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ABSTRACT

The death of an artist constitutes a negative supply shock to his future production; in finance terms, this supply shock reduces the artist's float. Intuition may thus suggest that this supply shock reduces the future auction volume of the artist. However, if collectors have fluctuating heterogeneous beliefs, since they cannot sell short, prices overweigh optimists' beliefs and have a speculative component. If collectors have limited capacity to bear risk, an increase in float may decrease subsequent turnover and prices (Hong et al. 2006). Symmetrically, a negative supply shock leads to an augmentation of prices and turnover. We find strong support for this prediction in the data on art auctions that we examine.

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Pour moi les tableaux de grand prix
Sont ceux que plus cher on m'achète.
Après tout, que m'importe le talent?[1]

I. Introduction

Around 1660, an Italian art dealer brought bad news to Rembrandt: his style of painting was no longer in vogue and sold at lower prices. Rembrandt did not yield to the art dealer's suggestion to start painting in the idealizing style of the classic painters, but thought up a cunning plan. He disappeared and had the rumor spread that he had died (De Wilt, 2006). As a consequence, works by a 'dead' Rembrandt were sold for up to three times the normal price.[2]

This anecdote illustrates that the unexpected death of an artist leads to higher prices, a natural consequence of the lower future supply relative to expectations. It is natural to expect that the lower supply would also lead to a smaller volume of trade in the future but theories of speculation based on fluctuating differences in beliefs and short-selling restrictions (Harrison and Kreps, 1978; Scheinkman and Xiong, 2003) suggest that the lower outstanding supply may actually lead to an increase in both prices and turnover (Hong et al. 2006). A smaller float means that the marginal future buyer is likely to have a more optimistic view, which makes the option to sell more valuable for the current owner. When the marginal future buyer is more optimistic, it is also less probable that a current owner's valuation will stay among the highest in the future leading to a higher

[1] "For me, highly priced paintings are those that I can sell ever more expensively. After all, why should I care about talent?" Quote from Forbeck, the art-dealer in the play "Rembrandt ou la Vente après décès" (by Charles-Guillaume Etienne, 1777-1845) (see Spieth 2017).

[2] Several versions of this anecdote circulate. The aforementioned play has been performed in France since 1800. According to the play, Rembrandt and his first wife Saskia van Uylenburgh conspired: Rembrandt left Amsterdam for a while, Saskia spread the rumor that her husband had died and dressed in traditional mourning clothing. As a consequence, the demand for Rembrandt's paintings and etchings surged and the 'widow' sold many, while remarking that there would be no new supply of Rembrandts (De Wilt, 2006). After a while, Rembrandt reappeared. In a different context, a similar anecdote was told: As a consequence of his bankruptcy, all his work was auctioned to pay off creditors. Prior to the auction, Rembrandt faked his death to increase the proceeds from the sales.

average turnover.[3]

In this paper we use a database of sales of modern and contemporary art at auction to evaluate the impact of an unexpected death of an artist. Since we do not observe the counterfactual evolution of an artists' *oeuvre* had she not died, we match an artist who died prematurely and suddenly with an artist who lived for at least 10 years after the death of the treated artist and who is otherwise similar or close in birth-year, and number of auctioned paintings, price level, and reputation over a ten-year look-back period prior to the death of the treated artist. We define death as premature if it takes place at an age of 65 or earlier (we perform sensitivity analyses on this age cutoff), and sudden if it is attributed to a heart attack, stroke, accident, murder, suicide, overdose, etc., information that we collect from obituaries, biographies, newspaper articles and other media sources. Our database of treated artists counts 246 cases of premature and sudden deaths out of 2,236 artists who were alive at the beginning of our sample period. We identify 57,997 auction transactions for the combined subsamples of treated and matched artists.

Our empirical results lead to five conclusions. First, premature death increases prices by 54.7% and sales by 63.2%. Second, if the death is also sudden, price and volume increases amount to 80.0% and 84.0%, respectively. Third, the death effect is more pronounced when the artist dies at a younger age, when she presumably leaves a larger un-produced body of work. Fourth, for death to have an impact on prices and sales, the artist needs to have a reputation, otherwise there is no effect. All these findings are confirmed by robustness tests on the definition of premature death and of an artist's notoriety, and with different samples (matched artists' sample, all artists' in the global database). A placebo test reassuringly shows that the death effect in a pseudo dataset is insignificant. Fifth, death has a permanent impact for 10 years and beyond on prices and volume in our diff-in-diff setup, which we confirm using event study designs and a repeat-sales analysis. Following Pénasse and Renneboog (2018), we use the number of transactions observed each year (trading volume) to proxy for auction turnover. Since an

[3] Mei et al. (2009) and Xiong and Yu (2011) document the negative cross-sectional correlation between turnover and float during two speculative episodes in Chinese markets.

artist's unexpected death necessarily diminishes supply, the increase in trading volume we document implies an even larger increase in turnover relative to the counterfactual.

While popular wisdom claims that a dead artist is worth more than one alive, the impact of death on art transactions and prices have not been studied often.[4] In the traditional hedonic regressions that aim at constructing art-indexes, some papers include a dummy variable indicating that an artist is dead at the time of the transaction (see e.g., Ekelund et al. 2000; Ursprung and Wiermann 2011; Renneboog and Spaenjers 2013). These studies all conclude that death is accompanied by higher average prices.[5] While not controlling for unexpected deaths, Korteweg et al. (2016) document that paintings do not sell more frequently subsequent to an artist's demise, "despite popular belief that the passing away of an artist temporarily raises visibility of his or her artwork". The authors speculate that this is because "most artists' deaths do not come as a surprise to the market".

The price increase following unexpected death is compatible with any theory in which supply affects prices, and a *temporary* volume increase could be a consequence of the price increase, since the current holders of the art-works of the deceased artist may decide to consume some of the capital gains or simply to rebalance their portfolios. If auctions of individual works are subject to fixed costs, an increase in price could affect sales volume. However, our results on volume stand even after we add a control for yearly-average sale price of an artist's works. The observed *permanent* increase in volume is more difficult to explain by alternative theories and gives support to the hypothesis that theories of speculation based on fluctuating differences in beliefs and short-selling restrictions apply to the art-market.

The remainder of the paper is structured as follows: In Section II we detail our

[4]The impact of supply-elasticity in speculative episodes in housing markets is modeled and documented in Glaeser et al. (2008).

[5]Our approach differs from these studies by its focus on premature and sudden deaths. In addition, our research design relies on the set up of a matched control group. A control group effectively pins down the counterfactual price and volume trajectories in the absence of premature and sudden death. In the absence of a matched sample, the control group consists of all non-treated artists. It is likely these artists exhibit different price and volume trajectories as they age, which would contaminate the estimate of the death effect. Our research design minimizes this risk by constructing a matched sample.

datasets and develop the empirical strategy and econometric considerations; in Section III we present the results and explain the robustness and placebo tests; and in Section IV, we formulate our conclusion. In Appendix A we present a simple model of speculation between risk-neutral agents where the premature death of an artist leads to a permanent increase in prices and turnover of her art-works.[6]

II. Data and empirical strategy

A. The Art Market

The setting for our empirical work is the auction market for modern and contemporary art. Works of art are usually sold through two types of intermediaries, dealers (galleries) and auction houses. Auction houses effectively act as brokers and operate most of the secondary market for art and other luxury goods. According to the Tefaf Art Market Report 2017, the art market is worth about USD 45 billion worldwide, typically split equally between dealers and auction houses (Pownall, 2017). Dealers are often small businesses, lightly regulated, so that this market is largely opaque. As a result, dealer prices tend not to be reliable or easily obtainable. We therefore work with auction data, which aligns well with our interest in the secondary market. Auction data is both reliable and publicly available, and has been used to study a broad number of finance and economics questions (e.g. Beggs and Graddy (2009), Galenson and Weinberg (2000), Mei and Moses (2005)). A drawback is that fewer artists are active on the auction market at the time of their death. This means that we can only measure the effect of death on prices conditional on the death of artists for whom there is a secondary market.

The way the auction market operates has changed little over the centuries. Sellers consign works of art to an auction house and works are grouped to create an auction. Every auction comes with a catalog listing all of the lots in the sale with information

[6] Bernales et al. (2019) also study a model featuring risk-averse agents with heterogeneous beliefs, in which a reduction in supply leads to an increase in volume. Lovo and Spaenjers (2018) propose a model where trading also arises endogenously, but do not study the effect of a change in supply.

about each piece and often features a public pre-sale exhibition. At the auction itself, each item is bid on, one at a time. When an item does not attract any bids or the bids do not exceed the reserve price, it is bought-in. If it is sold, the winner is required to pay the hammer price along with the buyer's commission and any taxes. The auction house also takes a seller's commission, which is deducted from the hammer price, and passes on the remainder of the proceeds to the consignor.

Transaction costs are substantial in the art market. Auction houses typically charge commissions of around 10% for both parties (buyers and sellers), and transaction costs may also include mandatory insurance and shipping charges (see Pesando (1993), Ashenfelter and Graddy (2003)). If a lot does not sell, consignors often face "buy-back" fees, reimbursing the auction house for its various costs, such as photographing, researching and cataloging the item. Sellers also incur some charges, such as shipping and handling costs even when a work of art goes unsold (i.e., it is "bought-in"). Art buyers also have to take into account the various costs incurred to maintain, store, restore and insure works of art, which can be non-negligible.

Despite these large transaction costs, art-as-investment is increasingly popular. The first formal art fund was one launched by the British Rail Pension Fund in 1974, investing some $70 million worth of art and luxury furniture (Trucco, 1989). The Art & Finance Report 2014, a joint report by Deloitte Luxembourg and ArtTactic, identifies 72 art funds in operation in 2014. Art funds are of course only the tip of the art investment iceberg. 76 percent of art buyers still view their acquisitions as investments, intending to at least avoid negative returns (Picinati di Torcello and Petterson, 2014). There are about 300,000 art advisors in the world today (Reyburn, 2014).

Equally interesting is the practice of flipping art. Art flippers purchase art with the intent of offering the piece at a profit shortly after purchase. Flipping is facilitated by specialized firms offering high-security warehouses, in tax-free jurisdictions, specially designed for the purpose of quickly reselling art. For example, a 2015 New York Times Magazine article covers a new storage company, Uovo (Alden, 2015): "Everything about the facility seems designed to remove friction from the art market—to turn physical objects into liquid assets. Apart from its private viewing rooms for deal making, which are now common in the storage business, what really sets Uovo apart is its vast database. [...] [G]iving clients and prospective buyers remote access to so much data, while making the business more efficient, also helps make the art more like a tradable unit, able to change hands without even leaving a warehouse.[7]

B. Auction data

Our primary data sources are the Blouin Art Sales database and Auction club, online databases commonly used in research on art-markets. In the Blouin database, we retain a million auction records from 1957 until 2016, for 8,199 artists, covering art periods from Medieval art to Modern and Contemporary art. The selected artists also appear in the Oxford Grove online Dictionary and/or in Artcyclopedia. Only London sales are included until 1969, but from the 1970s, the coverage consists of almost all major, medium-sized, and even smaller auction houses around the world. We restrict our attention to 2,051 artists who were alive in 1957, the beginning of our sample period. We expand the universe of contemporary artists using various sources (mostly from lists complied by Wikipedia), and obtain additional transactions from the data provider Auction club. This additional search yields transactions for 866 artists including 185 that were not in our initial dataset and were alive at the start of our sample window. Our final sample thus comprise 2,236 artists.

This paper focuses on 246 artists who passed away prematurely and no later than 2015. This enables us to observe transactions at least one year before and one year after the death of the artist. We consider a death as premature if it occurs prior to an artist's 66th birthday (we later explore the sensitivity of our results to this cutoff). On average, these artists died at age 54.

[7]Buying art as an investment is not a recent phenomenon. The noted collector Peggy Guggenheim wrote after a visit to New York in 1959 that "[T]he entire art movement had become an enormous business venture,... Some buy merely for investment, placing pictures in storage without even seeing them, phoning their gallery every day for the latest quotation, as though they were waiting to sell stock at the most advantageous moment." Guggenheim (1997), page 78.

