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The Death Effect in Art Prices: Evidence from Denmark

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Abstract

Analysing a panel of paintings by Danish painters suggests that the conditional life expectancy of the artist at the time of sale has a negative impact on the sale price. This is consistent with the idea that artists share some of the characteristics of durable monopolists and that the ageing and ultimately the death of the artist represent acceptable forms of commitment not to 'overproduce'. In addition interest in an artist's work begins to wane after their death.

Keywords: Art Prices; Auctions; Durable Monopolist

Introduction

Economists have often studied the art market in an attempt to answer the perennial question: Is art a good investment? In order to answer this question however requires an index of art prices over time. It is difficult to provide such an index because art objects are heterogenous and not traded very often. One cannot simply take an average price of all works traded within a particular period or take a basket of art works and calculate the cost of purchasing that basket. This being so two alternative approaches are typically taken to computing the rate of return on paintings over time. The first of these is the hedonic approach in which differences in the characteristics of paintings are controlled for using regression analysis. Variables include things like the dimension of the painting, the materials used, the date of the painting etc. The other technique is the resale method and is a more direct method of calculating the rate of return to art. This approach waits until a painting has been sold twice and then computes the rate of return over the intervening period.

From Baumol (1986) onwards the general finding is that the rate of return on art is lower than that obtained on risk free financial assets. The reason for this is that individuals presumably derive a non-pecuniary benefit from possessing art that is quite independent of the financial rate of return that they expect to achieve when the time comes to sell the painting (Frey and Eichenberger, 1995). The difference between the financial rate of return on the painting and the rate of return on alternative financial asset therefore reflects the benefit that the individual derives from possessing the painting. Unless one actually likes the picture, ownership of a painting is therefore not a good investment. Neither can it be said that art is a particularly liquid asset since the costs of buying and selling are high. Chanel (1995) demonstrates that art markets are linked to financial markets but Ginsburgh and Jeanfils (1995) argue that there is only a short run relationship between the two.

A second reason that economists have studied the market for art is in order to test the efficient market hypothesis and the law of one price. The efficient market hypothesis does not however receive much support from the analysis of art markets. It would appear that one is able to predict future price movements on the basis of past price movements and that there is significant serial correlation in the data. Furthermore it is frequently said that old masters enjoy a higher rate of return than contemporary artists of the works of lesser-known artists (although a sequence of papers suggests that the opposite might be true). There also appear to be deviations from the law of one

price in which identical prints are sold for different prices days apart with no intervening release of information. Some auction houses appear to obtain consistently higher prices for auctioned paintings, and there is evidence to suggest that art prices are systematically lower in some months than in others. Ashenfelter and Graddy (2003) provide a recent survey of the literature.

One characteristic of artists that has not so far received much analytical attention is that they suffer the same problems encountered by a monopoly producer of durable goods. The problem of the durable goods monopolist first described by Coase (1972) is that the monopoly producer cannot sign a contract limiting future production. Then the best thing he can do after having sold a unit is to try and sell another for as high a price as he can obtain. This goes on until the price falls to the marginal cost of production. But consumers will anticipate the fall in price and be unwilling to pay more than the competitive price for the goods. Thus the monopolist forfeits his monopoly power.

The artist shares the same difficulty as any other durable monopolist in that he or she lacks any credible commitment not to 'overproduce' in future time periods (e.g. Grampp, 1989). The word 'overproduce' should however be extended to include anything that might jeopardise the market value of paintings already sold to collectors. It seems that the only credible commitment that the artist can make not to over-produce in future time periods is either to die or at least grow old to the point where the ability to overproduce is limited by a short remaining life expectancy and declining health. This phenomenon might explain why artists often enjoy greater success dead than they did alive. The problem appears elsewhere in the field of culture as well. There is for example, the problem of the book publisher who would like to persuade individuals to buy an expensive hardback copy of a book rather than waiting for the paperback edition. Once individuals have bought the hardback version however the incentives of the publisher change.

A number of solutions to the problem of the durable monopolist have been suggested in the context of industrial economics (Bulow, 1982). One possibility is to rent the product rather than to sell it. Another possibility is to make binding commitments about future production, issue price guarantees or to make the product less durable than it otherwise would be. These do not seem to help the artist much. One possibility is that the artist who makes lithographs can destroy the plates.

