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THE HEDONIC VALUATION OF SOUTH AFRICAN WINE BRANDS

by

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ABSTRACT

This study aims to value South African wine brands. Deploying blind and sighted versions of hedonic quality it defines (1) 'functional' wine brands as those with consistently higher levels of intrinsic quality as proxied by their blind tasting scores, and (2) placebo-type 'symbolic' wine brands as those with statistically significant positive predictive differences between their blind and sighted scores.

Through a series of econometric analyses applied to 8225 wines sampled over the eight year period from 2000 through 2007, a higher proportion of functional-to-symbolic brands is notified. Bi-polar clustering is observed in both brand-classes, with positive and negative brand-effects yielding positive and negative 'non' brands, respectively. Such clustering extends to those brands presenting *simultaneously* with both functional *and* symbolic brand-effects. Here brands decompose into zones of either *Symbolic Values* (with positive placebos and weak intrinsics) or *Functional Values* (with negative placebos and strong intrinsics). When these zones are graphed relative to their intrinsic blind to sighted-minus-blind scores, no brands appear to occupy the middle-ground. Each zone is located approximately one standard deviation left and right of the grand-sample mean intrinsic score. This functional-to-symbolic typology confirms and extends the literature on brands in general (Bhat and Reddy, 1998), and wine brands in particular (Mowle and Merrilees, 2005).

Two wine brand valuation techniques are subsequently presented and comparatively assessed. Each is based on the combined use of non-ordinal wine valuation models and discounted cash-flow methodologies. The first *price-premium* approach defines brand equity value (per bottle) as the difference between a wine's price and a valuation of its intrinsic worth as measured by blind ratings. The second *quality-premium* approach defines brand equity value as the difference between a wine's intrinsic value and (instead of price) the value of its perceived quality when sampled sighted.

With a set of assumptions regarding consistency in future wine quality, hectorage, price points, and sales volumes; final brand valuations for each method are calculated as the net present value of the brand premiums paid over the total cases sold. The consequent calculations reveal how the price-premium method realises a mean valuation three times greater than the average derived from the alternate method. This difference is attributed to extreme valuations noted at either end of the price-premium sample, and suggests that this method is perhaps less conservative and reliable than perceived quality premium-based valuations. Additionally, the specification of perpetuity is observed to be too extreme. Alternate time scenarios are considered, with a period of ten years posited as perhaps more appropriate for such computations.

Thus, given the availability of financial metrics and the appropriate modelling techniques, wine brands can certainly be valued. Less assured is the capacity to maintain price premiums and the production of wines that can, over time, ably present with steady levels of blind and sighted quality. It is upon these variated forms of stability that such wines can manifest, ultimately, as brands, and this can only occur through careful management in vineyard, cellar and marketplace.

DEDICATION

To: **Aleksander Priilaid**

(1912 - 1969)

&

David Luke

(1916 - 1943)

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This work is dedicated to my grandfathers, Aleksander and David, two men who sacrificed so much over the span of their lives. Aleksander, born an orphan in Moscow, lost everything to bring his family safely to South Africa after WWII. David was killed in flying battle, shot down somewhere over Italy in 1943. Though I could never know these men, the force of their lives is not forgotten.

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> *It's Hebrew tradition that forefathers are referred to as "we," not "they." "When we were delivered from Egypt…" This encourages empathy and a responsibility to the past, but more important, it collapses time. The Jew is forever leaving Egypt. A good way to teach ethics. If moral choices are eternal, individual actions take on immense significance no matter how small: not for this life only.*
>
> Anne Michaels, *Fugitive Pieces* (1997: 159-160).

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INTRODUCTION AND BACKGROUND

This chapter is organised as follows. Section 1.1 introduces the field of study and section 1.2 the aim and justification of this research. Respectively, Sections 1.3 and 1.4 present a description of the primary and sub-problems to be investigated and the structure of the thesis.

1.1. Introduction

The last fifty years have witnessed a new species of firm that generates value almost entirely from a variety of intangible assets ranging from technological expertise (for example, Microsoft and Intel), to patents (Servier and Astra Zenica) and brands (Coca-Cola and Pepsi). Studies (Gerzema & Lebar, 2008) show that the Nike and Prada brands constitute 84 and 73 per cent of the total value of their respective companies. Firms with intangible assets typically display a wide disparity between initial capital invested, and ultimate value realised. Studying financial reports as of February 2008, Colvin (2008) notes for example, that over its corporate life, Microsoft has invested about $30 billion worth of financial capital into its business; creating, in the process, about $221 billion worth of shareholder value. This is over seven times its initial investment value. Google has done even better: its total corporate investment of about $5 billion has, in turn, unlocked value worth about $124 billion. Such is this increasing phenomenon of intangible value that Gerzema and Lebar (2008) observe that the total worth of the 250 most valuable brands stands at roughly $2.2 trillion – a figure that in aggregate exceeds the GDP of France. These same authors cite a *Fortune Magazine* survey indicating that in 2006 some 72 per cent of the Dow Jones market cap was reportedly due to intangibles (Gerzema & Lebar 2008: 10).

As these value estimates continue to verge on hyperbole, it becomes increasingly important that the accounting and financial disciplines seek out sensible and more accurate methods to value intangible assets. This task has, however, proven difficult.

As a survey of the balance sheets of intangible-asset-type firms will attest, conventional *accounting* practices tend to understate the worth of these assets or disregard them entirely (Damodaran, 2006). By contrast market estimates of such assets appear to be overstated. Gerzema and Lebar (2008) note that prior to the internet bubble of 2000, the S&P reported intangible value to be as high as 80 per cent. Damodaran (2006) observes that in a good number of consumer product companies, the underpinning brand name may explain more than half of the firm's value. Weak valuation techniques, he argues, ultimately compromise accounting estimates of profitability (such as return on equity) and ultimately also capital and market estimates (such as price-to-equity ratios) (Damodaran, 2006).

Lev (2003) maintains that the manner in which accountants work with intangibles is neither conservative nor informative. For example, while accounting for research and development expenses tends to understate earnings in low growth firms, this practice overstates earnings in firms with high growth. In an earlier paper Lev and Zarowin (1999), argued that revenues from US firms show decreasing levels of stock price correlation, a matter he attributed to the failure to properly account for intangible assets. This decreasing correlation stands in contrast to an earlier study by Barth, Clement, Foster and Kasznik (1998) which, using market-based methods of assessment between the period 1991 to 1996, found close correlations between brand values and share prices.

Given the poor job accountants have made of assessing the value of intangible assets, Damodaran (2006) questions whether valuation analysts have done any better. Noting that much of the underpinning valuation information is derived from *accounting* statements, he concludes not. "The valuation of intangibles assets has suffered from many of the same limitations as the accounting measures. In fact, the pressure on accountants to better reflect the value of intangible assets like brand name on financial statements has *provided an impetus to valuation analysts* to take a closer look at how they have valued or failed to value these same assets" (Damodaran 2006: 408, emphasis added).

1.2. Aim and Justification

1.2.1. Aim

The context of the increasing importance of brands as drivers of company value, and the commensurate struggle to value them appropriately has given rise to a programme of research *aimed* at **the development and application of a methodology that can identify and value a wine brand.**

1.2.2. Justification

Underpinned and guided by the disciplines of finance and marketing, this aim addresses certain theoretical and practical issues. By way of justification for this research, these issues present as follows:

First, we must note the difficulties associated with conventional cost, market-based or net-present-value-style (NPV) company value estimations. These three methods are often invoked as standard valuation techniques and are well documented in the literature (Damodaran, 2006). However, for a number of reasons to be elaborated upon further in this thesis, in their standard form, such methods can prove insensitive when applied to the particularities of brand valuation.

Second, while conventional wine valuation models might notionally be applied to the valuation of wine brands, such models as they do exist (such as those published by the South African *WINE* magazine), tend to be linear in their construction, and confounded by difficulties associated with over or under-valuating wines, especially at the top and bottom end of the price continuum.

Third, in South Africa at least, consumer-facing wine data, though rich in variety (see Boom, 2006), is often disparate, piecemeal and shallow[1]. The consequent lack of any deep and consolidated dataset has placed severe constraints on the ability of local researchers to conduct market facing econometric-style wine studies, and the resultant output in international wine marketing journals has been scant, driven solely (to the best of

[1] This is not the case with production-side datasets which are adequately informed and updated by an industry-funded body known as the *South African Wine Industry Information and Systems* (or SAWIS).

this researcher's knowledge) by the research work of Priilaid and van Rensburg[2]. This paucity of appropriate consumer-facing data potentially neuters any ambition relating to the analytic inspection and valuation of potential wine brands and, consequently, poses a significant challenge for any research of this nature.

Fourth, and specific valuation issues aside, research aimed at the valuation of wine brands would need to address itself to the matter of how one might ably discern and distinguish a wine brand from a mere wine label. Clearly the application of any valuation technique can only be valid if the brand in question is in itself legitimate. Given the vast array of wines clamouring for customer attention, in the marketing of wines the legitimacy accorded to a brand therefore becomes critical if it is to elevate itself above the noise and clutter of contending wine labels. By way of example, just within South Africa there are currently over 560 wine producers struggling to meaningfully differentiate over 6000 wines in the public eye (van Zyl, 2010). In such overcrowded market conditions, producers are challenged to differentiate their wines meaningfully.

With respect to such differentiation, in the sale of sensory products such as wine, extrinsic cues can and do play a critical role in alerting potential customers to the distinguishable virtues of the product at hand. Importantly, these cues can enable the increase of hedonic pleasure without additional effort or expenditure (see Priilaid, Feinberg, Carter & Ross, 2009), and have been shown to be the principal evaluative criteria used by consumers during the buying process (see Halstead, 2002 and Spawton, 1991). This is especially so since wine consumers are characterised by low levels of predetermination, and thus typically carry out their decision to purchase only when in a store (Seghieri, Casini & Torrisi, 2007). The literature identifies a number of extrinsic cues that can mediate a wine's intrinsic merit. The most important of these is price, which is often regarded as a proxy for genuine quality (see *inter-alia* Plassmann, O'Doherty, Shiv & Rangel, 2008).

Other cues commonly employed as invitations to purchase include: aging quality, vineyard prestige, wine complexity, diversity of range, esoteric wine language, award-stickers and labelling in general. In terms of the latter, drinkers of South African wine are subjected to a diversity of fonts ranging from crude to sophisticated, the occasional African wild animal, gestures of Dutch gabling, and frequently some suitably unpronounceable estate names. Whether, how, and to what extent these cue-assemblages actually convert into any form of brand recognition is a matter of conjecture. Certainly the literature appears silent in this respect.

[2] See for example, Van Rensburg and Priilaid (2004), Priilaid (2006a), and Priilaid (2007).

The reasons for this silence are diverse and stem from the lack of data and a consequent lack of econometric scrutiny of any potential theoretical constructs that might underpin a wine's transition from a label to a brand. With little commensurate understanding of the underpinning mechanisms of brand development or of whether any particular branding strategy is working or not, insufficient producer insight has led to something of a shotgun approach to branding, with wine producers using the same set of cues repeatedly, but in different cue combinations. In their analysis of the U.S. wine market, Kim and Mauborgne (2005) observed that to the novice consumer it is the sameness of these cues, and not the differentiation of their deployment, that counts the most. The consequence is that to the consumer the market seems both uniformly confusing and without obvious differentiation.

Notwithstanding the above, there is a significant degree of wine literacy amongst the South African wine drinking public. By way of example, a readership poll which invites readers to vote on categories such as the best South African wineries, the best emerging wineries, and so forth, is regularly published in *WINE* magazine. The results reflect a clear view that certain wineries have obvious distinguishable pedigree. Yet how such pedigree may be assessed remains, of course, a key challenge. We know little either of how wine brands come into being, or of their cognitive form, or how they may be assessed, ranked and possibly valued.

It is thus this challenge which, along with the attendant and aforementioned issues of complicated and inappropriate conventional brand valuation techniques, the existence of hitherto crude wine valuation models, and the shallowness of contemporary wine datasets that, in sum, provides the justification for this piece of research.

Cognizant of the four issues noted above, *there exists thus an opportunity both to develop and apply techniques by which one can ably separate wine brands from their lesser labeled cousins, and thereafter appropriately value them.* And, by way of restatement, this then is the aim of this thesis.

1.3. Primary and Sub-Problem Statement

As per the critical issues noted above, the broad aim of this thesis may be reduced to a focus on one **primary problem**, namely *the valuation of South African wine brands. The approach adopted is to use a combination of the standard net-present-value (NPV) styled brand-valuation procedure and an appropriate set of wine-valuation models*. The resolution of this problem relies on the prior resolution of two sub-problems, namely (1) *the identification of statistically significant South African wine brands*, and (2) *the modeling of wine prices emanating from a dataset containing such wine brands*.

The statement and character of these interlocking problems is presented below, along with a brief description of the approach taken in each instance.

Problem Statement: **Whether statistically significant brands (as notified in Sub-Problem 1 below) can be adequately valued using a synthesised methodology incorporating a standard net-present-value (NPV) brand valuation technique and the non-ordinal hedonic pricing techniques outlined in Sub-Problem 2 below.**

This section of research seeks to establish a means by which a statistically significant wine brand can be valued. In so doing, two wine brand valuation techniques will be identified and contrasted. In conjunction with conventional net-present-value style (NPV) company valuation methods, these two techniques are founded on the use of non-ordinal wine valuation models to be developed in sub-problem 2 below.

The first of these techniques is based on a wine's price premium and thus specifies brand equity as the difference between a wine's price and a valuation of its intrinsic worth. Such valuations are derived from scores of blind-based wine tasting – the aforementioned method of assessment devoid of any extrinsic cue bias. Price premiums can generally be regarded as a measure of the extent to which a consumer is willing to pay for a product over and above its intrinsic value and, as such, can be considered a measure of customer loyalty (Aaker, 1996).

The second technique defines brand equity as the difference between a wine's intrinsic value and, instead of price, the value of its *perceived quality* when sampled sighted. Though less finely calibrated a measure than

price, a (currency-based) valuation of a branded bottle's perceived quality can also serve as a measure of consumer preference when juxtaposed against the valuation of a generic wine product of similar quality.

By applying appropriate valuation techniques to both the price and quality premium versions of brand equity, this component of the research examines the extent to which a branded wine is trading over and above its value merely as a generic product of equivalent quality.

As mentioned above, the primary problem rests on the resolution of two sub-problems, namely (1) the identification of statistically significant South African wine brands, and (2) the valuation of a cohort of South African wines using hedonic pricing techniques. The resolution of these two problems is presented in further detail below.

Sub-Problem 1: The identification of statistically significant[3] South African wine brands

In this study segment a database of 8225 blind and sighted wine assessments (as manifest in star ratings) is collated so as to observe, while controlling for contending vintage and price cues, the extent to which 'functional' and 'symbolic' brand-effects can be identified, mapped out and interpreted.

The above two constructs accord with the work of Bhat and Reddy (1998) who constitute symbolism and functionalism as two separate brand components. According to these authors functional brands are those which present with predictably consistent assessments of (blind-tasted) intrinsic quality. By contrast, symbolic brands are proxied by a predictably consistent difference between a wine's intrinsic and (sight-tasted) extrinsic merit. This *sighted-to-blind* differential equates with the 'value-added' view of brand equity (*inter-alia*, see Kamakura & Russell, 1993; Keller, 1993 and Erdem & Swait, 1998) and is commonly employed when a brand's utility cannot adequately be explained by the functional attributes at hand.

Properly identified, these brands may now be valued.

Sub-Problem 2: the valuation of a cohort of South African wines using hedonic pricing techniques.

As an intermediary step toward the valuation of the brands identified in sub-problem 1 above, this second segment of research further explores the relationship between wine price, wine value and

[3] Statistical significance accords with a computed measure of wine brand quality that is greater than one can attribute to chance.

value-for-money. To this end a series of regression models is developed from a database of some 1358 South African red and white wines available during the 2007 period. With the underpinning hypothesis that successive increments in wine quality ratings are not equally priced, this segment seeks then to value wines using a combination of blind and sighted wine assessments.

The successful resolution of these two sub-problems permits an attack on the primary problem of this thesis.

1.4. Thesis Structure

As outlined in section 1.3 above, three inter-related problems are investigated. Accordingly, the empirical analysis is broken down into three corresponding sections. The first section is presented in *Chapter Four*, and seeks to identify statistically significant wine brands. *Chapter Five*, the second section, addresses the hedonic valuation of wines. The third and final section, consisting of *Chapter Six*, moves on to determine the value of such brands.

Proceeding from this introductory chapter, *Chapter Two* explores the span of theory and literature underpinning this research. It begins with an overview of existing brand theory so as to propose a provisional framework for the notification of particular brand-forms. Thereafter, follows a critical review of hedonic pricing theory as it applies both generally and, more specifically, to wine. *Chapter Two* closes with a review of brand valuation theory, presenting a perspective on how hedonic price-modelling might amend better known methods of valuation so as to sensibly value identified wine brands.

Chapter Three then presents and explores the two sets of data employed in this study. Spanning the eight year period stretching from 2000 to 2007, the larger dataset (n=8225) is employed to identify functional and symbolic brand forms. The smaller subset of wines available only during the 2007 period (n = 1358) is utilized to develop pricing models that can ultimately value those brands notified in the larger dataset.

Cognizant of prior research that identifies price as an extrinsic cue that can mediate a wine's intrinsic merit, *Chapter Four* presents the brand construct as an additional potential mediator. Here we define (1) functional brands as representations of intrinsic (blind-tasted) quality, and (2) symbolic brands (as proxied by the difference between a wine's intrinsic and extrinsic (sighted-tasted) evaluations) as placebos. While

2

THEORETICAL OVERVIEW

What seas what shores what grey rocks and what islands
What water lapping the bow
And scent of pine and the woodthrush singing through the fog
What images return
O my daughter.

T.S. Eliot, *Marina* (1970: 115).

2.1 Introduction

This chapter presents and describes the theories employed in this study. These theories are disparate, deriving chiefly from the disciplines of marketing and finance. The logic of their presentation follows that of the sub and primary problem statements presented in *Chapter One* and this determines the flow of the three empirical chapters of this study, commencing in *Chapter Four*.

This chapter opens with a presentation of theories relating to the understanding of brands. Work on the treatment of brands as extrinsic cues, as functional and symbolic constructs and as placebo effects are thus introduced and discussed. The neurological conjecture known as the Dopamine Gating Hypothesis is also explored. A theoretical architecture for the identification of symbolic and functional wine brands concludes this section.