The relatively young average age of decease suggests that premature death may have suppressed a substantial body of work. To provide a rough estimate of the size of the anticipated oeuvre which was not produced as a result of premature death, we again use Blouin Art Sales data and select the sample of painters who were born after 1880 (and hence active in the 20th century), lived to at least age 70, and had at least 200 sales in auctions from 1957 to 2016.[8] On average, each painter had 605 sales but Blouin provides year-of-production for only 255 of these. The painters in this sample created, on average, 129 paintings before and including the age of 54 and 126 paintings subsequently. Hence we can reasonably argue that the average prematurely deceased artist that we focus on in this paper produced only half of their potential oeuvre.

The "death events" are spread over the sample period. A group of nine artists passed away in 1958, while the last two artists died in 2013. This is convenient from an econometric point of view, because it reduces the risk that our results may be driven by the state of the market at a narrow point in time (Figure 1).

Whenever possible, we collect the cause of death of artists who passed away at the age of 65 or younger. We gather this biographical information from a combination of obituaries, biographical memoirs, newspaper articles, magazine articles, and encyclopedia (including Grove Dictionary of Art/Oxford Art Online and Wikipedia), in order to ascertain the surprise element in an artist's death. We report statistics on causes of death in Table I.

Each auction record contains information on the artist, artwork, and sale. We observe the name of the artist, his nationality, and his or her years of birth and death. Even in public sales, the identity of the buyer and the seller are typically kept secret by the auction house, and our dataset does not contain this information. The information on the art object includes title, year of creation (for about a third of observations), medium, size, and whether the piece is signed. The transaction information includes the auction house, date of the auction, lot number, and hammer price. Our sample includes periods

[8]Although catalogue raisonnés would provide more complete data, they only exist for a small number of artists.

of large inflation and we calculate 2015 US dollar equivalent hammer prices using the US consumer price index.

Our main variables of interest are auction prices and trading volume around death events. Few artists sell at auction every year, and many artists only sell when they reach a certain level of notoriety. Each year-artist for which we do not observe a transaction is recorded as a zero, provided the artist is aged 23 or older.[9] Our volume panel consists of 124,273 artist-year volume observations, of which 26,865 correspond to the treated artists and their matched controls. Estimating the death effect on art prices imposes an additional condition, since we need to observe at least one transaction before and after the death of the artist. To measure the impact on prices, we thus rely on a subset of 76 artists who were active on the auction market before their death.

C. Empirical strategy

We ask whether premature death affects two outcome variables, volume and prices. A natural starting point is to examine whether the price and traded volume of a deceased artist change after the artist passes away. Our hypothesis is that, everything else equal, prices and volume should increase. That is, we are interested in the counterfactual price and volume trajectory of the same artist if she would not have passed away prematurely. In Appendix A, we formalize this hypothesis in a stylized model. Since both prices and volume may correlate with age, as well as the passage of time, our specifications must include not only artist fixed effects, but also age and time fixed effects. In particular, age fixed effects are set irrespective of whether the artist is alive or not at the time of the transaction, because they serve the purpose of separately identifying the effect of death from the effect of age. Even with such a rich set of fixed effects, it is important to reflect on what control group will serve to pin down the counterfactual prices and volume in the absence of premature death. When the sample only includes the works of artists who passed away prematurely, we cannot separately identify the effect of death from the effect

[9]We set the beginning of an artist's career at the age of 23, which corresponds to the earliest sale in an artist's career (Jean-Michel Basquiat) in our sample.

of old age. In our baseline specification, since the age cutoff of premature death is 65 years, the age fixed effects for ages exceeding 65 capture both the effect of age and the effect of death. Separating the effect of death from the effect of age therefore requires the presence of a control group of artists who did not die prematurely. Because artists may experience different career paths—the effect of age may be different across artists—it is a priori important to construct a control group that is as close as possible to the group of treated artists.

Our preferred empirical strategy therefore relies on constructing a synthetic control group of artists that is very similar to the group of treated artists. We implement a matching procedure to construct a control group of artists who are most comparable to the group of 246 artists that died prematurely. We delineate a set of covariates along which matched artists must resemble each other. The control group must consist of artists of approximately the same age as the "treated" group, selling art in the auction market in the same quantity and price range. We also want that the degree of notoriety of the treated and matched artists are comparable. We then implement a variation on the coarsened exact matching procedure (Iacus et al., 2012) to identify the artists that best satisfy these criteria. This procedure is similar to the identification strategy used by, e.g., Azoulay et al. (2010) to estimate the effect of "superstar" scientists on the productivity of their collaborators.

To construct our synthetic control group, we first match artists based on the average real USD price commanded by the artist's work and the average number of artworks sold per year. Both variables are measured over a lookback period of at most ten years before the death of the treated artist. We distinguish cases where the artist's work has been auctioned prior to his death, to cases in which no work of the artist has been sold prior to his death. For artists with prior sales, we search for other artists for which both past sales and prices fall within a 50% range of the treated artist. We match the remaining individuals without prior sales to other artists without prior sales. In the absence of price information, we check that the reputation of the treated artists and those in the control sample are similar at the time of death of the treated artist. To do so, following Pénasse and Renneboog (2018), we measure the yearly "Fame" of the artist as the percentage of mentions of each artist name in the English-language books digitized by Google Books. We require that the control artist's Fame in the year of the death of the treated artist, winsorized at the 5% level, falls within a 50% range of the treated artist Fame.[10]

Third, we require that a matched artist is born no more than ten years before or after the treated artist and that the matched artist is presently alive or passed away at age of 66 or older and at least ten years after the treated artist. This ensures that matched artists belong approximately to the same age cohort, while at the same time they do not die prematurely, so that we can identify the effect of the treated artist's death. We match without replacement so that each artist is assigned exactly one match. Whenever more than one match is found, we pick the matches that minimize the (normalized) Euclidean distance in the year of births of the two artists, sales, and price at death or fame. If several matches satisfy this last distance criterion, we pick one at random.[11] As an example, the algorithm matches Eva Hesse, one of the pioneers of post-minimalism, who died in 1970 at age 34, with Frank Stella (1936-) a major American artist of the 20th century, who is still active. In an online appendix, we show the list of artists and their matches.

Finally, we note that while our design aims at capturing the causal effect of death, we are interested in capturing the effect of the realized supply. This requires two additional assumptions. First, premature death must affect treated artists but not their controls. We later construct a placebo test that allow us to check that assumption. Second, death has to leave the demand for the artist unchanged. For instance, death must not boost the artist's (unobserved) notoriety. We consider a series of proxies for notoriety and return to this question in Section III.F.

Our control selection procedure matches 242 of the 246 treated artists (98.37%). We have a total of 57,997 transactions for these artists and the control group. Table II provides summary statistics for the variables of interest for the sample of artists who died prematurely and their matched counterparts. Statistics on average real USD prices,

[10] Google nGram data is unavailable after 2008; for artists that died after that, we take Fame in 2008.

[11] We also considered a simpler procedure where we minimize the Euclidean distance for the vector of standardized matching variables and obtained similar regression results.

average yearly volume and fame are computed for both samples of artists, based on the years before the death event of the treated artists. Fame is standardized so that the cross section of all artists in a given year has a zero mean and unit standard deviation. Both treated and control artists are, by construction, well balanced on all covariates relating to age, past prices, and volume. The typical artist in our sample is born in the mid-1920s. Treated artists pass away at the age of 54.3 on average, which is 22.7 years younger than the typical control (conditional on the later artist dying before 2016). There is considerable variation in the age, and time, of death. For instance, the youngest artist in our sample, Francesca Woodman, died in 1981 at the age of 23; 17 passed away at the age of 65. On average, treated and matched artists sold one work through auction per year in the ten years that preceded their death. 170 artists had not sold a single work of art at the time of their death; also in this respect, matched artists are very similar.[12]

D. Econometric Considerations

We use a difference-in-differences framework to estimate the impact of death on prices and volume. Our econometric specification differs slightly depending on whether the outcome variable is price or trading volume. For the former, our specification is

$$\log P_{i,t,k} = \beta_0 + \beta_1 \text{PostDeath}_{i,t} + \alpha_i + \delta_t + \gamma_1' \text{Age}_{i,t} + \gamma_2' \text{Artwork}_{i,t,k} + \gamma_3' \text{Artist}_{i,t} + \epsilon_{itk}, \quad (1)$$

where P_{itk} denotes the auction price of artwork k for artist i in year t, PostDeath is an indicator variable that switches to one from the artist's death year if the artist dies before 65, α_i and δ_t are artist and year fixed effects, $\text{Age}_{i,t}$ corresponds to age brackets dummies in five-year intervals, and $\text{Artwork}_{i,t,k}$ is a vector of artwork-specific controls that affect the price of art. This vector includes observed characteristics such as whether a given work is signed, whether it is dated, the medium (oil, watercolor, etc.), size, and auction house dummy variables. The vector $\text{Artist}_{i,t}$ includes artist characteristics

[12]Although our sample contains both superstars and lesser known artists, Table II does not suggest that outliers may be present. We nevertheless verified that our results do not change when we winsorize prices and volume or drop the most traded artists.

reflecting the fact that artist notoriety may change over time. To proxy for notoriety, we create a dummy variable equal to one when the artist has exhibited at the Documenta exhibition in Cassel, and another equal to one when the artist's work has been sold at Sotheby's or Christie's main venues, in London or New York. We also report regression results controlling for 'Fame', as defined above, since the variable is only available on a shorter sample (up to 2008). Equations of the form of (1) are often referred to as "hedonic regressions" in the literature on the determinants of real estate and art prices (e.g., Renneboog and Spaenjers, 2013).

To estimate the impact of death on the number of artworks sold $V_{i,t}$ for artist i in year t, we use the following specification, which is commonly used for count data with many zeros:

$$E[V_{i,t}|Z_{i,t}] = \exp[\beta_0 + \beta_1 \text{PostDeath}_{i,t} + \alpha_i + \delta_t + \gamma_1' \text{Age}_{i,t} + \gamma_3' \text{Artist}_{i,t}], \qquad (2)$$

where all variables are defined as above ($Z_{i,t}$ includes all right-hand side variables in Equation (2)). In both instances, a positive β_1 indicates that artists command higher prices or volume on average after their death. We estimate the effect of death on prices in (1) by OLS. In Equation (2) where the dependent variable is volume with a large number of zeros, we present conditional quasi-maximum likelihood (QML) estimates of the fixed effects Poisson model (Hausman et al., 1984). In both cases, we compute standard errors using the generalized Huber-White formula clustered at the artist level. QML standard errors are consistent even if the underlying data generating process is not Poisson, as long as Equation (2) is the correct specification of the conditional mean (Cameron and Trivedi, 1998). Bertrand et al. (2004) show that these "cluster-robust" standard errors perform well in the context of Differences-in-Differences estimation similars to our setting.

III. Results

A. *Main effect of premature death*

Table III gives the resulting β_1-estimates. The top panel reports the impact of death on auction prices and the bottom panel reports the effect on trading volume. The first column of each panel gives the results including the control group of matched artists, whereas the second column of each panel shows the results for the treated artists only. The table reports the number of observations as well as the number of treated artists and the number of control artists, if any. Observe that the number of artists is smaller in the top panel. We measure the impact of death on prices for the 76 artists who were active on the auction market before their death. In the bottom panel, we can work with the full sample of 246 artists.

Overall we find that both prices and volume surge when an artist passes away prematurely. In our baseline specification that includes the control group (column 1), we find that prices increase by $\exp(0.436) - 1 = 54.7\%$. Likewise, volume increases by 63.2%. All estimates are highly significant. The effect is practically the same for volume and are smaller but in the same magnitude for prices when we exclude artists of the control group.