There is nevertheless one mechanism by which the artist might be able to enjoy the financial benefits of their work prior to their death. This is practice of 'droit de suite' (Solow, 1998). Under this practice the artist has the right to a percentage of the selling price every time one of his paintings is sold. This right is inalienable and continues for a period even after the artist's death. It clearly burdens the artist with some of the risk of uncertain future price changes. This might lead to the artist not producing copies of original work or doing anything that might lower his stock as an artist such as a failure to censor sub-standard pieces of work. Note that this practice is illegal in all the United States except for California, but more common in Europe. From January 2006 a European Union directive will harmonise the practice throughout member states leading to concern over the possible relocation of trade to locations such as Zurich and New York.

The impact of the changed supply conditions associated with the death of the artist has been examined by Ekelund et al (2000) whose study involves 21 Latin American artists whose works have been sold at major auction houses in USA. The conclusion of the paper is that there is a measurable "death effect". Prices rise around the time of the artist's death but fall again. Unfortunately the results use a questionable variable for representing the death effect "years after death" squared (i.e. the year of sale minus the year of death of the artist squared so as to ensure that the variable takes only positive values). Ekelund et al attribute their results to the existence of durable monopoly. It is not immediately clear however why the death of the artist should result in a symmetric response in prices around the time of their death, nor why the effect should be identical for all artists irrespective of whether they die prematurely or survive until old age.

Recently, Matheson and Baade (2004) have suggested that any death effect in art prices and in collectibles generally is a transient phenomenon caused by renewed interest in the artist's work following news of their death. They refer to this as the "nostalgia effect" and demonstrate its existence using time series data on the price of sports cards for 13 famous baseball players. The interesting aspect of their study is that the baseball cards are already fixed in supply following the retirement of the player and that changed perceptions regarding the supply of the cards around the time of the players death cannot therefore account for any observed price dynamics. The authors find that there is an increase in the price of cards around the time of a player's death but that it is short-lived. But whilst Matheson and Baade's work demonstrates the existence of a "nostalgia

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effect" it does not say anything about the existence of a death effect associated with the problem of durable monopoly precisely because changed supply conditions are absent in their example.

The purpose of this paper is examine closely the price dynamics of an artist's work around the time of their death. More specifically we argue that although temporary renewed interest and a change in perceived supply conditions might both cause an increase in prices following the death of the artist, only concern over supply conditions can explain why the conditional life expectancy of the artist at the time when the painting is sold should be reflected in the price. We use of the artist's conditional life expectancy at the time of sale to represent supply conditions because from the perspective of the collector, an ageing artist means that supply conditions are improving all the time. For the same reason any death effect should be most pronounced for those who die prematurely since supply conditions for an artist in their nineties are already quite favourable to the collector. Furthermore, prices should not change after the death of an artist since supply conditions cannot change and conditional life expectancy falls to zero at this point. To anticipate the results, it appears that using conditional life expectancy of the artist at the time of sale as a proxy for supply conditions, the durable monoply hypothesis has considerable empirical content even when variables are included to account for any temporary renewed interest in the artist following news of their death.

Data

The data set used to compare the "durable monopolist" and "nostalgia effect" explanation of price dynamics around the time of death of the artist comprises the price of oil paintings by contemporary Danish artists who died during the period 1983 to 2003. The price data was extracted from Hislop's Art Price Index. The first sale took place in 1971 and the last recorded sale was in 2003. The paintings included in the data set were all sold at auction, reflecting the most visible segment of the art market. This means that the study does not reflect the entire art market, but it rather the largest part with the highest prices. The data set contains 4,857 transactions of paintings by 93 artists. No bought-in paintings (i.e. paintings that failed to reach their reservation price) are included in the data set. The price of the paintings (PRICE) is in current USD.

The identity of the artist is treated as a fixed effect in what follows accounting for the style as well as the reputation of the artist. The exact day of birth and death of the artists were found via a database for Danish artists.[2] Because the day of the sale is also known it is possible to create a dummy variable (DEAD) indicating whether the artist was dead or alive at the time of the sale. Another variable was created to represent the time elapsed between the death of the artist and the time of the sale (YEARS_AFTER_DEATH). This variable takes the value zero for paintings sold while the artist is still alive. Finally, combining knowledge of the artist's date of birth as well as the date of sale makes it possible, via a database on Danish demographic statistics, to compute the artist's conditional life expectancy at the time of sale (COND_LIFE_EXPECT).[3] This variable is obviously zero for those artists who were already dead at the time of sale. There is a great deal of variation in the data set: the youngest artist to die lived until 38 whilst the oldest artist to die survived until 100. Table 1 gives information on conditional life expectancy in Denmark for the decade 1990-1999.

