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BETTER OFF DEAD? PRICES REALISED FOR AUSTRALIAN PAINTINGS SOLD AT AUCTION

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Better off Dead? Prices Realised for Australian Paintings Sold at Auction

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Abstract: Using auction sales data on Australian paintings over the period 1995 and 2003 we investigate the relationship between artists' living status and the price of paintings sold at auction. For deceased artists we consider the time since their death and for living artists their conditional life expectancy. Hedonic regression analysis is applied separately to the data on Indigenous and non-Indigenous paintings. Comparing the modelling results across Indigenous and non-Indigenous paintings we see evidence of two different patterns of response to an artist's living status. Both yield non-linear impacts but for Indigenous paintings these are quadratic and for non-Indigenous they are quartic. Thus the response to living status in the more recent market for Indigenous paintings is different to the more established market for non-Indigenous paintings. Whilst the responses differ for the two types of paintings, in answer to the question posed and in terms of the price of a painting at auction an artist is better off long dead or close to death.

Keywords: Australian paintings, Indigenous paintings, auction prices, death, conditional life expectancy.

JEL Classification: Z11

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1. Introduction

What effect does the death of an artist have upon the price of paintings that are sold at auction? This paper addresses this question empirically with econometric analysis applied to sales from the Australian secondary market. To investigate the effect of death upon price both sales by living and deceased artists are considered to enable comparison. It is hypothesised that living status information is important for determining price as it conveys to potential buyers of art, supply conditions connected with the source of art, namely, the artist. Numerous studies show that artist, art work and auction characteristics have a significant impact on the market valuation or price of works auctioned. Some of these studies include Anderson (1974), Agnello (2002), Agnello and Pierce (1996), Buelens and Ginsburgh (1993), Czujack (1997), De la Barre, et al (1994), Nahm (2010) and Worthington and Higgs (2006) who also consider the top end of the Australian market. Other price determination studies including those by Ekelund, et al (2000) and Maddison and Pedersen (2008) explore the effect that an artist's death has upon auction prices. The findings from these studies suggest prices tend to rise most notably for a relatively short period following the death of an artist before falling. Ursprung and Wiermann (2011) find that the impact of the death of an artist declines over time but is also dependent upon the age of the artist at death. In a related study Matheson and Baade (2004) explore the relationship between death and the price of sports trading cards, which like art are collectable assets. They find evidence of what is described as a nostalgia effect on the price of cards featuring famous baseball players, following the player's death. Matheson and Baade describe this nostalgia effect as a transient phenomenon where higher prices are caused by a surge of renewed interest, when the subject dies and as interest falls away, so too does demand and prices then fall.

In considering the living status of an artist and how this influences supply conditions we must bear in mind that for living artists the supply conditions of their work change gradually as the artist ages and their life expectancy shortens (Ginsburgh and Weyers (2006), Hutter, et al (2007) and Ursprung and Wiermann (2011)). The event of an artists death significantly impacts supply conditions as once an artist dies supply of their works becomes fixed and the supply curve for works by the artist becomes perfectly inelastic. No new works will be created for the market, although existing works will continue to be traded and circulate in art markets.

Perhaps even more marked than the change to supply after an artist's death is the more transient change in demand that occurs. The death of an artist has some interesting

implications for the demand side of the market as tastes and expectations are influenced by the news of an artist's death and the publicity that often accompanies this event. The death effect is of interest as both demand and supply conditions change following an artist's death, which both serve to influence the auctioned price of art.

Using a hedonic approach, which is capable of accounting for quantifiable characteristics associated with the work, the artist, and the sale, a series of models is used to consider how death and the time elapsed since an artist's death influence price for paintings sold at auction. Similarly, for sales of paintings by living artists, the effect of the artist's conditional life expectancy upon price is tested. There are some unique features of the data used in this study in terms of their depth of coverage and completeness which enables a comprehensive investigation of the effect of an artist's living status upon price. For instance, one notable feature of the data is that it reflects all sales by artists with Australian nationality recorded in Hislop's Art Sales Index (2003). In this sense the data truly reflect the secondary Australian market defined on this criteria basis and includes sales by a large cohort of Australian artists including both well known, at least in Australia, and also little known artists, and hence provides an accurate representation of the whole cross-section of the Australian secondary market.

An interesting feature of the Australian art market is that there exists a large proportion of sales of what can be termed Indigenous or Aboriginal painting which represents a niche market and a distinct collecting category of art that has global appeal. As Indigenous paintings are distinct from the rest of the Australian market in terms of characteristics associated with the style, form and theme of paintings it is of interest to test whether, and if so how, Indigenous paintings differ from the rest of the market in relation to how prices are formed. Indeed, as Ginsburgh, et al (2006) note, factors influencing prices (and returns) can vary dramatically across different categories within an art market. Given some of the intrinsic differences that exist between Indigenous and non-Indigenous paintings in not only theme and style, but also in relation to the circumstances of the artists who created the works, we choose to consider Indigenous and non-Indigenous paintings separately in our analysis. This provides insight into how the living status of an artist influences price for both Australian Indigenous and Australian non-Indigenous paintings. Thus, this study adds to the existing literature by applying the hedonic regression approach to Australian data and focuses upon differences between the Indigenous and non-Indigenous paintings.