The price and volume elasticities implicit in Table III, together with our estimate that the premature death of our treated artists caused a halving of their float (compared to the output of artists who did not die prematurely), allows us to calculate the elasticities with respect to float of price and volume that are displayed in Table IV. In turn, these imply an elasticity of price with respect to turnover of .46. This back-of-the-envelope calculation yields a result that is not far from the point estimate of .38 obtained by Cochrane (2003) for the elasticity of price-to-book with respect to float for Nasdaq stocks during the internet-bubble month of December 1999 or the elasticity of the price of warrants with respect to float for the data in Xiong and Yu (2011) (.24).

B. Robustness

We check the robustness of our main findings in Tables V to VII. Our results stay the same when using the full sample of artists alive in 1957 (Table V): their premature decease lead to both higher prices and volume, which respectively increase by 51.4% and 61.4%. The death of an artist can have an impact on his visibility and thus, on collectors' willingness to pay, which is why we repeat the above analyses while while controlling for an alternative definition of notoriety based on the Fame variable. The Fame variable, as defined earlier, is the percentage of mentions of each artist name in the English-language books digitized by Google Books.[13] The coefficients remain highly significant and effects are of similar magnitude. Finally, in Table VII, we perform a placebo test by dropping all treated artists and by "treating" their matched controls. To this placebo population of artists, who exhibit the same characteristics as the actually treated artists, we assign a placebo date of death that corresponds to the date of the premature death of the matched artists. We then match these these artists, who are assigned a placebo premature death date, with a new group of control artists and estimate the death effect on this placebo group.[14] Reassuringly, Table VII indicates that the death effect in this pseudo dataset on prices and volume is small and insignificant.

C. Sensitivity of sudden death, premature decease, and artist fame

In Table VIII, we drop all artists for whom death could have been anticipated. We expect the effect of death to be stronger in that case. We gather biographical information through a combination of the following resources: obituaries, biographical memoirs, artist biographies on auction websites, gallery descriptions, newspaper articles, magazine articles, and Google searches (including Wikipedia articles). We classify premature deaths as sudden, when the death is indicated as sudden in obituaries or news articles, or when the cause of death is given as a hearth attack, stroke (for artists with no reported heart

[13]The results in Table VI are based on the shorter sample of artists for which Fame is available in the year of death, but same results hold if we use 2008 Fame for artists that died after 2008.

[14]We match the large majority of artists, yielding a sample only slightly smaller of 69 (235) treated artists in the price (volume) specification.

disease), accident, murder, suicide,[15] overdose, sudden disease, and complication from surgery. Deaths are classified as anticipated whenever our source mentions that an artist was ill or in fragile condition. Table VIII indicates that prices and volume increase 80.0% and 84.0% upon unexpected death. As expected, these estimates are larger than our baseline estimates, so that the effect of premature death on prices and volume is larger when death is unexpected.[16]

We next explore the sensitivity of our result to the 65 year age cutoff. Death constitutes a shock to the future production of the artist. The shock is larger when the artist leaves a larger un-produced body of work, that is when the artist dies young. We therefore expect the death effect to be stronger for younger artists. Besides, death is less likely to be expected when it occurs at prime age, which should also contribute to the effect being larger for younger artists. In Figure 2, we report the coefficients for the effect of death interacted by the age of the treated artist, for age cutoffs from 50 and below to ages exceeding 90. The sample includes all artists who are alive at the beginning of our sample period (1957), as in Table V. Figure 2 confirms our prediction. The death effect declines with age as expected. The price effect is insignificant at the 95% level from the age of 65 onwards; the effect on volume turns insignificant from the age of 80.

We also expect that the death effect would matter mainly for artists who have already achieved a certain degree of reputation. In order to analysis the impact of fame at the time of death, we split the sample of artists with higher and lower notoriety (as measured by Fame). The left/right column in Table IX shows results for artist whose Fame is within the top/bottom tercile at the year of their death. We find that the results are driven by artists with a higher degree of notoriety, whereas there is no significant price and volume impact for less reputable artists.

Finally, to examine the possibility that the volume results are a consequence of the results on prices, perhaps because the presence of fixed costs lead to art pieces being

[15] One exception is Keith Vaughan's suicide, which was preceded by a diagnosed cancer two years before his death.

[16] The results are similar when we also drop potentially endogenous deaths such as suicides and overdoses, although the sample becomes much smaller.

present in auctions only when their prices are above a threshold. To capture that possibility, we construct artist-level price indices by interacting artists and year fixed effects in a hedonic regression:

$$\log P_{i,t,k} = \beta_0 + \delta_{i,t} + \gamma_2' \text{Artwork}_{i,t,k} + \epsilon_{itk}, \tag{3}$$

Coefficients $\delta_{i,t}$ in this regression correspond to the average log price of same-quality works sold for each artist-year. We next run Equation (2) while controlling for our (log) artist price indices. Note that, as in Eq. (1), we can only work with the smaller sample of artists that had an active auction-market by the time of their death. Further, even for this smaller subset of artists, there are some years with zero-volume, for which prices are not observed. In this case, we linearly interpolate to get continuous series (we find similar results if we do not interpolate). Table X shows the impact of death on volume, once we control for average prices. The coefficient associated with average-prices is significantly positive, implying that there is indeed a positive partial price-volume correlation. Nevertheless, the β_1 coefficient retains statistical significance and is about the same as our baseline estimate.[17] This result indicates that the volume death-effect is not a consequence of the price increases after death.

D. Persistence

We also study the dynamics of the death effect, which is particularly important for volume if we want to separate the change-in-supply channel from a possible portfolio-rebalancing channel. Collectors may decide to sell some of the deceased artist work after this work increased in value, for instance because of the associated wealth effect. Portfolio rebalancing would therefore cause volume to increase after death. But in contrast to the death effect we are interested in, this effect should be short-lived since portfolio rebalancing is only necessary once. In contrast, the supply effect predicts a permanent

[17]If we use the smaller sample but exclude the price index controls, the β_1 estimates are slightly higher, as expected (0.544 with the control group and 0.467 without).

effect on volume, because the change in float is permanent.

We estimate a variant of Equations (1)-(2) as we interact the treatment effect with indicator variables corresponding to a particular year relative to the artist's death. To reduce noise, we pool observations by year for each year within a five-year period before and a ten-year period after the artist's death. More concretely, the β_1 coefficient is replaced by a 15×1 vector and the PostDeath indicator is decomposed into 15 dummy variables. The first dummy is equal to one for observations up to five year prior to a treated artist death; the second dummy equals one for four years prior to a treated artist death, etc. The year prior death is left out. The final dummy is equal to one for observations 10 years or later after the passing away of the artist. Figure 3 suggests that the death effect is permanent, as reflected by the point estimates and the 95% confidence interval around them (Panels (a) and (b) correspond to columns 1 in Panels A and B in Table III). We observe a sharp increase in both prices and volume on the year following death. The point estimates are all insignificant in the pre-treatment years and are all positive (mostly significant) for all years after the death of the artist.[18]

E. *Evidence using round-trip transaction data*

So far our estimates of the price impact have been based on different items auctioned at different periods. As is common in the literature on art and real estate, we rely on the objective "hedonic" characteristics of the auctioned items to control for unobserved heterogeneity. We can also estimate the death effect using observations for the same item, provided such item has been auctioned at least twice. This is useful, because it enables us to work directly with returns, rather than prices.

Consider an item bought in time t and sold in time $t+j$. Taking the difference of Equation (1) yields

$$\log P_{i,t+j,k} - \log P_{i,t,k} = \beta_1(\text{PostDeath}_{i,t+j} - \text{PostDeath}_{i,t}) + (X_{i,t+j,t} - X_{i,t,t})\gamma + \delta_{t+j} - \delta_t + \epsilon_{i,t,t+j}.$$

[18] We also find no evidence of extrapolative behavior, *e.g.* Barberis et al. (2018), as a result of death of an artist although extrapolation is most probably present in art markets (see Pénasse and Renneboog 2018).

The left-hand side variable is now the round-trip log return between times t and $t + j$. The treatment variable is now the *change* in death status within the round-trip, that is, whether the artist i died between the purchase and resale of the work of art. Notice that all time invariant controls, including artwork specific variables and individual fixed effects disappear in the difference. Because individual artists may exhibit different risk characteristics, we nevertheless retain a specification with a constant and individual fixed effects:

$$r_{t,t+j} = \beta_0 + \beta_1 \text{Died}_{i,t,t+j} + \beta_2 \text{Deceased}_{i,t} + (X_{i,t+j,t} - X_{i,t,t})\gamma + \delta_{t+j} - \delta_t + \alpha_i + \epsilon_{i,t,t+j}, \quad (4)$$

where $r_{t,t+j} = \log P_{i,t+j,k} - \log P_{i,t,k}$ and $\text{Died}_{i,t,t+j} = (\text{PostDeath}_{i,t+j} - \text{PostDeath}_{i,t})$. We also include an additional indicator variable, $\text{Deceased}_{i,t}$, that is equal to one when the artist is deceased at purchase (i.e. at time t). A non-zero β_2 tests whether treated artists earn different returns *after* their death—whether there is a drift in prices. Our theory predicts that the effect of death is permanent. We therefore expect an estimate of β_1 that is close to the estimates presented in the top panel of Table III, and a β_2 estimate statistically indifferent from zero.

To construct our repeat-sale sample, we follow Pénasse and Renneboog (2018) to identify artworks that have been auctioned at least twice. In this dataset, each pair of transactions for the same item is a unique observation. We find 764 repeat sales for 70 treated artists that pass away within at least one round-trip and their 72 controls. (We keep artists in the sample even if we did not find repeat sales for their matched counterpart). We report the estimated β_1- and β_2-coefficients in Table XI. As expected, the effect of death on returns is high: death events are associated with an "abnormal" return of $\exp(0.477) - 1 = 61.1\%$ on average, when compared to a typical matched artist who does not die.

The effect is of the same magnitude when excluding the control group, so that returns are also abnormally high compared to other round-trips without death events. In both specifications, β_2-coefficients are small and indistinguishable from zero, indicating returns are not different after death. This confirms that the effect on prices is permanent.

F. Alternative explanations — media attention, exhibits and estate sales

A possible alternative explanation for our results is that death increases an artist's notoriety, in a way that is not well-captured by our controls for notoriety, and that more famous artists trade more often. It is reasonable to expect that death increases notoriety—Vincent van Gogh's being a well-known example. Recall that, in Table IX, we found that the death effect is absent for artists with low fame, suggesting that van Gogh's story is the exception rather than the rule. Further, the effect on prices and volume declines with the age at death (Figure 2), which means that if increases in notoriety that are imperfectly captured by our controls were the cause of the volume and price effects, the change in notoriety should decrease with age of death. While this seems plausible—artists that are older are probability more famous—this is difficult to square with the observation that the death effect is absent for artists with low fame.

In addition, we find that the effect on volume remains about the same when we control for the increases in artists' post-death prices (Table X). This means that an artist's added notoriety following death has to affect volume in a way that is not only orthogonal to our set of controls, but also to price changes.

Nevertheless, it is worthwhile to explore further if media exposure or exhibits increase durably after an artist's premature death, so that so that these notoriety measures can be candidates to explain the permanent changes in prices and volume that we observe. We perform two tests: (i) we compare the number of exhibitions (including retrospectives) of the treated and control artists in relevant time-spans, and (ii) we compare the number of times an artist is mentioned in the media (press) in the year before and after his death while excluding the obituaries in the week/month after decease.

