Title

Reputation and Status in the High-Quality Wine Industry

Permalink

https://escholarship.org/uc/item/37g1980j

Author

Kleinhans, Joern

Publication Date

2018

Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA,
IRVINE

Reputation and Status in the High-Quality Wine Industry

DISSERTATION

submitted in partial satisfaction of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

in Management

by

Jörn Kleinhans

Dissertation Committee:
Professor Philip Bromiley, Chair
Associate Professor John Joseph
Associate Professor Libby Weber

2018

TABLE OF CONTENTS

CURRICULUM VITAE

Jörn Kleinhans

2003   Diplom-Betriebswirt (FH), Finance
Hochschule für Bankwirtschaft, Frankfurt School of Finance and Management
Frankfurt, Germany

2004   Master of Science. Mathematics
California State University, Long Beach
Long Beach, California

2018   Ph.D., Management (Strategy)
University of California, Irvine
Irvine, California

FIELD OF STUDY

Firm Reputation, Status, and their Implications for Strategic Management

ABSTRACT OF THE DISSERTATION

Reputation and Status in the High-Quality Wine Industry

By

Jörn Kleinhans

Doctor of Philosophy in Management

University of California, Irvine, 2018

Professor Philip Bromiley, Chair

This dissertation seeks to understand how and when firms actively build reputation, how firms adjust product quality in response to sudden status changes, how existing reputation and status levels influence price levels. The empirical setting for all three studies is the high-quality wine segment of Bordeaux, France.

INTRODUCTION

<u>**Study 1**</u>
Underpricing Wine to Build Reputation:
Evidence on Signaling in Price Setting of New Product Releases

In markets characterized by ambiguous product quality, firms aspiring for a high-quality reputation will likely choose to signal high quality. In the Bordeaux region, wineries set an initial price for their wines, which then enter a secondary market in which investors buy and sell the wines at publicly posted market prices. Wines that increase in price in the secondary market reflect positively on their producers, and vice versa for lowering prices. We argue that producers underprice new products to create a positive reputation from subsequent market price increases, and that a firm's age, ownership status, and production output influence a producer's tendency to underprice. This study extends reputation theory to consider reputation building based on intentional management actions and targeted use of industry-specific mechanisms.

<u>**Study 2**</u>
Losing Status and Getting it Back:
How Status-Changing Events Influence Firm Strategy
Evidence from the Cru Bourgeois Classification of French Bordeaux Wine

We examine firm reactions to status-changing events in a market strongly oriented around quality. In the French Bordeaux wine market, a setting with clear status demarcations, we observe how firms change product quality after experiencing reclassification of their status. We

find that a loss of status drives wineries to improve quality quickly and significantly. Further, the quality improvement effect appears to last several years. The analysis also finds quality improvement following a status gain, suggesting that quality increases following both types of status change. Our study is set in the Bordeaux red wine industry, where certain wines are reassessed annually for inclusion in the status category "Cru Bourgeois."

Study 3
Quality Is Not Everything:
Evidence of the Status and Reputation Premiums
in the High-Quality Wine Industry of Bordeaux

Status and reputation may influence individual firms to set product prices far below or above the peer group average. In the high-end Bordeaux wine market setting, we first identify the median release price charged for wines of a given quality level. Differentiating 14 ordinal quality levels by using wine critic scores, we then test whether firm status and reputation help explain pricing set by the firm. Results indicate both status and reputation, separately and together, help determine the extent to which firms deviate from the price as it would be determined solely by quality level.

Underpricing Wine to Build Reputation:
Evidence on Signaling in Price Setting of New Product Releases

Jörn Kleinhans
University of California, Irvine
The Paul Merage School of Business
4293 Pereira Drive
Irvine, CA 92697-3125
jkleinha@uci.edu
310 467 5582

Underpricing Wine to Build Reputation:
Evidence on Signaling in Price Setting of New Product Releases

ABSTRACT

In markets characterized by ambiguous product quality, firms aspiring for a high-quality reputation will likely choose to signal high quality. In the Bordeaux region, wineries set an initial price for their wines, which then enter a secondary market in which investors buy and sell the wines at publicly posted market prices. Wines that increase in price in the secondary market reflect positively on their producers, and vice versa for lowering prices. We argue that producers underprice new products to create a positive reputation from subsequent market price increases, and that a firm's age, ownership status, and production output influence a producer's tendency to underprice. This study extends reputation theory to consider reputation building based on intentional management actions and targeted use of industry-specific mechanisms.

KEYWORDS

corporate reputation, signaling, IPO underpricing, family-owned business, wine

Underpricing Wine to Build Reputation:
Evidence on Signaling in Price Setting of New Product Releases

INTRODUCTION

In markets in which consumers experience difficulty assessing quality, firm reputation may substitute for direct measures of quality in driving consumer behaviors (Deephouse, 2000; Frooman, 1999; Pfarrer, Pollock, and Rindova, 2010; Weigelt and Camerer, 1988). Consequently, reputation is paramount in such markets, providing firms with incentives to actively manage their reputations (Fombrun and Shanley, 1990). However, improving reputation demands indirect mechanisms, since market participants trust independent, outside observers' judgments more than direct statements from a firm. Managers therefore select actions designed to make influential outside stakeholders send positive signals about the firm or its products, increasing the firm's reputation (Milgrom and Roberts, 1986).

This study examines how producers signal quality to increase reputation. Firms with frequent product launches are especially interested in the benefits of reputation improvements (Beatty and Ritter, 1986), since improving reputation justifies higher prices for future products before customers have actual experience with the products. Despite many studies on reputation, limited literature examines conscious manipulation of reputation (Fombrun and Shanley, 1990; Kotha, Rajgopal, and Rindova, 2001). This paper addresses the gap by reviewing the managerial practice of active reputation building, examining how a firm's characteristics influence use of reputation-building mechanisms.

Early research on reputation suggests that firms seek to build reputation (Fombrun and Shanley, 1990; Rindova and Fombrun, 1999). A stream of reputation research studies the phenomenon of reputation change generally (Basdeo *et al.*, 2006; Petkova, Rindova, and

5

Gupta, 2008; Rindova, Petkova, and Kotha, 2007). The recent studies emphasize either the prevention of negative reputations (Love and Kraatz, 2010; Zavyalova *et al.*, 2016) or external factors influencing firm reputations (Flanagan and O'Shaughnessy, 2005; Wei, Ouyang, and Chen, 2017). In contrast to the loss-prevention perspective, we address reputation building, recognizing that firms seek mechanisms and create events that increase reputation.

Further, this study extends the discussion of reputation by demonstrating that firms take actions with substantial immediate costs to influence reputation, corroborating that firms take reputation seriously and will forfeit present income to boost reputation. In the context chosen for this study, we show that firms use pricing policies to build reputation in markets characterized by uncertain product quality through a mechanism enabled by a well-developed secondary market.

Our results counter traditional assumptions. Marketing and past work on signaling theory (Spence, 2002) emphasize firms using high price to signal quality (and therefore build reputation) (Connelly et al., 2011; Milgrom and Roberts, 1986). In contrast, we show that some firms underprice newly released products to increase reputation by an alternative mechanism that applies in industries with established secondary markets. In the current context, while the wines we study may trade at high absolute prices, firms, on average, underprice relative to fair market values, thereby delivering both the quality signal of high prices and reputation building based on relative underpricing.

LITERATURE REVIEW

Corporate reputation serves as an important intangible strategic asset (Hall, 1992), as positive reputations encourage favorable decision-making processes for prospective customers (Frooman, 1999), and strengthen relations with existing customers and stakeholders (Shapiro, 1983). A good reputation can be the most valuable organizational asset (Gibson, Gonzales, and Castanon, 2006), and studies in strategic management show that reputation influences firm performance (Weigelt and Camerer, 1988). Reputations partially explain financial performance and long-term competitiveness (Ertug and Castellucci, 2013; Roberts and Dowling, 2002).

Firms sometimes sacrifice short-term profits to build non-economic value, including firm reputation (Chrisman and Patel, 2012), particularly in industries where unclear product quality makes reputation one of a few reference points for outside observers (Leitterstorf and Rau, 2014). Good reputation comes from a history of proven quality (Roberts and Dowling, 2002), and the public's assessment of quality depends on the sum of available impressions, often driven by critics and publications, but also fair market prices in industries with aftermarkets. Although firms can signal high quality through advertising and other promotional mechanisms, observers trust outsiders' evaluations and independent quality statements more than firm statements because such non-firm sources avoid conflicts of interest and potential adverse selection. Word-of-mouth among consumers influences firm reputation, as do published assessments from product reviewers. Additional third-party factors that influence firm reputation include published rankings, contests, and certifications (Rao, 1994).

A challenge in the corporate reputation literature is that researchers often define reputation in different ways (Barnett, Jermier, and Lafferty, 2006; Rindova and Martins, 2012; Wartick, 2002). Examining several definitions, researchers agree that corporate reputation involves a long-lasting positive or negative perception of stakeholders that is comparative (Walker, 2010).

MECHANISM OF UNDERPRICING TO GAIN REPUTATION

When releasing a new product, producers often set an original price. The initial sale from the producer to the consumer is called a primary market. Several industries, including various financial products, real estate, automobiles, and live concert tickets, have also developed secondary markets, where demand and supply determine a subsequent price.

Secondary markets, and how their prices compare to the ones in the primary markets, reflect the long-term quality perceptions of a market. In the live music concert market, a grey economy (i.e., ticket scalping) relies on underpriced tickets on release. Investment banks encourage firms to underprice IPOs, resulting in newly offered stocks generally increasing in price (Allen and Faulhaber, 1989; Judge *et al.*, 2015; Ljungqvist, 2004). Bond markets operate similarly, with initial bond purchasers often able to resell their bonds at higher prices. Secondary markets for stocks, houses, and automobiles are larger than primary markets; these products are often sold multiple times. In such industries, firms may use the interaction of original prices and secondary market prices to signal quality.

In a primary market, a firm sells a new product to a first generation of buyers, who often have limited evidence on product quality. For example, new car buyers have limited

8

evidence on vehicles' long-term durability or future value in secondary markets. Existing

firm reputation, earned over previous periods, helps during this placement period (Carter

and Dark, 1993, Rindova, Williamson, and Petkova, 2010). Once a firm has sold the

products, trading begins in secondary markets, and at that time, the public has a chance to

review and evaluate the products. Individuals share observations on the quality/price

relationship with those who have not bought or used the products. Trading in secondary

markets often occurs with more product information than available during primary market

trading. For example, with wine, products change in their early years. For automobiles,

aftermarket repair and other information become available, and with stocks, additional

public–company data becomes available.

In such markets, we observe two very different strategies regarding initial pricing.

In some markets, such as housing, producers price a product at a price that results in the

highest immediate profits, often the highest price such that all or almost all inventory sells.

In other markets, producers routinely price below what the product will trade at in

secondary markets. Ticket scalpers for sporting events and concerts exist only because

event promoters routinely set initial prices below the market clearing price. Likewise, to

have a reputation as an investment bank that offers IPOs with positive returns to equity

investors, banks encourage companies to price below the market-clearing price (Ritter and

Welch, 2002). Regarding elite wines, I find that producers often set initial offering prices

below subsequent prices in secondary markets.

Underpricing offers reputational benefits (Welch, 1989). In shows, selling all

available seats makes it appear that the show is extremely attractive, reflecting positively

on sponsors and performers. An investment bank with a reputation for underwriting that

stocks increase in value attracts more companies needing underwriting (Katti and Phani, 2016). With wines, increasing aftermarket prices produces a positive connotation for the quality of a wine and a vineyard's reputation.

Firms in such industries want to establish an initial price such that first-generation buyers gain from a higher trading price in secondary markets. This seldom happens in industries, including automobiles, cell phones, and airplanes, where products decay with age and use, or become obsolete. Contrarily, secondary markets in some industries, including IPOs, collectible wines, and concert tickets, trade products that remain in like-new condition despite prior ownership and passing of time since release. While stocks trade indefinitely, some such products can trade until their redemption date, which could be the opening of a wine bottle, or attendance at a concert; prior ownership does not diminish product quality. These industries have fixed quantities of a specific product available on the market that usually cannot expand.

Firms that produce these types of products plan to set a release price considering both revenue and impact on repute. Not selling out an allotted release quantity affects both sales volume and reputation, especially if market participants can observe sales success, and if reputation matters strongly in the industry. Often, legal and institutional factors make it almost impossible for producers to change prices after initial release. Furthermore, a firm reputation for dropping from initial prices will encourage buyers to delay purchases in anticipation of a price reduction. In such industries, producers often need to sell available volumes within a given period, either before the product becomes unusable (e.g., a concert occurs), or the firm releases a subsequent product generation. This

time pressure leads to an additional need for release price accuracy because producers have limited time and ability to adjust price to achieve desired sellouts.

In examining an industry with a robust secondary market—the high-end wine industry—we draw theoretical parallels from observations in investment banking and IPO literature, proposing that intentional underpricing of a new product release influences firm reputation positively. Research on IPOs suggests that banks intentionally underprice clients' IPOs (Judge *et al.*, 2015; Leitterstorf and Rau, 2014; Ljungqvist, 2004). The underpricing increases the likelihood that a firm's stock price will rise after the IPO, and those increases (i.e., signals) improve the advising bank's reputation as a successful IPO advisor. Among industries that use underpricing as a reputation-manipulation mechanism, IPO literature offers the best body of empirical evidence. Recent studies corroborate that average security offering prices increase by approximately 18 percent in trading after release, and these higher prices remain even after supply and demand have settled (Katti and Phani, 2016). Investment banking firms use the degree of IPO underpricing to signal quality (Allen and Faulhaber, 1989; Grinblatt and Hwang, 1989), though underpricing can have several motivations besides reputation-building (Welch, 1989).

RESEARCH SETTING

We examine quality signaling from high-quality Bordeaux wineries. Similar to IPOs, wineries set initial prices for their wines, and wine experts then buy and sell the wines in a secondary market. As with banks underpricing IPOs, we argue that wineries underprice their initial offerings so that prices rise in the secondary market. Just as a stock price increase after an IPO offers a positive signal, increases to a wine's price after issuance offer

a positive signal about the winery. We offer hypotheses regarding factors that modify this behavior, including a firm's age, ownership status, and production capacity. We test these hypotheses using a 12-year dataset of red Bordeaux wine releases and post-release prices.

Wine producers appear to systematically price new releases below expected fair market values for two reasons. Overpricing a new release relative to its fair market value leads to damaged reputation, since the subsequent price reduction takes place in public and is very visible. Buyers who lose market value on the current year's vintage from a given winery, or who observed others with such losses, hesitate to buy the winery's next vintage. Wineries therefore avoid the risk of overpricing. Underpricing also offers the advantage that a price increase in the secondary market signals high quality to the public. Although the wine producer accepts a lower price during the current year, reputation builds in a way that does not require marketing from the producer to substantiate a claim of quality. In markets with uncertain product quality, the underpricing/signaling mechanism leads to positive, external evaluations by increasing price, and therefore addresses the problem of adverse selection that inhibits effective reputation-building: Without an external validation of quality, buyers may expect that wineries overstate product quality, so that buyers avoid relying on company claims to tell good from bad products. A market increase in price of an underpriced product provides a credible product quality signal. Positive, third-party validation of the product quality/price relationship closes an information gap regarding quality between a potential buyer and seller, when the seller has a clearer understanding of the actual quality than the buyer. The publicly visible price increase serves as public testimonial to product quality demonstrating a product over-delivers in reference to a release price.

The Bordeaux high-end wine industry operates in two markets, a primary market, in which producers set prices and release wines to the public, and a secondary market, in which stores, designated exchanges, collectors, auction houses, and professional investors price and trade the stock of remaining wines based on supply and demand. Secondary market prices commonly differ significantly from primary market's release price. If the secondary market price increases above the release price, the producer does not collect the maximum profit a higher initial price would have offered. However, if the market price falls below the release price, reputation and future sales might suffer. Just like IPO firms, wineries experience a tradeoff; higher initial prices increase the immediate profit (nearly all production runs are fully sold) but also increase the chances that the secondary market will price the wine below the initial price, damaging the winery's reputation. Lower initial prices reduce immediate profits but increase the likelihood that a wine's value will increase in the secondary market, and consequently improve the winery's reputation by signaling wine quality to external observers. The hypotheses rely on the mechanism that desire for improved reputation results in lower primary market prices relative to secondary market prices. We call this underpricing, measured as market price minus release price. Thus, a firm that has a very low release price relative to subsequent market price is underpricing heavily.

Strategy researchers have used the wine industry to study relations among quality, reputation, and status of firms (Benjamin and Podolny, 1999; Malter, 2014). The wine industry offers several advantages for testing hypotheses and isolating factors, since products from a particular region differ largely by quality rather than other characteristics, and product styles are usually region-specific. Firms in the wine industry annually release

new products to the market. Dedicated wine critics and the press review the output quality and offer a prevailing consensus to consumers and investors, allowing consistent testing of time series and cross-sectional datasets.

SUBSTANTIATION OF THE MECHANISM

To substantiate the proposed underpricing mechanism as applied in the high-end wine industry, we reached out to 32 of the leading Bordeaux chateaux included in our dataset. Telephone interviews were set up in September and October 2017 with those winery representatives who agreed to discuss pricing strategy and who stated that they have personally been part of the price setting process over at least 7 recent years at the winery. We asked each manager during the phone call to point out factors they consider when setting prices for the upcoming vintage launch. When the manager mentioned price considerations relative to fair market value, we asked for further elaboration. Out of 32 wineries we approached, 12 agreed to a phone interview, and 7 out of those raised the issue of setting pricing differently from the expected fair market value. From this group of 7 managers, a subset of 5 elaborated in detail on their conscious practice of actively underpricing wines. All 5 managers were long-term senior decision makers at top 20 Bordeaux wine producers. 3 of the 5 managers allowed us to use their winery affiliation for the purpose of research.

Every year in the wine region of Bordeaux, the leading 60 wine producers that constitute the Grand Cru Classé set the release prices of the recently bottled wine vintage. In determining the release price, winery managers consider the quality of the vintage in general, and the perceived quality of their product specifically. An annual challenge is

to estimate what the fair market price will be once the wineries release the new vintage. "Overpricing would be a big mistake", comments the owner and family heir of Château Leoville Barton, "people will all talk about how the wines lose value; it damages the repute of the château for years".

While avoiding a negative reputation may be a high priority, wineries also actively consider the counter effect, by building a positive reputation through measured underpricing: "We set our price slightly below what we can get. We want to see how the market goes up and validates us. There is a lot of visibility. It will create reputation for future vintages and the château", adds the strategist of Château Lascombes.

"The importance of moderate underpricing became very clear for the Bordeaux valley in 2010", one of the owners of Château Langoa Barton explains. "2010 was a vintage of outstanding ripening conditions in the vineyard, so that many wineries seized the opportunity and set very high prices for their releases. But the market did not respond. Several wines lost value after release, and it created great damage for the Grand Cru Classé around the world. The affected wineries certainly returned to underpricing in the following years, to build back reputation through trading values climbing up upon release. Every year is a balancing act to accomplish this."

