

ORGANIZATIONAL DIVERSITY IN U.S. EMERGING WINE REGIONS

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Doctor of Philosophy

by

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ORGANIZATIONAL DIVERSITY IN U.S. EMERGING WINE REGIONS

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ORGANIZATIONAL DIVERSITY IN U.S. EMERGING WINE REGIONS

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ABSTRACT

This dissertation analyzes the institutional structure of production in U.S. emerging wine regions. More specifically, it scrutinizes the grape procurement strategies of firms from five states – Illinois, Michigan, Missouri, New York, and Vermont. After proposing a research agenda for investigating “make-or-buy” decisions in nascent clusters in Chapter II, I assess the determinants of the extent of vertical integration among the small wineries in the sample. Finally, Chapter IV discusses the drivers of adoption of concurrent sourcing and the simultaneous use of diverse governance mechanisms within the same transaction. The results point out to the importance of informal ties in the governance of the studied grape exchanges. In particular, trust is an essential supporting mechanism in less coordinated transactions, reflecting the constraints faced by many firms to devise long-term formal arrangements. On the other hand, the ability to evaluate the objective attributes of grapes produced by independent growers appears to exert a limited influence on the procurement choices of several firms, suggesting heterogeneous measurement capabilities among the surveyed organizations. Finally, concurrent sourcing appears to relate to grape varieties with a higher differentiation potential. The outcome possibly illustrates the intense learning effort carried out in U.S. emerging areas, as well as the progressive convergence of the varieties grown in each region.

CHAPTER I

INTRODUCTION

1 BACKGROUND

This dissertation analyzes the institutional structure of production in U.S. emerging wine regions. More specifically, it scrutinizes the grape procurement strategies of firms from five states – Illinois, Michigan, Missouri, New York, and Vermont. Almost 10,000 bonded wineries opened their doors across the country between 1970 and 2014 (Wine Institute 2015). Although California accounts for 87% of the national wine production, 54% of the U.S. wineries are located in non-traditional areas (Wines and Vines 2016). Several authors describe the potential benefits of the flourishing of new wine clusters throughout rural America (Hall et al. 2000; Carlsen 2004; Storchmann 2010). These findings add to a growing literature on the revitalizing influence of wineries in rural communities (e.g., Alonso and Liu 2010; Alonso and Bressan 2013; Boatto et al. 2013; Correia and Brito 2016). Yet, the available evidence on the economic performance of these firms is scarce.

The progressive expansion of the “wine frontier” in the United States inspires fundamental research questions. As shown by Ashenfelter (2008), grape quality decisively affects the prices of Bordeaux wines. Does the same logic hold for wineries from emerging regions? How do newcomers to the U.S. wine industry typically acquire grapes used in wine production? Franken and Bacon (2014) note that explanations of the drivers of

“grow-or-buy” choices have focused on established areas. Inspired by Oliver Williamson’s (1985) Transaction Cost Economics (TCE), several studies conclude that the relative specificity of the assets involved in production affects grape procurement decisions (Fraser 2005; Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer 2009; Fernández-Olmos 2010a; Codron, Montaigne, and Rousset 2013). Moreover, the literature shows the influence of measurement issues on the adoption of enhanced coordination (Goodhue et al. 2003; Fraser 2005; Fernández-Olmos 2010b; Franken 2014).

The proclaimed universal applicability of economic principles offers a fertile ground for comparative work. However, generalizations have overshadowed the existence of diverse routines around the world. Two areas with contrasting organizational features have historically concentrated wine production. While grape growing and wine making are mostly integrated in the Old World – i.e., Western Europe –, the reliance on independent grape producers is the predominant strategy in New World regions such as the Argentine province of Mendoza, California, Chile, and South Australia (see Simpson 2011). The empirical literature illustrates such diversity only implicitly. Differently from the “make-or-buy” choices studied in the Old World (Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer 2009; Fernández-Olmos 2010b), researchers dedicated to the analysis of New World clusters describe a “formal-contract-or-informal-contract” trade-off (Goodhue et al. 2003; Fraser 2005; Franken 2014).

The search for convergence has also obscured the organizational diversity within traditional wine areas. The qualitative evidence from New World countries such as Argentina and Chile points to an increased adoption of vertical integration (Giuliani 2007; Codron, Montaigne, and Rousset 2013). In Europe, the design of empirical studies suggests

the adoption of concurrent sourcing in regions such as Spain's Rioja. Indeed, the use of a cut-off measure to specify the predominant procurement decision – e.g., vertical integration – evidences the reliance on “make-and-buy” strategies in the Old World (Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer 2009; Fernández-Olmos 2010a). Finally, the heterogeneity among governance structures classified under a generic denomination – e.g., long-term contract – might be considerable. A growing literature outlines the contrasting characteristics of written arrangements (Goodhue et al. 2003; Fraser 2005; Codron, Montaigne, and Rousset 2013), as well as the interaction between formal and informal mechanisms (Somogyi et al. 2010; Fernández-Olmos 2011; Codron, Montaigne, and Rousset 2013; Wilson, MacDonald, and Monnane 2015).

2 SCOPE AND ORGANIZATION

The identification of organizational diversity in traditional wine areas invites a cautious approach to the study of U.S. emerging regions. For instance, both terms encompass clusters with a broad array of characteristics. Following the literature, this dissertation makes a major distinction between California – considered part of the New World – and the rest of the country. However, taxonomic efforts must explicitly acknowledge their limits to grasp heterogeneity. Compared to the French area of Bordeaux or the Spanish zone of Penedès, New York state's Finger Lakes or Washington state's Walla Walla are evidently nascent. A different judgment would prevail if the sample were restricted to wine clusters within the borders of the United States. In many parts of rural America, the mere existence of a vineyard still causes surprise.

What is the nature of the organizational trade-off in U.S. emerging regions? The limited evidence is puzzling. Tuck and Gartner (2013) summarize data from 13 states – including Connecticut, Illinois, Iowa, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New York, North Dakota, South Dakota, Vermont, and Wisconsin. The survey depicts a complex pattern of competition and cooperation. Although vertical integration is the primary grape sourcing strategy, respondents also cite other options such as the acquisition from other wineries. Franken and Bacon (2014) identify a broad set of choices in Illinois: along with their own vineyards, firms rely on spot market transactions, informal agreements and written contracts. In Missouri, small wineries perceive “make-as-much-as-you-can” as the optimal procurement strategy. Nevertheless, heterogeneity is pervasive when it comes to actual practices (Miranda and Chaddad 2014).

The scarce knowledge base reflects the recent revival of the industry in most U.S. states. Robinson and Murphy (2012) contend that a “wine revolution” is taking place in rural America. Recovering from the discontinuity imposed by Prohibition in 1920, several geographical areas have rediscovered their past attachment to the sector¹. Others are creating such bonding from scratch. Since the turn of the twenty-first century, U.S. emerging regions have embarked in a continuous-identity building process. Firstly, experience has motivated an incipient regional specialization in the production of grape varieties (Alston, Anderson, and Sambucci 2015). Secondly, the surge of entire new

¹ Located in Missouri, Hermann illustrates this trend. Founded by German settlers in the nineteenth century, the city housed Stone Hill Winery, which produced more than a million of gallons of wine in 1900. Five decades after Prohibition, entrepreneurs would start to rebuild the local industry. See: Pinney (2005).

clusters led to the establishment and consolidation of collective actions – e.g., wine trails, and Grape and Wine Boards.

History shows that revolutions generally produce unpredictable outcomes. In this sense, avoiding analytical blind spots demands methodological pluralism. The project that guides this dissertation uses a mixed-methods approach. More specifically, I adopt a “development strategy”, which consists on the use of a qualitative analysis to inform and help to establish the basis for the quantitative research (see Greene, Caracelli, and Graham 1989). In-depth interviews were conducted with the owners of six Missouri wineries between February and May of 2014. Originally intended to assess the drivers of grape procurement decisions from a TCE perspective, the research showed that small firms tended to pursue full vertical integration. At the same time, the conversation pointed to an intense trial and error process in the vineyards of the “Show Me State”. In at least one case, the respondent preferred to grow the less specific varieties, buying those with more idiosyncratic features (see Miranda and Chaddad 2014).

For a researcher trained to search for “discriminating efficient alignments” (Williamson 1991), the outcome was unexpected. Still, identifying an “anomaly” might shed light on aspects of complex phenomena not covered by the original theoretical hypotheses. As Coase’s (1937) “*The Nature of the Firm*” illustrates, the perception that existing theories do not encapsulate the drivers of human action in a given context is a powerful incentive to innovation in the social sciences. Ironically, the same author would criticize the limited attention given to the description of actual management practices 75 years after the publication of his pioneering contribution (Coase 2012). Although most

researchers would recognize the usefulness of the notion of “transaction costs”, fewer scholars actively adopt the empirical approach that allowed its conceptualization.

The lack of a clear characterization of “make-or-buy” decisions in emerging regions provides a rich scenario for empirical research on the determinants of the institutional structure of production. In this sense, this dissertation represents an initial effort to identify the typical governance structures adopted in U.S. nascent wine clusters. Perhaps its main contribution is the emphasis on the need of explicitly acknowledging the pervasiveness of organizational diversity. To a great extent, the heterogeneity described in the next chapters was only captured after the initial difficulty to explain the strategies adopted by Missouri small wineries. Finding an explanation to a “deviation” often demands a reinterpretation of the literature, with more attention given to the nuances behind generic claims of convergence.

Three essays compose this dissertation. Chapter II proposes a research agenda for investigating grape procurement decisions in emerging regions. After a review of the theories used to study “make-or-buy” decisions in the wine industry, I summarize the main conclusions from the existing empirical literature. Then, a set of questions sheds light on aspects related to three level of analysis – the individual, the firm, and the cluster. Departing from the qualitative conclusions described in Miranda and Chaddad (2014), Chapter III analyzes the determinants of the extent of vertical integration in U.S. nascent clusters. Finally, Chapter IV discusses the drivers of adoption of organizational complexity among the small wineries in the sample. In particular, the essay deals with two outcomes ruled out by TCE (Williamson 1985, 1991): (i) the occurrence of concurrent sourcing, and (ii) the simultaneous use of diverse governance mechanisms within the same transaction.

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CHAPTER II

THE ECONOMIC ORGANIZATION OF THE WINE FIRM IN U.S. EMERGING AREAS: A RESEARCH AGENDA²

1 INTRODUCTION

Economics is what economists do. Attributed to Jacob Viner, the sentence symbolizes the broad nature of the field. Since the publication of Lionel Robins' (1932) essay on the nature and significance of economics, the profession has expanded its frontier towards new areas of interest. Along the way, a lively debate occurred among the proponents of different characterizations of the intellectual tradition inaugurated by Adam Smith (see Backhouse and Medema 2009). Although no consensus exists, a definition rooted in the idea of "choice under scarcity" would receive a welcoming response from nearly all scholars. In fact, even proposals of theoretical amendment depict agents concerned about minimizing the costs of their decisions (e.g., Coase 1937; Buchanan 1965; Williamson 1985).

Above all, economics furnishes a toolkit that explains diverse social phenomena. In this sense, the expansion of the field is germane to the interests of its readership. Take the example of the emergence of "wine economics". Certainly, consumers could use Ashenfelter's *Liquid Assets* newsletter to decide on what to drink or store. In turn, support

² The author gratefully acknowledges the support of the National Institute of Food and Agriculture, U.S. Department of Agriculture, through Award 2011-68006-30815.

to the hypothesis that the weather influences the contents of a bottle (Ashenfelter 2008) has motivated the broadening of empirical efforts. Progressively, the nascent research area would encompass related topics such as the effects of climate change on quality and prices (see Ashenfelter and Storchmann 2016) or the ability of experts to evaluate the beverage (see Storchmann 2012 for a review).

Parallel to the establishment of “wine economics”, the wine industry itself has experienced considerable transformations. Since the early days of Ashenfelter’s *Liquid Assets* newsletter, novel empirical puzzles have emerged. In the United States, Robinson and Murphy (2012) coined the term “wine revolution” to describe the exponential growth and the quality improvements achieved by the sector. From 441 in 1970, the number of U.S. bonded wineries reached 10,736 in 2015 (Wine Institute 2015). The country is also the world’s foremost wine consumer (OIV 2015). From Washington State’s Walla Walla to New York State’s Finger Lakes, several thriving clusters have contributed to the revitalization of American rural communities (Hall et al. 2000; Carlsen 2004; Storchmann 2010).

In the long run, the positive spillovers from the “wine revolution” highly depend on the performance of the newcomers to the industry. Yet little is known about the economic nature of the phenomenon. Interestingly, much of the expansion has occurred in areas where a vineyard would have surprised observers until recently. Although California produced 89% of the national output in 2015, more than 3,500 bonded wineries were created in non-traditional areas between 2000 and 2014 (Wine Institute 2015). Questions also remain over the profile of the entrants to the activity. More specifically, it is still

unclear what their motivations are and how previous professional experiences influence the decision of establishing a wine firm.

From an organizational standpoint, the “wine revolution” inspires a series of fundamental research problems. Simpson (2011) notes that the features of the typical wine firm in Western Europe differ from those observed in regions such as California, Mendoza and South Australia. While Old World wineries integrate grape growing and wine making, New World wineries have commonly acquired inputs from independent growers. The same author traces back the origin of such divergence to the period between 1840 and 1914. The process contrasts with the enactment of the Volstead Act only six years after the beginning of the First World War and the subsequent disruption of the U.S. wine industry (Pinney 2005b).

In California, where the wine sector resurged in the 1960s (Porter and Bond 2008), organizational features have followed the pattern described by Simpson (2011). Even the growing importance of the integration between grape growing and wine making among Californian wineries is comparable to strategies adopted in other New World areas, such as Argentina (see Codron, Montaigne, and Rousset 2013) and Chile (see Giuliani 2007). Elsewhere in the United States, however, the revival of the wine industry would only deepen in the 1990s. Although some of the nascent clusters are located in geographical areas with a rich wine history (see Pinney 2005a), a continuum between the times before and after Prohibition can hardly be drawn.

What are the typical firm boundaries in U.S. emerging wine regions? This paper outlines a theoretical framework for the study of organizational choices in non-traditional areas. I focus on grape procurement strategies, presenting the central elements behind the

analysis of “make-or-buy” decisions in the wine sector. Three questions guide the discussion over the next few pages: (i) *what are the approaches commonly used to study the economic governance of the wine industry?* (ii) *What are the general conclusions found in the empirical literature dedicated to established wine clusters?* (iii) *How can these findings enhance our understanding of the strategies pursued by wineries in emerging regions?*

2 THEORIES FOR THE STUDY OF ECONOMIC ORGANIZATION

What are the approaches commonly used to study the economic governance of the wine industry? Section 2 explores three theoretical frameworks: (i) transaction cost economics; (ii) capabilities-based view; and (iii) embeddedness theory. Given their ability to explain closely related phenomena, the ideas below inspire most of the hypotheses tested by the literature.

2.1 Transaction cost economics

Published in 1937, “The Nature of the Firm” introduces the argument that both the existence and the boundaries of the firm derive from efficiency-based reasons. As Coase (1937 p. 390) notes, “[...] *the main reason why it is profitable to establish a firm would seem to be that there is a cost of using the price mechanism*”. The insight inspired a series of alternative interpretations (Alchian and Demsetz 1972; Jensen and Meckling 1976; Barzel 1982; Cheung 1983; Grossman and Hart 1986; Gibbons 2005). Among such

contributions, Williamson's (1985, 1991) transaction cost economics – TCE thereafter – has decisively influenced the empirical literature on economic organization (Shelanski and Klein 1995; Klein 2005; Richman and Macher 2008).

Since the development of TCE in the late 1970s and early 1980s, Williamson has extensively summarized his main arguments. Given the characteristics of a transaction, agents adopt a governance structure that minimizes the costs of ex-post adaptation (see also Klein, Crawford, and Alchian 1978). Three dimensions influence such choice: (i) the nature of the incentives provided by the organizational arrangement; (ii) the particular procedures for dispute settlement; and (iii) the contract law regime framing the relationship (Tadelis and Williamson 2012). The expected outcome is a “discriminating alignment” between the features of the transactions – in special, the level of asset specificity involved in the exchange – and those of its governance mechanism.

TCE stands on two behavioral assumptions that deviate from standard economic theory. The first one, “opportunism”, implies the addition of strategic considerations to the study of organization. According to Williamson (1993), self-interested individuals might eventually seek personal goals with guile. “Bounded rationality”, in turn, results from a particular interpretation of Simon's (1955) ideas: in a world inhabited by agents with cognitive limitations, there should be no such a thing as a complete contract. The “discriminating alignment hypothesis” implies both the establishment of safeguards against malfeasance and an explicit attempt to minimize the costs of designing complex governance structures.

Several scholars test the “discriminating alignment hypothesis” in an agricultural context. Early contributions propose a framework for the study of coordination in

agribusiness systems (Frank and Henderson 1992; Zylbersztajn 1996; Zylbersztajn and Farina 1999). Masten (2000) suggests the influence of perishability – a form of temporal specificity – on the adoption of governance structures, an idea later reinforced by Williamson (2004). Agriculture has also inspired extensions of the “make-or-buy” trade-off, such as Ménard’s (1996) interpretation to the emergence of hybrid forms (see also Ménard 2012). In the wine industry, TCE principles have mostly been applied to the analysis of grape transactions (Goodhue et al. 2003; Zylbersztajn and Miele 2005; Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer 2009; Fernández-Olmos 2010a; Franken 2014).

2.2 Capabilities-based approach

The fiftieth anniversary of the publication of “The Nature of the Firm” was marked by a special conference. Among the papers presented in the event, Demsetz (1988) and Winter (1988) stress the role of knowledge on boundaries decisions. Sixteen years earlier, Richardson (1972, p. 888) presents a similar view, suggesting that “make-or-buy” choices derive from variables such as “[...] *knowledge, experience, and skills*”. Along with other pioneering contributions (e.g., Kogut and Zander 1992; Conner and Prahalad 1996), these studies outline the basic elements for a capabilities-based interpretation to economic organization. Overall, the main goal of the framework is to explain the nature and the implications of firm heterogeneity (see Argyres et al. 2012).

The emergence of the idea of “capability” has motivated an intense semantic debate. Originally, scholars relied on the notion of “resource” to describe unique attributes

detained by a firm (Wernerfelt 1984; Barney 1991). In response to the claim that such a broad characterization precluded the development of testable hypotheses (see Williamson 1999), several authors propose alternative interpretations. For example, Makadok (2001) argues that “capabilities” are embedded in the organizational structure of the firm, allowing a more efficient use of its financial, human and physical resources. Studies of the wine industry have focused on the role of “absorptive capacity” (Cohen and Levinthal 1990) in the diverse patterns of exchange and appropriation of inter- and extra-cluster knowledge (Giuliani and Bell 2005; Giuliani 2007; Giuliani 2011).

Inspired by authors such as Hayek (1945), Penrose (1959) and Richardson (1972), the development of the capabilities-based approach gained steam in reaction to Williamson’s “discriminating alignment hypothesis”. TCE assumes that two similar transactions will be governed by identical arrangements. For example, vertical integration necessarily ensues from a high vulnerability to ex-post appropriation of quasi-rents (Klein, Crawford, and Alchian 1978; Williamson 1985). The outcome stands on the implicit – and heroic – assumption that every organization would be equally able to produce a certain good or service (Demsetz 1988; Winter 1988). In turn, the capabilities-based approach discusses how different bundles of resources and skills affect firm performance and boundaries decisions (Argyres et al. 2012).

After a period of competition (e.g., Ghoshal and Moran 1996; Poppo and Zenger 1998), scholars have increasingly pointed to the complementarities between TCE and the capabilities-based approach (Foss and Foss 2004; Argyres and Zenger 2012). Williamson (1999, p. 1103) himself recognizes that the “discriminating alignment hypothesis” would benefit from the recognition that economic agents have preexisting “[...] *core*

competencies and disabilities". Similar arguments are found on the other side of the debate on firm boundary decisions. For example, Madhok (2002) introduces the idea of a "trilateral alignment" between (i) the characteristics of the transactions; (ii) the bundles of capabilities and resources owned by the parties; and (iii) the features of the arrangement.

2.3 Embeddedness theory

Embeddedness theory builds on Granovetter's (1985) critique to the "discriminating alignment hypothesis". Since then, social scientists have increasingly turned their attention to the effects of networks on organizational performance. A growing literature supports the assertion that the emergence of trust is related to the density of supporting social structures (see Granovetter 2005 for a review). At the same time, studies point to the central role played by personal ties in the governance of transactions (Chiles and McMackin 1996; Nooteboom 1996; Uzzi 1996). Researchers have also expanded Granovetter's (1985) original arguments, describing the influence of different network properties on both economic and non-economic outcomes (DiMaggio and Louch 1998; Uzzi 1999; O'Brien, Phillips, and Patsiorkovsky 2005; Podolny 2008).

The development of embeddedness theory has contributed to the identification of the interactions among different governance structures. Agents often resort to a mix of distinct control mechanisms – price, hierarchy and trust – to govern their exchanges (Bradach and Eccles 1989). For example, parties carrying out a spot market transaction are influenced not only by the high-powered incentives from the "invisible hand", but also by their ties to other individuals (DiMaggio and Louch 1998; Zak and Knack 2001). The same

logic applies to vertical structures, in which concrete personal relations influence outcomes as much as formal structures do (Banfield 1958; Putnam 1993; La Porta et al. 1997). Consequently, transactions supported by identical formal mechanisms might entail very different distributions of potential gains or adaptation costs (Uzzi and Lancaster 2003; Miranda and Saes 2011).

On the other hand, networks are not a panacea against opportunism or an infallible solution to information asymmetry problems. By allowing the consolidation of norms and the flow of knowledge among their participants, social networks reduce the governance costs under high uncertainty (Greif 1993). Of course, the emergence of trust does not invalidate the protection from contractual provisions. Rather, informal ties complement formal agreements (Lyons and Mehta 1997; Poppo and Zenger 2002). Finally, benefiting from the participation in networks is contingent on the ownership of specific capabilities (Gulati 1999; Zaher and Bell 2005; Giuliani 2007).

The contribution of embeddedness theory to the study of the organization of the wine industry is threefold. Reflecting the importance of informal ties in many wine clusters, analyses of “make-or-buy” decisions often mention the central role played by trust in the governance of grape transactions (Somogyi et al. 2010; Codron, Montaigne, and Rousset 2013; Miranda and Chaddad 2014; Wilson, MacDonald, and Monnane 2015). Social relationships also furnish a powerful incentive to the emergence of a common identity, potentially creating economic value (Benjamin and Podolny 1999; Beebe et al. 2013). Finally, scholars show that both the network properties (Dyer and Nobeoka 2000; McDermott, Corredoira, and Kruse 2009) and the organizational ability to engage in

mutually beneficial exchanges (Giuliani and Bell 2005; Giuliani 2007) determine the distribution of positive externalities.

3 THE ECONOMIC ORGANIZATION OF THE WINE INDUSTRY

What are the general conclusions found in the empirical literature dedicated to the organization of the wine firm in established clusters? Section 3 summarizes the main findings of papers published between 2003 and 2015. Two initial remarks deserve attention: (i) diverse measurement strategies coexist; (ii) as noted by Franken and Bacon (2014), empirical analyses have concentrated on Old World and New World settings.

3.1 Does site specificity affect contract duration?

Evidence from Southern Brazil (Zylbersztajn and Miele 2005) and the Spanish Rioja region (Fernández-Olmos 2010b) supports the hypothesis that the distance between a vineyard and the winery explains the duration of a formal agreement. Following Masten (2000) and Williamson (2004), both studies point to the influence of perishability in the maintenance of stable contracts. Overall, the closer the parties are located, the longer the relationship will last. Measurement strategies differ though. While Zylbersztajn and Miele (2005) estimate the variable with a distances table, Fernández-Olmos (2010b) relies on a 7-point Likert item that assesses the relative importance of site specificity in the contractual relationship. The use of a subjective evaluation is justified with the argument that

transportation is also affected by variables such as road conservation (Fernández-Olmos 2010b, p. 309).

3.2 Do investments in dedicated assets impact governance choices?

Results depict the organizational diversity among wine clusters around the globe. Based on qualitative evidence from Argentine's province of Mendoza, Codron, Montaigne, and Rousset (2013) assert that yield limitation is probably the most important investment in idiosyncratic assets by grape growers. The argument reinforces the results presented by Fraser (2005), who finds a positive relationship between the addition of a contractual provision limiting grape yields in Australian wine regions and the duration of the agreement.

Additional evidence from the Old World invites a cautious approach though. Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer (2009) find a positive relationship between dedicated asset specificity and the adoption of vertical integration in the Spanish Rioja region. However, Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer (2009) measure the independent variable as the excess capacity supported by the grower, depicting a diverse scenario than the one found in the studies by Fraser (2005) and Codron, Montaigne, and Rousset (2013). While the cases of Australia and Mendoza underline the capacity of hybrid arrangements to mitigate the threat of hold-up, Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer (2009) suggest a more pessimistic outcome.

It is true, the nature of the organizational challenge discussed by Fraser (2005) and Codron, Montaigne, and Rousset (2013) differs from the one described by Fernández-

Olmos, Rosell-Martínez, and Espitia-Escuer (2009). In the former case, independent growers agree to limit the amount produced per acre in response to monetary incentives. In turn, price premiums directly depend on the reputation of the winery. Given the importance of high-quality grapes to the production of differentiated wines, a hold-up would entail costs to both parties in the transaction. In the Spanish Rioja region, supporting institutions guarantee greater consistency in the quality level across vineyards. Not surprisingly, perishability has become a central concern even for producers of differentiated inputs.

On the other hand, Fernández-Olmos (2010b) finds no significant relationship between the ex-post duration of a contract and the existence of dedicated assets. The result is justified with the claim that producers can easily react to external shocks and reduce their grape supply. Together with the ideas found in Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer (2009), the argument is puzzling: why would farmers worry about excess capacity in their interaction with wineries if adaptation can be smoothly achieved?