For our first test, we use data from Artfacts.net that catalogs exhibitions from a wide range of artists; the exhibitions go back to the 19th century. We identified 5510 solo-exhibitions for treated artists and 6237 solo-exhibitions for the matched artists in the Artfacts.net data. We do not find any statistical differences in the number of exhibitions between treated and matched artist for several time windows—the two (three) years prior to the death of the treated artist, the two (three) subsequent years, the life span of the treated artist or the time span subsequent to the treated artist's death.[19]

As a second test, we search for all mentions of our treated artists, in Factiva, a global news monitoring in the year before and after their deaths. This media monitoring and communications database comprises seven main search categories (Dow Jones, All, Publications, Web News, Blogs, Pictures, Multimedia). The vast majority of our hits come from the category of Publications, which includes mainly articles in newspapers and magazines in 28 languages since 1990. We would like to measure a change in artist's notoriety but need to correct for the number of articles reporting the artist's death. Therefore, we partition the articles into those that provide information about the artists and their oeuvre and those that are triggered by their decease (and hence are merely obituaries).[20] Since we use Factiva data starting in 1990, we have only 55 treated artists. On average, there were 32.7 articles written around the world in the year before their deaths. In the subsequent year (including the date of decease), the average number of articles by artist is 77.6, which is (borderline) significantly different from the number prior to death (with a t-value of 1.71). When we exclude the articles including an obituary in the week (month) after the passing of an artist, we do not find a significant difference between these two years at the usual confidence levels (t-value is 1.36).

Overall, our tests do not indicate a significant increase in our treated artists' exposure through media (articles in newspapers and magazines) or exhibitions just after an artists' deaths.

One possible explanation for the increase in sales–though not for the simultaneous increase in prices—is that following decease, an artist's holdings of her own work would

[19]We count more exhibitions in the two years prior to death of the treated (212; 0.84 exhibition per artist) than in the year of death and subsequent year (190; 0.75 per artist), but the difference is not statistically significant. Using three years time windows yields similar results. The average number of exhibitions during the life of treated artists (5.5) is significantly smaller than post-death (16.4), but the post-death time window is, for most artists, much longer. If exhibitions explain the growth in reputation, it is a gradual effect (on average, over more than four decades since death).

[20]We screened all articles in English, French, German, Dutch, Italian and Spanish, and used Google translate for other languages.

be sold-off, increasing total sales. If these estate sales were the reason for our results, one would expect that following the death of an older artist this effect would be at least as pronounced as the effect on younger artists, because older artists should be able to accumulate a larger inventory of their own work, but our results in Figure 2 show that the volume effect declines markedly with age. In addition, the majority of artists' estate/foundations appoint one or more galleries to handle sales instead of auction houses—making it less likely that sales by estates would add to the auction sales that we use, at least for the first few years, when the volume effect is already clearly present.[21] An artist's heirs or trustees of the estate/foundation are often interested in increasing the reputation of the deceased and galleries, particularly those who have had a long-term relationship with the artist, are often committed to her legacy. A representing gallery may also help underwrite the production of a "catalogue raisonné" and organize exhibits at the gallery or interested museums. In addition, auction houses do not have access to art fairs, an important venue for finding buyers. Finally, auction houses have a mixed reputation among artists. As Chuck Close, the great American painter and photographer, who has been represented since the last century by New York's Pace Gallery and London's White Cube, told the New York Times "The last thing I want messing around with my career is an auction house."[22]

IV. Conclusions

We studied the impact of an exogenous negative supply shock to the float in the art market, namely the impact of the premature and unexpected death of an artist on art prices and the volume of transactions. When collectors have fluctuating heterogeneous beliefs, since they cannot sell short, prices overweigh optimists' beliefs and have a speculative component that reflects the resale option. If collectors have limited capacity to bear risk, a decrease in float may increase the value and the frequency of exercise of this resale

[21]Internet searches identify galleries appointed by estate/foundations of more than 90% of the first fame-tercile of our treated artists that, as Table IX shows, is responsible for our results.

[22]*New York Times*, December 1 2017.

option; increasing prices and turnover.

This is indeed the case according to our difference-in-differences experiment where we compare price-volume following an artists' death to price-volume of artists who survive the treated artist, but are otherwise close in terms of age, "fame", market value and transaction frequency. We document that premature death increases price by 54.7% while volume goes up by 63.2%. When we add the restriction that the death should not only be premature but also sudden, the price and volume increases amount to 80.0% and 84.0%, respectively.

We also perform a sensitivity analysis on the definition of premature death (initially set at 65 years) and show that the death-effect is more pronounced when the age at death is lower, reflecting a potentially larger un-produced body of work. In addition, we show that the death-effect is only present when the artist had achieved, while alive, sufficient notoriety. Robustness tests varying the definitions of premature and notoriety, and testing different (sub)samples confirm these results. A placebo test reassuringly shows that the death-effect in a pseudo dataset is insignificant. We also exclude the possibility that our findings of price-volume increases are driven by art investors' portfolio reallocation or that the volume-effect is merely a consequence of the price-effect.

Using data on auctions of paintings by artists that survived to age 70, recorded by Blouin in 1957-2016, we calculate that our average prematurely deceased artist lost half of her potential oeuvre. Remarkably, the resulting estimate of the price impact of this loss of float is comparable to the one produced by Cochrane (2003) for the speculative episode involving internet stocks or using the data in Xiong and Yu (2011) on speculation on Chinese warrants. Nonetheless, while the Chinese warrants had expiration dates and internet speculation imploded during the first semester of 2000, our results on price and volume over the long-term (10+ years) and a repeat-sales analysis indicate that a premature artist's death produces a permanent shock to prices and volume. The presence of these permanent effects supports the arguments in Glaeser et al. (2008) or Scheinkman (2014) on the role of supply responses on the implosion of speculative episodes.[23]

[23]As documented by Ofek and Richardson (2003), the dot-com price crash was linked to the increase

Appendix A. A simple model

In this Appendix we exposit a simple model of speculation that motivates the regressions in this paper. The model is related to the models in Hong et al. (2006) and Scheinkman (2014), where investors speculate about dividend payments. Here, market participants forecast how much utility they will gain from holding the asset.

There are an infinite number of time periods $t = 1, 2\cdots$, and two goods: art and a numeraire non-art good. All agents have time-separable utility functions, a common discount rate $\frac{1}{1+r}$ per period and are risk-neutral. Investors receive in each period an endowment of e units of the numeraire good and access to a "risk-free" technology on the non-art good with a gross rate of return per period of $1 + r$. There are two equally sized groups of investors. At time t, before trading occurs, investors in group $i \in \{1, 2\}$ forecast that each unit of art-goods will give them next period $(1+r)\theta_t^i$ units of utility on average. Investors face a cost of carry in their art-good inventory. There is no shorting, and an investor that carries $x \geq 0$ units from time t to time $t+1$ incurs a cost $\frac{1}{2}\gamma(x_t)^2$ at time t. More precisely, the representative agent of group $i \in \{1, 2\}$ who has beliefs θ_t^i, holds $x_t \geq 0$ units of art in period t and consumes c_t units of consumption, and has a period t utility flow

$$u^i(x_t, c_t, \theta_t^i) = \theta_t^i x_t - \frac{1}{2}\gamma(x_t)^2 + c_t \tag{A-1}$$

We assume that $\theta_t^i \in \{\theta^\ell, \theta^h\}$, $\theta^h > \theta^\ell > 0$ for each (i, t) and that $\theta_t^1 \neq \theta_t^2$. For simplicity we assume that the value of θ_t^i is i.i.d. and the probability that $\theta_t^i = \theta^h$ is .5. We write $\bar{\theta} = .5(\theta^\ell + \theta^h)$. Notice there is no aggregate uncertainty concerning beliefs on the value the artist's work, although aggregate uncertainty could be easily introduced. As the regressions in the paper, the model concentrates on supply uncertainty and ignores demand uncertainty.

We will assume that c_t is not restricted to be positive or equivalently that e is large enough. We write p_t for the price of a unit of art in period t. Trading in period t occurs

in float that resulted from an unprecedented level of lockup expirations and insider selling.

after θ_t^i obtains and a buyer of the art-work at t holds it until time $t+1$ when one may choose to sell or to hold it for one more period.

All investors start with an amount $\frac{N_0}{2}$ of the art-good, where N_0 is the total supply at time 0. In period 1 the aggregate supply (inelastically) increases to N_1, with $N_1 > N_0$. At $t = 2$ the aggregate supply N_2 is either N_1 (with probability π) or μN^1 with $\mu > 1$. The lower supply indicates the artist died between periods 1 and 2. Aggregate supply from period 3 on is equal to the supply in period 2, that is artists that survive to period 2 die before period 3.

From period 2 on, there is no change in supply. We will look for an equilibrium in which for $t \geq 2$ prices remain constant and the allocation of the art-work to group i only depends on the current forecast $(1+r)\theta_i^t$ that is $x_t^i = x(\theta_t^i)$ for $i = 1, 2$ and all $t \geq 2$. If p stands for the price of an unit of art from period 2 on, we obtain the first order condition for a potential buyer in period $t \geq 2$ who has forecast $(1+r)(\theta_t^i)$:

$$\theta_t^i - \gamma x - p + \left(\frac{p}{1+r}\right) \leq 0 \text{ with equality if } x > 0.$$

Hence,

$$x(\theta_t^i) = \max\left\{\frac{\theta_t^i - \delta p}{\gamma}, 0\right\}, \tag{A-2}$$

where $\delta := \frac{r}{1+r}$.

The constant equilibrium price that prevails period 2 on would depend on the actual realization of supply, N_2. There are two possibilities. The first is an equilibrium where at each $t \geq 2$, the currently most optimistic group holds the full supply of art-works. Since this group must hold a per-capita amount N_2, this requires that the equilibrium price that holds for $t \geq 2$, $\hat{p}$ is given by:

$$\hat{p}(N_2) = \frac{\theta^h - \gamma N_2}{\delta}, \tag{A-3}$$

Such an equilibrium also requires that the currently pessimistic group chooses to hold zero in period t when the price equals $\bar{p}$ in periods t and $t+1$, that is: $\theta^\ell - \delta\hat{p}(N_2) \leq 0$ or

$$\gamma N_2 \leq \theta^h - \theta^\ell \tag{A-4}$$

Notice that condition (A-4) also guarantees the non-negativity of the price given by (A-3). Thus (A-4) is also sufficient for the existence of an equilibrium in which only the group that receives signal θ^h buys art-works. Hence, if differences in utilities are large relative to the supply (multiplied by the holding-cost coefficient γ) then, in equilibrium, only the most optimistic agents hold the art-work. Furthermore, the buyer of the art-work has a 50% probability of wanting to reduce her demand to zero in the next period. If she were forced instead to hold the asset for s periods, then her demand D in period 2 for art-works, if the art-work price $p_t = \bar{p}$ for $t \geq 2$, would satisfy:

$$\theta^h - \gamma D + \sum_{t=3}^{s+2} \frac{\bar{\theta} - \gamma D}{(1+r)^{t-2}} \leq \bar{p} - \frac{\bar{p}}{(1+r)^s},$$

with equality if $D > 0$. It is easy to check that for s large, this inequality cannot be satisfied when $\bar{p} = \hat{p}(N_2) = \frac{\theta^h - \gamma N_2}{\delta}$ and $D = N_2$. In fact when $s = \infty$, i.e., when only buy and hold strategies are allowed, then:

$$\theta^h - \gamma \bar{N} + \sum_{t=3}^{\infty} \frac{\bar{\theta} - \gamma \bar{N}}{(1+r)^{t-2}} = \sum_{t=2}^{\infty} \frac{\theta^h - \gamma \bar{N}}{(1+r)^{t-2}} + \sum_{t=3}^{\infty} \frac{\theta^\ell - \theta^h}{(1+r)^{t-2}} = \hat{p}(N_2) - \frac{\theta^\ell - \theta^h}{2r} < \hat{p}(N_2).$$

A buyer who is optimistic today benefits from the option of reselling her art-work to another agent who has become more optimistic than her in the future, and places a value on that option of $\frac{\theta^h - \theta^\ell}{2r}$. If resale is ruled out and only buy-and-hold strategies are allowed, optimists would not be willing to purchase the full supply at the price $\bar{p}$.

On the other hand, if $\gamma N_2 > \theta^h - \theta^\ell$ then in equilibrium both types hold positive amounts of the art-good and the equilibrium price $\tilde{p}$ is

$$\tilde{p} = \frac{\theta^\ell + \theta^h - \gamma N_2}{2\delta} \tag{A-5}$$

In this "interior" equilibrium, the amount held by the type that receives θ^i is given by:

$$x(\theta^i) = \frac{\theta^i - \bar{\theta}}{\gamma} + \frac{N_2}{2} \tag{A-6}$$

Again, an optimist purchases a larger quantity and gains from the option to resell. However, that option is less valuable than in the case where optimists hold the full supply, because, in this "interior equilibrium" instead of reselling N_2 art-units she would resell only $\frac{\theta^h - \theta^l}{\gamma} < N_2$.

