

Art as a Wartime Investment: Conspicuous Consumption and Discretion

Kim Oosterlinck

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ABSTRACT

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Introduction

Since at least the beginning of the 20th century, people have wondered whether, besides the aesthetic pleasure they derive from owning artworks, they could reasonably hope to make a decent financial return from their collection. Baumol's (1986) seminal paper was one of the first to analyze long-term returns on the art market. Relying on sales of 640 artworks he finds that the annual compounded real rate of return over three centuries was a meager 0.55%. Goetzmann (1993), on the basis of 3,329 price pairs for a period stretching from 1715 to 1986, concludes that for risk-averse investors, there is little evidence that art is an appealing investment. Mei and Moses (2002) analyze the US art market from 1875 to 2000 and reconstruct an annual index on basis of 4,896 price pairs. They find that art outperformed fixed income securities and provided diversification benefits even though it underperformed the equity market. Renneboog and Spaenjers (2013) reconstruct an art price index on basis of 1.1 million auction prices from several countries. They find that between 1951 and 2007 the art market appreciated on average by 4.03% per year in real USD. They conclude that art underperformed equity but outperformed bonds. They further show that art market returns may change significantly depending on the period analyzed, and they conclude that buyers of art should "expect to reap non-pecuniary benefits rather than high financial returns, especially because the modest art returns are further diminished by substantial transaction costs". Eventually, and on top of these observation, David et al. (2013) show that the art market is inefficient and attribute this observation to the opacity of price.

The financial underperformance of art has been attributed to several consumption-side factors. For Baumol (1986) the aesthetic pleasure derived from the ownership of an artwork may be viewed as a return in itself. Frey and Eichenberger (1995) attribute part of the observed returns to the fact that actors on the art market are more likely to exhibit “*behavioral anomalies*”. They suggest that private collectors are strongly subject to “the endowment effect (an art object owned is evaluated higher than one not owned), the opportunity cost effect (most collectors isolate themselves from considering the returns of alternative uses of the funds) and the sunk cost effect (past efforts of building up a collection play a large role)”. Mandel (2009) goes one step further. He incorporates the utility derived from conspicuous consumption into the framework of a consumption-based capital asset pricing model. In his model, the benefits of conspicuous consumption are integrated into a “utility dividend” that is an increasing function of art prices. This utility dividend explains the low level of art market returns: the higher conspicuous consumption, the lower the financial return. The model developed by Mandel (2009) elegantly reconciles empirical observations with theory.

Even though on the long run art investment is dominated by other classes of assets in a risk return framework, artworks may have characteristics of interest when low-probability disasters occur. This paper tests whether art investment hedges against tail risk by analyzing investments in occupied France during World War II. To do so the paper reconstructs an art market index for occupied France on basis of an original database of more than 4,300 artworks sold between 1937 and 1947 at Drouot, the main auction house in Paris. The index is then compared with alternative investments: equities, bonds, and gold and foreign currencies on the black market. Results show that the artworks outperformed all other investment opportunities but investing in gold on the black market.

The paper also exploits the unique setting provided by World War II to analyze the role of conspicuous consumption. During wartime and in an occupied country, it is reasonable to assume that few people would derive significant utility from conspicuous consumption. During the war, newcomers entered the Parisian art market. Some