3.3 Does measurement difficulty influence governance choices?

Williamson (1985) divides the existing transaction costs-based approaches in the “governance branch” and the “measurement branch” (e.g., Barzel 1982; Cheung 1983). Although discussing their differences is beyond the scope of this article, the pervasiveness of measurement costs-based arguments on the empirical literature deserves attention³.

³ Foss’ (2010) discussion of “property right economics” includes a review of the main aspects attached to the measurement branch. See also: Barzel (1997).

Overall, the available evidence supports the idea that an increase in measurement costs leads to the adoption of more complex arrangements (Goodhue et al. 2003; Fraser 2005; Fernández-Olmos 2010b; Franken 2014; Franken and Bacon 2014). Again, the use of diverse instruments and rhetorical nuances in the hypotheses tested limit further generalization.

Franken (2014) finds that Californian grape handlers are more likely to adopt sophisticated procurement mechanisms in response to measurement hurdles. More specifically, both the probability of vertical integration and the actual in-house grape production increase as quality assertion becomes more important. Interestingly, the same hypothesis finds no statistical support in a study of 17 Illinois wineries (Franken and Bacon 2014). The explanation to the contrast is recurrent in the literature: wherever the relevant grape attributes can be objectively measured, contractual provisions suffice to govern a transaction between independent parties (see also Goodhue et al. 2003; Fraser 2005).

High-quality grapes are exchanged through contracts as much as low-quality ones. So, a relevant question relates to the features of the provisions in each case. Goodhue et al. (2003) find that input characteristics decisively influence the characteristics of written agreements in California. While the measurement of the performance of transactions involving low-quality grapes is based on objective attributes, contracts for high-quality grapes outline production practices. Similarly, Codron, Montaigne, and Rousset (2013) show that hybrid arrangements supporting the exchange of premium grapes in Mendoza grant extended decisions rights to the wineries in aspects related to production and harvesting. The outcome is interpreted as a strategy to minimize the costs of designing incomplete contracts under uncertainty.

Finally, Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer (2009) study the influence of adverse selection and moral hazard on “make-or-buy” decisions in the Spanish region of Rioja. Their hypothesis is that high measurement costs justify the adoption of vertical integration. The influence of two potential problems is scrutinized: (i) the difficulty to evaluate the real effort of growers; and (ii) the influence of weather events on vineyards. Both the coefficients for behavioral and environmental uncertainty are significantly positive determinants of “making” strategies. The results reinforce Simpson’s (2011) argument that the historical pattern of integration between grape growing and wine making in Europe is due to the harsh weather conditions in the continent.

3.4 Does physical specificity shape “make-or-buy” decisions?

The influence of physical asset specificity on grape procurement strategies has received scant attention in the literature. On one hand, the characteristics of a transaction are fundamentally changed after decisions such as using drip irrigation, planting a new variety or establishing a specific trelling system (Codron, Montaigne, and Rousset 2013). On the other hand, measurement hurdles have prevailed. To some extent, the difficulty results from the diverse units of analysis used by farmers and scholars. More specifically, TCE’s basic hypothesis is suited to deal with individual exchanges. Nevertheless, most grape producers would contend that production practices could generally be extended to transactions with different asset specificity levels.

Empirical studies tend to use a dependent variable reflecting the aggregate procurement of a winery. Moreover, subjective measures assess the relationship between

physical specificity and “make-or-buy” decisions. For example, Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer (2009) deploy 7-point Likert items that reflect both parties in the transaction. The results show that idiosyncratic investments appear to influence the decision of growers, but not of wineries. The outcome is attributed to the influence of other goals on wineries’ investments decisions, such as appealing to the growing influx of tourists to the area. However, surveys were sent only to the wineries. Thus, respondents might have exaggerated the importance of specific investments by independent producers.

3.5 Does the threat of opportunism decisively affect organizational decisions?

The scarce evidence is mixed. On one hand, TCE inspires a series of hypotheses built on the notion of “opportunism”. The behavioral assumption is explicitly cited by Goodhue et al. (2003) to illustrate the influence of the “small numbers problem” in the coordination of grape transactions in California (see also Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer 2009). In Australia, Somogyi et al. (2010) note that independent growers fear the consequences of power asymmetry in times of low prices. Based on qualitative findings, the same study suggests that the size of the winery acts as a moderating variable, shaping the relationship with farmers.

On the other hand, Scott Morton and Podolny (2002) contend that winery owners often derive utility from outcomes other than profit maximization (see also Thornton 2013). In Mendoza, Codron, Montaigne, and Rousset (2013) report the persistence of informal arrangements between grape growers and buyers after shifts in the transaction features. In Spain, Fernández-Olmos (2011) argues that the existence of trust influences the

characteristics of contractual agreements. The study shows that the level of asset specificity does not decisively predict the level of formalization of the arrangements, which appears to be determined by the nature of the concrete ties between the parties.

3.6 Does experience help to determine “make-or-buy” decisions?

Scholars have discussed various aspects of the relationship between experience and organizational choices in the wine industry. The multidimensional nature of the phenomenon explains the diverse hypotheses tested. Relevant topics include (i) how the duration of the relationship influences the mix of contractual provisions; (ii) the role of trust in the level of formalization of governance mechanisms; and (iii) the impact of experience on the performance of transactions. Over time, individuals are expected to enhance the ability to produce a good or service and to rely on less incomplete contracts. From an organizational standpoint, long-term commitment also contributes to the progressive convergence of interests, facilitating ex-post adaptation.

First of all, the available evidence suggests a close interaction between experience and trust. Goodhue et al. (2003) show that an increase in the length of the relationship is significantly related to the adoption of less complex contracts in California. Yet, formal agreements are maintained as a framework for ex-post adaptation (see also Franken 2014). In Southern Australia, elder growers with a higher qualification level tend to develop more flexible relationships with wineries (Fraser 2005). In turn, Fernández-Olmos (2010a) finds that the age of farmers positively influences the performance of transactions in the Spanish region of Rioja.

Of course, the features of the goods mediate the influence of experience on contractual design. As Fraser (2005) points out, long-term contracts for low-quality grapes are more detailed than those crafted for high-quality grapes. The outcome reflects the relative easiness of stipulating performance goals through objective criteria in the former case (see also Codron, Montaigne, and Rousset 2013). Franken and Bacon (2014) present similar arguments in a rare example of study of an U.S. emerging area. The article shows that the use of spot market transactions and informal agreements in Illinois tend to decrease over time. At the same time, measurement concerns do not appear to impact governance choices. Together, the results illustrate the importance of attributes such as sugar content and acidity in the grape contracts adopted in the “Land of Lincoln”.

The empirical results discussed above furnish guidelines for future research. Experience positively affects the ability of individuals to devise and enforce more complex governance mechanisms. However, the consequences of experience on the mix of contractual provisions depend on the features of the exchange. Overall, the marginal cost of writing a contractual clause explains the characteristics of the arrangement. The acquisition of high-quality grapes from independent growers is generally supported by relational contracts. In this sense, the emergence of trust facilitates the reallocation of decision rights among the parties, contributing to the simplification of formal mechanisms. On the other hand, the performance of transactions involving lower-quality grapes is typically evaluated by measuring objective attributes. Therefore, learning allows less incomplete agreements.

3.7 How does knowledge spread through wine clusters?

Knowledge flows in wine clusters highly depend on network and firm characteristics. McDermott, Corredoira, and Kruse (2009) describe how public-private partnerships have bridged structural gaps among previously isolated networks in Mendoza. In turn, a perceived fair distribution of rights and duties incentivized participation in the collective action, potentiating positive spillovers. The increased interaction among groups with diverse knowledge stocks is pointed as a fundamental driver of the quality improvements made throughout the Argentine's province since the 1990s.

Additional evidence comes from Chile. Giuliani and Bell (2005) show how the distribution of capabilities shapes the patterns of interaction among wineries inside and outside the Colchagua Valley cluster. Thanks to their superior "absorptive capacities" (Cohen and Levinthal 1990), "technological gatekeepers" play a central role in consolidating and maintaining knowledge networks through time (see also Giuliani 2011). In a self-reinforcing process, intense in-house experimentation enhances the ability to learn from others, boosting the potential benefits from the establishment of multiple structural ties.

In a comparative study of clusters from Chile and Italy, Giuliani (2007) concludes that geographic proximity does not suffice to promote knowledge diffusion – as suggested by Marshall (1920). Again, heterogeneous "absorptive capacities" explain the diverse patterns of integration to knowledge flows. The research finds that the prospects of mutual gains lead wineries with similar cognitive abilities to establish dense networks. Over time,

the building of trust strengthens such ties. On the other hand, firms with a limited capacity to learn from others are relatively isolated.

3.8 How do group characteristics influence the development of a wine cluster?

The evidence described above suggests that wineries have good reasons to engage in institutional building. Earlier in this section, the influence of variables such as firm and network characteristics on cooperation was discussed (Giuliani and Bell 2005; Giuliani 2007; McDermott, Corredoira, and Kruse 2009). Moreover, group characteristics explain the outcomes of collective action as much as in other industries. Two aspects deserve attention: (i) the consequences of group heterogeneity on the design of the governance rules of a collective action; and (ii) how the number of members of a coalition affects the establishment and enforcement of institutions.

Beebe et al. (2013) describe the process of identity construction of the Californian Paso Robles cluster, whose collective action originally focused on protecting the interests of grape growers. Years of continuous interaction allowed the identification of additional shared attributes with a potential market value. The initial efforts created an economic opportunity, attracting investments to the region. Nevertheless, the arrival of new players added heterogeneity to the coalition. Soon enough, the diverse interests among farmers, wineries and hospitality firms fueled conflicts. The authors discuss the process of continuous institutional redesign of the initiative to maintain an inclusive identity that allows the exploitation of the complementarities in the cluster.

In turn, Castriota and Delmastro (2015) discuss the relationship between group characteristics and collective action. A concave curve is used to depict the hypothesized influence of group size on reputation. The statistical evidence suggests that Italian wine coalitions are less effective to design mechanisms to protect reputation – or to enforce them – after reaching a threshold of members. The contribution coincides with the literature inspired by Olson’s (1965) “*The Logic of Collective Action*”.

3.9 What are the drivers of reputation of a wine region?

As with any complex notion, several alternative definitions and proxies for reputation coexist (see Jensen, Kim, and Kim 2012). Researchers have probably identified the consequences of reputation more clearly than its core elements. From an economic perspective, reputation contributes to the reduction of transaction costs under uncertainty (Klein and Leffler 1981; Shapiro 1983). On the other hand, the emergence of reputation itself is affected by the existence of governance costs. Not surprisingly, a broad literature discusses the antecedents of reputation (e.g., Rindova et al. 2005; Walsh et al. 2009; Fombrun 2012).

Empirical studies of the wine industry define reputation as quality level through time (Benjamin and Podolny 1999; Castriota and Delmastro 2015). In turn, its measurement is based on the wine classification systems widely available in the Old World. Two main explanations are found in the literature: (i) a structural interpretation, mostly embedded in a sociological toolkit (Benjamin and Podolny 1999; Podolny 2008); and (ii)

an institutional view (Catriota and Delmastro 2015), that implicitly departs from the insights of authors such as Olson (1965), Ostrom (1990) and Williamson (1991).

Experts have traditionally underlined the close relationship between grape and wine quality, an argument later corroborated by the literature (Ashenfelter 2008). Yet subjective factors also influence reputation. For instance, performance evaluation might result not only from objective attributes, but also from the relative alignment with a previously determined social role (Podolny and Phillips 1996). In California, Benjamin and Podolny (1999) show that the rewards from quality decisions highly depend on the “status” of its producer. In other words, the potential price to be charged for a bottle of wine depends on both intrinsic characteristics and the affiliations of the winery. Therefore, economic incentives push wineries to establish networks that enhance the effectiveness of quality demonstrations.

From an institutional perspective, the evidence highlights the complementarity between quality choices at the firm level and the decision to invest resources in the strengthening of a collective action at the cluster level. Castriota and Delmastro (2015) find that Italian coalitions that enforce minimum quality standards have higher reputation levels recognized by a specialized publication and the national government. A related research in the same environment concludes that the collective reputation of a denomination of origin boosts the particular reputations of the members of the group (Castriota and Delmastro 2012).

Of course, history helps to shape the symbolic dimension behind cooperation. While Old World clusters generally depart from a rich common history, New World areas often face the challenge of building a new identity from scratch (see Beebe et al. 2013). In

either case, wineries actively seek structural linkages to firms with a quality level at least equal to their own. Hence, “status” functions as a “filter” that facilitates consumer decision-making (Benjamin and Podolny 1999). Interestingly, Castriota and Delmastro (2015) show that institutional signals poorly predict the reputation of Italian wineries after technical factors are included in the model. Still, denominations reflect the adoption of appropriate production processes, furnishing a useful proxy for buyers.

4 A RESEARCH AGENDA

Since the turn of the twenty-first century, scholars have increasingly applied economic principles to analyzing the organization of the wine industry in established clusters. The interest is paralleled by transformations in the geography of the sector. Between 2000 and 2014, China became the world’s foremost grape producer, harvesting 15% of the global supply (OIV 2015). In the same period, more than 7,500 bonded wineries were established in the United States (Wine Institute 2015). Does the evidence from traditional areas shed light on the nature of such ongoing changes? The findings summarized in Section 3 provide a path for further research in new settings. In fact, the analysis of similar questions would contribute to a characterization of the institutional structure of production in U.S. emerging areas. Nevertheless, an uncritical reproduction of the existing arguments might hamper our ability to describe phenomena such as the “wine revolution” in rural America effectively.

To be more specific, the search for generic hypotheses without a careful description of the routines adopted by wineries in nascent clusters might lead to vague conclusions.

Perhaps Simpson (2011) provides the best illustration of the coexistence of diverse grape procurement strategies around the globe. His analysis of the emergence of the world wine industry departs from the observation that the organizational features of the typical firm in the Old World differ from those commonly found in the New World. More specifically, while grape growing and wine making have historically been vertically integrated in Western Europe, inputs have mostly been sourced from independent growers in places such as California, Mendoza and South Australia. To which group do U.S. emerging regions belong? As Franken and Bacon (2014) note, this is a question open to investigation.

At the same time, the reliance on a TCE rationale has partially overshadowed the existing organizational diversity in the wine industry. The adoption of two alternative arrangements suffices for an empirical test of the “discriminating alignment hypothesis” (see Sykuta 2008 for a discussion). Thus, different grape procurement contexts might inspire similar conclusions. Take the example of the body of research discussed in Section 3. While studies of Old World clusters are based on the “make-or-buy” trade-off (e.g., Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer 2009; Fernández-Olmos 2010a), analyses of New World areas follow an “informal-contract-or-formal-contract” logic (e.g., Goodhue et al. 2003; Fraser 2005; Franken 2012). Together, both strands of the literature claim that greater coordination ensues from the demand for high-quality grapes. Yet the argument implies different actions from those in charge of acquiring inputs.

Obviously, if predictive power is the primary criterion for assessing a theory (Friedman 1953), outcomes are encouraging. However, it is not clear whether a similar empirical strategy would allow researchers to depict the nature of the transformations in emerging wine regions effectively. Or, inspired by Coase’s (2015) words, would scholars

be able to fully explain the “[...] *the working of the economic system [...] with all its relationships*”? TCE furnishes a powerful tool for the comparison of a set of organizational alternatives, but sheds little light on the drivers of organizational and performance heterogeneity (see Argyres et al. 2012 for a discussion). Hence, the approach falls short in illuminating the practices of wineries in emerging clusters, where limited records of actual transactions exist.

In summary, understanding the nature of the economic organization of emerging wine clusters is contingent on the identification of their fundamental characteristics. Both the theoretical approaches presented in Section 2 and the empirical evidence described in Section 3 pave the way to the construction of a research agenda on “make-or-buy” choices in emerging areas. In the next few pages, I discuss potential questions related to three levels of analysis: (i) the individual; (ii) the firm; and (iii) the cluster. Although my focus is on grape procurement strategies, the ideas presented below might inform the analysis of other transactions, such as those related to the distribution of wine (Sun et al. 2014; Santiago and Sykuta forthcoming).

4.1 The individual

Anecdotes from entrepreneurs in the U.S. wine industry recurrently refer to a search for “personal fulfillment”. Profit maximization often comes accompanied by goals such as the desire to embrace a new lifestyle or to be acknowledged by connoisseurs (Thornton 2013). Hence, the objective function of a winery owner helps to determine wine quality. Scott Morton and Podolny (2002) assume that a “utility-maximizer” producer can bear

higher marginal costs, compensating the lower efficiency with the satisfaction of supplying a distinctive beverage. Conducted in California, the study does not impose constraints on the individual ability to achieve a desired quality level. The assumption is reasonable, thanks to the booming market for consultants eager to help neophytes to the industry in clusters such as Napa and Sonoma Valley, as well as the existence of specialized research centers (Porter and Bond 2008; Beebe et al. 2013; Thornton 2013). At the same time, innumerable accounts in the press suggest that money does not appear to be a problem to the newcomers in the region.

Do similar conditions hold for every U.S. wine cluster? “Utility-maximizers” are probably found in other parts of the country as much as in California (see Li and Gómez 2014). Nevertheless, it is not clear whether quality levels initially envisaged can be delivered. Firstly, the lack of capabilities might hamper original plans (Miranda and Chaddad 2014). In addition, financial constraints might preclude the hiring of experts. Thornton (2013) estimates that more than 95% of the American wine firms are proprietorships or partnerships, whose access to capital is limited to personal wealth or bank borrowing. Finally, even the most skilled producer might face acute legitimacy problems in emerging wine regions (see Sun et al. 2014). If, as Benjamin and Podolny (1999) conclude, “status” determines the rewards reaped by a winery, firms from prestigious clusters can bear higher marginal costs than those located in non-traditional areas.

Therefore, the objective function of the entrepreneur from an emerging wine region must account for a broader set of constraints. In special, further research is needed to assess how limited capabilities and financial constraints affect quality decisions. At a most basic

level, both factors also influence grape procurement decisions. Potential research questions include: (i) *Are “utility-maximizers” from emerging clusters able to achieve their initial quality goals?* (ii) *Are these quality levels similar to those reached by “utility-maximizers” from traditional areas?* (iii) *How acute are the financial constraints faced by entrepreneurs from emerging regions?* (iv) *Does the lack of skills restrict the capacity to choose a grape procurement strategy – e.g., precluding vertical integration?*

Moreover, the objective function of the entrepreneur influences the predisposition to engage in a collective action. By shaping the immediate ties to other agents, preferences help to determine a set of feasible strategies, as well as potential rewards. An individual devoting several hours of the week to wine activities and a competitor fully dedicated to cost minimization efforts will most likely be linked to diverse social networks. On the other hand, the appropriation of knowledge through social structures is contingent on the ownership of absorptive capacities (Giuliani and Bell 2005; Giuliani 2007). That said, further investigation might reveal relevant aspects of the following question: (v) *How do entrepreneurs’ preferences influence the characteristics of the networks in emerging areas?*

4.2 The wine firm

The wine firm is the fundamental decision unit in the industry. As such, it is responsible for establishing a grape procurement strategy, defining the technology to be used to produce wine and choosing how to distribute the output (Thornton 2013). Moreover, wineries are a legal framework where individuals with particular motivations

strive to achieve personal goals. In U.S. emerging regions, wine firms are mostly family owned and operated – eventually relying on hired labor. Consequently, their economic behavior can be credited to the preferences and skills of a small group of people. For example, sourcing decisions cannot be disconnected from the objective functions or the bundles of capabilities and resources found inside firm boundaries.

Taken together, the arguments presented in Sections 2 and 3 pave the way to a better understanding of “make-or-buy” choices in emerging clusters. Scott Morton and Podolny (2002) argue that quality decisions derive from the preferences of firm owners. At the same time, several studies point to a positive correlation between the acquisition of high-quality grapes and strict coordination (Goodhue et al. 2003; Fraser 2005; Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer 2009; Fernández-Olmos 2010a; Codron, Montaigne, and Rousset 2013; Franken 2014). On the other hand, wineries from U.S. emerging regions might face specific constraints to implement a procurement strategy. For instance, the ability of “utility-maximizers” to grow grapes with the quality levels originally intended should not be taken for granted.

It is true, the creation of a firm allows entrepreneurs to exploit the potential benefits of a joint effort (Alchian and Demsetz 1972). Nevertheless, factors limiting the individual action of the winery owner – e.g., lack of capital or skills – are most likely reflected in the features of the organization. In this sense, (i) *what is the nature of the trade-off in different U.S. emerging regions? Should we define it as “make-or-buy”, “informal-contract-or-formal-contract” or other combination of arrangements?* (ii) *Is the same set of grape procurement alternatives available – or feasible – to every firm?* I expect somewhat constrained choices in nascent wine clusters. For example, if nobody knows how to manage

a vineyard in a start-up winery, purchasing grapes from someone else is the only feasible procurement strategy.

Similarly, the inability to devise long-term contracts precludes the adoption of complex mechanisms to govern the relationship with independent growers. In the absence of capabilities to design comprehensive written agreements – or to enforce their clauses –, trust might replace formal provisions. The recurrent reference to the use of strong ties as a supporting mechanism alongside contracts (e.g., Somogyi et al. 2010; Fernández-Olmos 2011; Codron, Montaigne, and Rousset 2013; Wilson, MacDonald, and Monnane 2015) demands further investigation. More specifically, (i) *does the mix of governance mechanisms used in grape transactions change depending on the capabilities owned by a winery?* (ii) *How important is the previous experience of the owner to explain the procurement strategy adopted by a firm?*

Personal preferences also affect the prospects of opportunistic behavior. In Missouri, Miranda and Chaddad (2014) note that “make-or-buy” choices often go beyond an assessment of the characteristics of the transactions (Williamson 1985) or the comparative ability to source a good (Madhok 2002). Although some of the largest wineries in the “Show-Me State” could obtain cheaper inputs from distant suppliers, repeated purchases from neighboring growers are preferred. According to the interviewed owners, factors such as “supporting the community” and “contributing to the development of the local industry” influence grape procurement decisions as much as cost and quality assessments.

Obviously, the qualitative evidence presented by Miranda and Chaddad (2014) should not be automatically generalized to every U.S. emerging wine region. Still, such

findings motivate relevant questions: (iii) *Is the perceived need to promote the development of the local cluster a key incentive to the acquisition of grapes from independent growers?* (iv) *Do the different motivations pointed by winery owners affect the materialization of the “discriminating alignment” predicted by TCE?* (v) *Does a broader set of goals influence the specific features of the governance mechanisms used? How are decision rights allocated in the exchanges carried out in nascent clusters?*

4.3 The wine cluster

Clusters result from the concentration of organizations devoted to a particular industry in a geographical area (Porter and Bond 2008). Scholars have long acknowledged the benefits of such agglomerations. In his *“Principles of Economics”*, Marshall (1920, p. 156) notes that, in industrial districts, *“[...] the mysteries of trade become no mysteries, but are as it were in the air, and children learn many of them unconsciously”*. More than a century later, several studies challenge the assertion that geography per se enables the diffusion of knowledge. An example is found in Giuliani’s (2007) analysis of the interaction patterns in three Chilean and Italian wine clusters. The conclusion: the benefits of participation highly depend on the capacity to learn from other firms (see also Giuliani and Bell 2005; Giuliani 2011).

Moreover, the establishment of a specialized bureaucracy is not a sufficient condition for the exchange of knowledge in clusters. For instance, the requirements of membership in an industrial association bear little resemblance to the capabilities needed for a beneficial engagement in knowledge networks (Giuliani 2007). Of course, this

argument does not downplay the role of organizations aimed at supporting the sector; whether the attachment to a formal initiative leverages the capabilities independently accumulated by wineries is open to empirical scrutiny. For example, McDermott, Corredoira, and Kruse (2009) show that the establishment of inclusive public-private partnerships fueled the effectiveness of research institutions in Mendoza.

Given the diverse features, strengths and weaknesses of informal networks and formal organizations, combining both mechanisms can potentially enhance the economic performance of the members of a cluster. Importantly, the lack of capabilities and resources might preclude an active participation in either case. Considering the issues discussed over the previous sections, (i) *Do the existing social structures enhance the diffusion of basic knowledge, allowing the learning of newcomers with limited skills?* (ii) *What are the properties of the different structures connecting firms in U.S. emerging regions?*

The examples from traditional areas inspire a series of questions. Analyzing the grapes grown within U.S. wine regions, Alston, Anderson, and Sambucci (2015) identifies a progressive convergence towards a specific mix of varieties. Future studies can assess the relative importance of climatic and market considerations to the emergence of such scenario. In other words: (iii) *What is the influence of joint strategies – e.g., active identity building – in the establishment of a procurement strategy?* (iv) *Does the use of the same mix of grape varieties by cluster members imply similar “make-or-buy” choices?*

Finally, the establishment of “wine trails” in U.S. emerging areas deserve special attention. In particular, the study of the potential misalignment between membership and actual cooperation offers a promising research path. At the most fundamental level, comparative research might outline the features of the different collective actions

established in emerging wine areas. More specifically: (v) *Are “wine trails” composed by similar mixes of formal and informal governance mechanisms?* (vi) *What are the institutional features of these arrangements?* (vii) *How does the prevalent distribution of capabilities and resources among the members of a “wine trail” affect the exchange of information?* (viii) *Does the participation in broader initiatives – e.g., industry association – leverages the impact of local collective action on procurement strategies?*

5 CONCLUDING REMARKS

Never before so many economists paid attention to wine. They are not alone. As the recent growth in the number of wineries in the United States attests, the interest surpasses academia. Beyond the boundaries of the thousands of newly established firms, the “wine revolution” can contribute to the revitalization of several portions of rural America. A significant role is reserved to institutional economists, that is: generating knowledge to inform the design of more efficient organizational strategies. Before, the current practices in each of these emerging clusters need to be identified. Otherwise, we risk making conclusions disconnected to the specific context of U.S. emerging wine regions.