Notice that both $\hat{p}(N_2)$ and $\tilde{p}(N_2)$ are strictly decreasing in the supply N_2. On the other hand, $\tilde{p}(N_2) < \hat{p}(N_2)$ if and only if $\theta^h - \theta^\ell - \gamma N_2 > 0$ that is exactly in the region where $\hat{p}$ is the equilibrium price. Thus if an artist dies prematurely (supply equals N_1) the post-death price for her work is larger than the post-death price of the work of an artist who dies later (supply equals μN_1).

Notice that if $\mu\gamma N_1 \leq \theta^h - \theta^\ell$, then only the most optimistic would hold the art-works of an artist from period 2 on, and consequently the expected turnover of both prematurely deceased and surviving artists is $\frac{1}{2}$, for $t \geq 2$. On the other hand, if $\gamma N_1 > \theta^h - \theta^\ell$ then in both cases we obtain an interior equilibrium. It follows from (A-6) that the difference in holdings between the most and less optimistic buyers is $\frac{\theta^h - \theta^\ell}{\gamma}$ so that expected turnover equals $\frac{\theta^h - \theta^\ell}{2\gamma N_2}$. Hence, turnover is strictly lower if an artist survives to period 2, since in this case N_2 is higher than when an artist dies between periods 1 and 2. Finally, if $\gamma N_1 < \theta^h - \theta^\ell < \mu\gamma N_1$ then if an artists dies between periods 1 and 2, in the equilibrium for $t \geq 2$, only the most optimistic agent holds the art-works and expected turnover is 1/2. However if an artist survives to period 2, the equilibrium for $t \geq 2$ is interior and expected turnover is $\frac{\theta^h - \theta^\ell}{2\gamma\mu N_1} < \frac{1}{2}$. We have thus established:

Proposition. *Prices for art produced by an artist who survives to period 2 are permanently lower than prices of art produced by an artist who does not survive to period 2. Turnover of art-work produced by an artist who survives to period 2 is permanently less than or equal to the turnover of art of an artist that dies between periods 1 and 2, the difference being strict unless the accumulated output of a surviving artist is low enough* *relative to the difference in marginal utility forecasts between optimists and pessimists* ($\mu\gamma N_1 \leq \theta^h - \theta^\ell$.)

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Table I: Cause of death

	N	Share of total (%)
Panel A: All deaths		
Unknown	88	35.5
Cancer	39	15.7
Unspecified illness	20	8.1
AIDS	10	4.0
Other disease	8	3.2
Heart disease	5	2.0
Tuberculosis	5	2.0
Alcohol and drug-related disease	4	1.6
Suicide*	1	0.4
Sudden death	68	27.4
Total	248	100.0
Panel B: Sudden deaths		
Heart attack	24	35.3
Suicide	11	16.2
Accident or murder	11	16.2
Sudden unspecified cause	7	10.3
Overdose	5	7.4
Sudden disease	4	5.9
Stroke	4	5.9
Complications from surgery	2	2.9
Total	68	100.0

This table reports the composition of our sample of artists who died between 1958 and 2014. Based on the cited cause of death in obituaries, biographical memoirs, newspaper articles, magazine articles, and Google searches (including Wikipedia articles), Panel A classifies the cause of deaths into Cancer; AIDS; Heart disease; Tuberculosis; Alcohol and drug-related disease; Other disease; Unspecified illness (for cases in which the precise disease is not reported); Unknown; Sudden death. * This observation corresponds to Keith Vaughan. Vaughan died of suicide, but we classify his death as predictable since he had been diagnosed cancer two years prior to his death. Panel B reports the cause of death for the subsample of sudden deaths from Panel A.

Table II: Matched sample

Variable	Sample	Mean	SD	Min	Max
Year of birth	Deceased ≤ 65 years	1924.4	16.2	1894.0	1966.0
	Control group	1924.7	16.3	1892.0	1966.0
Year of death	Deceased ≤ 65 years	1978.7	14.1	1958.0	2013.0
	Control group[a]	1993.8	12.9	1970.0	2018.0
Age at death	Deceased ≤ 65 years	54.3	9.3	23.0	65.0
	Control group[a]	77.0	7.8	66.0	101.0
Av. price at treatment (thousands)[b]	Deceased ≤ 65 years	9.8	11.8	1.0	82.9
	Control group	10.4	11.6	1.1	80.2
Av. yearly volume at treatment	Deceased ≤ 65 years	0.9	3.4	0.0	36.7
	Control group	0.8	3.0	0.0	25.7
Fame at treatment[c]	Deceased ≤ 65 years	-0.0	0.9	-0.5	3.6
	Control group	-0.1	0.9	-0.5	3.6
No. of artists	Deceased ≤ 65 years	242.0			
	Control group	242.0			

This table reports summary statistics for the group of treated and control artists defined in Section II.C. The statistics are computed using data prior to the year of death of the treated artist. Prices are reported in 2015 dollars. Volume is defined as the total number of transactions per year. Fame is the standardized percentage of mentions of each artist name in the English-language books digitized by Google Books. [a] For the 165 control artists who die in our sample. [b] For the 73 treated and control artists who are 'active' with at least one transaction prior to the treated artist's death. [c] For the 242 artists (and their controls) who pass away before 2009 (when Google nGram data is available).

Table III: Impact of artist death on prices and volume – Matched sample

	With control group	Without control group
Panel A: Death and auction prices		
Deceased ≤65 years	0.436	0.277
t-stat	(3.88)	(2.11)
Year and age fixed effects and hed. controls	Y	Y
Artist fixed effects	Y	Y
No. of observations	57,997	37,178
No. of artists (treated + matched controls)	72+72	72
Panel B: Death and volume		
Deceased ≤65 years	0.490	0.437
t-stat	(3.34)	(2.99)
Year and age fixed effects	Y	Y
Artist fixed effects	Y	Y
No. of observations	26,865	13,449
No. of artists (treated + matched controls)	242+242	242

This table shows the β_1-coefficients in Equations (1)-(2). The sample consists of artists who passed away at the age of 65 or earlier together with their matched controls (left column). We also report estimates with treated artists only in the right column. Panel A gives OLS estimates of a regression of log real auction prices on the treatment dummy, while controlling for year, age and individual fixed effects, two dummies proxying for notoriety (a dummy equal to one when the artist had exhibited at the Documenta and another one when the artist has sold at least once at Sotheby's or Christie's in London or New York), and the full set of controls to address artwork heterogeneity (medium, auction house, a dummy equal to one if the artwork is signed, a dummy equal to one if the artwork is dated, artwork height and width). Panel B gives conditional quasi-maximum likelihood Poisson estimates of a regression of annual trading volume on the same set of controls (minus artwork-specific controls). Note the smaller number of artists in Panel A than in Panel B; measuring the death effect on art price requires that artists are active on the auction market before their death, hence the smaller sample. Standard errors are clustered at the artist level.

Table IV: Turnover elasticity of price

Elasticity			Source
Panel A: Art Sample			
Average float change of early death	Δf	-0.50	Authors's calculation
Average log price change	Δp	0.46	Table III
Average log volume change	Δv	0.49	Table III
Float elasticity of price	$\varepsilon_{fp} = \frac{\Delta p}{\Delta f}$	-0.92	
Float elasticity of volume	$\varepsilon_{fv} = \frac{\Delta v}{\Delta f}$	-0.98	
Float elasticity of turnover	$\varepsilon_{ft} = \varepsilon_{fv} - 1$	-1.98	
Turnover elasticity of price	$\varepsilon_{tp} = \frac{\Delta p}{\Delta t} = \frac{\varepsilon_{fp}}{\varepsilon_{ft}}$	0.46	
Panel B: Related Studies			
Turnover elasticity of price	ε_{tp}	0.38	Cochrane (2003) (Table 3)
Turnover elasticity of price	ε_{tp}	0.24	Xiong and Yu (2011) and authors's calculation.

Table V: Impact of artist death on prices and volume – Full sample

	Unmatched control group	Without control group
Panel A: Death and auction prices		
Deceased ≤65 years	0.415	0.246
t-stat	(3.98)	(1.86)
Year and age fixed effects and hed. controls	Y	Y
Artist fixed effects	Y	Y
No. of observations	694,071	41,576
No. of artists (treated + all controls)	76+2160	76
Panel B: Death and volume		
Deceased ≤65 years	0.479	0.460
t-stat	(3.05)	(3.20)
Year and age fixed effects	Y	Y
Artist fixed effects	Y	Y
No. of observations	124,273	13,657
No. of artists (treated + all controls)	246+1990	246

This table shows the β_1-coefficients in Equations (1)-(2). The sample consists of all artists alive at the beginning of the sample period (1957) or later. We also report estimates with treated artists only in the right column. Panel A gives OLS estimates of a regression of log real auction prices on the treatment dummy, while controlling for year, age and individual fixed effects, two dummies proxying for notoriety (a dummy equal to one when the artist had exhibited at the Documenta and another one when the artist has sold at least once at Sotheby's or Christie's in London or New York), and the full set of controls to address artwork heterogeneity (medium, auction house, a dummy equal to one if the artwork is signed, a dummy equal to one if the artwork is dated, artwork height and width). Panel B gives conditional quasi-maximum likelihood Poisson estimates of a regression of annual trading volume on the same set of controls (minus artwork-specific controls). Standard errors are clustered at the artist level.

Table VI: Impact of artist death on prices and volume – Alternative control for notioriety (1957-2008)

	With control group	Without control group
Panel A: Death and auction prices		
Deceased ≤65 years	0.360	0.248
t-stat	(3.16)	(2.11)
Year and age fixed effects and hed. controls	Y	Y
Artist fixed effects	Y	Y
No. of observations	31,653	18,643
No. of artists (treated + matched controls)	72+72	72
Panel B: Death and volume		
Deceased ≤65 years	0.406	0.409
t-stat	(2.98)	(3.33)
Year and age fixed effects	Y	Y
Artist fixed effects	Y	Y
No. of observations	22,651	11,329
No. of artists (treated + matched controls)	242+242	242

This table shows the β_1-coefficients in Equations (1)-(2). Similarly to Table III, the sample consists of artists who passed away at the age of 65 or earlier together with their matched controls (left column). The sample stops in 2008 because our Fame control is only available through 2008. We also report estimates with treated artists only in the right column. Panel A gives OLS estimates of a regression of log real auction prices on the treatment dummy, with a similar set of controls as in Table III, to which we add an alternative definition of notioriety (as measured by the percentage of mentions of each artist name in the English-language books digitized by Google Books). Panel B gives conditional quasi-maximum likelihood Poisson estimates of a regression of annual trading volume on the same set of controls (minus artwork-specific controls). Standard errors are clustered at the artist level.

Table VII: Impact of artist death on prices and volume – Placebo sample

	With control group	Without control group
Panel A: Death and auction prices		
Deceased ≤65 years	-0.058	0.106
t-stat	(-0.49)	(1.16)
Year and age fixed effects and hed. controls	Y	Y
Artist fixed effects	Y	Y
No. of observations	42,212	18,876
No. of artists (treated + matched controls)	69+69	69
Panel B: Death and volume		
Deceased ≤65 years	-0.180	-0.067
t-stat	(-1.14)	(-0.41)
Year and age fixed effects	Y	Y
Artist fixed effects	Y	Y
No. of observations	25,323	12,648
No. of artists (treated + matched controls)	235+235	235

This table shows the β_1-coefficients in Equations (1)-(2). The sample consists of a placebo sample consisting of the matched artists in the baseline regression (Table III). We drop artists who passed away at 65 or earlier and use this placebo group as treated sample. We assign a placebo date of death to each placebo-treated artist, corresponding to the date of the premature death of the matched artists who actually passed away prematurely. We then match these these artists, who are assigned a placebo premature death date, with a new group of control artists. We also report estimates with placebo-treated artists only in the right column. Panel A gives OLS estimates of a regression of log real auction prices on the treatment dummy, while controlling for year, age and individual fixed effects, two dummies proxying for notoriety (a dummy equal to one when the artist had exhibited at the Documenta and another one when the artist has sold at least once at Sotheby's or Christie's in London or New York), and the full set of controls to address artwork heterogeneity (medium, auction house, a dummy equal to one if the artwork is signed, a dummy equal to one if the artwork is dated, artwork height and width). Panel B gives conditional quasi-maximum likelihood Poisson estimates of a regression of annual trading volume on the same set of controls (minus artwork-specific controls). Standard errors are clustered at the artist level.

