Art as an investment

Comparison with financial markets

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### Abstract

This literature review examines the characteristics of art as an investment object and whether art can produce rates of return comparable to equity or bonds. The literature reviewed covers a theoretical model on the utility of art to consumers based on both financial returns and emotional dividends by Lovo and Spaenjers (2018) and a study of the role of discrete consumption in demand for art. Empirical evidence on rates of return is examined with results showing an opportunity cost when investing in art compared to equity and mixed evidence when compared to bonds. Risk factors specific to art are described and the risk-return profile of art is compared to other. Another question asked is if masterpieces produce the highest returns, since famous paintings are often the ones to break record prices at auctions. Empirical measures of the rate of return of art differ to varying degrees in each study reviewed due to differences in data and methods.

**Keywords**  art, investment, art market, rate of return, auction
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1 Introduction

Record high prices reported in the media might incite excitement about art as an opportunity for windfall profits. Finding lost paintings in an old attic could be equated to winning the lottery and indeed works by famous artist tend to sell at extraordinarily high prices at glamorous evening auctions at Christie’s or Sotheby’s. Art is becoming more popular as an investment object (Lovo & Spaenjers, 2018), which is reflected in financial motivations becoming more important to collectors in surveys conducted by Arts Economics and UBS Investor Watch (McAndrew, 2021). Thus, it is important to analyse the performance of art as an investment and whether it should be considered one.

An increase in the ultra-wealthy worldwide, multimillion dollar art sales, and need for diversification has caused increased interest in art as an investment (Renneboog & Spaenjers, 2013). Renneboog and Spaenjers (2013) note that this new interest has led to the creation of several art funds and services for those investing into art and claim that investors are investing more in collectibles overall, including art. This increased interest in art as an investment is also accompanied by research into the returns and profitability of art that has had a renaissance in recent decades. Several studies find that auctioned artwork underperform traditional investment assets, such as equity and bonds (see e.g., Mandel, 2009; Mei & Moses, 2002; Renneboog & Spaenjers, 2013), which raises the question of whether financial motivations should be considered at all when buying art.

This thesis aims to answer how the unique characteristics of art differentiate it from other investments and how art performs as an investment compared to other assets. Unlike many intangible assets, art sold at established auction houses is accompanied by commissions, insurance, and transportation costs. Further, there are several risks that need to be considered when buying art that are not present in equity or bonds, such as issues of authenticity and material risk. Wrongful attribution can immediately reduce the price of an artwork to a mere

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1 Such as a painting attributed to Caravaggio being found in the attic of a French family home and selling for an undiscoled amount before an auction where it was estimated to be sold for up to €170 million (The Guardian, 2019).
few percent of the previous sale price (Frey & Pommerehne, 1989). Art is also much more illiquid than equity or bonds due to the delay between decision to sell and actualization and is generally not divisible, making diversification more difficult (Chanel, 1995). On the other hand, art funds are divisible and beneficial from a diversification perspective, but the consumption benefit is lost if the consumer does not get to personally enjoy their owned artwork.

Studying the art market is difficult due to heterogeneity of goods. Most artworks are one of a kind, making price comparison difficult and valuations subjective. To study the price developments of art, researchers construct an art index either using repeat sales of the same artwork or a hedonic regression approach. The reason repeat sales are used to construct art price indexes is to compare the price of an artwork to the price of the same artwork at a different time, thus the heterogeneity of art is overcome (Oosterlinck, 2017). This approach has challenges such as selection bias and a small sample size. Other papers use a hedonic regression approach that estimates the price of art based on several characteristics, such as size, artist, and auction house. Because all available data on art transactions are included, the hedonic regression methods may avoid some issues of selection bias; however, the issue here is in choosing the optimal characteristics to be the price determinants of art (Renneboog & Spaenjers, 2013). Out of the studies included in this thesis Baumol (1986), Mei and Moses (2002), and Lovo and Spaenjers (2018) use repeat sales to construct an art index, while Oosterlinck (2017), Renneboog & Spaenjers (2013), and Chanel (1995) use hedonic regression methods.

Another challenge in studying the art market is the selection bias inherent in data collection methods. Data is scanty available for the gallery market due to transactions being mostly between individuals and small galleries (Frey, 2000). At the top of the market there is more data available due to public auction records, which is most often used in studies on the art market (Frey, 2000). Because of lack of transparency in prices at art galleries and dealers, all papers summarized in this literature review use data from art auctions. However, auction sales data can give rise to selection bias due to art that has risen in value being more likely to be consigned to auction. The art auction market is dominated by the auction houses Christie’s and Sotheby’s, which is why most of the data originates there. If an artist’s work is sold at either of these auction houses the artist would generally be considered established, leaving out a large part of the art market that does not reach this high level. Due to these limitations, the market
segment analysed in literature is often limited to the very top of the market and the most expensive artworks.

The literature reviewed in this thesis unanimously finds that art indexes underperform equity as an investment and find mixed evidence when comparing art to corporate and government bonds. When compared with other tangible assets, such as gold, art does outperform alternatives (Renneboog & Spaenjers, 2013). The consensus is that art is highly volatile, which combined with the relatively low return makes it far from an ideal investment. However, Lovo & Spaenjers (2018) also consider emotional dividends to the consumer, which together with the financial return, might make investing in art a worthwhile endeavour due to the pure enjoyment of owning art.

1.1 Structure of the research

The thesis is organised as follows. Chapter 2 gives an overview of the functioning of the art market. Chapter 3 describes the unique differentiating characteristics of art as an investment. Chapter 4 reviews literature comparisons of art and other financial markets. Chapter 5 concludes.