This paper delivers three contributions. Firstly, I review the theoretical approaches typically used by studies of economic organization in traditional wine areas: (i) transaction cost economics; (ii) capabilities-based view; and (iii) embeddedness theory. Secondly, I summarize the findings of the growing literature on the issue, discussing some of the challenges on the empirical front. Finally, I outline the essential elements for the study of

grape procurement strategies in emerging regions. Although my arguments are inspired by the expansion of the U.S. wine industry' frontier, similar ideas may be used to analyze trends in other nascent clusters.

Essentially, I highlight the importance of a comprehensive description of the set of relevant economic relationships in emerging wine clusters. My focus is limited to interactions with an immediate influence on grape procurement decisions. Nevertheless, I am aware that other factors not discussed here, such as regulation and distribution strategies, also influence organizational outcomes (see Sun et al. 2014; Santiago and Sykuta forthcoming). The progressive addition of novel findings in related strands of literature will open the opportunity for further integration. Whatever economists do, the efforts must enhance our understanding of the working of the economic system and the features of its innumerable participants. The consolidation of completely new clusters in the wine industry offers a unique possibility for those interested in following the call of Ronald Coase.

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CHAPTER III

TRANSACTION COSTS, CAPABILITIES, AND GRAPE PROCUREMENT STRATEGIES IN U.S. EMERGING WINE REGIONS⁴

1 INTRODUCTION

Few agribusiness sectors have expanded faster in the United States than the wine industry. As Robinson and Murphy (2012) remark, a “wine revolution” has taken place, changing the landscape of several rural areas. Between 1970 and 2014, almost 10,000 bonded wineries were established, spreading the activity to the 50 American states (Wine Institute 2015). From these firms, 96% are considered small wineries, annually producing up to 50,000 cases of wine (Wines & Vines 2015). The progressive broadening of the so-called “emerging regions”, geographical denominations that until recently have not been associated with the wine industry, has brought new opportunities and challenges. While a growing body of knowledge identifies the potential economic benefits of such transformations (Hall et al. 2000; Carlsen 2004; Storchmann 2010), long-term survival is still a concern for hundreds of wineries.

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Previous research points out quality as a fundamental factor for the success of both individual wineries and regional clusters (Ashenfelter 2008; McDermott, Corredoira, and Kruse 2009; Giuliani 2011; Castriota and Delmastro 2015). Not surprisingly, scholars have increasingly turned their attention to the logic behind grape procurement decisions in the wine industry. Relying on the hypotheses forwarded by Williamson's (1985, 1991) transaction cost economics – TCE thereafter –, several studies relate the “make-or-buy” decisions of wineries to the relative specificity of the grapes used in production (Goodhue et al. 2003; Fraser 2005; Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer 2009; Fernández-Olmos 2010b; Codron, Montaigne, and Rousset 2013; Franken 2014). However, as noted by Franken and Bacon (2014), these analyses have mostly concentrated on traditional wine regions, leading to an unavoidable question: are the procurement strategies of wineries in emerging clusters *motivated* by the same factors?

This paper departs from a slightly different question: *are the grape procurement strategies of wineries from emerging regions constrained by the same factors as in traditional wine areas?* In fact, Miranda and Chaddad (2014) argue that “make-or-buy” decisions in emerging regions are directly affected by (i) the considerable heterogeneity in the bundles of capabilities and resources owned by each firm; and (ii) the structural features of these emerging clusters, such as the existence of experienced independent grape growers in the surroundings. Or, to put in another words, small wineries in emerging regions are often unable to properly “make” or may find it difficult to “buy” high-quality grapes, having to adapt their procurement strategies to these limitations.

I adopt a mixed-methods approach to explore the logic behind procurement decisions of small wineries from five U.S. states: Illinois, Michigan, Missouri, New York,

and Vermont. Following Greene, Caracelli, and Graham (1989), I use a “development approach”, departing from a series of interviews conducted with Missouri wineries to lay the foundations for a quantitative analysis. The qualitative evidence shows that, although small Missouri wineries perceive full vertical integration as the optimal grape sourcing strategy, actual procurement decisions vary widely (see Miranda and Chaddad 2014). To explain such divergence, the hypotheses discussed in Section 4 are rooted in insights from three branches of the literature on the boundaries of the firm: the aforementioned Williamson’s (1985, 1991) TCE, the capabilities-based view (see Argyres et al. 2012) and the embeddedness theory (see Granovetter 2005).

Consistent with the view that knowledge plays a decisive role in boundary decisions (Demsetz 1988; Winter 1988; Kogut and Zander 1992; Madhok 2002), I show that previous experience with viticulture is positively associated with higher levels of vertical integration in the emerging regions analyzed. On the other hand, the ability to evaluate the objective attributes of grapes produced by independent growers appears to exert a limited influence on actual procurement decisions, suggesting a widespread lack of measurement skills among the surveyed small firms. The results also point out to the importance of informal ties in the governance of the transactions carried out by the wineries in the sample. In particular, trust is an essential supporting mechanism in the governance of less coordinated exchanges, reflecting the constraints faced by many firms to devise complex formal arrangements.

The remainder of this article is organized as follows. Section 2 discusses the influence of TCE on the research on grape procurement decisions in traditional wine clusters. Then, I outline the main characteristics of the typical winery from an emerging

region, paving the way to the description of the hypotheses in Section 4. The research design is explained in Section 5, with the subsequent presentation and analysis of the main results. Some concluding remarks close the paper.

2 GRAPE PROCUREMENT STRATEGIES AND ORGANIZATIONAL DIVERSITY

The United States is the largest wine market in the world. Domestic consumption has steadily increased since the turn of the twenty-first century, reaching 29.1 million hectoliters in 2013. Total imports in the same year corresponded to 37% of this volume, mainly from Italy, France, Australia, Argentina, Spain, and Chile (OIV 2014). Fueled by the growing interest of consumers, several wine clusters have been formed around the country in the last two decades, increasing by more than 400% the number of wineries since 2000. Geographic dispersion has been the rule: although California still accounts for around 90% of both the value and the production of wine in the United States, only 42% of the 9,649 American wineries were located in the state in 2013 (Wine Institute 2015).

Conquering new frontiers, grape and wine production has changed the landscape of several rural portions across the United States. Along with similar phenomena in other countries (Fensterseifer 2007; Alonso and Liu 2010; Boatto et al. 2013), this expansion has transformed the geography of the industry, inspiring the creation of new terms. Historically, the so-called “established areas” have been divided between those located in the “Old World” – France, Germany, Italy, Portugal, and Spain – and the “New World”, which encompasses traditional clusters outside Europe such as Argentine’s province of

Mendoza, California, Chile, and South Australia (Simpson 2011). However, the rise of new producing regions since the 1990s led experts to add expressions such as “emerging regions” and “New Latitude Wines” to the daily lexicon of the field (Robinson 2004; Veseth 2014).

From an organizational standpoint, a relevant empirical question is whether wineries from emerging regions adopt the same grape procurement strategies of firms from traditional wine clusters (Franken and Bacon 2014). In either case, TCE has been the theoretical approach used to examine such decisions. The framework is summarized by the “discriminating alignment hypothesis”, which supposes the existence of a clear optimal choice under any scenario (Williamson 1985, 1991). Given the features of a transaction, economic agents will devise organizational arrangements that minimize governance costs, defined as the costs of negotiating, supervising and enforcing contracts (Klein, Alchian, and Crawford 1978; Williamson 1985). Before deciding, individuals compare among discrete alternatives, each one characterized by (i) a particular dispute settlement system; (ii) a given level of exposure to the incentives furnished by the market mechanism; and (iii) a specific contract law regime (Tadelis and Williamson 2012).

Since the publication of “*The Economic Institutions of Capitalism*”, thousands of pages have been written to discuss the realism of TCE – and of its behavioral assumptions, “opportunism” and “bounded rationality”. Williamson (1993, 1994) himself has carried over an active defense of the framework. On the empirical front, a growing literature demonstrates that, irrespective of TCE’s ability to depict the economic system, predictive power has been high (Shelanski and Klein 1995; Richman and Macher 2008). Yet several authors have offered critical appraisals of Oliver Williamson’s ideas (see Hodgson 2010

for a review). Contentious theoretical issues include the role of asset specificity in the determination of firm boundaries (Coase 1988; Demsetz 1988; Simon 1991; Kogut and Zander 1992); the sufficiency of the “discriminating alignment hypothesis” to explain order (Granovetter 1985; Bradach and Eccles 1989; Hennart 1993); and the convenience of forwarding a message rooted in the notion of “opportunism” to practitioners (Conner and Prahalad 1996; Ghoshal and Moran 1996).

Perhaps the main limitations of TCE are not those related to its explicit assumptions, but to its implicit ones. Firstly, the “discriminating alignment hypothesis” applies to successive stages of production using separable technologies (Williamson 1985; Tadelis and Williamson 2012). By focusing on specific vertical transactions, the framework overshadows the role of horizontal complementarities in the determination of firm boundaries (Milgrom and Roberts 1990; Jacobides and Winter 2005; Parmigiani and Mitchell 2009; Puranam, Gulati, and Bhattacharya 2013). TCE also departs from a theoretical scenario in which firms own identical capabilities – or, at least, their acquisition is not problematic (Demsetz 1988; Langlois and Foss 1999). Finally, Williamson’s interpretation of “bounded rationality” does not preclude a maximizing outcome in the main choice variable of the model. In fact, if “farsighted contracting” is as pervasive as Williamson (1994) suggests, it is reasonable to ask whether the notion of “satisficing” (Simon 1955) plays a role at all in TCE.

TCE’s strengths and weaknesses have shaped the research design of several empirical studies on grape procurement strategies in the wine industry. Departing from the “discriminating alignment hypothesis”, these contributions reach a similar conclusion: in established clusters, firms producing higher-quality wines tend to adopt stricter levels of

coordination in the governance of grape transactions (Goodhue et al. 2003; Fraser 2005; Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer 2009; Fernández-Olmos 2010b; Codron, Montaigne, and Rousset 2013; Franken 2014). Remarkably, the coexistence of diverse governance models inside the term “established area” has not affected this consensus. Indeed, the drivers of organizational choices in the Old World and in the New World differ considerably, affecting the relative size and the boundaries of the typical firm in each case (Simpson 2011). In Europe, the dominant arrangements are the family vineyard and the cooperative, which vertically integrate grape growing and wine making. In turn, New World wineries have been characterized by the large-scale of production, the use of cutting-edge technology and the acquisition of large amounts of inputs from independent growers.

Inadvertently, the existing literature acknowledges the organizational heterogeneity across the oceans. While studies focused on European clusters frame the decisions of wineries as a “make-or-buy” tradeoff (e.g., Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer 2009; Fernández-Olmos 2010b), scholars dealing with New World wineries explain strategies as the outcome of a “formal-contract-or-informal-contract” trade-off (e.g., Goodhue et al. 2003; Fraser 2005; Franken 2012). To a great extent, fitting such diversity into the same theoretical framework has been possible thanks to the core features of TCE. Although Williamson (1991) conceives organizational arrangements as discrete structural alternatives with unique attributes, the framework predicts a nearly frictionless adaptation to new circumstances (Nickerson and Silverman 2003). Consequently, different modes of governance can still be placed in a continuum from “spot market exchange” to “vertical integration”.

To be more specific, TCE implicitly assumes that *all* organizational choices are available – and feasible – to *every* economic agent. It is true, most empirical studies based on Williamson’s ideas are not affected by the potential shortcomings from such assumption. By relating observable organizational choices to different levels of asset specificity, TCE does not aim to explain what economic agents can do but, rather, why they did what they did (see Argyres et al. 2012 for a discussion). As Williamson (1985) argues, deviations from the “discriminating alignment hypothesis” should be seen as a transitory phenomenon (for critical views, see Langlois 1992 and Parmigiani 2007). In this sense, having two actual arrangements – e.g., “make” and “buy” – is a sufficient condition to test TCE’s postulates in a stable industry. After all, if firms have used a certain structure and seem satisfied with the choice, scholars can always resort to the idea that no superior option exist – at least when the criterion is the minimization of governance costs (see Williamson 1994).

Back to the research on grape procurement strategies in established areas, the centuries of existence of most European wine clusters justify the assumption that a static equilibrium exists. In fact, wineries from the Old World have dealt with two or more procurement alternatives long enough to adapt its governance structures to the “make-or-buy” logic. The same applies to the New World, even recognizing that the traditional separation between grape growing and wine making has progressively given room to more coordinated strategies (Goodhue et al. 2003; Giuliani 2007a; Codron, Montaigne, and Rousset 2013). For the most part, a favorable *terroir* and the ownership of a considerable bundle of capabilities and resources allowed a smooth adaptation process. Even in developing countries, such as Argentina and Chile, the combination of an extensive stock

of knowledge and partnerships with public agencies and Old World wineries contributed to the emergence of modern wine clusters in no more than a decade (McDermott, Corredoira, and Kruse 2009; Giuliani and Bell 2005).

Are the American emerging wine regions similar to either the Old World or the New World? The scarce available evidence suggests a complex scenario. According to Miranda and Chaddad (2014), although small Missouri wineries tend to perceive “full vertical integration” as the optimal procurement strategy, several firms have not reached that goal. Not infrequently, the lack of capabilities and resources restrict the feasible sourcing choices to less coordinated ones, such as spot market transactions and informal contracts. On the other hand, a few large-scale Missouri wineries have adopted strategies that resemble those of their New World counterparts, following a logic similar to TCE’s principles. Therefore, assessing the empirical question posed by Franken and Bacon (2014) demands an explicit recognition that organizational decisions in emerging wine clusters are often constrained by both internal and external factors.

3 HOW DOES THE TYPICAL WINERY IN AN EMERGING REGION LOOK LIKE?

Understanding the rationale behind grape procurement strategies in emerging areas is contingent on the identification of the typical attributes of the organizations where such decisions are made. From the 9,649 American wineries in 2013, 42% were located in the New World region of California, which contributed to almost 90% of the national production in the same year (Wine Institute 2015). Remarkably, 96% of the United States

wineries are considered small, producing up to 50,000 cases (Wines & Vines 2014). Even this group is strongly skewed towards micro wineries, with 3,189 firms producing up to 5,000 cases and 2,828 firms with an output of less than 1,000 cases. Hence, it is safe to assume that *the limited scale of production characterizes the absolute majority of wineries in emerging clusters.*

Diverse environments surround each winery. While clusters such as Washington's state Walla Walla and New York state's Finger Lakes receive hundreds of thousands of visitors every year, others are still unknown beyond regional boundaries. Their legitimacy also varies widely (see Sun et al. 2014). New wine regions close to traditional clusters have established broad coalitions, which allowed the consolidation of a unique identity (Alonso and Liu 2010; Beebe et al. 2003; Boatto et al. 2013). In other areas, the existence of a vineyard is still seen as an exotic occurrence. Anecdotal evidence suggests a growing number of conflicts between winery owners and grain farmers due to the use of herbicides (Ball, Corp, and Dami 2013). This is only one among the many constraints for the building of a solid reputation in many nascent clusters.

Indeed, convincing the neighbors to refrain from using herbicides or political officers to foster promotion policies is insufficient for the consolidation of an emerging region. Perhaps the main attribute shared by all established wine areas is the complex pattern of competition and cooperation among multiple agents (Giuliani and Bell 2005; Visser and De Langen 2006; McDermott, Corredoira, and Kruse 2009; Giuliani 2011; Beebe et al. 2013). For example, the availability of inputs is directly affected by the economic decisions made outside the organizational boundaries of a winery. In emerging clusters, the limited scale of most firms precludes the acquisition of grapes from distant

locations. Thus, “buying” depends on the existence of independent growers in the surroundings. As a series of interviews conducted in Missouri in 2014 reveal, the leading players appear to be aware of this scenario. The manager of one of the biggest Missouri wineries pointed out that, even though cheaper grapes could be obtained from other American states⁵, “[...] *the idea is to buy as much as we can from here, so we support the local industry and increase consumer awareness*”.

The account above reveals two fundamental characteristics of emerging areas. Firstly, the decision to acquire grapes from local producers does not imply the absence of economic calculation. Given the importance of a strong regional reputation to the success of a wine cluster (Benjamin and Podolny 1999; Castriota and Delmastro 2015), it is in the best interest of the wineries with higher stakes in the activity to support the establishment of other businesses in the same geographical region⁶. Moreover, the scarcity of suppliers is evidenced by the predisposition of large-scale wineries to incur higher costs to incentivize the creation of a regional supply network. Of course, carrying out this strategy demands specific capabilities, such as the ability to effectively design and supervise contracts (Mayer and Argyres 2004). It would be unrealistic to assume that smaller firms can equally foster the consolidation of a wine cluster in their surrounding areas or easily access suppliers from other regions in times of shortage. Therefore, *the structural characteristics of emerging wine regions are highly diverse, directly affecting the possibility of wineries to “buy” grapes from independent growers.*

⁵ Personal interview, February 2014.

⁶ It is important to remark that grapes are highly perishable. Consequently, temporal asset specificity incentivizes the establishment of a network of providers in the surroundings. See Masten (2000) and Williamson (2004) for a theoretical discussion. Zylbersztajn and Miele (2005) and Fernández-Olmos (2010a) provide empirical applications.

Mostly living in geographical areas marked by the cool climate, the newcomers to the industry have to deal with challenging conditions. Contrary to the popular belief, this is not exclusive to North America. Simpson (2011) argues that a primary reason for the integration between grape growing and wine making in Europe is the high risk of investing in a vineyard due to the inclement weather. In the nineteenth century, small European producers grew several varieties in the same plot of land to minimize the losses from climatic damage. The emerging wine areas in the United States share both the fear of bad news from the weather forecast and the preference for diversified vineyards. Among the 104 wineries that furnished detailed information on their grape procurement strategies in the survey, 87.5% informed the use of at least five varieties⁷. By the same token, the available qualitative evidence suggests the desire for the adoption of a “make-as-much-as-you-can” strategy by many wineries from emerging regions (Miranda and Chaddad 2014). Consequently, assuming vertical integration as the default organizational form in these clusters seems reasonable. Or, to put in another words, *the typical winery from a nascent cluster perceives “full vertical integration” as the optimal organizational strategy.*

By expanding its frontier, the wine industry has incorporated not only land traditionally used to other ends, but also entrepreneurs with characteristics that differ from the typical winery owner from established areas. Again, the comparison with the Old World is illustrative. In European rural areas, grape growing and wine making were widespread

⁷ Throughout the paper, we use data from a survey with 127 wineries from five U.S. states characterized by their emerging wine industries: Illinois, Michigan, Missouri, New York and Vermont (see Section 5 for more details). The descriptive statistics presented in the next few pages reflect the total number of answers received to the specific question of interest, unless specified. The quantitative analysis in Section 6 is based on a sample of 76 small firms, whose surveys had answers to all relevant variables in our model.

until the beginning of the twentieth century. Hundreds of thousands of families took advantage of the fact that vineyards can be grown in marginal lands to diversify agricultural production and increase annual income (Simpson 2011). Many of these individuals would eventually emigrate to other countries, using the accumulated knowledge to produce wine elsewhere. In fact, two of the three largest wineries in the world in 1900 were located in the United States⁸. Nevertheless, the enactment of Prohibition in 1920 would vanish this flourishing industry, creating a void that lasted for many decades. Except for California and a few other areas, the rebirth of the sector would only occur in the 1990s, propelled by the publicizing of the health benefits of wine consumption in the mass media (Cattell 2013).

Not infrequently, the newcomers to the industry have little to do with the pioneers from the past – or with the wine sector at all – before opening their businesses. Examples of celebrities acquiring a vineyard abound in the press (Wise 2013). Others are motivated by the search of a new lifestyle: among the 89 owners of small wineries who responded the survey that informs this article, 57.3% pointed out *Passion for Wine and Food and Lifestyle Objectives* as primary motivations. In turn, the option *Business Opportunity* was chosen by a lower percentage, of 44.9%. Additional features shed light on the profile of these entrepreneurs. In the same sample, 58.4% have no training in enology, while 57.3% have no training in viticulture. In addition, it is worth to highlight that the attachment of most respondents to the activity appears to be a direct result of the “wine revolution”. The average experiences with the wine industry and grape production are equivalent to 13.39

⁸ For example, Stone Hill Winery, founded by German settlers in Hermann (Missouri), annually produced more than a million of gallons in the period. See: Pinney (2005).

and 14.05 years respectively, period that coincides with the peak of the expansion towards emerging regions.

Along with the characteristics of transactions, boundary decisions are affected by the capabilities and resources owned by agents (Madhok 2002; Argyres et al. 2012). While the lack of experienced providers affects the possibility of “buying”, the inability to properly manage a vineyard poses a critical constraint on vertical integration. Considering that 85.5% of the aforementioned wineries have five or less full-time employees – with a mean of 2.73 –, the skills of their owners directly influence procurement choices. Although “make-as-much-as-you-can” is commonly pointed out as the perceived optimal strategy, the qualitative evidence from small Missouri wineries epitomizes the hardship faced by many entrepreneurs in the effort to “make”. Asked about how information on vineyard management techniques was obtained, a winery owner showed a cabinet with four introductory books on viticulture⁹. Other interviewed individual recounted that, after five years of constant warnings about the convenience of setting up an irrigation system in his vineyard, a drought in 2012 finally convinced him. In his words¹⁰, “[...] *maybe that is why they call Missouri the ‘Show Me State’. You see a lot of trial-and-error going on in this industry*”.

The lack of capabilities and resources also affects the ability to “buy” appropriate inputs. Miranda and Chaddad (2014) describe the difficulties faced by some Missouri wineries to measure the attributes of grapes from independent grape growers. Two years before, Allen (2012) interviewed a winery owner who, after conceding his inaptitude to

⁹ Personal interview, March 2014.

¹⁰ Personal interview, March 2014.

access the quality of the inputs purchased through spot market transactions, concluded: “[...] give me another ten years and I can tell you whether it is a good grape or not”. Obviously, inputs are still bought somewhere. Nevertheless, the lack of skills to devise complex governance structures strongly shapes the features of the organizational arrangements supporting exchanges. Often, actual procurement decisions reflect the only feasible form given the characteristics of the firm. In summary, *capabilities and resources are highly heterogeneous among wineries in emerging regions, affecting the comparative ability to “make” and “buy”*.

In summary, the typical winery from an emerging region in the United States is characterized by (i) *the limited scale of production*; (ii) *the participation in underdeveloped clusters*; and (iii) *the recent attachment of its owners to the wine industry*. Comparatively, these firms (i) *face diverse levels of access to inputs*; and (ii) *own highly heterogeneous bundles of capabilities and resources*, which determine the ability to “make” or the capacity to adopt complex organizational arrangements to “buy”. The next section discusses the consequences of such features on the grape procurement strategies pursued by these firms, presenting a series of testable hypotheses.

4 GRAPE PROCUREMENT STRATEGIES IN EMERGING REGIONS

What are the drivers of grape procurement decisions in U.S. emerging wine areas? The scarce available evidence leads to mixed conclusions. Although Franken and Bacon (2014) identify commonalities between the strategies pursued by Illinois wineries and the practices in established areas, the conclusions are based on the quantitative analysis of a

relatively small sample. In turn, case studies conducted by Miranda and Chaddad (2014) suggest that many Missouri wineries face constraints to adopt a “make-or-buy” rationale. The qualitative findings show that, while a few large-scale firms pursue strategies resembling TCE’s logic, the typical Missouri small winery perceives full vertical integration as the optimal organizational setup. The same study also contrasts this homogeneous goal with the considerable heterogeneity in actual boundary choices.

Indeed, organizational diversity is ubiquitous in U.S. emerging wine regions. Research with 127 wineries between February and October of 2015 shows that, on average, firms from the Midwestern states of Illinois, Michigan and Missouri vertically integrated 42.2% of the grapes used in 2014. In the Northeastern states of New York and Vermont, in-house grape production reached 53.4%. The aggregate data presented by the Northern Grapes project from a research conducted in 13 states also depict a rich mosaic of arrangements¹¹. Although the main sourcing choice is vertical integration, it corresponds to only 35% of the transactions (Tuck and Gartner 2013). Remarkably, many respondents informed purchases of grapes from other wineries, an option not included in the original survey.

Of course, the aggregate data presented above does not invalidate TCE’s core tenets per se. As Williamson (1985) argues, an apparent case of “make-and-buy” of the same good might be transitory or due to the use of different technologies (see Parmigiani 2007

¹¹ The 13 U.S. states included in the report are Connecticut, Illinois, Iowa, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New York, North Dakota, South Dakota, Vermont and Wisconsin. For more details, see Tuck and Gartner (2014).

for a critical appraisal). After all, TCE’s unit of analysis is the transaction, not the total procurement of the firm. Nevertheless, evidence based on the five most representative varieties used by the surveyed firms appears to contradict the “discriminating alignment hypothesis” (see Table 1). Wineries not only pursue diverse strategies to source the same grape varieties, but also adopt concurrent sourcing commonly.

Table 1: Procurement decisions in U.S. emerging regions (number of observations)

Variety	Vertical Integration	Spot Market Transactions	Handshake Contracts	Formal Contracts	Concurrent Sourcing
Cabernet Franc	16	2	5	5	10
	42.10%	5.26%	13.15%	13.15%	26.31%
Chambourcin	17	2	11	2	10
	40.47%	4.76%	26.19%	4.76%	23.80%
Norton	13	1	5	1	9
	44.82%	3.44%	17.24%	3.44%	31.03%
Riesling	18	1	7	5	10
	42.85%	2.43%	17.07%	12.19%	24.39%
Vignoles	14	5	4	3	11
	37.83%	13.51%	10.81%	8.10%	29.72%

Source: Survey conducted by the authors between February and October of 2015 with 127 bonded wineries from five U.S. states – Illinois, Missouri, Michigan, New York and Vermont. For concurrent sourcing, firms used at least two different governance mechanisms to acquire the same grape variety.

