innovation, can say that the Icon wine (Tempus Pleno) was sold in 2009, at the same FOB price, as today, of **u\$ 11 per bottle**. From that year on the winery started to market the new Icon wine (Tempus VERO Malbec), the first vintage of a blend of ten clones produced in 2007, at the FOB price of **u\$ 32 per bottle**.

The **share of total exports by countries** shows that these are markets with **high purchasing power** that demand wines with very **high quality standards**. The wines are mainly sold through channels based on **niche markets** with a high appreciation of the quality of the product, as it was previously shown by the steady increase of the average price per bottle over time.

Another peculiarity is that the winery is also exporting now to countries with a high reputation as wine producers and exporters in both the Old World (Italy) and the New World (Australia).

As a corollary of policy, taking into account the important *positive externality* that would arise with the transfer of knowledge (new Malbec clones) from the innovative firm to the rest of the wine sector, we affirm that the *public authority* responsible for promoting the future development of the national grape-wine industry, should tend to facilitate the spread of the new genetic to other producers located in all other grape-wine regions of the country. There must be a sufficient number of vines as to plant at least one hectare on the new Malbec clones, to make adopters able to produce at industrial scale around 10,000 bottles per year.

In our opinion this is the only way to achieve varietal *wines with genetic identity* and at the same time, get *different expressions of Malbec*, according to the characteristics of the terroir where it was implanted.

The *tacit knowledge* is simple and will be handled within the framework of the Círculo VERO Malbec contractual agreement; by describing the clones (their ampelographic characteristics and DNA patterns), and writing down the formal obligation of the recipient to return oenological information about the behaviour of the clones in his particular terroir.

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