In the following section of this paper, the paintings, artists and auction houses are described. The description of the data is presented to reflect the Australian art market considered on the basis of distinction made between Indigenous and non-Indigenous painting. In Section 3 a number of hypotheses in relation to the living status of an artist and the price of art are presented. Section 4 outlines the methods used. Rather than modelling supply and demand separately, the approach taken is similar to that used in many other studies dealing with heterogeneous goods where a hedonic price function is estimated. In Section 5 the empirical results from the modelling are presented and analysed. The paper closes by drawing a number of conclusions and suggests avenues for further research.

2. Description of the Data

The data used in this paper were sourced from Hislop's Art Sales Index (2003). Covering the nine year period from 1995 to 2003, sales records of all paintings by artists with Australian nationality and whose living status was known were extracted. This process yielded 23,190 sales observations, 3,217 of which were for paintings by Indigenous artists while the remaining 19,974 observations were paintings by non-Indigenous artists.

<Table 1 about here>

The share of sales by Indigenous paintings reflected in the secondary market stands at around 14 per cent. This closely matches Indigenous art's share of private gallery sales where, according to the Australian Bureau of Statistics, ABS (2001), in the 1999-2000 financial year 16 per cent of all Australian art sold in Australian commercial galleries was categorised as Indigenous art.[1] The high level of representation by Indigenous artists and their works on the Australian art market is noteworthy given the share of Indigenous people in the overall Australian population is around 2.4 per cent according to ABS (2004) estimates. That is, Indigenous art and the contributions by Indigenous artists are represented far more within the data than one would expect based on the census proportions. This over-representation of Indigenous artists within the data is encouraging when we consider that it is more common to

[1] When comparing total secondary market sales for Australian art over the period 1999-2001 against the ABS (2001) commercial art gallery survey data for 1999-2000 it is interesting to note that around a third of Australian sales occur on the secondary market, as secondary market sales are valued at approximately US$28.8 million compared to primary market sales which are valued at approximately US$87.5 million over the same period.

find the Indigenous population over-represented in social statistics that have negative connotations and social implications.[2]

We now turn our attention to summarise the data in terms of the artist, painting and auction level attributes that form much of the set of explanatory variables incorporated into the hedonic models that are applied. Table 2 provides a descriptive summary of characteristics associated with the artist, the painting and the auction for the paintings sold on the secondary market over the period for the Indigenous and non-Indigenous paintings, which when aggregated, represent the Australian market.

<Table 2 about here>

From the artist level attributes we can see there is a large cohort of artists responsible for creating the works reflected in the secondary market data. Almost half of the 1,493 individual artists for whom their living status details are known were deceased by the end of the 2003, with works by these deceased artists comprising almost 60 per cent of works sold and accounting for just over 70 per cent of the total value of all auction sales of Australian art.

Features associated with the physical qualities of the paintings themselves are important in helping to understand price. The type of media and medium used by the artist need to be considered as these not only impact the costs of production in creating works, but perhaps more importantly they convey information to potential buyers as to the degree of archival soundness a particular work might have. For instance, a painting executed on bark using pigments which is commonly found in traditional Indigenous or tribal art, is far more likely to warp and deteriorate at a much faster rate than say one executed using oil on canvas.

The auction house attributes which describe the sale of paintings are the third cluster of characteristics. The descriptive statistics concerning auction attributes tell us clearly about the major players in the Australian market.[3] The dominance of Sotheby's and Christies is hardly

[2] Social and economic problems experienced by Australia's Indigenous population are reflected in high rates of substance and alcohol abuse, domestic violence and unemployment and relatively low life expectancy, literacy levels rates (etc.). For further information on the state of Indigenous disadvantage in Australia refer to SCRGSP (2009) *Overcoming Indigenous Disadvantage: Key Indicators 2009.*

[3] For the sample period the auction market for Australian art was dominated by the two major international auction houses Sotheby's and Christies, with the locally based auction house Deutscher Menzies gaining increased market share over the period following its entry into the market in 1998. Since the period of this study there have been some major shake-ups in the Australian auction market including in 2006 when Christies

surprising given their long established reputations. Previous studies including most notably De la Barre et al (1994) and Førsund and Zanloa (2006) have interpreted price premiums associated with the leading auction houses as indicative of the quality of the works they attract for sale. Another feature of the data is that overwhelmingly sales occur within the domestic market. Over 95 per cent of sales measured both in terms of volume and valuation take place within Australia where the two largest capital cities Sydney and Melbourne are dominant. Within the data, the highest valued painting is the Australian Impressionist work by the famous Heidelberg School artist Frederick McCubbin entitled *Bush Idyll* which was sold in Sydney by Christies in 1998 for AUD$2.1 million.[4]

3. Living Status Effects and Art Prices

The rationale underlying the hypothesis concerning why the event of an artist's death may temporarily increase price is that around the time of an artist's death there is increased and renewed interest in the artist. This renewed interest is short term in nature as the news of the artist's death is absorbed by the public and the market. If the artist is sufficiently acclaimed then with the passing of time their works will maintain or increase in value. On the other hand, paintings by lesser-known artists may fade out from the market as they depreciate to become worthless and cease to be traded due to their loss in value relative to the transaction costs associated with placing them up for sale.

There are distinct forces at work when an artist dies that influence both supply and demand. Firstly, we can think of a death effect in terms of providing a limit to supply that serves to make the total available supply of an artist's works perfectly inelastic. Thus, the rate at which works from an artist's oeuvre of work is turned over becomes the crucial factor driving secondary market sales. Secondly, there are demand side implications following an artist's death. For more famous artists news of their death is likely to renew broader interest in them and their works serving to pick up demand and further drive up prices. However, the demand side effect may operate quite differently for lesser known artists where death may actually

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announced it was to cease conducting regular auctions in Australia and also the sale of Sotheby's Australia in late 2009 to the Sydney businessman and auctioneer Tim Goodman. Also as a result of a further series of mergers the presence of Deutscher Menzies in the market has been consolidated and now trades under the umbrella of Menzies Art Brands.