What would explain such organizational diversity? Madhok (2002) contends that sourcing decisions derive from a trilateral alignment among (i) the characteristics of the transaction; (ii) the features of the organizational arrangement; and (iii) the bundles of capabilities and resources involved in the exchange. In other words, the internalization of a transaction will only occur if nobody else can supply the good or service more efficiently (see also Argyres and Zenger 2012). Therefore, the acquisition of the same grape variety through very different arrangements should not surprise. Although scientific advances have contributed to the codification of several routines in the wine industry, tacit knowledge is still fundamental when it comes to grape growing (see Giuliani 2007b). For instance,

Miranda and Chaddad (2014) note that small Missouri wineries established by independent grape producers tend to “make” a higher percentage of their inputs. Given the general assumptions presented in Section 3, I expect that:

Hypothesis 1: The higher the number of years of experience in grape growing of a key respondent, the higher the level of vertical integration of the respective winery.

A common argument is that vertical integration allows greater control over quality (e.g., Zylbersztajn and Miele 2005; Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer 2009). On the other hand, there is no such a thing as an infallible organizational arrangement (Williamson 1991). From a comparative institutional standpoint, relying on informal contracts or spot market transactions might be appealing under specific circumstances. In traditional areas, wineries often resort to uncoordinated relationships with independent growers to procure lower-quality grapes (Goodhue et al. 2003; Fraser 2005; Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer 2009; Codron, Montaigne, and Rousset 2013; Franken 2014). More specifically, the empirical literature shows that effectively “buying” implies the ability to measure the relevant attributes of the purchased inputs (Barzel 1982) – for example, sugar content and acidity. I hypothesize that, as wineries enhance the capacity to oversee exchanges with grape producers, a smaller percentage of their total procurement will be vertically integrated.

Hypothesis 2: Wineries able to measure the objective attributes of grapes will “make” a smaller percentage of their total procurement.

The idea that “making” and “buying” demand the ownership of specific capabilities and resources provides a compelling explanation for the existence of organizational diversity. However, the argument fails to explain learning processes. Are firms able to acquire new skills through time, expanding the set of feasible procurement choices? In the short term, it is evident that different knowledge bases lead to contrasting possibilities of reaching a strategic goal. Giuliani (2011) shows that the ability to learn from others is strongly related to an active participation in knowledge networks in the Chilean Colchagua Valley wine cluster (see also Giuliani and Bell 2005). I also expect that the number of ties to independent growers and wineries would help to reveal a superior “absorptive capacity” (Cohen and Levinthal 1990).

Having the ability to evaluate grape quality attributes is an insufficient condition for a “buying” decision though. Similarly, the capacity to engage in mutually beneficial knowledge exchanges does not entirely explain the materialization of “making” strategies. Embedded in highly diverse clusters, small wineries may face prohibitive searching costs to locate potential providers. In part, the preference for a “make-as-much-as-you-can” strategy ensues from the lack of skilled growers in the surroundings – and not a demonstration of a superior capacity to manage a vineyard. Network features also influence the patterns of inter-firm interaction (see Shan, Walker, and Kogut 1994; Gulati 1999; McDermott, Corredoira, and Kruse 2009; Miranda and Saes 2011). For example, structural constraints may incentivize the cooperation among potential competitors, as practices such as the acquisition of inputs from other wineries denote (Tuck and Gartner 2013). At least in the short term, I expect that strong ties to independent producers and other firms will

reduce the governance costs of less coordinated sourcing decisions (Greif 1993; Uzzi 1996), reducing the incentives to the pursuit of full vertical integration.

Hypothesis 3: The greater the level of cooperation with other wineries and independent growers, the lower the level of vertical integration of a winery.

The empirical research inspired by TCE has traditionally related an observed arrangement to the characteristics of a transaction. So far, I have introduced two elements that go beyond Williamson's (1985, 1991) core ideas, those are: (i) the role of capabilities in shaping "make-or-buy" strategies; and (ii) the influence of the attachment to networks to organizational outcomes. Yet even the most constrained firm makes procurement decisions, devising structures that mitigate the lack of proper skills. Miranda and Chaddad (2014) show that trust replaces active monitoring in many transactions carried out by newcomers to the Missouri wine industry. Strong ties also support long-term relationships in other wine clusters, reducing the governance costs associated with contract enforcement (Somogyi et al. 2010; Fernández-Olmos 2011; Codron, Montaigne, and Rousset 2013; Wilson, MacDonald, and Monnane 2015).

The idea that a specific supporting mechanism characterizes an organizational arrangement is a fundamental TCE's theoretical cornerstone (Williamson 1991; Williamson and Tadelis 2012). Reacting to the argument, several scholars stress the importance of institutional complementarities for the promotion of social order and economic performance (Granovetter 1985; Bradach and Eccles 1989; Hennart 1993; Makadok and Coff 2009). Consistent with the literature from other industries (Uzzi 1996,

1999; Poppo and Zenger 2002; Lazzarini, Miller, and Zenger 2004), the available evidence from emerging wine regions points to the interaction between informal and formal governance structures (Miranda and Chaddad 2014).

Importantly, the nature of institutional complementarities is contingent on the characteristics of the interacting arrangements. Networks can embody diverse attributes, depending on the features of their participants and the existing institutional rules (see Granovetter 2005). By the same token, problem-solving processes are not homogeneous, with the nature of the challenge at hand helping to determine peculiar patterns of cooperation (Nickerson and Zenger 2004; Saes 2010). Although dense ties can potentiate the benefits of interaction, trust is a property of concrete relationships (Granovetter 1985). Or, to be more specific, even isolated entrepreneurs may rely on informal mechanisms to devise a procurement strategy. Needless to say, such decisions will be highly constrained.

Ouchi (1980) contends that trust creates order in contexts marked by the difficulty of measuring the relative contribution to a cooperative effort. Following the qualitative findings described elsewhere¹² (Miranda and Chaddad 2014), I develop a similar argument. Overall, the more constrained the organizational choice of a winery is, the greater the importance of informal mechanisms of governance. My hypothesis is that trust is a decisive feature of weakly coordinated exchanges carried out in emerging clusters. In other words,

¹² Interviews with newcomers to the Missouri wine industry show that convincing friends and neighbors to start producing grapes is one of the strategies adopted to minimize governance costs. For a discussion, see Miranda and Chaddad (2014).

the inability to evaluate the performance of a transaction demands the establishment of mechanisms that mitigate the prohibitive costs of a conventional assessment.

Hypothesis 4: The existence of a relationship based on trust is negatively correlated with the level of vertical integration of a winery.

To claim that capabilities, networks and resources help to shape the limits of the firm is not equivalent to saying that the minimization of governance costs plays no role in boundary decisions (Madhok 2002; Foss and Foss 2004; Argyres and Zenger 2012; Argyres et al. 2012). Together with structural features, such as the availability of potential partners, capabilities and resources determine the set of feasible arrangements to a firm. Once the available alternatives are identified, a search for “discriminating alignment” follows. By pointing out that, in the “[...] *traditional transaction cost query, the question to be put instead is: How should a firm A – which has preexisting strengths and weaknesses (core competences and disabilities) – organize X?*”, Williamson (1999, p. 1103) himself appears to agree with this argument. The “remediability criterion” suggests a similar reasoning (Williamson 1994)¹³.

That said, the protection of appropriable quasi-rents (Klein, Crawford, and Alchian 1978; Williamson 1985) only partially explains the adoption of more complex governance structures. Vertical integration is a fundamental aspect in the process of value creation in

¹³ According to Liebowitz and Margolis (1995), the “remediability criterion” is embedded in a specific interpretation of “path dependence”. Although TCE acknowledges the influence of intertemporal effects on organizational distortions, the “discriminating alignment hypothesis” predicts a nearly frictionless adaptation once the inefficiency is identified (see also Nickerson and Silverman 2003).

the wine sector. Managing a vineyard allows wineries with the proper set of skills to make experiments and consolidate a reputation (Giuliani 2011). Newcomers to the industry can also acquire tacit knowledge through vertical integration, progressively enhancing both the ability to produce inputs and to learn from others. Accordingly, the empirical literature on traditional clusters provides several examples of firms aiming at controlling the production of premium grapes (Goodhue et al. 2003; Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer 2009; Franken 2012; Codron, Montaigne, and Rousset 2013). I hypothesize that wineries will “make” grapes with a higher differentiation potential.

At the same time, it is necessary to acknowledge that the returns to “make-or-buy” decisions are shaped by the interplay among objective factors¹⁴ – e.g., the *terroir*, the technology used in production and the skills of the winemaker – and structural ones, such as the status of a firm (Benjamin and Podolny 1999; Podolny 2008). From a historical perspective, much of the diversity in the world wine industry results from a process of progressive change between 1840 and 1914 (Simpson 2011). In the United States, the void created after the enactment of the Volstead Act explains the relative lack of knowledge about the peculiarities of U.S. emerging areas. Indeed, the existence of innumerable classification systems in traditional regions contrasts with identities under construction in nascent clusters.

More specifically, value creation in the wine industry ensues from both the reputation and the pattern of network affiliation of the winery (Benjamin and Podolny 1999; Castriota and Delmastro 2015). Under conditions of imperfect information,

¹⁴ As discussed by Thornton (2013, p. 60), some controversy exists on the actual influence of variables such as the soil on wine quality.

reputation results from the offer of a consistent quality level through time (Shapiro 1983). Therefore, any grape variety allows the establishment of a positive image among consumers at first sight. In response to the peculiarities of each *terroir*, U.S. wine regions have increasingly specialized in specific mixes of grape varieties¹⁵ (Alston, Anderson, and Sambucci 2015). It is fair to assume that the decisions of growers will not necessarily align with the worldwide reputation of a grape variety. For example, small wineries from cool climate or continental areas might prefer to specialize in *non-Vinifera* species.

The convergence towards a specific mix of varieties amplify the prospects for collective actions dedicated to the building of a common identity among cluster members (see Beebe et al. 2013). Nevertheless, heterogeneous capabilities might constrain the ability to exploit their quality potential. Consequently, firms will prefer to focus on activities aligned with the skills accumulated inside their boundaries (Kogut and Zander 1992; Conner and Prahalad 1996). I expect that a winery will devote more attention to grape varieties with well-known features to its respective winemaker. Or, to put in another words:

Hypothesis 5: The stronger the perception that the reputation of a winery is tied to a mix of grape varieties, the higher the level of vertical integration.

¹⁵ The same study shows a convergence between the practices in established U.S. clusters – in special California, responsible for 79.7% of the national crushed grape production in 2010 – and in Old World regions. While the former group has become more specialized in a mix of varieties, the latter has seen a relative increase in the internal diversity.

Although wineries prefer to grow grapes believed to enhance their reputation, it is unclear whether the decision derives exclusively from the fear of haggling. In emerging regions, independent growers often have no credible threat against wineries. The qualitative findings presented by Miranda and Chaddad (2014) suggest that the “self-enforcing range” of contractual relationships in emerging clusters is considerable¹⁶. How rational would a hold-up be if nobody else in the neighborhood can use the same inputs as well as the original buyer? By the same token, there is no obvious theoretical relationship between the notions of “differentiation” and “opportunism”. As shown by Goodhue et al. (2003), a “small number problem” might emerge in regions marked by the harvest of lower-quality grapes. Hence, the idea of “appropriable quasi-rent” is not related to the intrinsic features of an asset, but to systemic considerations.

Some nascent clusters offer limited options for those interested in “buying”. Therefore, dependence from others might lead to acute adaptation problems. Interestingly, the risk from an excessive reliance on independent growers is even higher in the case of lower-quality grapes. For instance, the steady entry of newcomers to the wine industry since the turn of the twenty-first century potentially increases the bargaining leverage of input producers. It is true, the materialization of potential threats results from a series of factors, such as the concrete relationships between the parties in a transaction (Granovetter 1985). Still, “make-or-buy” decisions depart from an evaluation of the worst-case scenario

¹⁶ The “self-enforcing range” of a contractual relationship results from public and private enforcement (Klein 1996). Williamson (1985) asserts that formal agreements are necessarily incomplete. As a result, the ability of courts to settle disputes is limited. Why would the parties cooperate, then? To a great extent, the stability of long-term relationships depends on the existence of mutual economic interest (Zylbersztajn and Lazzarini 2005; Fernández-Olmos 2010a). In this sense, sudden changes in relative prices might incentivize a hold-up.

(Williamson 1993). Consequently, I hypothesize that the level of dependence from a certain variety will motivate a higher level of vertical integration, irrespective of the features of the grape.

Hypothesis 6: The dependence level from the two most relevant grape varieties used in production will be positively correlated with higher percentages of vertical integration.

Table 2 presents the hypotheses discussed above. I also summarize the empirical approach, outlining the operationalization strategy for each of the variables used in Section 6.

5 RESEARCH DESIGN

This study adopts a mixed-methods approach. Following Greene, Caracelli, and Graham (1989), I use a “development strategy”, which consists on the use of a qualitative analysis to inform and establish the basis for the quantitative research. On-site semi-structured interviews with the owners of six Missouri wineries were conducted between February and May of 2014. Originally planned to assess the “make-or-buy” decisions in the industry, the interviews showed that, among the smaller firms in the sample, the perceived optimal strategy was closer to a “make-as-much-as-you-can” setup. The qualitative evidence also suggested a huge gap between preferences and actual decisions, inspiring the hypotheses tested here (see Miranda and Chaddad 2014).

Table 2: Summary of predictions and results (dependent variable is percentage of vertical integration)

Hypothesis	Variable	Description	Expected sign	Results
<i>(1) The higher the number of years of experience in grape growing of a key respondent, the higher the level of vertical integration of the respective winery.</i>	Experience with viticulture	Years of experience in grape production.	+	Supported by models 2, 3, 4, 5, 6 and 7.
<i>(2) Wineries able to measure the objective attributes of grapes will “make” a smaller percentage of their total procurement.</i>	Measurement ability	Dummy variable, resulting from the sum of the responses given to a Likert scale-type item for the two most representative varieties used by a winery. Values between 0 and 7 were coded as 0 and values between 8 and 10 were coded as 1.	-	Supported by models 2 and 5.
<i>(3) The greater the level of cooperation with other wineries and independent growers, the lower the level of vertical integration of a winery.</i>	Cooperation with wineries and grape growers	Sum of the number of ties with individual grape growers and other wineries informed by the respondent, multiplied by the extent of the cooperation (scale from 1 to 5).	-	Not supported.
<i>(4) The existence of a relationship based on trust is negatively correlated with the level of vertical integration of a winery.</i>	Trust in independent growers	Dummy variable, resulting from the sum of the responses given to a Likert scale-type item for the two most representative varieties used by a winery. Values between 0 and 7 were coded as 0 and values between 8 and 10 were coded as 1.	-	Supported by models 3, 4, 6 and 7.
<i>(5) The stronger the perception that the reputation of a winery is tied to a mix of grape varieties, the higher the level of vertical integration.</i>	Reputation of the winery	Composite measure based on two Likert scale-type items. Variable created from the sum of the answers given to the two most representative varieties (Crombach’s alpha = 0.704).	+	Supported by models 4 and 7.
<i>(6) The dependence level from the two most relevant grape varieties used in production will be positively correlated with higher percentages of vertical integration.</i>	Dependence level	Variable created from the sum of the quantities used of the two most representative varieties, divided by the total winery production.	+	Supported by models 4 and 7.

5.1 Empirical strategy

Quantitative data was collected through a survey sent to key informants from wineries located in five American states. Lists of firms were obtained from the Grape and Wine Boards of Illinois, Michigan, Missouri, and New York. Vermont would be added to the research after a respondent strongly tied to the Northeastern wine industry provided a list of wineries from the “Green Mountain State”. The final mailing list included 549 firms, which received an electronic survey along with a support letter from the respective Board between February and March of 2015. Reminders were sent twice, followed by a round of phone calls to the wineries that had not answered the survey. Overall, between two and four contacts were made with each firm. The aggregate response rate of 23% is similar to the rates commonly obtained in firm-level studies¹⁷ (Paxson, Dillman, and Tarnai 1995).

Three stages of pre-testing were conducted. In 2012, wineries from Michigan, Missouri, and New York received a summarized version of the questionnaire – with a response rate of 33%. Then, academic researchers from three universities – Cornell University, Michigan State University and University of Missouri – and an expert from the University of Missouri’s Grape and Wine Institute evaluated the original instrument. Finally, I presented both the qualitative evidence collected by the on-site structured interviews with Missouri winery owners and the preliminary conclusions obtained from the first version of the survey in five different occasions. In each event, scholars, industry leaders and entrepreneurs commented on the assumptions and results.

¹⁷ The specific response rates for each state are Illinois, 27.3%; Michigan, 27.3%; Missouri, 30.2%; New York, 13.4%; and Vermont, 32.1%.

From the 127 respondents, 82.9% produced less than 10,000 cases of wine in 2014. Among these firms, 79 surveys had complete answers for the variables used here. To limit the sample to small wineries, I adopt a cut-off measure based on total production (Wines and Vines 2014). Three firms that produced more than 50,000 cases of wine in 2014 were excluded from the analysis, leading to a final sample of 76 wineries. Table 3 presents descriptive statistics, as well as pairwise correlations. Both the average age of the firms – 13.9 years – and the average experience of key respondents with grape production – 14.2 years – suggest a predominance of organizations established in the wake of the U.S. “wine revolution”.

I apply an Ordinary Least Squares (OLS) regression with robust errors and a Tobit model to analyze grape procurement strategies. The choice ensues from (i) the non-normal distribution of the dependent variable; and (ii) the fact that 15 wineries “buy” 100% of the used grapes, leading to values equal to zero to *Vertical Integration*. The data shows no multicollinearity, with both individual and average values for the variance inflation factor (VIF) close to 1.

5.2 Variable operationalization

My unit of analysis is the winery. I use data collected at both the firm level and the transaction level, constructing aggregate variables from the latter when necessary. Contrary to most empirical studies on organizational economics (see Sykuta 2008 for a discussion), the dependent variable here is continuous, reflecting the percentage of the total grape procurement vertically integrated by each winery in 2014. Previous studies transform

Table 3: Descriptive statistics and correlations^a

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11
1. Vertical Integration	47.95	37.549	1										
2. Size	15.02	21.251	-0.103	1									
3. Age	13.93	11.294	0.113	0.592**	1								
4. Geographic Location (0/1)	0.71	0.457	-0.254*	-0.286*	-0.438**	1							
5. Reputation of Grape	-0.010	0.828	0.112	0.114	0.063	-0.215	1						
6. Cooperation with Wineries and Independent Growers	51.71	47.650	0.088	0.080	-0.064	-0.028	0.129	1					
7. Experience with Viticulture	14.26	12.535	0.260**	0.207	0.370**	-0.131	0.167	0.064	1				
8. Measurement Ability (0/1)	0.63	0.486	-0.338**	0.052	0.127	-0.006	-0.017	-0.129	-0.036	1			
9. Trust in Independent Growers (0/1)	0.51	0.503	-0.489**	-0.019	-0.003	0.075	-0.036	-0.193	-0.064	0.511**	1		
10. Dependence Level	0.564	0.537	0.125	-0.142	-0.031	0.024	0.092	-0.138	-0.007	0.101	0.085	1	
11. Reputation of Winery	0.024	0.853	0.234*	0.254*	0.224	-0.262*	0.186	0.094	0.296**	0.065	0.089	-0.059	1

^a n = 76.

* p < 0.05; ** p < 0.01 (Two-Tailed Test).

continuous data into discrete categories, adopting a cut-off measure to classify firms according to their predominant sourcing choice (e.g., Monteverde and Teece 1982; Poppo and Zenger 1998; Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer 2009). I believe such approach would be unsuitable to the case at hand for two reasons. Firstly, I argue in Section 3 that small wineries from emerging regions generally pursue “make-as-much-as-you-can” strategies. Consequently, my goal is to identify the factors explaining convergence to this objective. Moreover, a discrete dependent variable for grape procurement based on firm-level data might encompass transactions with diverse features under the same label. In U.S. nascent clusters, where wineries often use different varieties in the production process, this potential problem is especially acute.

The control variables are measured as follows. Inspired by Benjamin and Podolny (1999) and Fernández-Olmos (2010b), *Size* is measured as storage capacity in gallons divided by 1000. The reason is straightforward: other variables, such as the number of acres owned by the winery or the number of employees, could be directly related to the boundary decision of the firm, producing biased estimates. Other control variables include the *Age* of the wineries and a dummy variable for *Geographical Location*, with 0 equivalent to Northeast – New York and Vermont – and 1 equal to Midwest – Illinois, Michigan, and Missouri. Finally, the variable *Reputation of the Grape Variety* is a composite variable resulting from three Likert scale-type items (see Table 4).

Table 4: Factor analysis

Survey Item	Reputation of the Grape	Reputation of the Winery
1. <i>This grape variety allows me to produce highly differentiated (distinctive) wines.</i>		0.718
2. <i>Consumers perceive the wines I produce with this grape variety as highly differentiated.</i>		0.736
3. <i>Relative to other varieties, growing this grape variety demands very specific knowledge on vineyard management.</i>	0.577	
4. <i>Considering the industry as a whole, consumers perceive wines produced with this grape variety as high quality wines.</i>	0.621	
5. <i>Compared to other grape varieties, the average cost of growing this variety is relatively high.</i>	0.732	
Eigenvalues	2.426	1.089
Crombach's Alpha	0.715	0.704

I employ the principal axis factoring extraction method and Varimax rotation. The Kaiser-Meyer-Olkin measure of sampling adequacy is equal to 0.710.

Reputation of the Winery is also a composite variable, created from two Likert scale-type questions. Since original answers were given to specific varieties, I sum the answers to the two most representative ones used by each firm. In both cases, the construction of the composite variable is based on the final values, which range between 2 and 10. In turn, the variable *Dependence Level* assesses the influence of the two most representative grape varieties used in wine production on grape procurement decisions. Originally, respondents furnished data in tons of grape per variety. After selecting the two

most important varieties in terms of quantity¹⁸, I convert the sum to gallons, multiplying the number by 150. Then, I divide the result by the total winery production in 2014, which was converted from cases to gallons through the multiplication of the original answer by 2.37753 (TTB 2015).

Measurement Ability and *Trust in Independent Growers* are dummy variables, obtained from the answers given to two Likert scale-type items, respectively: (i) *We are able to easily and accurately measure all relevant quality attributes of this grape variety if we have to acquire it from an independent grape grower*; and (ii) *For this variety, I know independent growers whose production I do not need to evaluate much because it has always been high quality*. As proceeded in the variables *Reputation of the Grape* and *Reputation of the Winery*, I sum the answers to the two most representative varieties. Final results from 2 to 7 are coded as 0, while those ranging from 8 to 10 are coded as 1 – implying ability to measure or the existence of strong ties to grape producers.

The characteristics of the available data motivate the creation of a dummy variable from data originally obtained at the transaction-level. Single Likert-type items cannot be interpreted as continuous (Clason and Dormody 1994; DeVellis 2012). Hence, the original numbers limit my ability to draw meaningful conclusions. At the same time, the surveyed wineries tend to carry out transactions with different partners. Assessing *Measurement Ability* or *Trust in Independent Growers* at the winery-level from the outset potentially lead

¹⁸ Whenever a winery used the same amount of three or more varieties in 2014, our choice follows a ranking of the most representative grapes in the total sample. The ten varieties with the greatest number of observations are: (1) Chambourcin; (2) Vignoles; (3) Riesling; (4) Cabernet Franc; (5) Norton; (6) Chardonnay; (7) Vidal Blanc; (8) Traminette; (9) Cayuga White; and (10) Pinot Noir.

to serious bias. In particular, responses could reflect the experience of individuals in one specific exchange, or with a single variety. By coding answers between 2 and 7 as a sign of lack of trust or measurement ability, I offer conservative estimates of their influence on procurement strategies.

The variable *Experience with Viticulture* is measured in years and reflects the personal story of respondents. Given the small size of the wineries in the sample – mean of 3.56 full-time employees –, this variable offers an accurate proxy of the capabilities found in the organization. For instance, respondents hold key positions in the surveyed firms: 76.3% are the owners, 15.8% the managers and 7.9% the winemakers. Finally, *Cooperation with Wineries and Grape Growers* is calculated in two steps. I multiply the number of ties of each firm to both wineries and independent producers by the extent of collaboration – scale of 1 to 5. Similar procedures are adopted in other empirical studies applied to the wine industry (Giuliani 2011). Then the results are summed for each firm.

6 RESULTS AND DISCUSSION

Tables 5 and 6 present the results of the quantitative analysis. Among the control variables, geographical location has a significant effect on the rate of vertical integration (Models 1, 2, 3, 4, 5, 6 and 7). Indeed, the Midwestern wineries in the sample rely on lower average levels of in-house grape production – 41.8% – than the analyzed Northeastern firms – 49.1%. The qualitative evidence collected during the research points to a potential influence of exogenous factors on such outcome. According to many Michigan wineries, the harsh winter of 2014 severely affected vineyards throughout the state. Not surprisingly,

the surveyed Michigan firms “made” an average of 45.4% of the grapes used in the same year, against 53.8% in New York. On the other hand, the use of a more comprehensive dataset suggests a higher level of vertical integration for Northeastern wineries irrespective of climate events¹⁹. Further studies can assess whether these differences are transitory, as well as the influence of the structural characteristics of clusters on percentages.

As predicted by Hypothesis 6, the relative dependence on the two most used grape varieties influences procurement strategies in U.S. emerging areas (Models 4 and 7). Nevertheless, the relationship is weaker than the prediction of TCE, possibly reflecting not only the fear of haggling, but also path dependence. In fact, the quantitative analysis says little when it comes to answering the question of “what came first” – the winery or the vineyard. An inspection of the data reveals interesting aspects for further research. Remarkably, the values for the variable *Dependence Level* in the dataset are higher than 1 for 17.1% of the firms in the sample, suggesting the sale of inputs to potential competitors (see also Tuck and Gartner 2013).