Table VIII: Impact of artist death on prices and volume – Sudden deaths

	With control group	Without control group
Panel A: Death and auction prices		
Deceased ≤65 years	0.588	0.307
t-stat	(3.23)	(1.77)
Year and age fixed effects and hed. controls	Y	Y
Artist fixed effects	Y	Y
No. of observations	24,071	18,607
No. of artists (treated + matched controls)	19+19	19
Panel B: Death and volume		
Deceased ≤65 years	0.610	0.690
t-stat	(2.40)	(4.16)
Year and age fixed effects	Y	Y
Artist fixed effects	Y	Y
No. of observations	6,766	3,135
No. of artists (treated + matched controls)	65+65	65

This table shows the β_1-coefficients in Equations (1)-(2). The sample consists of artists who suddenly passed away at the age of 65 or earlier together with their matched controls (left column). We report characteristics of the sudden death sample in Table I. We also report estimates with treated artists only in the right column. Panel A gives OLS estimates of a regression of log real auction prices on the treatment dummy, while controlling for year, age and individual fixed effects, two dummies proxying for notoriety (a dummy equal to one when the artist had exhibited at the Documenta and another one when the artist has sold at least once at Sotheby's or Christie's in London or New York), and the full set of controls to address artwork heterogeneity (medium, auction house, a dummy equal to one if the artwork is signed, a dummy equal to one if the artwork is dated, artwork height and width). Panel B gives conditional quasi-maximum likelihood Poisson estimates of a regression of annual trading volume on the same set of controls (minus artwork-specific controls). Standard errors are clustered at the artist level.

Table IX: Impact of artist death on prices and volume – Conditioning on Fame at Death (1957-2008)

	High Fame	Low Fame
Panel A: Death and auction prices		
Deceased ≤65 years	0.599	-0.224
t-stat	(4.57)	(-1.42)
Year and age fixed effects and hed. controls	Y	Y
Artist fixed effects	Y	Y
No. of observations	45,385	2,480
No. of artists (treated + matched controls)	24+24	24+24
Panel B: Death and volume		
Deceased ≤65 years	0.586	0.029
t-stat	(2.87)	(0.12)
Year and age fixed effects	Y	Y
Artist fixed effects	Y	Y
No. of observations	8,815	7,629
No. of artists (treated + matched controls)	81+81	81+81

This table shows the β_1-coefficients in Equations (1)-(2). Similarly to Table III, the sample consists of artists who passed away at the age of 65 or earlier together with their matched controls. The left/right column shows results for artist which Fame (as measured by the percentage of mentions of each artist name in the English-language books digitized by Google Books) is within the top/bottom tercile at the year of their death. The sample stops in 2008 because our Fame data is only available through 2008. Panel A gives OLS estimates of a regression of log real auction prices on the treatment dummy, with a similar set of controls as in Table III. Panel B gives conditional quasi-maximum likelihood Poisson estimates of a regression of annual trading volume on the same set of controls (minus artwork-specific controls). Standard errors are clustered at the artist level.

Table X: Impact of artist death on volume – Controlling for artist prices

	High Fame	Low Fame
$\delta_{i,t}$	0.168	0.138
t-stat	(3.59)	(1.99)
Deceased ≤65 years	0.458	0.420
t-stat	(3.48)	(3.14)
Year and age fixed effects	Y	Y
Artist fixed effects	Y	Y
No. of observations	4,993	2,467
No. of artists (treated + matched controls)	72+72	72

This table shows the β_1-coefficients in Equation (2), while controlling for the average price of items sold for each artist-year. The sample consists of active artists who passed away at the age of 65 or earlier together with their matched controls (left column). We also report estimates with treated artists only in the right column. The log artist price index δ_i, t is constructed according to Eq. (3) and is linearly interpolated in the absence of trading volume for a given artist-year. Standard errors are clustered at the artist level.

Table XI: Impact of artist death on round-trip returns

	With control group	Without control group
Died ≤ 65 during round-trip	0.477	0.392
t-stat	(2.15)	(1.71)
Deceased ≤ 65 at purchase	0.028	0.007
t-stat	(0.49)	(0.05)
Year and age fixed effects and hed. controls	Y	Y
Individual fixed effects	Y	Y
No. of observations	764	442
No. of artists (treated + controls)	70+72	70

This table shows the β_1- and β_2- coefficients in Equation (4). The first coefficient measures the death effect, similarly to our hedonic specification (1). The β_2 coefficient tests whether treated artists earn different returns *after* their death. The sample consists of repeat-sales for artists who passed away at the age of 65 or earlier, as well as their matched controls (left column). We also report estimates with treated artists only in the right column. Standard errors are clustered at the artist level.

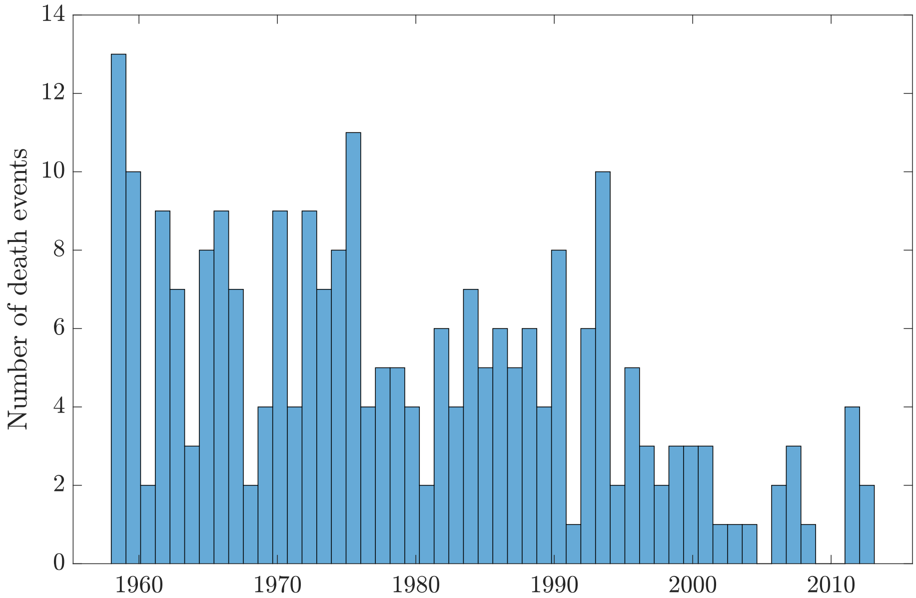
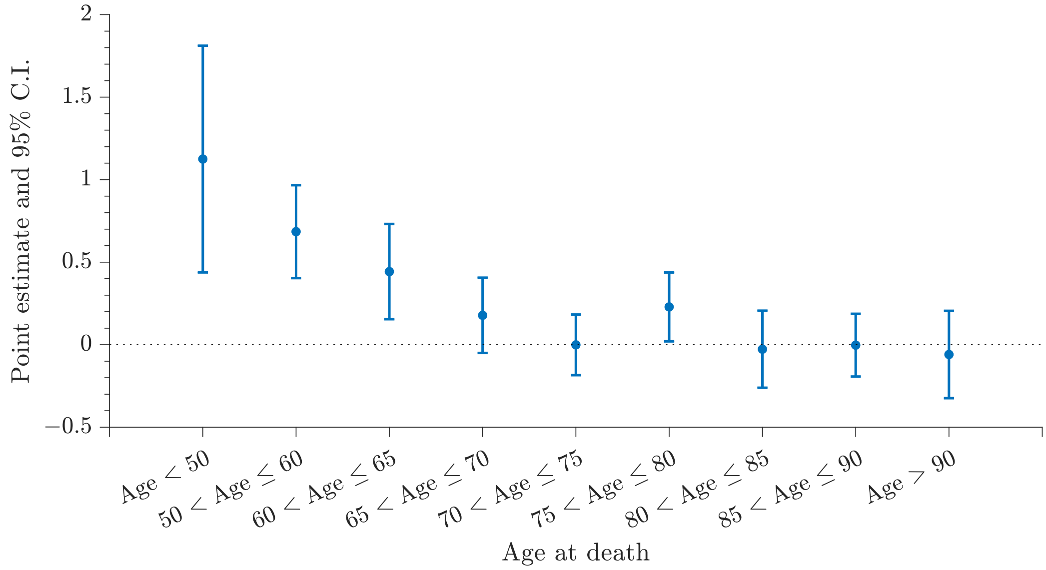
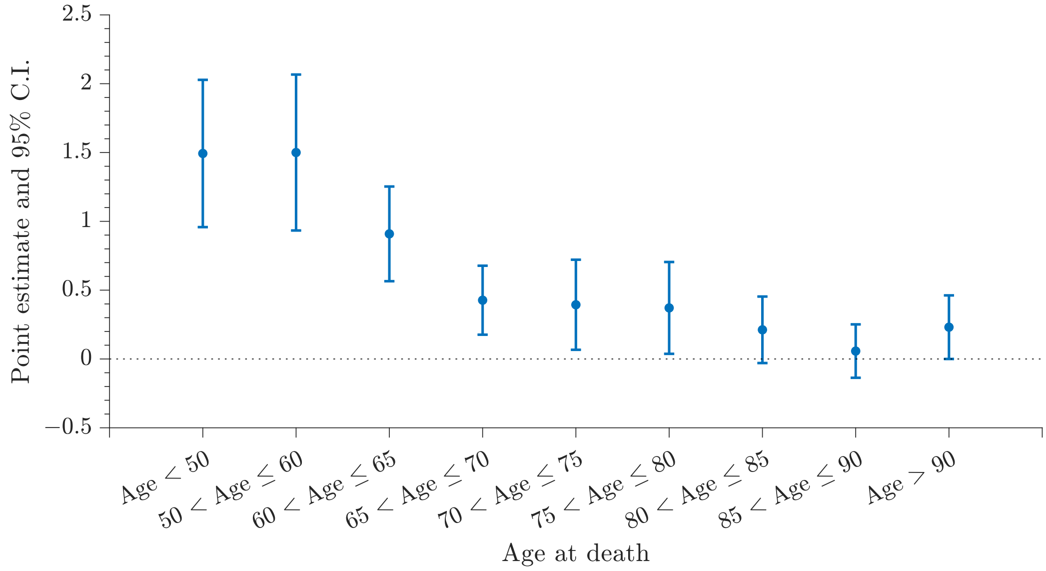


Figure 1: Distribution of premature death events
This figure depicts the number of artists who died a the age of 65 or earlier in a specific year over our time span 1958-2014. The total sample of artists who died prematurely over our sample window (1957-2016) amounts to 258. In order to analyze the impact of death on prices and returns, we require at least one year of price data before an after the death in our sample window.