[4] Recently a new record high price was achieved at auction for the iconic work entitled *First-Class Marksman* by Sidney Nolan which is part of his famous Kelly series of paintings painted in 1946. The work was auctioned in Sydney on 25 March 2010 by Menzies for AUD$5.4m.

contribute to render an artist and his work obsolete, particularly as this means that the artist will no longer be in a position to actively contribute to the marketing and promotion of their work.

Indigenous artists are generally more removed from the formal art institutions and often are located in remote regions far removed from the pulse of the art market in large cities. Factors around Indigenous artists' remoteness coupled with social and economic disadvantage compared to the mainstream non-Indigenous population serve to complicate the process normally experienced in terms of how artists market themselves and their works to establish their reputation in the art market. It is postulated that the different circumstances Indigenous artists typically face in this sense may contribute to the art market placing a different valuation on information about the living status of an artist based on whether the artist is Indigenous.

For artists who are deceased their year of death was recorded and used to calculate the time elapsed since the artist death and the sale. This paper also considers the sales by living artists where the artist's conditional life expectancy becomes the central variable to reflect supply conditions. As such the relevant question for artists alive at the time of sale becomes what effect does their conditional life expectancy have upon price and how does this differ across Indigenous paintings compared to other paintings sold in the Australian market? For artists alive at the time of the sale, conditional life expectancy information was sourced from the Human Morality Database (2008) to work out the artist's conditional life expectancy at the time of the sale. The conditional life expectancy of the Australian population for the decade 1990-1999 is given in Table 3. The overall life expectancy data for the Australian population were sourced from the Human Mortality Database (2008) and are principally reflective of the non-Indigenous life expectancy while the source data for the Indigenous life expectancy data have been obtained from the ABS (2004) and are based on conditional modelling techniques using the Bhat (2002) method of experimental calculation.

<Table 3 about here>

From Table 3 it can be observed that Indigenous life expectancy is 20 per cent lower than that for the non-Indigenous Australian population which reflects the poor health outcomes for many Indigenous people and is indicative of Indigenous disadvantage. In Australia given the public policy objective to close the gap on Indigenous disadvantage across a number of socio-economic and health indicators, art markets have a clear role to play in aiding Indigenous

economic development. Ensuring appropriate incentives for Indigenous stakeholders including artists across both primary and secondary art markets is paramount given the natural linkages found by researchers including Altman and Hunter (2003) between social, economic and health indicators for Indigenous Australians. Art markets will play an obvious role in assisting Indigenous economic development which is also linked to some of the arguments in support of resale royalties for Australian art sold at auction.

4. Methodology

Hedonic models have widely been used in studies in cultural economics as well as in other areas of applied economic research. These models focus upon observable factors that help to explain price. Our hedonic price regressions take the form: $\ln(p_{it}) = \alpha + x_t'\beta + s_{it}'\gamma + a_{it}'\delta + u_{it}$. That is, the logarithm of the real price of painting *i* (in 2003 US dollars)[5] sold in time period *t*, $\ln(p_{it})$, depends upon the time invariant characteristics of the painting (x_t), on the time varying characteristics of the sale (s_{it}) and on the potentially time varying characteristics of the artist (a_{it}). We estimate two hedonic regressions – one for Indigenous paintings and one for non-Indigenous paintings. This reflects the fact that the two types of paintings differ substantially and that the price determination may differ between the two types.

Characteristics of the painting used in the models are the logarithm of the size (in metres squared) of the painting, a number of dummy variables representing the media and medium of the work, dummy variables to represent the type of painting (e.g. landscape) and dummy variables to refer to the date of creation of the painting. Sale characteristics used relate to the location of the sale (auction house, within Australia), the number of paintings sold in the year of sale, whether the sale occurs within a year of the artist's death (where applicable) and variables to reflect time trends (year "fixed effects" or time trend). Characteristics of the artist relate to gender, "fame" – whether the artist has works in the National Gallery of Australia – artist "fixed effects" for artists with a large number of sales in our sample period 1995 to 2003 and a number of variables concerning either time since death or conditional life expectancy. The exact sets of explanatory variables used for the two models (Indigenous and non-Indigenous) differ to reflect the differences in the type of paintings and in the determination of prices of the two types.

[5] A robustness check for potential foreign exchange effects was also conducted using nominal Australian dollars in the models with similar findings. Results are available on request.

To investigate whether price appreciation following an artist's death is a short term phenomena or whether prices remain high over a longer period following an artist's death is crucial to our understanding of how death influences price. This leads us to consider whether any effect on price associated with an artist's death mitigates as the time since death is extended. Consideration of the time passed since death and its relationship to price is important to reflect within the modelling, as a dummy variable to capture only whether the artist is living or deceased is not informative in understanding how living status influences price. The fact that works by artists who are long deceased even still appear at auction signals that the work is likely to be relatively valuable, given that with the passing of time most art declines in value to become worthless in the sense described by Grampp (1989).