HYPOTHESES

As part of our first hypothesis, we examine the type of firm ownership in relation to the underpricing mechanism discussed. Ownership type influences both performance (Short, 1994) and managers' preferences among corporate strategy choices (Thomsen and Pedersen, 2000). Family-owned businesses behave differently than publicly traded

corporations or corporate-owned entities (Trostel and Nichols, 1982). Trostel and Nichols (1982) suggest that family-owned companies emphasize long-term profitability relative to near-term earnings more than public companies do. Other strategy researchers find that corporate managers overvalue immediate results over future results, leading to underinvestment in long-term assets (Souder and Bromiley, 2012). Among high-end wineries, we expect corporate-owned wineries emphasize short-term performance more than family-owned wineries do. Evaluation of the managers of corporate-owned wineries often depends on performance milestones reported to shareholders either yearly or quarterly. A family-owned winery does not experience this prioritization or similar governance issues, and therefore exercises a longer-term orientation.

The long-term orientation of family businesses should lead them to invest more in reputation building than corporate businesses do. Since reputation is the long-lasting and widespread perception of a firm and its products, pursuit of high reputation represents an intrinsically long-term project (Weigelt and Camerer, 1988). Reputation takes time to build, but it influences performance for many years (Hall, 1992); improving reputation requires consistent behavior over an extended time. That means high reputation has deferred, instead of immediate, benefits, generally paying off over a long period. Firms with a long-term orientation should therefore emphasize firm reputation more than those with a focus on short-term results.

Managers in family-owned firms might also perceive that their personal reputations tie directly to the firm's reputation, unlike corporate organizations in which identification is weaker for managers, and a leadership role carries more the character of a temporary assignment (Harris, Martinez, and Ward, 1994). In a study of IPOs in family-run firms,

16

Leitterstorf and Rau (2014) found that due to identity overlap between firm and family, a firm's reputation directly influences the reputation of family members; damage to the firm's reputation damages the reputation of the individuals (Deephouse and Jaskiewicz, 2013). This aligns interests between the individual manager and the overall firm more closely than in a comparable firm that is not family run or owned.

Firms with a long-term orientation should emphasize firm reputation more than firms that focus on short-term results. Since the literature suggests that family-owned firms have longer temporal orientations than publicly held firms do, family-owned firms should invest more in reputation-building than publicly held firms do. If firms with longer horizons invest in reputation, and if underpricing improves reputation, family-owned wineries should underprice more than wineries under corporate ownership do.

H1: Family ownership (versus public ownership) positively influences underpricing.

Research suggests a direct relation between firm age and reputation (Walker, 2010). Strategy research suggests that firms with longer histories experience smaller reputation changes arising from an event, while such events play a larger role in a younger firm's reputation. The reputation of younger firms depends more on recent, or present, performance and actions than the reputation of older firms does. The reputations of young firms should therefore adapt more quickly to new information than older firms do. Each additional piece of information constitutes a greater proportion of the information available on a younger firm than it does for an older firm. An event that influences

reputation influences younger firms more than older firms (Flanagan and O'Shaughnessy, 2005).

Reputation and age vary substantially across wineries; many top Bordeaux wineries have been top wineries for over a century, building a reputation from tradition, reliable quality, and consistent house styles. Younger wineries seeking high reputations benefit more from a given signal than older wineries do, and need improved reputations more than older wineries do. If managers believe that underpricing benefits reputation, older firms should underprice less than younger firms.

H2: Winery age influences underpricing negatively.

Firms differ in their ability to capitalize on improved reputation. Firms that can benefit more should also invest more in reputation building than those that cannot capitalize as much on improved reputation.

In high-end wines, a firm's ability to increase production volume influences how much it can exploit a potential demand increase from improved reputation. Although all firms can increase release prices if reputation improves, those with unused capacity can also increase volume. Firms operating at full capacity cannot immediately increase output; expanding capacity takes significant time and capital investments, particularly in the winery context where the most important producers own a fixed acreage under vine. Those that have a lower output of bottles relative to their vineyard size (which we will refer to as vineyard use) have greater potential to increase output. Firms with the capability to

increase volume have the potential for greater benefit from reputation, and therefore should underprice more than other firms.

H3: Vineyard use influences underpricing negatively.

A firm's age decreases the benefits from a given signal, as does vineyard use, and for that reason, age and vineyard use might interact. A young firm with low vineyard use not only gains the basic reputation change from underpricing, it can also exploit that improved reputation more than a young firm with high vineyard use. Wineries with both shorter firm history and the ability to adjust production volume more easily experience over-proportional benefits from a positive, reputation-relevant event. These wineries might recognize that underpricing of new wine releases has such an effect, and consequently set wine release prices lower than other wineries, without the combined characteristics of relative youth and production flexibility.

H4: Winery age interacts positively with the ability to increase production volume when influencing underpricing.

DATA AND METHODS

We assembled a dataset comprised of 43 of the leading wine producers of Bordeaux red wine. The left bank of the Bordeaux valley consists of 45 top producers (i.e., chateaus) that create top-quality, investment-grade wines. The right bank has 15 chateaus at that level, amounting to a total of 60 wineries. The 43 wineries in the dataset produce the most

actively traded wines from the group of 60 investment-grade chateaus. Leading producers release a flagship product each year (i.e., the Grand Vin), and the dataset includes flagship products for all wine vintages from 1998 to 2009. With 43 producers launching new products annually over 12 years, the dataset includes 516 individual products.

From historic and current records (Brook 2012; Feret 2001; Parker 2003), we collected information on vineyard size, age, average bottle output, grape yield, percentage of second label bottlings (in comparison to the wineries first label), and a winery's founding year. Ownership status came from Brook (2012) for 2009, classified as either family- or corporate-owned. The trading exchange platform Liv-Ex in London provided release and subsequent annual secondary market prices. Average production volume, winery age, and vineyard size came from Parker's industry standard Bordeaux compendium (Parker, 2003), verified with the equivalent French wine publication on Bordeaux (Feret, 2001). The Wine Spectator online database provided past vintage and wine quality scores.

Winery age came from historic records and reports about a château's founding year as an active winery. To measure vineyard use, we calculated a ratio of the number of bottles released by a château to its vineyard acreage under vine. The interaction of firm age and vineyard use represented the multiplicative results of both individual factors.

As of 2013, we coded the ownership status of each winery as family-owned (1) or corporate-owned (0). The affiliations of 3 wineries were unclear from written records, and so we removed those wineries from analysis. These 3 included wineries that were family-owned on paper but run by a professional management company with no apparent management or decision link to the family. We verified such relations by failing to find a

family name represented on the management team for those wineries. We also excluded wineries that switched from family- to corporate-owned during the analysis window. Although no winery had switched from corporate- to family-owned, several family-owned and -run wineries had been sold to outside investor groups during the period.

We calculated our dependent variable, new product release underpricing, by subtracting the release price (i.e., primary market price) from the secondary market price 5 years after an initial offering. At that time, a new wine traded primarily among professionals through exchanges that established fair market values.

The dependent variable was the underpricing of newly released wine, expressed in Great Britain Pounds (GBP) and calculated as a wine's price 5 years after release minus the price at release. These are years 7 and 2 after the vintage, since Bordeaux wineries release wines in the second year after berry harvest. During a release year, the wineries work with distributors, exporters, and merchants to offer the wines to the public. This primary market is active for approximately 1 year, and usually concludes before the release of the next vintage. A primary market can exceed its natural duration of 1 year, especially if the following vintage is lower quality. Top wineries bottle larger amounts of wine during good years, and reduce output in years with difficult growing conditions. During bad years, a smaller share of the estate's grapes grows to the desired ripeness, so the winery applies stronger grape selection to maintain product quality. When a poorer vintage follows, the better vintage stays in the primary market longer, usually until sold out. By employing a 5-year gap in the underpricing measure, we ensured that all primary market trading had ceased by the time we compared trading prices, and the price fully reflected secondary market trading without further producer supply.

Wineries establish the release price for each wine vintage 2 years after harvest, constituting the primary market price. All prices were denominated in GBP quotes for 1 case consisting of 12 750ml bottles. The release price, combined with subsequent annual trading prices for each wine, allowed calculation of underpricing. Complete historic time series for market price of a vintage represented prices observed in the years after release and that were part of the secondary market. As a clarification, the underpricing term in the model refers to a full case of 12 wine bottles.

Winery age, expressed in years, was derived from records as the first mention of a chateau producing wine commercially under its current name (Feret, 2001). Some wineries were listed with a publicly known founding year (Parker, 2003). Age was calculated as of the year 2014. To establish a comparative measure for winery production output, we used the number of bottles produced per acre-under-vine. Although the measure disregarded the size of the winery estate, it considered how much product for sale it derived from production using land as a factor. We used the bottles per acre measure to assess production capacity.

The model includes several control variables. We use leading critics' annual wine scores (for each producer's primary product; the Grand Vin of a château), specifically Wine Spectator and Wine Advocate scores on a 100-point scale, to measure wine quality. Over the last 30 years, only the upper 30 points of the 100-point scale have been used in practice. The year's "vintage score" captures a publication's view of overall wine quality for a vintage in a region, issued by leading publications (e.g., Wine Spectator and Wine Advocate) after en primeur tastings, during which critics have a chance to sample and compare nearly all wines from leading producers. En primeur tastings are barrel tastings,

and although critics cannot assess the final bottled product, they provide a preview of the overall profile of a wine's vintage.

We measure production volume as the number of cases of wine produced. A case includes a dozen 750ml bottles. To avoid confusion with the measure for grape yield, we use the term "bottles produced" in the model.

The percentage of first-label production offers insights into the product strategies of leading Bordeaux wineries. Wineries only use a subset of harvested grapes in Grand Vin wines, with wineries processing the remainder into second wines. Nearly all leading Bordeaux chateaus offer a second wine (also called second label). Each chateau decides annually how to allocate output between first and second labels.

We did not measure firm size by the vineyard size, because wineries use their land differently and not all portions of a vineyard are under vine. Replanting or non-use might occur for large sections of land.

Average vine age considers that vines start producing wine only after age 5, and can continue with strong output for a hundred years. However, plants older than 30 years are old vines, producing more concentrated juice. Average vine age therefore indicates some vine-growing and wine style characteristics of a winery.

We estimated the coefficients of the model by a linear regression with random effects. Since the model included several winery characteristics that did not vary over time, we employed random effects model rather than fixed effects. We also estimated the model using the Mundlak method, using panel means as regressors. As the Mundlak technique offers controls for the assumption of a random-effects estimator that the observed variables are uncorrelated with the unobserved variables, we compared Mundlak and

standard random effects models. We then ran a Hausman test to confirm that no significant difference between both models occurred, and we therefore concluded that the random effects model was sufficient and appropriate for the dataset.

RESULTS

--- PLACE TABLE 1 HERE: DESCRIPTIVE STATISTICS ---

--- PLACE TABLE 2 HERE: CORRELATION TABLE ---

--- PLACE TABLE 3 HERE: REGRESSION RESULTS ---

Examining des descriptive statistics on Table 1 indicates that most wineries systematically underprice new product launches so that secondary market prices increase shortly after product launch. On average, Grand Cru wineries of Bordeaux underprice annual new wine releases by GBP 35 per bottle (see Table 1). Underpricing goes beyond the aggregate view since most wineries (36 of 43) underpriced during at least 8 of the 12 years reviewed. Given average release price per bottle during these years across all wineries of GBP 140, the degree of underpricing represents a very significant price discount of 25 percent.

Supporting H1, the family ownership dummy variable has a positive coefficient estimate (b=745.4, p<0.001). We conclude that family-owned wineries underprice new wine releases more strongly than corporate-owned firms. Upon closer review, we found that the frequency of underpricing incidents is similar in both groups. But the family-owned firms show a much stronger effect in average underpricing as measured in GBP. Expressed in percentages of underpricing, the difference between the groups is still significant, but not as drastic (see Table 4). The main explanation is that the top firms (first

growth Bordeaux) are family-owned. These top firms produce the most expensive wines and therefore have a larger magnitude of underpricing. Comparing the median (as well as mean) underpricing percentages between releases of family-owned firms (21.69%) and corporate-owned firms (19.20%), a two-sample t-test for difference in populations rejects the null that the samples have the same mean, at 5% significance.

The observation of a difference between family-owned and corporate-owned firms concurs with our small sample of telephone survey interviews. Managers that carry the last name of the winery evidenced a stronger sentiment towards the importance of reputation. In contrast, managers of corporate owned firms emphasized year on year cash flow considerations more strongly in the phone conversation.

--- PLACE TABLE 4 HERE ---

Supporting H2, winery age has a negative parameter estimate (b= -6.629, p<0.001). Age differences between wineries in our study amount to several centuries in some cases, and even the youngest wineries are much older than most companies in the economy. We therefore are surprised to find a strong effect of the age factor. This is potentially explained by long periods of stability and transparency among the Bordeaux wineries, where firm age and accumulated reputation -- as well as the awareness thereof -- carry forward over very long periods. Winery managers also commented on the age effect during the phone interviews, suggesting that relative firm age influences their pricing decisions as we argued above.

Supporting H3, vineyard use (bottles produced per acre) has a negative coefficient (b= -1.710, p<0.001). As we applied vineyard use as a measure for a winery's ability to add production output, wineries that had capability to use more of their land for grape growing accordingly underpriced more. While we argued that firms with higher additional production capacity can benefit more from a reputation increase, and therefore underprice more strongly, we should note we have no direct evidence for this mechanism, not even in the phone interviews, and realize that the statistical relations may not actually be causal as hypothesized.

H4, the interaction term of age and vineyard use, was not supported (b= 0.000044, p>0.1). The results do not support a conclusion that age moderated the impact of vineyard use on underpricing.

Several control variables had significant parameter estimates. Vintage quality, wine quality score, and percentage of a château's first-label production influenced the degree of underpricing positively. Thus, wineries underprice more during good years using highly rated wines and when bottling more of a product under a first label.

DISCUSSION

We considered but rejected the possibility that underpricing simply reflects surprising increases in wine prices. The difference between secondary and primary market prices is best explained by intentional underpricing: Inflation and market yields on wine investment remained far below observed disparities during all 12 years. We compared release prices with prices on secondary markets 5 years after release. In the high-end Bordeaux segment, wines are not considered ready to drink within 5 years, and any

intrinsic value increase of these wines materialized only over longer time spans—between 8 and 20 years after release. Given the 12-year span reviewed, no unexpected increase in wine market demand explained the release discount. Further, results suggest that family-owned wineries employ a different pricing strategy than corporate-owned firms. Although both corporate and family-owned firms underprice, family-owned firms underprice more and more frequently than corporate-owned. Therefore, family-owned wineries seem to follow a different pricing strategy, which aligns earlier predictions of deliberate underpricing. If outside circumstances are the reason secondary market prices are so much higher than release prices, those effects would apply to corporate-owned wineries as well. We conclude that release underpricing is most under the control of the winery, and is likely intentional and systematic.

It appears that wineries consistently and intentionally underprice new releases to build reputation. If reputation effects from aftermarket value increases were not such positive signals among wine market participants, producers would offer their new releases closer to their estimated fair values. Positive and negative effects arising from slight overpricing or underpricing would balance, and producers could maximize profits by offering available stock at the highest prices that cleared the market. However, we observe that wineries aim below fair market prices, since accidental overpricing might emphasize negative reputations through highly visible secondary market trading prices.

We found that younger firms underprice more heavily than older ones. Since reputation changes have a greater influence on younger firms, and their present stock of reputation is lower than in older, established firms, results suggest that they engage in greater underpricing, confirming the hypothesis. These results might be counterintuitive

from the perspective we take in the prior hypothesis, where we highlight reasons family-owned firms emphasize reputation in that family-owned firms associate with tradition and longevity, and both terms relate to firm age. Therefore, we argue that younger firms underprice more strongly than older ones do. However, results show that both old and young wineries seek reputation growth through underpricing, but younger wineries show a stronger effect that is probably due to the reasons stated in the hypothesis.

Wineries that produce close to their production capacity underprice less since they can benefit less from potential reputation increases. Firms capitalize on reputation either by selling more units or increasing prices. Grand Cru wineries in Bordeaux have limited vineyard, so firms cannot easily increase production capacity. In other regions of the world, wineries simply buy grapes from outside growers, and thereby enjoy nearly unlimited output flexibility. Such practices are frowned on in Grand Cru wines, and would have negative legal ramifications, leading to forced label changes. Bordeaux wineries grow revenue by commanding higher prices from year to year, which they have done over the last few decades by consistently increasing reputation.

Our exam of underpricing suggests several topics for future research. Firstly, subsequent research should examine how firms capitalize on reputation in detail. If wineries pay a cost to actively build reputation, they may also be aware of one or more mechanisms to earn rents on this reputation investment. A second opportunity for subsequent research could be a separate study on the impact of current wine ratings as well as vintage ratings on underpricing and reputation. The relation between wine ratings and price is a typical topic in research on fine wines, but no past or current work has included the reputation perspective into the price/quality linkage.

REFERENCES

Allen F, Faulhaber GR. 1989. Signaling by underpricing in the IPO market. *Journal of Financial Economics* **23**: 303–324.

Balvers RJ, McDonald W, Miller RE. 1988. Underpricing of new issues and the choice of auditors as a signal of investment banker reputation. *Accounting Review* **63**: 605–622.

Barnett ML, Jermier JM, Lafferty BA. 2006. Corporate reputation: the definitional landscape. *Corporate Reputation Review* **9**: 26–38.

Basdeo DK, Smith KG, Grimm CM, Rindova VP, Derfus PJ. 2006. The impact of market actions on firm reputation. *Strategic Management Journal* **27**: 1205–1219.

Beatty RP, Ritter J. 1986. Investment banking, reputation, and the underpricing of initial public offerings. *Journal of Financial Economics* **15**: 213–232.

Bednar MK, Love EG, Kraatz M. 2015. Paying the price? The impact of controversial governance practices on managerial reputation. *Academy of Management Journal* **58**(6): 1740–1760

Benjamin, BA, Podolny JM. 1999. Status, quality, and social order in the California wine industry. *Administrative Science Quarterly* **44**: 563–589.

Brook S. 2012. *The Complete Bordeaux: The Wines, The Châteaux, The People*.

Carter RB, Dark FH. 1993. Underwriter reputation and initial public offers: the detrimental effects of flippers. *The Financial Review* **28**: 279–301.

Carter RB, Dark FH, Singh AK. 1998. Underwriters, initial returns, and the long run performance of IPO stocks, *Journal of Finance* **53**: 285–311.

Carter RB, Manaster S. 1990. Initial public offerings and underwriter reputation. *Journal of Finance* **45**: 1045–1067.

CIVB (Le Conseil Interprofessionel du Vin de Bordeaux). 2017. *Private Database of the Council*.

Clark BH, Montgomery DB. 1998. Deterrence, reputations, and competitive cognition. *Management Science* **44**: 62–82.

Cocks C, Feret, E. 1883. *Bordeaux and Its Wines* (2nd ed.). G. Masson and Feret & Fils: Paris/Bordeaux, France.

Cocks C, Feret E. 1998. *Bordeaux and Its Wines: Classified in Order of Merit Within each Commune*. G. Masson and Feret & Fils: Paris/Bordeaux.

Connelly BL, Certo ST, Ireland RD, Reutzel CR. 2011. Signaling theory: A review and assessment. *Journal of Management* **37**: 39–67.

Connelly BL, Hoskisson RE, Tihanyi L, Certo ST. 2010. Ownership as a form of corporate governance. *Journal of Management Studies*

Deephouse DL. 2000. Media reputation as a strategic resource: an integration of mass communication and resource-based theories. *Journal of Management* **26**: 1091–1112.