nouveaux riches, who had gained from the black market, were attracted by the supposed safety of art investments during those troubled times but also by the ease with which paintings could be used to hide illegal profit (Feliciano, 1995, p. 123; Moulin, 1967, p. 41). The massive increase in German buyers from diversified horizons also had a dramatic impact on the art market. These buyers benefited from the advantageous exchange rate imposed upon defeated France (Feliciano, 1995, pp. 125-126). In the case of the new French “collectors” active on the market, nothing could have been further from their motives than conspicuous consumption. If paintings were bought to hide illegal profits, then bragging about the collection would have been counterproductive. The same holds for people who bought artworks as a portable store of value which could be taken abroad should they have to flee France. One could argue that German actors were more prone to consume art in a conspicuous way. For a substantial part of the art market, however, this was unlikely. Indeed, starting in 1937 the Nazi made a clear distinction between “real” and “degenerate” art. Museums were “purged” of the degenerate artworks they owned, and the works themselves were stored, sold abroad or simply destroyed. As the war went on, importation of degenerate works to Germany was forbidden. Needless to say, conspicuous consumption of degenerate artworks by Germans was therefore highly unlikely. The paper exploits the difference in conspicuous consumption for “degenerate” and “non-degenerate” artworks to determine the role of conspicuous consumption in art valuation. It shows that just before the war broke out, investors required a higher premium to hold “degenerate artworks” so as to compensate for the loss in conspicuous consumption. This premium disappeared at the Liberation, when the difference in conspicuous consumption also vanished.

Eventually the paper introduces the concept of discretion. In an occupied country, non-pecuniary benefits from holding art may increase. Whereas actors derive significant utility from conspicuous consumption in peacetime, during wartime they value the discretion offered by artworks. In this context, discretion may be defined as the ability to store a large amount of value in small and easily transportable goods. Many luxury goods and collectibles (jewels, rare stamps, and artworks) have a dual nature: they may be used for conspicuous consumption but may also be favored because of the discretion they offer

when needed. Obviously other luxury goods (castles, mansions, yachts, etc) have only the conspicuous consumption aspect. To test the role of discretion, the paper compares the price evolution of small (and thus discreet) and large artworks. Artworks that could easily be transported and used as a large store of value traded at a premium during the war. The paper further suggests that other factors played a crucial role in paintings' valuations during World War II: the inflation-proof character of artworks, the absence of market intervention and the possibility to resell these assets abroad. Investors were ready to go to the black market to obtain assets that could easily be resold abroad. For those who preferred to remain legal, the art market provided an attractive alternative.

In a nutshell, three main conclusions may thus be drawn from the analysis. First, artworks may prove to be interesting as investment to hedge against low-probability disasters. Second, the paper empirically confirms the importance of conspicuous consumption in art valuation, an element which had been theoretically stressed by Mandel (2009). Third, the respective importance of non-pecuniary and pecuniary motives to hold art may vary over time.

The paper is organized as follows. Section One presents the Nazi position regarding modern art and more precisely, regarding paintings. It then describes the French art market shortly before and during World War II. Section Two details the database, provides descriptive statistics about the art market in Occupied France and presents the econometric methodologies used to assess price changes in art markets. Section Three presents and discusses the main results: the art market index and its evolution during the war, and compares the index with alternative investments. Section Four concludes.

1. The Nazi position on art and the French art market during World War Two

The Nazis and the visual arts

The Nazi ideology regarding the arts took gradually shape during the 1930s. On June 30, 1937 Joseph Goebbels the Reich Minister for Propaganda asked the painter Adolf Ziegler to mount an exhibition to show “works of German degenerate art since 1910 (...) which are now in collections owned by the German Reich” (Nicholas, 1995, pp. 16-17). The regime purged state collections of the works of artists who did not fit into its vision, and in six months the Ziegler commission confiscated close to 17,000 artworks from 101 German museums (Petropoulos, 1996, p. 56). A speech by Adolf Hitler on the Day of German Art in Munich in 1938 gives a better understanding of the regime’s point of view: artists were forbidden to represent anything but forms seen in nature and were threatened either with incarceration in an asylum or with trial by court if they did not obey (Nicholas, 1995, p. 20). In accordance with the overall *Weltanschauung* of the Nazi rulers, art was in substance the product of the artist’s origin and, by extension, his race. Art was thus an expression of race, and German art had to be “heroic, romantic and realist at the same time” (Cassou, 1947, pp. 22-23).