Turning our attention to the paintings sold at auction by living artists, we must consider how the artist's life expectancy influences price. Life expectancy, rather than simply age, is used as it is more accurately able to reflect supply conditions related to the time an artist is expected to remain alive at the point of sale and hence is reflective of the artist's ability to create works into the future. This is relevant given gender differences in life expectancy between males and females and is especially significant given the substantial gap that exists in life expectancy between Indigenous and non-Indigenous Australians. It is important to note at this point that this paper does not test the effect of the age of the artist at the time of creating a work to see how this influences price (see for example Galenson and Weinberg (2000)) as, unfortunately, we lack detailed information as to the *year* of creation for many of the paintings in the data.

In our modelling for both the Indigenous and non-Indigenous paintings we test linear, quadratic, cubic and quartic death functions for either years since death (deceased artists) or conditional life expectancy in years (living artists). This allows for considerable flexibility in the response in price to the time since death or to conditional life expectancy. We use the Bayesian Information Criterion (BIC) to determine the appropriate degree of polynomial. Using this criterion we select the model with the lowest value of BIC.

5. Results

The purpose of the models is to capture the effect on price where the living status of the artist is a point of focus. Models are estimated with differing order of polynomials in time since death and conditional life expectancy. Our hedonic models are estimated by ordinary least squares and we select the specification with the lowest BIC.

<Table 4 about here>

From this we see that for Indigenous paintings the quadratic function and for non-Indigenous paintings the quartic function are preferred. Before discussing the living status results in detail we present and discuss the estimated hedonic models.

Our hedonic regression results for the Indigenous paintings are presented in Table 5 and for non-Indigenous paintings in Table 6.

<Tables 5 and 6 about here>

The models which include painting, sale and artist attributes are typical of those used in other art price determination and return studies. The characteristics that have been incorporated into the models reveal coefficients which, in magnitude and significance, generally conform to expectations. The focus of our analysis is the impact of artist's living status on price. However, before discussing those findings we briefly discuss the impact of painting, sale and auction characteristics on price.

For Indigenous paintings (Table 5) a number of painting' attributes are significant. Paintings on bark, *ceteris paribus*, sell for less. This may be due to the archival properties of bark. That is, it is far more likely to warp and deteriorate at a much faster rate than, say canvas. Larger paintings and traditional Indigenous work have higher prices as do paintings sold in the major auction houses, in Australia, and by "famous" artists. A result that differs from *a priori* expectations is the negative coefficient found on the dummy variable to indicate whether a work has been signed by an Indigenous artist. Although we can better understand this when we consider the fact that many valuable Indigenous works are tribal paintings whereby the identity of the artist is not such an important feature associated with the work. Also some of the controversy in the Indigenous art market that peaked in the late 1990s around authenticity and attribution of works by noted Indigenous artists, including Emily Kame Kngwarreye may help us understand why the market does not value a signature on an Indigenous painting the same as a signature on a non-Indigenous one. Our results for non-Indigenous paintings (Table 6) conform to *a priori* expectations. Significant positive price impacts are found for older paintings, oil paintings, paintings sold through the major auction houses, signed paintings and those by famous artists. Negative impacts are found for paintings on paper and executed in acrylic.

We now discuss what the models reveal to us about the effect of an artist's living status on price. Rather than discuss the estimated coefficients we consider the estimated polynomials

over the range of our data. These are presented in Figure 1 (for years since death for deceased artists) and Figure 2 (for conditional life expectancy for living artists).

<Figures 1 and 2 about here>

Comparing the modelling results across Indigenous and non-Indigenous paintings we see evidence of two different patterns. Both yield non-linear impacts but for Indigenous paintings these are quadratic and for non-Indigenous they are quartic.

Prices for paintings by deceased artists (Indigenous and non-Indigenous) are estimated to initially fall and then increase as years since death increases with paintings by 'long dead' artists selling for a very large premium compared to those by the more recently deceased. We note that our estimated death effect is unlike that of Ursprung and Wiermann (2011) who find that price declines linearly with years since death. Our estimated models also include a year of death impact (a dummy variable for sale within a year of death). This variable is not statistically significant for Indigenous paintings but has a positive impact (significant at the 10% significance level) for non-Indigenous paintings. This means that sales of non-Indigenous paintings by recently deceased artists have an increased price. This is consistent with the nostalgia effect described by Matheson and Baade (2004) where the death event drives up prices in the short run – in our case the first year since death – and then prices fall.

A potential reason for our finding of a fall then an increase in price may be that artists who are not very well known when they die could face a decrease in demand after their death and thus quickly disappear from the sample. Paintings from more well known artists do not disappear and it is these paintings that appreciate in price as the time since death increases. This effect could be larger for Indigenous paintings where there are even more less well known deceased artists. Moreover, for artists long dead any death effect on price for their paintings will have also long passed as the market will have naturally adjusted to take account of this information. It would be unwise to infer that a death effect was responsible for driving up the price of historic paintings as death of the artist is likely to be a trait shared by all historic works. Indeed paintings from earlier time periods may be valued by the market as much for their scarcity as their historic and aesthetic qualities. For such paintings the fact that the creator is deceased would be assumed by the market and as such have no bearing upon price in itself. For example, early colonial art is very scarce, highly collectable and typically trades for high values compared to other Australian art and due to the period it was created in around the time that European settlement occurred in Australia, it is also by artists who naturally are also long dead. The difference between the Indigenous and non-Indigenous results may be due to a

number of factors. For example, the initial lowering of price in response to an Indigenous artist's death might reflect some of the recent concern over issues around authenticity and attribution of paintings that has served to damage the reputation of Indigenous artists and their paintings.