The second component of this chapter considers the theory of hedonic pricing, and traces the evolution of this approach from the relatively primitive studies conducted prior to World War Two to the nineteen-sixties and seventies when the theoretic promise of hedonic price indices could be matched by the growing capacity of computing. This section also explores hedonic estimation issues and the extent of the application of hedonic pricing in various fields including the wine industry. A theory of consumer-facing (as opposed to production-facing) price models is subsequently discussed. Questions relating to consumer-driven modelling are critical to understanding the basis of candidate variable selection in the appropriate modelling of wine

prices – an exercise that constitutes the *second* of this study's three empirical analyses. In line with the overarching symmetry of this chapter, the third and final section presents the theory and literature pertaining to the valuation of brands. Comparative and holistic methods of valuation are discussed in a manner that ultimately points to the melded brand valuation approach adopted by this study.

2.2 Brand Theory

Brand definitions are varied and, in turn, reflect the transition of the term's meaning over time (Keller, 1993). The brand construct was originally used to indicate ownership, and derived from the act of ownership-branding whereby, for example, a cow would be branded with the initials of the ranch owner using a red-hot branding iron to emblazon the owner's insignia on the cow's hind. In the light of this history, brands were initially understood as being reflective only of the physical product and most brand definitions encompassed either a name, a term, a mark or a symbol of some sort (Urde, 1999). A consequent definition proffered in the early sixties by the American Marketing Association (AMA 1960: 404) defined a brand as "a name, term, sign, or a combination of them intended to identify the goods or services of one seller or group of sellers and to differentiate them from those of their competitors."

In the past twenty years conceptualizations of branding have moved away from production-side "trade-mark" indications and the AMA definition above has come under consequent criticism for its focus on the mere product and its visual features (Crainer, 1995; Arnold, 1992). In contrast, today brands are increasingly seen from the consumer's perspective as marks of trust, representing ongoing consistency and the persistent delivery of a set of expectations (Davis, 2000). Webster (2000) argues that brands facilitate customer relationships that would not be possible with 'no-name' commodity-type products. Customer perceptions of brands are thus critical to these relationships (Wood, 2000) and, regardless of their accuracy or relevance, for Bowker (2003), it is these customer perceptions that form the basis of our understanding and management of brands.

According to Rios (2007) strong brands are those that consumers perceive as evincing high quality and integrity. Uncles, Cocks and McRae (1995) maintain that such brands are broadly accepted and hold an exclusive place in the mind of the consumer. Companies thus desire strong brands which, through the ongoing development of their brand equity, can distinguish themselves in a crowded market (Pappu, Quester & Cooksey, 2005).

2.2.1. Wine Brands as Extrinsic Cues

In the sale of sensory products such as wine, extrinsic cues are deemed critically important since these enable the increase of hedonic pleasure without additional effort or cost either in the vineyard or in the cellar. From the consumer perspective, these cues have been shown to be the principal evaluative criteria used by consumers during the buying process (see Halstead, 2002 & Spawton, 1991). This is especially true since wine consumers are characterised by low levels of predetermination, and thus typically carry out their decision to purchase only when in store (Seghieri, Casini & Torrisi, 2007). To date, the literature identifies price as an extrinsic cue that can mediate a wine's intrinsic merit (see Priilaid 2006a, and Plassmann, O'Doherty, Shiv & Rangel, 2008). Proceeding from these analyses, this study presents the brand construct as an additional potential mediator.

Wine brands are observed to dominate in markets that are less inclined to employ terroir-units as markers of quality. These so-called *new world* territories include most of the English-speaking world, as well as, certain countries in South America and Asia (Robinson, 2006). The wine market in the USA is a case in point, where rapid market consolidation has enabled the top eight wine companies to capture 75 per cent of that 20-billion-dollar *per annum* industry. These eight also dominate distribution and above-the-line media. This, together with a nationwide consolidation amongst retailers and distributors, has contributed towards the downward pressure on wine prices. The remaining 25 per cent market share is deeply divided by some 1600 smaller wine producers. Australia too, is dominated by small wineries, with over 16000 different labels originating from over 2000 different wineries (Lockshin 2001). As Kim and Mauborgne (2005: 25) describe it, the effect of all this is a massive "red ocean of bloody competition" (see also Taplin, 2006).

The situation in South Africa is not too different. While in 1996 there were only 295 wine cellars (Ponte & Ewart, 2007), by 2005 this figure had almost doubled to 581. This notwithstanding, according to the national buyer of *Pick 'n Pay* (*personal communication*), South Africa's leading supermarket chain responsible for some 37 per cent of domestic supermarket wine sales, volume sales in 2006 were dominated by no more than 10 brands, operating typically in the R14 to R30 price bracket.

With respect to the context above, aside from acknowledging the *new world* preponderance for a few cheap commodity-type brands that compete amidst a swathe of high-price high-quality wine brands, the literature appears mostly silent on the extent to which the brand-construct actually remains a valid and useful marketing tool in the wine industry. Writing from an *old world* perspective, Robinson (2006) suggests, that wine brands compete at the bottom-end of the market, serving as interpretive heuristics to uninitiated wine drinkers: "But as wine drinkers become more sophisticated, they learn to decode what initially seems the arcane language of wine names, usually by identifying the major varietals and some of the more important place-names" (Robinson, 2006: 102). Specifically within a *new world* context where terroir is not common currency and where a selection of wines based simply on varietal is too broad to be meaningful, Robinson's asserted primacy of this two-pronged selection strategy appears ill conceived.

When one considers the high proportion of quality wines that jostle for attention, a case must be made for an additional suite of mid-to-high-point brands that can serve as a decision heuristic to more discerning wine drinkers. However, while acknowledging the lower stratum of a few commodity-type wine brands, empirically derived literature on the topic of wine branding and loyalty is viewed as largely undeveloped or still developing. (In the case of the former, see Chaney, 2000; Lockshin, Rasmussen & Cleary, 2000; Mowle & Merrilees, 2005, and Casini, Rungie & Corsi 2009). (In the case of the latter, as in the instance of the worldwide study on the extrinsic influencers of consumer wine choice, see Goodman, Lockshin, Cohen, Fensterseifer, Ma, d'Hauteville, Sirieix, Orth, Casini, Corsi, Jaeger, Danaher, Brodie, Olsen, Thatch & Perrouty, 2008). Thus, as Mowle and Merrilees (2005: 220) observe, in the main, "(d)espite the vital role that brands play in the successful marketing of wine, there appears to be a paucity of empirical research into branding in the wine industry."

In June 2007 an initial piece of South African wine branding research was published by *WINE* magazine in the guise of a readership survey asking the drinking public to nominate the best winery and best emerging winery in South Arica. The response sample (n=600) was deemed large enough for valid inferences, with a sample error of 2 per cent (see McDonald, Simon and Eedes, 2007). The best winery as voted by the respondents was *Vergelegen*, Anglo America's flagship winery based in Somerset West, near Stellenbosch. Table 2.1 showcases the top twelve wineries cited in the poll. This includes *Thelema*, *Rustenberg*, *Boekenhoutskloof* and *Hamilton Russell*.

	Winery	% voted by *Wine* readers	Cases per annum	Frequency of candidate brands featured in this dataset by varietal
South Africa's "best" wineries as voted in 2007 by *WINE* magazine readers	Vergelegen	37%	47 000 cs	cabernet (6), shiraz (7), red blends (12), chardonnay (15), sauvignon blanc (14) white blends (6).
	Thelema	14%	30 000 cs	cabernet (10), merlot (15), shiraz (8), chardonnay (13), sauvignon blanc (12).
	Rustenburg	11%	130 000 cs	Cabernet (7), red blends (7), chardonnay (12).
	Boekenhoutskloof	10%	120 000 cs	Cabernet (8), shiraz (7), red blends (8).
	Hamilton Russell	10%	13 500 cs	pinot noir (9), chardonnay (8)
	Kanonkop	Below 10%	50 000 cs	cabernet (6), pinotage (8), red blend (13).
	Kanu	Below 10%	38 000 cs	merlot (8), shiraz (9), red blend (11), chardonnay (8), chenin blanc(13), sauvignon blanc (10).
	Jordan	Below 10%	65 000 cs	cabernet (8), merlot (6), red blends (10), chardonnay (13), chenin blanc (6), sauvignon blanc (13).
South Africa's "best emerging" wineries as voted in 2007 by *WINE* magazine readers	Cape Point Vineyards	29%	7 000 cs	sauvignon blanc (13).
	Tokara	24%	50 000 cs	sauvignon blanc (11).
	De Toren	18%	7 000 cs	red blends (10).
	Ernie Els	9%	45 000 cs	red blends (8).
	Sadie Family	7%	900 cs	shiraz (7).
	Raka	Below 7%	15 000 cs	red blends (9).
Distell wines featured in this dataset **(whole or partly owned)** **as per 2007 financial results**	Allesverloren	n/a	50 000 cs	cabernets (6), shiraz (6).
	Alto	n/a	25 000 cs	red blends (7).
	Chateau Libertas	n/a	Not cited	red blends (4) (*did not qualify; < 6*).
	Drosdy Hof	n/a	Not cited	Nil.
	Durbanville Hills (I)	n/a	140 000 cs	merlot (10), shiraz (6), sauvignon blanc (11).
	Fleur du Cap (I)	n/a	180 000 cs	cabernet (17), merlot (15), shiraz (17), chardonnay (13), sauvignon blanc (13).
	Le Bonheur	n/a	37 000 cs	red blends (6), chardonnay (6), sauvignon blanc (6).
	Lomond	n/a	300 cs	sauvignon blanc (7).
	Nederburg (I)	n/a	1 100 000 cs	cabernet (12), pinotage (6), shiraz (7), red blends (11), chardonnay (9), sauvignon blanc (15).
	Neethlingshof	n/a	100 000 cs	cabernet (6), red blends (8), chardonnay (8), sauvignon blanc (6).
	Plasir de Merle	n/a	55 000 cs	merlot (8), chardonnay (6).
	Stellenzicht	n/a	120 000 cs	pinotage (7), shiraz (12), red blends (9), chardonnay (7), sauvignon blanc (8).
	Tassenberg	n/a	Not cited	red blends (2) (*did not qualify; < 6*).
	Uitkyk	n/a	73 000 cs	chardonnay (6), sauvignon blanc (8).
	Zonnebloem	n/a	220 000 cs	pinotage (6), red blend (7).

Table 2.1: Prominent South African wineries: As per (1) a June 2007 *WINE* magazine survey and (2) Distell's listed wine brands – their annual case output and their relative significance within the dataset. (Sources: Boom 2006; van Zyl 2007; *Wine* 2007 and the 2007 financials of the JSE listed Distell liquor group). Distell wines with an (I) denote an international profile.

3

DATA AND DESCRIPTIVE STATISTICS

3.1 Introduction

This chapter presents and describes the twin datasets employed in this study. The larger dataset comprising 8225 wines covers the eight year period stretching from 2000 to 2007 and is utilized to identify *functional* and *symbolic* brands. Constituted as a subset of this larger dataset, the smaller dataset comprising 1358 wines is collated solely from the 2007 period, and is employed to derive pricing models that can ultimately value those brands so identified[1].

In the sections that follow, these datasets are described from a range of perspectives including cultivar, vintage, price, wine quality and brand.

3.2 Data for sub-problem 1: the identification of statistically significant South African wine brands: 2000–2007

This section presents and describes the data used to identify functional and symbolic brands. To recap, the functional and symbolic constructs constitute two separate brand components (Bhat & Reddy, 1998). According to these authors functional brands are those which present with predictably consistent assessments of (blind-tasted) intrinsic quality. By contrast, symbolic brands are proxied by a predictably consistent difference between a wine's intrinsic and (sight-tasted) extrinsic merit. This sighted-to-blind differential equates with the value-added view of brand equity (inter-alia, see Kamakura & Russell, 1993; Keller, 1993 and Erdem & Swait, 1998) and is commonly employed when a brand's utility cannot adequately be explained by the functional attributes at hand.

Collated over a period spanning January 2000 to December 2007, the dataset comprises 8225 wines assessed - both blind and sighted - to sum 16450 observations. These are derived from eight cultivars and a

[1] There is hence no additional base-data employed in the brand valuation exercise that constitutes the final empirical chapter of this study. Data for this section is pooled from the datasets above and the empirical analyses of *Chapters Four* and *Five*.

sample of red and white blended wines. Controlling for vintage and, in the sole instance of sighted-less-blind scores, price; this dataset is interrogated with the aim of establishing to what extent wine brands can be invoked as: (1) explicators of intrinsic merit, as proxied by blind assessments and, also as (2) placebos, as proxied by the *difference* between blind and sighted assessments.

On this basis variables employed in the explanation of blind and sighted-less-blind scores are portrayed below in Table 3.1. A full description of blind and sighted wine tasting protocols appears in sections 3.4.2.A and 3.2.4.B of this chapter, respectively.

Thereafter, the dataset is presented and described from a set of perspectives, namely: cultivar, vintage, price, quality (blind-based tastings and sighted tastings) and brand. Finally a correlation matrix explores the interrelationship between price and the quality metrics cited above.

Candidate variables explaining blind scores	Candidate variables explaining sighted-less-blind scores
a. Functional Brands (treated as descriptive dummy variables) b. Vintage (each year treated as a descriptive dummy variable)	a. Symbolic Brands (treated as descriptive dummy variables) b. Vintage (each year treated as a descriptive dummy variable) c. Price (price bands treated as descriptive dummy variables)

Table 3.1: Candidate variables explaining wine blind scores and sighted-less-blind scores.

3.2.1. Cultivar

For purposes of varietal-specific modelling, the entire dataset is segmented by cultivar, whereupon cultivar-specific hedonic data is then analysed against a cross-section of brands. There are ten cultivar sub-segments in all: five red-grape varietal segments (cabernet sauvignon (n=932), merlot (n=727), pinotage (n=908), pinot noir (n=168), and shiraz (n=1096)), three white varietal segments (chardonnay (n=1087), chenin blanc (n=495), and sauvignon blanc (n=1152)), a red-blended wine segment (n=1454) and a white-blended segment (n=308). (For purposes of simplicity, in this study the red and white blended wines are termed varietal wines.)

The eight cultivars selected for this study constitute most of South Africa's national vineyard (see Table 3.2 for details). Colombard, the third most prolifically planted grape, is excluded since most of its grapes are employed in the production of brandy. Based on its lofty prices and the profile of some of its producers, the ever fickle though niche-like pinot noir is included in this study, though by planting is ranked only 19th in the country. Due to a lack of workable data, marginal white wine equivalents such as sémillon (1.05%) and viognier (0.62%) are, however, excluded. So too are cinsaut (2.78%), ruby cabernet (2.61%), hanepoort (2.60%) and Cape riesling (1.13%), since the fruit from these cultivars is generally employed in the production of low-priced blends (Boom, 2006: 392).

Varietals analysed	% of national vineyard	Total Hectorage	Ranking
Chenin Blanc	18.75 %	19053	1
Cabernet Sauvignon	13.36 %	13572	2
Shiraz	9.64 %	9794	4
Chardonnay	7.80 %	7927	5
Sauvignon Blanc	7.50 %	7661	6
Merlot	6.83 %	6941	7
Pinotage	6.39 %	6493	8
Pinot Noir	0.53 %	535	19
Total	70.80%	7197600	n/a

Table 3.2: Varietals analysed for brand-cue effects.
Note: white and red blends are also included in the study. (Adapted from Boom, 2006: 383-397).

3.2.2. Vintage

The details of 8225 wines were sampled over the eight year period January 2000 to December 2007 (see Table 3.3 for details of the cultivar breakdown per year of collation).

Period Of Collection	Cabernet	Merlot	Pinotage	Pinot Noir	Shiraz	Red Blends	Chardonnay	Chenin	Sauvignon Blanc	White Blends	All Wines
2000	126	53	86	17	65	144	141	70	142	18	**862**
2001	140	110	116	21	91	172	149	81	154	7	**1041**
2002	144	88	89	19	106	162	134	58	129	13	**942**
2003	71	74	106	14	108	74	120	39	137	13	**756**
2004	100	97	112	23	200	146	142	45	136	13	**1014**
2005	132	98	96	26	123	271	141	59	146	105	**1197**
2006	103	100	106	23	190	146	124	43	156	64	**1055**
2007	116	107	95	25	213	339	136	100	152	75	**1358**
Total	**932**	**727**	**806**	**168**	**1096**	**1454**	**1087**	**495**	**1152**	**308**	**8225**

Table 3.3: The distribution varietals collated over the eight year period 2000 to 2007 across the 10 varietals. (n = 8225).

Across this entire 8225 wine sample, vintages span the years 1995 to 2007. (47 non-vintage wines are also included in the dataset.) Sourced from various editions of the South African monthly *WINE* magazine; vintage-per-cultivar statistics are tabled overleaf (see Table 3.4).

Wine Vintage	Cabernet	Merlot	Pinot Noir	Pinotage	Shiraz	Red Blend	Chardonnay	Chenin Blanc	Sauvignon Blanc	White Blend	Total
1995	2	2	0	0	1	2	0	0	0	0	7
1996	3	6	1	0	7	10	1	1	0	0	29
1997	87	26	12	4	20	56	2	5	0	0	212
1998	131	76	11	74	64	105	12	19	4	2	498
1999	130	90	16	108	83	142	138	66	35	9	817
2000	104	96	21	103	125	137	141	64	127	7	925
2001	119	112	25	119	127	151	126	54	160	15	1008
2002	120	89	18	105	177	212	136	42	140	9	1048
2003	111	99	27	110	176	247	154	62	143	33	1162
2004	97	98	23	110	199	222	135	60	157	52	1153
2005	26	30	13	62	112	116	150	54	136	77	776
2006	1	2	1	10	4	22	83	66	147	66	402
2007	0	0	0	1	0	0	8	2	103	27	141
NV	1	1	0	0	1	32	1	0	0	11	47
Total	932	727	168	806	1096	1454	1087	495	1152	308	8225

Table 3.4: The distribution of vintages across the 10 varietals. (n = 8225).

3.2.3. Price

Brand label aside, price is possibly the most important extrinsic cue appearing on each wine bottle. Studies have shown that this cue can confound one's appreciation of a wine's intrinsic merit (see Priilaid, 2006a and Plassmann, *et al.*, 2008). For this reason we assume a similar effect on the sighted-to-blind differential. Throughout the study, cellar door prices are reported. The mean bottle prices per cultivar, per period of collection, are depicted in Table 3.5. Note how, in the period of eight years from 2000 to 2007, the average price of a bottle of wine increases by more than 100 per cent from R34.17 to R78.60.