Deephouse DL, Carter SM. 2005. An examination of differences between organizational legitimacy and organizational reputation. *Journal of Management Studies* **42**: 329–360.

Ertug G, Castellucci F. 2013. Getting what you need: how reputation and status affect team performance, hiring, and salaries in the NBA. *Academy of Management Journal* **56**(2): 407 431

Fang LH. 2005. Investment bank reputation and the price and quality of underwriting services. *Journal of Finance*

Ferguson TD, Deephouse DL, and Ferguson WL. 2000. Do strategic groups differ in reputation? *Strategic Management Journal* **21**(12): 1195–1214

Flanagan DJ, O'Shaughnessy KC. 2005. The effect of layoffs on firm reputation. *Journal of Management* **31**(3): 445–463.

Fombrun CJ. 1996. *Reputation: Realizing Value from the Corporate Image*. Harvard Business School Press: Boston, MA.

Fombrun CJ, Shanley M. 1990. What's in a name? Reputation building and corporate strategy. *Academy of Management Journal* **33**: 233–258.

Frooman J. 1999. Stakeholder influence strategies. *Academy of Management Review* **24**(2): 191–205.

Gao C, Zuzul T, Jones G, Khanna T. 2017. Overcoming institutional voids: a reputation-based view of long-run survival. *Strategic Management Journal*

Gibson D, Gonzales JL, Castanon J. 2006. The importance of reputation and the role of public relations. *Public Relations Quarterly* **51**(3): 15–18.

Gomulya D, Mishina Y. 2017. Signaler credibility, signal susceptibility, and relative reliance on signals: how stakeholders change their evaluative processes after violation of expectations and rehabilitative efforts. *Academy of Management Journal* **60**(2): 554–583.

Grinblatt M, Hwang C. 1989. Signaling and the pricing of new issues. *Journal of Finance* **44**:

393–420.

Hall R. 1992. The strategic analysis of intangible resources. *Strategic Management Journal* **13**(2): 135–144.

Harris D, Martinez JI, Ward JL. 1994. Is strategy different for the family-owned business? *Family Business Review* **7**(2)

Judge WQ, Witt MA, Talaulicar T, Chen JJ, et cetera. 2015. Corporate governance and IPO underpricing in a cross-national sample: a multilevel knowledge-based view, *Strategic Management Journal* **36**: 1174–1185.

Katti S, Phani BV. 2016. Underpricing of initial public offerings: a literature review. *Universal Journal of Accounting and Finance* **4**(2): 35–52

Kotha S, Rajgopal S, Rindova V. 2001. Reputation building and performance: an empirical analysis of the top-50 pure Internet firms. *European Management Journal*

Leitterstorf MP, Rau SB. 2014. Socioemotional wealth and IPO underpricing of family firms. *Strategic Management Journal* **35**: 751–760.

Ljungqvist A. 2004. IPO Underpricing. Handbooks in Finance: Empirical Corporate Finance.

Love EG, Kraatz M. 2010. Failed stakeholder exchanges and corporate reputation: the case of earnings misses. *Academy of Management Journal*

Love EG, Lim J, Bednar M. 2014. The Face of the Firm: the influence of CEOs on corporate reputation. *Academy of Management Journal*

Malter D. 2014. On the causality and cause of returns to organizational status: evidence from the Grands Crus Classés of the Médoc. *Administrative Science Quarterly* **59**(2): 271 300.

Milgrom P, Roberts J. 1986. Price and advertising signals of product quality. *Journal of Political Economy* **94**: 796–821.

Mishina Y, Block ES, Mannor MJ. 2012. The path dependence of organizational reputation: how social judgment influences assessments of capability and character. *Strategic Management Journal* **33**(5): 459–477.

Parker R. 2003. *Bordeaux: A Consumer's Guide to the World's Finest Wines*. Simon & Schuster: New York, NY.

Petkova AP, Rindova VP, Gupta, AK. 2008. How can new ventures build reputation? An exploratory study. *Corporate Reputation Review* **11**: 320–334.

Pfarrer MD, Pollock TG, Rindova VP. 2010. A tale of two assets: The effects of firm reputation and celebrity on earnings surprises and investors' reactions. *Academy of Management Journal* **53**: 1131–1152.

Philippe D, Durand R. 2011. The impact of norm-conforming behaviors on firm reputation. *Strategic Management Journal* **32**(9): 969–993.

Podolny, JM. 1994. A status-based model of market competition. *American Journal of Sociology* **98**(4), 829–872.

Pollock TG, Lee PM, Jin K, Lashley K. 2015. (Un)tangled: exploring the asymmetric coevolution of VC firm reputation and status. *Administrative Science Quarterly* **60**(3): 482 485.

Raithel S, Schwaiger M. 2015. The effects of corporate reputation perceptions of the general public on shareholder value. *Strategic Management Journal* **36**(6): 945–956.

Rao AR, Qu L, Ruekert AR. 1999. Signaling unobservable product quality through a brand ally. *Journal of Marketing Research* **36**: 258–268.

Rao H. 1994. The social construction of reputation: certification contests, legitimation, and the survival of organizations in the American automobile industry: 1895–1912. *Strategic Management Journal* **15**: 29–44.

Reilly FK, Hatfield K. 1969. Investor experience with new stock. *Financial Analysts Journal* **25**: 73–80.

Rhee M, Haunschild PR. 2006. The liability of good reputation: a study of product recalls in the US automobile industry. *Organization Science* **17**: 101–117.

Rindova VP, Fombrun CJ. 1999. Constructing competitive advantage: the role of firm constituent interactions. *Strategic Management Journal* **20**: 691–710.

Rindova VP, Martins LL. 2012. Show me the money: a multidimensional perspective on reputation as an intangible asset. In *The Oxford Handbook of Corporate Reputation*, Barnett ML, Pollock TG (eds). Oxford University Press, Oxford, UK; 16–33.

Rindova VP, Petkova AP, Kotha S. 2007. Standing out: how new firms in emerging markets build reputation. *Strategic Organization* **5**(1): 31–70.

Rindova VP, Williamson IO, Petkova AP. 2010. Reputation as an intangible asset: reflections on theory and methods in two empirical studies of business school reputations. *Journal of Management* **36**: 610–619.

Rindova, VP, Williamson IO, Petkova AP, Sever JM. 2005. Being good or being known: an empirical examination of the dimensions, antecedents, and consequences of organizational

reputation. *Academy of Management Journal* **48**: 1033–1049.

Ritter JR, Welch I. 2002, A review of IPO activity, pricing, and allocations. *Journal of Finance*

Roberts PW, Dowling GR. 2002. Corporate reputation and sustained superior financial performance. *Strategic Management Journal* **23**: 1077–1093.

Shapiro, C. 1983. Premiums for high quality products as returns to reputations. *The Quarterly Journal of Economics* **98**: 659–680.

Short H. 1994. Ownership, control, financial structure and the performance of firms. *Journal of Economic Surveys* **8**: 203–249.

Souder D, Bromiley P. 2012. Explaining temporal orientation: evidence from the durability of firms' capital investments. *Strategic Management Journal* **33**: 550–569.

Spence M. 2002. Signaling in retrospect and the informational structure of markets. *American Economic Review* **92**: 434–459.

Thomsen S, Pedersen T. 2000. Ownership structure and economic performance in the largest European companies. *Strategic Management Journal* **21**(6): 689–705.

Trostel AO, Nichols ML. 1982. Privately-held and publicly-held companies: a comparison of strategic choices and management processes. *Academy of Management Journal* **25**(1): 47 62.

Walker K. 2010. A systematic review of the corporate reputation literature: definition, measurement, and theory. *Corporate Reputation Review* **12**: 357

Wartick, S. 2002. Measuring corporate reputation: definition and data. *Business and Society* **41**(4): 371–392.

Wei J, Ouyang Z, Chen HY. 2017. Well known or well liked? The effects of corporate reputation on firm value at the onset of a corporate crisis. *Strategic Management Journal*

Weigelt K, Camerer C. 1988. Reputation and corporate strategy: a review of recent theory and applications. *Strategic Management Journal* **9**(5): 443–454.

Welch I, 1989. Seasoned offerings, imitation costs and the underpricing of initial public offerings. *Journal of Finance* **44**, 421–450.

Wong SS, Boh WF. 2010. Leveraging the ties of others to build a reputation for trustworthiness among peers. *Academy of Management Journal* **53**(1): 129–148.

Yeoman, JC. 2001. The optimal spread and offering price for underwritten securities. *Journal of Financial Economics* **62**: 169–198.

Zavyalova A, Michael D, Pfarrer MD, Rhonda K, Reger RK, Hubbard TD. 2016. Reputation as a benefit and a burden? How stakeholders' organizational identification affects the role of reputation following a negative event. *Academy of Management Journal* **59**(1): 253–276.

Table 1: Descriptive Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Vintage (calendar year)	522	2,003.55	3.44	1998	2009
Vintage Score (100 point scale)	522	90.70	4.22	86	99
Wine Score (100 point scale)	498	92.46	3.64	50	100
Vineyard Size (acres)	522	49.73	31.85	2	113
Surface Area (acres)	522	121.48	78.36	5	305
Vine Age (years)	522	35.07	7.06	21	55
Planting Density (vines per acre)	522	7,804.79	1,665.96	3,500	10,000
Production (bottles)	511	142,641.90	100,246.70	7,000	420,000
Second Label Produced (bottles)	511	86,129.16	81,407.51	-	280,000
Founding Year (calendar year)	522	1,674.83	204.86	1,147	1,979
Family Owned Status (1, 0)	522	0.69	0.46	-	1
Winery Age (years)	522	339.17	204.86	35	867
Bottles per Acre	511	1,266.32	493.47	324	3,250
Wine Price (case of 12 bottles)	522	1,935.44	3,457.88	153	27,932

Table 2: Correlation Matrix

	Vintage Score	Wine Score	Vineyard Size	Surface Area	Vine Age	Density	Yield	Family Owned	Winery Age	Bottles/Acre	First Label %
Vintage Score	1										
Wine Score	0.4693	1									
Vineyard Size	0.0186	-0.077	1								
Surface Area	0.0218	-0.086	0.9712	1							
Vine Age	-0.03	0.1091	-0.1686	-0.195	1						
Planting Density	-0.0079	-0.1249	0.4909	0.5095	-0.1639	1					
Grape Yield	-0.0197	-0.1999	0.3103	0.3017	-0.0403	0.4919	1				
Family-Owned Status	0.0114	0.0412	0.0192	-0.0173	0.0595	-0.137	-0.0987	1			
Winery Age	-0.0025	0.1219	0.3079	0.2348	0.135	0.061	-0.0269	-0.154	1		
Bottles Per Acre	-0.0179	-0.1508	-0.1851	-0.2248	0.0897	0.0756	0.5422	-0.0147	-0.1061	1	
First Label Share	-0.0013	0.0854	-0.5114	-0.5285	0.0589	-0.4559	-0.3522	-0.1009	-0.0252	0.3741	1

Table 3: Results

Variables	Underpricing Release Price Relative to Fair Market Value per Case of 12 Bottles
Family-owned firm	**745.4*****
	(274.5)
Firm age	**-6.629****
	(2.783)
Vineyard use	**-1.710*****
	(0.552)
Age x Vineyard use	**0.000044**
	(0.000095)
Vintage quality score	37.04**
	(16.73)
Wine quality score	58.80***
	(21.72)
Percentage of first label production	5,612***
	(2,020)
Vineyard size	1.929
	(6.258)
Average vine age	25.39
	(22.77)
Bottles produced	-0.00147
	(0.00233)
Grape yield	23.93
	(28.31)
Interact age and grape yield	0.111
	(0.0921)
Constant	-5,052***
	(1,728)
Observations	487
Number of firms	43
Random effects	Yes

Notes. Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Comparing Family-Owned and Corporate-Owned Firms

	Observations	Mean of GBP by Case	Median of GBP by Case	Mean %	Median %
Sample descriptive data					
- all wine releases	519			100.00%	
- family-owned wineries	355			68.40%	
- corporate owned wineries	164			31.60%	
Underpricing incidents detected					
- all wine releases	389			75%	
- family-owned wineries	264			76%	
- corporate owned wineries	125			73%	
Underpricing averages					
- all wine releases	519	563	120	19.01%	21.11%
- family-owned wineries	355	750	130	20.20%	21.69%
- corporate owned wineries	164	155	110	16.44%	19.20%

Losing Status and Getting it Back:
How Status-Changing Events Influence Firm Strategy
Evidence from the Cru Bourgeois Classification of French Bordeaux Wine

Jörn Kleinhans
University of California, Irvine
The Paul Merage School of Business
4293 Pereira Drive
Irvine, CA 92697-3125
jkleinha@uci.edu
310 467 5582

Losing Status and Getting it Back:
How Status-Changing Events Influence Firm Strategy
Evidence from the Cru Bourgeois Classification of French Bordeaux Wine

ABSTRACT

We examine firm reactions to status-changing events in a market strongly oriented around quality. In the French Bordeaux wine market, a setting with clear status demarcations, we observe how firms change product quality after experiencing reclassification of their status. We find that a loss of status drives wineries to improve quality quickly and significantly. Further, the quality improvement effect appears to last several years. The analysis also finds quality improvement following a status gain, suggesting that quality increases following both types of status change. Our study is set in the Bordeaux red wine industry, where certain wines are reassessed annually for inclusion in the status category "Cru Bourgeois."

INTRODUCTION

In markets where a dominant status system strongly influences firms' public prestige, performance, and market position, a firm may lose status without warning. How will the firm react? Will the unexpected status loss lead to a downward spiral of worsening firm performance, or will the firm work swiftly to regain status classification?

Firms in a clearly-defined peer group or product category often compete for high status to differentiate themselves and signal high quality. However, firms can also lose a desired status. While strategy researchers have studied the pursuit of status in detail (Barkow, 1989; Berger, Rosenholtz, & Zelditch, 1980; Podolny & Phillips, 1996; Van der Vegt et al., 2006), less research addresses on the phenomenon of status loss and its implications for the affected firm. If membership in the prestigious status group serves as an essential asset of a firm and characterization of its products, this negative status change may trigger a reaction by firm management.

Some individual statutes are permanent and irrevocable (e.g., winning an Oscar, receiving a Nobel Prize, earning a degree); the individual does not have to repeat or maintain the achievements because the title is valid for life. In many industries, however, a firm's status can vary over time (e.g. business schools, hospitals, and "best places to work" rankings). In such industries, firms try to maintain or increase status on an ongoing basis. Loss of the status, or even a relative decline in status rankings, can hurt the organization.

Firms can lose status many reasons, including changes in the criteria determining status, changes in relative performance, and changes in absolute performance. However, firm status often depends on the quality of goods the firm produces. For that reason, firm management may realize that their decisions can influence future status. Firm may act

proactively, perhaps trying to boost status, or can act in response, for example to a sudden loss of status. Given that firms pursue high status because it has economic benefits, status loss can damage firm performance.

With these effects in mind, we examine how losing status affects firm behavior, and under what circumstances quality, specifically, deteriorates or improves following status loss.

Carson Marr and Thau (2014) found that status loss in individuals leads to subsequent deterioration of work quality, as threatening and stressful experiences negatively impact performance quality exactly at the point when the individual needs to get back on track. Such a vicious cycle could exist for firms as well. As a loss of status reduces firm access to resources or loyalty from constituents, firms may show similar behavior as humans, resulting in output of lower quality after a status loss. Such firms may end up in a worse position than a peer group member that never held high status in the first place, as the loss signals a downward trajectory that gathers momentum, suggesting wider problems affiliates and consumers want to avoid.

Much of the research pointing toward negative performance implications following a status loss derives from the study of individuals rather than firms. Some might assume firms exhibit similar reactions. We do not make that assumption in this study. Instead, we will apply the Behavioral Theory of the Firm (Cyert and March, 1963) to the question of how performance in the form of status change influences output quality at the firm level. Specifically, in firms for which status plays an important role so that it has aspirations associated to status. In such firms, status often stands in direct relation to long-term financial performance of the enterprise.

Our study empirically examines the influence of an unexpected status change, including both loss and increase, on product quality changes. We find the opposite results on the firm level from those discovered on the individual level: Status loss associates with swift and significant performance improvement in the organizations examined. To define their own market identity, firms often seek validation and status categorization (Zuckerman 1999; Wang, Wezel and Forgues 2016), which are usually awarded by outside organizations and experts. We find that status can become part of the long-term identity of a firm so that a prior status membership remains permanently attached to the aspirations of the firm. Status, as an important side of the overall firm identity in the context of our research setting, becomes an important long-term aspiration that does not fade away as part of the annual aspiration adjustments. Our findings suggest necessary expansions to the current behavioral theory of the firm.

RESEARCH SETTING

To study the effects of status change, we look for a setting with several important features:

First, clarity of the actual status held at any time is important. Not all status systems offer clarity about exact ranks, make membership of the status public, or otherwise clearly identify status. A setting of binary membership in a status class offers the highest clarity — that is, a clear "yes" or "no" to any question of membership.

Second, clarity about the reason why a positive status was lost is a necessary insight in order to make a response action possible. In our setting, losing status indicates that the product quality did not meet the standards of the organizations.

Third, clarity about the fix of problem (in case of a status loss) is also helpful, and not present in most settings. That is, in addition to the clarity of a status loss, it is useful to know what remedy will undo the loss. In our setting, there's an obvious solution for the negative feedback, as the status loss can be remedied in future periods by increasing product quality sufficiently.

Fourth, complete and detailed data availability with regard to status membership over time, and across firms, is desirable. Identifying an industry setting with detailed panel data can be a challenge.

Fifth, a preferred research setting offers a direct connection between status and economic outcomes. Holding high status should create clear economic benefits, and not having it should create economic disadvantages.

Sixth, a setting with an absolute standard for status is better than a comparative standard, as managers often receive more information about how to gain or keep status by meeting fixed hurdle requirements, if known. In the case of an absolute standard, the firm can focus on understanding the sponsor's status criteria, and make internal decisions accordingly.

Using historic wine critic scores as the quality measure, we observe quality score levels in the years following a change in status. We study the Cru Bourgeois classification of high quality red wines in Bordeaux, where more than 500 wineries aim to gain the prestigious Cru Bourgeois status each year. This setting offers suitable characteristics in the dimensions discussed above. In Bordeaux, the largest wine classification system is called Cru Bourgeois. The Crus Bourgeois produced approximately 28 million bottles in 2011, or about 30% of the wine production in all of Bordeaux.

When the Cru Bourgeois status system was first established, the member firms were fixed, so that all wineries, whether included or excluded, kept their status for many decades. But in the early 2000s, some members of the Cru Bourgeois complained that a fixed system did not reliably represent merit over time, so that the association decided to cancel existing fixed memberships, effective in 2008. Since then, instead of classifying the winery, the Cru Bourgeois classified the annually-released product itself. Each year, a large panel of blind-tasters establishes which wines (and their wineries) may be part of the Cru Bourgeois status for that year. It is the only famous and influential wine classification system in the world that determines status based on annual blind tastings. Membership is not limited to a specific number; the class includes every winery that fulfills the minimum wine quality requirements. The number of members has fluctuated yearly, ranging from 250 to 350 members. In each year, between 5% and 15% of Cru Bourgeois members lose their status based on blind-tasting results, some wineries regain status and some wineries gain status for the first time.