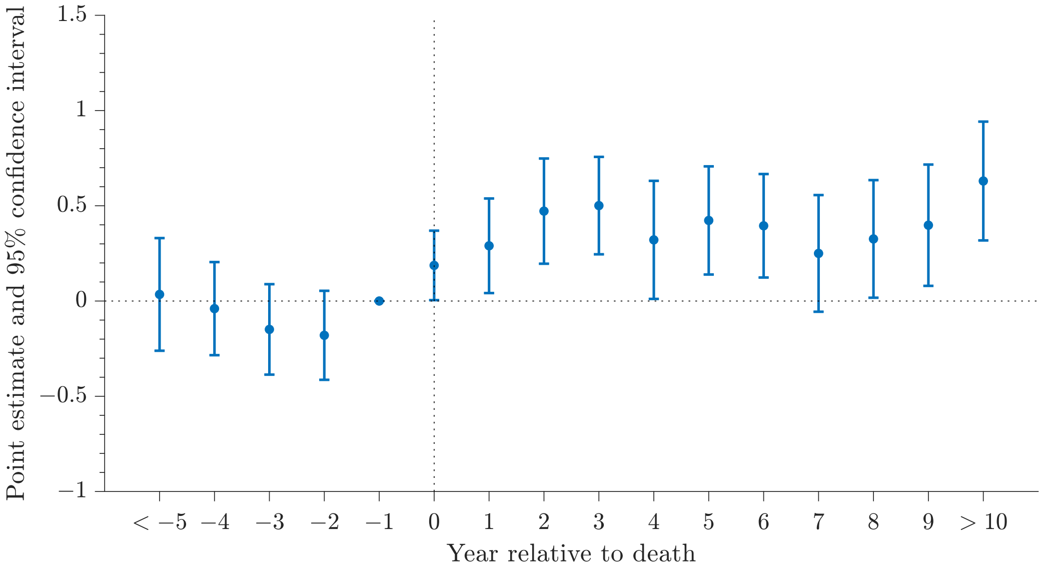
(a) Prices



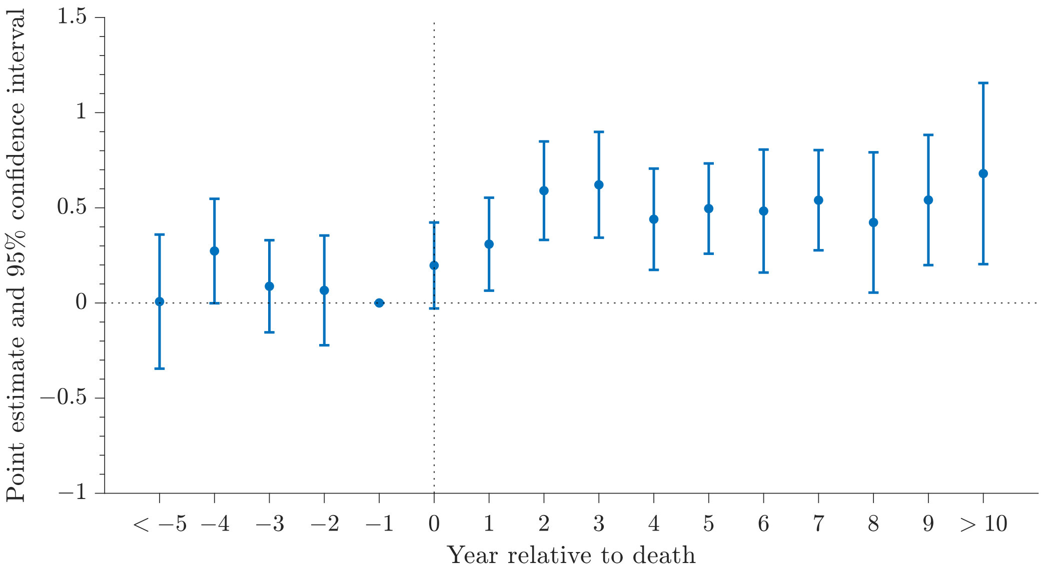
(b) Volume

Figure 2: The death effect declines with the age at death

Panels (a) and (b) present the point estimates and 95% confidence intervals for the causal impact of death interacted with the age at death. The sample includes all artists who are alive at the beginning of our sample period (1957). Panel (a) gives OLS estimates (based on Equation (1)); Panel (b) gives QML Poisson estimates (based on Equation (2)). Standard errors are clustered at the artist level.



(a) Prices



(b) Volume

Figure 3: Prices and trading volume around year of death

Panels (a) and (b) present the point estimates and 95% confidence intervals for the causal impact of death in a given year relative to the artist's death. The sample includes all treated artists who are active prior to their death. Panel (a) gives OLS estimates (based on Equation (1)); Panel (b) gives QML Poisson estimates (based on Equation (2)), similar to Column 1 of Table III. Observations more than 5 (10) years before (after) the death are grouped together. Standard errors are clustered at the artist level.

Appendix – For Online Publication

Matched Sample

Treated artists				Controls		
Artist	Birth	Death	Active	Artist	Birth	Death
Aagaard Andersen, Gunnar	1919	1982		Lassnig, Maria	1919	2014
Abedin, Zainul	1914	1976		Hogan, Joao	1914	1988
Afro	1912	1976	Y	Soulages, Pierre	1919	–
Ali, Shakir	1916	1975		Heyboer, Anton	1924	2005
Altenbourg, Gerhard	1926	1989	Y	Trujillo, Guillermo	1927	–
Angus, Rita	1908	1970		Korniss, Dezso	1908	1984
Apap, William	1918	1970		Quiros, Antonio	1918	1984
Arbus, Diane	1923	1971		Bury, Pol	1922	2005
Arkley, Howard	1951	1999	Y	Oulton, Therese	1953	–
Atlan, Jean-Michel	1913	1960		Butler, Reg	1913	1981
Ayrton, Michael	1921	1975	Y	Johnson, Ray	1927	1995
Baldessin, George	1939	1978	Y	Attersee, Christian Ludwig	1940	–
Bandeira, Antonio	1922	1967		Cruz-Diez, Carlos	1923	–
Batlle Planas, Juan	1911	1966		Paniker, K. C. S.	1911	1977
Bazile, Castera	1923	1966		Palacios, Luisa	1923	1990
Baziotes, William	1912	1963		Burri, Alberto	1915	1995
Bela	1917	1968		Hare, David	1917	1992
Belkin, Arnold	1930	1992	Y	Felguerez, Manuel	1928	–
Beuys, Joseph	1921	1986	Y	Pearlstein, Philip	1924	–
Binyinyiwuy	1928	1982		Imai, Toshimitsu	1928	2002
Birolli, Renato	1905	1959		Porter, Fairfield	1907	1975
Boetti, Alighiero	1940	1994		Onobrakpeya, Bruce	1932	–
Bogusz, Marian	1920	1980		Castro, Amilcar de	1920	2002
Bonevardi, Marcelo	1929	1994	Y	Saul, Peter	1934	–
Borduas, Paul-Emile	1905	1960		Cremer, Fritz	1906	1993
Brauner, Victor	1903	1966		Krasner, Lee	1908	1984
Bredow, Rudolf	1909	1973		Bergman, Anna-Eva	1909	1987
Brittain, Miller	1912	1968		Spyropoulos, Yannis	1912	1990
Broodthaers, Marcel	1924	1976		Neri, Manuel	1930	–
Brown, Joan	1938	1990		Weiner, Lawrence	1942	–
Brown, Mike	1938	1997	Y	Jaray, Tess	1937	–
Bruning, Peter	1929	1970		Larter, Richard	1929	2014
Buthe, Michael	1944	1994	Y	McLean, Bruce	1944	–
Caballero, Luis	1943	1995	Y	Mosset, Olivier	1944	–
Campbell, George	1917	1979	Y	Rodhe, Lennart	1916	2005
Carrillo, Lilia	1930	1974		Claus, Carlfriedrich	1930	1998
Castagnino, Juan Carlos	1908	1972		Stematsky, Avigdor	1908	1989
Chaissac, Gaston	1910	1964		Lamba, Jacqueline	1910	1993
Chambers, Jack	1931	1978		Comtois, Ulysse	1931	1999
Cherkaoui, Ahmed	1934	1967		Gaucher, Yves	1934	2000
Chighine, Alfredo	1914	1974	Y	Messagier, Jean	1920	1999
Christensen, Dan	1942	2007	Y	Self, Colin	1941	–
Chukwuogo-Roy, Chinwe	1952	2012		Von Hausswolff, C. M.	1956	–
Colquhoun, Robert	1914	1962		Schumacher, Emil	1912	1999
Corbett, Edward	1919	1971		Abreu, Mario	1919	1993

Coronel, Pedro	1923	1985	Y	Colville, Alex	1920	2013
Corzas, Francisco	1936	1983	Y	Chavez, Gerardo	1937	–
Crippa, Roberto	1921	1972	Y	Sugai, Kumi	1919	1996
Curnoe, Greg	1936	1992		Gershuni, Moshe	1936	2017
Cutrone, Ronnie	1948	2013	Y	Cahn, Miriam	1949	–
Dallaire, Jean	1916	1965		Badii, Libero	1916	2001
Daraniyagala, Justin Pieris	1903	1967		Wang Xuetao	1903	1982
Davies, John	1936	1999	Y	Goode, Joe	1937	–
Davis, Gene	1920	1985	Y	Carrington, Leonora	1917	2011
Defeo, Jay	1929	1989		Beksinski, Zdzislaw	1929	2005
Deira, Ernesto	1928	1986	Y	Makowski, Zbigniew	1930	–
Dekkers, Ad	1938	1974		Lancaster, Mark	1938	–
Deyrolle, Jean	1911	1967		Orlando, Felipe	1911	2001
Diller, Burgoyne	1906	1965		Aeschbacher, Hans	1906	1980
Disney, Walt	1901	1966		Turner, Helen Monro	1901	1977
Djanira	1914	1979		Guerrero, Jose	1914	1991
Dotremont, Christian	1922	1979		Day, Melvin	1923	2016
Downey, Juan	1940	1993		Attersee, Christian Ludwig	1940	–
Dumouchel, Albert	1916	1971		Gysin, Brion	1916	1986
Duwe, Harald	1926	1984		Johnson, George Henry	1926	2007
Eardley, Joan	1921	1963		Raza, Sayed Haider	1922	–
Echeverria, Enrique	1923	1972		Hlito, Alfredo	1923	1994
Endara Crow, Gonzalo	1936	1996	Y	Amaral, Antonio Henrique	1935	2015
Engilberts, Jon	1908	1972		Marczynski, Adam	1908	1985
Espaliu, Pepe	1955	1993		Nel, Karel Anthony	1955	–
Evans, Merlyn	1910	1973	Y	Lancaster, Osbert	1908	1986
Eyuboglu, Bedri Rahmi	1911	1975		Lardera, Berto	1911	1989
Fahlstrom, Oyvind	1928	1976		Scott, Patrick	1921	2014
Fairhurst, Angus	1966	2008	Y	Paine, Roxy	1966	–
Farrell, Micheal	1940	2000	Y	Wilson, Robert	1941	–
Feeley, Paul	1910	1966		Mortensen, Richard	1910	1993
Feni, Dumile	1942	1991		Bruggen, Coosje van	1942	2009
Fernhout, Edgar	1912	1974		Cage, John	1912	1992
Ferren, John	1905	1970		Cadmus, Paul	1904	1999
Fisher, Sandra	1947	1994	Y	Lavier, Bertrand	1949	–
Flavin, Dan	1933	1996	Y	Buren, Daniel	1938	–
Fomison, Tony	1939	1990	Y	Polesello, Rogelio	1939	2014
Forg, Gunther	1952	2013	Y	Scharf, Kenny	1958	–
Fraile, Alfonso	1930	1988	Y	Brizzi, Ary	1930	2014
Freedman, Barnett	1901	1958		Johnson, William H.	1901	1970
Frink,Elisabeth	1930	1993	Y	Cuevas, Jose Luis	1934	–
Fruhtrunk, Gunter	1923	1982	Y	Kupferman, Moshe	1926	2003
Fu Baoshi	1904	1965		Messel, Oliver	1904	1978
Gadanyi, Jeno	1896	1960		Adalid, Agustin Lazo	1896	1971
Galan, Julio	1958	2006	Y	Currie, Ken	1960	–
Garcia Ponce, Fernando	1933	1987		Molinari, Guido	1933	2004
Gnoli, Domenico (ii)	1933	1970		Ferrer, Rafael	1933	–
Goldstein, Jack	1945	2003	Y	Nerdrum, Odd	1944	–
Gonzales-Torres, Felix	1957	1996		Sitthiket, Vasan	1957	–
Gonzalez, Juan	1945	1993		Piper, Adrian	1948	–
Graves, Nancy	1939	1995		Hiller, Susan	1940	–
Greco, Alberto	1931	1965		Baya	1931	1998