	Mean price per bottle (in Rands) per period 2000 to 2007										
Period of Collection	**Cabernet**	**Merlot**	**Pinotage**	**Pinot Noir**	**Shiraz**	**Red Blend**	**Chardonnay**	**Chenin**	**Sauvignon Blanc**	**White Blend**	**All Wines**
2000	41.39	38.34	37.82	58.47	42.91	36.31	34.46	18.62	24.34	18.21	34.17
2001	49.68	46.13	42.55	68.07	44.58	44.35	35.62	21.90	26.75	21.39	39.80
2002	54.33	48.14	50.13	85.59	56.15	52.53	43.62	24.90	31.58	21.42	46.97
2003	70.88	62.87	53.91	97.96	80.14	68.23	51.30	40.38	37.79	44.61	58.15
2004	76.56	70.20	56.95	86.51	81.25	75.82	52.04	36.71	42.26	38.08	64.53
2005	72.75	62.44	59.57	112.79	100.65	86.73	57.86	43.26	47.69	45.05	69.06
2006	77.01	69.63	65.71	115.16	90.13	95.39	63.55	47.97	56.33	43.40	73.08
2007	83.34	73.53	70.64	108.24	93.80	96.59	71.59	42.22	57.81	59.41	78.76
Total	**932**	**727**	**806**	**168**	**1096**	**1454**	**1087**	**495**	**1152**	**308**	**8225**

Table 3.5: The mean price per bottle (in Rands) per cultivar, per period of collection 2000 to 2007.

For purposes of empirical treatment collated prices are first inflation adjusted to equate with those wines emanating from the 2007 period. The inflation index is derived by calculating the average price of a bottle of wine on a year-by-year basis (see Table 3.6 below).

Period	No of wines Recorded on dataset	Average price per period (in Rands)	Inflation per period
2000	862	34.17	2000 to 20001: 16.48%
2001	1041	39.80	2001 to 2002: 18.02%
2002	942	46.97	2002 to 20003: 23.80%
2003	756	58.15	2003 to 2004:10.97%
2004	1014	64.53	2004 to 2005: 17.02%
2005	1197	69.06	2005 to 2006: 15.82%
2006	1055	73.08	2006 to 2007: 17.87%
2007	1358	78.83	2007 only: 0.00%
	8225		

Table 3.6: The inflation index employed for wines emanating from different time periods: 2000 to 2007.

4

SYMBOLIC AND FUNCTIONAL BRAND EFFECTS IN THE HEDONIC ASSESSMENT OF SOUTH AFRICAN WINES[1]

A corpse in a doorway dried to leather. Grimacing at the day. He pulled the boy closer. Just remember that the things you put in your head are there forever, he said.
You might want to think about that.
You forget some things don't you?
Yes. You forget what you want to remember and you remember what you want to forget.

Cormac McCarthy, *The Road* (2006: 10).

4.1 Introduction

Customers have been noted to struggle in their assessments of product quality especially when the product in question is marked by a high proportion of characteristics that cannot be verified before actual consumption (Chaney, 2000). This is especially so for wine consumers who are noted for low levels of predetermination and thus, typically, carry out their decision to purchase only when in store (Seghieri, Casini & Torrisi, 2007). In this regard various studies indicate that wine consumers, in their vicarious assessments of genuine intrinsic quality, are shown to employ extrinsic cues as their principal evaluative criteria (see Spawton, 1991; Speed, 1998; Halstead, 2002; Siegrist & Cousin, 2009 and Priilaid, Feinberg, Carter & Ross 2009, *inter-alia*.) Such cues are unrelated to the intrinsic quality of the product at hand yet have been shown to evoke consumer expectations to the point that the actual intrinsic efficacy or merit of the sampled product is altered in the act of consumption. Such cues are not inherent to the product itself and, as such, can be defined as placebos.[2] Within the literature of the marketing discipline, the most important of these extrinsic cues is found to be price (see Shiv, Carmon & Ariely, 2005, Priilaid, 2006a, and Plassmann, O'Doherty, Shiv & Rangel, 2008, *inter-alia*). In this chapter the extrinsic brand cue is presented and explored as an additional potential confounder of a product's inherent efficacy. The brand construct is broken into two sub-types: symbolic and functional brands.

[1] The working paper entitled "Symbolic and Functional Brand Effects in the Hedonic Assessment of South African Wines" by Priilaid and Van Rensburg borrows heavily from this chapter and certain sections of *Chapters Two* and *Three*. This working paper has been accepted for publication in the *South African Journal of Business Management* (see Priilaid and Van Rensburg, 2010a).
[2] For a fuller elaboration on placebos see section 2.2.4 of *Chapter Two*.

For this analysis symbolic brands (as proxied by a statistically significant positive difference between a wine's intrinsic and extrinsic merit), are held as extrinsic cues that can serve as placebos to increase the consumer's expectation of product efficacy. This *sighted-to-blind* differential accords with the 'value-added' view of brand equity (see Kamakura & Russell, 1993; Keller, 1993 and Erdem & Swait, 1998, *inter-alia*), and is commonly employed when a brand's utility cannot adequately be explained by the intrinsic attributes at hand. In contrast functional brands are specified as those which present with statistically consistent assessments of intrinsic quality[3].

The functional and symbolic typology is in line with the work of Bhat and Reddy (1998) who note that, in the mind of the consumer, a brand may register simultaneously with *both* functional *and* symbolic appeal: functional in the sense that it presents with predictable intrinsic merit; symbolic in that it presents with predictable sighted-to-blind differentials – that is to say, placebos.

With respect to the specifications above, in this empirical chapter the already described database of 8225 blind and sighted wine assessments is interrogated to observe the extent to which functional and symbolic brand-effects can be identified and interpreted. The analysis is conducted initially without controlling for contending vintage and price cues, with a subsequent analysis incorporating these controls. (Potential terroir effects are not considered in this analysis since too many wines within the dataset were considered insufficiently terroir-contingent.[4])

If we are able to calibrate and scale these brand-effects, wine producers will know what proportion of their product's sight-driven appeal can ably be ascribed to a brand's placebo as opposed to the underlying quality. Consequently, their marketers may more knowledgably amplify (or, where appropriate, down-play) the label-cue, and adjust their wine marketing communication accordingly.

With sections on literature and data already presented in *Chapters Two* and *Three*, this chapter is organised as follows. Section two details the methodology and model construction employed in the empirical analysis. Section three presents, contrasts and ranks a cross-section of cultivar-specific brand-effects, both functional and symbolic. Where brands are found to be *simultaneously* functional and

[3] Recall that wine quality evaluations can be tasted blind or sighted. Blind tastings are devoid of extrinsic cue bias and are generally held to be fair representations of a wine's intrinsic quality.

[4] As per the work of Priilaid (2007), within South Africa, terroir cue-effects can merit assessment only if the wines in question emanate from a ward, being the smallest wine-producing land-unit with ecological features sufficiently distinctive to produce the signature of *locale* that we deem "terroir" (Carey, 2005). In the main, wines featured on this database failed to satisfy this ward-of-origin specification, many being sourced at a wider district or even regional level; this being the case especially with beverage-type wines commonly produced at high volume.

symbolic, (respectively presenting consistent intrinsic merit and placebos), their respective empirical properties are explored and mapped out. Section four concludes.

4.2 Methodology and Model Construction

On the basis of the descriptive statistics presented in section 3.2 of *Chapter Three*, a series of varietal-specific stepwise regressions is developed to explain and contrast functional and symbolic brand-driven explanations of intrinsic wine quality and the sighted-to-blind differential, respectively. So doing, the cross-section of blind scores and sighted-minus-blind scores is modelled for the similar goods $i=1\ldots n$ as a function of K "quality cue" (QC_k where $k=1,\ldots, K$) characteristics. As already discussed, the classification of the explanatory variables (QC) includes only those that are likely to influence hedonic quality: in the case of blind tastings the intrinsic influence of vintage and the functional quality of the wine-brand in question; and in the case of sighted tastings, the perceived effects of vintage, price and wine-brand. The following equations are hence estimated using OLS:

$$Blind\ score_i = \alpha + \sum_{k=1}^{K} b_k QC_k + \varepsilon_i \qquad \ldots \text{ to identify functional brands}$$

and

$$(Sighted\ minus\ Blind)\ score_i = \alpha + \sum_{k=1}^{K} b_k QC_k + \varepsilon_i \qquad \ldots \text{ to identify symbolic brands}$$

Where: α = the estimated intercept term

b = the estimated K slope coefficients

QC = the K 'quality cues': namely vintage, brand and, in the sole instance of "sight-minus-blind" scores, price.

ε = a random residual error term following classic assumptions

As with Priilaid (2007), the vintage variable is coded (dummified) on a year-by-year basis in order to control for and quantify seasonal fluctuations in wine quality. Price is specified as a ratio variable and also disaggregated into five categorical price-bands namely: "0–R49.99", "R50–R99.99", "100–149.99", "150–199.99" and "Over R200". Candidate brands are also treated as categorical variables and

dummified. Additionally, the respective categorical vintage, price and brand comparators – "2001", "0–R49.99", and the brand designated as "Not Applicable" – are introduced to avoid the dummy trap (see Malhotra, 2007). This final variable accounts for all wine labels failing to meet the varietal-specific *six-or-more* brand-candidate specification. All brand-defined coefficients produced in the models that follow should hence be considered relative to these base comparators which, in turn, are represented by the constant term derived in each model.

The general varietal-specific regression equations describing the blind score and placebo for each wine, *i*, are laid out below in equations 4.1 and 4.2, respectively.

$$Blind\ score_i = \alpha + b_1(Vintage)_i + b_2(Brand)_i + \varepsilon_i \quad (4.1)$$

Where, respectively, b_1 and b_2 represent the *inherent* marginal effects of vintage and *functional* brands on intrinsic quality (blind scores).

And

$$(Sighted - Blind)\ score_i = \alpha + b_1(Vintage)_i + b_2(Brand)_i + b_3(Price)_i + \varepsilon_i \quad (4.2)$$

Where, respectively, b_1, b_2 and b_3 represent the *perceived* marginal effects of vintage, *symbolic* brands and price on sighted-minus-blind scores.

By controlling for vintage, we can strip out inter-seasonal effects; thus where these occur in equations 4.1 and 4.2 the effects are removed from the final computation. With respect to equation 4.1, it should be noted that vintage serves here as a *production*-side variable which will *inherently* affect the quality of a wine from one season to the next. By contrast, as a consumer-facing construct, price has no determining influence on a wine's blind score and hence plays no part in equation 4.1. Conversely, in equation 4.2, where identified, the price-effects for each wine (*i*) are computed since they remain constant across the sample[5] irrespective of time. Where brands are identified as statistically significant, by controlling thus for vintage and price, equations 4.1 and 4.2 can be simplified so as to enable a computation for wineries that present with functional and symbolic brand effects:

[5] This is not the case with vintage.

From (4.1):

$$Blind\ score_i = \alpha + b_2(Brand)_i + \varepsilon_i \quad (4.3)$$

Where b_2 represents the *functional* brand effect of brand *i*.

And from (4.2):

$$(Sighted - Blind)\ score_i = \alpha + b_2(Brand)_i + b_3(Price)_i + \varepsilon_i \quad (4.4)$$

Where b_2 represents the *symbolic* brand effect of brand *i*. Where identified, the effect of price controls can be noted through b_3.

In summary, functional brands are thus identified as those brands which present with *statistically significant* assessments of intrinsic quality as proxied here by the blind score computation in equation 4.3, and imply an additional increment (b_2) above or below the model constant/mean (α).

In contrast, symbolic brands are denoted by a *statistically significant* difference between a wine's intrinsic and extrinsic merit and, as per equation 4.4, also imply an increment (b_2) above or below the sample constant (α) though this time factoring in potential price controls as per b_3.

A preliminary analysis of functional and symbolic brand effects across the ten varietals is conducted without controlling for either vintage or price. The following four tables present the results thereof: Table 4.1 (red functional brands) Table 4.2 (red symbolic brands), Table 4.3 (white functional brands) and Table 4.4 (white symbolic brands).

These analyses are subsequently repeated *with* vintage and price controls, the output of which is depicted in the following tables: Table 4.5 (red functional brands) Table 4.6 (red symbolic brands), Table 4.7 (white functional brands) and Table 4.8 (white symbolic brands).

Cabernet **Blind: *Adj R^2: 14.14%, F: 7.13 (p=0.0001), n = 932*** **Statistically significant brands: 25/49**
Constant: (2.54, 83.62).
Functional Brands: Neil Ellis *Vineyard Selection* (1.32, 4.22); Rustenberg (1.25, 3.99); Thelema (1.21, 4.62); Boekenhoutskloof (0.96, 3.28); Cederburg (0.91, 3.48); Morganhof (0.88, 2.60); Waterford (0.88, 2.60); Jordan (0.84, 2.86); Bon Courage (0.80, 2.35); Nederburg *Private Bin* (0.80, 2.35); Vergelegen (0.80, 2.35); De Trafford (0.78, 3.12); Fleur du cap (0.78, 3.12); L'Avenir (0.77, 2.64); Stony Brook (0.77, 2.64); Flagstone (0.71, 2.43); Spier (0.71, 2.43); Longridge (0.71, 2.11); Blue Creek (0.68, 2.16); Eikendal (0.68, 2.16); Boland (0.65, 2.22); Stark Conde (0.65, 2.22); Le Riche (0.63, 2.62); Nederburg straight cabs (-0.87, -2.58); Diemersdal (-0.90, -2.86).
Merlot **Blind: *Adj R^2: 7.21%, F: 6.13 (p=0.0000), n = 727*** **Statistically significant brands: 11/36**
Constant: (2.54, 78.11).
Functional Brands: Thelema Reserve (1.46, 4.30); Veenwouden (0.79, 2.33); Morganhof (0.77, 2.62); Steenberg (0.77, 2.62); Saxenburg (0.71, 2.09); De Trafford (0.68, 2.45); Rust en Vrede (0.64, 2.19); Spier (0.57, 2.05); Thelema (0.57, 2.05); Landskroon (-0.69, -2.18); Bilton (-0.71, -2.09).
Pinotage **Blind: *Adj R^2: 10.57%, F: 10.52, (p=0.0000), n = 806*** **Statistically significant Brands: 10/43**
Constant: (2.50, 80.21).
Functional Brands: Kanonkop (1.38, 4.61); L'Avenir (1.00, 4.09); Moreson (1.00, 3.35); Simonsig *Red Hill* (0.94, 3.35); Delheim (0.86, 2.69); De Waal (0.79, 2.46); Southern Right (0.71, 2.24); Spice Route (0.65, 2.43); Kleine Zalze (-1.0, -2.90); Porterville (-1.33, -3.87).
Pinot Noir **Blind: *Adj R^2: 14.83%, F: 10.69 (p=0.0000), n = 168*** **Statistically significant brands: 3/10**
Constant: (2.48, 34.41).
Functional Brands: Hamilton Russell (1.07, 3.66); Bouchard Finlayson (0.67, 2.71); Cabrière (-1.15, -3.23).
Shiraz **Blind: *Adj R^2: 8.88%, F: 6.08 (p=0.0000), n = 1096*** **Statistically significant brands: 21/60**
Constant: (2.65, 90.90).
Functional Brands: Boekenhoutskloof (1.14, 3.39); Saxenburg *Private Collection* (1.02, 2.81); Waterford (1.02, 2.81); The Sadie Family (0.99, 2.97); Stellenzicht (0.93, 3.64); Spice Route flagship syrah (0.92, 2.75); Graham Beck (0.85, 3.03); Simonsig *Merindol* (0.85, 2.71); Avondale (0.85, 2.54); Glen Carlou (0.85, 2.35); Hartenberg (0.74, 2.50); Thelema (0.71, 2.11); Diemesfontein (0.70, 2.50); De Trafford (0.60, 2.53); Boschendal (0.58, 2.16); La Motte (0.55, 1.96); Fairview premium shirazes (0.52, 2.25); Anthony Smook (-0.73, -2.02); Blaauwklippen (-0.73, -2.02); Boplaas (-0.82, -2.25).
Red Blends **Blind: *Adj R^2: 10.44%, F: 9.46 (p=0.0000), n = 1454*** **Statistically significant brands: 20/79**
Constant: (2.61, 111.91).
Functional Brands: Jordan *Cobbler's Hill* (1.64, 3.95); Ernie Els Wines (1.33, 4.51); De Toren *Fusion V* (1.25, 3.97); Kanonkop *Paul Sauer* (1.18, 3.74); Rust en Vrede (1.18, 3.74); Rustenberg (1.18, 3.74); Morganhof (1.03, 3.29); Vergelegen (1.01, 4.22); Glen Carlou (0.85, 3.83); Yonder Hill Winery (0.81, 2.38); Rupert and Rothschild (0.72, 2.61); Grangehurst (0.64, 2.42); Raka (0.61, 2.21); Simonsig (0.60, 2.94); Remhoogte (0.58, 1.96);.Beyerskloof (0.51, 2.14); Flagstone (0.42, 2.07); Welgemeend (-0.66, -2.51); Nederburg (-0.75, -2.97).

Table 4.1: Red varietal regression results explaining *blind* wine assessments with no controls.
Where statistically significant at the 5% level, functional brand effects (b_2) are notified by order of size, with their respective regression coefficients and associated t-statistics in parenthesis.

Cabernet **Sighted - Blind: *Adj R^2: 2.76%, F: 6.28 (p=0.0000), n = 932*** **Statistically significant brands: 5/49**
Constant: (0.94, 33.40).
Symbolic Brands: Diemersdal (1.13, 3.54); Hoopenburg (0.73, 2.11); Nederburg all cabs (0.56, 2.29); *Bon Courage (-0.69, -2.00)*; Nederburg Private Bin (-1.33, -3.17).
Merlot **Sighted - Blind: *Adj R^2: 5.08%, F: 6.56 (p=0.0000), n = 727*** **Statistically significant brands: 7/36**
Constant: (0.87, 26.74).
Symbolic Brands: Bilton (1.30, 3.75); Cordoba (0.99, 3.09); Eikendal (0.80, 2.31); Overgaauw (0.78, 2.42); Kleine Zalze (0.72, 2.07); Kanu (0.70, 2.32); Meerlust (0.63, 1.97).
Pinotage **Sighted - Blind: *Adj R^2: 2.63%, F: 5.35 (p=0.0001), n = 806*** **Statistically significant Brands: 5/43**
Constant: (0.90, 27.19).
Symbolic Brands: Porterville (1.01, 2.70); Beyerskloof standard (0.66, 2.03); Kaapzicht (0.60, 2.15); Delheim (-0.69, -1.97); Moreson (-0.84, -2.57).
Pinot Noir **Sighted - Blind: *Adj R^2: 9.15%, F: 17.83 (p=0.0000), n = 168*** **Statistically significant brands: 1/10**
Constant: (0.98, 14.52).
Symbolic Brands: Cabrière (1.52, 4.22).
Shiraz **Sighted - Blind: *Adj R^2: 1.09%, F: 5.01 (p=0.0019), n =1096*** **Statistically significant brands: 3/60**
Constant: (0.96, 34.52).
Symbolic Brands: Kloovenburg (0.76, 2.20); Stellenzicht (-0.58, -2.22); Diemesfontein (-0.66, -2.29).
Red Blends **Sighted - Blind: *Adj R^2: 4.75%, F: 7.58 (p=0.0000), n = 1454*** **Statistically significant brands: 11 /79**
Constant: (0.91, 39.43).
Symbolic Brands: Nederburg *Edelrood* (1.19, 3.14); Veenwouden *Classic* (0.93, 2.67); Asara (0.84, 2.43); Welgemeend (0.79, 2.94); Ken Forrester *(0.73, 2.29);* Alto *Rouge* (0.73, 2.29); Kanu (-0.54, -2.12); Groot Constantia (-0.54, -2.12); Jordan (-0.66, -2.44); Glen Carlou (-0.87, -3.83); Cederburg (-0.91, -3.37).