With more than 2 million visitors, the *Entarte Kunst* (degenerate art) exhibition proved a major success and the exhibition was shown in several German cities. By March 1938, all museums had been cleansed of their “degenerate work”. This would open the way for large-scale sales abroad, undertaken by a Commission for the Exploitation of Degenerate Art (Nicholas, 1995, p. 23). Consistent with the low esteem in which they held the works, the Nazis let major artworks go for such ridiculous sums that they were almost given away. To increase revenues, a German dealer suggested that some of the works could be auctioned abroad, and on June 30, 1939 the international art market witnessed one of the most extraordinary auctions ever: the sale in Lucerne (Switzerland) of 126 paintings and sculptures made by major “degenerate” modern artists such as Braque, Chagall, Gauguin, Van Gogh, Modigliani, Picasso, Nolde, Klee, Dix and Matisse. The Nazi regime in an attempt to maximize sales revenues ended up having to

market the artworks as being worth something, in direct contradiction to its claim that the art was “degenerate” (Fleckner, 2012). As a result of the context, the atmosphere in Lucerne was extremely tense and the sale far from successful in view of the amounts collected and the number of unsold lots (Nicholas, 1995, pp. 3-5). However, the masterpieces sold in Switzerland escaped the sad fate of more than 4,000 “degenerate” artworks which, considered unsalable, had been burned for a practice exercise by Berlin’s Fire Department in March the same year. The events in Berlin and Lucerne would in a sense foreshadow the fate of many artworks from French collections: Taken away without any compensation, the despised works would either be sold abroad to obtain hard currency or be simply destroyed.

The administration of looted art in occupied France

When war broke out, Paris was still the heart of the international art market. The Parisian art market had experienced a huge boom after the First World War. During the 1930’s, however, French galleries and auction houses suffered from the lack of activity and interwar financial instability. Art prices declined by close to 70 percent and a third of art galleries were forced to stop their activities (Feliciano, 1995, p. 123). This phenomenon was not unique for France. In Great Britain, the art market experienced a sharp decline following the 1929 crisis (Goetzmann et al., 2010). During the Phony War, galleries remained open even though trades were few and far between (Nicholas, 1995, pp. 86-87).

As was the case in Germany, German leaders quickly competed to be in charge of the administration of the arts in occupied France¹. Alfred Rosenberg (the Nazi party ideologue in charge of the education of the Party and Reich Minister for the Occupied Eastern Territory), Martin Bormann (Reich Minister, Private Secretary to Hitler after 1943), Hermann Göring (Reichsmarschall, Chief of the Luftwaffe and Minister President

¹ For a much more detailed description of looting and the politics related to the art world in occupied France, see Feliciano (1995), Nicholas (1995) and Petropoulos (1997). Euwe (2008) provides an interesting comparison point in his book dedicated to the art market in occupied Netherlands.

of Prussia) and Joachim von Ribbentrop (Reich Minister for Foreign Affairs) were vying with Joseph Goebbels to administer art in occupied France. Eventually, Alfred Rosenberg would end up in charge of looting artworks. Hitler allowed Rosenberg and his staff, the *Einsatzstab Reichsleiter Rosenberg* (ERR), to collect archives and libraries from the enemies of the Reich. Artworks would come under Rosenberg's sphere of influence in September 1940, when the ERR took charge of collecting all "ownerless" cultural property (Petropoulos, 1997, p. 130). By early 1941 most major Jewish-owned collections had been raided and the looted artworks stored at the Musée du Jeu de Paume in Paris.