The Cru Bourgeois classification of Bordeaux an unusually favorable setting in which to study status effects, because the firms produce very similar products, status strongly influences the price a firm can charge, and status changes are clearly demarcated.

HYPOTHESES

Applying the Behavioral Theory of the Firm (Cyert & March,1963), we propose that wineries will have aspirations for status. Wineries of high status will aspire to retain their status, and in the event of its loss, will look for ways to recover it. It follows that when a winery loses status due to insufficient product quality, management will seek to remedy

the loss by increasing quality. Wineries are motivated to maintain, at a minimum, a sufficient level of product quality to avoid losing status (Podolny, 2005).

A winery that loses Cru Bourgeois status in one vintage will attempt to improve the wine of the next vintage sufficiently to ensure it passes the blind-tasting quality test. While wineries have limited control over product quality in a given year due to weather patterns that influence the overall quality of the harvest, they can decide to use a smaller selection of only the best grapes. They can also use other proven methods of improving quality such as employing a more capable winemaker, using better oak barrels, or opting for more elaborate fermentation techniques.

Given that wineries can improve quality in these ways, we suggest several hypotheses about factors that might influence their decisions to do so.

First, firms will show a strong reaction following a status loss, to reach the desired status again swiftly and to avoid ongoing dissonance with set aspiration levels. Specifically, a loss of status in one period should lead to a significant quality improvement in the next product release.

In our context of Cru Bourgeois wineries, the quality of the wine released in the year following a status loss should be noticeably higher than in the losing year.

Hypothesis 1a: *Loss of status leads to an improvement in product quality in the*

       following period.

Most arguments in this study concern the ways in which firms respond to a loss of status, and we propose firms will also respond with quality improvements following a

positive change in status. While we theorize that firms' aspirations push them to regain lost status as quickly as possible, we expect that a different, but related, motivation for improving quality applies following a gain in status.

A newly-won status may lift aspiration levels, so that firms increase quality to avoid losing the newly-received status: Aspirations rise quickly, and a recently acquired positive status represents a potential loss. The threat of future performance falling below the new level of aspirations is best countered by increasing quality. In effect, a firm-induced quality increase following a status increase therefore lowers the probability that the newly gained status will be lost again. With this action a firm may aim to avoid dissonance with the risen aspiration level that now references the higher status.

Research shows that high status leads to a self-perpetuating effect of increasing quality (Bidwell, Barbulescu and Mollick, 2015). High status not only signals quality; holding high status also has the self-reinforcing effect of incentivizing firms to preserve status by continuing to release high-quality products. This suggests firms that gain status will not rest on their laurels by capitalizing on status while lowering quality to enjoy a lower cost basis; they will seek to maintain or increase quality after a status gain.

In the setting of Cru Bourgeois wineries, we therefore expect wineries will improve product quality in the year following a status upgrade.

Hypothesis 1b: *Gain in status leads to an improvement in product quality in the following period.*

While hypotheses 1a and 1b predict firms will improve quality after *either* significant status change, positive or negative, we expect uneven effects. A status improvement event should lead to a relatively smaller quality improvement effect because the strong signal that quality is insufficient does not apply here like in the case of a status loss.

However, aspiration level theory helps to explain why firms can be expected to improve quality in both cases, while firms not experiencing a status change do not improve.

Next, in H2a and H2b, we are exploring a logical extension of H1a and H1b. Having achieved a desired status, we not only expect wineries to react to status loss by improving quality swiftly, but, further, they will take additional care not to lose the status in the future. Consequently, a one-time loss in status should positively influence quality even after the winery has regained its previous status. As a status loss may be unexpected and traumatic, firms may keep any past loss front-of-mind, prompting them to fortify product quality on an ongoing basis, to prevent another loss.

Building upon the prior hypotheses, we therefore extend our expectation of a one-time strong reaction to a longer-term, sustained reaction, leading to a long-term positive shift in product quality. We continue to expect quality improvement will be strongest in the year following a status loss, but expect that average quality in years after status loss will be higher than in years prior to and up to a loss.

After a status loss, wineries may recognize that production standards must be improved steadily over the long-run, to maintain status going forward. Therefore, they may

opt for continuous increases in quality at a sustainable rate, leading to a slightly raised average quality in years following a loss.

Hypothesis 2a: Loss of status positively influences product quality beyond the 1st year following the loss.

Our next hypothesis offers the logical extension of our H1b expectation that a positive status change will encourage a product quality improvement in the immediately following period. Aspirations adjust quickly to recent performance changes, and the longer a firm holds a desirable status, the more this status becomes part of the firm's future aspiration baseline. A recently held positive status represents a potential loss that firms may actively attempt to avoid. The threat of future status falling below the level of aspirations is best countered by increasing product quality in the long-run, as opposed to only shortly after receiving the positive status. In effect, a firm-induced quality increase over multiple periods following a status increase therefore increases the probability that the gained status can be maintained in the long run.

We expect to find that wineries gaining membership in the Cru Bourgeois classification will exhibit increased quality levels over the remainder of the subsequent observed periods, as compared with the quality shown across periods up to the change in status.

Hypothesis 2b: Gain in status positively influences product quality beyond the 1st year following the gain.

Adding a more detailed perspective to the prior hypotheses 1a and 2a, we expect an additional effect to become visible in the case of a loss of status: We may observe an anchoring effect causing firms with the inaugural status endowment to behave differently from the other firms when a status change occurs.

This expected effect would suggest a necessary expansion of aspiration theory. The traditional aspiration model suggests firms will adjust aspirations over time based on recent performance, among other factors. This means the influence of circumstances from the distant past on aspirations should fade over time. Therefore, if a firm loses a desirable status, its aspirations to re-obtain that status should decrease as time passes.

As firms assess performance, the historical aspiration perspective suggests past performance strongly anchors future expectations—but with focus on the recent past, not a distant past. We propose to expand this traditional perspective to include the long-term effect of identity aspiration. Firms with inaugural status endowment may have assimilated the status into their identities more fully than firms with newly-attained status, which have survived in the past without having it.

The traditional aspirations perspective falls short of accounting for this case, as the implied annual update to aspiration levels is not applicable in the context of status and identity. Therefore, the theory is in need of expansion.

A firm that has held a desirable status for many years may have a more durable aspiration than what the traditional model would suggest. Status can become part of the firm's identity to such a degree that the effect of a prior status remains permanently ingrained in firm aspirations. In that way, status differs from other measures of firm

performance and goal attainment in that it becomes part of a firm's identity. Status itself is

an important long-term aspiration, which may not fade in year-over-year adjustments to

aspirations. Current aspiration models ignore the possibility of a long-term reference point

of this type.

Consistent with our expectation that status aspirations can survive long-term

despite a recent history of status loss, we propose that firms with inaugural status

endowment may behave differently from firms outside of this group. Because status may be

more essential to the identities and aspirations of firms with early status endowment, those

firms may act more strongly to reverse a loss of status.

Hypothesis 3: Inaugural membership in the status group positively modifies product quality

following a status loss.

THEORETICAL BACKGROUND

The Behavioral Theory of the Firm explains that low performance drives search for

improvement of performance (Cyert and March, 1963). Status forms one criterion for

which a firm may have aspirations and to which it may react. Therefore, the theory offers

perspective on the effects of a status change. Whether past actions of the firm caused a loss

of status or not, its sudden loss represents a change to which managers react. Managers

may interpret the performance of their organization in light of the status loss, search for

ways to improve, and make changes intended to recover status.

Research supports the idea that firms compare actual performance with

preconceived aspiration levels (Joseph and Gaba, 2014). Aspirations affect strategic

decision making (Bromiley, 2005; Gavetti et al., 2012; Shinkle, 2012) and discrepancies between aspiration levels and actual performance influence strategic behavior (Ansoff, 1979; Cyert and March, 1963; Fiegenbaum, Hart, and Schendel, 1996). When performance falls below aspiration levels, managers search for strategies to increase performance (Cyert and March, 1963), although these new strategies may lead to higher risk (Bromiley, 1991).

The Behavioral Theory of the Firm argues that the relation between a firm's past achievement and current aspirations depends on actual and expected changes in firm performance. Firms may have aspiration in many dimensions, just as planning systems often generate a variety of targets in different areas. Current aspirations depend on three main factors including recent aspirations, past performance, as well as social comparison. The first factor, historical aspiration is a reflection of the second one, a firm's past performance. Third, social aspiration reflects comparison with members of the reference group (Massini, Lewin, and Greve, 2005). In the latter type of aspiration, the focal firm aims to display similar performance as a reflection of desirable firm capabilities believed to be within reach (Blettner, He, Hu, Bettis 2015). Research shows managers reflect on performance in light of all three types of aspiration in some combination (Cyert and March, 1963).

When negative developments in firm performance occur, aspirations exceed actual performance. Subsequently, aspiration levels adjust downward, but only slowly, so that an aspiration gap remains. When existing policy fails to reach results consistent with aspirations, the search for improvement intensifies.

The described formation of aspirations applies to status when a firm aspires to maintain and defend a status it consistently occupied historically and when all relevant peer group members hold the same status.

Feedback can often be ambiguous, noisy, or too complex (Fang, Kim and Milliken, 2014). As managers interpret market signals and feedback, such ambiguity of information can dampen firm responsiveness (Joseph and Gava, 2014). March and Simon (1958) made a distinction between operational and non-operational goals in organizations, whereas non-operational goals present the challenge that no clear criteria for determining the best of course of action for goal attainment exist. Such goals would first need the identification of sub-goals before organizations can decide about specific actions, adding complications and subjectivity. For that reason, direct operationality of goals and aspirations are preferable.

Using status change as a specific type performance feedback offers the advantage that the feedback is clearer than it is under most other circumstances, and also offers operationality. In our context of the Bordeaux wine industry, a change in status presents itself as unambiguous feedback. Therefore, we expect to find clear firm responsiveness after a change in status.

Specifically, we expect loss of status will visibly lead to immediate and significant product quality improvement, and our hypotheses will test various aspects of this expected bounce-back. If feedback indicates performance lies below aspiration levels, firms make changes and select new strategies to increase performance (Cyert & March, 1963). These new strategies frequently lead to higher expenditures, as well as higher risk (Bromiley, 1991).

DATA AND METHODS

Sample

To examine the influence of status changes on quality, we assembled a unique dataset of all past and current member firms in the Cru Bourgeois classification from 2003 to 2015. Over this time, more than 340 wineries have held Cru Bourgeois status at least once. The association rules state that membership depends solely upon meeting or exceeding a necessary level of quality; and diversified panel of blind-tasting experts judges the quality level. The experts assess each wine in a rigorous selection process, which takes place yearly before new-vintage wines are bottled and made ready for distribution. We obtained the annual membership list directly from an office representative of the Alliance des Cru Bourgeois du Medoc in Bordeaux, France. The dataset does not include any winery that applied but did not earn the status in at least one of the years in our review period. Based on this, we can capture which wineries have always maintained their status over all years observed, and which experienced status change, including both loss and gain.

Each winery issues exactly one new product per year. For each product, we transcribed current score data from the database of the leading magazine, Wine Spectator. Wine scores, also called ratings, are assigned on a 100-point scale, although the lower half of the scale has never been used. In practice, only the range from 75 to 100 has meaning in the wine world, and the average score allocated to red wines of the Cru Bourgeois classification is 89 points. Wine Spectator did not issue wine scores for every wine in our dataset. Because several other publications evaluate wines using the same 100-point scale, we used the scores of the Wine Advocate, another leading magazine, to fill in missing data.

We also obtained quality scores for each wine vintage from *Wine Enthusiast* magazine's annually updated vintage quality chart, organized by growing region and calendar year. The chart allows comparison across decades of vintages and each major growing region, the Médoc region of Bordeaux being one. Growing conditions in vineyards typically vary year-by-year, mostly based on weather patterns. Amounts and timing of rainfall, frost, heat, hail, windstorms and fog, among other factors, can lead to very different results and make each year unique, especially in regions such as Bordeaux that have a continental climate and significant temperature swings between day and night, winter and summer.

Variables

The dependent variable for several hypotheses in our study is the change in product quality. We use the Wine Spectator critic ratings on the 100-point scale to measure product quality for each wine, in each year observed. Depending on the hypothesis, we reviewed the quality score immediately following a period with treatment effect (i.e., loss or gain in status) or we applied the average quality score of those subsequent years. This comparison of post-treatment effect is made in reference to the data points up to the treatment period. This may include using the quality score directly coinciding with a treatment effect (again, loss or gain in status) or past average quality score up to the point of the treatment effect.

We use a combination of membership status patterns on the time series of each winery as independent variables for most of the hypotheses. In all of our hypotheses, some version of status change serves as the independent variable.

We coded separate treatment effect triggers for our main hypothesis. We first test how a status change in a given year influences the quality in subsequent periods. We also apply a 2-period lag to the status change trigger assess more long-term effects as compared to the 1-period lag.

The linear regression model also includes the current year's status of focal wine, and current vintage score is added as a second control variable.

RESULTS

--- PLACE TABLE 1 HERE: DESCRIPTIVE STATISTICS ---

--- PLACE TABLE 2 HERE: CORRELATION TABLE ---

--- PLACE TABLE 3 HERE: REGRESSION RESULTS ---

Consistent with H1, stating that a status loss positively influences quality in the following year, the coefficient on status loss in Table 3, column C is positive and statistically significant (b=0.8071, p<0.01). A one-unit change in status (in the case of a loss, the status dummy variable is moving from 1 to 0) results in a 0.8071 unit increase in predicted quality score. Thus, it appears that status loss has a statistically and substantively significant association with increase in quality. The findings predict that a winery losing Cru Bourgeois status will manage to improve the quality score in response by more than 4/5 of a point, on a scale that practically uses a point scale between 85 and 100.

Improvement of product quality comes at a high price that limits the ability to volitionally bring up quality while keeping costs reasonable. Using higher quality grapes for a wine means that the winery must employ more expensive harvest and grape sorting

techniques. In addition to this related cost increase, output will be smaller, as an increased amount of grapes cannot be used. Wineries cannot source grapes from outside the property in Bordeaux, as all wines are based on estate-grown grapes per local labeling law. These economic considerations help explain the somewhat moderate quality increase observed above.

Our analysis also supports hypothesis 1b, which states that a status gain is followed by an increase in the wine quality score in the next period. The coefficient on status gain in Table 3, column C is positive and statistically significant (b=0.5200, p<0.01). A one-unit change in status (in the case of a gain, the status dummy variable is moving from 0 to 1) results in a 0.5200 unit increase in predicted quality score. Thus, it appears that status gain has a statistically and substantively significant association with increase in quality.

As expected, the quality improvement effect in the immediately following year is larger for status loss than for status gain. Our expectation was to observe a strong quality effect upon status loss, and a moderate effect in response to status gain. The support of H1b points to a strong mechanism of the self-perpetuating effect of status on quality described earlier.

--- PLACE TABLE 6 HERE: DIFF-IN-DIFF RESULTS FOR STATUS LOSS ---

Hypothesis 2a extends H1a by testing whether status loss leads to a quality improvement that persists beyond the year immediately following the loss. Specifically, we test whether a continued quality improvement is detected in the second year after the loss.

Consistent with H1, the coefficient on status loss in Table 3, column C is positive and statistically significant (b=0.9260, p<0.01). A unit change in status from 1 to 0 results in a 0.9260 unit increase in predicted quality score. Thus, it appears that status loss has a statistically and substantively significant association with increase in quality, 2 two periods after the status loss event.

As a robustness check, we run a difference-in-differences estimation for a before-and-after treatment analysis that serves as a robustness check. Rather than merely assessing the 2 year lag between status loss and wine score quality, this model considers all the years available in the data set that follow the status loss event. The difference-in-differences model shows a positive coefficient as well (b=0.186, p<0.05), indicating the longer-term quality improvement after status loss event improves by nearly 0.2 as compared to the average of the periods prior and up to the status loss event.

We also applied a Chow test for structural breaks to the time series, and receive significant results (p<0.001), rejecting the null hypothesis that the structure of quality score data is the same before and after treatment. That means, it's indicating that the loss event coincides with a structural break in the time series of quality scores across wineries. The Chow test responds to regime changes, intermittent non-stationarity as well as trend breaks and similar patterns of change in the time series component of a panel data set.

This confirms that the short-term response to a status loss is a much larger effect, but that the firm response is not isolated to a reaction the immediately following year. Apparently a status loss event leads to a long-term improvement of product quality.

--- PLACE TABLE 7 HERE: DIFF-IN-DIFF RESULTS FOR STATUS LOSS ---

58

H2b stated that a status gain influences product quality 2 years after the change. In parallel to hypothesis 2a, significant results for H2b would imply that the short-term quality improvement effect we observed in response to a status gain continues in year 2 after the gain. The linear regression used to predict quality scores 2 years after status gain does not support this hypothesis, the coefficient on status gain with 2 year lag in Table 3, Column 2 is negative and not statistically relevant (b= -0.2637, p>0.1). Thus, it appears that status gain has no statistically and substantively significant association with an increase in quality two years after the status change event.

Consistent with the regression model, the difference-in-differences analysis shows also that H2b is not supported (b=0.124, p>0.1). Both these results do not support a conclusion that a longer team quality improvement follows a status gain event. The Chow test for structural break continues to indicate a structural break (p<0.001) also in this case of status gain. Results for this hypothesis are therefore inconclusive.

--- PLACE TABLE 8 HERE: SUB POPULATION AVERAGES and T TEST FOR DIFF ---

Firms may have a long history of affiliation with a given status classification, while others may be more recent or intermittent entrants into the classification. Those firms that joined the classification at its inauguration and that have held membership since are likely to exhibit positive performance that justifies the membership. Firms that do not have this inaugural status endowment may exhibit less consistently positive performance. Therefore, we expect the overall quality level of inaugural status members will be higher on average

than the overall population of competing firms, acknowledging the indirect but relevant relationship between quality and status.

To establish whether wineries with the initial status endowment behave differently from those who did not have Cru Bourgeois status from the outset, we tested for differences in averages. Wineries that held the Cru Bourgeois status from the outset averaged a wine score of 89.45 over the 14 year period we observed. In context, wineries that had no status in the reference year of 2003 averaged a quality score of 89.07 over the same period, and stayed 0.38 score points below the group of wineries that held the status upon inauguration of the classification.

That means that wineries that have a longer tradition of being attached to the Cru Bourgeois classification have a substantially higher quality level than the other wineries in our study, i.e. wineries that just more recently experienced membership status for the first time. The finding validates the overall concept of the Cru Bourgeois status concept in that their long-term members exhibit higher quality so that the status serves as a reliable quality signal to consumers that is backed up by actually observed quality in the review period.

--- PLACE TABLE 9 HERE: REGRESSION TABLE ---

Hypothesis 3 suggested that a status loss should interact positively with the initial firm status, and thereby should further drive up the quality score in a year following the status loss. Supporting H3, the interaction coefficient on status loss and initial status in Table 3, column C is positive and statistically significant (b=0.8667, p<0.05). A one-unit

increase in this interaction term results in a 0.5200 unit increase in predicted quality score. Thus, it appears that status loss interacts with the initial status of each firm so that there is evidence for a statistically and substantively significant association with increase in quality. This means that those wineries with initial status endowment improve quality more strongly following a status loss, as compared to those wineries that were not endowed with the Cru Bourgeois status upon initiation of the classification.