Table 4.2: Red varietal regression results explaining *sighted-minus-blind* wine assessments with no controls. Where statistically significant at the 5% level, symbolic brand effects (b_2) are notified by order of size, with their respective regression coefficients and associated t-statistics in parenthesis.

Chardonnay **Blind: *Adj R^2: 17.09%, F: 9.61 (p=0.0000), n = 1087*** **Statistically significant brands: 26/66**
Constant: (2.28, 79.14).
Functional Brands: Mulderbosch *Barrel Fermented* (1.57, 4.93); Fleur du Cap *Unfiltered* (1.36, 4.26); Jordan (1.22, 5.18); Rupert and Rothschild (1.22. 3.53); Cape Chamonix (1.17, 4.59); Fairview (1.15, 3.86); Hamilton Russell (1.09, 3.66); Amani (1.03, 3.45); Thelema (not Ed's) (1.03, 3.45); Avontuur (0.99, 3.53); Rustenberg (0.97, 3.96); Vergelegen (0.95, 4.34); Longridge (0.88, 2.56); Newton Johnson (0.86, 2.69); Eikendal (0.84, 3.44); Plasir de Merle (0.80, 2.32); Groot Constantia (0.79, 2.47); Warwick Estate (0.79, 2.47); Buitenverwachting (0.77, 2.87); Boschendal (0.72, 3.05); Diemersdal (0.72, 2.25); Groote Post *Wooded* (0.67, 2.49); Glen Carlou (0.64, 2.72); Neil Ellis (0.45, 2.06); Bouchard Finlayson *Sans Barrique* (-0.78, -2.27); Dieu Donné (-0.87, -2.51).
Chenin Blanc **Blind: *Adj R^2: 13.49%, F: 6.93 (p=0.0000), n = 495*** **Statistically significant brands: 13/23**
Constant: (2.31, 49.35).
Functional Brands: Kanu *Wooded* (1.78, 4.75); Rijks (1.28, 3.41); Rudera (1.04, 3.58); Jean Daneel (0.94, 2.52); Spice Route (0.91, 2.62); Spier (0.86, 2.30); Hazendal (0.78, 2.08); De Trafford (0.65, 2.33); Fort Simon (0.64, 2.21); Simonsig (0.64, 2.08); Ken Forrester (0.59, 2.75); Kleine Zalze (0.57, 2.13); Landskroon (-0.87, -2.67).
Sauvignon Blanc **Blind: *Adj R^2: 12.68%, F:8.59, (p=0.0000), n = 1152*** **Statistically significant brands: 22/75**
Constant: (2.28, 79.51).
Functional Brands: Cape Point Vineyards (1.45, 5.90); Steenberg *Reserve* (1.41, 4.50); Springfield (1.25, 5.63); Fleur du Cap *Unfiltered* (1.05, 3.57); Spier *Private Collection* (0.97, 2.69); Neil Ellis (0.91, 2.90); Vergelegen (0.90, 3.79); Tokara (0.90, 3.37); Kumkani (0.86, 3.20); Mooiplaas (0.80, 2.23); Iona (0.80, 2.23); Bon Courage (0.79, 2.37); Cederburg (0.72, 2.30); Groote Post (0.72, 2.30); Graham Beck (0.72, 2.44); Kleine Zalze (0.66, 2.10); Cape Chamonix (0.61, 2.06); Jordan (0.61, 2.58); Steenberg *standard* (0.57, 2.03); Nitida (0.58, 2.18); Thelema (0.55, 2.16); Swartland (-0.85, -2.55).
White Blends **Blind: *Adj R^2: 4.37%, F: 8.01 (p=0.0004), n = 308*** **Statistically significant brands: 2/8**
Constant: (2.48, 46.90).
Functional Brands: Woolies *Longmarket* (0.90, -2.76); Rhebokskloof (-0.98, -2.83).

Table 4.3: White varietal regression results explaining *blind* wine assessments with no controls. Where statistically significant at the 5% level, functional brand effects (b_2) are notified by order of size, with their respective regression coefficients and associated t-statistics in parenthesis.

Chardonnay **Sighted - Blind: *Adj R^2: 6.44%, F: 11.68 (p=0.0000). n = 1087*** **Statistically significant brands: 7/66**
Constant: (1.03, 39.56).
Symbolic Brands: Bouchard Finlayson all chardonnay (1.39, 5.93); Rhebokskloof *Grand Reserve* (0.97, 2.81); Amani (-0.76, -2.00); Avontuur (-0.76, -2.69); Mulderbosch *Barrel Fermented* (-1.03, -3.25); Bouchard Finlayson *Kaaimansgat* (-1.21, -3.07); Boland (-1.37, -3.98).
Chenin Blanc **Sighted - Blind: *Adj R^2: 8.21%, F: 7.28 (p=0.0000), n = 495*** **Statistically significant brands: 6/23**
Constant: (0.73, 17.14).
Symbolic Brands: Raats (0.92, 2.68); Beaumont (0.81, 3.32); Rijks (-0.73, -1.97); Hazendal (-0.81, -2.20); Simonsig (-0.84, -2.78); Kanu *Wooded* (-1.06, -2.88).
Sauvignon Blanc **Sighted - Blind: *Adj R^2: 6.23%, F: 6.89 (p=0.0000), n = 1152*** **Statistically significant brands: 13/75**
Constant: (1.04, 36.80).
Symbolic Brands: Villiera *Traditional Bush Vine* (0.89, 2.58); Southern Right (0.77, 2.39); Lushof (0.75, 2.16); Kanu (-0.59, -2.03); Graham Beck (-0.65, -2.13); Backsberg (-0.68, -1.97); Cape Point Vineyards (-0.69, -2.72); Landskroon (-0.79, -2.11); Kleine Zalze (-0.85, -2.63); Springfield (-0.85, -3.71); Mooiplaas (-0.87, -2.34); Du Toitskloof (-1.04, -2.78); Bon Courage (-1.40, -4.04).
White Blends **Sighted - Blind: *Adj R^2: 1.40%, F: 5.37 (p=0.0211), n = 308*** **Statistically significant brands: 1/8**
Constant: (0.64, 12.57).
Symbolic Brands: Woolworths (-0.59, -2.32).

Table 4.4: White varietal regression results explaining *sighted-minus-blind* wine assessments with no controls. Where statistically significant at the 5% level, symbolic brand effects (b_2) are notified by order of size, with their respective regression coefficients and associated t-statistics in parenthesis.

Cabernet **Blind: *Adj R^2: 14.14%, F: 7.13 (p=0.0001), n = 932*** **Statistically significant brands: 25/49**
Constant: (2.54, 83.62).
Functional Brands: Neil Ellis *Vineyard Selection* (1.32, 4.22); Rustenberg (1.25, 3.99); Thelema (1.21, 4.62); Boekenhoutskloof (0.96, 3.28); Cederburg (0.91, 3.48); Morganhof (0.88, 2.60); Waterford (0.88, 2.60); Jordan (0.84, 2.86); Bon Courage (0.80, 2.35); Nederburg *Private Bin* (0.80, 2.35); Vergelegen (0.80, 2.35); De Trafford (0.78, 3.12); Fleur du cap (0.78, 3.12); L'Avenir (0.77, 2.64); Stony Brook (0.77, 2.64); Flagstone (0.71, 2.43); Spier (0.71, 2.43); Longridge (0.71, 2.11); Blue Creek (0.68, 2.16); Eikendal (0.68, 2.16); Boland (0.65, 2.22); Stark Conde (0.65, 2.22); Le Riche (0.63, 2.62); Nederburg straight cabs (-0.87, -2.58); Diemersdal (-0.90, -2.86).
Merlot **Blind: *Adj R^2: 11.40%, F: 8.79 (p=0.0000), n = 727*** **Statistically significant brands: 11/36**
Constant: (2.63, 77.18).
Vintage: Yr 2004 (-0.52, -5.97).
Functional Brands: Thelema Reserve (1.46, 4.41); Morganhof (0.75, 2.61); Steenberg (0.75, 2.61); Veenwouden (0.71, 2.13); De Trafford (0.65, 2.41); Rust en Vrede (0.63, 2.18); Spier (0.54, 2.00); Thelema (0.54, 2.00); Landskroon (-0.70, -2.26); Bilton (-0.71, -2.13); Kleine Zalze (-0.71, -2.14).
Pinotage **Blind: *Adj R^2: 12.46%, F: 9.81 (p=0.0000), n = 806*** **Statistically significant brands: 11/43**
Constant: (2.56, 71.69).
Vintage: Yr 2002 (-0.18, -2.04).Yr 2004 (-0.30, -3.43);
Functional Brands: Kanonkop (1.38, 4.67); L'Avenir (1.03, 4.27); Moreson (1.00, 3.40); Simonsig *Red Hill* (0.94, 3.38); De Waal (0.91, 2.86); Beyerskloof *Reserve* (0.86, 2.51); Delheim (0.80, 2.53); Southern Right (0.73, 2.30); Spice Route (0.62, 2.35); Kleine Zalze (-0.98, -2.87); Porterville (-1.31, -3.85).
Pinot Noir **Blind: *Adj R^2: 14.83%, F: 10.69 (p=0.0000), n = 168*** **Statistically significant brands: 3/10**
Constant: (2.48, 34.41).
Functional Brands: Hamilton Russell (1.07, 3.66); Bouchard Finlayson (0.67, 2.71); Cabrière (-1.15, -3.23).
Shiraz **Blind: *Adj R^2: 9.66%, F: 6.86 (p=0.0000), n = 1096*** **Statistically significant brands: 19/60**
Constant: (2.70, 85.60).
Vintage: Yr 2004 (-0.28, -4.06).
Functional Brands: Boekenhoutskloof (1.12, 3.37); The Sadie Family (1.02, 3.06); Saxenburg *Private Collection* (1.01, 2.81); Waterford (0.96, 2.67); Spice Route flagship syrah (0.91, 2.72); Stellenzicht (0.90, 3.54); Glen Carlou (0.84, 2.34); Simonsig *Merindol* (0.83, 2.67); Graham Beck (0.83, 2.95); Avondale (0.80, 2.39); Hartenberg (0.75, 2.54); Thelema (0.73, 2.20); Neil Ellis Vineyard Selection (0.71, 1.98); Diemesfontein (0.70, 2.52); De Trafford (0.61, 2.57); Boschendal (0.58, 2.16); Fairview premium shirazes (0.50, 2.19); Blaauwklippen (-0.74, -2.05); Boplaas (-0.87, -2.41).
Red Blends **Blind: *Adj R^2: 10.74%, F: 9.74 (p=0.0000), n = 1454*** **Statistically significant brands: 19/79**
Constant: (2.59, 108.49).
Vintage: Yr 1998 (0.25, 2.98).
Functional Brands: Jordan *Cobbler's Hill* (1.60, 3.85); Ernie Els Wines (1.35, 4.59); De Toren *Fusion V* (1.27, 4.04); Kanonkop *Paul Sauer* (1.16, 3.70); Rust en Vrede (1.16, 3.70); Rustenberg (1.16, 3.70); Morganhof (1.02, 3.24); Vergelegen (1.01, 4.22); Glen Carlou (0.86, 3.85); Yonder Hill Winery (0.78, 2.32); Rupert and Rothschild (0.69, 2.48); Raka (0.63, 2.28); Grangehurst (0.61, 2.32); Remhoogte (0.60, 2.04);. Simonsig (0.59, 2.90); Beyerskloof (0.51, 2.14); Flagstone (0.44, 2.17); Welgemeend (-0.74, -2.80); Nederburg (-0.77, -3.08).

Table 4.5: Red varietal regression results explaining *blind* wine assessments with controls for vintage and price. Where statistically significant at the 5% level, variable coefficients are ranked by order of size, with their respective regression coefficients and associated t-statistics in parenthesis, in the sequence: constant, vintage, and functional brand effect (b_2). For reference see equation 4.3.

Cabernet **Sighted - Blind: *Adj R^2: 4.06%, F: 6.63 (p=0.0000), n = 932*** **Statistically significant brands: 5/49**
Constant: (1.00, 31.43).
Vintage: Yr 2003 (-0.24, -2.82), Yr 2004 (-0.28, -3.04).
Symbolic Brands: Diemersdal (1.11, 3.51); Hoopenburg (0.71, 2.07); Nederburg all cabs (0.50, 2.06); Eikendal (-0.64, -2.02); Nederburg Private Bin (-1.25, -2.98).
Merlot **Sighted - Blind: *Adj R^2: 7.31%, F: 8.15 (p=0.0010), n = 727*** **Statistically significant brands: 7/36**
Constant: (0.81, 23.57).
Vintage: Yr 2004 (0.39, 4.27).
Symbolic Brands: Bilton (1.29, 3.77); Cordoba (1.05, 3.29); Eikendal (0.79, 2.31); Overgaauw (0.78, 2.45); Kleine Zalze (0.77, 2.25); Kanu (0.75, 2.53); Meerlust (0.69, 2.17).
Pinotage **Sighted - Blind: *Adj R^2: 4.06%, F: 5.26 (p=0.0000), n = 806*** **Statistically significant Brands: 5 (+2) /43**
Constant: (0.71, 8.41).
Vintage: Yr 1999 (-0.24, -2.54).
Price: R50 to R99.99 (0.16, 2.41); Ratio (0.0019, 2.11).
Symbolic Brands: Porterville (1.11, 2.97); Beyerskloof standard (0.80, 2.43); Kaapzicht (0.54, 1.90); Delheim (-0.73, -2.10); Moreson (-0.89, -2.74).
Pinot Noir **Sighted - Blind: *Adj R^2: 9.15%, F: 17.83 (p=0.0000), n = 168*** **Statistically significant brands: 1/10**
Constant: (0.98, 14.52).
Symbolic Brands: Cabrière (1.52, 4.22).
Shiraz **Sighted - Blind: *Adj R^2: 1.56%, F: 5.33 (p=0.0003), n =1096*** **Statistically significant brands: 3/60**
Constant: (0.93, 30.28).
Vintage: Yr 2004 (0.18, 2.50).
Symbolic Brands: Kloovenburg (0.76, 2.22); Stellenzicht (-0.57, -2.15); Diemesfontein (-0.66, -2.30).
Red Blends **Sighted - Blind: *Adj R^2: 7.36%, F: 6.49 (p=0.0000), n = 1454*** **Statistically significant brands: 16 (+6) /79**
Constant: (0.79, 16.26).
Vintage: Yr 1998 (-0.23, -2.67); Yr 2005 (-0.23, -2.77); Yr 1997 (-0.25, -2.16).
Price: R50 to R99.99 (0.17, 3.51); Ratio (0.0013, 3.70).
Symbolic Brands: Nederburg *Edelrood* (1.11, 2.94); Welgemeend (0.95, 3.50); Asara (0.86, 2.50); Veenwouden *Classic* (0.78, 2.25); Alto *Rouge* (0.72, 2.26); Kanu (-0.52, -2.06); Vergelegen (-0.52, -2.08); Groot Constantia (-0.56, -2.22); Fairview (-0.60, -2.34); Raka (-0.62, -2.23); Morganhof (-0.63, -1.98); Rust en Vrede (-0.73, -2.25); Jordan (-0.73, -2.75); Ernie Els Wines (-0.87, -2.67); Glen Carlou (-0.90, -4.00); Cederburg (-0.91, -3.41).

Table 4.6: Red varietal regression results explaining *sighted-minus-blind* wine assessments with controls for vintage and price. Where statistically significant at the 5% level, variable coefficients are ranked by order of size with their respective coefficient and *t*-statistics in parenthesis in the sequence: constant, vintage, price, and symbolic brand effect (b_2). For reference see equation 4.4. (Note that with price effects an additional two pinotage and six red blend symbolic brands are identified.)

Chardonnay **Blind: *Adj R^2: 18.35%, F: 9.71 (p=0.0000), n = 1087*** **Statistically significant brands: 26/66**
Constant: (2.28, 69.65).
Vintage: Yr 2005 (0.22; 2.90), Yr 2000 (-0.20, -2.66).
Functional Brands: Mulderbosch *Barrel Fermented* (1.55, 4.88); Fleur du Cap *Unfiltered* (1.36, 4.30); Fairview (1.21, 4.07); Jordan (1.20, 5.15); Rupert and Rothschild (1.18. 3.46); Cape Chamonix (1.14, 4.48); Hamilton Russell (1.09, 3.69); Amani (1.08, 3.65); Avontuur (1.04, 3.73); Thelema (not Ed's) (1.03, 3.48); Vergelegen (0.95, 4.38); Rustenberg (0.95, 3.92); Newton Johnson (0.89, 2.81); Longridge (0.88, 2.59); Eikendal (0.86, 3.55); Groot Constantia (0.82, 2.59); Plasir de Merle (0.80, 2.34); Warwick Estate (0.79, 2.49); Buitenverwachting (0.75, 2.81); Boschendal (0.72, 3.08); Diemersdal (0.69, 2.17); Groote Post *Wooded* (0.67, 2.52); Glen Carlou (0.61, 2.61); Neil Ellis (0.44, 2.01); Bouchard Finlayson *Sans Barrique* (-0.82, -2.39); Dieu Donné (-0.90, -2.63).
Chenin Blanc **Blind: *Adj R^2: 21.48%, F: 10.01 (p=0.0008), n = 495*** **Statistically significant brands: 10/23**
Constant: (2.67, 44.87).
Vintage: Yr 2002 (-0.39, -2.64); Yr 2006 (-0.41, -3.34); Yr 2000 (-0.61, -4.97); Yr 1998 (-0.77, -3.69); Yr 1999 (-0.84, -6.97).
Functional Brands: Kanu *Wooded* (1.72, 4.83); Rijks (1.08, 3.03); Spice Route (0.95, 2.85); Rudera (0.82, 2.95); Hazendal (0.79, 2.20); Spier (0.74, 2.08); Mulderbosch *Steen op Hout* (0.69, 2.09); De Trafford (0.59, 2.22); Ken Forrester (0.55, 2.69); Landskroon (-0.90, -2.89).
Sauvignon Blanc **Blind: *Adj R^2: 17.68%, F:10.51, (p=0.0000), n = 1152*** **Statistically significant brands: 22/75**
Constant: (2.10, 57.74).
Vintage: Yr 2006 (0.57, 7.26); Yr 2005 (0.46, 5.67); Yr 2007 (0.28; 3,06); Yr 2004 (0.24, 3.08).
Functional Brands: Steenberg *Reserve* (1.39, 4.59); Cape Point Vineyards (1.38, 5.76); Springfield (1.24, 5.74); Fleur du Cap *Unfiltered* (1.00, 3.48); Vergelegen (0.92, 3.99); Neil Ellis (0.89, 2.94); Spier *Private Collection* (0.89, 2.54); Mooiplaas (0.87, 2.47); Kumkani (0.78, 2.99); Iona (0.77, 2.20); Cederburg (0.71, 2.32); Groote Post (0.71, 2.32); Tokara (0.75, 2.89); Bon Courage (0.75, 2.31); Graham Beck (0.66, 2.32); Jordan (0.65, 2.83); Bloemendal (0.62, 2.03); Mulderbosch (0.58, 2.22); Steenberg *standard* (0.54, 1.98); Nitida (0.52, 2.02); Thelema (0.49, 1.99); Swartland (-0.74, -2.28).
White Blends **Blind: *Adj R^2: 11.01%, F: 10.49 (p=0.0000), n = 308*** **Statistically significant brands: 2/8**
Constant: (2.41, 41.55).
Vintage: Yr 2006 (0.44, 3.60); Yr 2000 (-1.00, -2.97).
Functional Brands: Vergelegen (1.10, 3.06); Rhebokskloof (-0.83, -2.46).