2 The Art Market

The art market in general is introduced due to it being a relatively unconventional topic in economics. This will provide context and setting for the literature and research question.

When discussing a concept like art, some clarifications are needed. In this thesis art refers to fine art, mostly paintings and other similar objects. The concept of art itself changes over time and what is seen as art is sometimes subjective. This further complicates the economic study of art since contemporary art often encompasses an idea, which will remain even if the artwork is physically renewed completely, such as Damien Hirst’s sharks that were replaced completely after beginning to decay (Thompson, 2009).

The art market has been changing in many ways in recent decades. For one, it has expanded rapidly with global auction sales tripling between the years 2000-2007 to $33 billion (Curioni,
Pierazzini, & Forti, 2020). In the past 10 years the size of the total market has been between $50-70 billion, with the US being the largest local market, followed by China and the UK (McAndrew, 2021). Art fairs are increasing in both importance and numbers with the number of established art fairs increasing from 55 to 300 between 2000-2018; the most famous one, Art Basel in Switzerland, accounts for 30-50 percent of the participating galleries’ annual sales (Curioni, Pierazzini, & Forti, 2020).

2.1 Structure of the art market

The art market can be divided into three tiers: the primary market (amateur or small-time trading), secondary market (regional clusters of specialised galleries and dealers or small museums), tertiary market (international auctions and galleries) (Frey, 2000).

Arora and Vermeylen (2013) describe the world of fine art as inherently a place of hierarchies and expert concentrated knowledge. Experts have traditionally been the gatekeepers of what is good art and have a strong influence on the reputation of an artist as well as on the tastes of buyers (Arora & Vermeylen, 2013). Some intermediaries can charge more than others because they also sell membership to an exclusive club of art collectors (Arora & Vermeylen, 2013), thus competition is monopolistic. These dealers also create communities that adhere to the dealer’s aesthetic style and the purchase of certain artworks can give access to this exclusive network, including invitations to gallery openings and exhibition parties (Knebel, 2008).

Some insiders in the art world, such as famous gallerists and collectors, can influence trends and even prices; thus, raising the question of whether others follow trends because they seek profit or due to changes in taste. Some of the most important barriers to entry into the art market are knowledge and cultural competence, which makes entry difficult for pure art speculators (Uusitalo, 2008). Meanwhile, the high barriers to entry of cultural institutions are being challenged by the low barriers to internet participation and online markets.

The art market is a reputation-based business where trust is crucial, and a lost reputation means going out of business. The costs of uncertainty are mitigated by a trust and reputation system where reputable art dealers and auction houses guarantee a degree of security against risk (Frey, 2000). Since the quality of art is inherently uncertain, the reputation of a gallery reduces the intrinsic risk of purchase and is a signal of their ability to choose to represent artists with high
potential, which assures consumers who are averse to buying “low quality” art (Schönfeld & Reinstaller, 2007).

The participants in the art market often see the commercial aspect as welfare reducing and a public bad (Frey & Pommerehne, 1989). Anticommercial attitudes have kept clear lines between non-commercial museums and the for-profit art sector (Uusitalo, 2008). Mandelin (1992) further states that reputable art institutions and galleries do not behave as profit-maximizing firms and seldom try to efficiently increase their market share and visibility. There is also resistance to selling abroad, due to national cultural endowment effects, demonstrated by export limitations and restrictions (Frey & Pommerehne, 1989). On the other hand, lending of artwork is considered positive cultural exchange. Frey and Pommerehne (1989) outline possible reasons for this; when lending art there is no need to assign a monetary value to it and even permanently loaned artwork is still part of the national art endowment.

2.2 Art as an economic good

Art booms tend to follow general economic upturns as an increase in wealth leads to increased demand for art (see e.g., Renneboog & Spaenjers, 2013; Lovo & Spaenjers, 2018). Renneboog and Spenjers (2013) examine the determinants for art market returns and find that equity market returns and changes in high-income consumers’ confidence are significant determinants for art returns. Demand for luxury goods is thus an important determinant for art prices. Oosterlinck (2017) argues that discretion, in addition to conspicuous consumption, may be a reason for increased demand when wealth inequality or wealth increases. Increased supply of credit during upturns also lowers the barriers to entry for new collectors (Uusitalo, 2008).

Factors affecting the demand of fine art include income of collectors, price of art, the rate of return of other investments and evaluation by art experts, like gallerists (Frey & Pommerehne, 1989). Advertising also increases the demand for the artist and thus price, even more so if it results in higher reputation and popularity of the artist and gallery (Thompson, 2009). Additional factors affecting demand include hedging against inflation (Frey & Pommerehne, 1989). Art in so called branded or superstar galleries will also be priced higher, and the death of an artist might increase prices as supply is now definitely restricted (Frey & Pommerehne, 1989).
The value of art is sometimes difficult to determine and can be completely arbitrary. Baumol (1986) suggests that there is no equilibrium price level for noted works of art and that the price is strictly unnatural. Frey and Pommerehne (1989) outline some factors affecting the price of an artist’s work: 1) artistic capital stock, 2) long history of good reputation, 3) variety in mediums, 4) past sale prices. The artist’s “artistic capital stock” could be seen as the superstardom or branding of the artist.

In the art market the main difference between the price of paintings by the same artist may be who has owned it before, what gallery or auction house is selling it, and current trends, i.e., factors revolved around branding that are somewhat separated from the quality of the work itself. For example, a notable collector exhibiting their collection in a prestigious museum, will see their collection appreciate. Artwork will also appreciate simply by being in the collection of a notable collector, allowing these taste makers to make profit on the art they buy. (Thompson, 2009)

2.3 Characteristics of the art market

The art market is complex and multi-faceted and is famous for its exclusivity and opaqueness. There is plenty of risk to consider when buying fine art, such as the authenticity of the work, fluctuating valuations, lack of transparency in both prices and ownership, and forgery.