DISCUSSION

The study offers insight to behavioral strategic decision making in response to feedback, in the form of status loss, or status change in general. Specifically, three main contributions arise from our analysis.

Firstly, losing a desirable status leads to a swift improvement in of product quality, and firms sustain this increase of quality also over the longer term. This finding is consistent with the traditional aspiration model in the Behavioral Theory of the Firm. Differentiating between the short-term and long-term adjustment is meaningful. If the quality of a product slips to a level where the firm loses the desirable status, it could be sufficient to simply fix the quality problem in one period to get back into status. But apparently the status loss also triggers concerns within the firm that a status loss could recur, so that precautions are taken to stay well clear of the minimum quality required to maintain the status.

Secondly, the results show that not only status loss has positive implications for future quality output of firms. Further, also status gain leads to some degree of quality improvement, so that we can conclude that status change in general has positive

implications for firm behavior in reference to product quality. If firms that experience a significant status change act upon it in a positive way, it implies that firms that maintain stability in their status do not take similar quality improvement actions, whether they continue a long-held status or remain excluded from the status category on ongoing basis. The finding that status change of both types drives quality improvement means that quality levels in industries with a dominant status system are likely higher than comparable industries, even highly competitive ones. Firms that are or try to be part of a recognized status system could for those reasons be at an advantage over firms that do not compete for status. Without a status system, the quality benefits of status change are not available.

A third important implication arising from this study is the importance of the status endowment effect. Wineries that have held the desirable Cru Bourgeois status long-term will react more strongly to a loss of status. We explain this by expanding the traditional model of aspiration, where status takes a special role in the set of possible firm aspirations. Status can become part of the long-term identity of the firm so that a prior status membership remains permanently attached to the aspirations of the firm. Unlike most types of firm performance and goal attainment, status is different in that it becomes part of firm identity, and thereby the status itself becomes an important long-term aspiration that does not fade away as part of the annual aspiration adjustments. Current aspiration models ignore the possibility of a long-term reference point of this type, and we therefore propose an extension of the existing theory to that effect.

Our observations, concerning the way in which various status change patterns in the timeline of individual firms affect future quality, offer several possibilities for future

research. Our quality feedback study took advantage of the very specific setting in the Cru Bourgeois category of Bordeaux red wine over a short time period, which allowed for favorable testing conditions. Strategy researchers with an interest in quality feedback studies and other behavioral models may question the applicability of our findings to other industry settings. We believe the results shown can be replicated in other industries where quality data is available and where a clear and simple status system can be identified. Where clear status systems are in place in other industries, the study would be easiest to generalize to other industries in which reliable and clear quality measures are available on a regular basis, as new products are introduced to the market.

Owing to data availability, our study encounters limitations other industry datasets may overcome. From our sample of the more than 400 wineries to have held the status we study, a subset of only around 130 actually experienced a status change during our review period. That means the majority of firms retained Cru Bourgeois membership consistently throughout the study period and were therefore not useful for assessing firm response to status change. Other settings may offer a larger number of firms that have experienced status change, possibly over a longer time period. This would allow more extensive scenario testing of our finding that firms respond strongly and swiftly to the loss of status.

REFERENCES

Barkow, J. H. 1989. *Darwin, sex, and status*. Toronto: University of Toronto Press

Berger, J., Rosenholtz, S. J., & Zelditch, M. 1980. Status organizing processes. In A. Inkeles, N. J. Smelser, & R. H. Turner (Eds.), *Annual review of sociology*, vol. 6: 479–508. Palo Alto, CA: Annual Reviews.

Benjamin, B. A., and J. M. Podolny 1999 ''Status, quality, and social order in the California wine industry.'' *Administrative Science Quarterly*, 44: 563–589.

Bidwell M, Won S, Barbulescu R and Mollick E. 2015. "I used to work at Goldman Sachs! How firms benefit from organizational status in the market for human capital", *Strategic Management Journal,* Volume 36, Issue 8, 1164–1173

Blettner DP, He ZL, Hu S and Bettis RA, 2015. "Adaptive aspirations and performance heterogeneity: Attention allocation among multiple reference points", *Strategic Management Journal,* Volume 36, Issue 7, 987–1005

Bothner, Matthew S. and Joel M. Podolny, and Edward Bishop SMith. 2011. "Organizing Contests for Status: The Matthew Effect vs the Mark effect*." Management Science* 57:439-457

Bromiley, P. 1991. Testing a causal model of corporate risk taking and performance. *Academy of Management Journal*, 34: 37-59.

Bromiley P. 2005. *The Behavioral Foundations of Strategic Management*. Blackwell Publishing: Malden MA.

Bromiley P and Harris JD: 2014: A comparison of alternative measures of organizational aspirations*, Strategic Management Journal,* Volume 35, Issue 3, 338–357

Carson Marr J, Thau S. 2014. Falling from great (and not-so-great) heights: How initial status position influences performance after status loss. *Academy of Management Journal.* Vol. 57 Issue 1, p223-248. 26p.

Cocks, C., and E. Feret. 1883 "*Bordeaux and Its Wines*, 2d rev. English ed. Paris/Bordeaux: G. Masson and Feret & Fils."

Cowen, A. 2012. An expanded Model of Status Dynamics: The effects of Status Transfer and Interfirm Coordination, *Academy of Management Journal*, Vol. 55 Issue 5, p1169-1186.

Cyert RM, March JG. 1963. *A Behavioral Theory of the Firm*. Prentice-Hall: Englewood Cliffs, NJ.

Ertug, G., and F. Castellucci. 2013 "Getting what you need: How reputation and status affect team performance, hiring, and salaries in the NBA." *Academy of Management Journal*, 56: 407–431.

Fang C, Kim JH and Milliken FJ, 2014: "When bad news is sugarcoated: Information distortion, organizational search and the behavioral theory of the firm", *Strategic Management Journal*, Volume 35, Issue 8, Pages: 1186–1201

Gavetti G, Greve HR, Levinthal DA, Ocasio W. 2012. The behavioral theory of the firm: assessment and prospects. *Academy of Management Annals* 6(1): 1–40.

Greve, H. R. (1998). Performance, aspirations, and risky organizational change. *Administrative Science Quarterly*, 43(1), 58–86.

Jensen, M., B.-K. Kim, and H. Kim 2011 "The importance of status in markets: A market identity perspective." In J. L. Pearce (ed.), *Status in Management and Organizations*: 87–117. Cambridge: Cambridge University Press.

Jeong Y and Siegel JI. 2018. Threat of Falling High Status and Corporate Bribery: Evidence from the Revealed Accounting Records of Two South Korean Presidents, *Strategic Management Journal*, Vol 39, Issue 4, 1083-1111

Joseph, J and Gaba, V. 2015: "The fog of feedback: Ambiguity and firm responses to multiple aspiration levels", *Strategic Management Journal*, Volume 36, Issue 13, December 2015, Pages: 1960–1978

Kuusela P, Thomas Keil T and Maula M. 2017. Driven by Aspirations, but in what Direction? Performance Shortfalls, Slack Resources, and Resource-Consuming vs. Resource-Freeing Organizational Change. *Strategic Management Journal,* Volume 38, Issue 5, pages: 1101–1120.

Malter, D. 2014 "On the Causality and Cause of Returns to Organizational Status: Evidence from the Grands Crus Classes of the Medoc" *Administrative Science Quarterly* 59 (2)271–300

March JG, Simon HA. 1958. *Organizations*, New York: J. Wileny & Sons Inc

Massini S, Lewin AY, Greve HA. 2005. Innovators and Imitators: Organizational Reference Groups and Adoption of Organizational Routines. *Research Policy* 34: 1550–1569

Melewar, T.C. 2003. Determinants of the Corporate Identity Construct: A Review of Literature. *Journal of Marketing Communications*, 9:4, 192-220

Podolny, J. M. 1993. "A status-based model of market competition." *American Journal of Sociology*, 98: 829–872.

Podolny, J. M., & Phillips, D. J. 1996. *The dynamics of organizational status. Industrial and Corporate Change*, 5: 453–471.

Podolny, J. M. 2005 *"Status Signals"*. Princeton, NJ: Princeton University Press.

Rao, H. 1994 ''The social construction of reputation: Certification contests, legitimation, and the survival of organizations in the American automobile industry: 1895–1912.'' *Strategic Management Journal*, 15: 29–44.

Ref O and Shapira Z. 2017. "Entering new markets: The effect of performance feedback near aspiration and well below and above it", *Strategic Management Journal,* Volume 38, Issue 7, July 2017, 1416–1434

Shinkle GA. 2012. Organizational aspirations, reference points, and goals building on the past and aiming for the future. *Journal of Management* 38(1): 415–455.

Simcoe, T. S., and D. M. Waguespack. 2011 ''Status, quality, and attention: What's in a (missing) name?'' *Management Science*, 57: 274–290.

Tarakci M, Ateş NY, Floyd SW, Ahn Y and Wooldridge B. Performance feedback and middle managers' divergent strategic behavior: The roles of social comparisons and organizational identification. *Strategic Management Journal*

Van Der Vegt, G. S., Bunderson, J. S., & Oosterhof, A. 2006. Expertness diversity and interpersonal helping in teams: Why those who need the most help end up getting the least. *Academy of Management Journal,* 49: 877–893.

Wang T, Wezel FC, Forgues B, 2016. Protecting Market Identity: When and How Do Organizations Respond to Consumers' Devaluations? *Academy of Management Journal*, 59: 132-162

Washburn, M., & Bromiley, P. (2012). Comparing aspiration models: The role of selective attention. *Journal of Management Studies*, 49(5), 896–917.

Washington, M., and E.J. Zajac. 2005 "Status evolution and competition: Theory and evidence." *Academy of Management Journal*, 48: 282-296

Zuckerman, E. W. 1999. The categorical imperative: Securities analysts and the illegitimacy discount. *American Journal of Sociology*, 104: 1398–1438.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
StatusLoss	2401	0.0716368	0.2579393	0	1
StatusGain	2401	0.0932945	0.2909052	0	1
VintageScore	3087	93.11111	3.695774	87	99
WineScore	3085	89.04182	2.44257	74	94
InitialStatus	3087	0.5481	0.4978	0	1
CurrentStatus	3087	0.7065112	0.4554342	0	1

Table 2: Correlation Matrix

Variable	StatusLoss	StatusGain	InitialStatus	Interaction Status Loss x Initial Status	Interaction Status Gain x Initial Status	CurrentStatus	VintageScore
StatusLoss	1.0000						
StatusGain	-0.0892	1.0000					
InitialStatus	-0.0281	-0.2041	1.0000				
Interact StatusLoss x InitialStatus	0.7621	-0.0680	0.1921	1.0000			
Interact StatusGain x Initial Status	-0.0414	0.4638	0.1350	-0.0315	1.0000		
CurrentStatus	-0.4488	0.1987	0.1643	-0.3420	0.0922	1.0000	
VintageScore	0.0342	0.1179	-0.0023	0.0568	-0.0003	-0.0320	1.0000

Table 3: Combined Regression Results

Dependent Variable: WineScore	(1) Base Model	(2) Final Model
Independent Variables:		
StatusLoss = Lag t-1	1.2195***	0.8071***
	(0.2289)	(0.2745)
StatusGain = Lag t-1	0.5274***	0.5200**
	(0.2006)	(0.2346)
StatusLoss = Lag t-2	0.8774***	0.9260***
	(0.1860)	(0.1907)
StatusGain = Lag t-2	-0.2603*	-0.2637*
	(0.1437)	(0.1425)
InitialStatus		0.1879
		(0.4843)
Interaction StatusLoss x InitialStatus = Lag t-1		0.8667**
		(0.3403)
Interaction StatusGain x Initial Status = Lag t-1		-0.0724
		(0.3493)
CurrentStatus = Lag t-1	0.1825	0.2163
	(0.2476)	(0.2476)
VintageScore	0.1540***	0.1537***
	(0.0116)	(0.0116)
Constant	74.7355***	74.6349***
	(1.0897)	(1.1488)
Observations	2053	2053
Number of Firms	343	343

Robust standard errors in parentheses   *** p<0.01, ** p<0.05, * p<0.1

Table 4: Difference in Differences Model – Hypothesis 2a

```
. diff WineScore, t(StatusLoss) p(Year)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS
Number of observations in the DIFF-IN-DIFF: 2400
            Before           After
   Control: 0               0           0
   Treated: 0               0           0
             0               0
```

Outcome var.	WineS~e	S. Err.	|t|	P>|t|
Before				
Control	-156.433			
Treated	-530.367			
Diff (T-C)	-373.934	172.520	-2.17	0.030**
After				
Control	-156.311			
Treated	-530.059			
Diff (T-C)	-373.748	172.434	2.17	0.030**
Diff-in-Diff	0.186	0.086	2.16	0.031**

```
R-square:    0.02
* Means and Standard Errors are estimated by linear regression
**Inference: *** p<0.01; ** p<0.05; * p<0.1
```

Table 5: Difference in Differences Model – Hypothesis 2b

```
. diff WineScore, t(StatusGain) p(Year)

DIFFERENCE-IN-DIFFERENCES ESTIMATION RESULTS
Number of observations in the DIFF-IN-DIFF: 2400
            Before          After
   Control: 0               0            0
   Treated: 0               0            0
             0              0
```

Outcome var.	WineS~e	S. Err.	|t|	P>|t|
Before				
Control	-178.348			
Treated	-427.239			
Diff (T-C)	-248.891	156.273	-1.59	0.111
After				
Control	-178.215			
Treated	-426.982			
Diff (T-C)	-248.767	156.195	1.59	0.111
Diff-in-Diff	0.124	0.078	1.60	0.111

```
R-square:    0.02
* Means and Standard Errors are estimated by linear regression
**Inference: *** p<0.01; ** p<0.05; * p<0.1
```

Table 6: Difference in Means Test

```
. mean Hyp5Ave if InitialStatus == 1

Mean estimation                    Number of obs   =      188
```

	Mean	Std. Err.	[95% Conf. Interval]	
Hyp5Ave	89.45058	.1123099	89.22902	89.67214

```
. mean Hyp5Ave if InitialStatus == 0

Mean estimation                    Number of obs   =      155
```

	Mean	Std. Err.	[95% Conf. Interval]	
Hyp5Ave	89.07312	.1211899	88.83371	89.31253

```
. ttest Hyp5Ave, by (InitialStatus)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	155	89.07312	.1211899	1.508803	88.83371	89.31253
1	188	89.45058	.1123099	1.539916	89.22902	89.67214
combined	343	89.28001	.0828974	1.535281	89.11695	89.44306
diff		-.3774599	.1655544		-.7030962	-.0518235

```
    diff = mean(0) - mean(1)                              t =  -2.2800
Ho: diff = 0                            degrees of freedom =      341