Table 4.7: White varietal regression results explaining *blind* wine assessments with controls for vintage and price. Where statistically significant at the 5% level, variable coefficients are ranked by order of size, with their respective coefficient and *t*-statistics in parenthesis, in the sequence: constant, vintage, and functional brand effect (b_2). For reference see equation 4.3.

Chardonnay **Sighted - Blind: *Adj R^2: 7.78%, F: 10.16 (p=0.0000). n = 1087*** **Statistically significant brands: 7 (+1) /66**
Constant: (0.86, 14.72).
Vintage: Yr 2000 (0.24, 3.12); Yr 2003 (0.19, 2.57).
Price: Ratio (0.0016, 2.30).
Symbolic Brands: Bouchard Finlayson all chardonnay (1.33, 5.66); Rhebokskloof *Grand Reserve* (0.94, 2.76); Amani (-0.60, -2.04); Avontuur (-0.80, -2.85); Mulderbosch *Barrel Fermented* (-1.14, -3.54); Bouchard Finlayson *Kaaimansgat* (-1.20, -3.06); Boland (-1.34, -3.91).
Chenin Blanc **Sighted - Blind: *Adj R^2: 11.51%, F: 9.03 (p=0.0000), n = 495*** **Statistically significant brands: 5/23**
Constant: (0.67, 13.97).
Vintage: Yr 1998 (0.72, 3.48); Yr 1999 (0.40, 3.44); Yr 2005 (-0.28, -2.16).
Symbolic Brands: Raats (1.02, 3.04); Beaumont (0.73, 3.05); Simonsig (-0.76, -2.58); Hazendal (-0.84, -2.33); Kanu *Wooded* (-1.02, -2.84).
Sauvignon Blanc **Sighted - Blind: *Adj R^2: 7.61%, F: 6.58 (p=0.0000), n = 1152*** **Statistically significant brands: 13/75**
Constant: (1.05, 24.43).
Vintage: Yr 2005 (-0.18, -2.17); Yr 2006 (-0.22, -2.76); Yr 1999 (-0.46, -2.97).
Price: R50 to R99.99 (0.11, 2.02).
Symbolic Brands: Villiera *Traditional Bush Vine* (0.85, 2.46); Lushof (0.73, 2.11); Southern Right (0.71, 2.20); Kanu (-0.61, -2.13); Graham Beck (-0.66, -2.18); Backsberg (-0.68, -1.98); Cape Point Vineyards (-0.73, -2.89); Landskroon (-0.76, -2.06); Kleine Zalze (-0.82, -2.56); Springfield (-0.89, -3.88); Mooiplaas (-0.89, -2.39); Du Toitskloof (-0.98, -2.63); Bon Courage (-1.34, -3.91).
White Blends **Sighted - Blind: *Adj R^2: 10.74%, F: 8.39 (p=0.0000), n = 308*** **Statistically significant brands: 1/8**
Constant: (0.62, 9.87).
Vintage: Yr 2000 (1.26, 3.93); Yr 2006 (-0.25, -2.13); Yr 2007 (-0.41, -2.45).
Price: R50 to R99.99 (0.39, 3.30).
Symbolic Brands: Woolworths (-0.64, -2.61).

Table 4.8: White varietal regression results explaining *sighted-minus-blind* wine assessments with controls for vintage and price. Where statistically significant at the 5% level, variable coefficients are ranked by order of size with their respective coefficient and *t*-statistics in parenthesis in the sequence: constant, vintage, price, and symbolic brand effect (b_2). For reference see equation 4.4. (Note that with price effects an additional chardonnay symbolic brand is identified.)

4.3 Findings

With respect to the results outlined in Tables 4.1 to 4.8, a number of observations are appropriate.

1. With a preliminary analysis of functional and symbolic brand effects across the ten varietals conducted *without* controlling for either vintage or price, and a subsequent analysis conducted *with* these controls, an assessment of these two suites of regression output shows how, in aggregate, models with controls identify eight more brands than those without. With respect to functional brand effects, a sum of 153 'no control' brands are identified versus 148 'control' brands. In the identification of symbolic brands this weighting reverses with a yield of 59 'no control' to 72 'control' brands identified. The control models also appear to be more statistically robust. Across the 'no-control' models, the mean *blind* and *sighted-to-blind* F statistics are 8.32 and 7.98, respectively. This compares to the 'control' model's *blind* and *sighted-to-blind* F statistics of 9.37 and 8.39. With price and vintage control in place, the adjusted r-square statistics also show improved scores. Across the 'no-control' models, the mean *blind* and *sighted-to-blind* adjusted r-square statistics are 11.40% and 4.77%, respectively. This compares to the 'control' model's *blind* and *sighted-to-blind* adjusted r-square statistics of 14.18% and 7.11%. Table 4.9 and 4.10 reflect summative statistics pertaining to the 'no-control' to 'control' suite of regressions. In line with the assessment above, the findings that follow all refer to the models run with controls.

Functional Brand Models		Cabernet	Merlot	Pinot Noir	Pinotage	Shiraz	Red Blend	Chardonnay	Chenin Blanc	Sauvignon Blanc	White Blend	Mean
No Control	Adj R2	14.14	7.12	14.83	10.57	8.88	10.44	17.09	13.49	12.68	4.73	11.40
	F	7.13	6.13	10.69	10.52	6.08	9.46	9.61	6.93	8.59	8.01	8.32
	Brands noted	25	11	3	10	21	20	26	13	22	2	Total: 153
Control	Adj R2	14.14	11.4	14.83	12.46	9.66	10.74	18.35	21.48	17.68	11.01	14.18
	F	7.13	8.79	10.69	9.81	6.86	9.74	9.71	10.01	10.51	10.49	9.37
	Brands noted	25	11	3	11	19	19	26	10	22	2	Total: 148

Table 4.9: Summative statistics pertaining to the 'no-control' and 'control' suites of functional brand regressions.

5

THE HEDONIC PRICING OF SOUTH AFRICAN WINES (2007 PERIOD)[1]

5.1 Introduction

This, the second of this study's three empirical chapters, proceeds from the van Rensburg and Priilaid econometric valuation methodology (2004) which mapped out the relationship between wine price and value. In this earlier paper the two quality metrics, blind and sighted 'star-styled' ratings, were used as explanatory variables in a multiple regression framework. For simplicity, the rest of this chapter shall refer to this specification as the 'linear' model, in the sense that, the fair pricing increment assumed to be associated with each successive star, was assumed to be equal: i.e. there is a straight line relationship between quality rating and value.

While, in the main, this linear approach has provided workable wine valuations, at the extreme ends of the quality spectrum in particular, it has not. By way of remedy this chapter provides an analysis of the price-quality continuum, and introduces what shall be termed a 'dummy-styled' approach to address the possibility of a non-linear price-to-quality relationship. Using red and white wines tasted over the *2007 period*, (which is to say that wines in this dataset span a number of vintages though *all* were tasted sometime in 2007), it shall be demonstrated that the dummy or non-ordinal approach avoids the bias of value-for-money misleadingly being identified excessively at the bottom end of the quality spectrum and neglected at the top end. Such bias avoidance provides for more economically sensible valuations across the continuum of quality, thus assisting retailers and consumers in better identifying wines that offer value-for-money.

[1] The conference paper entitled "The Use of Hedonic Pricing in the Valuation of South African Wines" by Priilaid and van Rensburg borrows heavily from this chapter and certain sections of *Chapters Two* and *Three*. The paper is to be presented to the 22nd annual conference of the *South African Institute of Management Scientists (SAIMS)* on 12-15 September 2010 at Rhodes University (see Priilaid and van Rensburg (2010c).)

Proceeding from certain sections in *Chapters Two* and *Three*, which respectively detail the relevant literature and pertinent aspects of the data, this chapter presents a full wine pricing analysis and is organised as follows. Section two presents the methodology and model construction employed. Thereafter, section three showcases the empirical analysis; contrasting the linear and dummy valuation techniques, and exploring the notion of value-for-money, and where along the value spectrum it might be identified. Section four concludes.

5.2 Methodology and Model Construction

In this pricing analysis the ordinary least squares (OLS) regression analysis methodology is employed. So doing, the cross-section of prices (*price*) is modelled for the similar goods $i=1\ldots n$ as a function of K consumer desirable (CD_k where $k=1,\ldots, K$) characteristics:

$$price_i = \alpha + \sum_{k=1}^{K} b_k CD_k + \varepsilon_i \qquad \text{Equation (2.2) in } \textit{Chapter Two}$$

Where: α = the intercept term as estimated by OLS

b = the K slope coefficients as estimated by OLS

CD = the K 'consumer desirables'

ε = a random residual error term following classic assumptions

As in the study cited previously, the classification of the explanatory variables (CD) includes only those that are likely to constitute perceived value for the consumer, in this case blind and sighted tasting scores as conducted by *WINE* magazine and *John Platter*, respectively. Using this approach, the model disaggregates the price of each wine into value and mispricing components.

The 'intrinsic value' of each wine, i, is then estimated:

$$\begin{aligned} value_i &= price_i - \varepsilon_i \\ &= \alpha + \sum_{k=1}^{K} b_k CD_k \end{aligned} \qquad \text{Equation (2.3) in } \textit{Chapter Two}$$

So doing, the derived fitted values equate to estimates of intrinsic value; the difference between value and price reflecting the level of mispricing (ε_i) in each instance. In this manner, a wine's price and

valuation may be charted, thus enabling the identification of a 'value frontier': that region where maximum value, relative to price, may be observed.

Using this methodology, the following two valuation models are estimated and contrasted:

$$OV_i = a + b_1 cab_i + b_2 merlot_i + b_3 pinot\ noir_i + b_4 shiraz_i + + b_5 red\ blend_i + b_6 chardonnay_i + b_7 sauv\ blanc_i + b_8 white\ blend_i + b_9 WINE\ Stars_i + b_{10} Platter\ Stars_i \quad (5.1)$$

$$DV_i = a + b_1 cab_i + b_2 merlot_i + b_3 pinot\ noir_i + b_4 shiraz_i + + b_5 red\ blend_i + b_6 chardonnay_i + b_7 sauv\ blanc_i + b_8 white\ blend_i + b_9 JP^{0.5}{}_i + b_{10} JP^{1}{}_i + b_{11} JP^{2}{}_i + b_{12} JP^{25}{}_i + b_{13} JP^{3}{}_i + b_{14} JP^{35}{}_i + b_{15} JP^{4}{}_i + b_{16} JP^{45}{}_i + b_{17} W^{1}{}_i + b_{18} W^{2}{}_i + b_{19} W^{25}{}_i + b_{20} W^{3}{}_i + b_{21} W^{35}{}_i + b_{22} W^{4}{}_i + b_{23} W^{45}{}_i + b_{24} W^{5}{}_i \quad (5.2)$$

Where:

OV_i = Ordinal Valuation of wine *i*.
DV_i = Dummy Valuation of wine *i*.
WINE Stars = *WINE* magazine rating of wine *i*.
Platter Stars = *John Platter* rating of wine *i*.
cab = 1 if wine *i* is a cabernet sauvignon; 0 if otherwise.
merlot = 1 if wine *i* is a merlot; 0 if otherwise.
pinot noir = 1 if wine *i* is a pinot noir; 0 if otherwise.
shiraz = 1 if wine *i* is a shiraz; 0 if otherwise.
red blend = 1 if wine *i* is a red blend; 0 if otherwise.
chardonnay = 1 if wine *i* is a chardonnay; 0 if otherwise.
sauv blanc = 1 if wine *i* is a sauvignon blanc; 0 if otherwise.
white blend = 1 if wine *i* is a white blend; 0 if otherwise.
$JP^{0.5}$ = 1 if wine *i* obtained 0.5 *John Platter* stars; 0 if otherwise.
JP^{1} = 1 if wine *i* obtained 1 *John Platter* stars; 0 if otherwise.
JP^{2} = 1 if wine *i* obtained 2 *John Platter* stars; 0 if otherwise.
JP^{25} = 1 if wine *i* obtained 2.5 *John Platter* stars; 0 if otherwise.
JP^{3} = 1 if wine *i* obtained 3 *John Platter* stars; 0 if otherwise.
JP^{35} = 1 if wine *i* obtained 3.5 *John Platter* stars; 0 if otherwise.
JP^{4} = 1 if wine *i* obtained 4 *John Platter* stars; 0 if otherwise.
JP^{45} = 1 if wine *i* obtained 4.5 *John Platter* stars; 0 if otherwise.
W^{1} = 1 if wine *i* obtained 1 *WINE* magazine stars; 0 if otherwise.
W^{2} = 1 if wine *i* obtained 2 *WINE* magazine stars; 0 if otherwise.
W^{25} = 1 if wine *i* obtained 2.5 *WINE* magazine stars; 0 if otherwise.
W^{3} = 1 if wine *i* obtained 3 *WINE* magazine stars; 0 if otherwise.
W^{35} = 1 if wine *i* obtained 3.5 *WINE* magazine stars; 0 if otherwise.
W^{4} = 1 if wine *i* obtained 4 *WINE* magazine stars; 0 if otherwise.
W^{45} = 1 if wine *i* obtained 4.5 *WINE* magazine stars; 0 if otherwise.
W^{5} = 1 if wine *i* obtained 5 *WINE* magazine stars; 0 if otherwise.

5.3 Empirical Analysis

5.3.1. Preliminary Analysis

Figures 5.1 and 5.2 illustrate the average price (in Rands) awarded to red wines during the 2007 period. Figure 5.1 depicts the sighted ratings, Figure 5.2, the blind. The average price (in Rands) awarded to white wines during the 2007 period are depicted in Figures 5.3 (for the sighted) and 5.4 (for the blind ratings).

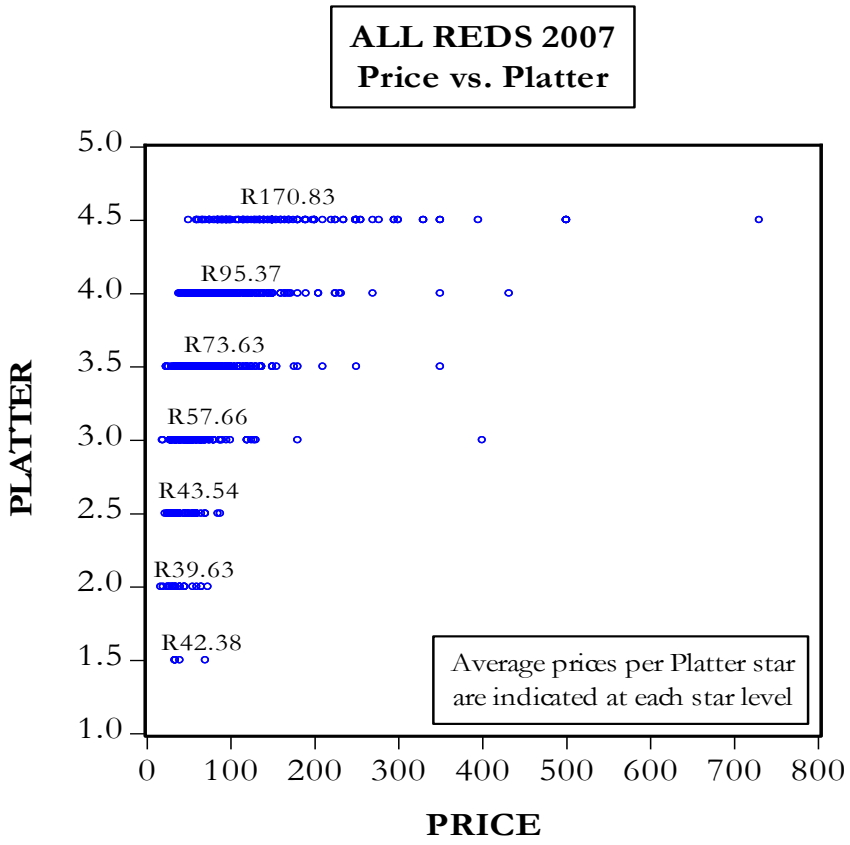

Figure 5.1: Red wines: wine prices (in Rands) per *Platter* star conferred.

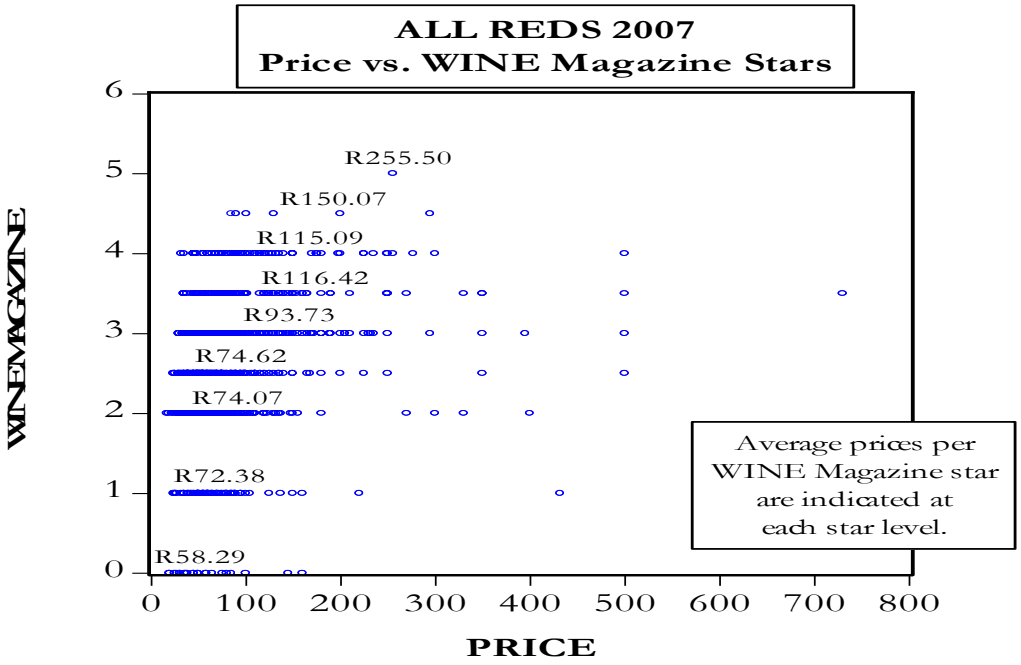

Figure 5.2: Red wines: prices (in Rands) per *WINE* star conferred.