In view of their respective positions, Rosenberg and Göring realized that cooperation would probably bring mutual benefits. In exchange for guaranteeing transportation and his overall support, Göring managed to get privileged access to the looted collections (Feliciano, 1995, p.36; Petropoulos, 1997, p. 133). The looted pieces were identified, catalogued and evaluated. Their fate would then depend on their quality and whether they matched the Nazi view of arts. Some works would be sent to Germany whereas others were to be used for trade or to be sold (Feliciano, 1995, p. 108). Compliant "experts" acted in the favor of the German authorities when providing price estimates which were systematically favorable for the occupying forces (Polack and Dagen, 2011). The least valuable paintings were to be sold to French dealers, the proceeds of the sale going to "widows and children of deceased French soldiers" (Petropoulos, 1997, p. 135). For a time, the fate of the modern artworks stored in the Jeu de Paume remained uncertain. A distinction was made in July 1943: some works had to be kept for trading, others for potential future sales, while a third group was obviously considered useless. As in Berlin a few years before, the "useless" artworks, which included among others, masterpieces by Picasso, Picabia, Klee, Ernst, Miro, Arp, Dali and Leger, were brutally destroyed (Polack and Dagen, 2011). Paintings by more traditional painters depicting members of famous Jewish families unfortunately suffered the same fate.

The French art market during World War II

The Occupation dramatically changed the Parisian art market. Shortly after the Armistice was signed, on June 22nd, 1940 some of the main art galleries came under intense scrutiny because their owners were Jews. Arianization procedures would start soon afterwards. Some dealers, such as Daniel-Henry Kahnweiler, managed to transfer their business to “Aryan” family members. Other galleries would by contrast fall under new “supervision” or would be “resold” during the war (Assouline, 2005, pp. 509-513). The looting and aryanization activities did however not mean that the German artistic model had been imposed directly on occupied France. This model would be imposed mostly because of the action of French collaborationists, since Hitler took a favorable view of French “artistic decadence” (Bertrand-Dorléac, 1993, p. 43). To be sure, the German occupation forces were also monitoring the shows offered by art galleries. In some instances they would request the removal of artworks by artists deemed degenerate (Riding, 2010, p. 171). But the scrutiny was loose, and artworks by painters viewed as degenerate were sold at auction or privately on a regular basis. The Vichy regime was more concerned with the protection of the French artistic treasures than with the prosecution of “degenerate” artists. The main fear was to see huge exports of national treasures to Germany. To prevent this, in June 1941 the Vichy government passed a law to limit exports of artworks but its impact in practice was close to zero (le Masne de Chermont and Schulmann, 2000).

The huge occupation indemnities imposed upon defeated France provided the occupant with almost unlimited means. As a consequence, Germans became major actors on the art markets in occupied Europe. They were buying mostly from art galleries but, as pointed out by Riding (2010, p. 170), they were also buying “not infrequently at Drouot auctions”. Indeed, Wittmann (1945-1946, p. 39) suggests that the Hôtel Drouot was one of the four main auction houses when it came to German buying (and the only one not located in Germany or Austria). Many of the transactions done for the benefit of German buyers were not recorded, but evidence of the magnitude of their purchases abound. Most notably the files of a German transportation company, Schenker, provide detailed

descriptions of the artworks bought, legally or not, in Paris and transported to Germany. On basis of these files Feliciano (1995, p. 129) has shown that German museums were in fact major purchasers on the Paris art market.

Surprising as it may seem, the Occupation period provided huge profit opportunities for galleries. Feliciano (1995, p. 123) goes as far as saying that the war was “a godsend for Paris’s art market”. Drouot reopened on September 26, 1940. By contrast, the Paris stock exchange would only very partially reopen on October 14, 1940, and trades in stocks would not be allowed before March 1941. In both cases, reopening was subject to some form of German supervision. In the case of Drouot, the auction house was to send the catalogues to Dr. Hermann Bunjes, to report all works valued at more than FF100,000² and to provide a record with the name and addresses of the purchasers (Nicholas, 1995, p. 153). Business quickly resumed and sales broke records during the war. During 1941-1942 alone, a million objects went under the hammer at Drouot (Nicholas, 1995, p. 153). In December 1942 the sale of part of the collection of the late dentist Georges Viau would bring in more than FF53 million. During this session nine of the ten paintings that would fetch the highest price at an auction during the war were sold³. Drouot was not the only art seller doing exceptional business. A Parisian newspaper mentioned in 1942 the existence of seventy galleries in Paris, most of which were having better sales than in the 1920s (Riding, 2010, p. 171). According to Assouline (2005, p. 513), besides the price fetched by some sales, the number of modern fakes on the market clearly showed the renewed interest in paintings as an investment⁴.