    Ha: diff < 0               Ha: diff != 0                 Ha: diff > 0
Pr(T < t) = 0.0116       Pr(|T| > |t|) = 0.0232        Pr(T > t) = 0.9884
```

Sélection Officielle 2011
Crus Bourgeois du Médoc

Médoc

CHÂTEAU BELLEGRAVE • CHÂTEAU BELLERIVE • CHÂTEAU BELLEVUE • CHÂTEAU BESSAN SÉGUR • CHÂTEAU BLAIGNAN • CHÂTEAU BOURNAC • CHÂTEAU CARCANIEUX • CHÂTEAU CASTERA • CHÂTEAU CHANTELYS • CHÂTEAU CHANTEMERLE • CHÂTEAU CLÉMENT SAINT-JEAN • CHÂTEAU CLOS DU MOULIN • CHÂTEAU D'ARGAN • CHÂTEAU DE BENSSE • CHÂTEAU DE LA CROIX • CHÂTEAU DE PANIGON • CHÂTEAU DE TOURTEYRON • CHÂTEAU DES BROUSTERAS • CHÂTEAU DES CABANS • CHÂTEAU DES GRANGES D'OR • CHÂTEAU D'ESCURAC • CHÂTEAU DU PÉRIER • CHÂTEAU ESCOT • CHÂTEAU FLEUR LA MOTHE • CHÂTEAU FONTIS • CHÂTEAU GEMEILLAN • CHÂTEAU GRAND BERTIN DE SAINT CLAIR • CHÂTEAU GRAVAT • CHÂTEAU GREYSAC • CHÂTEAU GRIVIÈRE • CHÂTEAU HAUT BANA • CHÂTEAU HAUT CANTELOUP • CHÂTEAU HAUT MAURAC • CHÂTEAU HAUT-MYLES • CHÂTEAU LA BRANNE • CHÂTEAU LA CARDONNE • CHÂTEAU LA CHANDELLIÈRE • CHÂTEAU LA CLARE • CHÂTEAU LA GORCE • CHÂTEAU LA GORRE • CHÂTEAU LA GRANGE DE BESSAN • CHÂTEAU LA GRAVETTE LACOMBE • CHÂTEAU LA PIROUETTE • CHÂTEAU LA RAZE BEAUVALLET • CHÂTEAU LA RIBAUD • CHÂTEAU LA ROQUE DE BY • CHÂTEAU LA VALIERE • CHÂTEAU LABADIE • CHÂTEAU LACOMBE NOAILLAC • CHÂTEAU LADIGNAC • CHÂTEAU LALANDE D'AUVION • CHÂTEAU L'ARGENTEYRE • CHÂTEAU LASSUS • CHÂTEAU LAULAN DUCOS • CHÂTEAU LE BOURDIEU • CHÂTEAU LE PEY • CHÂTEAU LE TEMPLE • CHÂTEAU LE VIEUX FORT • CHÂTEAU LEBOSCQ • CHÂTEAU L'ESTRAN • CHÂTEAU LES ANGUILLEYS • CHÂTEAU LES GRANDS CHÊNES • CHÂTEAU LES GRANGES DE CIVRAC • CHÂTEAU LES LATTES • CHÂTEAU LES MOINES • CHÂTEAU LES ORMES SORBET • CHÂTEAU LES TRESQUOTS • CHÂTEAU LES TROIS MANOIRS • CHÂTEAU LES TUILERIES • CHÂTEAU LESTRUELLE • CHÂTEAU LIVRAN • CHÂTEAU LOIRAC • CHÂTEAU LOUDENNE • CHÂTEAU LOUSTEAUNEUF • CHÂTEAU MAISON BLANCHE • CHÂTEAU MAREIL • CHÂTEAU MAZAILS • CHÂTEAU MÉRIC • CHÂTEAU MOULIN DE BEL AIR • CHÂTEAU MOULIN DE CANHAUT • CHÂTEAU MOULIN DE CASSY • CHÂTEAU NOAILLAC • CHÂTEAU PATACHE D'AUX • CHÂTEAU PEY DE PONT • CHÂTEAU PIERRE DE MONTIGNAC • CHÂTEAU PLAGNAC • CHÂTEAU POITEVIN • CHÂTEAU PONTEY • CHÂTEAU PREUILLAC • CHÂTEAU PRIEURE DE BLAIGNAN • CHÂTEAU RAMAFORT • CHÂTEAU RICAUDET • CHÂTEAU ROLLAN DE BY • CHÂTEAU ROQUEGRAVE • CHÂTEAU ROUSSEAU DE SIPIAN • CHÂTEAU SAINT-AUBIN • CHÂTEAU SAINT-BONNET • CHÂTEAU SAINT-CHRISTOLY • CHÂTEAU SAINT-CHRISTOPHE • CHÂTEAU SAINT-HILAIRE • CHÂTEAU SEGUE LONGUE MONNIER • CHÂTEAU SIGOGNAC • CHÂTEAU TOUR CASTILLON • CHÂTEAU TOUR HAUT-CAUSSAN • CHÂTEAU TOUR PRIGNAC • CHÂTEAU TOUR SAINT-BONNET • CHÂTEAU TOUR SAINT-VINCENT • CHÂTEAU TOUR SERAN • CHÂTEAU VERNOUS • CHÂTEAU VIEUX ROBIN • VIEUX CHÂTEAU LANDON

Listrac-Médoc

CHÂTEAU BAUDAN • CHÂTEAU CAP LÉON VEYRIN • CHÂTEAU CAPDET • CHÂTEAU DONISSAN • CHÂTEAU FONRÉAUD • CHÂTEAU LAFON • CHÂTEAU LALANDE • CHÂTEAU L'ERMITAGE • CHÂTEAU LESTAGE • CHÂTEAU LIOUNER • CHÂTEAU REVERDI • CHÂTEAU SARANSOT-DUPRÉ • CHÂTEAU SÉMEILLAN MAZEAU • CHÂTEAU VIEUX MOULIN

Moulis

CHÂTEAU ANTHONIC • CHÂTEAU BISTON BRILLETTE • CHÂTEAU BRANAS GRAND POUJEAUX • CHÂTEAU BRILLETTE • CHÂTEAU CAROLINE • CHÂTEAU CHEMIN ROYAL • CHÂTEAU DUPLESSIS • CHÂTEAU GRESSIER GRAND POUJEAUX • CHÂTEAU GUITIGNAN • CHÂTEAU LA GARRICQ • CHÂTEAU LA MOULINE • CHÂTEAU LALAUDEY • CHÂTEAU MOULIN À VENT • CHÂTEAU MYON DE L'ENCLOS • CHÂTEAU POMEYS

Margaux

CHÂTEAU BELLEVUE DE TAYAC • CHÂTEAU D'ARSAC • CHÂTEAU DEYREM VALENTIN • CHÂTEAU HAUT BRETON LARIGAUDIÈRE • CHÂTEAU LA TOUR DE BESSAN • CHÂTEAU LA TOUR DE MONS • CHÂTEAU MONGRAVEY • CHÂTEAU PAVEIL DE LUZE • CHÂTEAU PONTAC LYNCH • CHÂTEAU PONTET CHAPPAZ

Saint-Estèphe

CHÂTEAU BEAU SITE • CHÂTEAU CLAUZET • CHÂTEAU COUTELIN MERVILLE • CHÂTEAU DE CÔME • CHÂTEAU LA COMMANDERIE • CHÂTEAU LA HAYE • CHÂTEAU LADOUYS • CHÂTEAU LAFFITTE CARCASSET • CHÂTEAU L'ARGILUS DU ROI • CHÂTEAU LE BOSCQ • CHÂTEAU LE CROCK • CHÂTEAU LILIAN LADOUYS • CHÂTEAU PETIT BOCQ • CHÂTEAU PICARD • CHÂTEAU PLANTIER ROSE • CHÂTEAU SAINT PIERRE DE CORBIAN • CHÂTEAU SERILHAN • CHÂTEAU TOUR DE PEZ • CHÂTEAU TOUR DES TERMES • CHÂTEAU TOUR SAINT-FORT • CHÂTEAU VIEUX COUTELIN

Pauillac

CHÂTEAU FONBADET • CHÂTEAU HAUT-BAGES MONPELOU • CHÂTEAU LA FLEUR PEYRABON • CHÂTEAU PLANTEY • CHÂTEAU TOUR SIEUJEAN

Haut-Médoc

CHÂTEAU ANEY • CHÂTEAU ARNAULD • CHÂTEAU BALAC • CHÂTEAU BARATEAU • CHÂTEAU BARREYRES • CHÂTEAU BARTHEZ • CHÂTEAU BEAUMONT • CHÂTEAU BEL AIR • CHÂTEAU BELLE-VUE • CHÂTEAU BEL-ORME TRONQUOY DE LALANDE • CHÂTEAU BERNADOTTE • CHÂTEAU BEYZAC • CHÂTEAU BIBIAN • CHÂTEAU CAMBON LA PELOUSE • CHÂTEAU CHARMAIL • CHÂTEAU CISSAC • CHÂTEAU CLÉMENT-PICHON • CHÂTEAU CORCONNAC • CHÂTEAU CROIX DU TRALE • CHÂTEAU D'AGASSAC • CHÂTEAU D'ARCHE • CHÂTEAU D'ARCINS • CHÂTEAU DASVIN BEL AIR • CHÂTEAU D'AURILHAC • CHÂTEAU DE BRAUDE • DOMAINE DE CARTUJAC • CHÂTEAU DE GIRONVILLE • CHÂTEAU DE MALLERET • CHÂTEAU DE SAINTE-GEMME • CHÂTEAU DE VILLAMBIS • CHÂTEAU DEVISE D'ARDILLEY • CHÂTEAU D'HANTEILLAN • CHÂTEAU DILLON • CHÂTEAU DOYAC • CHÂTEAU DU BREUIL • CHÂTEAU DU CARTILLON • CHÂTEAU DU MOULIN ROUGE • CHÂTEAU DU RAUX • CHÂTEAU DU RETOUT • CHÂTEAU DU TAILLAN • CHÂTEAU DUTHIL • CHÂTEAU FONPIQUEYRE • CHÂTEAU FONTESTEAU • CHÂTEAU GRAND CLAPEAU OLIVIER • CHÂTEAU GRANDIS • CHÂTEAU HAUT BELLEVUE • CHÂTEAU HAUT LOGAT • CLOS LA BOHÈME • CHÂTEAU LA FON DU BERGER • CHÂTEAU LA LAUZETTE DECLERCQ • CHÂTEAU LABORDE • CHÂTEAU LACOUR JACQUET • CHÂTEAU LAMOTHE BERGERON • CHÂTEAU LAROSE PERGANSON • CHÂTEAU LAROSE TRINTAUDON • CHÂTEAU LE BOURDIEU VERTHEUIL • CHÂTEAU LE MONTEIL D'ARSAC • CHÂTEAU LESTAGE SIMON • CHÂTEAU LIEUJEAN • CHÂTEAU LIVERSAN • CHÂTEAU MAGNOL • CHÂTEAU MALESCASSE • CHÂTEAU MAUCAMPS • CHÂTEAU MAURAC • CHÂTEAU MEYRE • CHÂTEAU MOULIN DE BLANCHON • CHÂTEAU MURET • CHÂTEAU PALOUMEY • CHÂTEAU PEYRAT-FOURTHON • CHÂTEAU PEYREDON LAGRAVETTE • CHÂTEAU PONTOISE CABARRUS • CHÂTEAU RAMAGE LA BATISSE • CHÂTEAU REYNATS • CHÂTEAU REYSSON • CHÂTEAU SAINT AHON • CHÂTEAU SAINT-PAUL • CHÂTEAU TOUR DU HAUT-MOULIN • CHÂTEAU TOUR SAINT-JOSEPH • CHÂTEAU TOURTERAN • CHÂTEAU VICTORIA

Illustration graphique : JOFO

256 CHÂTEAUX

Le cahier des charges et le plan de vérification relatifs à la Sélection Officielle des Crus Bourgeois du Médoc sont homologués par l'arrêté ministériel du 27 novembre 2012.

www.crus-bourgeois.com

L'abus d'alcool est dangereux pour la santé. À consommer avec modération.

Quality Is Not Everything:
Evidence of the Status and Reputation Premiums
in the High-Quality Wine Industry of Bordeaux

Jörn Kleinhans
University of California, Irvine
The Paul Merage School of Business
4293 Pereira Drive
Irvine, CA 92697-3125
jkleinha@uci.edu
310 467 5582

Quality Is Not Everything:
Evidence of the Status and Reputation Premiums
in the High-Quality Wine Industry of Bordeaux

ABSTRACT

Status and reputation may influence individual firms to set product prices far below or above the peer group average. In the high-end Bordeaux wine market setting, we first identify the median release price charged for wines of a given quality level. Differentiating 14 ordinal quality levels by using wine critic scores, we then test whether firm status and reputation help explain pricing set by the firm. Results indicate both status and reputation, separately and together, help determine the extent to which firms deviate from the price as it would be determined solely by quality level.

KEYWORDS

Firm status, reputation, status and reputation premium, quality, market price, conspicuous consumption, wine

INTRODUCTION

A bottle of Château Lafite-Rothschild Cabernet Sauvignon costs three to four times the price of the average Grand Cru Classé classified wine from Bordeaux's Médoc region, even when compared at the same wine critic score. This remains true even when wines of the same quality level—based on leading critics' quality scores—are compared. Is it the wine's Premier Grand Cru status (one of five "First Growth" wines) that explains this price premium? Or does the firm's overall reputation for quality drive such exceptional pricing? Why is quality not the major determinant of market price?

Strategy scholars view both reputation and status as valuable intangible resources on which firms can capitalize (Hall, 1992; Rindova et al., 2005; Roberts & Dowling, 2002). Firm reputation, reputation of the strategic group, and specific firm status within a peer group significantly influence firm outcomes and have a strong effect on the long-term market prices of a firm's products (Pfarrer et al., 2010). In certain product markets, a firm's reputation and status—both together and separately—can explain market prices much better than can product quality alone.

Shapiro (1983) finds that both reputation and status have strong impacts when the actual product quality cannot be observed prior to purchase. Visible reputation and status often serve as proxies for less visible underlying quality in markets that have low quality transparency; they reduce information asymmetries and risk when product quality is unobservable.

This mechanism helps explain the disconnect between quality and price in many industries, but it requires either that quality is hard to measure or that quality levels are not widely accessible to actors. That is, when reputation and status serve as quality proxies

under uncertainty, they should persist in doing so only if a high level of uncertainty about quality is sustained (Podolny, 1993). This implies reputation and status should play a lesser role when actors can easily observe product quality. If established quality measures are consistently available, reputation and status should be relatively minor moderating factors in relation to quality. However, this is not the case. Significant reputation and status premiums exist in luxury markets and high-quality product markets more generally, even when quality levels are highly transparent.

Seemingly the purchase price pays for more than just the equivalent in quality (Malter 2013). The buyer benefits from association with high-status products; he pays for a personal association with the product's reputation and status, so that the positive attributes becomes associated with him. Such conspicuous consumption occurs most with high-quality and luxury products, and usually requires that observers and peers of the buyers can see the purchase, use or consumption (Bourdieu, 1984). The buyer gains reputation and status through visible association to the high-status products. Knowing this, the firms that sell such products price the products to reflect not only quality but also a reputation and status premium. Their buyer counts on rewards obtained from the audience, which observes the display of association to the products of the high-status firm. In these cases, greater quality transparency does not reduce the premium. If the product in question is at the very top of the industry's status hierarchy, the premium can reach extreme levels and become disconnected from the price component that quality alone would justify.

In this study, we aim to further the stream of research by reviewing the role of firm reputation and status in more depth. Specifically, we offer three extensions to the discussion: (1) While reputation and status are related, they deserve separate theoretical

treatment, because they lead to separate price premiums. (2) In markets of high quality

products, quality is often not the sole carrier of value to the buyer (e.g., when an audience

witnesses the consumption and the status of the product is conferred on the buyer).

Reputation and status matter greatly here, and their effects can even dominate the value

exchange. (3) The relative proportions of the reputation and status impacts are dynamic.

We show that the status premium dominates the determination of total market price on the

very high end of a status system.

THE STRATEGIC IMPORTANCE OF REPUTATION AND STATUS

The role of status and reputation in management literature remains unclear. Some of

the researchers treat the terms as synonymous or at least interchangeable, and often use

them without a clear definition. Only more recently have status and reputation been treated

in separate research streams, as distinct types of intangible assets (Sorenson, 2014).

High levels of status and reputation both indicate a positive quality of goods and

services, suggesting they have the same essential function as a proxy for quality. However, a

growing body of management literature comparing the concepts of reputation and status

offers points of differentiation (Deephouse & Suchman, 2008; Gioia & Thomas, 1996; Jensen

& Roy, 2008; Washington & Zajac, 2005). While the concepts of status and reputation are

closely related, they differ enough to justify separate treatment (Washington and Zajac

2005). Reputation depends on the quality of previous actions, while status is determined

according to a socially-constructed and highly-visible system of ranking (Stern, Dukerich,

Zajac 2014). In other words, status is derived from a position within a hierarchy that is not

just based on product quality, while reputation arises from prior output quality. Therefore,

status certainly *associates* with quality but reputation actually *requires* quality (Sorenson, 2014). This differentiation enables researchers to set and interpret separate measures for both concepts and to test whether each has explanatory power on its own.

The significance of status and reputation varies by product type. Economists differentiate two main types (Darby and Karni, 1973; Nelson, 1970). Search products allow that the buyer can assess all essential features pertaining to function and quality prior to purchasing the product. Experience products, on the other hand, only allow for clear evaluation after purchase, or even only after consumption. For instance, the buyer does not know whether a glass of wine will taste good prior to tasting (Sorensen, 2014).

Within these product types, reputation would be most relevant for prospective buyers of experience products, because a prospective buyer of search products can evaluate the relevant features, including quality, before making a purchase. The reputation of the producer should be irrelevant in, so long as details about function and quality are fully accessible and uncontroversial. In experience goods such information is not available in advance, so reputation allows consumers to use information gleaned from past purchases to make their present purchasing decision.

Status also provides greater signaling value to the prospective buyer of experience products than to the prospective buyer of search products. Status, in the form of comparative rankings or authoritative lists of purported high-quality products, can act as a proxy for prospective buyers who have difficulty determining quality on their own. For experience products, the lack of access to objective information and the presence of information about status encourages prospective buyers to presume high-status producers offer products of correspondingly superior quality.

Fombrun (1996) defines reputation as "a perceptual representation of a company's past actions and future prospects that describes the firm's overall appeal to all its key constituents when compared to other leading rivals." A reputation for high quality stems mostly from the past provision of high quality goods or services. It presumes some consistency in quality over time (Sorenson, 2014). Consistent past actions make observers believe that the behavior reflects a fixed character attribute rather than just a series of instances (Weigelt and Camerer, 1988). Such a fixed character attribute would suggest that past quality will predict future quality.

However, the actual quality of new products may not accurately predict the quality that reputation implies. Especially in markets where users cannot assess current quality before using the product, markets may set product prices based on firm reputation rather than actual quality of the product. Therefore, reputation influences price setting. As an intangible resource to a firm, positive reputation is an asset firms can exploit to achieve increased financial performance (Deephouse 2000). Reputation produces value for a firm in so far as it signals to potential customers a superior product quality based on the firm's track record of past products (Rindova & Martins, 2012).

The reputation of a firm or product is an important quality signal for multiple reasons. It not only captures and conveys past performance as a basis for assumptions about future performance; it also has the self-reinforcing effect of providing incentives for firms to preserve reputation through the continued release of high quality products. Rather than capitalizing on existing reputation in the short term by cutting costs and increasing profit at the expense of quality, firms with good reputations tend to sustain high quality output (Rhee and Haunschild, 2006). Rather than harvesting short-term benefits of

favorable reputation, firms attempt to protect reputation as a valuable intangible asset by maintaining or increasing quality. Therefore, the firm is effectively "held hostage" by its good reputation and must respond to the consumer with quality in each future transaction (Shapiro, 1983).

High status and positive reputation both represent assets to a firm, and both have positive effects on prices paid for products and resources (Ertug and Castelucci, 2013). But only status usually stems from social position and its measurement assesses a relative position, as part of an explicit ranking or hierarchy where competitors are named as well. Most accepted definitions in the management literature describe status as a comparative phenomenon, for example as the prominence of an actor's relative position within its population (Wejnert, 2002), a rank-ordered relationship among players (Huberman, Lock, Onculer, 2004) or a clear expression of hierarchy and ranking (Washington & Zajac, 2005; Jensen & Roy, 2008).

Status can be a source of competitive advantage for a firm. Consumers assume high status firms produce high-quality goods (Podolny 1993), so that status often serves as a proxy for product quality (Rindova, Pollock, & Hayward, 2006). Observers often assume high-status have superior capabilities (Pollock et al., 2010; Stuart, Hoang, & Hybels, 1999) to draw on to produce superior products. Status is not necessarily directly coupled with past behavior (Jensen and Roy, 2008). Status effects account for exceptionally high product demand after adjusting for quality. This status-based demand can allow for significantly higher pricing, among other benefits. Based on the benefits of high status, firms systematically pursue it as an intangible asset that can influence firm performance (Roberts and Dowling, 2002).

Whereas reputation captures impressions of quality and merit, status captures aspects of social ranking upon which relevant audiences have agreed. Once formed, a status position is more difficult and slower to change than is reputation. This phenomenon, termed the Matthew effect (Merton, 1968), suggests high status and the related privileges perpetuate themselves and becomes decoupled from actual merit and quality (Podolny, 1993; Stinchcombe, 1965; Weber, 1978). Thus, status offers a less direct proxy for quality, while reputation stands in a relatively direct relation to (past) quality.

Even when management research does distinguish status from reputation, not every setting lends itself to measurement and demonstration of the separate impacts of the two. Several studies setting out to capture a status effect have difficulty differentiating among status, reputation, or a combination of the two (Sorensen 2014, Roberts et al 2011). In particular, firm-level studies of the separate effects can be problematic, as a product level analysis is preferable if status was formed at a product level as opposed to the firm level— and if detailed attributes and past quality information are available to support the reputation side of the study. With these concerns in mind, we attempt to develop measures that let us isolate distinct effects of reputation and status.

RESEARCH SETTING

In the market segment of high-end wines, winery revenue depends on the release price of a new vintage. Firms determine a price for each product, considering the overall quality and price level in the relevant market segment. Assuming that all competing products are largely differentiated by quality, a median price for each quality level can

82

establish the approximate fair market value in the focal product class. This median release price can serve as a reference point to understand firm pricing behavior.

When producers set prices very different from this fair market value, they may be allowing for either a reputation effect or a status effect to influence buyer behavior. To test the influence of firm and industry reputation, as well as status, on the pricing strategy, we choose an industry setting in the Grand Cru Classé wine category of Bordeaux.

The top wine producers of Bordeaux are organized into a status system called the Grand Cru Classé. Approximately 60 wineries have been members of this prestigious wine association. Within the Grand Cru Classé, five status tiers differentiate the member wineries further, from First Growth to Fifth Growth. Although First Growth carries the highest status among the five tiers, all wineries within the Classé enjoy worldwide attention and wide visibility in the wine market. They are the elite of the more than 1,000 wine-producing wineries in Bordeaux, and among wine regions worldwide.