2.3.1 Authenticity, secrecy, and material risk

Works determined to be authentic are included in the *catalogue raisonné* of the artist and while it is not a definite list of all works done by the artist, the marketability of a work depends on it being included. A big problem in determining authenticity stems from the employment of artisans to create art both historically and more recently by the likes of Andy Warhol and Jeff Koons; an artwork coming from the studio of the artist might still leave questions unanswered, such as was the work completed by a pupil and did the artist approve it (Thompson, 2009). The

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2 A *catalogue raisonné* is a comprehensive list of all known works by an artist.
primary methods for determining the authenticity of a painting are provenance\(^3\), examination by experts, and scientific testing (Cheong, 2021).

Cheong (2021) states that art dealers and victims of fraud are hesitant to seek correction in case a forgery could be determined to be authentic and sold for a higher price. Neither buyers nor intermediaries are keen to find out if a painting is a forgery and are also not sharing revelations of forgery and misattributions as it goes against both the intermediaries’ and buyers’ interests (Day, 2014). Getting an expert's opinion on a painting as a consumer is expensive and experts are very hesitant to give out critical statements on authenticity due to fears of litigation by owners (Cheong, 2021). Further, experts sometimes work for a dealer, which creates a clear conflict of interest between authenticating works and accurately appraising them (Day, 2014). Secrecy in transactions also allows owners of artwork to not disclose any suspicions on authenticity to new buyers (Day, 2014).

Scarcity and high demand for well-known artworks combined with rapidly increasing prices has raised incentives for forgery and theft (Uusitalo, 2008). Cheong (2021) argues that the commodification of art has also increased the incentives for forgeries. While it is extremely difficult to estimate the share of inauthentic art, The Fine Art Experts Institute estimated in 2014 that over 50 percent of art is forged or misattributed, which has later been said to be exaggerated (Cascone, 2014). Forgers and investigators are in a constant race to develop more sophisticated methods and the incentives to do so will hardly ever disappear. The presence of fakes in the market means uncertainty and additional costs for buyers in the form of time, effort and money spent in efforts to find information and evaluate authenticity of works (Frey, 2000).

Cheong (2021) claims the culture of secrecy and questionable auction practices increase information asymmetry in the auction market. Auctioneers buy in works when no bids are made to protect an artist's reputation, which distorts price signals and gives buyers limited information to base their choices on. Auction houses sometimes also have a financial stake in the sale of a piece in the form of a guaranteed price given to the seller, and thus an incentive to exploit information asymmetries in the market to drive up prices. (Cheong, 2021)

\(^3\) Provenance is the history of ownership of an artwork.
Lack of transparency is an issue in the art world due to anonymous owners, private transactions, and unequal access to records of price and provenance. Discretion is highly valued, which is why galleries do not often disclose sale prices or the identity of their clients and allows for price discrimination by offering different deals and conditions to different buyers (Bianchi, 2015). In conclusion, the lack of transparency in the art market forces consumers to be highly dependent on intermediaries.

Theft has increased over time as prices climb to record heights; Interpol (2022) reports 22,927 art and cultural objects being stolen in 2021. Due to higher risk of theft, more security is needed for spaces holding art, which reduces consumer utility in the form of reduced visiting hours, less accessibility, and additional security costs (Frey & Pommerehne, 1989). Thus, price increases can lead to negative externalities, which Frey and Pommerehne (1989) argue are rather minor due to compensating positive externalities and limited number of affected collectors. The combination of high prices and a culture of secrecy make the art market attractive to criminals.

3 Differences between art and other assets

Due to the unique characteristics of art as a good and the art market discussed above, art investments differ in central ways from financial assets. This chapter will summarize papers by Lovo and Spaenjers (2018), and Oosterlinck (2017) that focus on aspects that differentiate art from traditional financial assets, namely subjective valuation, conspicuous consumption, and discrete consumption.

3.1 Subjective valuations and bidding behaviour

Lovo and Spaenjers (2018) study heterogeneity in optimal bidding and resale strategies in the art auction market, and how these change with macroeconomic conditions. This is the first paper to model equilibrium behaviour in the art auction market. Besides the expected returns that are part of any investment, the authors also include emotional dividends from art in the utility for the investor. The emotional dividend varies between individuals and determines subjective valuations for art. This section will focus on how the emotional dividends impact collectors’ behaviour and expected returns.
Lovo and Spaenjers (2018) model an art auction in an infinite-horizon economy where duration of ownership is varied. The owners of artwork choose whether to hold or sell their art and will incur transaction costs whether the work sells or not. The owner's consignment decision and reserve price depend on the owner’s type and distress status and the state of the economy. A bidder's bid depends on the state of the economy and the bidder’s type. There are three different types of owners in the model, from “highest” to “lowest”: 1) collectors that will only sell when in distress, 2) investors that sell only when in distress or during expansionary times and 3) flippers who want to resell quickly no matter the macroeconomic conditions.

Each bidder in the model receives an emotional dividend in each period of ownership, which depends on the owner’s tastes and turns negative when the owner is in distress from an exogenous idiosyncratic shock. The valuation of artworks is a function of both emotional dividends and expected resale revenue. In distress, the pleasure of a luxury good is reduced while insurance and possible storage costs remain. The authors also mention that opportunity costs may be higher when in distress. Therefore, all types will sell when in distress. An owner will auction a work if they expect to receive more revenue from its sale than the value of keeping it, with each type valuing the ownership differently.