The addition of a capabilities-based explanation to the “make-or-buy” trade-off opens room for the analysis of the directional nature of the phenomenon. Miranda and Chaddad (2014) describe the case of an independent grower whose decision to produce wine stemmed from the perception that the relationship with grape buyers was too conflictive. The example illustrates two ideas often overlooked by the literature. First of

¹⁹ In 2014, the average rate of vertical integration per U.S. state among the 76 firms in the sample was the following: 50.8% in Illinois; 35% in Michigan; 35.6% in Missouri; 56.5% in New York; and 84% in Vermont. For the sake of comparison, the same percentages calculated from a broader sample – 127 wineries – are: 49.8% in Illinois; 45.4% in Michigan; 42.8% in Missouri; 53.8% in New York; and 51.8% in Vermont.

Table 5: OLS results (dependent variable is percentage of vertical integration)

Variables	Model 1	Model 2	Model 3	Model 4
Intercept	58.298 (14.27)***	68.809 (15.39)***	76.388 (13.83)***	70.181(15.33)***
Size	0.046 (0.24)	0.059 (0.21)	0.071 (0.19)	0.072 (0.17)
Age	-0.016 (0.58)	-0.177 (0.61)	-0.253 (0.58)	-0.255 (0.52)
Geographic location	-19.462 (11.08)**	-19.945 (10.98)**	-17.727 (10.62)*	-14.696 (11.01)*
Reputation of the Grape Variety	2.160 (4.64)	0.653 (4.79)	0.747 (4.04)	-1.163 (3.80)
Cooperation with Wineries and Independent Growers	0.057 (0.99)	0.013 (0.09)	-0.027 (0.08)	-0.021 (0.08)
Experience with Viticulture		0.677 (0.28)**	0.661 (0.28)**	0.505 (0.28)**
Measurement Ability		-25.049 (8.39)***	-9.498 (8.41)	-10.920 (8.66)
Trust in Independent Growers			-29.979 (8.23)***	-32.365 (8.53)***
Dependence Level				13.694 (8.40)*
Reputation of Winery				9.650 (5.48)**
R^2	0.07	0.22	0.34	0.41

Number of observations = 76. One-tailed tests, with * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

all, vertical integration ensues from the inability of the parties to reach mutually beneficial terms. In other words, both the winery and the farmer make organizational choices. Secondly, “remediability” (Williamson 1994) is contingent on the set of feasible arrangements to each agent. The prospects for minimizing the governance costs of

transactions with newcomers might offer an additional incentive for experienced grape growers tempted to expand the boundaries of their firms.

At the same time, the qualitative evidence from Missouri points to the widespread adoption of a “trial-and-error approach” among small wineries (Miranda and Chaddad 2014). Firms with limited bundles of capabilities and resources might decide to focus on the vertical integration of a few varieties considered easier to grow. The scenario influences the assessment of the relationship between experience with viticulture and procurement strategies. Although Models 2, 3, 4, 5, 6 and 7 support Hypothesis 1, the marginal effect of the variable *Experience with Viticulture* on procurement choices is relatively low. Future studies might explore the consequences of experience on variables such as the quality of the harvested grapes or firm performance. Does a superior ability to manage a vineyard explain the prices paid to a bottle of wine? Previous research discusses the complex relationship between identity, quality attributes and economic rewards (Benjamin and Podolny 1999; Castriota and Delmastro 2015). In my view, emerging clusters offer an appealing empirical setting for the analysis of the diverse factors behind winery success.

Models 2 and 5 support Hypothesis 2. However, the coefficient for *Measurement Ability* becomes non-significant after *Trust in Independent Growers* is added to the analysis. Consistent with Hypothesis 4, the existence of trust seems to be an essential component in the relationship between wineries and independent growers in U.S. emerging areas (Models 3, 4, 6 and 7). These combined results reinforce the qualitative evidence collected by Miranda and Chaddad (2014), who highlight the importance of trust to the

Table 6: Tobit results (dependent variable is percentage of vertical integration)

Variables	Model 5	Model 6	Model 7
Intercept	68.571 (15.93)***	78.167 (14.89)***	72.286 (14.83)***
Size	0.112 (0.28)	0.132 (0.25)	0.146 (0.24)
Age	-0.302 (0.62)	-0.412 (0.57)	-0.465 (0.55)
Geographic location	-22.953 (11.77)**	-20.642 (10.86)**	-17.616 (10.44)**
Reputation of the Grape Variety	1.092 (5.74)	1.310 (5.27)	-0.690 (5.04)
Cooperation with Wineries and Independent Growers	0.006 (0.10)	-0.051 (0.09)	-0.043 (0.09)
Experience with Viticulture	0.881 (0.41)**	0.863 (0.37)**	0.694 (0.36)**
Measurement Ability	-30.811 (9.80)***	-11.101 (10.27)	-12.483 (9.73)
Trust in Independent Growers		-38.100 (10.09)***	-40.125 (9.62)***
Dependence Level			14.367 (8.08)**
Reputation of Winery			10.285 (5.56)**
<i>Log Likelihood</i>	-321.344	-314.569	-311.597

Number of observations = 76. One-tailed tests, with * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

minimization of governance costs by small wineries unable to evaluate the quality attributes of inputs produced elsewhere. A relevant question for future research is whether trust represents a requisite for the establishment of informal relationships in emerging clusters. In fact, the continued exchange between independent parties might lead to the

emergence of strong ties, strengthening the relational aspect of the contract through time (Fraser 2005; Somogyi et al. 2010; Codron, Montaigne, and Rousset 2013).

The quantitative evidence also supports Hypothesis 5. More specifically, small wineries tend to vertically integrate grape varieties that contribute to their reputation. Interestingly, the coefficients for *Reputation of the Grape Variety* are non-significant, suggesting that the trends in established areas exert a limited influence in the choice to “make” a variety. Together with the conclusions found in the literature, the results show a tendency towards specialization in the use of inputs (i) well-adapted to climatic conditions (Alston, Anderson, and Sambucci 2015); and (ii) aligned with the capabilities and resources found inside the firm. Further studies can assess the impact of different levels of convergence on procurement strategies.

In the long run, specialization can ease the emergence of a common identity among producers, improving the prospects for collective actions. On the other hand, it is not clear how the constraints imposed by the *terroir* and those derived from the lack of skills will interact. Although Hypothesis 3 is not supported, structural factors should play a significant role in the process. From a comparative perspective, research has shown that the distribution of the economic gains from the consolidation of a wine cluster is highly dependent on (i) the level of heterogeneity in the capabilities of its members (Giuliani 2011) and (ii) the network features (McDermott, Corredoira, and Kruse 2009).

Finally, cooperation with independent grape growers and other wineries is not correlated with the level of vertical integration. The lack of statistical support for Hypothesis 3 should be taken cautiously though. Future studies have to open the “black box” of cooperation in U.S. emerging wine regions, discussing the effects of specific

cluster features on organizational outcomes. Moreover, researchers can assess the role of heterogeneity on the nature of the interactions among firms in a geographical area. Giuliani (2007a, 2011) asserts that knowledge networks result from the exchange of information among firms with similar levels of skills. In this sense, formal attachment to a formal initiative can be misleading. Relevant questions for the future include: how do wine trails influence “make-or-buy” choices in the industry? Does cooperation help newcomers to improve performance? Or, rather, effective inter-firm collaboration is contingent on the ownership of homogeneous “absorptive capacities”? The incipency of most initiatives offers a unique possibility for time-series studies.

I do not discuss the influence of interactions between wineries and industry associations, public agencies and universities on grape procurement strategies. Through the provision of knowledge, public and private organizations directly influence the configuration of the set of feasible arrangements to firms in emerging clusters. Defining whether the “making” enhancing effect outweighs the “buying” enhancing effect is a matter of empirical verification. In fact, such ties might improve wineries’ ability both to manage vineyards and to measure the quality attributes from inputs grown elsewhere. In Section 3, I assume that the typical small winery from emerging regions perceives “make-as-much-as-you-can” as the optimal strategy. However, it is also true that firms strongly constrained in their organizational choices might prefer to focus on acquiring basic expertise on the governance of “buying” relationships in the short-term.

7 CONCLUDING REMARKS

What are the drivers of grape procurement strategies in U.S. emerging wine regions? Are these decisions constrained by the same factors as in established areas? This essay discusses the two aforementioned questions. As the “wine revolution” in rural America takes shape, an unavoidable question relates to the nature of the thousands of firms recently established throughout the country since the turn of the twenty-first century. By offering an interpretation to the sourcing choices of small American wineries based on their actual characteristics and patterns of relationship with the external world, I expect to pave the way for a more comprehensive assessment of both their economic performance and survival prospects.

Consistent with the view that knowledge plays a decisive role in boundary decisions (Demsetz 1988; Winter 1988; Kogut and Zander 1992; Madhok 2002), I show that previous experience with viticulture is positively associated with higher levels of vertical integration in the emerging regions analyzed. On the other hand, the ability to evaluate the objective attributes of grapes produced by independent growers appears to exert a limited influence on actual procurement decisions, suggesting a widespread lack of measurement skills among the surveyed small firms. The results also point out to the importance of informal ties in the governance of the transactions carried out by the wineries in the sample. In particular, trust is an essential supporting mechanism in the governance of less coordinated exchanges, reflecting the constraints faced by many firms to devise complex formal arrangements.

The following limitations of this essay have to be considered. Firstly, the characterization presented in Section 3 is based on qualitative evidence from Missouri (Miranda and Chaddad 2014). In-depth case studies in other emerging clusters would enrich our understanding of the nature of the “make-or-buy” decisions in the industry. Likewise, advances in the literature should furnish the elements for a more dynamic picture of the phenomenon at hand. In addition, I implicitly assume that the key respondents pursue profit maximization. Although the approach is consistent with organizational analysis, Scott Morton and Podolny (2002) shows that winery owners might have a broader set of motivations. Further studies should investigate the relationship between the goals of entrepreneur and grape procurement decisions. Finally, the reliance on dummy variables to test two of the six hypotheses opens room for additional measurement efforts. This is especially important for multidimensional phenomena, such as trust.

Overall, the ideas presented here contribute to our understanding of organizational decisions in emerging industries. Remarkably, the difficulties faced by the small wineries in the sample should not be automatically associated with a specific strategy. Potential threats to survival derive mainly from highly constrained sets of feasible procurement choices. In this sense, learning to “buy” – i.e., measuring the attributes of the acquired grapes and designing contracts – is as important as properly managing a vineyard. In turn, the enhancement of the bundles of capabilities and resources owned by these firms can potentiate the governance cost-minimizing effect of strong ties. Indeed, the literature provides several examples of the importance of trust on the design of informal and informal agreements in established wine clusters (Somogyi et al. 2010; Fernández-Olmos 2011; Codron, Montaigne, and Rousset 2013; Wilson, MacDonald, and Monnane 2015).

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CHAPTER IV

ORGANIZATIONAL COMPLEXITY IN U.S. EMERGING WINE REGIONS²⁰

1 INTRODUCTION

A long-standing debate relates to the factors determining firm boundaries. Departing from Coase's (1937) pioneering contribution, different interpretations to the phenomenon have emerged in the last three decades of the twentieth century (see Gibbons 2005 and Argyres et al. 2012 for reviews). Despite the diversity of assumptions and explanatory variables, overall predictions generally rule out any form of enduring organizational heterogeneity among identical exchanges. In other words, given a set of similar exogenous conditions, "make-or-buy" choices tend to converge to a unique efficient outcome. An example is found in Oliver Williamson's (1985, 1996) transaction cost economics (TCE), whose fundamental hypothesis prescribes a discriminating alignment between the features of the transaction and the characteristics of the governance mechanism adopted.

Similarly, institutional complementarities play no role in TCE's logic. Williamson (1991) argues that a particular syndrome of attributes defines a governance mechanism, influencing its strengths and weaknesses. For example, the prerogative to exert fiat and the high powered incentives furnished by the "invisible hand" belong to opposite extremes of

²⁰ The author gratefully acknowledges the support of the National Institute of Food and Agriculture, U.S. Department of Agriculture, through Award 2011-68006-30815. The Institutional Review Board approval number is 1190598.

the same continuum. Having the best of each world is unrealistic (see Foss 2003). On the other hand, every organizational challenge appears to find a sufficient response in TCE's stylized prescriptions (Granovetter 1985). In fact, difficulties derive from systemic factors, such as uncertainty or the impossibility to find alternative partners in case of contract termination. Following the identification of a potential threat, a process of nearly frictionless adaptation ensues (Liebowitz and Margolis 1995; Nickerson and Silverman 2003).

Yet, organizational heterogeneity is pervasive. Firstly, firms often make and buy the same good or service. The adoption of concurrent sourcing has puzzled scholars since the early days of TCE. Although contemporaneous contributions discuss similar phenomena (Harrigan 1986), the foundations of the "discriminating alignment hypothesis" leave no room for "make-and-buy" strategies (see Williamson 1985, 1996). Secondly, descriptions of structures with two or more reinforcing mechanisms within the same exchange are overly found in the literature. In particular, the interaction between contracts and trust has galvanized the interest of researchers (Ouchi 1980; Bradach and Eccles 1989; Lyons and Mehta 1995; Uzzi 1996; James and Sykuta 2005). Again, Williamson's (1993a) arguments point to the redundancy of combining diverse arrangements to deal with a specific transaction.

Both theory and measurement hurdles have shaped the responses over the years. Sykuta (2008) notes that several assessments of Williamson's (1985) ideas use a set of cut-off measures that intend to capture the predominant organizational choice given an asset specificity level. Aimed at allowing the study of a microanalytical approach under conditions of data scarcity, the empirical strategy implicitly labels phenomena such as

concurrent sourcing as “anomalies”. It was only in the 1990s that “make-and-buy” strategies started to receive systematic attention (see Mols 2010 for a review). At the same time, tests of the “discriminating alignment hypothesis” tend to fit observed arrangements into TCE’s generic categories – market, hierarchy, or hybrid form. Important nuances are lost along the process, affecting the identification of potential complementarities among governance mechanisms even in the same transaction.

By analyzing the grape procurement decisions of bonded wineries from five U.S. states – Illinois, Michigan, Missouri, New York, and Vermont –, this article adds to the growing literature on the adoption of complex organizational forms. In agreement with Bradach and Eccles’ (1989) contribution, I highlight the importance of the transactional context in the governance of an exchange. As it will be argued in the next few pages, the use of aggregate data to test a hypothesis rooted in a microanalytical rationale contributes to overshadowing the diversity of real-world structures. Moreover, the use of allegories such as the “market-hierarchy continuum” might misleadingly lead to the conclusion that organizational choices are unconstrained.

Directly influenced by Coase’s (2012) arguments, I contend that the empirical study of procurement decisions should depart from a careful description of the arrangements designed in a specific context. This article tests hypotheses derived from previous efforts of understanding the mechanisms adopted in U.S. emerging wine regions (Allen 2014; Miranda and Chaddad 2014). Reflecting the ownership of heterogeneous abilities to implement a “make-or-buy” strategy (Langlois 1992; Mayer and Argyres 2004), several wineries lack the capabilities needed to devise complex governance structures. The unit of analysis – the sourcing choice – is conceived as a “moderator” (see Mols 2010; Heide,

Kumar, and Wathne 2014), whose architecture resonates internal constraints to make organizational choices.

Similar to the findings published elsewhere (Goodhue et al. 2003; Fraser 2005; Franken 2014; Franken and Bacon 2014), measurement skills help to explain the acquisition of grapes from independent growers. However, the decisive role played by trust in the adoption of “buy-type” structures shades doubt on the actual ability of firms to evaluate inputs. Consistent with the available qualitative evidence (see Miranda and Chaddad 2014), the results indicate the substitutive effect of strong ties on the capacity to oversee the performance of a contractual obligation. In other words, bonding replaces active assessment. In turn, concurrent sourcing is associated with the use of grape varieties with a differentiation potential. Given the stated intention of many wineries to depend on “making” as much as possible, the conclusion suggests an intense learning effort in U.S. nascent wine clusters.

The remainder of this article is organized as follows. Sections 2 and 3 review the central elements of the literature on the adoption of complex organizational forms. Emphasis is given to the influence of theoretical ideas and empirical hurdles on the current tendency of oversimplifying the description of governance structures. Then, I summarize the main features of U.S. emerging wine areas, paving the way to the establishment of the hypotheses to be tested. While Section 5 explains the research design, Section 6 presents the results. The paper is closed with a discussion of my conclusions and recommendations of future research.

2 THE GOVERNANCE STRUCTURE AS A “MODERATOR”

Beginning in the 1990s, several contributions describe the occurrence and stability of complex forms. Albeit the lack of consensus, the literature revolves around a set of core issues. Sections 2 and 3 discuss the fundamental elements of the debate. Before, I underscore the apparent contradiction between the considerable support to the “discriminating alignment hypothesis” (Shelanski and Klein 1995; Richman and Macher 2008) and the growing awareness of the existence of “puzzling” strategies. To a great extent, TCE’s empirical appeal stems from the capacity to frame organizational phenomena as the outcome of an unconstrained choice. Together with the use of the “remediability criterion” (Williamson 1993), the assumption allows scholars to assume the efficiency of observed arrangements²¹.

Claiming that the adoption of a governance mechanism represents the manifestation of a successful economizing behavior has weakened the impetus for a transaction cost-based explanation of firm heterogeneity. Systemic in nature, dimensions such as asset specificity and uncertainty say little about the antecedents of an exchange²². In other words, TCE privileges the scrutiny of ex-post adaptation, taking the choice of a specific partner as given (see Madhok 2002). Williamson’s (1985) account promptly motivated a series of reactions. During the 1990s, criticism targeted the behavioral assumptions sustaining the “discriminating alignment hypothesis”. As Argyres et al. (2012) point out, establishing an

²¹ Liebowitz and Margolis (1995) point out that Williamson (1985) assumes a particular interpretation to the notion of “path dependence”. Under TCE’s logic, intertemporal distortions can be quickly corrected once inefficiency is identified.

²² Although Williamson (1985) also points to the influence of “frequency” in delineating firm boundaries, the variable has received limited attention from the empirical literature. See: Klein (2005).

“opportunism-free” approach became a recurrent goal (e.g., Conner and Prahalad 1996; Ghoshal and Moran 1996). It was only after the turn of the twenty-first century that scholars would increasingly acknowledge the potential complementarities between TCE key elements and those discussed by other strands of the literature on organizational economics (Mahoney 2001; Foss and Foss 2004; Argyres and Zenger 2012).

More prosaic choices also affected the development of the field. Although Williamson (1985) stresses the microanalytical character of TCE, empirical studies generally rely on a broader unit of analysis. Instead of collecting data at the transaction level, researchers tend to aggregate different procurement decisions into a synthetic measure. A fundamental decision ensues: defining the nature of the dependent variable. The typical test of the “discriminating alignment hypothesis” relies on a cut-off measure that intends to capture the predominant governance choice (see Sykuta 2008 for a discussion). At the same time, predicting the convergence towards a unique outcome is contingent on the identification of contrasting alternatives. Not surprisingly, Williamson (1991) emphasizes the internal consistency of the particular syndrome of attributes pertaining to an arrangement. Leaving no room for overlap, the approach assumes that the strengths of a mechanism are closely related to its weaknesses. Or, to use the jargon, selective intervention is unfeasible (Williamson 1993b).

Still, “misalignments” are often observed. Since Monteverde and Teece’s (1982a) contribution, innumerable studies have reported the coexistence of diverse arrangements to govern similar exchanges. According to Williamson (1985), the phenomenon should be transitory. Contrary to TCE’s predictions, researchers have also identified the interaction of two or more mechanisms within the same transaction (Bradach and Eccles 1989; Uzzi

1996; Poppo and Zenger 2002). Interestingly, each of these deviations has inspired a different response. While the persistence of “make-and-buy” strategies has fostered the publication of articles focused on the logic behind “plural forms” (Dutta et al. 1995; Heide 2003; Parmigiani 2007; Mols 2010; Krzeminska, Hoetker, and Mellewigt 2013; Ménard 2013; Puranam, Gulati, and Bhattacharya 2013; Heide, Kumar, and Wathne 2014; Schnaider, Raynaud, and Saes 2014), the interaction among various syndromes of attributes in the same exchange has fueled explanations to the existence of “hybrid structures” (Hennart 1993; Ménard 2004; Makadok and Coff 2009; Chaddad 2012).

Although a broadening of the taxonomy sheds light on governance structures formerly classified as “anomalies”, allegories from the past exert a decisive influence on how scholars approach organizational diversity. An example is the idea of a continuum from market to hierarchy. Ironically, an insistent critic of the so-called “blackboard economics” (Coase 2014) is remembered as the precursor of an abstraction rooted in ideal forms. Perhaps Hennart (1993) gives the best definition of the rich mosaic of arrangements between the overly explained extremes: the “swollen middle”. Would the identification of unique syndromes of attributes suffice to place such myriad of structures sequentially? Despite the arguments forwarding the approach (Ménard 1996), the question is far from settled.

In fact, understanding the nature of complex organizational forms possibly implies adapting old representations. Four year after the publication of “*The Economic Institutions of Capitalism*”, Bradach and Eccles (1989) contend that assuming a continuum from market to hierarchy is misleading (see also Hodgson 2014). The reason: the allegory wrongly assumes that the attributes found in each of the extremes are mutually exclusive.

The same article introduces the notion of “plural form”, whose existence denotes the coexistence of diverse mechanisms performing an identical function. Later associated with strategies such as concurrent sourcing (Ménard 2013), these insights shed light on broader phenomena. To some extent, the aforementioned hurdles to test the “discriminating alignment hypothesis” have obscured the nuances behind the original discussion.

Fundamentally, Bradach and Eccles (1989) challenge the analytical focus delimited by Williamson (1985). For the most part, TCE conceives the establishment of governance mechanisms as a reactive process. Or, to put in another words, for each generic challenge, a standard response exists. By calling attention to the importance of the transactional context, the idea of “plural form” stresses that governance structures result from an explicit effort of institutional building. Resulting from micro and macroanalytic considerations, organizational choices are linked to a set of available strategies given the context. Of course, defining what a firm can do – be it “making” or “buying” – depends on the capabilities and resources found inside its boundaries and those owned by potential partners and competitors (see Madhok 2002).

In this sense, assuming that firms purposefully engage in the designing of arrangements demands the addition of new constraints to the study of economic organization. In particular, the ability to devise contracts or to develop organizational routines should not be taken for granted (Langlois 1992; Mayer and Argyres 2004). In fact, the comparison among “one-size-fits-all” solutions preclude the recognition of organizational diversity. Does every written contract – or, more generally, “hybrid form” – perform the same function? How should researchers deal with arrangements composed

by two or more interacting mechanisms? Can these observations be compared with pure forms, some of them restricted to a single relationship?

Although transaction cost-based principles can enlighten these questions, TCE offers no specific guidelines. At the same time, most of the empirical literature has dealt with these limitations on an *ad hoc* basis, defining the unit of analysis according to the nature of the data at hand. For example, no consensus exists on how cases of concurrent sourcing should be compared to pure forms. It is true, the association between organizational choice and the features of the exchange (Williamson 1985) grants considerable flexibility to researchers. However, the approach says little when it comes to analyzing the effects of relational variables on “make-or-buy” decisions. In fact, behind a generic denomination – e.g., “hybrid” – there might exist different numbers of actual relationships. The same applies to cases of plural governance.

Still, useful notions have emerged in the search of answers to the existence of institutional diversity. Reacting to the difficulty of fitting concurrent sourcing on a microanalytical logic, Mols (2010) argues that governance structures act as a “moderator”. The idea conceives an organizational architecture as an answer to a broader set of challenges – e.g., measurement, value protection, or problem solving (see also Heide, Kumar, and Wathne 2014). More specifically, multiple potential threats inspire the adoption of several coexisting mechanisms. Obviously, moving beyond generic forms demands a previous description of the available choices. If agents actively devise contractual provisions and routines with the goal to mitigate a specific mix of transactional hazards, the nature of the trade-off to be analyzed deserves explanation.

In summary, the idea of governance structure as a “moderator” acknowledges the multiple transactional hazards affecting “make-or-buy” choices. The notion also grants a more active role to economic agents in the effort to establish an organizational architecture, opening room to a deeper assessment of complementarities and constraints affecting its construction. Although TCE’s foundations have allowed the consolidation of a considerable body of evidence, the search for generic labels – and the subsequent placement on a continuum – has precluded a deeper scrutiny of complex forms. To accomplish the goal, more attention has to be given to the features of the real-world arrangements. Before organizational decisions are evaluated, researchers need to clearly identify the alternatives to be chosen.

3 THE ADOPTION OF COMPLEX FORMS

What are the drivers of adoption of complex forms? I argue in Section 2 that using an aggregate variable to describe “make-or-buy” decisions has affected the identification of heterogeneity. Since TCE implicitly assumes a nearly frictionless adaptation to new exogenous conditions (Liebowitz and Margolis 1995; Nickerson and Silverman 2003), discussing the actual characteristics of an arrangement becomes unnecessary. Two specific caveats ensue: (i) the use of a cut-off measure obscures divergent choices inside the boundaries of the firm; (ii) the effort to label real-world arrangements with generic denominations overshadows the particular features of the structures designed by different organizations.

In this sense, the idea of governance structure as a “moderator” (Mols 2010; Heide, Kumar, and Wathne 2014) allows the recognition of the importance of purposeful action in the establishment of a governance structure. That said, what are the fundamental dimensions behind the design of a particular architecture? Inspired by Puranam, Gulati, and Bhattacharya’s (2013) discussion of the adoption of concurrent sourcing, Section 3 explores two factors: complementarities and constraints. Following my interpretation of Bradach and Eccles’ (1989) ideas, I expand the use of such categories to the analysis of different manifestations of organizational diversity.

3.1 Complementarities

Oliver Williamson’s (1985, 1991) “discriminating alignment hypothesis” has exerted a considerable influence on the analysis of firm boundaries. Yet, as Demsetz (1988) points out, TCE is silent about the drivers of organizational heterogeneity (see also Argyres et al. 2012). What does explain the apparent paradox? To a great extent, TCE’s “empirical success story” ensues from the nature of its basic proposition. By providing a “one-size-fits-all” solution to the problem of order, the approach has set the stage for the consolidation of a broad body of supporting evidence (Shelanski and Klein 1995; Richman and Macher 2008) based on a simple but powerful idea: transactions with the same characteristics will be governed by arrangements with similar attributes.