The Grand Cru classification of Bordeaux's Médoc subregion was established in 1855, when Napoleon III ordered that the most reputable red wines should become part of a classified group with the purpose to display excellence to the world of wine and to clarify status order among the top Bordeaux wineries. At that time, the classification arranged the 61 best-regarded producers into five status tiers within the Grand Cru Classé. In practice, wineries of the first and second tiers refer to their class on product labels while members of the third through fifth tiers often simply refer to being part of the "Grand Cru Classé of 1855". The categorizations originally depend on market price, as an indicator of relative quality. Price-based rankings have a long tradition in Bordeaux wine, as alternative means

of judging quality (for example, in blind tasting competitions) raise concerns about subjectivity, bias or other methodological flaws in such evaluations.

Several factors make the Grand Cru classification of Bordeaux an exceptional setting to study status and reputation effects. Because the classification allocated group status to the winery firms and not to specific products or vineyards used by the wineries, it established a persistent link between the firm and its status, which endures today. In fact, no classified winery has lost its group status, or even its tier ranking, since 1855, although quality has arguably changed. The classification offers a clear hierarchy with only one ranked list, and it allocates exactly one position to each firm. The individual classifications cannot change, and no winery can be added, dropped, or reclassified within the system, regardless of product quality. All firms of the classification stem from a coherent and relatively small region surrounding the city Bordeaux, contained within the five important wine villages of Pauillac, Margaux, Saint-Julien and Saint-Estèphe and Pessac-Léognan. The leading grape variety in all wines of these firms is Cabernet Sauvignon, with the addition of Merlot and three minor blending grapes. All competitors have similar sales channels and distribution costs. Products of each winery, in each vintage, are mostly differentiated by quality.

Buyers in the high-end wine market rely heavily on expert assessments on wine quality. The four leading wine critic organizations distribute their quality assessments of the leading wines of the world through monthly print and online publications. Robert Parker's Wine Advocate, the Wine Spectator, the Wine Enthusiast and the Decanter Magazine all offer wine reviews based on an established 100-point scale of wine scoring. Such wine scores are presumed to be unbiased results of expert tasters assessing objective

quality within the limitations of human perception. Due to the blind-tasting method, quality

ratings of the wines are not likely be systematically driven by factors other than quality.

Every year, each firm (winery) releases a new main product to the market (the

"Grand Vin") at a release price of their choice. Before the annual release season begins,

leading international wine critics gather to study the quality of upcoming wine releases

through barrel tastings. During those systematic tastings, they assess individual wine

quality, and they come to a consensus view on the overall quality of the wine vintage

(average quality of wines in a given year), which is strongly influenced by weather patterns

during the grape growing season. As a result, each winery receives a quality score for their

Grand Vin, on the 100-point scale. In addition, an official vintage score for the year is

announced, summarizing the overall quality of all wines represented. The products, while

differing in quality, are otherwise highly similar: They are all red wines, based on the

Cabernet Sauvignon grape, produced in a delimited area on the west coast of France.

Besides quality, wines across producers are sufficiently similar that even the leading

sommeliers and wine experts in the world cannot systematically identify producers in a full

blind tasting.

RESEARCH QUESTION

In a market of many very similar products predominantly differentiated by quality

rather than by other characteristics, how do firm reputation and status influence market

prices? Allocating each specific wine to a quality segment, in correspondence with its exact

critic quality score, we compare prices of wines within each segment. A focal wine's market

price is reviewed in comparison to the median price of that quality segment to identify a

price premium or discount. We aim to understand what drives any wine's price deviation from the group median.

HYPOTHESES

Our hypotheses address the separate impacts of reputation and status on market price. We also suggest two additional variables that may moderate these main effects.

Consumers buy a high-status product for more reasons than just its function and quality. Therefore, the market price does not merely represent production costs, functional characteristics and quality level. It also includes a premium for the conveyance of other benefits the typical buyer receives from the purchase and consumption. We propose that a product's price in luxury industries may consist of at least three components: (1) compensation for the basic function of the product (what it does) and the level of quality (how well it does it) is only part of the product price, even if the quality level is highly visible to the public; (2) compensation for the status benefits that a purchase of the product grants the buyer; and (3) compensation for the benefits extracted from knowing the firm's reputation for its products. The product price may consist of other value components, but we will concentrate on the justification of the status premium and reputation premium in this study.

Consumers care about how others perceive them. They know that others observe their behavior and draw conclusions about their abilities, tastes and character. This awareness leads to consumers being mindful of their actions in public. Individuals attempt to gain high status among peers, and affiliating themselves with high-status firms and

products offers a mechanism to transfer status from the firms and products to themselves, once or repeatedly.

The luxury product market lets a buyer make visible statements about ability to afford and appreciate products of the highest status. This partially explains how products in the luxury and ultra-luxury market segments can command high price jumps with each incremental increase of status level. Their purchase or use is highly visible, and it confers a desirable kind of attention for the buyer or user.

While conspicuous consumption behavior may have the primary effect of demonstrating the purchase to an audience, the user may value a status product also without presence of an audience. For reasons of self-image, an individual may purchase and use high-status products irrespective of judgment by others, if the consumer believes he deserves to enjoy high-status products and has a reasonable entitlement to them. Thus, users of high-status products may also use and consume them in private, without others watching.

Within the Grand Cru Classé of Bordeaux wines, the member wineries are categorized into five tiers that represent a more granular status categorization. The higher first and second tiers may take advantage of their relative status by charging a premium on top of the median price corresponding to the wine's actual quality level. Therefore we hypothesize that the leading tiers can command a price premium that is directly attributable to their status. Lower status corresponds to a higher tier level, so that level 1 carries the highest status, and level 5 carries the lowest status within the Grand Cru classification.

Hypothesis 1: The winery's position in the status hierarchy negatively influences the wine's

price deviation from the market median at a given quality score.

We propose that the rationale for a reputation premium differs from the status premium reasoning discussed above. The reason reputation influences the product price is less obvious in markets where objective quality is openly available. That is, if reputation is a proxy for quality, why would there be a reputation premium when product quality is known? The quality measures and signals available may not completely address the needs of the potential buyer. Quality measures such as scores from leading wine critics on an established point scale may be insufficient because the methods of determining scores are subjective or controversial. Consumers may perceive randomness in individual quality ratings, and may suspect ratings reflect of adverse incentive structures, corruption or other hurdles in the industry. In experience goods, consumers know that the product reviewer's quality judgment depends on subjective impressions. In short, qualitative measures of quality exhibit noise, and for that reason they may not satisfy potential buyers when it comes to their individual reliability.

Therefore, reputation remains important, so long as information asymmetry may be reduced but not eliminated by publicly known quality measures. Reputation continues to serve as an important signal, adding information about quality to other information available in the market. Consumers can reduce their risk by incorporating knowledge of firm or product reputation in their assessment of the product.

The producer's reputation for product quality may influence price effect separate from firm status, because past quality adds information to the market and may predict

88

future product quality. A strong reputation for quality may cause firms to set market prices higher than the peer group's median market price at a given quality level. Firms can thereby capitalize on existing reputation.

Hypothesis 2: The average past quality of each winery's products positively influences the focal wine's price deviation from the market median at a given quality score.

The overall product quality level across the industry changes from year to year, based on more or less favorable weather patterns' influence on the ripening of the wine grapes, among other impacts. Each year, the leading wine critic magazines release a vintage score, which is supposed to capture the overall quality of the fruit in that growing season. Years with a higher vintage score should lead to a higher price for the average wine bottle than years with a weaker vintage score. The announcement of a highly scored vintage should influence the overall market price level of wines in a given year significantly. Vintage quality therefore should partially explain price deviations from the long-term market value mean per quality segment.

Hypothesis 3: The vintage score of a given year positively influences the focal wine's price deviation from the long-term market median at a given wine quality score.

Wineries with similar average past quality levels may differ in their degree of quality stability over time, so that producers with consistent past performance may change a price premium on the release price. This sort of risk-adjusted pricing would in turn suggest a

release price discount for producers that have shown higher quality variation in the past. We review wine score volatility for each winery, expressed in standard deviation of wine quality scores before the focal year.

Hypothesis 4: *Fluctuation of past quality scores of a winery will negatively influence the wine's price premium relative to the market median of a given quality score.*

Wines with a good quality history (i.e., wines of high reputation for quality) may take advantage of the most highly-scored vintages by capturing over-proportional prices in those years, capitalizing on consumer interest to own a highly reputed wine from a particularly good vintage. We therefore propose an interaction effect between reputation (hypothesis 2) and vintage quality (hypothesis 3) that explains more of the observed price variation that the two main factors alone.

Hypothesis 5: *Past wine quality scores interact positively with vintage quality scores when influencing a wine's price deviation from the long-term market median at a given wine quality score.*

DATA AND METHODS

We assembled a dataset comprising the majority of the 61 Grand Cru Classé wine producers of the Bordeaux valley's left bank. The 43 wineries in the dataset produce the most actively traded wines from the group of 61 investment-grade wineries. Leading producers release a flagship product each year (i.e., the Grand Vin). The dataset includes

flagship products for all wine vintages from 1998 to 2009. With 43 producers launching new products annually over 12 years, the dataset includes 516 individual product releases, each with its own market price. The dataset includes measures for product price, product quality, firm reputation, firm status, peer group average quality in a given year, as well as village of provenance.

For each product, we transcribed current wine score data from the database of the leading wine magazine, *Wine Spectator*. Wine scores, also called ratings, use a 100-point scale, although the lower half of the scale has never been used. In practice, only the range from 75 to 100 has meaning in the wine world, and the average score allocated to red wines of the Grand Cru Classé is 92 points. *Wine Spectator* did not issue wine scores for every single wine in our dataset.

Liv-Ex London, the world's largest fine wine exchange, supplied us with release pricing and market value data for each producer and vintage. In this study, we measure market value by the market price observed five years after release for each individual wine, for two main reasons. First, during the first year of wine sales, the release price set by the producer is the binding price that applies to all transactions. This price is generally different from the subsequent market value. After the initial year, the focal wine enters a secondary market that reflects actual supply and demand, also in light of a new vintage already being available from the same producer. Wineries of Bordeaux usually set release prices below the long-term market price (Kleinhans 2018), yet the differences between release price and final market price can be substantial. By employing a five-year gap for the market value measure, we ensure that the price we use is a direct reflection of actual demand and supply rather than an arbitrary price set by the producer.

To establish a relation between release price and the quality of each wine, we calculate median release price buckets per quality score. Drawing from our dataset of annual wine release prices, we approximate the fair market value for each quality score level.

--- PLACE EXHIBIT 1 HERE: PRICE AND QUALITY RELATIONSHIP ---

Reflecting the relationship between wine quality score and median release price, we derive a chart showing mostly continuous positive growth for all wine scores widely considered to indicate "high quality" (i.e., 89+). The price variation of individual wines at a given score is high but not depicted in this chart. The distribution of prices is asymmetric: Those wineries that underprice relative to the median do so slightly, while those that overprice do so more strongly. Therefore the average producer price is significantly higher than the median.

--- PLACE EXHIBIT 2 HERE: PRICE AND QUALITY RELATIONSHIP GRAPHIC ---

The dependent variable in our study is the individual wine's price deviation from the above median, at its given quality level. We interpret this price deviation as a premium that compensates for something other than quality (e.g. reputation or status). Therefore we classify each wine, from a quality perspective, as overpriced or underpriced (above or below peer group median), on a continuous scale, expressed in currency. Since high-end wines are priced on an exponential scale, with each incremental quality level adding a

disproportionate amount of market value, we use the median instead of the mean to avoid extremely high-priced First Growth wines distorting the average price.

We attempt to explain winery variation from the median release price per quality level on a producer-year basis. We test whether a firm's long-term reputation, status and the industry's current reputation explain a majority of the price variation not explained by the wine's score in that year. We conducted the analysis on the firm level, not the product level. Therefore the score of the most recent wine in a focal year represents the firm's current quality level for its flagship bottling.

The firm's average wine quality score of the previous 10 product cycles (years) serves as the measure of firm reputation. As discussed above, reputation often reflects a firm's quality track record, so that average past quality serves as a good measure for firm reputation.

The status measure employed comes directly from the sub-classifications of each winery within the Grand Cru Classé. Each firm has a status between 1 and 5, with 1 being the top status. Since the Grand Cru Classé system has not been changed substantially since 1855, all firms in our study maintained their status during the focal time period of 12 years. By all median wine prices sorted by quality score and by status level, we can see in the following graphic that prices are consistently higher with increased quality, as well as with higher status.

--- PLACE EXHIBIT 3 HERE: MEDIAN PRICE DEVIATION ACROSS STATUS TIERS ---

We also obtained vintage-specific quality scores for each grape growing season. *Wine Enthusiast* releases an annual vintage chart showing wine quality for decades of

vintages across different growing regions, Bordeaux being one of them. Growing conditions in vineyards around the world change from year to year, mostly based on weather patterns. Amounts and timing of rainfall, frost, heat, hail, windstorms and fog, among other factors, can lead to very different results and make every year unique, especially in wine regions like Bordeaux that have a continental climate with significant temperature swings between day and night, and between winter and summer.

From the wine quality scores obtained we calculated an additional variable to capture past quality volatility for each firm, to test for a potential impact of risk and quality variation among firms.

We initially ran an OLS regression to assess the data. Upon inspection, the model generated problems associated with heteroskedasticity, omitted variable bias, and two of the variables produced variance inflation factors (VIFs) above 10, indicating multi-collinearity issues.

We then estimated the coefficients of the model by a linear regression with random effects. Since our estimation model includes some variables that did not vary over time, we employed a random effects model rather than a fixed effects model. The Breusch and Pagan Lagrangian multiplier test for random effects (Exhibit 8 in the appendix) supports the choice of a random effects model. Similarly, the Hausman test suggests that the random effects model fits the data more appropriately than the fixed effects model (Exhibit 9 in the appendix).

We first proposed a model that includes variables for our proposed main effects and two promising interaction terms. We later dismissed one of the interaction terms from the model, as its additional inflated error terms for most variables, and it introduced multi-

collinearity issues. For that reason, our final model does not include the interaction term between status and reputation. In the below, we show regression results for both models.

RESULTS

As discussed, in this paper we study whether and how reputation effects and/or status effects drive individual product market value deviation from industry median prices, while controlling for quality. Below we show a summary description of the dataset, price deviation breakdown by all firms included, correlation matrix of all variables, as well as regression results of the final model and a second model that we considered but eventually dismissed as problematic.

--- PLACE EXHIBIT 4 HERE: DESCRIPTIVE STATISTICS ---

--- PLACE EXHIBIT 5 HERE: PRICE DEVIATION BY PRODUCER ---

--- PLACE EXHIBIT 6 HERE: CORRELATION TABLE ---

--- PLACE TABLE 7 HERE: REGRESSION RESULTS ---

Supporting H1, the status rank dummy variable has a negative coefficient estimate (b=-378.20, p<0.001). Since a lower number means higher status (ranging from 1 to 5, for the First to Fifth Growths of the Grand Cru Classé), higher status levels associate with the price deviation from the market median positively. We conclude higher status wineries can

extract a high status premium from the market. In other words, firms of higher status exhibit positive price deviation from the median price at a given quality level, substantiating the significant status effect we proposed in this study. As the average case of 12 Bordeaux bottles in this sample is priced at 1935.44 pounds (corresponding most closely to tier 4 in the status system), the results imply that a ranking improvement by 1 tier elevates the value by 378.20 pounds. The standard deviation of the by-the-case price lies at 3457.88 pounds and is driven by very high price variations towards the top of the 5-tier system.