Many newcomers entered the art market. According to Feliciano (1995, p. 123) Frenchmen did so because of the lack of alternative investment opportunities. Moulin

² Over the course of the war more than 450 paintings were sold for more than 100 000FF.

³ See Appendix 1, Table 6 for the list of the paintings which were sold for more than 1 million FF during the occupation. The most expensive painting sold, Cezanne’s *La Vallée de l’Arc et la montagne Sainte-Victoire* would eventually turn out to be a fake (Nichols, 1995, p. 154)!

⁴ Fake discoveries have an impact on the art market, however more on the timing of sales than on prices themselves (see Bocart and Oosterlinck, 2011).

(1967) suggests that paintings were viewed as a safe investment in view of huge war-time inflation⁵. Leon-Martin (1943, pp. 192-193) mentions fear regarding the real value of the franc as one of the buyers' main motives. This element was also pointed out by other contemporaneous actors for other art markets in occupied countries. Indeed, in 1940 protection from inflation was already presented as one of the reasons of the price rise in the Dutch art market by agents buying on German behalf (Vlug, 1945, p. 17). Moulin (1967) further attributes part of the art market's success to the fact that paintings are easy to hide and resell, internationally if needed. Anecdotal evidence has also led Moulin (1967) to suggest that the market paid a premium for smaller artworks, which were easier to hide and take away.

The desire to hide profits made during the war, on the black market for example, also explains the presence of these new actors. In a review of the workings of Drouot, Leon-Martin (1943, p. 191), explicitly mentions the presence of buyers enriched by the black market. Contemporaneous novels also stressed the link between black market activities and paintings. Marcel Aymé, in *Uranus* (1948), describes the activities of Monglat, a wine merchant enriched by his black market activities. Monglat is desperate to convert as much cash as possible into real goods. His holdings of cash are such that he knows that even declaring 10% of its fortune would bring the fiscal administration to his door. To spend his money he buys artworks even though he hates paintings. Recent academic work on the black market in occupied France also stresses the hiding role played by artworks (Mouré and Grenard, 2008; Mouré, 2010 and 2011) or luxury goods (Grenard, 2012). Mouré and Grenard (2008, p. 978) highlight the fact that buying real goods to conceal illegal profits was common “long before the Liberation” suggesting that the impact of these activities may have been visible already at an early stage of the occupation.

⁵ This belief is actually not really confirmed by modern empirical studies (see Mei and Moses, 2002 and Goetzmann et al, 2011)

2. Data and methodology

Data series: descriptive statistics

Two sources have been used to construct the data series: the *Gazette de l'Hôtel Drouot*, a weekly newspaper dedicated to the French auction world, and catalogues tracking all paintings, sketches, engravings and drawings sold in Drouot, the main French auction house, between October 1940 and June 1944 (Drouot, 1942, 1943, 1944 and 1945). The second source has more information than the first. As a result the analysis will be deeper for the Occupation period⁶.

