

Posthumous Trading Patterns affecting Artwork Prices

Dakshina DeSiliva, Georgia Kosmopoulou,
Rachel Pownall, Robert Press

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Introduction

Walton Bridges (1805)
J.M.W. Turner

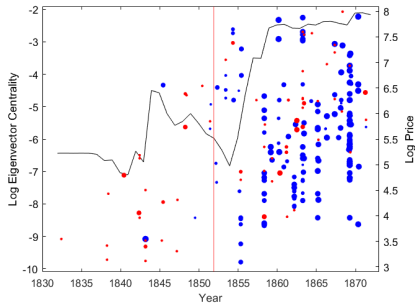


Kilchurn Castle, Loch Awe (1854)
Horatio McCulloch

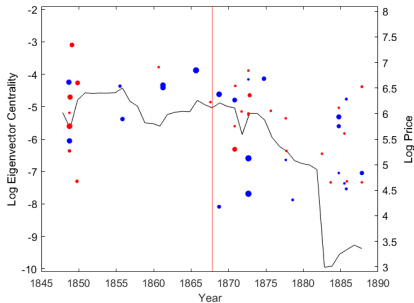


Death Effect?

J.M.W. Turner



Horatio McCulloch



“A Painter has so much more Talent when He’s Dead”

- Mark Twain *Is He Dead?*

- ▶ Generally found an increase in artwork prices after death
 - ▶ Demand Side - Ekelund et. al (2000), Matheson and Baade (2004)
 - ▶ Supply Side - Maddison and Jul Pedersen (2008), Ursprung and Wiermann (2011)

- ▶ We observe a 7% decline in prices following death in the 19th century London Art Market

Contribution

- ▶ We use Network Measures and Quantile Regression analysis to evaluate the power of the “Death Effect” and identify the drives of market success for artists
- ▶ We use a unique data set of all auction sales that took place in London for a period spanning one and a half centuries. This data provides an opportunity to follow artist from the beginning to the end of their professional careers and trace their success within that period and beyond
- ▶ Our paper complements a limited literature on networks and art (Mitali and Ingram (2018), De Silva et al (2019))

Data - London Art Market

- ▶ Collected by Graves (1918)
- ▶ Covers 7,760 pieces sold by 160 artists at auction between 1741 and 1913
 - ▶ Prices, Dates, Genre, Medium, Number of Buyers
- ▶ Includes the identities of Buyers, Sellers, and Artists and their status (recorded as dealer, collector, aristocrat, artist, etc.)

Summary Statistics

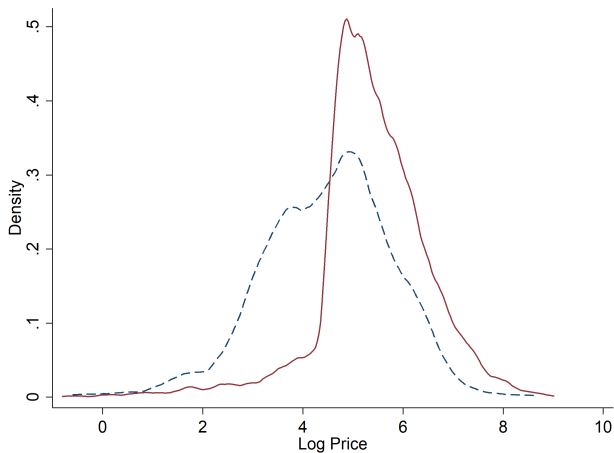
Table: Descriptive Statistics

Variable	Before Death		After Death	
	Mean / Count	STD	Mean / Count	STD
Number of Pieces Sold	3,127		4,633	
Number of Unique Artists	160		160	
Number of Unique Buyers	647		946	
Number of Unique Sellers	715		929	
Number of Unknown Sales	381		516	
Price	381.7	508.1	355.2	596.0
Average Number of Bidders in an Auction	40.19	19.56	42.11	20.92
Artist: Eigenvector Centrality	0.005	0.006	0.011	0.018
Artist: Number of Art Sold	30.59	33.07	43.04	42.4
Buyer: Eigenvector Centrality	0.024	0.038	0.024	0.038
Buyer: Capacity	11,095	16154	12000	17,974
Buyer: Dealer	0.664	0.473	0.627	0.484
Artist-Buyer Link	0.481	0.500	0.511	0.500
Seller: Family	0.007	0.084	0.129	0.336
Seller's Past Volume	3.82	14.68	3.176	12.51
Unknown Seller	0.122	0.327	0.111	0.315
Christie's Dummy	0.967	0.179	0.942	0.233