The model’s macroeconomy follows a Markov process and can affect the number of bidders and their types. The economy can be in either an expansionary state or a recession, which impacts the emotional dividends and reserve prices of owners. The authors also find that auction prices and volume are lower in recessions. The model contains the assumption that consumers are risk-neutral, which leads to it excluding the effects of uncertain prices for owners who are risk-averse.

Lovo and Spaenjers (2018) define the bidder's willingness to pay as the present value of expected emotional dividends until resale and the expected revenue from a resale. The owner of a piece of art will consign it to auction if and only if there is a reserve price that gives an expected revenue for selling, including the costs of a buy-in (an unsuccessful sale attempt), that is higher than the utility from holding the artwork. Thus, the owner will consign the work to auction if and only if:

$$Q_\omega = \max_{x \in [0,1]} \frac{R_\omega(x)}{1 - F(x)^{n_\omega}} > b_\omega(e)$$
where:

- \( \omega = \) state of the macroeconomy,
- \( \sigma = \) owner’s distress status,
- \( e = \) owner’s type,
- \( b = \) highest bid,
- \( x = \) reserve price,

Thus, \( b^\omega_\omega (e) \) denotes the owner’s expected utility from holding the art, \( R_\omega (x) \) is the expected revenue from auctioning a work and \( 1 - F(x)^n_\omega \) is the probability that the sale is successful. To summarize, the probability that the owner sells a work is weakly decreasing in the owner’s type and is larger for owners who are distressed. The model implies that reserve prices are increasing in the owner’s type and are lower when in distress.

The model indicates that average returns and buy-in probabilities are negatively correlated with the amount of time an artwork is owned. This means that the average total return and probability of a buy-in are lower for longer holding periods. The average return will thus be lower for collector types than other types. After controlling for the state of the economy, average returns are lower for long holding periods across all types of owners due to the negative correlation between holding time and average sale price. Buy-in rates decrease in the time since purchase, because probability of distress and time since purchase are positively correlated and artworks are more likely to sell at auction if the owner is distressed due to their lower reserve price. The negative correlation between holding time and returns is weaker in expansions than in recessions due to investor types who tend to receive higher returns auctioning their artworks.

The authors test the above implications of the model by constructing a repeated-sales art index from a database of sales from Christie’s and Sotheby’s auction houses between 1976 and 2015. The authors used this database together with the provenances of the works included to find works included twice in the list or otherwise known to be purchased previously at auction. The mean total returns based on the resale art index are decreasing with holding time, as shown in Figure 1. This confirms the model implication that longer holding periods lead to lower returns on average due to the characteristics of the collector type including both long holding times and lower returns. A longer holding time is also correlated with a lower buy-in probability, as in the model. Flippers tend to outperform the index while collector types tend to underperform,
but then again, they receive the highest emotional dividends. Standard deviation increasing with holding years is contrary to Baumol (1986).

Figure 1: Mean total return and standard deviation across holding periods (Lovo & Spaenjers, 2018)

The authors also find that idiosyncratic return variance does not converge to zero as the holding period is reduced and that the distribution of returns is fat-tailed if the probability to recover from distress is small. The distribution is fat-tailed because the return on voluntary sales by investor types is high compared to the return on sales motivated by distress. Lower transaction costs or probability of liquidity shocks, an increase in the probability of recovery from distress or in the number of bidders all result in an increase in the valuation of owning artwork. Thus, these all lead to higher bids and auction revenues.

Further model implications include increased prices and auction volumes during expansions. This is due to the increase in investor type bidders, whose expected revenues increase during expansions more than their emotional dividends and thus sell during expansions. The increase in bidders is also due to the increase in wealth levels and thus willingness to pay for art goods. The probability of sale is also higher in expansions, even if reserve prices are higher, due to more potential buyers. More buyers also increase competition, driving up prices. Figure 2 shows that consignment volume and prices correlate strongly with economic growth, which corresponds with the model implication.
Lovo and Spaenjers (2018) conclude that some art buyers will perform better than price indexes due to relatively quick reselling, while others who gain more emotional enjoyment from the art they purchase will hold it for longer and underperform the index.

Transaction prices and price indexes are used to measure the state of the art market, which raises some issues. Firstly, the market value of art is estimated using prices of similar works, which ignores the low buy-in prices of auctions and leads to an upward bias in price. Second, indexes might show biased estimates of variance due to changes in the distribution of different types of owners and optimal strategy. Third, repeat-sales indexes typically have to be revised downwards. Fourth, the heterogeneity across types of buyers cannot be captured by a price index.

The authors test their results against bias by constructing a “bias-free” benchmark. This consists of the second-highest willingness to pay. The authors conclude that the transaction-based price index always overestimates the market value index if the buy-in rate is significantly higher. This is because the transaction-based price index is affected by distribution of owner types and owner strategies, which the market value index is not (it depends only on bidders). These issues demonstrate the selection bias inherent in any art price index. The authors note that the model might not hold true for works of contemporary art without auction history, because the assumption that the types of bidders are constant and known might not hold.
3.2 Art as discrete consumption

Oosterlinck (2017) aims to determine the role of discrete consumption in art valuation by using data from World War II France. While conspicuous consumption, i.e., consumption with the purpose to display wealth, is generally a characteristic of luxury goods, art and other goods can also be used for the explicit purpose of hiding wealth. Oosterlinck (2017) argues that conspicuous consumption would not have been a motive for buying art in occupied France, and instead art might have been used occasionally to hide illegal profits or to store wealth while fleeing the war. Thus, discretion could have served both occupiers and the occupied. The paper is based on ideas presented in previous literature that claims new art buyers enter the market due to lack of other investment opportunities during war time (Feliciano, 1997) and that cite the need to hide illegal profits as a reason for art demand (e.g., Moulin, 1967; Grenard, 2012; Léon-Martin, 1943; Le Boterf, 1974).