Supporting H2, reputation shows a positive parameter estimate (b=426.69, p<0.01), supporting the expectation that a higher average past wine quality explains market price deviations from the median market value for a given quality level of the focal wine. That is, a firm's higher average quality score leads to a positive price deviation compared with peer products of the same quality level, given that we used the firm's past average quality score as the measure for firm reputation. An increase by 1 point on the scale leads to a price increase of 426.69 pounds. The 100-point scale in practice only uses the score range of 85 to 100, allowing for 15 possible tiers that we apply to measure reputation.

Supporting H3, the vintage quality score of a given year also has a positive parameter estimate (b=440.84, p<0.05), as expected. The effect of vintage quality, being a measure of overall industry quality performance in a given year, explains a much smaller amount of market value variation than either the reputation effect or the status effect. As higher vintage quality score leads to positive price deviation, we find the results support the basic intuition of better years leading to higher prices in that year, as compared with the long-term median price, is supported by the data. Similar to the wine score scale, the

vintage score scale is usually used between 85 and 100 points, with a minimum of 86 and a maximum of 99 in our sample data. An increase by 1 point on the scale leads to a price increase of 440.84 pounds.

H4, concerning the volatility of past product quality scores for a given firm, was not supported (b=51.37, p>0.1). The results do not indicate the market charges a risk discount to firms producing relatively high variation in product quality over time.

The interaction term of reputation and vintage score shows a negative parameter estimate (b=-12.22, p<0.01), not supporting our expectation that wines of high repute command over-proportionate market prices in years of high vintage quality. The model actually indicates significant support for the opposite effect: Wines of high reputation appear to command relatively lower prices in years of high vintage quality.

In summary, we see that a product price level not explained by quality alone, is strongly influenced by the winery's status (in Bordeaux, set by a government more than 150 years ago) and its long-term reputation (measured by past quality). Additional factors like the vintage score also carry a significant role in explaining price variations from the long-term median market price across wine producers of the Grand Cru Classé level.

DISCUSSION

We expected that status and reputation effects influences product price, but quality would continue to dominate the equation. We find that both the status and the reputation effect, together and separately, explain a much larger part of the total product price than expected. The impact of either component gets specifically strong on the high-end: In our

setting of wine, we have already concentrated on the most coveted group of firms in the world of wine; reviewing the very top sub-segment of this group captures several extremes. That these extremes are of top status (First Growth of the Grand Cru Classé) and highest reputation levels possible (average past quality close to 100 points), suggests total price is an exponential function of both factors. While quality may drive up the price alone, the strong increase making the function truly exponential on the high end of the spectrum stems from both reputation and status. Holding quality constant, the five most expensive wines show very high status and reputation effects, representing a multiple of the median market price at that quality level.

The status component in our study corresponds with five discrete status levels, whereas the reputation component consists in 14 discrete quality levels, ranging from 87 to 100 points. Each incremental positive difference leads to strong price changes for both factors. Vintage quality score shows a comparably small effect. The vintage quality score is a proxy for industry performance by region, as it captures how the overall regional market performed in a given year, based on quality. Results indicate that the firm effect has a larger influence than the industry of vintage effect in this high-end market, as we expected.

Our final hypothesis proposed that quality fluctuations should play a role in how consumers evaluate pricing. We suspected wines of volatile past quality would be subject to a risk discount, and that firms producing consistently high quality would be rewarded accordingly in comparison. Perhaps because more powerful factors are at work, the data did not substantiate this effect. While individual producer performance does fluctuate, we observed in the dataset that overall fluctuations are moderate across all producers. No wineries exhibited exceptionally strong score volatility over the observed time window.

Overall low variance on a firm basis and little differences among firms may explain why we could not detect a volatility effect. Since all firms in question operate at a high level of past quality, one of our prior findings may further assist the explanation: If all firms in the dataset are of high repute, a general focus on consistent quality may explain the lack of variation.

While the interaction term of winery reputation and vintage quality shows significant results, the effect turned out to be the opposite from our expectation. It appears that high vintage quality moderates the impact of winery reputation on the market price, effectively decreasing the positive price deviation from the median we observe from both main variables. The coefficient is small in comparison to the coefficient to the main effects though, and we cannot offer a substantiated argument for the negative effect the interaction seems to have on a wine's price deviation from the group median.

SUMMARY AND OUTLOOK

The results of our study appear to reveal a market anomaly: Literature has traditionally argued that reputation and status effects on pricing mostly arise from a lack of clarity on product quality. We find that even when a product's quality is highly visible according to the measures of quality most widely accepted by buyers, high premiums for reputation and status exist, and they can be separated, perhaps because they represent different purposes from a buyer's perspective.

The setting of our study was the uniquely suitable industry of Grand Cru Classé red wines in the Bordeaux region of France. The fixed nature of their classification addressed potential endogeneity concerns that usually trouble the relationships among status,

reputation, quality and price. Wine ratings from blind tastings allowed for robust controls on the side of product quality, represented by current wine rating as well as firm reputation, as represented by the average of past wine ratings.

Managers in applicable industries can derive multiple implications from our study. Knowing that status and reputation continue to matter even while the market offers clear quality indicators allows for a conscious product pricing approach that considers the separate components, and allocates distinct value to each so that final product pricing can be better aligned with the eventual fair market value. Due to the important signaling function of new release prices, firms already understand how important initial price setting of a new product can be. Therefore, they may appreciate better methods to assist with price setting. Managers in the luxury industry can segment the total price into separate components, which account for quality, status, and reputation, given the insight that buyers obtain at least three types of value in exchange for the product price.

In our study, we substantiated the difference of status and reputation in general, following established strategy research, which has long acknowledged and characterized the similarities and differences of the two concepts. Our study contributed to this discussion by reviewing very separate effects of status and reputation in the same setting, measuring them separately to show evidence of status and reputation independently impacting product prices in certain industries. While we chose an industry with a history of strong evidence of status and reputation impact, we believe future research will be able to find the principles discovered can be applied to a range of industries beyond the specialty industries of luxury consumer items and the high-end quality sectors of industries.

Understanding that buyers are willing to pay for benefits related to firm reputation and firm status is useful, but does not alone provide managers with options to extract substantially higher value. Gladly, insights on status and reputation premiums do not only allow for a more precise pricing approach that acknowledges the value components of the product. Managers may use the information to build additional value that justifies higher premiums on both reputation and status. Future research offers exciting opportunities to explore the action alternatives that will allow management to charge higher premiums for reputation and status. Firms will likely find value in both amplification and decoupling of the effects arising from reputation and status.

One of the key findings in our study is that even when visible quality indicators exist, they are not sufficient signals of quality. To the eye of the buyer, firm reputation still adds significant information and lowers overall purchase risk. If managers wish to promote the firm's high reputation level as an important factor in pricing considerations, firms may choose to cast doubt on the visible quality measures and offer arguments to buyers as to why publicly-available quality measures do not sufficiently address their desire for information. For example, firms might focus on creating individualized and first-hand experiences to reduce dependence on third-party quality assessments, or otherwise escape objective quality assessments. Finding and developing product features and new ways to cultivate a client group that emphasizes benefits from reputation, especially in light of visible quality measures, may offer a rich field for future research.

If the high status of a firm is rewarded by buyer willingness to pay a higher price, mainly due to the aforementioned benefits of conspicuous consumption, managers may be able to change product and firm characteristics in a way that increases buyer value from

status effects. This can be done by, for example, building a culture among an elite group of clients in which showing off is acceptable, supported and rewarded. Placing focus on the allure of status affiliation, exclusivity and belonging to an insider group can amplify the benefits of status for the buyer. Leveraging high status might take the form of supply reduction, limited availability or strong marketing differentiation from lower-status products. Firm efforts to that effect are already applied in the high-end sector of American wines (i.e. the "cult wine" segment of Napa Valley). Relatively little activity of this kind has been visible in our study's setting of Bordeaux, suggesting work can be done in this industry and in others.

REFERENCES

Allen, Franklin 1984. Reputation and Product Quality. Rand Journal of Economics, 15: 311-327.

Benjamin, B. A. and Podolny, J. M. (1999) "Status, Quality, and Social Order in the California Wine Industry," Administrative Science Quarterly 44(3): 563–589.

Bitektine, Alex (2011): Toward a Theory of Social Judgments of Organizations: The Case of Legitimacy, Reputation, and Status. Academy of Management Review, Vol 36, No 1, 151-179

Bourdieu (1984). Distinction: A Social Critique of the Judgement of Taste.

Castellucci, F. & Ertug, G. 2010. What's in It for Them? Advantages of Higher-Status Partners in Exchange Relationships. Academy of Management Journal, 53(1): 149-166.

Darby, M. R. and Karni, E. (1973) "Free Competition and the Optimal Amount of Fraud," Journal of Law and Economics 16(1): 67–88.

Davies G, Chun R, Kamins MA. 2010. Reputation Gaps and the Performance of Service Organizations. Strategic Management Journal 31(5): 530–546.

Deephouse DL, 2000. Media Reputation as a Strategic Resource: An Integration of Mass Communication and Resource-Based Theories. Journal of Management 2000, Vol. 26, No. 6, 1091–1112

Deephouse, D. L., & Suchman, M. C. 2008. Legitimacy in Organizational Institutionalism. In R. Greenwood, C. Oliver, & R. Suddaby (Eds.), The Sage Handbook of Organizational Institutionalism: 49-77.

Ertug, G and Castelucci, F. 2013. Getting What You Need: How Reputation and Status Affect Team Performance, Hiring, and Salaries in the NBA. Academy of Management Journal, 56(2), 407-431

Fang, L. H. 2005. Investment Bank Reputation and the Price and Quality of Underwriting Services. Journal of Finance, 60(6): 2729-2761.

Fombrun CJ. 1996. Reputation: Realizing Value from the Corporate Image. Harvard Business School Press: Boston, MA.

Fombrun, C, & Shanley, M. 1990. What's in a Name? Reputation Building and Corporate Strategy. Academy of Management Journal, 33.

Hall, R. 1992. The Strategic Analysis of Intangible Resources. Strategic Management Journal 13(2): 135–144.

Huberman, B. A., Loch, C. H., & Onculer, A. 2004. Status as a Valued Resource. Social Psychology Quarterly, 67: 103-115

Kleinhans, Joern. 2018: New Product Underpricing of Product Releases in Bordeaux Red Wines. Working paper at University of California, Irvine.

Landon, S and Smith, CE 1998. Quality Expectations, Reputation, and Price Source. Southern Economic Journal, Vol. 64, No. 3, pp. 628-647

Malter, Daniel. 2014: On the Causality and Cause of Returns to Organizational Status: Evidence from the Grands Crus Classés of the Médoc, Administrative Science Quarterly.

McNamara, G, and Bromiley, P. 1997. "Decision-making in an Organizational Setting: Cognitive and Organizational Influences on Risk Assessment in Commercial Bank Lending." Academy of Management Journal, Oct 1997; 40, 5.

Merton, R. K. 1968. The Matthew Effect in Science. Science, 159: 56-63.

Negro, G. and Leung, M. D. (2013). Actual and Perceptual Effects of Category Spanning, Organization Science 24(3): 684–96.

Nelson, P. (1970). Information and Consumer Behavior, Journal of Political Economy 78(2): 311–29.

Nelson, P. (1974). Advertising as Information, Journal of Political Economy 82(4): 729–54.

Obloj, T. and Laurence Capron, L. 2011. Role of Resource Gap and Value Appropriation: Effect of Reputation Gap on Price Premium in Online Auctions, Strategic Management Journal 32: 447–456

Pfarrer, M. D., Pollock, T. G., & Rindova, V. P. 2010. A Tale of Two Assets: The Effects of Firm Reputation and Celebrity on Earnings Surprises and Investors' Reactions. Academy of Management Journal, 53(5): 1131-1152.

Podolny, J. M. (1993). A Status-Based Model of Market Competition, American Journal of Sociology 98(4): 829–72.

Podolny, J. M. 2005. Status signals: A sociological study of market competition. Princeton, NJ: Princeton University Press.

Rao, H. (1994). The Social Construction of Reputation: Certification Contests, Legitimation, and the Survival of Organizations in the American Automobile Industry: 1895–1912, Strategic Management Journal 15(S1): 29–44.

Rindova VP, Williamson IO, Petkova AP, Sever JM. 2005. Being good or being known: an empirical examination of the dimensions, antecedents, and consequences of organizational reputation. Academy of Management Journal 48(6): 1033–1049.

Roberts PW, Dowling GR. 2002. Corporate reputation and sustained superior financial performance. Strategic Management Journal 23(12): 1077–1093.

Shapiro C. 1983. Premiums for high-quality products as returns to reputations. Quartely Journal of Economics. 98 659-679.

Simcoe, 2011. Quality, and Attention: What's in a (Missing) Name? Management Science Status
Vol. 57, No. 2, February 2011, pp. 274–290.

Stern I, Dukerich J and Zajac E, 2014. Unmixed Signals: How reputation and status affect alliances. Strategic Management Journal , 35: 512–531.

Sorenson, O 2014: Status and reputation: Synonyms or separate concepts? Strategic Organization, Vol. 12(1) 62–69.

Washington, M. & Zajac, E. J. 2005. Status Evolution and Competition: Theory and Evidence. Academy of Management Journal, 48(2): 282-296.

Weigelt & Camerer, 1988. Reputation and Corporate Strategy: A review of recent theory and applications, Strategic Management Journal, Vol. 9, 443-454.

Wejnert, B. 2002. Integrating models of diffusion of innovations: A conceptual framework. Annual Review of Sociology, 28: 297-326.

Wilson, R, 1985. Multi-dimensional Signaling. Economic Letters, 19 (1), pp. 17-21.

Exhibit 1: Relationship between Price and Quality

Quality Score by Wine Spectator	Median Price Per Case in GBP
87	310
88	409
89	474
90	450
91	569
92	695
93	815
94	1095
95	1160
96	1600
97	1925
98	3400
99	4200
100	6500

Exhibit 2: Relationship between Price and Quality

Price and Quality Relationship Grand Cru Classé
per case of 12 bottles, market prices for vintages 1998 - 2014
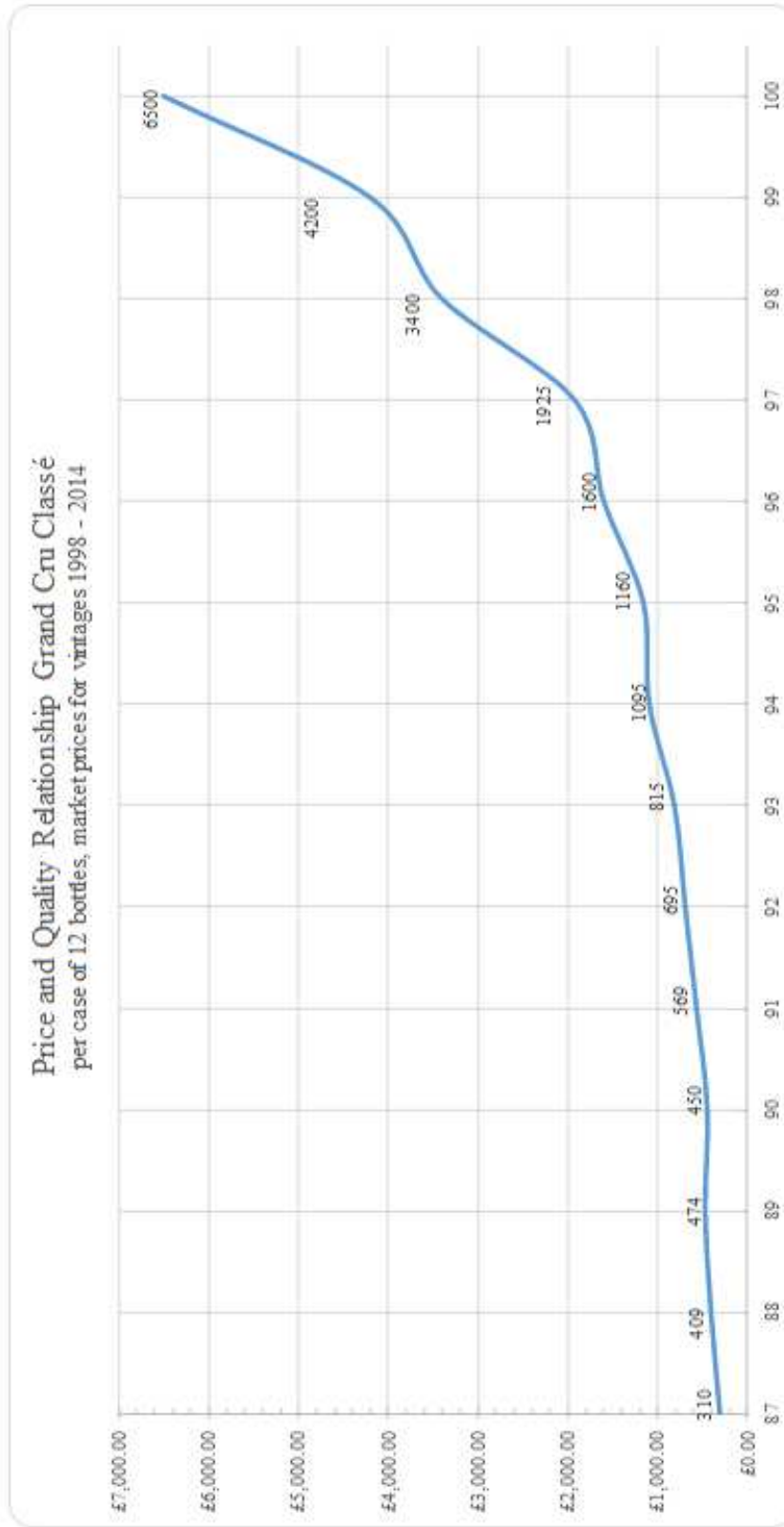
Exhibit 3: Median Price per Quality Level across Status Tiers

Exhibit 4: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
Vintage Range (calendar years)			1998	2009
Vintage Quality Score (100 point scale)	90.70	4.22	86	99
Wine Quality Score (100 point scale)	92.46	3.64	85	100
Reputation (average of past quality)	92.46	3.64	85	100
Status (Grand Cru classification)	2.66	1.51	1	5
Score Volatility (firm level)	2.86	1.23	1.83	8.53
Wine Price (case of 12 bottles)	1,935.44	3,457.88	153	27,932
Price Deviations at fixed quality	0.00	2,247.62	-8270	15,500

Exhibit 5: Price Deviation from Median of Quality Score Group by Producer

Summary Table of Price Deviations by Producer					
Producer	Mean	Std. Dev.	Minimum	Maximum	Median
Petrus	7988	5042	0	15500	7614.5
Pin	6855	4548	2712	14500	5356
Cheval Blanc	1798	1204	427	3256	1706
Ausone	1795	1907	262	5550	600
Lafleur	1767	2578	-750	8656	1050
Yquem	1381	1352	-520	3150	1750
Margaux	1139	1105	-100	2800	767.5
Mouton Rothschild	1122	887	62	2612	981
Lafite Rothschild	861	1440	-1075	4350	589.5
Mission Haut Brion	826	1102	-314	2806	290
Haut Brion	645	2074	-4448	4700	590.5
Latour	569	1627	-3125	3275	281
Palmer	304	475	-293	1441	230
Angelus	292	405	-115	1133	193
Pichon Lalande	172	279	-145	750	87.5
Cos d'Estournel	119	216	-264	574	90
Clinet	109	216	-100	560	30
Conseillante	19	364	-935	546	67.5
Eglise Clinet	8	495	-1057	843	-68
Troplong Mondot	-29	199	-330	428	-63
Lynch Bages	-32	285	-454	756	-60.5
Ducru Beaucaillou	-82	461	-1195	829	-97.5
Duhart Milon	-82	292	-490	650	-101
Beychevelle	-93	128	-304	100	-78
Gruaud Larose	-125	84	-295	-24	-87
Leoville Poyferre	-127	255	-579	385	-90.5
Montrose	-133	148	-295	122	-202.5
Fleur Petrus	-136	506	-1245	533	-52.5
Pichon Baron	-144	217	-539	219	-107.5
Vieux Chateau Certan	-149	442	-1080	312	17.5
Grand Puy Lacoste	-150	106	-276	55	-165
Calon Segur	-158	165	-485	7	-165
Clos Fourtet	-166	180	-529	43	-121.5
Haut Bailly	-177	229	-668	105	-90
Smith Haut Lafitte	-184	119	-438	-46	-145
Pontet Canet	-197	234	-591	156	-197.5
Climens	-282	465	-1330	260	-228
Leoville Barton	-352	562	-2095	-33	-185.5
Pavie	-360	2084	-6853	975	15
Coutet (Barsac)	-387	280	-754	-13	-422
Evangile	-393	2392	-7461	1060	367
Suduiraut	-485	662	-2205	-90	-303
Rieussec	-1382	2791	-8270	-125	-432
Leoville Las Cases	-1475	2908	-7650	425	-393

Exhibit 6: Correlation Matrix

	Status Rank	Reputation	Interaction Status x Reputation	Vintage Score	Interaction Vintage Score x Reputation	Score Volatility
Status Rank	1					
Reputation	-0.6231	1				
Interaction Term Status and Reputation	0.8844	-0.4818	1			
Vintage Score	0.0124	0.0063	0.1561	1		
Interaction Term Vintage Score and Reputation	-0.1764	0.2353	0.1517	0.8491	1	
Score Volatility	0.2231	-0.1234	0.1333	-0.0071	-0.0814	1

Exhibit 7: Results

Product Market Value Deviation from Median at Fixed Quality Level	(1) Final Random Effects Regression Model	(2) Random Effects Regression with Added Term: Interaction of Status and Reputation
VARIABLES		
Status Rank	-378.20***	775.64
	(119.60)	(462.00)
Reputation	426.69***	462.85***
	(149.40)	(159.67)
Status x Reputation		-50.30
		(28.50)
Vintage Score	440.84***	338.87***
	(80.78)	(79.01)
Reputation x Vintage Score	-12.22***	-7.61**
	(2.28)	(3.21)
Past Quality Volatility	51.37	82.00
	(104.57)	(106.02)
Constant	-11,770.78***	-12,854.76
	(3,860.12)	(4,206.95)
Observations	480	480
Number of firms	44	44
Random effects	Yes	Yes

Notes. Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Exhibit 8: Breusch and Pagan Lagrangian Multiplier Test for Random Effects Modeling

Breusch and Pagan Lagrangian Multiplier Test for Random Effects

Model for PRICEDEVIATION[producernum,t] = Xb + u[producernum] + e[producernum,t]

Estimated results

	Var	sd = sqrt(Var)
PRICEDEVIATION	5061533.0	2249.8
e	1988603.0	1410.2
u	2288824.0	1512.9

Test: Var(u) = 0

  chibar2(01) = 688.5

  Prob > chibar2 = 0.00

Exhibit 9: Hausman Test for Difference between Fixed and Random Effects Modeling

```
              ---- Coefficients ----
             |     (b)          (B)            (b-B)      sqrt(diag(V_b-V_B))
             |    fixed        random        Difference          S.E.
-------------+----------------------------------------------------------------
  STATUSRANK |  -362.3717    -378.2031         15.83132         383.7412
   VINTSCORE |    441.571     440.8395         .7315181         4.059939
VINTREPINT~T |  -12.24165    -12.22249        -.0191633         .1188599
-------------------------------------------------------------------------------
        b = consistent under Ho and Ha; obtained from xtreg
        B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

            chi2(3) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                    =           0.05
            Prob>chi2 =       0.9972
```