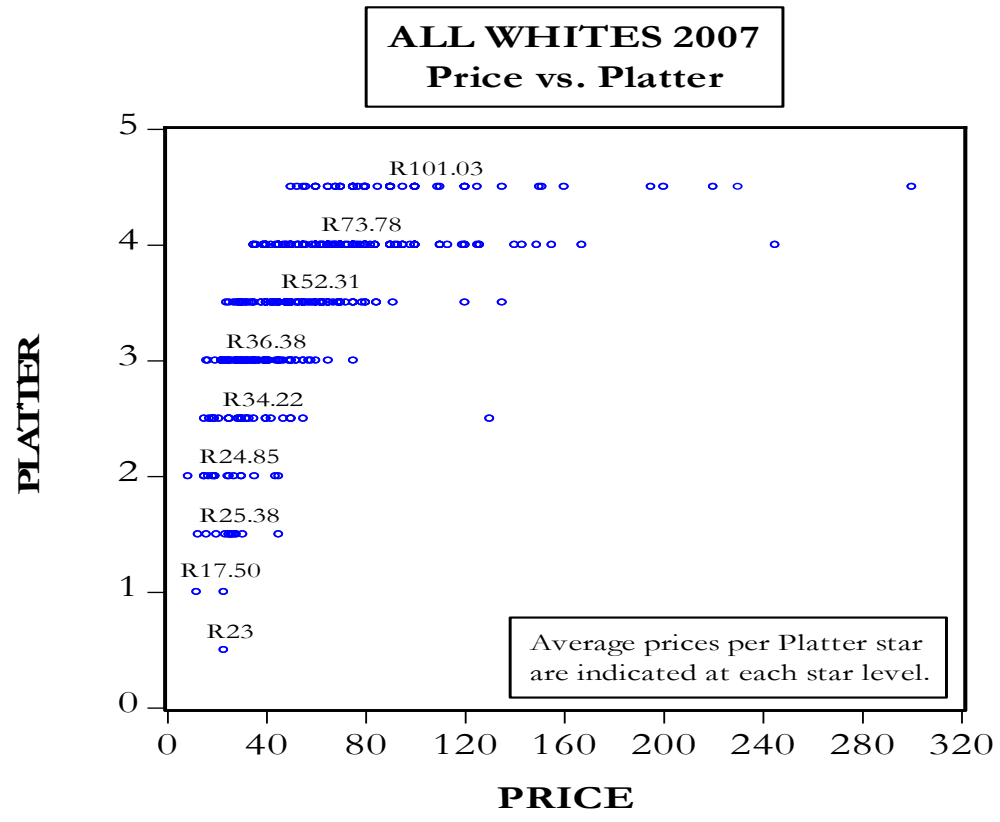

Figure 5.3: White wines 2007: wine prices (in Rands) per *Platter* star conferred.

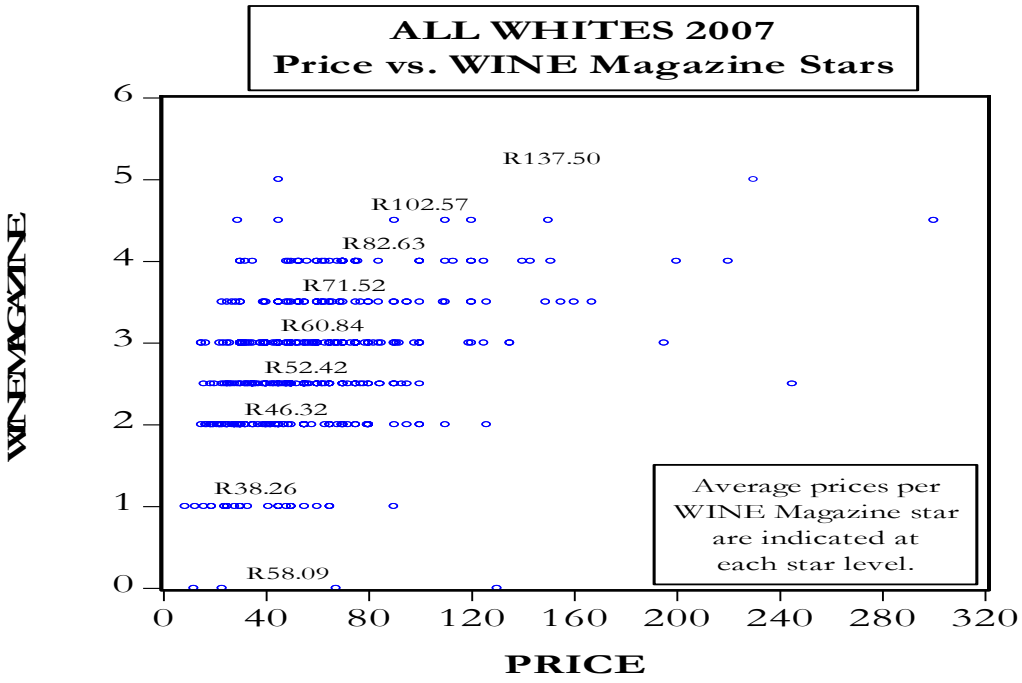

Figure 5.4: White wines 2007: prices (in Rands) per *WINE* star conferred.

Close scrutiny of these scattergrams, (particularly those derived from *Platter* ratings) reveals how price-per-star appears to increase in a non-linear fashion, especially from 3 stars upwards. Mispricing at the 0 and 1 star-level is also observable. The extent of mispricing at the lower levels of quality is not as apparent in the sample of sighted assessments. In all cases the degree to which specific cultivars impact on price-per-star is uncertain.

On the basis of the descriptive statistics presented both in *Chapter Three* and in the pages directly preceding, and for purposes of comparison, linear and dummy-styled regression models are consequently developed independently for each of the blind and sighted assessment metrics. Avoiding the dummy trap, the varietal, *Platter* and *WINE* magazine rating-comparators employed throughout this paper are *pinotage* and *chenin blanc* (in the case of the red and white subsets, respectively) and one-and-a-half *Platter* stars and zero *WINE* stars respectively. All regressions were treated for heteroskedasticity, though none is discernible. For each of the red and white wine datasets, the four preliminary regressions and their corresponding adjusted R-square values are presented in Tables 5.1 (reds) and 5.2 (whites). Through the lens of sighted and blind ratings, each table, presents and contrasts the linear and dummy style of data interpretation.

Variable	Coefficient	*t* Statistic
First regression: *Linear Model for Blind (WINE Mag) assessments only* (Adj. R^2: 7.33%, n=896.)		
Constant	**27.29**	**3.80**
shiraz	**20.29**	**3.35**
cabernet sauvignon	6.94	1.22
merlot	7.94	1.49
pinot noir	**35.99**	**2.52**
red blends	**22.66**	**3.87**
WINE magazine stars	**17.16**	**7.25**
Second regression: *Linear Model for Sighted (Platter) assessments only* (Adj. R^2: 35.87%, n=896.)		
Constant	**-109.54**	**-8.30**
shiraz	**13.31**	**2.50**
cabernet sauvignon	2.84	0.57
merlot	2.98	0.64
pinot noir	**33.13**	**2.75**
red blends	**16.62**	**3.39**
Platter stars	**51.87**	**13.99**
Third regression: *Dummy Model for Blind (WINE Mag) assessments only* (Adj. R^2: 8.83%, n=896.)		
Constant	**42.94**	**4.90**
shiraz	**20.56**	**3.49**
cabernet sauvignon	6.41	1.13
merlot	6.40	1.20
pinot noir	**34.25**	**2.38**
red blends	**21.64**	**3.73**
WINE magazine 1 star	15.85	1.60
WINE magazine 2 stars	15.17	1.73
WINE magazine 2.5 stars	16.91	1.93
WINE magazine 3 stars	**34.53**	**3.98**
WINE magazine 3.5 stars	**57.69**	**4.93**
WINE magazine 4 stars	**55.03**	**4.97**
WINE magazine 4.5 stars	**89.91**	**2.82**
WINE magazine 5 stars	**190.91**	**23.14**
Fourth regression: *Dummy Model for Sighted (Platter) assessments only* (Adj. R^2: 33.15%, n=896.)		
Constant	**38.54**	**6.10**
shiraz	**14.48**	**2.97**
cabernet sauvignon	4.73	1.12
merlot	5.58	1.30
pinot noir	**30.27**	**2.69**
red blends	**17.09**	**3.80**
Platter 2 stars	-11.73	-1.52
Platter 2.5 stars	-6.21	-0.88
Platter 3 stars	7.31	1.00
Platter 3.5 stars	**23.28**	**3.39**
Platter 4 stars	**44.73**	**6.38**
Platter 4.5 stars	**118.95**	**11.02**

Table 5.1: Red wines 2007: estimated linear and dummy model regressions for blind and sighted metrics. Significant t-statistics and their respective coefficients are cited in bold. In all models the constant represents a pinotage with 1.5 *Platter* stars and zero *WINE* magazine stars.

6

VALUATIONS OF SOUTH AFRICAN WINE BRANDS[1]

6.1 Introduction

Employing blind and sighted evaluations of wine quality, this chapter presents and contrasts two wine brand valuation techniques that, in conjunction with conventional net-present-value style (NPV) company valuation methods, are founded on the use of non-ordinal wine valuation models developed in the previous chapter.

The first approach is based on a wine's price premium and thus specifies the brand equity of a single bottle of wine as the difference between its price and a valuation of its intrinsic worth. Such valuations are derived from scores of blind-based wine tasting – a method of assessment that is devoid of any extrinsic cue bias. Price premiums can generally be regarded as a measure of the extent to which a consumer is willing to pay for a product over and above its intrinsic value and, as such, can be considered a measure of customer loyalty. According to Aaker (1996: 107) the price premium approach "may be the best single measure of brand equity available because, in most contexts, any driver of brand equity should affect the price premium."

The second approach defines brand equity as the difference between a bottle's intrinsic value and, instead of price, the value of its *perceived quality* when the wine is sampled sighted. For Aaker (1996), perceived quality stands as a proxy for product leadership, an additional component of brand equity, which has been shown to correlate with price premiums, price elasticities, brand usage, and the like. Though less finely calibrated a measure than price, a (currency-based) valuation of a branded bottle's perceived quality can also serve as a measure of consumer preference when juxtaposed against the valuation of a generic wine product of similar quality.

[1] The conference paper entitled "Brand Valuations of South African Wines" by Priilaid and van Rensburg borrows heavily from this chapter and certain sections of *Chapters Two* and *Three*. The paper was presented to the 19th annual conference of the *South African Finance Association* on 15 January 2010 at UCT's Graduate School of Business (see Priilaid & van Rensburg, 2010b), and had has been further revised into a working paper entitled "The Hedonic Valuation of South African Wines Brands."

Both premium approaches equate with the value-added view of brand equity (*inter-alia*, see Kamakura & Russell, 1993; Keller, 1993 and Erdem & Swait, 1998) commonly employed when a brand's utility cannot adequately be explained by the functional attributes at hand. They also align well with Keller's (1993: 2) definition of consumer-led brand equity which he cites as the "consumers' reaction to an element of the marketing mix for the brand in comparison with their reaction to the same marketing mix element attributed to a fictitiously named or unnamed version of the product or service".

By applying appropriate valuation techniques to both the price and quality premium versions of bottle-based brand equity, this chapter examines the extent to which a branded wine is trading over and above its value merely as a generic product of equivalent quality. The chapter is organised as follows. With the theory and literature relevant to this chapter already presented in *Chapter Two*, the brand-data employed for this final analysis is presented briefly in section two hereafter. While much of this data has already been described in *Chapter Three*, given the *interlocking logic* of the three empirical chapters in this study, some data components have not (specifically the 35 brands identified as candidates for evaluation in this chapter's analysis). These 35 brands were drawn from the dataset spanning the eight year period between January 2000 and December 2007 and were empirically identified in *Chapter Four*, the first of the three empirical chapters in this study. Though fully analysed in *Chapter Four*, this suite of brands is formally re-described as a preamble to the analysis that follows.

This done, section three presents the rationale for the combined non-ordinal and NPV-styled valuation methodologies. Section four thereafter details the interim brand premium valuations per bottle. Where valid, the consequent valuations for the brand as a whole are presented for comparative purposes. Section five concludes.

6.2 The Brand Suite Presented

For the purposes of price and quality premium styled brand valuations, as per the preceding chapters, we employ a dataset which divides, logically, into two sections: (1) eight consecutive years of wine quality metrics employed to identify legitimate (placebo-based) wine brands, and (2) wine prices as of 2007 – the base-line year to which all valuations are tied. These two data components are described on the following page.

6.2.1. Data Employed for Identifying Wine Brands

A total of 35 wine brands were selected for valuation, each emanating from a dataset of 8225 wines assessed both blind and sighted over an eight year period spanning January 2000 to December 2007. This broad spread of data is fully described in *Chapter Three*.

Data for blind scores – a proxy for intrinsic merit – is derived from *WINE* magazine which employs the five-star or twenty-point scoring system. Working with the sampled data, *WINE* magazine's mean score is 2.59 stars, with a maximum, minimum and standard deviation of 5, 0 and 0.92, respectively. Data for sighted scores – a proxy for the "perceived sighted quality" metric to be valuated in this study – is derived from (John) *Platter's South African Wine Guide* which also scores off the five-star system. In contrast to *WINE* magazine, the fifteen professional tasters (see van Zyl, 2007) appointed to this popular guide assess *all* but their five-star wines sighted. In order to keep the blind-to-sighted distinction explicit, for the purposes of this exercise (and earlier empirical chapters) all *Platter* versions of the five-star accolade have been scored in the dataset as four-and-a-half stars – the interim score assigned to these wines before *Platter's* blind taste-off was conducted. Of the entire 8225 wines sampled, the mean *Platter* score is 3.51 stars, with a maximum, minimum and standard deviation of 4.5, 0 and 0.67, respectively. Relative to *WINE*'s blind assessment metrics, its higher mean and lower variability is noted.

Wines containing six or more vintages were considered for brand analysis and, thus from the 8225 wines assembled, some 448 candidate brands were initially identified, potentially qualifying as either functional brands, symbolic brands, or both.

This study takes the view that a symbolic brand becomes empirically legitimate when its sighted-to-blind differential can, statistically, be attributed to the brand cue, while controlling for any other extrinsic cues like price or vintage. (Recall that this conceptualisation is linked to the neurologically derived placebo effect, as the brain literally tastes the brand, all things considered). The sighted-to-blind differential is derived by subtracting the (blind) *WINE* magazine score from the (sighted) *Platter* score. Over the entire 8225-line dataset, the mean average "*Platter* minus *WINE"* score is 0.92 stars, with a respective maximum, minimum and standard deviation of 4.5, -2.5 and 0.90. By contrast,

functional brands accrue if, from their blind scores, they present with a statistically significant level of higher intrinsic quality[2].

From this initial analysis, 148 functional and 72 symbolic brands were identified; the thirty most powerful of which appear in Tables 4.6 and 4.7 in *Chapter Four*. From these two subsets, 35 present, simultaneously, as both functional *and* symbolic. These are also presented in *Chapter Four's* Table 4.8, but for ease of reference, appear in modified form as Table 6.1.

In sum these 35 brands constitute the full sample of brands to be valued in this the final empirical chapter. From this table the preponderance of red blends can be observed: 12 of the 35 brands identified fall into this cluster. Other key varietal contributions include: sauvignon blanc (5), cabernet sauvignon and chardonnay (4) and pinotage (3).

6.2.2. Data Employed for the Valuation Models

For the purposes of valuating the 35 selected brands, non-ordinal pricing models are developed (as per *Chapter Five*), using the 1358 wine dataset emanating specifically from the 2007 period. As more fully expressed in the data description in *Chapter Three*, these 1358 wines are wrought from the broader 8225 wine sample noted above and represent the last of the eight years spanning this broader set of data. In turn, these 1358 wines decompose further into two subsets: red wines: (n = 896) and white wines (n = 462). Each notified wine carries an assessment from both *WINE* magazine (over the period January to December 2007), and the annual *Platter* wine guide and, in aggregate, represent the 2007 red and white wine market in South Africa.

The mean price of the entire 1358 wine sample is R78.76. The price maximum, minimum and standard deviation for the sample are R730, R8.50 and R58.32 respectively. Within the red wines, pinot noir is on average the most expensive wine per bottle (R108.24), followed by red blends (R96.59), shiraz (R93.88), cabernet sauvignon (R83.34), merlot (R73.52) and finally pinotage (R70.64). Within the white sample, chardonnay is, on average, the most expensive cultivar per bottle (R71.59), followed by white blends (R59.41), sauvignon blanc (R57.81) and, lastly, chenin blanc (R42.22).

[2] As per point 4 in section 4.3. of *Chapter Four*, functional brands can *also* present with statistically significant levels of *lower* intrinsic quality. Only 12 per cent of the 148 functional brands identified in *Chapter Four* fell into this category.