Oosterlinck (2017) states that many luxury goods, including art, can offer both conspicuous consumption and discretion benefits. The author argues that this makes art especially useful during what the author calls low-probability disasters like war or occupation. Thus, a consumer can gain utility from art in the form of an emotional dividend, expected financial returns, signalling wealth, and hedging against disaster.

The data used comes from a weekly newspaper dedicated to French auctions and catalogues from the largest auction house in Paris at the time, Drouot, that recorded all sales during the occupation period of 1940-1944. Due to the procyclicality of art, a decrease in prices and sales would be expected during disasters that cause a general tanking of the economy. However, the data shows that Drouot experienced heightened levels of sales revenue, to which an increased volume of sales contributed, during the occupation years as shown in Figures 3.
Oosterlinck (2017) constructs an index of artwork sold at auction in Paris during the years 1937-47 using a hedonic regression approach that is based on characteristics of the artworks. Oosterlinck uses 16 variables in his regression, such as dummies for attribution, copies, signature, and size. A full list of the variables used can be found in Appendix A. The author also creates a subset of works by famous artists that are more liquid and easier to sell abroad, which he argues would be preferred when fleeing the country.

The results in Table 1 show that while the prices for art increased during the occupation, the prices for famous artists (blue-chip) increased substantially. Famous artworks seemed to be the best investment during the occupation, after which gold came second. Other investments, e.g., real estate, were significantly impacted by the war. Gold, foreign securities and currencies were not available on the legal market, which increased the risk of obtaining and holding these assets. Art, and to some extent gold, was discreet to purchase and could hedge against inflation and provided protection from market interventions. The difference between art and traditional investment opportunities is highlighted by contrasting the relative freedom of the auction houses to strictly supervised stock exchanges.
Table 1: Real returns, standard deviation, and Sharpe ratio for Wartime Investments during March 1941 – June 1944 (Oosterlinck, 2017)

<table>
<thead>
<tr>
<th>Monthly real return (%)</th>
<th>Standard deviation (%)</th>
<th>Sharpe ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>3% French Rente</td>
<td>-1.51</td>
<td>2.37</td>
</tr>
<tr>
<td>Equity</td>
<td>0.06</td>
<td>6.68</td>
</tr>
<tr>
<td>Foreign currencies (US$, GBP and CHF)</td>
<td>-0.46</td>
<td>11.80</td>
</tr>
<tr>
<td>Gold Napoleon</td>
<td>1.32</td>
<td>9.51</td>
</tr>
<tr>
<td>Gold</td>
<td>1.39</td>
<td>9.98</td>
</tr>
<tr>
<td>Art Market</td>
<td>4.79</td>
<td>24.66</td>
</tr>
<tr>
<td>Art Market (Blue chip)</td>
<td>6.21</td>
<td>28.17</td>
</tr>
</tbody>
</table>

The author also compares the prices of small and large artworks, shown in Figure 4. The author finds that there is a price premium on small artworks during the war, which are easier to transport and keep hidden. Oosterlinck notes that at the time of the spike for small artworks in 1942, the black market was widespread, and the Jewish population could still flee France. With this in mind, small artworks that are easier to smuggle abroad or sell on the black market would be preferred.

Figure 4: Price index for small and large artworks during 1937-1947 (Oosterlinck, 2017)
Contrary to findings of procyclicality, Oosterlinck’s results show that the art market index was negatively correlated with GDP and consumption during the occupation years. The same holds true for the market for gold. Oosterlinck finds that the art index outperforms all other available investment opportunities during the occupation of France. In conclusion, some art collectors gain utility from conspicuous consumption while others from the seemingly opposite effect of discretion, depending on the situation of the collector.

4 Art and financial markets

As discussed above, art has a number of characteristics that differentiate it from traditional investments, such as equity and bonds. In this chapter the rate of return and risk of art is compared to other assets, and the relationship between the art and financial market is examined. The papers covered are Chanel (1995), Renneboog and Spaenjers (2013), and Mei and Moses (2002). Baumol (1986) will also be briefly mentioned as a seminal paper in the study of art returns.

4.1 Rate of return compared to financial assets

Ever since Baumol’s 1986 paper, which analyses price determinants of art from an investment perspective, the rate of return on art has overall been determined as inferior to other assets. Baumol (1986) argues that since art prices are even more unpredictable than that of stocks, there is no value in conducting analysis in hopes of increasing rates of return. However, due to the unique attributes of art it can still be an appealing investment object.

Baumol (1986) compares the art and stock market and notes several key differences; the owner of a piece of art holds a monopoly on it, transactions are few and far between in the art market, and there is a lack of transparency of prices. There are also additional risks to holding art that are not present in equity, such as the possibility of destruction or theft. Throughout the long period of Baumol’s (1986) dataset, wars have also ravaged Europe and led to the destruction of art.

Financial rates of return are generally lower for art that other investments with similar risk levels, which is expected if we assume that the owner of an art object also receives some
consumption benefit. The share of collectors to speculators in the market determines the rate of return; the more collectors there are the lower the financial return because most of the return consists of nonpecuniary benefits instead of monetary gain. (Frey, 2000)

4.2 Relationship between art and financial markets

Chanel (1995) examines the relationship between the art market and financial markets by using causality tests and a Vector Auto Regressive (VAR) model. The author finds that financial markets influence the art market with a lag of about a year, but that the prediction is not accurate enough to produce systematic profits.