Since the publication of *“The Economic Institutions of Capitalism”* in 1985, thousands of pages have discussed the strengths and weaknesses of Williamson’s arguments. Remarkably, these contributions have done little to change the fundamental

features of TCE. It suffices to compare early theoretical developments (Williamson, 1979) with pieces published more than three decades later, such as Tadelis and Williamson (2012). Leaving aside rhetorical refinements, the drivers of adoption of a specific organizational arrangement – asset specificity, frequency and uncertainty – have remained stable over the period. The same applies to the predicted features of the chosen modes of governance, whose generic attributes embody (i) a particular contract law regime; (ii) the level of incentives influencing action; and (iii) the nature of authority for dispute settlement (Williamson 1991).

TCE's ability to respond to suggestions of amendment has influenced the acceptance of critiques to Williamson's fundamental hypothesis. Take the case of the contribution by Bradach and Eccles (1989). Often cited by the pioneering use of the term "plural form", the article presents an idea similar to the one found in Granovetter (1985): effective adaptation results from the influence of different governance structures in the same exchange. Moreover, Bradach and Eccles (1989) contend that strategic decisions ensue from micro and macro considerations (see also Heide, Kumar, and Wathne 2014). Together, these arguments enrich the typology proposed by Williamson (1985), stressing the function of institutional complementarities in the promotion of order (Milgrom and Roberts 1994; Poppo and Zenger 2002; Lazzarini, Miller, and Zenger 2004; Foss et al. 2006).

At the same time, a growing literature has unveiled the influence of complementarities among assets on the "make-or-buy" trade-off (see Parmigiani and Mitchell 2009). At the root of the argument is the idea that firms are bundles of knowledge with different degrees of tacitness (Kogut and Zander 1992). In this sense, boundary

decisions ensue not only from transaction-cost considerations, but also from a comparative assessment of the capabilities and resources accumulated inside an organization and those detained by its potential partners (Madhok 2002; Argyres and Zenger 2012). As pointed out by Langlois (1992), teaching and learning to manufacture a certain good are important sources of governance costs through time. In other words, to vertically integrate production a firm has to know how to “make” it and, in the long-term, “make” it better than anyone else (see also Miranda and Chaddad 2014).

Based on the assumption of “technological separability”, the “discriminating alignment hypothesis” opens limited room for the study of complementarities. After all, the microanalytical logic proposed by Williamson (1985) suggests the scrutiny of individual exchanges. Nevertheless, the broadening of TCE’s unit of analysis would not enhance its ability to assess the potential benefits of transactional synergies. Given the disregard of the role of idiosyncratic knowledge in the establishment of organizational boundaries (Demsetz 1988; Winter 1988), the approach assumes identical production costs across the participants of a market (Riordan and Williamson 1985). Consequently, it fails to explain why some firms decide to “make” a set of related products while others prefer to outsource production.

In addition, institutional complementarities play no role in TCE. Williamson's (1993a) defense of opportunism as a realistic behavioral assumption illustrates the argument. By insisting on the sufficiency of a generic governance mechanism for the promotion of order, the approach overshadows the considerable diversity found in real-world arrangements. Researchers have increasingly acknowledged the complex interaction between market and hierarchy-type attributes in the so-called “hybrid forms” (Hennart

1993; Makadok and Coff 2009; Chaddad 2012). However, even the polar forms in the “make-or-buy” continuum might be simultaneously influenced by two or more structures. For example, bureaucracies unable to establish clear standards of performance evaluation rely on alternative informal mechanisms, such as trust, to align incentives (Ouchi 1980). By the same token, adaptation in arms-length relationships is often facilitated by supporting networks rooted in non-economic variables, such as ethnicity (Uzzi 1996).

Not surprisingly, TCE’s aptitude to deal with organizational complexity is limited. Deviations from the “discriminating alignment hypothesis” should be temporary (Williamson 1985) or resulting from an imprecise evaluation of the transactions at stake (He and Nickerson 2006). Moreover, the approach implicitly assumes that marginal governance costs do not respond to volume changes, ruling out the possibility of organizational diseconomies of scale (Puranam, Gulati, and Bhattacharya 2013). Interestingly, Williamson (1985) does not incorporate the argument found in Coase (1937) that, *ceteris paribus*, the progressive expansion of firm boundaries increases the likelihood of managerial mistakes. Under TCE’s lenses, the main disadvantages brought by vertical integration refer to the predominance of low-powered incentives in hierarchies.

Two examples illustrate the difficulty of designing a TCE-based explanation for the existence of organizational complexity. Contrary to the available definitions in the literature (see Mols 2010), Parmigiani (2007) employs the term “concurrent sourcing” and “hybrid forms” interchangeably, associating both notions with intermediate levels of asset specificity. As Puranam, Gulati, and Bhattacharya (2013) would later note, the interpretation is imprecise. In turn, Ménard (2012) argues that “plural forms” ensue from the impossibility of perfectly measuring governance costs. The argument assigns a

defensive function to the structure, seen as a reaction against hurdles such as technological uncertainty or the lack of bargaining leverage. Still, agents devise arrangements with the generic attributes described by Williamson (1991), limiting the interaction between different mechanisms.

3.2 Constraints

Concurrent sourcing occurs when an organization simultaneously “makes” and “buys” the same input. Although similar definitions coexist in the literature, the actual meaning of the term highly depends on previous theoretical choices. In fact, the idea of “similarity” hides a great deal of complexity (Krzeminska, Hoetker, and Mellewigt 2013). Take the example of asset specificity, a fundamental explanatory variable in the “discriminating alignment hypothesis”. Under TCE’s logic, the degree of idiosyncrasy of an investment is determined by the prevalent characteristics of the market. Responding to diverse contexts, different governance mechanisms might be established to support the exchange of supposedly identical goods (He and Nickerson 2006). For instance, vertical integration ensues from “small-numbers bargaining”, a systemic condition (Klein, Crawford, and Alchian 1978).

As discussed in Section 2, answers to the existence of concurrent sourcing have largely depended on the operationalization of the notion of “transaction”. Most tests of the “discriminating alignment hypothesis” use data at the firm level, aggregating similar exchanges carried out with diverse parties under the same generic label. The empirical strategy is consistent with Williamson’s (1985) assumption that a specific mechanism

contains all of the needed remedies in case of maladaptation (Granovetter 1985). On the other hand, it overshadows a significant manifestation of organizational diversity, potentially leading to estimation bias (Puranam, Gulati, and Bhattacharya 2013). Needless to repeat, TCE's rationale also understates the interactions among governance mechanisms within the same transaction.

To a great extent, TCE's insufficient explanation of the nature of transaction costs explains its incapacity to grasp the nature and consequences of institutional complexity. Consider again the case of asset specificity. As Demsetz (1988) points out, the framework does not clearly relate the variable with the magnitude of the governance costs faced by agents. Given a level of idiosyncrasy equal to k , Williamson (1985) argues that the burden from the establishment of a hierarchy is superior than the one associated with the creation of a "make-type" arrangement. However, no specific assumptions on the actual behavior of each of the curves is made. More specifically, TCE implicitly suggests that, *ceteris paribus*, every firm is equally able to discover what the relevant prices are, negotiate and enforce contracts. Hence, organizational choice is unconstrained.

Of course, finding potential partners, designing contracts and engaging in production demand skills unavailable to many agents (Langlois 1992; Madhok 2002; Mayer and Argyres 2004). Therefore, the magnitude of the governance costs from a specific choice should be a function of the capabilities and resources detained by the organization. Figure 1 illustrates the argument. A test of the "discriminating alignment hypothesis" would not identify that, even in the same environment, the asset specificity levels that motivate vertical integration differ among firms. For example, *Firm 2* might have developed superior routines that positively affect its ability to solve internal disputes.

Consequently, it is able to “make” at point k_{firm2} efficiently. The same idea applies to the emergence of heterogeneous skills to measure the individual contributions of a joint effort (Alchian and Demsetz 1972) or the quality attributes of the exchanged goods (Barzel 1982).

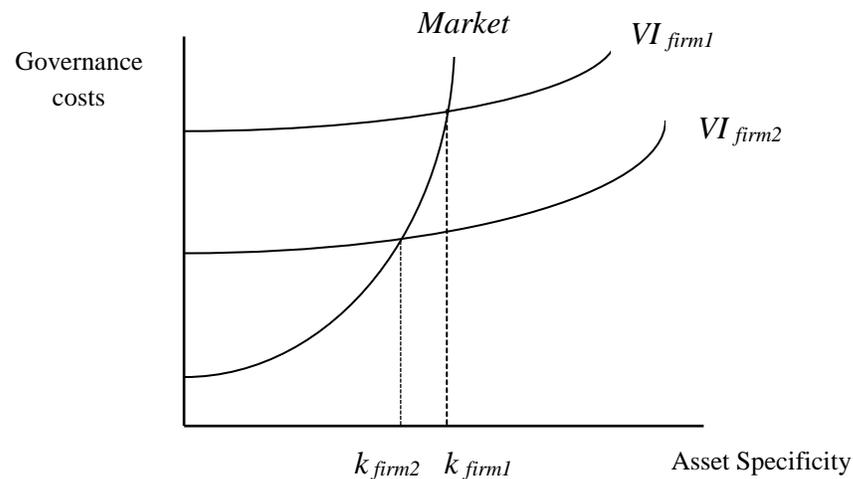


Figure 1: Governance costs and firm heterogeneity²³

In part, Williamson (1999, p. 1103) recognizes the usefulness of incorporating a capabilities-based rationale to TCE. In his view, instead of asking “[...] *what is the best generic mode (market, hybrid, firm, or bureau) to organize X?*”, scholars might inquire “[...] *how should firm A – which has preexisting strengths and weaknesses (core competencies and disabilities) – organize X?*”. However, such rhetorical concession does not affect the general features of the “discriminating alignment hypothesis”. In particular,

²³ The slopes of the curves in Figure 1 reflect the different nature of the governance costs depending on the organizational choice. For example, the establishment of a hierarchical structure implies a considerable level of fixed costs. For a theoretical discussion, see Demsetz (1988). Contributions such as Masten, Meehan, and Snyder (1991) and Poppo and Zenger (1998) apply similar ideas in an empirical context.

the approach remains silent on the consequences of heterogeneity on governance decisions. As Figure 1 shows, *Firm 1* is restricted to the range from the origin to k_{firm2} . Beyond this level of asset specificity, the superior ability of *Firm 2* to mitigate governance costs would preclude either “make-type” or “buy-type” transactions by *Firm 1* in the long run. Hence, the less efficient firms in the industry might have highly constrained sets of feasible organizational choices (see Miranda and Chaddad 2014). Often, options are limited to the spot market, especially when the burden of carrying out an exchange is similar to all of the parties.

If constraints affect the ability of devising a strategy, how would these limitations shape the choice of simultaneous use of diverse arrangements? From a broader perspective, it seems evident that different mechanisms can either complement or substitute each other. The argument applies both to the coexistence of informal and formal institutions within an exchange and to a plural form. For example, the search for reducing the costs of measuring the attributes of inputs bought elsewhere furnishes a powerful incentive to the adoption of concurrent sourcing. Partial vertical integration allows a deeper understanding of productive processes, offering a protection against opportunism (Heide, Kumar, and Wathne 2014) or a learning opportunity (see Lafontaine and Shaw 2005). Consequently, “make-and-buy” strategies potentially affect the magnitude of governance costs in the long run.

Figure 2 illustrates the potential impact of a plural form on the burden of “making”, supposing the concomitant use of a hybrid form. Below, a firm vertically integrates part of the production with a learning objective. In turn, a long-term relationship with a provider supports the exchange of attributes with a similar asset specificity level – i.e., k_1 . Supposing

the ownership of similar levels of absorptive capacities between the parties (Cohen and Levinthal 1990), I expect that the transference of knowledge will impact the governance costs of vertical integration in *Period 2*. The outcome would allow both the adoption of a “make-type” arrangement on lower levels of idiosyncrasy – i.e., k_2 – and the reduction of costs related to the writing and enforcement of agreements²⁴.

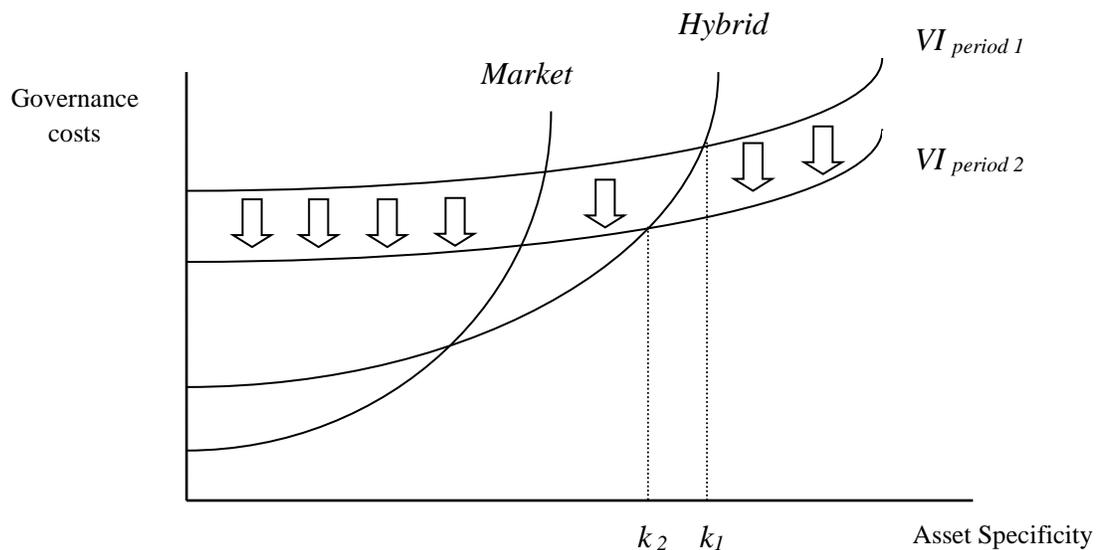


Figure 2: Effects of concurrent sourcing on governance costs

The debate over the effects of opportunism on “make-or-buy” choices decisions is intrinsically related to the discussion on the roles of complementarities and constraints in

²⁴ I do not make assumptions on the features of the contract that guides the bilateral interaction. Ménard’s (1996) typology on hybrid forms would suggest the establishment of arrangements with a considerable degree of coordination in both points k_1 and k_2 . The same contribution outlines the main features of such structures (see also Ménard 2004). In the example at hand, the coexistence between two or more mechanisms – e.g., trust and a formal agreement – might replace some of the elements found in the hybrid forms described by this literature.

organizational outcomes. Puranam, Gulati, and Bhattacharya (2013) contend that the emergence of transactional hazards incentivizes the adoption of pure sourcing strategies. The argument assumes that the establishment of a hierarchy would not be problematic. However, how should agents proceed when the risk of hold-up coincides with the impossibility of designing institutional remedies? Are there alternatives that can mitigate the constraining consequences of the lack of such capabilities? As the literature shows, gaps of incomplete contracts can be partially filled with informal mechanisms, such as trust (Greif 1993; Uzzi 1996; Wilson 2000; Lazzarini, Miller, and Zenger 2004).

Indeed, strong ties might contribute to reducing contractual incompleteness. Trust – and its interaction with formal arrangements – has concentrated much of the attention from scholars. Explanations that dense networks can reduce the negative impact of organizational hazards are abundant. Wilson (2000) discusses the influence of social capital in the governance of economic relationships. Representative of a mix of expectations, obligations, and trustworthiness, the term denotes not only the interaction among diverse mechanisms, but also the possibility of a substitution. Obviously, such replacement is not tantamount to the access to an arrangement with identical properties. For example, close-knit networks only partially compensate for the lack of legal guarantees in small-sized groups (Greif 1993). However, under a context of constraints, bonding might mitigate the deleterious effects of the lack of protection.

4 GRAPE PROCUREMENT IN U.S. EMERGING WINE REGIONS

What are the typical governance structures used in U.S. emerging wine regions? What are the drivers of adoption of each potential sourcing choice? Section 4 explains the most common grape procurement strategies carried out by the firms in the sample. Then, I outline a series of hypotheses. Before, it is worth reminding that terms such as “diversity” can only be fully interpreted when accompanied by an interpretation of “similarity” (see Krzeminska, Hoetker, and Mellewigt 2013). Throughout this article, TCE’s “discriminating alignment hypothesis” furnishes the main contrast to the claim that real-world arrangements are more complex than the generic labels found in the literature. In this sense, it is the expectation that “make-or-buy” decisions should converge to simplified forms that fosters the debate in Sections 2 and 3. Nevertheless, the insufficiency of Williamson’s (1991) typology to explain such outcomes does not invalidate the fundamental idea that agents strive to minimize transaction costs. At the most basic level, I contend that defining the set of available strategies is a requisite for a deeper understanding of the nature of organizational trade-offs.

4.1 Background

Starting in the 1970s, a “wine revolution” has changed the landscape of rural United States (Robinson and Murphy 2012). Only in the first decade of the twenty-first century, 4,722 wineries were established in the country, expanding the industry towards new locations. Although California was responsible for around 90% of the U.S. wine production

in 2013, 62.2% of the firms opened between 2000 and 2014 were located in emerging regions (Wine Institute 2015). The small scale of production characterizes most newcomers, with 96% of the wineries annually producing less than 50,000 cases of wine (Wines & Vines 2016). A growing literature describes the positive outcomes from the consolidation of wine clusters (Alonso and Liu 2010; Storchmann 2010; Boatto et al. 2013; Correia e Brito 2016). However, little is known about the long-term survival prospects of firms from non-traditional areas.

Giuliani (2011) argues that the acquisition of high-quality grapes is a fundamental competitive factor in the industry (see also Ashenfelter 2008; Franken 2014). Thus, understanding how wineries obtain inputs is a fundamental aspect in the study of their performance through time. Several studies have described the organization of the wine industry in traditional areas since the end of the 1990s (see Chapter II for a review). From a historical perspective, Simpson (2011a) shows that grape procurement strategies have varied depending on the geographical area. Comprised by Western European countries such as France, Italy, and Spain, the Old World presents high rates of vertical integration between wine making and grape growing. In turn, New World clusters – e.g., California, Mendoza, and South Australia – have traditionally relied on vineyards managed by independent producers (see also Simpson 2011b).

Yet, traditional areas house a considerable organizational diversity. Although the influence of TCE on the hypotheses tested prevents a clear identification of plural forms, the accounts found in the literature suggest the widespread use of concurrent sourcing around the globe. In their analysis of the drivers of “make-or-buy” decisions in the Spanish Rioja region, Fernández-Olmos, Rosell-Martínez, and Espitia-Escuer (2009) deploy a cut-

off measure to capture the predominant choice of each firm (see also Fernández-Olmos 2010). In the New World, shifting consumer demands have incentivized wineries to exercise greater control over grape production – increasingly investing in vertical integration (see Giuliani 2007a; Codron, Montaigne, and Rousset 2013).

By the same token, several studies go beyond the search for generic labels to procurement choices. Descriptions of the coexistence among mechanisms in the governance of specific exchanges abound in the literature. In most cases, attention is given to the interaction between written agreements and trust (e.g., Fraser 2005; Somogyi et al. 2010; Fernández-Olmos 2011; Wilson, MacDonald, and Monnane 2015). Researchers have also detailed the characteristics of contracts in New World clusters, testing hypotheses that relate the adoption of specific provisions to the features of the purchased grapes (Goodhue et al. 2003; Fraser 2005; Giuliani 2007; Codron, Montaigne, and Rousset 2013; Franken 2014).

Comparatively, the available evidence from emerging areas is scarce. Among the 74 bonded wineries from the states of Illinois, Michigan, Missouri, New York, and Vermont in the sample informing this article, 39.1% adopt “make-and-buy” strategies to obtain at least one variety. Tuck and Gartner (2013) present data on grape sourcing strategies for a sample of 442 independent growers and wineries from 13 U.S. states²⁵. Since the report contains only aggregate results, no conclusion on the use of concurrent sourcing can be drawn. The same applies to the core features of the adopted arrangements. Still, the study depicts a substantial diversity. While almost 40% of the surveyed

²⁵ The study uses data from the following states: Connecticut, Illinois, Iowa, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New York, North Dakota, South Dakota, Vermont, and Wisconsin.

organizations own a vineyard, 25% of the reported exchanges are supported by contracts. Other options, such as spot market transactions and the acquisition from other wineries, are also cited.

What are the drivers of the adoption of concurrent sourcing in U.S. emerging wine areas? So far, no research has examined this question. In Illinois, Franken and Bacon (2014) find that quality concerns increase the likelihood of use of written contracts and vertical integration. The same study shows that larger wineries partially depend on the supply from independent growers. However, it is not clear whether the results – based on data at the firm level – suppose the use of a “make-and-buy” strategy. Indeed, the simultaneous occurrence of diverse governance mechanisms within the boundaries of an organization might reflect an effort to adapt procurement choices to the relative level of asset specificity in each transaction. For example, large-scale wineries from Missouri reserve their vineyards to the production of more idiosyncratic inputs, acquiring abundant grapes through informal and formal arrangements (Miranda and Chaddad 2014).

Of course, the mere adoption of diverse generic mechanisms to procure the same input does not necessarily betokens the existence of concurrent sourcing. Actual practices offer a better proxy for organizational diversity. In the wine industry, long-term grape contracts often grant extended decision rights and obligations to the residual claimant (Codron, Montaigne, and Rousset, 2013), resembling the quasi-vertical integration arrangements described by Monteverde and Teece (1982a). Interviews conducted between February and March of 2014 in Missouri show that the winery tends to define the key aspects in transactions mediated by formal agreements (Miranda and Chaddad 2014). Moreover, the particularities of the sector affect the range of available strategies. A crucial

factor in the governance of agricultural transactions (Masten 2000; Williamson 2004), perishability hampers an extended use of pure spot market grape exchanges. Generally speaking, weak coordination implies at least an informal commitment between the parties.

Not surprisingly, “vertical integration” and “verbal contracts” represent the absolute majority of the observations from the survey that informs this article. While informal arrangements support 41.9% of the reported exchanges, wineries resort to their vineyards in 72.6% of the cases. Therefore, the typical example of concurrent sourcing in U.S. emerging regions involves the simultaneous reliance on “making” and handshake agreements – equivalent to 18.5% of the transactions in the sample. Below, I associate the adoption of a plural form with the active search for an expansion of the set of available organizational strategies. By managing a vineyard and transacting with independent growers, small wineries can reduce the governance costs from both activities.

In fact, the heterogeneous distribution of capabilities and resources among the analyzed firms possibly explain the use of other sourcing choices. The available qualitative evidence from nascent clusters suggests that the ability to oversee the performance of long-term contracts is limited to a few wineries. On the other hand, the dependence on the spot market – or relatively uncoordinated exchanges – ensues from the lack of the necessary skills for the establishment of complex governance mechanisms. Likewise, interviews with small Missouri wineries show that trust is often used as a replacement for the active measurement of grape attributes (Miranda and Chaddad 2014). In other cases, strong ties and verbal agreements complement each other. Therefore, I expect that ex-post adaptation in “buying” strategies will result from different levels of interaction between economic and non-economic processes.

In summary, three typical sourcing choices emerge. In each case, it is assumed that wineries devise an organizational architecture to obtain a specific grape variety. The first one, “make-type” structures, refer to transactions governed through vertical integration or long-term contracts with extended rights to the residual claimant. Secondly, “buy-type” arrangements are predominantly verbal deals between the winery and an independent grower. As discussed below, I hypothesize that such exchanges are partially supported by the existence of strong ties between the parties (see also Chapter III). Finally, concurrent sourcing represents the simultaneous use of vertical integration and informal agreements.

4.2 Hypotheses

The need to assess the characteristics of the inputs used in production shape the procurement choices in the wine industry. Measurement issues have inspired a series of theoretical contributions since the 1970s (Alchian and Demsetz 1972; Jensen and Meckling 1976; Barzel 1982; Cheung 1983; Milgrom and Roberts 1992). As discussed earlier, a growing empirical literature relates the features of contracts to the relative difficulty of evaluating grape quality (Goodhue et al. 2003; Fraser 2005; Franken 2014; Franken and Bacon 2014). While the expected levels of objective attributes – i.e., sugar content and acidity – may be stated in a provision, physiological maturity cannot be precisely determined through chemical experiments (Thornton 2013). Therefore, the extended decision rights granted to the residual claimant in written agreements supporting the exchange of high-quality grapes should not surprise (Codron, Montaigne, and Rousset, 2013).

However, long-term contracts are seldom used in the sample. The result reflects the limited scale of most wineries from U.S. emerging regions. In fact, active monitoring would be a herculean task to firms with an average number of 3.5 full-time employees. Rather, wineries appear to privilege their own vineyards in response to measurement problems. Considerable searching costs also ensue from the lack of reliable grape suppliers in several fledging wine clusters (see Chapter III). Miranda and Chaddad (2014) note that small firms from Missouri tend to pursue “make-as-much-as-you-can” strategies. Hence, I expect that the difficulty to evaluate the inputs from independent growers will motivate the adoption of vertical integration (see also Franken and Bacon 2014). More specifically:

Hypothesis 1: Measurement hurdles will increase the likelihood of adoption of vertical integration in comparison with “buy-type” arrangements.

Ménard (2013) observes that agency theory has decisively influenced explanations to the existence of plural forms. In this sense, measurement issues should play a relevant role in the design of “make-and-buy” strategies. Concurrent sourcing enhances the monitoring capacity by facilitating the comparison between the inputs produced inside and outside firm boundaries (Heide, Kumar, and Wathne 2014). In the case at hand, a more complex issue refers to the identification of the relative importance of a plural form in allowing grape evaluation. Take the example of two wineries. The first possesses internal capabilities that allow the quality assessment of the harvest from independent growers. In turn, the second chooses concurrent sourcing to overcome constraints to the evaluation of inputs produced elsewhere. Remarkably, both firms could reach similar outcomes in terms

of measurement capacity – with the obvious difference of the sources of such ability. Therefore:

Hypothesis 2: Measurement ability will not be a relevant factor in determining the likelihood of concurrent sourcing in comparison with “buy-type” arrangements.