1. BRANDS		2. Varietal	3. 2007 Price	4. Predicted Blind Rating	5. Predicted Placebo (Sighted - Blind Rating)	6. Imputed Sighted Rating
1	Porterville	pinotage	R 44.75	1.25	1.91	3.16
2	Cabrière	pinot noir	R 128.29	1.33	2.50	3.83
3	Bouchard Finlayson *Sans Barrique*	chardonnay	R 80.00	1.46	2.34	3.80
4	Diemersdal	cabernet sauvignon	R 52.00	1.64	2.11	3.75
5	Nederburg (standard)	cabernet sauvignon	R 68.49	1.67	1.50	3.17
6	Nederburg *Edelrood*	red blend	R 63.88	1.82	2.15	3.97
7	Welgemeend	red blend	R 66.63	1.85	2.00	3.85
8	Kleine Zalze	merlot	R 58.53	1.92	1.58	3.50
9	Bilton	merlot	R 80.80	1.92	2.10	4.02
10	Graham Beck	sauvignon blanc	R 62.58	2.76	0.50	3.26
11	Bon Courage	sauvignon blanc	R 32.00	2.85	-0.30	2.55
12	Mooiplaas	sauvignon blanc	R 46.85	2.97	0.16	3.13
13	Eikendal	cabernet sauvignon	R 81.50	3.21	0.36	3.57
14	Raka	red blend	R 72.08	3.22	0.43	3.65
15	Avontuur	chardonnay	R 70.63	3.32	0.16	3.48
16	Nederburg *Private Bin*	cabernet sauvignon	R 80.00	3.33	0.25	3.58
17	Springfield	sauvignon blanc	R 62.93	3.34	0.27	3.61
18	Delheim	pinotage	R 91.98	3.36	0.29	3.65
19	Amani	chardonnay	R 68.25	3.36	0.35	3.71
20	Diemesfontein	shiraz	R 81.51	3.41	0.26	3.67
21	Glen Carlou *Tortoise Hill*	red blend	R 40.00	3.45	0.13	3.58
22	Glen Carlou *Grand Classique*	red blend	R 120.00	3.45	0.08	3.53
23	Hazendal	chenin blanc	R 32.00	3.45	-0.18	3.27
24	Cape Point Vineyards	sauvignon blanc	R 80.06	3.48	0.43	3.91
25	Moreson	pinotage	R 39.00	3.56	0.16	3.72
26	Vergelegen *V*	red blend	R 730.00	3.60	0.85	4.45
27	Vergelegen *Mill Race*	red blend	R 56.00	3.60	0.32	3.92
28	Morganhof (standard)	red blend	R 165.00	3.61	0.22	3.83
29	Morganhof *Premier Selection*	red blend	R 49.15	3.61	0.54	4.15
30	Stellenzicht	shiraz	R 120.10	3.61	0.36	3.97
31	Rust en Vrede	red blend	R 270.00	3.75	0.43	4.18
32	Mulderbosch *Barrel Fermented.*	chardonnay	R 155.00	3.83	-0.03	3.80
33	Ernie Els Wines	red blend	R 500.00	3.94	0.54	4.48
34	Jordan *Cobblers Hill*	red blend	R 156.37	4.19	0.27	4.46
35	Kanu *Limited Release Wooded*	chenin blanc	R 70.00	4.39	-0.35	4.04

Table 6.1: The 35 selected brands that qualify *simultaneously* with *functional* and *symbolic/placebo* effects, ranked by ascending order of their predicted average *blind* score (column 4). In turn, this fitted value is added to column 5's predicted average *placebo* (*sighted-minus-blind*) score (also a fitted value), to impute the sighted score in column 6. Both fitted values are derived from the brand-identification models featured in Tables 4.1 to 4.4 in *Chapter Four*.

Valuation models are derived by regressing price against 2007 quality metrics from *Platter* and *WINE* magazine. Over the 868 red wines tasted, the mean average *Platter* score is 3.61, with a maximum, minimum and standard deviation for the sample of 4.5, 1.5 and 0.62 respectively. By comparison to the reds, the mean average *Platter* score for the 462 white wines tasted is 3.50, with a maximum, minimum and standard deviation for the sample of 4.5, 1.5 and 0.73 respectively.

Of the red wines assessed in this study, the mean average *WINE* magazine score is 2.65, with a maximum, minimum and standard deviation for the sample of 4.5, 1.5 and 0.90 respectively. Equivalent figures for the white wine sample are mean: 2.70, maximum: 5, minimum: 0, and standard deviation: 0.82.

6.3 Valuation Methodology

As per Damodaran (2006), a brand's worth can be computed as the brand premium multiplied by volumes generated. A crude version of this equation looks thus:

Total Brand Value = volumes produced x brand premium.

Placing the implicit NPV calculations momentarily aside, this study seeks explicitly to compare two wine brand valuation techniques, namely those attached to (1) the *price*-to-intrinsic value premium, and (2) the *value of perceived sighted quality*-to-intrinsic value premium, respectively. As per Keller (2003), the above two approaches resolve into the following two equations:

Either

Value of Brand Premium = Brand price – Intrinsic value. (6.1)

Or

Value of Brand Premium = Value of brand's perceived sighted quality – Intrinsic value. (6.2)

Assuming that in all instances we are valuating a legitimate symbolic brand with a predictably consistent difference between its sighted and blind score, *ceteris paribus*, both the price and quality premium equations carry with them certain requirements.

In the case of the former (the price premium calculation), we should know the price of the wine and be able to ascertain the value of its underlying intrinsic quality. Here it is crucial that each wine presents simultaneously as a functional brand with predictably consistent levels of intrinsic quality. Through appropriate price modelling, we can hence calculate the worth of that quality-point. In the instance of the 35 wines[3] qualifying simultaneously as symbolic and functional brands and notified in Table 6.1, this interim condition is met.

In the case of the latter (the quality premium calculation), we should, again, be able to ascertain the value of a wine's intrinsic quality. Similarly, therefore, the wine under scrutiny should present as a functional brand with a consistent underpinning of intrinsic quality. In this way we can employ the selfsame pricing model to valuate a specific level of intrinsic quality. Additionally, we should also know the wine's perceived sighted quality and hence be able to model and compute the value of that particular point of quality. Once more, by employing the 35 tabled brands, it is possible to determine both the intrinsic (blind-based) quality of each brand and its perceived sighted quality (that being the intrinsic quality plus the placebo-driven difference between the sighted and blind quality – as proxied by the *Platter* minus *WINE* magazine score.) In this way, both conditions are met.

Thus, with respect to both methods under scrutiny, the underpinning requirements necessary to value brand premiums have been fulfilled.

6.3.1. Non-Ordinal Models

Implicit in both the above noted *price* and *quality premium* equations is the ability to solve independently for the value of a (generic) product of similar intrinsic quality. Additionally the *quality premium* equation also requires that we value the perceived sighted quality of that same product. In both instances, we invoke the van Rensburg and Priilaid study of 2004, where the ordinary least squares (OLS) regression

[3] The 37 symbolic brands that failed to qualify as functional brands do not qualify for valuation since they do not present with statistically significant versions of intrinsic quality. Thus they fail to qualify for either of the two mooted approaches. In order therefore to qualify as a value-able brand, it is critical that such a brand qualifies simultaneously as both a functional and symbolic brand.

analysis methodology is employed. For pricing purposes these techniques are hereby applied to a dataset of wines emanating from the 2007 period.

So doing, the cross-section of prices (*price*) is modelled for the similar goods *i=1…n* as a function of *K* consumer desirable (CD_k where *k=1,…, K*) characteristics:

$$price_i = \alpha + \sum_{k=1}^{K} b_k CD_k + \varepsilon_i$$

(Equation 2.2 in *Chapter Two*)

Where:

α = the intercept term as estimated by OLS

b = the K slope coefficients as estimated by OLS

CD = the K 'consumer desirables'

ε = a random residual error term following classic assumptions

As in the previously cited study, the classification of the explanatory variables (CD) includes only those that are likely to constitute perceived value for the consumer. Solving, respectively, for the value of a generic non-branded wine and the value of the same product's perceived sighted quality, as explanatory variables (CD), we use the assessment scores from the (blind-based) *WINE* magazine and the (sight-based) *Platter*. In both instances, the model disaggregates the price of each wine into value and mispricing components.

The 'value' of each wine, *i*, is then estimated:

$$value_i = price_i - \varepsilon_i$$

$$= \alpha + \sum_{k=1}^{K} b_k CD_k$$

(Equation 2.3 in *Chapter Two*)

So doing, the derived fitted values equate to approximations of the wine's value; the difference between value and price reflecting the level of mispricing (ε_i) in each instance.

Using this methodology, and *applied to all wines in the 2007 dataset*, the following non-ordinal (or dummy-style) valuation models are estimated:

$$DVIQ_i = a + b_1 cab_i + b_2 merlot_i + b_3 pinot\ noir_i + b_4 shiraz_i + b_5 red\ blend_i + b_6 chardonnay_i + b_7 sauv\ blanc_i + b_8 white\ blend_i + b_9 W^1{}_i + b_{10} W^2{}_i + b_{19} W^{25}{}_i + b_{11} W^3{}_i + b_{12} W^{35}{}_i + b_{13} W^4{}_i + b_{14} W^{45}{}_i + b_{15} W^5{}_i \quad (6.3)$$

$$DVPSQ_i = a + b_1 cab_i + b_2 merlot_i + b_3 pinot\ noir_i + b_4 shiraz_i + b_5 red\ blend_i + b_6 chardonnay_i + b_7 sauv\ blanc_i + b_8 white\ blend_i + b_9 JP^{0.5}{}_i + b_{10} JP^1{}_i + b_{11} JP^2{}_i + b_{12} JP^{25}{}_i + b_{13} JP^3{}_i + b_{14} JP^{35}{}_i + b_{15} JP^4{}_i + b_{16} JP^{45}{}_i \quad (6.4)$$

Where:

$DVIQ_i$ = Dummy Valuation of the Intrinsic Quality of wine *i*.

$DVPSQ_i$ = Dummy Valuation of the Perceived Sighted Quality of that selfsame wine *i*.

Note: in both above instances the dummy valuation is *non-ordinal* and addresses the possibility of a non-linear price to quality relationship.

cab = 1 if wine *i* is a cabernet sauvignon; 0 if otherwise.

merlot = 1 if wine *i* is a merlot; 0 if otherwise.

pinot noir = 1 if wine *i* is a pinot noir; 0 if otherwise.

shiraz = 1 if wine *i* is a shiraz; 0 if otherwise.

red blend = 1 if wine *i* is a red blend; 0 if otherwise.

chardonnay = 1 if wine *i* is a chardonnay; 0 if otherwise.

sauv blanc = 1 if wine *i* is a sauvignon blanc; 0 if otherwise.

white blend = 1 if wine *i* is a white blend; 0 if otherwise.

$JP^{0.5}$ = 1 if wine *i* obtained 0.5 *John Platter* stars; 0 if otherwise.

JP^1 = 1 if wine *i* obtained 1 *John Platter* stars; 0 if otherwise.

JP^2 = 1 if wine *i* obtained 2 *John Platter* stars; 0 if otherwise.

JP^{25} = 1 if wine *i* obtained 2.5 *John Platter* stars; 0 if otherwise.

JP^3 = 1 if wine *i* obtained 3 *John Platter* stars; 0 if otherwise.

JP^{35} = 1 if wine *i* obtained 3.5 *John Platter* stars; 0 if otherwise.

JP^4 = 1 if wine *i* obtained 4 *John Platter* stars; 0 if otherwise.

JP^{45} = 1 if wine *i* obtained 4.5 *John Platter* stars; 0 if otherwise.

W^1 = 1 if wine *i* obtained 1 *WINE* magazine stars; 0 if otherwise.

W^2 = 1 if wine *i* obtained 2 *WINE* magazine stars; 0 if otherwise.

W^{25} = 1 if wine *i* obtained 2.5 *WINE* magazine stars; 0 if otherwise.

W^{3} = 1 if wine *i* obtained 3 *WINE* magazine stars; 0 if otherwise.

W^{35} = 1 if wine *i* obtained 3.5 *WINE* magazine stars; 0 if otherwise.

W^{4} = 1 if wine *i* obtained 4 *WINE* magazine stars; 0 if otherwise.

W^{45} = 1 if wine *i* obtained 4.5 *WINE* magazine stars; 0 if otherwise.

W^{5} = 1 if wine *i* obtained 5 *WINE* magazine stars; 0 if otherwise.

As a consequence of the interim methodology outlined above, in *Chapter Five* non-ordinal valuation models are derived for blind and sighted valuations of red and white wines and, for ease of reference, these appear in the Tables 6.2 and 6.3. As can be noted in the equations above, no bottle cues or supply side factors are accounted for other than those implicit in the (sighted) ratings themselves. The red and white models are thus styled upon either sighted or blind quality ratings, and nothing else. Treating each wine on its individual merit, *Chapter Five* demonstrates the bias-reducing effect of employing dummy variables instead of ordinary linear calibrations. This dummy-style approach thereby addresses the central flaw in the linear modelling technique: that it cannot adequately price wines of exceptional quality. Figures 6.1 and 6.2 depict the scattergrams of the consequent blind/generic and sighted valuation models for the white wine sample.

Spliced together with the appropriate price-data, the derived non-ordinal blind and sighted valuation models can be used to solve for the brand premium or 'part worth' attendant with either the price-premium or the quality-premium methods of brand valuation – as in equations (6.1) and (6.2) cited earlier. I.e.:[4]

$$\textit{Value of Brand Premium} = \textit{Brand price} - \textit{Intrinsic value.} \tag{6.1}$$

or

$$\textit{Value of Brand Premium} = \textit{Value of brand's perceived sighted quality} - \textit{Intrinsic value.} \tag{6.2}$$

[4] As an additional note on the derivation of premiums, when using the *price premium method*, from equation 6.1 we should note (a) that the fitted values of the *blind*-based regression models (featured in Tables 6.2 and 6.3) are taken as an estimate of intrinsic value (*DVIQ*) and (b) that the individual pricing deviations from this relationship of best fit (ε_{blind} for each wine) represent the magnitude of the relative mispricing in the blind pricing model. For the dummy valuation of intrinsic quality for each wine, this implies that: $DVIQ = price - \varepsilon_{blind}$ ... and hence that $price - DVIQ = \varepsilon_{blind}$. Since this last expression is merely a reconfiguration of equation 6.1, accordingly, we can say that when using the *price-premium method*, the brand premium constitutes no more than the magnitude of the blind model's mispricing, in other words, the error term (ε_{blind}). Applied to the *quality premium method*, an equivalent manipulation of equation 6.2 reveals that the quality-based brand premium equates to the difference between the blind and the sighted error terms: $\varepsilon_{blind} - \varepsilon_{sighted}$. From this we can conclude that the quality premium approach is *identical* to that of the price premium approach, *less* the mispricing of sighted valuation model; $\varepsilon_{sighted}$. Hence, should the sighted pricing models be less volatile than those of the blind, (as an inspection of the adjusted R^2's of the blind and sighted models depicted in Table 6.2 and 6.3 already indicates), then the output of *quality premium* method should thus also be less volatile than that of the *price premium* method.

7

SYNTHESIS OF KEY FINDINGS

The organisation of this final chapter is as follows. Section 7.1 reviews the context in which this thesis is located. Respectively, sections 7.2 and 7.3 move on to present a summation of key findings and a consideration of significance. Section 7.4 concludes with a discussion on limitations and potential avenues of future research.

7.1. The Context Reviewed

As it applies in particular to brands, this thesis notes the ongoing consolidation of consumer-driven perspectives within marketing theory. Wood (2000) observes, for example, that where once the view of brands was dominated by a company-facing orientation with emphasis on visual 'trade-mark style' features, increasingly the contemporary emphasis of brand equity has shifted to the domain of the consumer's mind. Therefore, it is within the context of the pivotal role that consumers play in the contemporary conceptualisation of brand-equity, and the ongoing adoption of demand-side perspectives in the pricing of wine, that this thesis identifies its primary problem of valuing South African wine brands.

While this exercise might make overriding intuitive sense, a philosophical disconnect between the fields of marketing and financial accounting complicates matters. "Accountants," as Wood (2000: 662) observes, "tend to define brand equity differently from marketers, with the concept either being defined both in terms of the relationship between customers and brand (consumer orientated definitions), or as something that accrues to the brand owner (company orientated definitions)". As an overview of the financial and accounting literature makes further apparent, entrenched financial accounting techniques applied to the valuation of brands appear by virtue of the underpinning discipline to be overly company-orientated and, consequently, sometimes too broad or too crude to be successfully applied to such consumer-driven constructs as brands. With respect to valuing South African wine brands as defined from a consumer perspective, this has clearly proven to be so. Applied to wine brands, traditional company-driven valuation models have proven simply unworkable.

It is thus within the context of a convergence toward consumer perspectives on marketing in general and branding and brand equity, in particular, that the import of the findings of this thesis may be reflected.

The primary aim of this thesis is to value legitimate wine brands using a combination of the generic net-present-value (NPV) styled brand-valuation procedure and an appropriate set of wine-valuation models. Its solution, as noted in *Chapter One*, requires the prior rendering of two sub-problems, namely: (1) the identification of statistically significant South African wine brands, and (2) the modeling of wine prices emanating from a dataset containing such wine brands.

A summation of the findings pertaining to each of these three interlocking problems follows below.

7.2. Summation of Study Findings

7.2.1. The identification of statistically significant South African wine brands

In the first of three empirical analyses, *Chapter Four* tested the brand construct as a potential extrinsic cue-effect. Using blind and sighted versions of hedonic quality, the analysis specified placebos as symbolic brands and so sought to identify these and their functional equivalents within a landscape of South African wine brands. Functional brands, as per Bhat and Reddy (1998), are those that present with statistically significant (and hence predictably consistent) assessments of (blind-tasted) intrinsic quality. In contrast symbolic brands are those associated with statistically significant differences between intrinsic and (sight-tasted) extrinsic merit. This *sighted-to-blind* differential is generally employed when available functional attributes alone cannot completely explain the sighted assessment of a brand's intrinsic merit. This conceptualisation corresponds with the value-added view of brand equity, and is consistent with much of the literature seeking to interpret extrinsic cues as non-medical placebos (see Plassmann, *et al.*, 2008). To date, the price-cue has been identified as one of the principal moderators of a wine's inherent efficacy.

A series of econometric analyses applied to some 8225 wines, sampled over the eight year period from 2000 to 2007, reveal how particular winery reputations impact consistently on the sighted-to-blind quality differential, presenting thus as placebo effects. Others do not. This study reasons that such placebos are founded on some pre-existing knowledge or expectancy of consistent intrinsic quality, and thus functional

and symbolic brands are respectively identified. A higher proportion of functional-to-symbolic brands is identified here (148 to 72 respectively). Read as a cross-section within an ongoing developmental process, this asymmetric distribution appears sensible since not all functional brands produce symbolic placebos.

Further inspection of the respective functional and symbolic regression models suggests a bi-polar clustering of positive to negative brand effects. Negative brands effects are largely symptomatic of wines lacking, either in intrinsic quality (in the instance of functional brands), or in sufficient and appropriate marketing (in the instance of symbolic brands).

Also considered is a class of 35 brands that presents *simultaneously* with both functional *and* symbolic brand-effects. This brand-set possesses elements of both intrinsic consistency (a requirement when interpreting brand equity as a signalling phenomenon), and placebo (as proxied by a consistent sighted-to-blind taste differential.) Again, clustering is observed, with these 35 brands decomposing into two distinctive zones. The smaller *Zone of Symbolic Values* (n=9) is characterised by negative functional brand effects and positive symbolic ones. In contrast the second, and larger, *Zone of Functional Values* (n=26) presents the opposite: a span of negative symbolic brand effects coupled with positive functional ones.

In graphing the above two zones relative to their intrinsic blind to sighted-minus-blind scores, a provisional structure to this class of *simultaneously* symbolic and functional brands emerges; with no brands appearing to occupy the middle ground between these two zones, and each located approximately one standard deviation left and right of the mean intrinsic score of the grand-sample.