Grundig, Hans	1901	1958		Evergood, Philip	1901	1973
Grunwald, Henryk	1904	1958		Mason, Alice Trumbull	1904	1971
Guerrero Galvan, Jesus	1910	1973		Sterne, Hedda	1910	2011
Gundersen, Gunnar S.	1921	1983		Garcia Guerrero, Luis	1921	1996
Hardin, Helen	1943	1984		Rosler, Martha	1943	–
Haring, Keith	1958	1990	Y	Paladino, Mimmo	1948	–
Hennessy, Patrick	1915	1980		Dzubas, Friedel	1915	1994
Hesse, Eva	1936	1970		Ono, Yoko	1933	–
Hester, Joy	1920	1960		Gonzalez Bogen, Carlos	1920	1992
Hilton, Roger	1911	1975	Y	Schultze, Bernard	1915	2005
Hockelmann, Antonius	1937	2000	Y	Max, Peter	1937	–
Hung, Francisco	1937	2001	Y	Senbergs, Jan	1939	–
Immendorff, Jorg	1945	2007	Y	Fetting, Rainer	1949	–
Jacoulet, Paul	1896	1960		Rodriguez Lozano, Manuel	1896	1971
Jarema, Maria	1908	1958		Aroch, Arie	1908	1974
Jarman, Derek	1942	1994	Y	Petrick, Wolfgang	1939	–
John, Jiri	1923	1972		Kemble, Kenneth	1923	1998
Jones, Joe	1909	1963		Stromme, Olav	1909	1978
Jorn, Asger	1914	1973	Y	Friend, Donald	1914	1989
Kazuki, Yasuo	1911	1974		Benoit, Rigaud	1911	1986
Kelley, Mike	1954	2012	Y	Sherman, Cindy	1954	–
Kemeny, Zoltan	1907	1965		Kotin, Albert	1907	1980
Kenny, Michael	1941	1999	Y	Pacheco, Ana-Maria	1943	–
Kim Hwan-gi	1913	1974		Oppenheim, Meret	1913	1985
King, Cecil	1921	1986		Espinola Gomez, Manuel	1921	2003
Kinley, Peter	1926	1988	Y	Skotnes, Cecil	1926	2009
Kippenberger, Martin	1953	1997	Y	Schutte, Thomas	1954	–
Klein, Yves	1928	1962		Leslie, Alfred	1927	–
Kline, Franz	1910	1962		Graves, Morris	1910	2001
Kobzdej, Aleksander	1920	1972		Barcala, Washington	1920	1993
Kondor, Bela	1931	1972		Coughtry, Graham	1931	1999
Kudo, Tetsumi	1935	1990	Y	Rodriguez, Alirio	1934	2018
Kurelek, William	1927	1977	Y	Rainer, Arnulf	1929	–
Lanyon, Peter	1918	1964		Johnson, Lester	1919	2010
Lasekan, Akinola	1916	1972		Thieler, Fred	1916	1999
Lavonen, Ahti	1928	1970		Swaminathan, Jagdish	1928	1994
Ledy, Cheik	1962	1997		Yuskavage, Lisa	1962	–
Leura Tjapaltjarri, Tim	1929	1984		Metzkes, Harald	1929	–
Licini, Osvaldo	1894	1958		Reggiani, Mauro	1897	1980
Lo Savio, Francesco	1935	1963		Sihlali, Durant	1935	2004
Louis, Morris	1912	1962		Guttuso, Renato	1911	1987
Lueg, Konrad	1939	1996	Y	Donaldson, Anthony	1939	–
Lui Shou-kwan	1919	1975		Walters, Gordon	1919	1995
Lunar, Emerio	1940	1990		Coen, Arnaldo	1940	–
MacBryde, Robert	1913	1966		Gopas, Rudolf	1913	1983
Macdonald, Jock	1897	1960		Yirawala	1897	1976
Mafai, Mario	1902	1965		Sternberg, Harry	1904	2001
Magani, Mick	1920	1984		Muller, Robert	1920	2003
Malaval, Robert	1937	1980		Suarez, Pablo	1937	2006
Manzoni, Piero	1933	1963		Katz, Alex	1927	–
Mapplethorpe, Robert	1946	1989		Anderson, Laurie	1947	–
Marika, Mawalan	1908	1967		Camarena, Jorge Gonzalez	1908	1980

Marika, Wandjuk	1927	1987		Malangi, David	1927	1999
Martin, Mary	1907	1969		Bill, Max	1908	1994
Matta-Clark, Gordon	1943	1978		Turrell, James	1943	–
Maymurru, Narritjin	1916	1981		Palazuelo, Pablo	1916	2007
McHale, John	1922	1978		Niro, Robert de, Sr.	1922	1993
Medek, Mikulas	1926	1974		Capdevila, F. M.	1926	1995
Mendieta, Ana	1948	1985		Abramovic, Marina	1946	–
Messil, Gabriel	1934	1986		Khakhar, Bhupen	1934	2003
Millares, Manolo	1926	1972		Aitchison, Craigie	1926	2009
Milpurrurru, George	1934	1998	Y	Cohen, Bernard	1933	–
Minaux, Andre	1923	1986	Y	Renqvist, Torsten	1924	2007
Mithinari	1929	1976		Gironella, Alberto	1929	1999
Moke	1950	2001	Y	Coe, Sue	1951	–
Molvig, Jon	1923	1970		Alonso, Raul	1923	1993
Morton, Ree	1936	1977		Wakabayashi, Isamu	1936	2003
Mualla, Fikret	1903	1967		Rimsa, Juan	1903	1978
Munoz, Juan	1953	2001	Y	Leirner, Jac	1961	–
Namatjira, Albert	1902	1959		Carter, Clarence Holbrook	1904	2000
Nanninga, Jaap	1904	1962		Burra, Edward	1905	1976
Newman, Barnett	1905	1970		Motherwell, Robert	1915	1991
Nickolls, Trevor	1949	2012	Y	Koningsbruggen, Rob van	1948	–
Oiticica, Helio	1937	1980		Brawley, Robert J	1937	2006
Ojeda, Gustavo	1958	1989	Y	Favier, Phillipe	1957	–
Onus, Lin	1948	1996		Woodrow, Bill	1948	–
Orszag, Lili	1926	1978		Thomas, Rover	1926	1998
Paalen, Wolfgang	1905	1959		Tworkov, Jack	1900	1982
Pacheco, Maria Luisa	1919	1982	Y	Lataster, Ger	1920	2012
Palermo, Blinky	1943	1977		Marioni, Joseph	1943	2009
Pancetti, Jose Gianini	1902	1958		Stokes, Adrian	1902	1972
Pane, Gina	1939	1990		Alviani, Getulio	1939	2018
Park, David	1911	1960		Mariano	1912	1980
Parvez, Ahmed	1926	1979		Ronald, William	1926	1998
Paschke, Ed	1939	2004	Y	Knoebel, Imi	1940	–
Pedro, Antonio	1909	1966		Lewis, Norman	1909	1979
Peeters, Jozef	1895	1960		Maxy, Max Herman	1895	1971
Pike, Jimmy	1940	2002	Y	Revilla, Carlos	1940	–
Poliakoff, Serge	1906	1969	Y	Manessier, Alfred	1911	1993
Ponc, Joan	1927	1984		Rivera, Manuel	1927	1995
Popkov, Viktor	1932	1974		Uglow, Euan	1932	2000
Portinari, Candido	1903	1962		Clifton, Marshall	1903	1975
Potworowski, Piotr	1898	1962	Y	Zack, Leon	1892	1980
Preller, Alexis	1911	1975	Y	Meistermann, Georg	1911	1990
Reinhardt, Ad	1913	1967		Smith, Tony	1912	1980
Requichot, Bernard	1929	1961		Munoz, Lucio	1929	1998
Rhoades, Jason	1965	2006		Bulloch, Angela	1966	–
Richier, Germaine	1902	1959		Herrera, Velino	1902	1973
Sadequain	1930	1987		Pomodoro, Gio	1930	2002
Sage, Kay	1898	1963		Feng Zikai	1898	1975
Schwalbe, Ole	1929	1990	Y	Hrdlicka, Alfred	1928	2009
Seitz, Gustav	1906	1969		Baij, Ramkinker	1906	1980
Seligmann, Kurt	1900	1962		Woodruff, Hale	1900	1980
Sempere, Eusebio	1923	1985		Cesariny, Mario	1923	2006

Serpa, Ivan	1923	1973		Jess (Collins, Burgess)	1923	2004
Shi Lu	1919	1982		Yamamoto, Taro	1919	1994
Silva, Carlos	1930	1987		Eggenschwiler, Franz	1930	2000
Skold, Otte	1894	1958		Bernath, Aurel	1895	1982
Smith, David	1906	1965		Brooks, James	1906	1992
Smithson, Robert	1938	1973		Bell, Larry	1939	–
Sokolov-Skalya, Pavel	1899	1961		Glarner, Fritz	1899	1972
Stajuda, Jerzy	1936	1992		Golden, Daan van	1936	2017
Stankiewicz, Richard	1922	1983		Velarde, Pablita	1918	2006
Stepanova, Varvara	1894	1958		Centurion, Emilio	1894	1970
Stohrer, Walter	1937	2000	Y	Iseli, Rolf	1934	–
Swift, Patrick	1927	1983		Daws, Lawrence	1927	–
Takamatsu, Jiro	1936	1998	Y	Schonebeck, Eugen	1936	–
Taylor, E. Mervyn	1906	1964		Grundig, Lea	1906	1977
Thek, Paul	1933	1988		Tousignant, Claude	1932	–
Thomkins, Andre	1930	1985	Y	Tubke, Werner	1929	2004
Thompson, Bob	1937	1966		Scholder, Fritz	1937	2005
Tschusiya, Tilsa	1928	1984		Fernandez, Agustin	1928	2006
Tsingos, Thanos	1914	1965		Balint, Endre	1914	1986
Tuckson, Tony	1921	1973		Iskowitz, Gershon	1921	1988
Valcin, Gerard	1927	1988	Y	Guinovart, Josep	1927	2007
Varo, Remedios	1908	1963		Lewers, Margo	1908	1978
Vassilieff, Danila	1897	1958		Pan Tianshou	1897	1971
Vaughan, Keith	1912	1977	Y	Turcato, Giulio	1912	1995
Vega, Jorge de la	1930	1971		D'Arcangelo, Allan	1930	1998
Vordemberge-Gildewart, F.	1899	1962		Carvalho, Flavio de	1899	1973
Warhol, Andy	1928	1987	Y	Riopelle, Jean-Paul	1923	2002
West, Franz	1947	2012	Y	Neshat, Shirin	1957	–
White, Charles Wilbert	1918	1979		Solari, Luis	1918	1993
Whiteley, Brett	1939	1992	Y	Kirkeby, Per	1938	–
Wiedemann, Guillermo	1905	1969		Narvaez, Francisco	1905	1982
Wilke, Hannah	1940	1993		Armajani, Siah	1939	–
Wilkerson, Jerry	1943	2007	Y	Buraimoh, Jimoh	1943	–
Williams, Fred	1927	1982	Y	Fuchs, Ernst	1930	–
Wlodarski, Marek	1903	1960		Bodmer, Walter	1903	1973
Wojnarowicz, David	1954	1992	Y	Frize, Bernard	1954	–
Woodman, Francesca	1958	1981		Wiszniewski, Adrian	1958	–
Wunuwun, Jack	1930	1990		Jaimes Sanchez, Humberto	1930	2003
Zabaleta, Rafael	1907	1960		Yunapingu, Munggurrawuy	1907	1979
Zobel, Fernando	1924	1984		Morellet, Francois	1926	2016
Zverev, Anatoly	1931	1986		Opalka, Roman	1931	2011