Chanel (1995) uses a database of 25,300 painting sales spanning the years 1961-1992. The database includes characteristics of the paintings, such as size, artist, and place of sale. The data for the financial market consists of financial indices from New York, London, Tokyo, and Paris, which are deflated by the consumer price index to account for inflation.

The author uses hedonic regression to construct the art price index to be able to include quarterly prices. The equation Chanel uses is the following:

\[
\ln P_{kt} = \sum_{m=1}^{M} \alpha_m X_{mkt} + \sum_{t=1}^{T} \beta_t \delta_t + \epsilon_{kt}
\]

where \( P_{kt} \) is the price of good k at time t, \( X_{mkt} \) is a measure of characteristic m of good k at time t, \( \delta_t \) is a dummy variable for a sale taking place at time t and \( \beta_t \) is used to create a price index. The author analyses the link between the art price index and financial market through causality tests, specifically the Granger- and Geweke-Meese-Dent-causality tests. The results are shown in Table 2.
Chanel (1995) finds evidence for the New York, Tokyo, and London equity markets causing the art index variable, shown in Table 2. Chanel (1995) uses a Chi-Square test to find the relevant lags on each index, which are between 1 to 4 quarters, showing that a short-run relationship exists between the markets.

The author then attempts to predict art prices with a VAR model. First, the author checks for long-term steady state relationships with the Johansen Maximum Likelihood method and finds no such relationship exists. The VAR model used:

\[
\Delta X_t = \sum_{k=1}^{K} \Gamma_k \Delta X_{t-k} + \epsilon_t
\]

where \( X_t \) is a vector of the art and financial indices and \( K \) is the number of optimal lags. The VAR model estimates coefficients of a variable by using lags of the other variables in the model and its own lagged values. Chanel (1995) sets \( K \) at 12 after using a Likelihood Ratio test to find the optimal number of lags and produces predictions with the VAR model that are shown in Figure 5.

<table>
<thead>
<tr>
<th>Causal variables</th>
<th>Caused variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art</td>
<td>-</td>
</tr>
<tr>
<td>New York</td>
<td>GC</td>
</tr>
<tr>
<td></td>
<td>GMD</td>
</tr>
<tr>
<td>Tokyo</td>
<td>GC</td>
</tr>
<tr>
<td></td>
<td>GMD</td>
</tr>
<tr>
<td>Paris</td>
<td>GC</td>
</tr>
<tr>
<td></td>
<td>GMD</td>
</tr>
<tr>
<td>London</td>
<td>GC</td>
</tr>
<tr>
<td></td>
<td>GMD</td>
</tr>
</tbody>
</table>

* = significant at the 10% level.
** = significant at the 5% level.
Figure 5: VAR model prediction (Chanel, 1995)

Figure 5 shows the VAR model prediction compared with the actual art index. The VAR model has an $R^2$ of 0.6, which indicates that the model accounts for over half of the variation in the art index.

The main finding by Chanel (1995) is that financial markets influence the art market with a lag of about a year. The author suggests that profits from financial markets may be invested into art, which would be consistent with more art purchased during economic booms. Lagged financial variables can to some extent predict art prices but are not accurate enough to result in systematic profits. The author also notes that the art market is dependent on trends and tastes, which are difficult to predict.

4.3 Risk-return of art and other assets

Both Renneboog and Spaenjers (2013) and Mei and Moses (2002) compare the risk-return of artworks to traditional financial assets. While Mei and Moses (2002) use a repeat sales index for paintings auctioned at Christie’s and Sotheby’s, Renneboog and Spaenjers (2013) use a hedonic regression method, which allows them to use a much larger dataset. Perhaps these differences in data and methods account for somewhat contradicting results.

To overcome the issue of heterogeneity in artworks, Mei and Moses (2002) use a repeat sales index that measures only changes in prices of the same artworks through resales. The dataset
includes 4896 price pairs from the American market over the time-period 1875-2000. The relatively large resale dataset allows the authors to construct subindexes for different styles of paintings, such as Impressionist works. Due to the data collection method of Mei and Moses (2002), which requires resale at a Christie’s or Sotheby’s auction after 1950, their data is biased towards expensive paintings by established artists. For financial assets Mei and Moses (2002) use data from the Dow Jones Industrial Total Return Index, U.S. Government Bond Total Return Index, U.S. Corporate Bond Total Return Index, and the United States Treasury Bills Total Return Index.

Renneboog and Spaenjers (2013) use a dataset of 1.1 million auction sales from a period between 1957-2007. The data comes from the online Art Sales Index database, which contains the price of auction sales without transaction costs. The mean price in the authors dataset is USD 159 354, median is USD 14 775, which demonstrates the large difference between record high prices and the average artwork. By not requiring a resale at auction, this dataset also includes less popular artists, which better represents the whole market. The authors note that the resulting return estimates should be considered an upper bound due to upwards bias and exclusion of transaction costs.

Renneboog and Spaenjers (2013) use the following hedonic regression model:

$$lnP_{kt} = \alpha + \sum_{m=1}^{M} \beta_{m}X_{mkt} + \sum_{t=1}^{T} \gamma_{t}D_{kt} + \epsilon_{kt}$$

where $P_{kt}$ is the price of good k at time t, $X_{mkt}$ is the value of characteristic m of good k at time t, $D_{kt}$ is a dummy for successful sale at time t, and $\beta_{m}$ and $\gamma_{t}$ are coefficients. The authors find that artist reputation, attribution, signs of authenticity, medium, size, topic, timing, and location of sale are all significantly correlated with price. The authors use the estimates of $\gamma_{t}$ to construct a price index that controls for time variation.