7.2.2. The valuation of a cohort of South African wines using hedonic pricing techniques

Having identified statistically significant wine brands, the task remained of valuing them appropriately. The establishment of properly specified consumer-facing pricing models was critical to this exercise and this, along with an exploration of the relationship between wine price, wine value and value-for-money, formed the focus of the second empirical chapter. Here a series of regression models was developed from a database of some 1358 South African red and white wines available during the 2007 period. With the underpinning hypothesis that successive increments in wine quality ratings are not equally priced, the analysis presented in *Chapter Five* sought to value wines using a combination of blind and sighted wine

assessments. The rationale throughout was one of producing a demand-side account of wine values that computes and identifies wines offering optimal value-for-money. Specific to this account is a view that wine value, and in particular value-for-money, is, and will increasingly, become paramount in the eyes of the consumer.

An analysis of this section's statistical output suggests that dummy-styled modelling techniques do much to address the problems associated with linear pricing models. This conclusion is conditioned however by the deployment of acknowledged consumer-facing market sources based, in this instance, on the ongoing tasting record of popular wine critics. The emergent pricing models are thus based solely on consumer versions of quality. Treating each wine on its individual merit, this chapter reveals the bias-reducing effect of substituting conventional linear calibrations with binary or dummy variables. This measure adequately addresses the appropriate pricing of wines of exceptional quality: a singular failing in the earlier van Rensburg and Priilaid analysis of 2004. So doing, the findings of this *Fifth Chapter* indicate that bargain wines can be acquired as much at the top end of the value (or quality) spectrum as at the bottom.

7.2.3. The valuing of statistically identified brands using a combination of NPV and non-ordinal hedonic pricing techniques.

The third and final empirical analysis sought to establish a means by which statistically merited wine brands could be valued. Here the selfsame dummy-style approach to price modelling was further employed as part of a synthesised technique to value the wine brands identified in C*hapter Four*. In so doing, two wine brand valuation techniques were identified and contrasted. In conjunction with conventional net-present-value style (NPV) company valuation methods, these techniques are founded on the use of the non-ordinal wine valuation models developed subsequently in *Chapter Five*.

Based on a wine's price premium, the first of these techniques specifies brand equity as the difference between a wine's price and a valuation of its intrinsic worth. Such valuations are derived from scores of blind-based wine tastings and do not contain any extrinsic bias. A product's price premium, commonly regarded as a measure of the extent to which a consumer is willing to pay for a product over and above its intrinsic value, can thus be held as a measure of consumer loyalty. The second technique specifies brand

equity as the difference between intrinsic value and, instead of price, the value of a wine's *perceived quality* on sighted assessment. Though somewhat coarser than the former technique, a valuation of this form can also serve as a proxy for consumer preference when contrasted with the valuation of a generic wine product of similar quality.

By sensibly valuing both versions of brand equity, this third and final analysis considered the degree to which a branded wine is trading over and above its value merely as a non-specified bottle of similar quality. In doing so, it noted that symbolic brands can only be valued when presenting *concurrently* as functional brands that is to say, with consistently determinable levels of intrinsic quality. In the process of valuing 35 wine brands that conform to this specification the two brand valuation methodologies were deployed and contrasted.

Invoking the quality premium method, positive intermediate valuations were noted in 11 out of the 35 brands. Six of these are red blends; four flagship brands. The widest difference between sighted and blind valuations accrued to top quality red wines at just over R50 per bottle.

In contrast 14 positive intermediate valuations were noted using the price premium approach. Again six of these are red blends flagship brands. Extreme valuations are observed at both ends of the price premium sample, the largest being calculated at over R600 for a bottle of Vergelegen *V*. In contrast to the quality premium-based valuations, the spread of these estimations is extreme, suggesting that this method is perhaps less conservative and more unpredictable.

On computing the full NPV value of each brand a price premium mean valuation of R 19.7 million is noted. This is three times greater than the average derived from the quality premium technique. The respective standard deviations are also reflective of the inherent volatility of the price premium approach. In both instances the stricture of perpetuity is perhaps too excessive for sensible valuations. By comparison, a ten-year time horizon yields brand asset values roughly seventy per cent of the size. Time periods of this order are probably more accommodating of cyclical nature of the wine industry.

7.3. Significance of Findings: contribution to literature

With respect to the identification of brands:

Given the theoretical functional-to-symbolic branding framework of Mowle and Merrilees (2005), this study sought to determine, empirically, the scale, character, and distribution of a given set of functional and symbolic brand effects. Specifying symbolic brands as placebos, two such sets were identified; the set of functional brands presenting with twice as many as the set of symbolic brands. So doing, this study confirmed the existence of two brand zones, noting how the smaller *Zone of Symbolic Values* is characterised by negative functional brand effects and positive symbolic ones, while by contrast, the larger *Zone of Functional Values* contains a set of negative symbolic brand effects coupled with positive functional ones. This functional-to-symbolic typology confirms and extends the literature on brands in general (Bhat and Reddy, 1998), and wine brands in particular (Mowle and Merrilees, 2005).

With respect to hedonic wine pricing techniques:

Proceeding from the van Rensburg and Priilaid (2004) econometric valuation methodology which mapped out the linear relationship between wine price and value, this study sought to address some of the key areas of weakness implicit in the linear approach, most especially its tendency to undervalue upper-quality wines. So doing, this study demonstrated that a better bias-reducing form of wine-price modelling can be derived (1) when conventional linear calibrations are replaced by dummy variables, and (2) when disaggregated customer-facing wine data is employed. Using a substantially larger and updated dataset, this study confirms the study of Priilaid van Rensburg (2006) which initiated the non-linear analysis.

With respect to the valuation of wine brands:

While the historic cost and market driven approaches are unsuitable to the valuation of wine brands, given the possibility of locating cash flows legitimately attributable to a wine brand, an adapted DCF approach does become viable. Adopting this line of attack, this study deploys two adapted residual techniques, each of which employs non-ordinal wine valuation models to locate and quantify the intangible brand-related component remaining once intrinsic product features have been deducted. The first of these techniques

specifies brand equity as the difference between a wine's price and a valuation of its intrinsic worth. The second specifies equity as the difference between intrinsic value and the value of a wine's perceived quality on sighted assessment. While neither of these approaches is in and of themselves new (each deriving from Aaker (1996)), the *adaptation* of these techniques within the DCF framework does represent a unique contribution to the valuation literature, most especially within the field of wine.

7.4. Significance of Findings: practical implications

With respect to the identification of brands:

1. For the first time, blind and sighted tasting results are collated into one comprehensive sample of South African wines and statistically interrogated for the purposes of notifying brand effects. The findings of this study demonstrate how, when tasting wine sighted, we are deleteriously distracted by the apparent efficacy of extrinsic brand cues.
2. With the ability to calibrate and scale symbolic brand-effects, as demonstrated in this thesis, notified wine producers can now know what proportion of their product's sight-driven appeal can ably be ascribed to a brand's placebo as opposed to the underlying quality. Consequently, their marketers may more knowledgably amplify (or, where appropriate, down-play) the label-cue.
3. The implied development of a brand-analytics model that can identify, quantify and rank non-conscious brand-effects, will also enable wine companies to better understand what constitutes a wine brand and how these might ably be identified across various price and market strata.
4. Wine brand analytics also present the possibility of identifying 'non-brands' with their associated negative functional or symbolic brand effects. Wineries on this 'negative' brand list can now identify themselves and rectify matters accordingly. For brands with negative symbolic effects remedial strategies might include an increase in promotion and advertising. Conversely, wineries with negative functional effects could consider ways to increase significantly the intrinsic quality of their produce, or, more radically, consider planting alternate varietals.
5. Within South Africa at least, much media noise is made by upstart 'me-too' wines that self-proclaim their status as brands. With no viable means to test these claims, and a wine media largely driven by ad-spend, the industry at large can often appear self-serving and prone to self-promotion and hubris. The methods employed in this study will do much to check such assertions.

With respect to hedonic wine pricing techniques:

1. Allowing for the possibility of the non-linear hedonic pricing of wine, avoids the bias of value-for-money misleadingly being identified excessively at the bottom end of the quality spectrum and neglected at the top end.
2. Given information on varietal and star ratings, non-ordinal models can be employed by producers for wine pricing, as much as by consumers for identifying value-for-money wines.
3. The application of valuation models indicates how value-for-money can be acquired at both ends of the price continuum. For liquor retailers this presents the opportunity of pre-emptive shopping off the value frontier – these wines to be sold onto the public on volume via promotional catalogues and the like. Retailers like Ultra-Liquors are already doing this. As the public becomes increasingly attuned to these bargain-shopping opportunities, other retailers are likely to follow.
4. As retailers move increasingly to identify value-for-money, it is likely that, with the exception of top wine brands, wines priced excessively beyond their quality-based valuations are likely to suffer price-dents.
5. Similarly, wines presenting consistently on the value-frontier can legitimately anticipate an upward adjustment in price. This is so especially for under-priced wine brands located in the zone of functional value. For the quality they deliver, these wines deserve better pricing. Apt examples here include: the red-blends: Glen Carlou *Tortoise Hill* and the Vergelegen *Millrace*. Other such wines can be identified through their negative brand premiums in tables: 6.4 and 6.5.

With respect to the valuation of wine brands:

1. In the instances in which brand effects are legitimately identified, this study enables their quantification, valuation and financial reportage. It is, however, worth noting that candidate brands were only considered for valuation if they presented with a minimum six-year period of assessment. This specification is arbitrary and could in future be reduced to three, four or five years. One can speculate that, under such conditions, more symbolic and functional brand effects are likely to be identified. This being so, subsequent brand valuations should *also* be tied, or at least, correlated to the period of their statistical consistency. A brand that presents with three years of stable quality can certainly not expect valuations based on earnings excessively beyond such a period. Industry debate as to an appropriate period of brand gestation is anticipated.

2. A technique that can identify statistically significant wine brands and appropriately value them now provides brand-owning producers with a route to determine the value of their firms and thus improve their consequent ability to raise company loans.
3. With the means developed to identify valid symbolic and functional brand effects, appropriate milestones for the development of brands can now be laid down along with the attendant strategies for their attainment. While this will enable the setting of industry standards, a word of warning is appropriate. On two counts this study notes that functional brands are easier to value than symbolic ones. Firstly, there are more of them[1] and, secondly, their valuation by way of the more volatile price premium technique requires no attached condition of placebo. Sight-based valuation models are hence not required. Such ease of execution could precipitate industry practice defaulting to this lesser species of valuation. With such practice the risk exists that consequent brand values are equated to those of symbolic placebos. Such brand class conflation should be closely monitored. Functional brands are the lesser evolved cousins of symbolic brands.
4. This said it seems likely that the deployment of either of these two valuation techniques will depend on the actual application. One could argue for example that stable measures of brand equity over several years could be better gauged using the quality premium method. Alternately, the rapid sale of a winery might anticipate the price-premium method instead. For a more balanced perspective, perhaps sifting between these two techniques might yield a more sensitive calculation.
5. At a broad level, this study's application of hedonic pricing to the valuing of wine brands demonstrates a means by which a consumer-perspective can be applied ably within the traditionally company-facing discipline of financial accounting.

7.5. Limitations and Future Research

Within the discipline of wine marketing, and marketing in general, some effort is required to refine further the constituent characteristics of the functional and symbolic brand zones identified herein. Given time, further analysis will reveal the rate and conditions under which symbolic brands mutate from their functional underpinnings to become placebos. Since our understanding of these neurological processes is still limited, it remains uncertain as to how the brain enables a functional-to-symbolic cue transition. By way of redress, with sufficient historical data we could, for example, imagine an empirical study detailing the nature of and rate in which certain brand characteristics evolve from one time period to the next.

[1] In this study functional brands outnumbered their symbolic counterparts by 148 to 72.

Similarly a valuation study modelling the potential for brand-premium decay over time would also prove useful. What rate of decay is appropriate – and how should this rate then be gauged? Answers to such questions would provide a meaningful contribution to the existing literature. Clearly then, as our understanding of brand morphology develops, so too must the depth of our quality-based datasets. While the 2000 to 2007 database has served as a fertile statistical source, it remains to be expanded.

An additional avenue of potential research might be an investigation into why certain consumers engage in the practice of buying alternative competing brands. Within this 'brand-churn' phenomenon one might interrogate the constituent characteristics of these more marginal brands. More so, one might also investigate the type of consumer and their motivations that underpin the purchase of 'change of pace' brands (see Jarvis and Goodman, 2005), bought occasionally or simply as a once off. What is it, within the psychology of these consumers, that provokes this brand 'diversification' strategy and under what conditions may such levels of 'promiscuity' prevail?

Commerce-specific observations aside, further enquiry into the neurology of how we respond to general hedonic stimuli will clarify the extent to which the distinctive two-zone model mapping the *functional* to *symbolic* relationship applies *across* discipline boundaries. Care should, however, be taken not to interpret the placebo effect merely as a commercial heuristic. At a fundamental human level, it forms the basis of bias and prejudice, belief and faith, and is a major mediator of the human condition.

APPENDICES

	Blind scores for Cabernet											
Vintage	**5**	**4.5**	**4**	**3.5**	**3**	**2.5**	**2**	**1.5**	**1**	**0.5**	**0**	**Total**
1995				1	1							**2**
1996				1	1	1						**3**
1997		4	8	5	30	1	30		7		2	**87**
1998		3	17	15	36	1	50		7		2	**131**
1999		3	6	25	38	16	29		13			**130**
2000		3	8	20	31	14	17		10		1	**104**
2001			9	9	26	39	19		16		1	**119**
2002		3	11	15	24	29	23		14		1	**120**
2003		4	18	18	23	22	18		5		3	**111**
2004			10	11	40	24	8	1	2		1	**97**
2005				6	5	7	3		5			**26**
2006							1					**1**
2007												**0**
NV											1	**1**
TOTAL	**0**	**20**	**87**	**125**	**254**	**154**	**198**	**1**	**79**	**0**	**11**	**932**

Table A.1: Cabernet wines: the distribution of blind scores per vintage (n = 932).

	Blind scores for Merlot											
Vintage	**5**	**4.5**	**4**	**3.5**	**3**	**2.5**	**2**	**1.5**	**1**	**0.5**	**0**	**Total**
1995					1		1					**2**
1996				1	2		3					**6**
1997		1	3	3	6	1	8		4			**26**
1998		4	7	7	29	4	22		3			**76**
1999		1	8	19	28	5	23		6			**90**
2000		2	3	15	32	18	19		6		1	**96**
2001		1	7	13	37	26	17		10		1	**112**
2002			2	10	28	23	16		9		1	**89**
2003		1	5	15	26	26	17		6		3	**99**
2004			5	9	15	16	26	1	20		6	**98**
2005			1	3	7	11	7		1			**30**
2006						2						**2**
2007												**0**
NV							1					**1**
TOTAL	**0**	**10**	**41**	**95**	**210**	**132**	**158**	**1**	**65**	**0**	**12**	**727**

Table A.2: Merlot wines: the distribution of blind scores per vintage (n = 727).

	Blind scores for Pinotage											
Vintage	**5**	**4.5**	**4**	**3.5**	**3**	**2.5**	**2**	**1.5**	**1**	**0.5**	**0**	**Total**
1995												**0**
1996												**0**
1997			2		1		1					**4**
1998		4	8	13	14	2	27		6			**74**
1999		3	10	12	36	2	37		6		2	**108**
2000		2	10	12	27	13	28		8		3	**103**
2001			10	14	33	27	24		9		2	**119**
2002			6	13	18	27	25		14		2	**105**
2003			3	8	34	34	23		8			**110**
2004		1	5	16	18	26	21		16		7	**110**
2005			6	3	15	18	13		6		1	**62**
2006				1	2	4	3					**10**
2007					1							**1**
NV												**0**
TOTAL	**0**	**10**	**60**	**92**	**199**	**153**	**202**	**0**	**73**	**0**	**17**	**806**

Table A.3: Pinotage wines: the distribution of blind scores per vintage (n = 806).

	Blind scores for Pinot Noir											
Vintage	**5**	**4.5**	**4**	**3.5**	**3**	**2.5**	**2**	**1.5**	**1**	**0.5**	**0**	**Total**
1995												**0**
1996					1							**1**
1997				2	1		7		2			**12**
1998				1	4	1	3		2			**11**
1999			1	2	7		4		1		1	**16**
2000			2	2	4	6	6		1			**21**
2001			2	3	8	4	3		4		1	**25**
2002			2	1	8	2	1		3		1	**18**
2003		1	1	3	6	9	5		1		1	**27**
2004			4	2	5	4	6		1		1	**23**
2005			2	1	4	3	1		2			**13**
2006					1							**1**
2007												**0**
NV												**0**
TOTAL	**0**	**1**	**14**	**17**	**49**	**29**	**36**	**0**	**17**	**0**	**5**	**168**

Table A.4: Pinot Noir wines: the distribution of blind scores per vintage (n = 168).

	Blind scores for Shiraz											
Vintage	**5**	**4.5**	**4**	**3.5**	**3**	**2.5**	**2**	**1.5**	**1**	**0.5**	**0**	**Total**
1995				1								**1**
1996					3		3					**6**
1997		1	2	3	8		7					**21**
1998		6	9	6	21		20	2				**64**
1999		4	9	16	23	3	20		4		4	**83**
2000		3	19	16	37	16	22		11		1	**125**
2001	1	6	21	19	27	16	28		6		3	**127**
2002	1	2	23	35	40	31	25		17		3	**177**
2003	1	5	19	26	53	29	26		13		4	**176**
2004		2	9	24	44	52	43		21		4	**199**
2005		1	11	9	35	25	22		8		1	**112**
2006					4							**4**
2007												**0**
NV							1					**1**
TOTAL	**3**	**30**	**122**	**154**	**295**	**172**	**217**	**2**	**80**	**0**	**20**	**1096**

Table A.5: Shiraz wines: the distribution of blind scores per vintage (n = 1096).

	Blind scores for Red Blended wines											
Vintage	**5**	**4.5**	**4**	**3.5**	**3**	**2.5**	**2**	**1.5**	**1**	**0.5**	**0**	**Total**
1995			1		1							**2**
1996			1		4		4		1			**10**
1997	1	2	8	10	16		13		6			**56**
1998	1	3	12	30	25	3	24		5		2	**105**
1999		8	15	20	38	6	40		14		1	**142**
2000		1	18	14	33	23	34		14			**137**
2001		3	8	24	33	31	36		13		3	**151**
2002		2	12	23	62	59	37		16		1	**212**
2003		2	29	41	56	54	49		13		3	**247**
2004		1	23	32	54	52	39		17		4	**222**
2005			10	11	44	30	16		3		2	**116**
2006				2	6	6	6		1		1	**22**
2007												**0**
NV					3	3	13		10		3	**32**
TOTAL	**2**	**22**	**136**	**207**	**374**	**267**	**311**	**0**	**113**	**0**	**17**	**1454**

Table A.6: Red Blended wines: the distribution of blind scores per vintage (n = 1454).

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