By stressing that institutional complementarities might be at work within a specific transaction, Bradach and Eccles’ (1989) discussion of plural forms sheds light on a fundamental aspect of the governance of grape transactions (see also Ouchi 1980; Uzzi 1996). Constrained in their ability to make organizational decisions, several wineries from emerging regions rely on informal mechanisms to assess the quality of the acquired inputs (Miranda and Chaddad 2014). Scholars have also noted the pervasiveness of trust in traditional wine areas. Studies describe both the complementarities among different mechanisms (Fraser 2005; Somogyi et al. 2010; Wilson, MacDonald, and Monnane 2015) and the replacement of strong ties for complex formal arrangements (Fernández-Olmos 2011; Codron, Montaigne, and Rousset 2013). I expect that wineries unable to effectively oversee the performance of suppliers will depend on personal acquaintances to minimize measurement costs. In other words:

Hypothesis 3: The adoption of a “buy-type” mechanism is associated with the reliance on trust.

In the context under scrutiny, the substitution of mechanisms seems to denote highly constrained sets of organizational choices (see Chapter III). However, the use of handshake contracts should not necessarily imply the dependence on trust for measurement purposes. As highlighted by Bradach and Eccles (1989), the broader structure matters. In fact, I expect that informal agreements adopted simultaneously with vertical integration will be less reliant on strong ties. Heide, Kumar, and Wathne (2014) argue that the adoption of plural forms weaken the importance of solidarity in the governance of a relationship. The conclusion is consistent with the extensive influence of agency theory on the analysis of “make-and-buy” strategies (see Ménard 2013). Overall, the ability to design more complex arrangements is tantamount to the capacity of overseeing their performance. Consequently:

Hypothesis 4: The adoption of concurrent sourcing denotes a diminished importance of trust in the governance of informal agreements.

Scholars have commonly employed knowledge-based arguments to explain the emergence of concurrent sourcing (see Mols 2010). In particular, technological uncertainty is seen as an influential factor in the adoption of “make-and-buy” strategies (Parmigiani 2007; Krzeminska, Hoetker, and Mellewigt 2013; Ménard 2013). By mitigating the deleterious effects of lock-in, plural forms might facilitate adaptation to new circumstances. On the other hand, firms need to own capabilities to design arrangements (Mayer and Argyres 2004), promoting their efficient interaction. Otherwise, the intricate combination of contractual gaps might exacerbate the governance costs of such structures.

Likewise, some skills might be transferred more easily than others (see Loasby 1998). The ability of an agent to engage in cooperative relationships should shape the idiosyncratic characteristics of a complex arrangements.

Generally speaking, “making-and-buying” the same variety in U.S. emerging regions means the simultaneous adoption of vertical integration and handshake contracts with independent growers. If, as Hypothesis 2 states, trust loses importance as more complex arrangements are adopted, what would be the complementarities to be exploited? What is the nature of the cooperation among firms with the ability to design complex arrangements? Giuliani and Bell (2005) show that Chilean wineries with similar absorptive capacities tend to engage in the exchange of information related to production. Remarkably, the geographic proximity and the strong ties created after years of relationship are not sufficient factors for the establishment of a cooperation. After all, firms will prefer to interact with partners owning similar bundles of capabilities and resources.

In the wine industry, competitive advantage ensues from the access to both codified and tacit knowledge (Giuliani 2007b). In particular, mastering the management of vineyards demands time. By allowing a comparison between the quality of the in-house production and those obtained through independent producers, concurrent sourcing might enhance learning processes. The effects should be especially dramatic for grape varieties with a greater differentiation potential, whose evaluation often rests on subjective criteria (Thornton 2013). At the same time, changing identities characterize emerging regions (Alston, Anderson, and Sambucci 2015). As firms strive to grasp the particularities of the region, potential cooperation opportunities are created. I hypothesize that wineries from

U.S. nascent clusters actively deploy “make-and-buy” strategies to obtain an additional amount of information on how to grow certain types of inputs.

Hypothesis 5: Concurrent sourcing will be more likely than “buy-type arrangements” as the differentiation potential of a grape variety increases.

5 RESEARCH DESIGN

I apply a multinomial logit model to interpret the procurement decisions in U.S. emerging regions (see Agresti 2002). The dependent variable represents the choice of a governance structure, which can be designed to deal with one or more transactions – as in the case of a plural form. The original dataset contains 341 sourcing choices from 74 wineries, potentially violating the non-independency assumption. Following previous empirical contributions (Mizruchi and Stearns 2001; Parmigiani 2007), I use robust standard errors adjusted for clustering by firm. The hypotheses tested here result from both a review of the relevant literature and six in-depth interviews with Missouri winery owners. Therefore, this study adopts a “development approach” (Greene, Carecelli, and Graham 1989), informing the quantitative analysis with qualitative evidence.

Table 1: Summary of predictions and results (dependent variable is sourcing mode chosen)

Hypothesis	Variable	Description	Results
<i>(1) Measurement hurdles will increase the likelihood of adoption of vertical integration in comparison with “buy-type” arrangements.</i>	Measurement ability	Dummy variable, created from a Likert-type item. Values between 1 and 3 were coded as 0 and values between 4 and 5 were coded as 1.	Supported by models 1 (p < 0.05) and 2 (p < 0.10).
<i>(2) Measurement ability will not be a relevant factor in determining the likelihood of concurrent sourcing in comparison with “buy-type” arrangements.</i>	Measurement ability	Dummy variable, created from a Likert-type item. Values between 1 and 3 were coded as 0 and values between 4 and 5 were coded as 1.	Supported by models 1 and 2 (non-significant coefficients).
<i>(3) The adoption of a “buy-type” mechanism is associated with the reliance on trust.</i>	Trust in independent growers	Dummy variable, created from a Likert-type item. Values between 1 and 3 were coded as 0 and values between 4 and 5 were coded as 1.	Supported by models 1 (p < 0.05) and 2 (p < 0.05).
<i>(4) The adoption of concurrent sourcing denotes a diminished importance of trust in the governance of informal agreements.</i>	Trust in independent growers	Dummy variable, created from a Likert-type item. Values between 1 and 3 were coded as 0 and values between 4 and 5 were coded as 1.	Supported by models 1 (p < 0.05) and 2 (p < 0.05).
<i>(5) Concurrent sourcing will be more likely than “buy-type arrangements” as the differentiation potential of a grape variety increases.</i>	Differentiation potential	Composite measure based on five Likert scale-type items, obtained through the use of principal axis factoring extraction method and Varimax rotation (Crombach’s alpha = 0.742).	Supported by models 1 (p < 0.01) and 2 (p < 0.01).

5.1 Empirical strategy

I study the sourcing decisions of wineries from five U.S. states: Illinois, Michigan, Missouri, New York, and Vermont. The 74 wineries in the sample are relatively small, with an average production of 5,608.3 cases of wine in 2014. The survey that informs this study results from multiple stages of pre-testing. A summarized version of the instrument was sent to wineries from Michigan, Missouri, and New York, having a response rate of 33%. Subsequently, I conducted on-site interviews with six Missouri winery owners between January and May of 2014, exploring their "make-and-buy" strategies in depth (see Miranda and Chaddad 2014). Later, the questionnaire would be reviewed by experts from three universities – Cornell University, Michigan State University, and University of Missouri – and an expert from the University of Missouri's Grape and Wine Institute. Finally, this research benefits from discussions with scholars, industry leaders and entrepreneurs in four occasions.

Surveys were sent to key informants from 549 firms between February and March of 2015. I obtained lists and a support letter from the Grape and Wine Boards of four of the U.S. states in the sample, adding Vermont after a respondent furnished the contacts from the "Green Mountain State". Each winery was contacted between two and four times through automatic reminders and phone calls. Similar to other firm-level studies (Paxson et al. 1995), the aggregate response rate is of 23%, with the following specific percentages: Illinois, 27.3%; Michigan, 27.3%; Missouri, 32.3%; New York, 13.4%; and Vermont, 32.1%.

From the 127 surveys returned, 74 individuals answered all of the questions used in this study. Information was provided at four levels of analysis: (i) the individual; (ii) the grape transaction; (iii) the organization; and (iv) the cluster. Respondents hold key positions in their firms, directly influencing grape procurement decisions: 84.3% are the owners, 9.6% the managers and 6.1% the winemakers. The average age of the firms in the sample – 14.3 years – point to a majority of newcomers to the industry. Table 2 provides descriptive statistics and pairwise correlations.

5.2 Variable operationalization

The dependent variable reflects the winery's procurement choice for a grape variety in 2014. The inclusion of a specific time period allows the comparison of the behavior of different agents (Fowler 2013). Firms were asked to provide data on up to the five most used grape varieties in production. The original survey contained four options: (i) *own vineyard/state grown*; (ii) *spot/cash markets as needed*; (iii) *verbal/handshake contracts*; and (iv) *long-term written contracts*. In the nominal measure, 0 is equivalent to a “buy-type” decision – 28% of the observations; 1 to a “make-type” – 53.3% of the observations; and 2 to concurrent sourcing – 18.2% of the observations.

As explained in Section 4, I interpret the answers that include vertical integration and long-term contracts as “make-type” exchanges, while those encompassing informal deals are labeled “buy-type”. In this sense, concurrent sourcing occurs when a winery adopts at least one coordinated and one uncoordinated mechanism at the same time – 19.8% of the transactions in the Northeast and 17.5% if the exchanges in the Midwest. The

Table 2: Descriptive statistics and correlations^a

	Mean	S.D.	1	2	3	4	5	6	7	8	9
1. Coordination Type	0.91	0.672	1								
2. Measurement Ability (0/1)	0.61	0.489	-0.048	1							
3. Trust (0/1)	0.54	0.499	-0.161**	0.448**	1						
4. Differentiation Potential	0.047	0.883	0.177**	0.067	0.061	1					
5. Constraints (0/1)	0.38	0.486	0.045	0.022	0.065	0.142*	1				
6. Age Winery ^b	14.35	12.59	0.085	0.255**	0.045	0.196**	-0.114*	1			
7. Storage Capacity ^b	20.46	40.81	0.083	0.088	-0.037	0.126*	0.007	0.598**	1		
8. Experience Agriculture ^b	22.92	14.83	-0.092	0.106	0.104	0.021	-0.172**	0.313**	0.296**	1	
9. Experience Grape Growing	16.35	12.59	0.095	0.090	0.041	0.165**	-0.079	0.483**	0.355**	0.515**	1

^a n = 314 sourcing choices from 74 wineries.

^b Mean and standard deviation consider the winery as the unit of analysis.

* p < 0.05; ** p < 0.01 (Two-Tailed Test).

simultaneous use of vertical integration and verbal contracts is the most common plural form in the sample, representing 77.9% of the observations coded as 2. Overall, the procurement choice corresponds to 18.7% of the observations in the category. In average terms, firms grow 48.2% of the total amount of the varieties acquired with the support of a “make-and-buy” strategy.

The following control variables are added to the analysis. *Size* is equivalent to storage capacity in gallons divided by 1000, with a mean and a standard deviation of 20.4 and 40.8, respectively. I follow the approach adopted by studies such as Benjamin and Podolny (1999) and Fernández-Olmos (2010) for a simple reason: the use of other alternatives found in the literature – e.g., the number of acres owned by the firm or the number of full-time employees – might be related to the sourcing decision. I also include the *Age* of the winery, variable with a mean of 14.3 and a standard deviation of 12.5 years. The result suggests the preponderance of newcomers to the industry in the sample. *Constraints* is a dummy variable, created from the following Likert scale-type item: “*our winery would face constraints (e.g., land availability, human resources, financial) if we decided to start or increase the production of this variety*”.

The control variables *Experience with Viticulture* and *Experience with Agriculture* echo the pathway of key respondents. Each alternative is added to a different model (see Table 3), with the goal to assess the influence of the involvement with farming activities on the ability to grow grapes. Although the skills to manage a vineyard are tacit (Giuliani 2007b), it is also true that individuals with a rural background could potentially have a shorter learning curve than neophytes from urban settings. In the sample, while the mean and the standard deviation for *Experience with Viticulture* are 16.3 and 12.8 years, the same

statistics for *Experience with Agriculture* amount to 22.9 and 14.8 years. Again, the evidence points to the importance of newcomers to the industry.

I obtain the dummy variables *Measurement Ability* and *Trust in Independent Growers* from two Likert scale-type items, those are: (i) *We are able to easily and accurately measure all relevant quality attributes of this grape variety if we have to acquire it from an independent grape grower*; and (ii) *For this variety, I know independent growers whose production I do not need to evaluate much because it has always been high quality*. Given the impossibility to interpret responses to a single sentence as continuous (Clason and Dormody 1994; DeVellis 2012), answers up to 3 are coded as 0, while those between 4 and 5 are coded as 1. The empirical strategy allows the expression of more nuanced perceptions of the phenomena under scrutiny, opening room for the construction of more conservative estimates.

Differentiation Potential is a composite variables resulting from five Likert scale-type items: (i) *This grape variety allows me to produce highly differentiated (distinctive) wines*; (ii) *Consumers perceive the wines I produce with this grape variety as highly differentiated*; (iii) *Relative to other varieties, growing this grape variety demands very specific knowledge on vineyard management*; (iv) *Considering the industry as a whole, consumers perceive wines produced with this grape variety as high quality wines*; (v) *Compared to other grape varieties, the average cost of growing this variety is relatively high*. The Cronbach's alpha coefficient is 0.742, surpassing the minimum reliability threshold suggested by Nunnally (1978). Importantly, such measure is sensitive to the number of elements (Cortina 1993). Indeed, scales with several components weakly correlated can still have inflated Cronbach's alpha coefficients. Given the use of a limited

number of items, I believe such outcome reflects an acceptable degree of internal consistency.

6 RESULTS

The results are discussed below. Correlations help to reveal the characteristics of U.S. emerging areas. I focus on relationships with a significance level of $p < 0.01$, citing the alternative threshold used if necessary. Table 2 shows that *Age of the Winery* is positively correlated with *Storage Capacity*. Older organizations also seem to face fewer constraints to expand their vineyards ($p < 0.05$). Indeed, *Age of the Winery* is significantly related to experience on both agriculture and grape growing. Finally, the additional years in the industry appear to influence the bundle of capabilities and resources found inside the boundaries of the firm. In other words, a positive correlation exists between *Age of the Winery* and the variables *Measurement Ability* and use of varieties with a *Differentiation Potential*.

In support of previous studies (Fernández-Olmos 2011; Codron, Montaigne, and Rousset 2013; Miranda and Chaddad 2014), *Trust* is negatively correlated with the adoption of complex arrangements. In turn, the existence of strong ties is positively related to *Measurement Ability*. The result is puzzling at first sight: the available qualitative evidence shows that the dependence on personal acquaintances to procure grapes denotes a highly constrained set of sourcing decisions (Miranda and Chaddad 2014). In fact, the Likert-type item reflects the observation that the lack of skills would explain the option for

not closely evaluating the acquired inputs. The multinomial logit model sheds additional light on this pattern (see also Chapter III).

The use of varieties with *Differentiation Potential* is positively correlated with *Coordination Type*. The result echoes the views of several respondents, who manifested the intention to vertically integrate the production of high-quality grapes²⁶. On the other hand, the existence of *Constraints* is associated with the sourcing of these inputs ($p < 0.05$). The outcome supports previous accounts of the same industry. More specifically, Miranda and Chaddad (2014) note a misalignment between the perceived optimal and actual procurement strategies. While the typical U.S. small winery possibly aims at “making-as-much-as-it-can”, reality imposes a series of limitations on the materialization of initial plans.

Table 3 displays the results of the multinomial logit model. The technique’s flexible specification allows the comparison of pairs of unordered discrete choices. In this sense, the results outlined below represent the likelihood of adoption of a given governance structure²⁷. Among the controls, two variables deserve mention. Relatively to “buy-type” arrangements, *Experience with Viticulture* significantly increases the likelihood of adoption of both “make-type” mechanisms and concurrent sourcing. Similar to the qualitative evidence presented by Miranda and Chaddad (2014), the result shows that the previous history of an entrepreneur influences the ability to design more complex procurement strategies. However, the marginal effect is lower than initially expected, suggesting the intensive experimentation of the wineries in the sample. Indeed, “trial-and-

²⁶ Personal interviews, February – May 2014.

²⁷ A relevant question refers to the level of distinction among the potential sourcing decisions. According to both the Hausman and the Small-Hsiao tests, the irrelevant alternatives are independent.

error” partially explains the use of plural forms in emerging areas (see also Chapter III). In turn, *Experience with Agriculture* seems to exert a limited effect on organizational decisions in the wine industry.

Table 3: Multinomial logit model (dependent variable is sourcing mode chosen)

	Model 1			Model 2		
	Make vs. CS	Buy vs. CS	Make vs. Buy	Make vs. CS	Buy vs. CS	Make vs. Buy
Constant	1.440** (1.433)	2.962** (1.469)	1.656*** (0.577)	1.507*** (0.614)	0.339 (0.729)	1.168*** (0.458)
Measurement Ability	-1.085*** (0.469)	-0.205 (0.652)	-0.881** (0.547)	-1.082*** (0.461)	-0.186 (0.645)	-0.896* (0.551)
Trust	0.033 (0.419)	0.971** (0.571)	-0.938** (0.509)	0.042 (0.424)	1.071** (0.593)	-1.031** (0.541)
Differentiation	-0.485** (0.227)	-0.681*** (0.253)	0.194 (0.615)	-0.509*** (0.224)	-0.686*** (0.262)	0.176 (0.252)
Constraints	0.139 (0.421)	-0.040 (0.485)	0.179 (0.444)	0.092 (0.423)	-0.215 (0.481)	0.307 (0.455)
Age Winery	0.005 (0.019)	-0.016 (0.031)	0.022 (0.031)	-0.001 (0.024)	-0.005 (0.028)	0.004 (0.031)
Storage Capacity	-0.007* (0.004)	-0.002 (0.005)	-0.005 (0.008)	-0.006* (0.004)	0.001 (0.005)	-0.006 (0.008)
Experience (Agriculture)	0.019 (0.015)	0.025 (0.019)	-0.006 (0.017)			
Experience (Grape growing)				0.026 (0.021)	-0.014 (0.024)	0.041** (0.022)
Log Pseudo Likelihood		-287.276			-283.919	
Pseudo R ²		0.084			0.094	

Number of observations = 341 choices. Tests are one-tailed, with * p < 0.10; ** p < 0.05; *** p < 0.01.

The results support Hypothesis 1. In comparison with vertical integration, *Measurement Ability* increases the likelihood of adoption of “buy-type” structures and concurrent sourcing. The conclusion is consistent with Franken and Bacon’s (2014) study in Illinois. Future studies might attempt to better delineate the relationship between organizational choices and the capacity to evaluate input quality. By allowing a comparison with in-house production, plural forms can equally improve the assessment capacity of wineries. In fact, I find support to Hypothesis 2: the coefficient for “Buy vs. Concurrent Sourcing” is non-significant.

Hypothesis 3 is also supported. Coinciding with the available evidence from emerging areas (Miranda and Chaddad 2014), *Trust* increases the likelihood adoption of “buy-type” structures. Given that such arrangements are adopted in 27.4% of the observations, I interpret the results as a sign of a highly constrained organizational choice. Moreover, the results reinforce the conclusions presented by Heide, Kumar, and Wathne (2014): the establishment of plural forms seems to weaken the relevance of strong ties in the governance of a relationship (Hypothesis 4). This is not to say that trust becomes unimportant as more complex procurement strategies are adopted. In fact, more research is needed to assess the role of strong ties in the plural forms adopted in emerging regions.

Finally, in adherence to Hypothesis 5, *Differentiation Potential* increases the likelihood of adoption of concurrent sourcing. The conclusion holds in the comparisons with both “make-type” and “buy-type” structures. Departing from the qualitative evidence gathered during the first stage of the research, I believe the result demonstrates the deployment of learning strategies by several of the analyzed wineries. Remarkably, the coefficient for the model “Make vs. Buy” is non-significant, a result that inspires important

questions: are the firms in the sample growing less specific varieties to gain experience? What is the impact of cluster-level variables – e.g., the number of available partners in the surroundings – in such decisions?

7 CONCLUDING REMARKS

The publication of *“The Economic Institutions of Capitalism”* represents a milestone in the study of the boundaries of the firm. Standing on the hundreds of tests of the “discriminating alignment hypothesis”, Williamson (1996, p. 27) himself classifies TCE as an “empirical success story”. Nevertheless, it did not take much time until “anomalies” started to emerge. From the first half of the 1990s on, researchers have increasingly paid attention to the interaction among governance mechanisms. Originally focused on explaining the working of hybrid forms (e.g. Hennart 1993; Ménard 1996), scholars soon realized that the “swollen middle” was more diverse than expected. As novel arrangements continued to be revealed, taxonomic efforts gained additional steam (e.g., Krzeminska, Hoetker, and Mellewigt 2013; Ménard 2013).

This article adds to the growing literature on complex forms. Two specific contributions are delivered: (i) a theoretical discussion of the rationale behind the emergence and maintenance of organizational diversity through time; (ii) an empirical assessment of the drivers of grape procurement decisions in five U.S. emerging wine areas – Illinois, Michigan, Missouri, New York, and Vermont. I propose an empirical approach that departs from the description of the actual governance structures adopted in a given context. In particular, scholars must recognize that firms have different abilities to devise

“make-or-buy” strategies, identifying the set of feasible arrangements. Researchers also have to outline the particular characteristics of the employed mechanisms, giving special attention to their complementary and substitutive relationships. Behind generic labels, several instruments might coexist even within the same transaction.

Although the qualitative evidence suggests a preference for full vertical integration in nascent wine areas, firms recur to a richer spectrum of organizational choices (see Miranda and Chaddad 2014). I show that the adoption of concurrent sourcing is associated with the use of grape varieties with a differentiation potential. The result enhances our understanding of the nature of the typical winery from U.S. emerging regions. Still, further work is needed. In particular, scholars should investigate how different sets of constraints – at the individual, firm, or cluster levels – affect the materialization of perceived optimal decisions. In the context under scrutiny, the use of plural forms appears to be embedded in a broader learning effort. As regional identities progressively consolidate (Alston, Anderson, and Sambucci 2015), convergence towards the use of similar inputs might facilitate the exchange of knowledge.

Consistent with the evidence outlined elsewhere (e.g., Fernández-Olmos 2011; Codron, Montaigne, and Rousset 2013; Miranda and Chaddad 2014), trust is related to the adoption of informal arrangements. Moreover, the dependence on strong ties becomes non-significant once handshake agreements are employed along with vertical integration. Since perishability considerably increases the governance costs of “buying” in the wine industry, my interpretation is that the reliance on personal acquaintances denotes the lack of skills for the establishment of complex procurement strategies. In other words, trust replaces active contract monitoring. Finally, measurement difficulty seems to motivate pure

“making” strategies. Inspired by the empirical literature on the issue (Goodhue et al. 2003; Fraser 2005; Franken, 2014; Franken and Bacon 2014), I assume that firms with the capacity to evaluate inputs by independent growers can translate this knowledge into less incomplete provisions.

To some extent, we are still ignorant of the complex interactions among mechanisms. Moreover, the relationship between organizational forms and variables such as technology and industry structure is still to be fully explained (see James, Klein, and Sykuta 2011). Enhancing our understanding is contingent on the refinement of the units of analysis typically found in the literature. Importantly, the mismatch between theoretical claims and empirical operationalization has to diminish. Otherwise, fundamental aspects of real-world governance structures will continue to be overshadowed. In recognition of the current difficulties, in-depth case studies can pave the way to a better understanding of the intricate synergies among the elements of different arrangements. Theoretical insights found in Crawford and Ostrom’s (2005) analysis of the influence of institutional structure on human action can be especially enlightening (see also Eggertsson 2005; Poteete, Janssen, and Ostrom 2010).

By illuminating the rationale behind grape procurement decisions, I expect to inform more efficient strategies in U.S. emerging regions. A fundamental aspect in this work is the explicit recognition that “make-or-buy” strategies in nascent clusters are often highly constrained (see also Miranda and Chaddad 2014). If, as suggested by the literature (Giuliani 2011; Franken, 2014), competitive advantage in the wine industry is tantamount to the acquisition of high-quality inputs, survival in the long run depends on the development of specific capabilities. Hundreds of small wineries have to expand their set

of feasible organizational strategies, learning to manage a vineyard or to devise and oversee long-term agreements with independent growers.

The following limitations are acknowledged. First of all, four of the hypothesis described in Section 4 are assessed through dummy variables. In fact, this article shares a common problem with most contributions in the field of organizational economics: data scarcity. I intend to overcome potential measurement hurdles with an intensive process of triangulation. Secondly, my conclusions derive from a sample of wineries from two U.S. geographical areas: Midwest and Northeast. Further research in other areas of the country is needed. Finally, I am silent on the consequences of the characteristics of clusters on adopted procurement strategies. Given the importance of structural factors to the development of wine clusters (McDermott, Corredoira, and Kruse 2009; Giuliani and Bell 2005; Giuliani 2007a; Giuliani 2011; Castriota and Delmastro 2015), subsequent studies must explore the complex patterns of cooperation and competition among U.S. wineries.