Mei and Moses (2002) use a generalized least-squares regression to create the art index and the Generalized Method of Moments (GMM) to estimate the model. Their results show that the art index only outperforms bonds and not equity, shown in Table 3. The volatility of the art price index is 21.3 percent during the period 1950-1999, which is not that much higher than the two equity indexes used in the paper, 16.1 and 16.2 percent. The art market index displayed less volatility and a much lower correlation with other assets compared to findings in earlier studies.
(see Goetzmann, 1993). Mei and Moses (2002) suggest the reason might be their larger dataset of repeated sales.

Table 3: Summary statistics of real returns (Mei & Moses, 2002)

<table>
<thead>
<tr>
<th></th>
<th>Art</th>
<th>S&amp;P 500</th>
<th>Dow</th>
<th>Government Bond</th>
<th>Corporate Bond</th>
<th>T-Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950–1999</td>
<td>Mean</td>
<td>0.082</td>
<td>0.089</td>
<td>0.019</td>
<td>0.022</td>
<td>0.013</td>
</tr>
<tr>
<td></td>
<td>Standard deviation</td>
<td>0.213 [0.016]</td>
<td>0.161</td>
<td>0.162</td>
<td>0.055</td>
<td>0.092</td>
</tr>
<tr>
<td>1900–1999</td>
<td>Mean</td>
<td>0.052</td>
<td>0.067</td>
<td>0.074</td>
<td>0.014</td>
<td>0.020</td>
</tr>
<tr>
<td></td>
<td>Standard deviation</td>
<td>0.355 [0.048]</td>
<td>0.198</td>
<td>0.222</td>
<td>0.086</td>
<td>0.084</td>
</tr>
<tr>
<td>1875–1999</td>
<td>Mean</td>
<td>0.049</td>
<td>0.066</td>
<td>0.074</td>
<td>0.020</td>
<td>0.029</td>
</tr>
<tr>
<td></td>
<td>Standard deviation</td>
<td>0.428 [0.047]</td>
<td>0.087</td>
<td>0.208</td>
<td>0.080</td>
<td>0.080</td>
</tr>
</tbody>
</table>

Table: Correlations Among Real Returns (1950–1999)

<table>
<thead>
<tr>
<th></th>
<th>Art index</th>
<th>S&amp;P 500 index</th>
<th>Dow industrial</th>
<th>Government bonds</th>
<th>Corporate bonds</th>
<th>Treasury bills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art index</td>
<td>1.00</td>
<td>0.04</td>
<td>0.03</td>
<td>-0.15</td>
<td>-0.10</td>
<td>-0.03</td>
</tr>
<tr>
<td>S&amp;P 500 index</td>
<td>0.10</td>
<td>1.00</td>
<td>1.00</td>
<td>0.33</td>
<td>0.38</td>
<td>0.32</td>
</tr>
<tr>
<td>Dow industrial</td>
<td>0.10</td>
<td>1.00</td>
<td>1.00</td>
<td>0.28</td>
<td>0.33</td>
<td>0.25</td>
</tr>
<tr>
<td>Government bonds</td>
<td>-0.15</td>
<td>0.10</td>
<td>-0.03</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Corporate bonds</td>
<td>-0.03</td>
<td>0.32</td>
<td>0.61</td>
<td>0.63</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Treasury bills</td>
<td>-0.03</td>
<td>0.32</td>
<td>0.61</td>
<td>0.63</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Renneboog and Spaenjers (2013) find that art prices increased 3.97 percent per year between 1957-2007. Figure 6 shows the development of their price index. Their estimates for the 1957-1999 period are substantially below the estimates by Mei and Moses (2002). The authors test their hedonic regression model against a repeat sales index they construct. The estimates are nearly the same as with their uncorrected hedonic regression model, annual price increase being 4.56 and 4.55 percent respectively. However, when including only oil paintings sold at Sotheby’s or Christie’s, the annual return is much higher although still slightly below Mei and Moses (2002). This suggests that the differences in return result from selection bias in Mei and Moses (2002).
Using the one-factor asset-pricing model Mei and Moses (2002) estimate the returns on the included assets, shown in Table 4. The art index has a smaller beta than the equity indexes, suggesting that art has less systemic risk and is expected to have a lower return.

Table 4: Estimation of returns with the one-factor model (Mei & Moses, 2002)

<table>
<thead>
<tr>
<th></th>
<th>$\beta_i$</th>
<th>$t$-stat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excess return on S&amp;P 500 index</td>
<td>1.000*</td>
<td>—</td>
</tr>
<tr>
<td>Excess return on art index</td>
<td>0.718</td>
<td>3.119</td>
</tr>
<tr>
<td>Excess return on Dow Industrial</td>
<td>1.160</td>
<td>25.84</td>
</tr>
<tr>
<td>Excess return on government bonds</td>
<td>0.114</td>
<td>3.609</td>
</tr>
<tr>
<td>Excess return on corporate bonds</td>
<td>0.246</td>
<td>4.845</td>
</tr>
</tbody>
</table>

*Notes: Asterisk (*) indicates that the S&P 500 index is used as the systematic factor. The sample period for this table is 1875–1999.*

Renneboog and Spaenjers (2013) conclude that the risk-return profile of art is worse than that of other financial assets, but that art did perform better than other physical assets, such as gold. Comparing art returns with other financial assets, the authors find that equity significantly outperforms art in the long run. Art does have higher returns than government bonds, but also much higher volatility. The authors note that transaction, insurance, and storage costs are not considered, which contributes to upward bias. In 2013 auction house commissions had risen to 25 percent, which the authors note represents a large transaction cost for collectors.