We now look at how for living artists an artist's conditional life expectancy influences price (Figure 2). We note that small values of life expectancy mean that the artist is close to death (at death, life expectancy = 0). Artists with small values associated with their life expectancy will thus be older artists and so more established in their careers. Comparing the modelling results across Indigenous and non-Indigenous paintings we see evidence of two different patterns. Both yield non-linear impacts but for Indigenous paintings these are quadratic and for non-Indigenous they are quartic. For non-Indigenous paintings price increases as conditional life expectancy reduces. However, for Indigenous paintings we see that paintings by artists with longer life expectancy have higher prices. That is, for Indigenous paintings price first falls then increases as conditional life expectancy reduces. Thus, Indigenous paintings by younger artists and older artists tend to sell for relatively higher prices at auction compared to works that are sold by artists who are mid-term in their careers. In this sense younger Indigenous artists such as Brook Andrews and Destiny Deakin who have relatively longer life expectancy are doing better, at least to the extent that their works sell for higher prices in the secondary market, in a similar way to those with shorter life expectancy as we may more typically expect to find amongst older artists.

We have seen that focus upon artists' living status has implications for auction prices of paintings. While artists create unique works during their lifetime there is nothing to stop the living artist from over-producing and creating a large oeuvre of work as we see in the case of many artists including the well known Australian artists Sidney Nolan, Pro Hart and Emily Kngwarreye. When there are more works created by a particular artist, regardless of whether the works are similar to what the artist has previously created, or stylistically quite different, over-production will have an undesirable consequence for the owners of earlier works by reducing the scarcity value of the works they already own by the artist. This reduction in scarcity value can be expected to lower the auctioned prices across all works by the artist.

The perceived risk of over production and also risk associated with other actions that the artist may undertake which could devalue present works underpin the application of Coase's

theorem (Coase, 1972) to fine art. This stems from the practical reality that there can be no guarantee over the future actions of any given artist and that the artist's future action can influence the value of all of the works she has created irrespective of when the works were created. Certainly artists are free and creative agents who generally would not be expected to sign any contracts that would limit their future production or restrict their professional and creative freedom. If we also assume that living artists seek to maximise income from the sale of their art, as by doing so this will reduce the time needed to be employed in other non-creative paid work in order to support themselves financially, it becomes relevant to consider how incentives influences artists' production decisions in relation to works they create for sale, even through works will initially be sold via the primary market through private galleries. To minimise the time spent in non-creative work, many artists may feel inclined to focus most of their creative efforts towards producing the type of works most palatable to the market hence after selling a given work for which there is a market the artist may feel inclined to produce another similar work that they attempt to sell for as high a price as can be obtained. Certainly artists typically create a number of similar works as part of a series. This practice is encouraged by private galleries that represent living artists in the primary market and certainly galleries typically spend considerable resources in promoting works by an artist from a particular series that the artist has created as part of the marketing and opening events associated with an exhibition of the artist's work. Although considering that Throsby and Hollister (2003) found 66 per cent of Australian visual artists over the period of the 2000/2001 financial year earned less than AUD$10,000 in creative income and needed to supplement their income from other sources it would appear that in Australia at least, most artists do not make sufficient creative income for overproduction to represent a strategy typically followed.

Solow (1998) also raises an interesting argument that *droit de suite* or resale royalties may provide an incentive for artists not to overproduce or engage in activity that devalues their work, whereby if the artist knows they will be able to receive a share of the auction price when their works are resold they have a greater incentive to ensure the value of their oeuvre of work will be maximised in the future. However, for many artists struggling to make ends meet, the discount rate on potential future income streams is likely to be very high with the artist rationally preferring the certainty of earning present value dollars from sales of their work compared to the chance to earn potentially more in the future. Further weighting on the minds of artists is the natural desire of an artist to achieve fame and success which can help ensure they do not overproduce or damage their reputation. As a result it could be argued that

a vital part of the role played by the private galleries that represent living artists and the community run art-centres that represent many living Indigenous artists, is to provide sound advice to help artists ensure the longevity of their careers and to assist with preserving the artists' market integrity that will have spill-over effects into the secondary market.

6. Conclusion

While an extensive literature on prices of art already exists, this study differs from most others in three respects. Firstly, it has focused predominately upon the characteristics associated with the artist and in particular on the effect that an artist's living status has upon price. Specifically through using hedonic models that incorporate death and life expectancy we have witnessed difference in relation to how art prices are formed in response to conditions associated with the living status of the artist. Secondly, by using all auction sales data from Hislop's Art Sales Index for an art market defined on a national basis, which in this case was Australia, the data are complete in that they include all sales by artists deemed to have Australian nationality regardless of their fame and renown to provide a more accurate representation of the whole market. This has enabled a more meaningful analysis of the entire national market rather than the top end of the market which can occur if only sales by leading artists are included in the data. Thirdly, the analysis has separated Indigenous and non-Indigenous paintings in the analysis. This separation is important for a number of reasons. The Australian market includes a sizable proportion of paintings created by Indigenous artists whose work is highly collectable as part of a broader global market for authentic tribal and Indigenous cultural product. Indigenous paintings are very different in type and characteristics to non-Indigenous ones. The market for Indigenous paintings and their age tends to be much younger than that of non-Indigenous paintings and conditional life expectancy for Australian Indigenous and non-Indigenous artists differ dramatically. The separate models also enable comparisons to be made between the two types of paintings. Our results show marked differences between the impact of an artist's living status on the price of Indigenous and non-Indigenous paintings.