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CHAPTER V

CONCLUDING REMARKS

1 MAIN FINDINGS

This dissertation analyzes the grape procurement decisions of wineries from five U.S. states – Illinois, Michigan, Missouri, New York, and Vermont. Since the turn of the twenty-first century, two bodies of literature have discussed related issues. Firstly, scholars have pointed to the potential benefits of the establishment of wine clusters in rural communities (e.g., Alonso and Liu 2010; Alonso and Bressan 2013; Boatto et al. 2013; Correia and Brito 2016). Moreover, several authors argue that grape quality is a fundamental driver of competitive advantage in the wine industry (Giuliani 2007; Ashenfelter 2008; McDermott, Corredoira, and Kruse 2009; Castriota and Delmastro 2015). Taken together, both sets of arguments suggest that the positive impact of nascent wineries on their surroundings depends on the access to high quality inputs.

I adopt a “development approach”, deriving a set of hypotheses from qualitative evidence (see Greene, Caracelli, and Graham 1989). Departing from Miranda and Chaddad (2014), this dissertation assumes that small wineries from U.S. emerging areas perceive full vertical integration as the optimal procurement strategy. Using the firm as the unit of analysis, Chapter III assesses the drivers of the alignment between such intentions and actual “make-or-buy” choices. Consistent with the view that knowledge plays a decisive role in boundary decisions (Demsetz 1988; Winter 1988; Kogut and Zander 1992; Madhok

2002), previous experience with viticulture is positively associated with higher levels of vertical integration. On the other hand, the ability to evaluate the objective attributes of grapes produced by independent growers appears to exert a limited influence on procurement choices, suggesting a widespread lack of measurement skills among the surveyed organizations. Still, the existence of contrasting “making” strategies for the acquisition of particular varieties suggests a considerable heterogeneity in the capabilities and resources owned by the firms in the sample.

The results found in Chapter III also point out to the importance of informal ties in the governance of the transactions carried out by the wineries under scrutiny. In particular, trust is an essential supporting mechanism in the governance of less coordinated exchanges, reflecting the constraints faced by many firms to devise long-term formal arrangements. Since perishability considerably increases the governance costs of “buying” in the wine industry, the reliance on personal acquaintances denotes the lack of skills for the establishment of complex procurement strategies. These ideas find additional support in Chapter IV, which discusses the drivers of adoption of governance structures with either complementary or substitutive mechanisms.

Using a microanalytical unit of analysis – i.e., the sourcing mode –, Chapter IV shows that the reliance on “buy-type” exchanges is associated with the existence of trust. In turn, concurrent sourcing appears to relate to grape varieties with a higher differentiation potential. The outcome possibly illustrates the intense learning effort carried out in U.S. emerging areas, as well as the progressive convergence of the varieties grown regionally across the country (see Alston, Anderson, and Sambucci 2015). Remarkably, the dependence on strong ties becomes non-significant once handshake agreements are

employed along with vertical integration. In other words, trust replaces active contract monitoring.

2 QUESTIONS FOR THE FUTURE

Ended the journey that started in August of 2012, the time to place this dissertation on the right shelf has come. The recognition of the pervasiveness of organizational diversity is the main contribution found here. Innumerable contributions point to a similar direction (e.g., Bradach and Eccles 1989; Hennart 1993; Krzeminska, Hoetker, and Mellewigt 2013). However, measurement hurdles have limited our ability to translate theoretical claims into empirical testing. Chapter IV demonstrates the difficulties related to the study of deviations from the “discriminating alignment hypothesis” (Williamson 1985, 1991). Yet, the current constraints should not preclude the development of new interpretations to organizational phenomena.

In this dissertation, I contend that the ownership of heterogeneous capabilities and resources directly influences “make-or-buy” decisions. Of course, even the most constrained agent makes choices. In this sense, an organizational architecture results from an active search for cost minimization given a set of feasible arrangements. Under TCE’s rationale (Williamson 1985, 1991), discriminating alignment appears to occur passively in response to the features of the exchange. Chapters III and IV challenge such view, advocating for an integration of the substitutive and complementary effects among governance mechanisms. The use of diverse units of analysis – i.e., the firm in the former

case, the sourcing mode in the latter – intends to shed light on both macro and microanalytical aspects of a grape procurement strategy.

Stressing the diversity found in real-world structures implies the acceptance of the complementary role among diverse methodological approaches. Indeed, case studies can be as enlightening as the reliance on econometric models. Again, the New World illustrates the benefits of pluralism. The publication of both quantitative (Goodhue et al. 2003; Fraser 2005; Franken 2014) and qualitative assessments (Somogyi et al. 2010; Codron, Montaigne, and Rousset 2013) has enhanced our ability to explain the actual features of written grape contracts. A similar process would highly contribute to the broadening of the knowledge base on procurement strategies in U.S. emerging regions (see Franken and Bacon 2014; Miranda and Chaddad 2014).

In spite of the contributions of this dissertation, we need to advance our understanding of the drivers of “grow-or-buy” decisions in emerging clusters. This dissertation paves the way for additional studies of the grape procurement strategies in the U.S. wine industry. In Chapter II, I outline a series of research questions that require further consideration. Below, three research avenues are highlighted. At the individual level, scholars must assess the influence of the objective function of owners on organizational choices. In California, Scott Morton and Podolny (2002) show that entrepreneurs often derive utility from outcomes beyond profit maximization, such as the provision of high quality (see also Thornton 2013). In the future, it is worth scrutinizing the role of personal motivations on the level of vertical integration adopted in emerging regions.

The U.S. wine industry also provides a rich environment for the analysis of the relationship between firm heterogeneity and “make-or-buy” decisions. As Miranda and

Chaddad (2014) point out, the lack of skills of the entrepreneur highly constrains the set of feasible organizational choices of several nascent wineries. This dissertation provides additional evidence on the impact of the ownership of diverse bundles of capabilities and resources on the grape procurement strategies adopted in emerging regions. Nevertheless, I acknowledge the limitations of the measurement approach adopted in Chapters III and IV. Further studies might depart from the conclusions presented here, advancing in the construction of independent variables.

Finally, more research is needed on the influence of cluster-level factors on grape procurement decisions. Since the 1980s, a process of progressive institutional building has allowed several New World wine clusters to achieve quality upgrading (Giuliani and Bell 2005; Giuliani 2007; McDermott, Corredoira, and Kruse 2009; Beebe et al. 2013). To some extent, a similar phenomenon is already occurring in several U.S. emerging clusters. Nevertheless, it is not clear how effective these efforts are in building a cohesive identity. For the same reason, scholars need to investigate the influence of diverse network properties on performance. For example, does the establishment of formal ties – e.g., through a wine trail – facilitate the exchange of knowledge among wineries? How do collective actions affect the features of the set of feasible governance structures?

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APPENDIX A

Organizational Diversity in the Missouri Wine Industry Questionnaire – Case Studies

The winery

1. What is your job in the winery?
2. When was the winery established? What came first: the winery or the vineyard?
3. What was the main motivation to establish the winery?
4. What is your current wine production? Can you give numbers on the growth of production during the last decade?
5. How many people work for the winery? What are the specific experience/skills they have on:
 - i) vineyard management;
 - ii) measuring the attributes of the grape produced by other growers;
 - iii) wine production and quality control?
6. What segments of the market do the brands sold by the winery cover?
7. Is your wine bottled as “grape variety” or “grape blend”?

Grape procurement

8. What are the ingredients you use to produce wine:

Grape ____%; Grape juice ____%; Bulk wine ____%; Others ____%?

9. What are the grape varieties the winery uses?

10. How does the winery obtain the grape it uses for wine production? Is the current procurement strategy working well? Do you plan to change your current grape procurement strategy?

11. What factors do you take in consideration when making decisions about how much grape to buy in the market vs. how much grape to produce in your own vineyard?

12. Does type of grape variety affect your procurement decision? If so, what varieties would you buy in the market and what varieties would you grow in your own vineyard? Why?

13. In general, do you perceive an “alignment” between your supply source and the price of the wine you sell? How would this “alignment” look like? Any relationship between your sourcing options and the percentage of grape you use (e.g., more grape juice with the grape bought in the spot market)?

Specific information about the governance of transactions

Vertical Integration: ____% of the total supply, divided into the following types of grapes:

i) _____ ()% of the total.

What is the average price of the wine that uses it:

What is the evolution through time?

ii) _____ ()% of the total.

What is the average price of the wine that uses it:

What is the evolution through time?

iii) _____ ()% of the total.

What is the average price of the wine that uses it:

What is the evolution through time?

iv) _____ ()% of the total.

What is the average price of the wine that uses it:

What is the evolution through time?

Formal contracts: ____% of the total supply, divided in ____ different transactions:

i) _____ ()% of the total. Type of grape:

Time of relationship?

Can you provide a copy of the contract?

Is the supplier your personal friend?

What is the average price of the wine that uses it?

What is the evolution through time?

ii) _____ ()% of the total. Type of grape:

Time of relationship?

Can you provide a copy of the contract?

Is the supplier your personal friend?

What is the average price of the wine that uses it?

What is the evolution through time?

iii) _____ ()% of the total. Type of grape:

Time of relationship?

Can you provide a copy of the contract?

Is the supplier your personal friend?

What is the average price of the wine that uses it?

What is the evolution through time?

Informal contracts: ____% of the total supply, divided in ____ different transactions:

i) _____ ()% of the total. Type of grape:

Time of relationship?

Is the supplier your personal friend?

How does this relationship work?

What is the average price of the wine that uses it?

What is the evolution through time (for each type)?

ii) _____ ()% of the total. Type of grape:
Time of relationship?
Is the supplier your personal friend?
How does this relationship work?
What is the average price of the wine that uses it?
What is the evolution through time (for each type)?

iii) _____ ()% of the total. Type of grape:
Time of relationship?
Is the supplier your personal friend?
How does this relationship work?
What is the average price of the wine that uses it?
What is the evolution through time (for each type)?

14. Does your profitability depend more on one of the relationship with one of these partners?

15. Are you able to give very specific advice on the management of the vineyard to grape producers? Why (or why not)? Possible limitations: lack of skills or limited resources (time, staff, etc.).

16. Do you inform grape producers about required growing practices? How do you inform (contract, constant communication)? Are these specific growing practices monitored and enforced?

17. Is timing delivery a critical issue in your case?

18. Do you monitor growers during the year? What is the frequency? Who decides the critical aspects related to grape production (harvest date, changes in the vineyard, etc.)?

19. Do you impose limits to the amount (or yield) produced by each grower? Do you consider this would be a useful strategy for quality control of the grape? Any other type of specific investment?

20. How do you evaluate the quality of grape delivered? Do you have a system of bonuses or penalties? Is this system formally specified?

21. When do you negotiate prices with the grape producer? How do you identify the exact price for the grape you want to buy (the reference for the price)?

22. Do you have different contracts depending on the expectations you have on quality? What are the main differences among these contracts? More specific clauses? Pricing system? Mandatory investments? What does determine the choice of each type of contract for each producer? Skills? Personal relationship?

23. Can you reject the grapes if you believe they are not appropriate for wine production? In practice, would you reject?

24. How is your relationship with grape growers? Any conflicts? Of what kind (measurement, use of certain practices/ specific investments, price)?

25. Do you think contracts can deliver the same grape quality as vertical integration does? Why or why not?

Spot market: ____% of the total supply.

26. Where do you buy it?

27. What is the average price of the wine that uses it?

28. Are you able to measure the quality attributes of this grape? Any thoughts on that?

29. Do you think measuring the quality attributes of the grape is possible only by observing the final product? Any thoughts on that?

30. When it comes to grape procurement, do you have an ideal proportion in mind?

Vertical integration: 0 – 20% __; 20 – 50% __; 50% – 70% __; 70% – 90% __; 100% __.

31. As part of this plan, is there any grape variety that you would like to produce more? Why?

32. What about the rest of your “ideal procurement strategy”?

Formal or informal contracts: ____% and ____%; Spot market: ____%.

33. Why did you choose this ideal proportion? Why is it different from your actual proportion?

34. What are the main limitations for achieving the ideal proportion?

__ Financial constraints; __ Skills owned by the winery; __ Skills detained by neighbors;
__ Lack of suitable land for grape production.

35. What determines the acquisition of the following skills?

(i) Vineyard management techniques:

(ii) Measurement of grape attributes:

36. Are these skills substitutes at all?

APPENDIX B



This survey is part of a research and outreach project conducted by three universities – University of Missouri, Michigan State University and Cornell University – and funded by the U.S. Department of Agriculture (USDA). We also benefit from a partnership with Western Illinois University.

Our purpose is to better understand current strategies and to identify common challenges faced by wineries in the emerging wine regions of Illinois, Missouri, Michigan, New York, and Vermont. Ultimately we intend to generate knowledge to help these wineries become more successful.

Given the breadth of the questions included, we suggest that a person with deep knowledge about the business such as the winery owner or general manager answer it. We estimate it will take the respondent about 30 minutes to complete the survey.

Your participation is voluntary and your answers to the survey will be completely confidential. The results of our analyses will be shared only in a consolidated form, which will not identify individuals or specific wineries.

Thank you in advance for agreeing to participate.

1. ZIP Code of your winery: _____.

2. In what year was your winery licensed? _____.

3. Why did you decide to enter the wine business? Please check all that apply:
 - Opportunity to enter the family business
 - Good business opportunity
 - Lifestyle or hobby objectives
 - Retirement nest egg
 - Passion for wine and food
 - Join the wine community
 Other (please specify):_____.

4. Which one was the most important? Please check only one:
 - Opportunity to enter the family business
 - Good business opportunity
 - Lifestyle or hobby objectives
 - Retirement nest egg
 - Passion for wine and food
 - Join the wine community
 Other (please specify):_____.

5. To what extent is maximizing profit an objective of your winery?
 Not Important 1 2 3 4 5 Very Important

6. Are you willing to sacrifice profits to produce a high quality wine?
 Very likely 1 2 3 4 5 Very Unlikely

7. What percent of your wines are named after family? _____%

8. If I had more financial resources I would invest more in the winery.
 Very likely 1 2 3 4 5 Very Unlikely

9. How much time do you devote to socializing with wine industry people (e.g. winery owners, restaurateurs, etc.)?
 A Little 1 2 3 4 5 A Lot

10. Do you have a specific rate of return from your winery in mind? YES___ NO___

11. How important is it for you continuing family ownership of the winery?
Not Important 1 2 3 4 5 Very Important

12. What percent of the family income comes from the winery?
() 0 – 20% () 21% – 40% () 41% – 60% () 61%-80% () 81%-100%

13. Gallo is a superior wine company in comparison to Mondavi.
Strongly Disagree 1 2 3 4 5 Strongly Agree

14. How many persons (excluding unpaid family workers and labor supplied by third party contractors) worked at the winery (including the vineyard if applicable) in 2014?

Full time, year round _____; Part time, year round _____; Part time, seasonal _____.

15. What is the wine storage capacity of your winery? _____gallons.

16. What was your total wine production in 2014? _____cases.

17. Over the previous three years (2012-2014), your annual wine production has:

- () been stable at the same level.
- () increased. By how much? _____%
- () decreased. By how much? _____%
- () Not applicable (if winery has less than 3 years in business).

18. Over the previous three years (2012-2014), your winery sales revenue has:

- () been stable at the same level.
- () increased. By how much? _____%
- () decreased. By how much? _____%
- () Not applicable (if winery has less than 3 years in business).

19. What percentage of your winery's gross revenue is from wine sales only? ____%.

20. In the past three years, what percentage of your total wine production was made from (sum to 100%):

Vinifera Grapes __% Hybrid Grapes __%Native American Grapes __%Other __%

21. What percentage of your total wine production is from grapes/bulk wine/juice concentrate that you:

Produce in your own vineyards (estate grown grapes)? _____%
Acquire in spot/cash markets as needed? _____%
Procure via verbal (handshake) contract? _____%
Procure via written contract? _____%

22. Currently, what percentage of wine volume is sold...?

At the winery	%
Direct to liquor stores	%
Direct to restaurants	%
At a farmers market	%
Direct mail order shipments	%
Through distributors	%
Festivals or community events	%
Other:_____	%

23. Do you outsource any of your wine making to another winery?

- () No, I produce all wine on site.
() Yes, I outsource.

24. Consider the wineries that compete with your winery (i.e. your main competitors). Please rate your winery relative to your top 3 competitors based on the following attributes:

	Much Lower than Rivals		About the Same	Much Higher than Rivals	
	1	2	3	4	5
Number of different wines available for sale					
N/A					
Ability to stage major events (e.g. wedding, concert, etc.)	1	2	3	4	5
N/A					
Geographic proximity to other wine trail members	1	2	3	4	5
N/A					
Fermentation and bottling on premise	1	2	3	4	5
N/A					
Wine quality	1	2	3	4	5
N/A					
Quality of customer service	1	2	3	4	5
N/A					
Quality of wine and food experience	1	2	3	4	5
N/A					
Winery tours	1	2	3	4	5
N/A					
Tasting room capacity	1	2	3	4	5
N/A					
Ability to produce estate-grown grapes	1	2	3	4	5
N/A					
Ability to source quality grapes from growers	1	2	3	4	5
N/A					

25. Again, consider the wineries that compete with your winery (i.e. your main competitors). Compare your winery's performance relative to your top 3 competitors based on the following attributes:

	Much Lower than Rivals		About the Same	Much Higher than Rivals	
	1	2	3	4	5
Competitive position in the wine industry	1	2	3	4	5
Customer satisfaction	1	2	3	4	5
Tasting room experience	1	2	3	4	5
Wine quality	1	2	3	4	5
Introduction of new, higher value products	1	2	3	4	5
Profitability	1	2	3	4	5
Overall performance	1	2	3	4	5

26. For each type of business or organization below, with how many different entities do you regularly interact, collaborate, or exchange information?

Individual grape growers	_____	(number of ties)
Other wineries	_____	(number of ties)
Other food and beverage providers	_____	(number of ties)
Restaurants	_____	(number of ties)
Hotels, motels and B&Bs	_____	(number of ties)
Tour operators	_____	(number of ties)
Local attraction and recreation providers	_____	(number of ties)
Grape and wine industry association	_____	(number of ties)
Colleges and Universities	_____	(number of ties)
Government agencies	_____	(number of ties)
Lenders	_____	(number of ties)
Cooperatives	_____	(number of ties)
Other (explain) _____	_____	(number of ties)

27. What is the extent of collaboration (or how strong is the relationship) that your winery has with the following entities?

	None		Some		Great Deal
Individual grape growers	1	2	3	4	5
Other wineries	1	2	3	4	5
Other food and beverage providers	1	2	3	4	5
Restaurants	1	2	3	4	5
Hotels, motels and B&Bs	1	2	3	4	5
Tour operators	1	2	3	4	5
Local attraction and recreation providers	1	2	3	4	5
Grape and wine industry association	1	2	3	4	5
Colleges and Universities	1	2	3	4	5
Government agencies	1	2	3	4	5
Lenders	1	2	3	4	5
Cooperatives	1	2	3	4	5
Other (explain) _____	1	2	3	4	5

28. With how many other wineries do you collaborate with in the following activities?

Sharing equipment	_____	(number of ties)
Wine trails	_____	(number of ties)
Cross promotion	_____	(number of ties)
Funding/producing promotions	_____	(number of ties)
Events and festivals	_____	(number of ties)
Purchasing supplies	_____	(number of ties)
Signage	_____	(number of ties)
Wine quality improvement	_____	(number of ties)
Bottling	_____	(number of ties)
Participating in research and extension	_____	(number of ties)
Sharing personnel	_____	(number of ties)
Government lobbying	_____	(number of ties)
Industry fundraising	_____	(number of ties)
Other (explain) _____	_____	(number of ties)

34. How many years of experience do you have:

- (a) In the wine industry? _____ years.
- (b) In grape production? _____ years.
- (c) In agriculture? _____ years.
- (d) In owning or managing a business? _____ years.

35. How many hours per week do you spend managing your winery or conducting activities related to your wine business (e.g. vineyard, tasting room, planning, etc.)? _____ hours per week.

36. What percentage of your current net worth is invested in the winery? _____%.

37. What is your age? _____ years.

Please indicate how much you agree or disagree with the following statements:

38. I have met or I am on track to meet my initial business goals that I had outlined at the time of startup.

I strongly disagree 1 2 3 4 5 I strongly agree.

39. I am able to offer my employees a steady, secure and enjoyable job.

I strongly disagree 1 2 3 4 5 I strongly agree.

40. Owning this winery makes me feel a sense of personal fulfillment.

I strongly disagree 1 2 3 4 5 I strongly agree.

41. I feel that by owning this winery, I am positively contributing to the wine industry and its consumers.

I strongly disagree 1 2 3 4 5 I strongly agree.

42. If given the option to make the decision a second time, I would again choose to assume ownership of this winery.

I strongly disagree 1 2 3 4 5 I strongly agree.

In the last part of the survey, we want to understand the factors that explain why some grape varieties are produced by the winery while others are obtained from transactions with independent grape growers. **Our goal is to help wineries make better decisions about grape procurement and to avoid excessive costs.**

Please select the grape varieties that your winery uses from the options below and write the names of the varieties in the spaces provided below the table. **You might choose up to five varieties that best define your winery.** For example, you can choose the two most representative varieties in terms of volume and three varieties that, in your opinion, offer the greatest potential to produce high quality wines.

Cabernet Sauvignon	Catawba	Cayuga White	Chambourcin
Chancellor	Chardonel	Chardonnay	Concord
Delaware	Frontenac	Gewurztraminer	Merlot
Muscat	Niagara	Norton	Pinot Noir
Riesling	Sauvignon Blanc	Seyval Blanc	St. Vincent
Syrah	Traminette	Vidal Blanc	Vignoles
Vivant	Zinfandel		

List selected varieties below:

Grape #1. _____

Grape #2. _____

Grape #3. _____

Grape #4. _____

Grape #5. _____

For the following questions, please use the above list to answer each question in relation to each grape by matching the grape number below to the type of grape you specified for the corresponding number above. (e.g. if four grapes are chosen, each question will be answered four times total - one time for each grape.)

43. For the past harvest, which option best describes how you sourced this grape variety? You may choose more than one option if this is the case.

Grape #1. _____

- Produced in your own vineyard (estate grown)? Quantity: _____ tons.
- Acquired in spot/cash markets as needed? Quantity: _____ tons.
- Procured via verbal (handshake) contracts? Quantity: _____ tons.
- Procured via long-term written contracts? Quantity: _____ tons.

Grape #2. _____

- Produced in your own vineyard (estate grown)? Quantity: _____ tons.
- Acquired in spot/cash markets as needed? Quantity: _____ tons.
- Procured via verbal (handshake) contracts? Quantity: _____ tons.
- Procured via long-term written contracts? Quantity: _____ tons.

Grape #3. _____

- Produced in your own vineyard (estate grown)? Quantity: _____ tons.
- Acquired in spot/cash markets as needed? Quantity: _____ tons.
- Procured via verbal (handshake) contracts? Quantity: _____ tons.
- Procured via long-term written contracts? Quantity: _____ tons.

Grape #4. _____

- Produced in your own vineyard (estate grown)? Quantity: _____ tons.
- Acquired in spot/cash markets as needed? Quantity: _____ tons.
- Procured via verbal (handshake) contracts? Quantity: _____ tons.
- Procured via long-term written contracts? Quantity: _____ tons.

Grape #5. _____

- Produced in your own vineyard (estate grown)? Quantity: _____ tons.
- Acquired in spot/cash markets as needed? Quantity: _____ tons.
- Procured via verbal (handshake) contracts? Quantity: _____ tons.
- Procured via long-term written contracts? Quantity: _____ tons.

Please indicate how much you agree or disagree with the following statements:

44. I am satisfied with the total cost or price of acquisition of this grape variety.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

45. I am satisfied with the level of cost or price stability of this grape variety.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

46. I am satisfied with the level of supply stability of this grape variety.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

47. I am satisfied with the overall quality of this grape variety.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

48. To assess or measure the quality attributes of this grape variety, we need detailed information on how it was produced.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

49. We are able to easily and accurately measure all relevant quality attributes of this grape variety if we have to acquire it from an independent grape grower.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

50. Relative to other varieties, growing this grape variety demands very specific knowledge on vineyard management.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

51. For this variety, I know independent growers whose production I do not need to evaluate much because it has always been high quality.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

52. This grape variety allows me to produce highly differentiated (distinctive) wines.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

53. Considering the industry as a whole, consumers perceive wines produced with this grape variety as high quality wines.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

54. Consumers perceive the wines I produce with this grape variety as highly differentiated.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

55. Compared to other grape varieties, the average cost of growing this variety is relatively high.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

56. The demand for wines produced with this variety changes a lot from year to year.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

57. Other wineries in my region can use this grape variety to produce wines with the same quality I produce.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

58. Many independent grape growers in my region are able to supply this grape variety with high quality.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

59. There is much I can learn from the independent grape growers who produce this variety in the region around my winery.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

60. In the last ten years, the industry has developed new wines using this grape variety.

	I completely disagree		Neutral	I completely agree	
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

61. Our winery would face constraints (e.g. land availability, human resources, financial) if we decided to start or increase the production of this variety.

	I completely disagree		Neutral		I completely agree
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

62. Relative to our competitors, our *terroir* has favorable conditions for the production of this variety.

	I completely disagree		Neutral		I completely agree
Grape #1. _____	1	2	3	4	5
Grape #2. _____	1	2	3	4	5
Grape #3. _____	1	2	3	4	5
Grape #4. _____	1	2	3	4	5
Grape #5. _____	1	2	3	4	5

Would you like to receive a final report with the study's collective findings?

If you have any comments or remarks concerning the survey, they are welcome below:

Your response is valuable to our research and we appreciate you taking the time to contribute.

VITA

Bruno Varella Miranda was born in São Paulo, Brazil, on February 2, 1984. He completed his Master's Degree in Administration at the University of São Paulo (USP) in 2009, performing research in the Agribusiness Intelligence Center (PENSA) under the supervision of Dr. Sylvia Saes. Three year earlier he earned a bachelor of arts in International Relations from the same institution. Since his arrival to Columbia in 2012, Bruno served in different capacities on the Graduate Students of Agricultural and Applied Economics Association (GSAAE). He also taught Microeconomics at Central Methodist University and Strategic Management at the University of Missouri. His research interests include organizational economics, organization theory, and strategy.