Mei and Moses (2002) also found that masterpieces (defined as very expensive paintings) underperformed the art index. The elasticity estimate indicates a 0.1 percent decrease in future
annual returns for every 10 percent increase in purchase price. Indicating that purchasing artworks at low prices would result in higher returns. However, Renneboog and Spaenjers (2013) obtain contradicting results.

Figure 7: Quantile hedonic price indices (Renneboog & Spaenjers, 2013)

Renneboog and Spaenjers (2013) perform a quantile variant of their model to allow their point estimates to vary across the price distribution. Figure 7 shows that prices of the most expensive quantile of paintings have increased the most in recent decades. These works of art also display higher volatility and decreased more in price than the lower quantiles during the slowdown of the 1990s. The authors hypothesize that this might be due to increased income inequality and income cyclicality of high-income consumers. The authors further test the performance of the most expensive works of art and find no evidence of underperformance. The resulting price index shows that appreciation of art varies across the price distribution of art, with more expensive works appreciating at higher rates. Even when using their repeat-sales index, no evidence for underperformance is found.

5 Conclusion

The papers examined in this thesis give a clear picture of low returns for art and does not suggest art as a primary investment strategy. However, art can provide diversification benefits
and large emotional dividends to avid collectors. Since branding and reputation are extremely important in the art world (Thompson, 2009), perhaps the only consistently successful art investors are those actors who can influence the tastes of other consumers. Mei and Moses (2002) note that buying art directly from the artist or dealers representing upcoming artists might be the most profitable art investments and warrants further research.

Art differs from traditional investments in its subjective valuation, heterogeneity in utility to consumers, conspicuous and discrete consumption benefits, and risk factors. Beside the pure financial returns, art also offers emotional dividends, functions as a signalling good for wealth or a deposit for individuals valuing discretion. Art also comes with additional risks such as forgery, theft, and misattribution, which makes the art market challenging to navigate. However, in politically unstable situations, such as during war, art seems to offer a way of preserving wealth when the financial markets are compromised (Oosterlinck, 2017). Thus, the main benefits of owning art seem to be nonpecuniary and give most utility when the consumer owns the artwork and can enjoy it in person, instead of investing in an art fund.

Several studies note that the rate of return tends to be higher for art speculators who do not hold the art for long (see Lovo and Spaenjers, 2018; Mandel, 2009). The returns are also most volatile in the short run, with the largest losses also corresponding with a short holding time (Baumol, 1986). Mei and Moses (2002) suggest that art might be appropriate as a long-term investment due to the high transaction costs of buying and selling at auction houses and ask whether there might be a systematic bias in bidding prices so that winning bids tend to exceed value. Investment in art may seem profitable due to the extremely high prices of masterpieces, but even the most expensive works of art are not assured to appreciate and might indeed result in the lowest returns on art (Mei & Moses, 2002).

5.1 Limitations

As previously mentioned, studying the art market is difficult due to several factors. While some collections of paintings appreciate substantially, these are the successful, surviving collections and might give rise to selection bias (Frey & Pommerehne, 1989). The same bias is inherent in highly publicised record-breaking prices, which do not represent the majority of artwork sold. There are severe limitations to studying the art market outside auctions due to opaqueness.
regarding prices. Depending on the success of an up-and-coming artist, art investments in the broader market might give rise to much higher returns or losses.

Regarding the rate of return of art, Baumol (1986) notes that a significant risk premium should be added, and sale commissions subtracted from the resale value to approximate the true rate of return. Several of the papers covered in this thesis estimate their rates of return as being overestimated due to these limitations (see e.g., Lovo and Spaenjers, 2018; Baumol, 1986; Renneboog and Spaenjers, 2013). Frey and Pommerehne (1989) also note a possible upwards bias on the rate of return of art due to exclusion of material risk and maintenance and insurance costs.
Bibliography


## Appendix A

Table A.1 Variables used in the hedonic regression in Oosterlinck (2017):

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>After Dummy</td>
<td>Is one if the artwork is after a given artist (a copy of the artist’s work)</td>
</tr>
<tr>
<td>Attributed Dummy</td>
<td>Is one if the artwork is attributed to a given artist</td>
</tr>
<tr>
<td>Copy Dummy</td>
<td>Is one if the artwork is a copy from a given artist</td>
</tr>
<tr>
<td>Date Dummy</td>
<td>Is one if the painting is dated</td>
</tr>
<tr>
<td>Degenerate</td>
<td>Is one if the artist was considered degenerate by the Nazis</td>
</tr>
<tr>
<td>Genre Dummy</td>
<td>Is one if the painting is in the genre of a given artist</td>
</tr>
<tr>
<td>Manner Dummy</td>
<td>Is one if the painting is in the manner of a given artist</td>
</tr>
<tr>
<td>Period Dummy</td>
<td>Is one if the painting is sold during a given time period</td>
</tr>
<tr>
<td>School Dummy</td>
<td>Is one if the painting is seen to belong to the school of a given artist</td>
</tr>
<tr>
<td>Signed Dummy</td>
<td>Is one if the painting is signed</td>
</tr>
<tr>
<td>Size</td>
<td>Height, width, and surface area</td>
</tr>
<tr>
<td>Stamp Dummy</td>
<td>Is one if the work has the stamp of the artist</td>
</tr>
<tr>
<td>Study Dummy</td>
<td>Is one if the painting is a study</td>
</tr>
<tr>
<td>Style Dummy</td>
<td>Is one if the painting is seen as being in the style of a given artist</td>
</tr>
<tr>
<td>Topic Dummies</td>
<td>Categorize paintings based on the words in the title</td>
</tr>
<tr>
<td>Workshop Dummy</td>
<td>Is one if the painting is from the workshop of a given artist</td>
</tr>
</tbody>
</table>