While works by living artists constitute a smaller proportion of the total works sold at auction, that these sales are heavily concentrated in works that are contemporary in theme and style and which have been created over the past 30 years or so. We have seen that the Indigenous market comprises a slightly higher proportion of paintings sold that are by living artists at around 44% of total works traded at auction, compared to around 40% in the non-Indigenous segment. This might be because of the history and development of the market for Indigenous

art which has risen to prominence relatively recently, since the 1970s when the Papunya Tula or Western Desert art movement began.

Given the growing dominance of Contemporary art traded at auction not only in Australia but around the globe it is informative to understand how the life expectancy of living artists may influence auction prices. Extending the models presented here to other defined segments of the global art market, including categories of Contemporary art, represents an area for further testing. Indeed further research into the Contemporary art market is warranted in relation to attributes associated with living artists creating works that sell both in primary and secondary markets and how the duality of works on primary and secondary markets influence Contemporary art prices per se.

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Table 1: Composition of auction sales recorded by Hislops Art Sales Index by Australian artists for whom living status is known over the period 1995 to 2003[a]

	Indigenous	**Non-Indigenous**
Annual Sales Volumes		
1995	213	1,826
1996	193	1,985
1997	344	1,551
1998	415	2,213
1999	472	2,560
2000	471	2,456
2001	341	2,524
2002	336	2,300
2003	432	2,559
Volume of sales over sample period	3,217	19,973
Proportion of total volume over sample period	0.1387	0.8613
Annual Sales Values		
1995	$577,003	$10,271,645
1996	$719,431	$14,680,235
1997	$1,872,196	$10,733,390
1998	$2,475,776	$15,613,341
1999	$2,397,975	$24,640,670
2000	$2,925,841	$27,150,791
2001	$2,444,241	$20,781,369
2002	$2,757,082	$24,026,917
2003	$4,809,616	$32,971,879
Value of sales	$20,979,160	$180,870,236
Proportion of total value over sample period	0.1039	0.8961
Mean price sales	$6,521	$9,055
Std. Dev. Sales	$15,794	$28,040
Maximum price	$343,075	$1,083,211
Minimum price	$331	$248

[a] Prices are measured in 2003 USD

Table 2: Descriptive statistics for artist, work and auction level attributes of Australian paintings by Indigenous and non-Indigenous artists sold at auction between 1995 and 2003[a]

	Indigenous			Non-Indigenous		
	Number	Mean	Std. Dev	Number	Mean	Std. Dev.
Work Level Attributes						
Oil	8	$7,336	$9,123	1,635	$17,393	$44,568
Acrylic	1,846	$6,729	$14,835	742	$6,727	$13,928
Earth Pigments	1,147	$5,700	$18,328	-	-	-
Watercolour	339	$4,899	$4,841	3,428	$3,608	$6,351
Size	3,461	$6,204	$15,288	20,468	$8,882	$27,725
Size in square metres	3,461	0.84 m^2	1.85 m^2	20,468	0.54 m^2	0.92 m^2
Artist Level Attributes						
Male	2,799	$6,139	$15,494	18,200	$9,324	$29,113
Female	662	$6,481	$14,392	2,268	$5,331	$11,040
Living	1,605	$3,529	$8,839	8,231	$6,496	$13,886
Average life expectancy	1,605	15.3 years	7.5 years	8,231	17.3 years	10.1 years
Deceased	1,856	$8,517	$18,890	12,237	$10,486	$33,907
Time since death	1,856	14.4 years	13.4 years	12,237	34.7 years	27.8 years
Famous*	2,653	$7,072	$17,009	16,849	$10,258	$30,237
Not famous*	808	$2,301	$6,381	3,619	$2,472	$6,404
Auction Level Attributes						
Sotheby's	2,159	$7,511	$18,275	4,322	$13,613	$31,066
Christies	185	$4,942	$6,158	4,519	$13,290	$38,556
Deutscher Menzies	403	$5,414	$11,193	2,295	$14,805	$38,331
Auctioned in Australia	3,430	$6,245	$15,350	19,122	$9,242	$28,543
Auctioned outside Australia	31	$1,647	$2,109	1,346	$3,755	$9,344

[a] Prices expressed in 2003 USD.

* Famous is based on works produced by an artist who is included in the National Gallery of Australia (NGA). Not famous applies to all sales by artists not included in the NGA.

Table 3: The conditional life expectancy of the Australian population, 1990-1999

	Non-Indigenous		Indigenous		Gender Unspecified	
Age	Male	Female	Male	Female	Non-Indigenous	Indigenous
0	75.29	81.13	58.38	64.11	78.34	61.33
1-4	74.81	80.57	58.01	63.67	77.82	60.92
5-9	70.92	76.67	55.00	60.59	73.93	57.88
10-14	65.98	71.72	51.16	56.68	68.98	54.00
15-19	61.05	66.77	47.34	52.76	64.04	50.13
20-24	56.29	61.88	43.65	48.90	59.22	46.36
25-29	51.62	57.00	40.03	45.04	54.47	42.64
30-34	46.94	52.12	36.40	41.19	49.70	38.91
35-39	42.25	47.25	32.76	37.34	44.93	35.17
40-44	37.55	42.42	29.12	33.52	40.18	31.45
45-49	32.90	37.64	25.51	29.74	35.47	27.77
50-54	28.32	32.94	21.96	26.03	30.84	24.14
55-59	23.92	28.37	18.55	22.42	26.37	20.64
60-64	19.77	23.96	15.33	18.93	22.10	17.30
65-69	15.97	19.74	12.38	15.60	18.11	14.18
70-74	12.59	15.79	9.76	12.48	14.45	11.31
75-79	9.63	12.18	7.47	9.63	11.16	8.74
80-84	7.15	9.03	5.54	7.14	8.33	6.52
85-89	5.17	6.43	4.01	5.08	5.99	4.69
90-94	3.68	4.45	2.85	3.52	4.21	3.30
95-99	2.67	3.09	2.07	2.44	2.97	2.33
100-104	2.01	2.20	1.56	1.74	2.16	1.69
105-109	1.60	1.67	1.24	1.32	1.65	1.29
110+	1.38	1.40	1.07	1.11	1.39	1.09

Source for Table 3: Human Mortality Database (2008) and ABS (2004)

Table 4: BIC values for linear, quadratic, cubic and quartic functions in time since death and conditional life expectancy for Indigenous and non-Indigenous models.