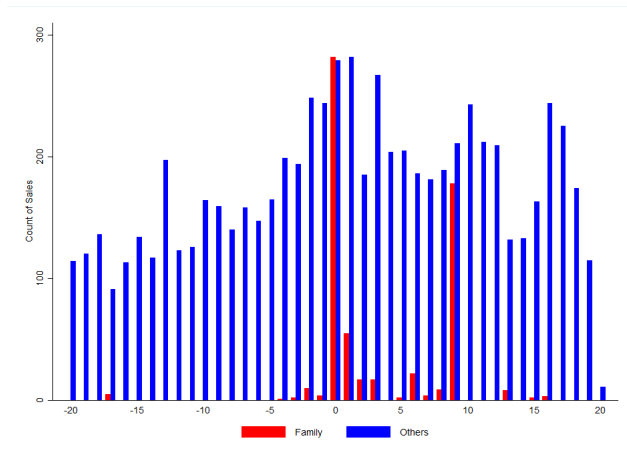
Proposed Explanation

- ▶ The results of this study identify two factors contributing to price fluctuations in artwork after an artist's death. Nonstrategic estate sales by family members of an artist and a dealer's buying interest both have a significant impact on the change in art prices over time with differing short and long term effects.
1. Families of artists are more likely to sell immediately after death
 - ▶ 1% of art sold before death versus 13% after
 2. Network of buyers diverge after death

Price Distribution of Art sold by Family



Timing of Art sold by Family



Measuring Networks

- ▶ Construct time evolving networks
 - ▶ Bipartite Network linking artists to buyers weighted by # of artworks purchased
 - ▶ Directed Network linking buyers and sellers
 - ▶ 10 year moving window

- ▶ Variables Created
 - ▶ Artists past sales
 - ▶ Seller, Artist, Bidder, and Artwork characteristics,
 - ▶ Dummies for seller's type (artist, collector, unknown, family etc.),
 - ▶ Seller's volume of past sales
 - ▶ Capacity
 - ▶ Number of buyers
 - ▶ **Artist Eigenvector Centrality**
 - ▶ **Buyer's Eigenvector Centrality**

Methodology

- ▶ Heckman Selection Model
- ▶ Arellano and Bonhomme (2017)
- ▶ First Stage:

$$Pr[win_{abt} | X_{abt}, dealer_{bt}] = \Phi(\beta \cdot X_{abt} + \gamma \cdot X_{abt} \cdot dealer_{bt})$$

- ▶ Second Stage:

$$Inprice_{abt} = \beta \cdot ph_{abt} + \delta \cdot X_{abt} + \sigma_{12} \cdot \lambda_{abt} + \alpha_a + \epsilon_{iat}$$

- ▶ Arellano and Bonhomme- Second Stage:

$$Q_{Inprice_{iat}}(\tau | ph_{iat}, X_{iat}, \hat{\rho}) = \beta_{G^{-1}(\tau, \hat{\rho}(z); \hat{\rho})} \cdot ph_{iat} \\ + \delta_{G^{-1}(\tau, \hat{\rho}(z); \hat{\rho})} \cdot X_{iat} + \alpha_{aG^{-1}(\tau, \hat{\rho}(z); \hat{\rho})}$$

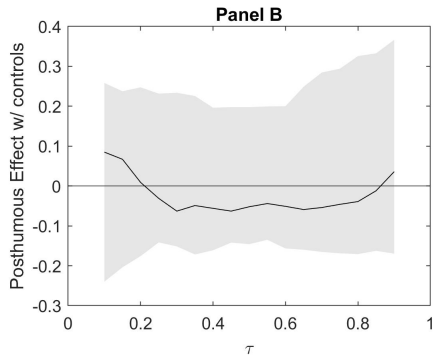
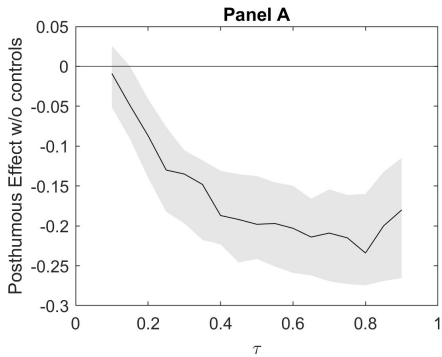
First Stage

