



Farm resources, transaction costs and forward integration in agriculture: Evidence from French wine producers

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ABSTRACT

This research aims to understand why French wine producers venture into direct sale to customers instead of selling bulk wine to wine companies. The empirical tests on the French Farm Census confirm the value of both Resource-Based Perspective and Transaction Cost Economics in understanding organizational choices in agriculture and food markets. Because asset specificity in wine trade is low on average, large wine producers have an advantage over smaller ones and so are more likely to venture into direct sale of generic wines. By contrast smaller wine producers are more likely to rely on the bulk wine market, which is less risky for them. In addition our model helps us to understand the effect of the State-sponsored certification of grape and wine quality, the Protected Designation of Origin system. All other things being equal, producers with vineyards of high reputation (PDO) are also more likely to bottle and sell their wines; we guess this is because they wish to capture the value of the PDO reputation, the collective brand name capital owned by the farmers. Finally, saving on transaction cost is only one side of the coin: the most educated wine producers can profitably reinvest their knowledge and capabilities into new activities. These choices have important consequence on the French Wine Supply Chain governance.

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Introduction

The economic literature on vertical integration in food chains mostly concerns processing firms (Ménard and Klein, 2004; Reimer, 2006; Reynolds, 2004). Research on this topic in the agricultural sector has been very limited to date (Battershill and Gilg, 1998; Kirwan, 2006; Summer and Wolf, 2002). In contrast, the broader topic of farm household pluri-activity – i.e. the generation of income additional to that from primary agriculture by any member of the household – a horizontal extension, has been widely studied by rural scholars in OECD and developing countries (See special issues in Fuller, 1990; Barrett et al., 2001; Otsuka and Yamano, 2006).

The characteristics of agricultural holdings – micro-businesses with largely immobile capital and labor – and the attention given to off-farm diversification have kept the topic of forward integration at some remove from scientific debate on the re-organization of firms and the global food chain. To our knowledge, little work in economics has been done from this perspective on farmers' ven-

tures into food processing and trade (Alsos and Carter, 2006; Ventura and Milone, 2000; Brester, 1999).

The renewal of organizational economics – especially Resource-Based Perspective and Transaction Cost Economics – provides a suitable framework for analyzing vertical integration in agriculture. We use both theories to explain an important feature of the French wine supply chain organization. The difficulties of the French wine industry in the early 21st century raise questions about the vertical organization and the governance of transactions on the wine markets. Moreover the relationship between supply chain organization and performance is important for European policy makers, especially in the context of ongoing Common Market Organization reform.

This study was designed to investigate the relation between farm resources and transaction costs on alternative farmer marketing strategies. Its combines the analyses of several determinants of the organization of the firm and supports its claims with an econometric analysis of an exhaustive database of the 38,000 French wine producers.

The first two sections of the paper present the French wine supply chain and the theoretical framework. This framework serves as the basis for specific empirical predictions and the logistic regression model presented in the third section. The main results, discussion and policy implications are presented in the last section.

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The French wine supply chain

The core activity in grapegrowing consists in crop-production tasks such as vine training, pruning, thinning, water management, and harvest. Forward activities—grape crushing, fermentation, clarification of wines, aging, bottling and marketing—are generally carried out by other categories of firms. Scale economies and commercial constraints explain the transfer of these functions outside the farm.

In France these processes affect the wine sector less than other parts of agricultural economics. However, they leave their mark on the industry in the new wine exporting countries (USA, Australia, Argentina, Chile, South Africa), and also in major European countries like Spain or Portugal (Cesaretti et al., 2006; Gatti et al., 2003). France typically, though, has a high proportion of integration of downstream activities by grape-harvesters.

The French Farm Census (individual data collected by the French Ministry of Agriculture and Fisheries) provides detailed statistics on the composition of labor, land, material, and on the different crops produced. A supplementary section on grapegrowing activities provides information on what grape harvests and vine products become (processing and trade channels, by legal category of wine). The French Farm Census offers the advantage of collecting information on an exhaustive population, thereby precluding selection bias. The last two censuses (1988 and 2000) are used here. The population of growers surveyed (166,282 individuals in 1988 and 109,869 in 2000) is large enough to allow segmentation into sub-populations within narrower bounds. We distinguish three categories of vine growing farms. First, grapegrowers (in French *viticulteur*) are producers confining themselves to farming (see Table 1). They are frequently but not exclusively farms with relatively small areas of vines, with a subgroup of grapegrowers not being vine specialists. They supply their harvest to two categories of firms: winemaking cooperatives whose capital is held by member operators, or wine trading firms with private capital (*négociants*). Half of the French harvest is processed by both these categories of large firms.