Apart from the personal details of the artist, a number of other characteristics are contained in the data set. These include whether the painting is attributed to the artist as opposed to being signed (ATTRIBUTED). Two different auction houses are separately identified: KUNSTHALLE and RASMUSSEN. The latter auction house includes paintings sold by Bruun who merged with

[2] The databse on Danish artists can be found at: www.kid.dk.
[3] Information on conditional life expectancies for Denmark for the decade 1990-1999 can be found at: www.mortality.org.

Rasmussen to become the biggest in Scandinavia and the world's 10th largest auction house. Shortly after the final sale recorded in the data set Kunsthallen too was purchased by Bruun Rasmussen. The remaining paintings were sold by miscellaneous auctioneers, including the Museumsbygningen (the art museum in Copenhagen), Sothebys and Christies etc. Selling at auction at the Museumsbygningen in Copenhagen costs 16 percent of the realised value of the painting indicating how difficult it is to take account of opportunities for arbitrage.

Three different places of sale are identified: COPENHAGEN, AARHUS (Denmark's second largest city) and VEJLE near the German border (many collectors are German). Other places of sale not separately identified include Stockholm, London, and Amsterdam etc. The vast majority of the paintings were sold within Denmark. The size of the painting (SIZE) is measured in square inches.

Note that the effect of the artist's age at time of production is not included because it is not systematically recorded in the data set. The artist's age at the time of production might explain some of the variance in the price of paintings. However, the timing of any "peaks" and "slumps" of the artist's career will differ markedly from artist to artist. By contrast, the effect of conditional life expectancy on perceived supply conditions is, at the time of sale, the same for all artists. Furthermore there is no relationship between the age of the artist at the time at which a painting is sold and the age of the artist when the work was created, other than that the former necessarily exceeds the latter.[4]

[4] Gallenson et al (2000) published a study looking at the age of the artist on the day of the paintings execution and the value of his work. The study looks at 42 contemporary America artists, and finds that artists born before 1920 were most likely to produce the most valuable work late in their careers and those born in the 1920s and 30s early in their careers. Some artists however peak at age 66 or 84 and overall there is great variation.

Table 1. The Conditional Life Expectancy of the Danish 1990-1999

Age	Conditional Life Expectancy
0	75.61
1-4	75.04
5-9	71.13
10-14	66.19
15-19	61.24
20-24	56.37
25-29	51.53
30-34	46.70
35-39	41.92
40-44	37.21
45-49	32.62
50-54	28.15
55-59	23.87
60-64	19.86
65-69	16.22
70-74	12.95
75-79	10.06
80-84	7.55
85-89	5.46
90-94	3.83
95-99	2.73
100-104	2.02
105-109	1.59
110+	1.37

Source: The Human Mortality Database.

Empirical Analysis

In order to reveal price dynamics associated with the ageing and death of the artist it is first necessary to control for autonomous trends in the price of paintings. This is achieved by creating a series of linear spline functions with knots placed at yearly intervals. These spline functions are included in all subsequent regressions, but the coefficients are not displayed in the table of results.

Table 2 contains the results of three models of increasing complexity. In each model the dependent variable PRICE is taken in the logarithms following attempts at a Box-Cox transformation. In Model 1 the variable COND_LIFE_EXPECT is included as a proxy for anticipated supply conditions. The coefficient on this variable is negative suggesting that conditional life expectancy of the artist at the time of sale has a significant depressing effect on art prices. Turning to the remaining variables, a painting that is merely attributed to a particular artist rather than actually signed attracts a lower price. Paintings sold by the two major auction houses Kunsthalle and Rasmussen attract a higher price whilst paintings sold in Copenhagen, Aarhus and Vejle all attract lower prices. These variables likely serve as a proxy for the characteristics of particular pieces leading them to be sold in particular places and by particular auction houses.[5] The size of the painting is statistically significant but the increase in price per square inch of canvas varies as the size of the painting increases.

Model 2 includes the dummy variable DEAD along with the variable YEARS_AFTER_DEATH. The purpose of this specification is to represent a situation in which the death of the artist generates renewed interest in his work that gradually ebbs away (or depending on the sign of the coefficient even increases). The results suggest that prices jump following the artist's death but the effect is significant only at the five percent level of confidence. The price of an artist's work does however fall significantly in the years following their death.