Table: Buyer Likelihood to Purchase Artwork at Auction

Variable of Interest	Dealers	Others	All
	(1)	(2)	(3)
Posthumous	-0.008 (0.050)	-0.001 (0.054)	0.018 (0.037)
Artist: Log Eigenvector Centrality	-0.003 (0.006)	-0.020*** (0.006)	-0.009* (0.004)
Artist: Log # of Art Sold	-0.036** (0.015)	0.028* (0.016)	-0.011 (0.011)
Buyer: Log Eigenvector Centrality	0.078*** (0.005)	-0.005 (0.004)	0.043*** (0.003)
Buyer: Log Capacity	0.039*** (0.008)	0.043*** (0.006)	0.059*** (0.005)
Artist-Buyer Link	0.566*** (0.019)	0.530*** (0.029)	0.572*** (0.015)
Seller: Family	-0.001 (0.037)	0.038 (0.037)	-0.004 (0.026)
Seller: Unknown	-0.108*** (0.025)	0.137*** (0.025)	-0.012 (0.018)
Seller: Log Past Sales	-0.025* (0.013)	0.038** (0.015)	0.000 (0.010)
Observations	110,217	206,295	316,512
Other Controls	Yes	Yes	Yes
Pseudo R ²	0.147	0.068	0.137

Second Stage

Variables of Interest	Mean	Quantiles(τ)				
		0.1	0.25	0.5	0.75	0.9
Panel A. Without Controls						
Posthumous	-0.120*** (0.026)	-0.009 (0.021)	-0.130*** (0.027)	-0.198*** (0.028)	-0.215*** (0.027)	-0.180*** (0.038)
Controls	No	No	No	No	No	No
Artist Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Panel B. With Controls and Sample Selection						
Posthumous	-0.007 (0.047)	0.085 (0.130)	-0.031 (0.105)	-0.052 (0.087)	-0.046 (0.115)	0.036 (0.145)
Artist: Log Eigenvector Centrality	0.084*** (0.012)	0.062** (0.042)	0.085*** (0.034)	0.096*** (0.032)	0.072*** (0.030)	0.042*** (0.032)
Artist: Log Number of Art Sold	-0.050** (0.027)	0.008 (0.095)	-0.017 (0.070)	-0.095* (0.058)	-0.095** (0.058)	-0.090* (0.069)
Buyer: Log Eigenvector Centrality	-0.054*** (0.008)	-0.022 (0.064)	-0.034 (0.049)	-0.033 (0.045)	-0.053 (0.044)	-0.067 (0.061)
Buyer: Log Capacity	0.269*** (0.014)	0.158*** (0.047)	0.186*** (0.038)	0.215*** (0.038)	0.272** (0.058)	0.302** (0.086)
Buyer: Dealer	-0.194*** (0.031)	-0.165 (0.202)	-0.132 (0.166)	-0.195 (0.148)	-0.176* (0.101)	-0.207* (0.143)
Artist-Buyer Link	-0.079 (0.050)	0.014 (0.335)	-0.013 (0.298)	-0.020 (0.290)	-0.031 (0.373)	-0.053 (0.429)
Seller: Family	-0.307*** (0.060)	-0.265 (0.166)	-0.256 (0.120)	-0.231* (0.098)	-0.209** (0.108)	-0.260* (0.125)
$\hat{\rho}$	-0.025 (0.103)			-0.060 (0.444)		



Eigenvector Centrality at Death

Variables of Interest	Mean	Quantiles(τ)			
		0.25	0.50	0.75	0.90
Panel A: Less than 2 years after death					
Artist: Log Eigenvector Centrality at Death	0.060* (0.033)	0.041 (0.029)	0.053* (0.028)	0.091** (0.036)	0.119*** (0.030)
Artist: Log Number of Art Sold	0.060 (0.067)	0.095 (0.074)	0.047 (0.063)	-0.036 (0.076)	0.000 (0.063)
R ²	0.311	0.278	0.290	0.262	0.168
Panel B: Between 2 and 10 years after death					
Artist: Log Eigenvector Centrality at Death	0.022 (0.022)	0.006 (0.015)	0.015 (0.017)	0.047* (0.028)	0.068** (0.028)
Artist: Log Number of Art Sold	-0.119 (0.115)	-0.112 (0.121)	-0.026 (0.117)	0.049 (0.108)	0.128** (0.052)
R ²	0.246	0.232	0.227	0.173	0.117
Panel C: Between 10 and 20 years after death					
Artist: Log Eigenvector Centrality at Death	-0.021 (0.028)	-0.031 (0.029)	-0.013 (0.022)	0.046* (0.027)	0.094*** (0.034)
Artist: Log Number of Art Sold	0.042 (0.081)	0.044 (0.065)	0.079 (0.063)	0.115* (0.068)	0.141** (0.070)
R ²	0.379	0.362	0.367	0.325	0.266

Conclusion

- ▶ Art valuations do change after death as we see in evidence from the analysis of the 19th century London Art Market. We attribute the changes to two causes:
 - ▶ Family estate sales pattern
 - ▶ Evolving buyer's pool
- ▶ Network measures can capture the change in buyers' interest in an artist
- ▶ Buyers' interest at death is an important predictor even years later for high priced art