The other half of the grape harvest is processed by wine producers (in French *cave particulière*), who own a crushing facility to process fruit. Unlike the US, Australian or South African wineries which crush grapes either bought in or produced by the firm indifferently, French wine producers produce wine exclusively from grapes grown on their own plots. This is an administrative restriction. This farm production is sold in bulk to wine trading companies or, less often, through the channel of marketing producer groups. The wine could also be sold in bottles or in small containers to a direct marketing base of consumers, retailers or caterers. Within wine producers, wine producers-traders (in French *château* or *domaine commercialisant*) adopt a strategy of full vertical integration, extending from grapegrowing through to marketing and

including the bottling and packaging of wines with their own brand (see Fig. 1). Our paper focuses on the skills-support strategies of wine producers in terms of marketing and selling wine. More precisely, our aim is to understand why 13,386 out of a total of 37,875 wine producers chose to integrate a commercial activity. The econometric study is based on the subset of wine producers within the 1988 and 2000 Farm Census.

One transaction is central to our analysis: the sale of bulk wine to middlemen, the alternative choice being direct sales of bottled wines to customers. The marketing of processed food by farmers is original in agriculture, and, in the wine industry, exclusively significant in France and some Italian regions.

Forward integration: Two explanations

Research in economics has highlighted numerous explanations of forward integration in supply chains, such as market power, countervailing power, risk management, efficiency or incentives alignment (Carlton and Perloff, 1994; Milgrom and Roberts, 1992). Gains from trade arise where diverse agents specialize in activities in which they have a competitive advantage, but agents also need to coordinate to produce and allocate resources. According to Oliver Williamson (Williamson, 1985), markets and firms are alternative ways of solving the same fundamental problem of coordination; even so they use two mechanisms with different transaction costs: price adjustment versus extensive administrative controls. Other scholars view the firm as a response to a specific economic problem, the coordination of resources: firms are seen as heterogeneous bundles of resources, capabilities and routines historically constructed (Barney, 1991; Dosi et al., 1992). The choice by a firm to organize production internally, rather than outsourcing, solves a problem of bundling knowledge, and immaterial and material resources, not a pure problem of efficiency. Nevertheless, this second perspective and Williamson's explanation of transaction costs are increasingly seen as additional, rather than rival, explanations (Jacobides and Winter, 2005; Poppo and Zenger, 1998).

Building on capabilities to sustain and protect competitive advantages

In order to sustain competitive advantage, it is necessary to build on specific capabilities to produce new resources, rather than merely distribute preexistent ones efficiently. Hence, in the Resource-Based Perspective, the distinctive parts of an organization's core competencies could not simply be replicated from the market (Langlois and Foss, 1999; Teece and Pisano, 1994; Teece et al., 1997). The advantage is strongly linked not only with the resources the firm could buy, but also with the resources the firm could produce internally (Barney, 1991; Prahalad and Hamel, 1990). The firm's efficiency depends on the coherence between skills and physical assets, and the use to which managers are able to put them. If the heterogeneous capabilities of the firms are persistent it could be explained by resistances in the transfer of innovations, and the importance of routines in the practical management of productive processes. These resistances are attributable to the inertia of physical assets and knowledge between firms. A major explanation of the production design is the heterogeneous distribution of productive assets between firms. It is also in the way each firm uses its assets. Firms are the result of idiosyncratic processes. The manager and other workers are able to build internal know-how about the efficient use of materials and knowledge. These "combinative capabilities" are translated into routines which become precious assets for the firm (Kogut and Zander, 1992). For the Resource Based Perspective, vertical integration becomes necessary when it is related to the protection of strategic

Table 1
Characteristics of French grapegrowing holdings. Source: Farm Census, French Ministry of Agriculture and Fisheries (2000)

Category	Number	Vineyard area (×1000 ha)	Grape harvest (×1000 hl)	Bulk wine production (×1000 hl)	Volumes marketed (×1000 hl)
Grapegrowers	71,994 (65.5%)	398.4 (46.1%)	26,530 (45.8%)	0 (0%)	395 (4.6%)
Bulk wine producers	24,489 (22.3%)	205.7 (23.8%)	16,245 (28.1%)	13,938 (49.5%)	180 (2.1%)
Wine producers-traders	13,386 (12.2%)	259.7 (30.1%)	15,139 (26.1%)	14,208 (50.5%)	8006 (93.3%)
Total above	109,869 (100%)	863.9 (100%)	57,915 (100%)	28,147 (100%)	8581 (100%)

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