	Indigenous	**Non-Indigenous**
Quartic	8,430.63	52,509.04
Cubic	8,414.83	53,133.21
Quadratic	8,399.97	53,195.40
Linear	8,420.73	53,203.23

Table 5: Results for Indigenous paintings.

Variable	Coefficient	s.e.	t-value
Painting Characteristics			
Bark	-1.4414	0.5490	-2.625
Board	0.8036	0.0736	10.925
Acrylic	-0.0914	0.1915	-0.477
Earth Pigments	0.0693	0.0967	0.716
ln(area in m^2)	0.3810	0.0184	20.761
Signed	-0.1854	0.0347	-5.348
Type:			
Traditional Indigenous	1.1026	0.5537	1.991
Contemporary Indigenous	0.1740	0.1799	0.968
Reference/omitted category: Other or Unknown			
Created:			
Pre 1940	0.1327	0.1225	1.083
1950s	0.1679	0.1561	1.076
1960s	0.2625	0.1626	1.614
1970s	-0.1789	0.1654	-1.082
1980s	-0.0537	0.1681	-0.319
1990s	0.3222	0.2503	1.287
2000-03	-0.3634	0.1609	-2.259
Reference/omitted category: Unknown			
Auction Characteristics			
Sotheby's	0.8211	0.0417	19.668
Christies	0.4314	0.0637	6.777
Deutscher-Menzies	0.4892	0.0572	8.556
Australia	0.6186	0.1684	3.672
Year of sale:			
1996	0.2439	0.0830	2.939
1997	0.4229	0.0687	6.154
1998	0.3900	0.0657	5.931
1999	0.4596	0.0664	6.916
2000	0.5387	0.0692	7.783
2001	0.5547	0.0719	7.715
2002	0.7391	0.0721	10.244
2003	0.9731	0.0687	14.159
Reference/omitted: 1995			

Artist Characteristics:			
Artist Dummies:			
Kngwarreye	0.9251	0.0782	11.827
Namatjira	1.4314	0.1359	10.534
Onus	1.0842	0.2159	5.023
Possum	0.4982	0.1259	3.958
Thomas	1.1017	0.1124	9.804
Yirawala	1.2404	0.1337	9.274
Reference/omitted category: All other artists			
Female	0.0286	0.0483	0.593
NGA	0.1259	0.0426	2.956
Life or Death:			
Death	-0.1560	0.1094	-1.426
Years since death	-0.0188	0.0050	-3.745
Years since death^2	0.0004	0.0001	7.373
Life expectancy	-0.0439	0.0057	-7.673
Life expectancy^2	0.0008	0.0002	4.526
Constant	3.2554	0.2839	11.465

Robust standard errors and t-values are reported.

Number of observations:	3,202
Adjusted R^2	0.4791

Table 6: Results for non-Indigenous paintings.

Variable	Coefficient	s.e.	t-value
Painting Characteristics			
Paper	-0.4313	0.0283	-15.231
Board	0.0205	0.0164	1.252
Acrylic	-0.1684	0.0391	-4.303
Watercolour	-0.0873	0.0301	-2.899
Oil	0.3120	0.0255	12.238
ln(area in m^2)	0.3668	0.0070	52.465
Signed	0.1253	0.0289	4.338
Type			
Abstract	0.0678	0.1062	0.638
Cityscape/Streetscape/Town/Village	-0.0271	0.0639	-0.424
Landscape	-0.1483	0.0555	-2.671
Naval	-0.1672	0.0718	-2.330
Nude	0.1115	0.0546	2.042
Seascape/Beach	-0.0115	0.0709	-0.163
Portrait	0.0016	0.0586	0.028
Still Life	0.0805	0.0734	1.097
Study	0.1491	0.0594	2.512
Reference/omitted category: Other or Unknown			
Created:			
Pre 1840	1.5329	0.2511	6.104
1840s	1.0528	0.1629	6.464
1850s	0.4910	0.1264	3.886
1860s	0.6622	0.1323	5.004
1870s	0.3547	0.1401	2.531
1880s	0.4417	0.0734	6.017
1890s	0.3089	0.0620	4.981
1900s	0.4009	0.0464	8.632
1910s	0.3590	0.0417	8.600
1920s	0.4363	0.0341	12.811
1930s	0.2781	0.0332	8.388
1940s	0.3001	0.0309	9.722
1950s	0.3782	0.0285	13.259
1960s	0.1866	0.0236	7.923
1970s	0.1421	0.0246	5.776
1980s	0.1745	0.0280	6.227
1990s	0.4511	0.0382	11.811
2000-03	0.6686	0.0807	8.287
Reference/omitted category: Unknown			
Auction Characteristics			
Sotheby's	0.6698	0.0187	35.723
Christies	0.6517	0.0182	35.715
Deutscher-Menzies	0.6191	0.0249	24.879
Australia	0.1469	0.0317	4.636
Number of paintings in year	0.0002	0.0000	5.672
ln(time)	0.0993	0.0153	6.490