Model 3 combines the previous two models. As before there is evidence of the existence of a durable monopoly, at least in so far as the fact that the artist's conditional life expectancy at the time of the sale is highly significant. The dummy variable denoting the period following the death

[5] The most important Danish paintings are obviously sold outside of Denmark.

of the artist is however, not significant. There is no surge in interest in an artist's work following their death. Only the time trend measuring years after death is significant.

Table 2. Regression Analysis

Dependent Variable = Log PRICE

Method = Fixed Effects Panel Data

	Model 1	Model 2	Model 3
ATTRIBUTED	-0.592833 (-4.07)	-0.6558729 (-4.58)	-0.6149806 (-4.24)
KUNSTHALLE	0.2283518 (3.94)	0.2258041 (3.92)	0.2254439 (3.91)
RASMUSSEN	0.1452296 (2.56)	0.1393776 (2.48)	0.1396537 (2.48)
COPENHAGEN	-0.4371322 (-5.85)	-0.4318278 (-5.79)	-0.4320232 (-5.79)
AARHUS	-0.5177402 (-8.36)	-0.516128 (-8.32)	-0.5171571 (-8.34)
VEJLE	-0.602433 (-7.54)	-0.5935193 (-7.43)	-0.5898853 (-7.38)
SIZE	0.0012067 (18.57)	0.0012048 (18.46)	0.0012034 (18.61)
$SIZE^2$	-3.00E-07 (-7.60)	-3.02E-07 (-7.58)	-2.99E-07 (-7.61)
$SIZE^3$	2.53E-11 (4.26)	2.57E-11 (4.31)	2.51E-11 (4.29)
COND_LIFE_EXPECT	-0.0134608 (-5.75)		-0.0150265 (-4.34)
DEAD		0.0642483 (2.14)	-0.0666766 (-1.53)
YEARS_AFTER_DEATH		-0.0234978 (-5.01)	-0.021138 (-4.54)
Number of Observations	4857	4857	4857
Zero Slopes	F(42, 4722) = 71.07	F(43, 4721) = 67.75	F(44, 4720) = 64.61

R^2	0.1843	0.1983	0.2040

Note: The regression includes 32 spline functions whose coefficients are not displayed in the table. T-statistics are heteroscedastic-consistent.

Conclusions

The results contained in this paper suggest that including information on the artists' age and whether they are dead or alive at the time of sale can explain better the price dynamics of paintings. Such findings are consistent with the view that artists share some of the problems encountered by monopoly producers of durable goods. Certainly it is hard to think of an alternative reason why the artist's conditional life expectancy at the time of sale should be of such importance to collectors. In addition it appears that interest in an artist's work generally dwindles after their death. There is however no sudden leap in art prices following news of the death of the artist other than that attributable to the resolution of the problem of the durable monopolist.

References

Ashenfelter, O. and Graddy, K. (2003) Auctions and the Price of Art *Journal of Economic Literature* **XLI**: 763-786.

Baumol, W. (1986) Unnatural Value or Art Investment as a Floating Crap Game *American Economic Review* **76**: 10-14.

Bulow, J. (1982) Durable-Goods Monopolists *Journal of Political Economy* **90**: 314-32.

Chanel, O. (1995) Is Art Market Behaviour Predictable? *European Economic Review* **39**: 519-527.

Coase, R. (1972) Durability and Monopoly *Journal of Law and Economics* **15**: 143-149.

Ekelund R., Ressler, R. and Watson, J. (2000) The Death-Effect in Art Prices: A Demand-Side Exploration *Journal of Cultural Economics* **24**: 283-300.

Frey, B. and Eichenberger, R. (1995) On the Rate of Return in the Art Market: Survey and Evaluation *European Economic Review* **35**: 528-537.

Gallenson, D. (2000) The Careers of Modern Artists Evidence from Auctions of Contemporary Art *Journal of Cultural Economics* 24: 87-112.

Ginsburgh, V. and Jeanfils, P. (1995) Long-term Comovements in International Markets for Paintings *European Economic Review* **39**: 538-548

Grampp, W. (1989) *Pricing the Priceless: Art, Artists and Economics* Basic Books: New York.

Matheson, V. and Baade, R. (2004) Death Effect on Collectible Prices *Applied Economics* **36**: 1151-1155.

Solow, J. (1998) An Economic Analysis of Droit de Suite *Journal of Cultural Economics* **22**: 209-226.