Artist Characteristics:

Artist Dummies:			
Blackman	1.1659	0.0414	28.161
Boyd, A.	1.6524	0.0422	39.142
Boyd, D.	0.1456	0.0312	4.665
Bunny	0.8066	0.0815	9.902
Dobell	1.5805	0.0937	16.866
Drysdale	2.3814	0.1297	18.360
Fox, E.C.	0.8580	0.1040	8.248
Friend	0.9171	0.0508	18.060
Gleeson	0.7061	0.0459	15.392
Heysen	1.2056	0.0577	20.891
Lindsay	2.0087	0.0490	41.007
Long	0.4771	0.0779	6.122
Nolan	0.8684	0.0379	22.920
Olley	0.9025	0.0724	12.472
Olsen	1.3022	0.0476	27.330
Perceval	0.9532	0.0782	12.186
Pugh	-0.0943	0.0552	-1.707
Rees	1.5476	0.0631	24.543
Smart	2.0873	0.0668	31.230
Streeton	1.3283	0.0710	18.708
Tucker	1.1631	0.0754	15.424
Wakelin	0.0988	0.0505	1.957
Whiteley	2.3240	0.0859	27.062
Williams	2.0107	0.0694	28.961
Reference/omitted category: All other artists			
Female	0.1311	0.0266	4.928
NGA	0.3340	0.0192	17.428
Life or Death:			
Death	0.1292	0.0681	1.899
Years since death	-0.0221	0.0039	-5.691
Years since death^2	0.0008	0.0001	6.978
Years since death^3	-7.68E-06	1.30E-06	-5.908
Years since death^4	2.17E-08	4.43E-09	4.898
Life expectancy	0.0069	0.0098	0.703
Life expectancy^2	-0.0034	0.0010	-3.606
Life expectancy^3	0.0001	3.26E-05	3.788
Life expectancy^4	1.29E-06	3.52E-07	3.665
Constant	3.5192	0.1064	33.061

Robust standard errors and t-values are reported.

Number of observations:	19,898
Adjusted R^2	0.5393

Figure 1: Plot for the change in ln(price) for time since death using the year in which death occurs (years since death = 0) as a benchmark

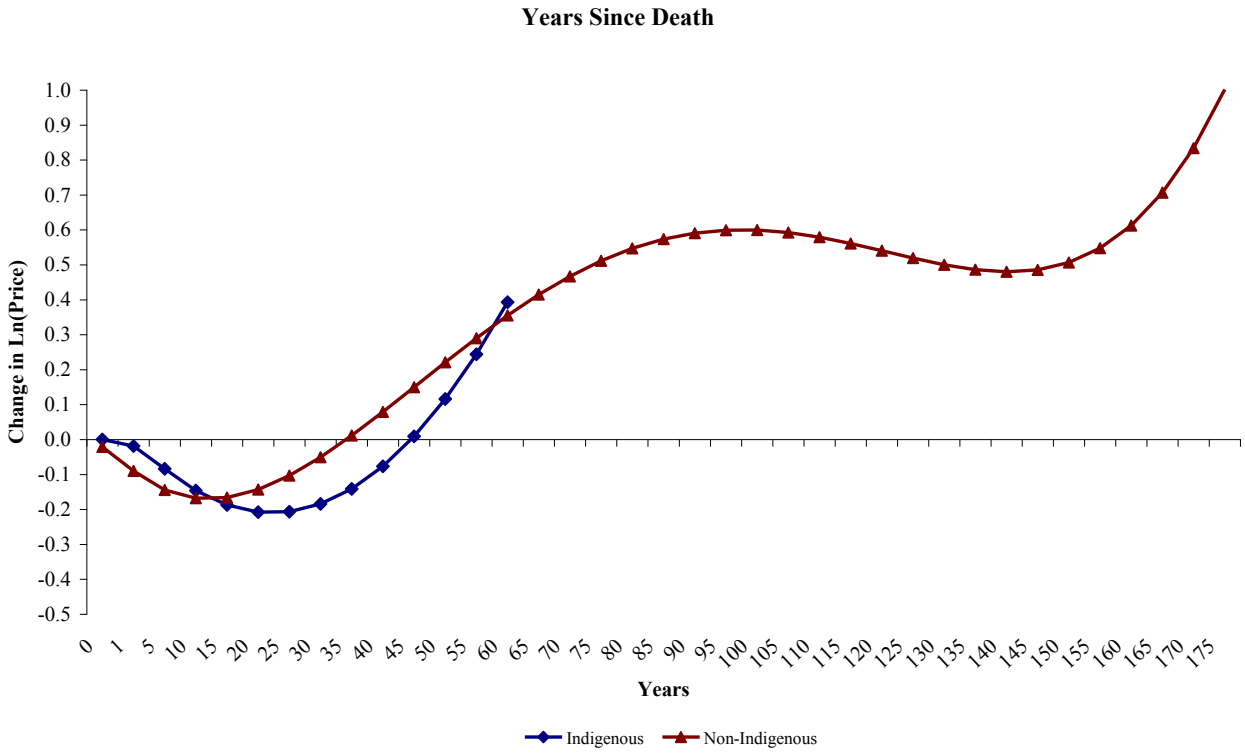

Figure 2: Plot for the change in ln(price) for conditional life expectancy using the years in which remaining life expectancy = 0 as a benchmark.