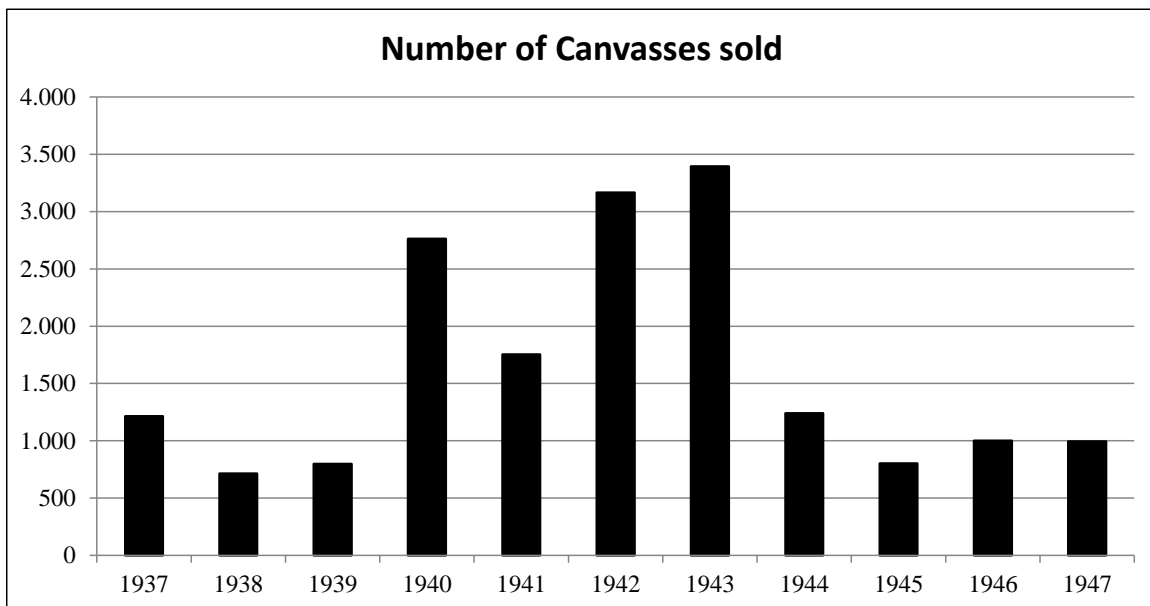
The *Gazette de l'Hôtel Drouot* was first published at the end of 19th century. Its main objective was to provide information related to the auctions held at Hôtel Drouot. The newspaper described past auctions and advertised future ones. The nature of the described auctions was extremely diversified and included sales of furniture, jewelry or artworks. In order to focus on the most important form of artworks, only data related to canvasses was collected. For past sales, the *Gazette* systematically mentioned the name of the artist, the title, the dimensions and the price of the artworks sold. In some instances the presence of a given artwork at a previous auction, or in some cases before the war, the name of the buyers were also reported. Descriptions of past auctions were not always immediate. Therefore, in order to identify all sales occurring between 1937 and 1947, all issues published between January 1937 and December 1948 were consulted.

⁶ The use of two different sources raises the question of sample selection bias. One could indeed believe that the *Gazette* would only relate the results of sales of prominent collections. There are however good reasons to believe that the *Gazette* was as exhaustive as the catalogues. Indeed, in many instances the artworks being sold were coming either from anonymous collectors (“A divers amateurs”) or were just grouped by period (“Tableaux modernes”). These categories were by far the most common and tend to indicate that reports were also covering minor sales and were exhaustive (in some instances only one or two artworks are mentioned showing that even minor sales were reported). Eventually, if the sample had been restricted to some extent to the most prominent sale, then the change in price observed during the war would be even more striking as paintings from famous collection tend to be valued more since at least the 18th century (Raux, 2012).

For the Occupation period, the data series have been collected from the Drouot catalogues. Each catalogue provides descriptions of both the auctions and of the artworks sold. For each auction, a general description (example: paintings or old furniture and artworks from the 18th century), the date of the auction and the name of the auctioneer(s) are given; sometimes the name of one or more expert is added. The catalogues provide very detailed descriptions of the artworks and mention their size as well as the presence of a date, a signature or a stamp from the artists' workshops. Appendix 1 provides additional information on the sales which occurred during the Occupation period and gives insights into the nature of the artworks sold. It shows that canvasses represented close to 50% of the sales made during the war.

A rough indication of the activity at Drouot can be given by the number of paintings sold each year as well as by the total amount of sales. For the whole period 16,349 canvasses were sold. The sales per year are represented on figure 1

Figure 1: Number of canvasses sold each year at Drouot (1937-1947)

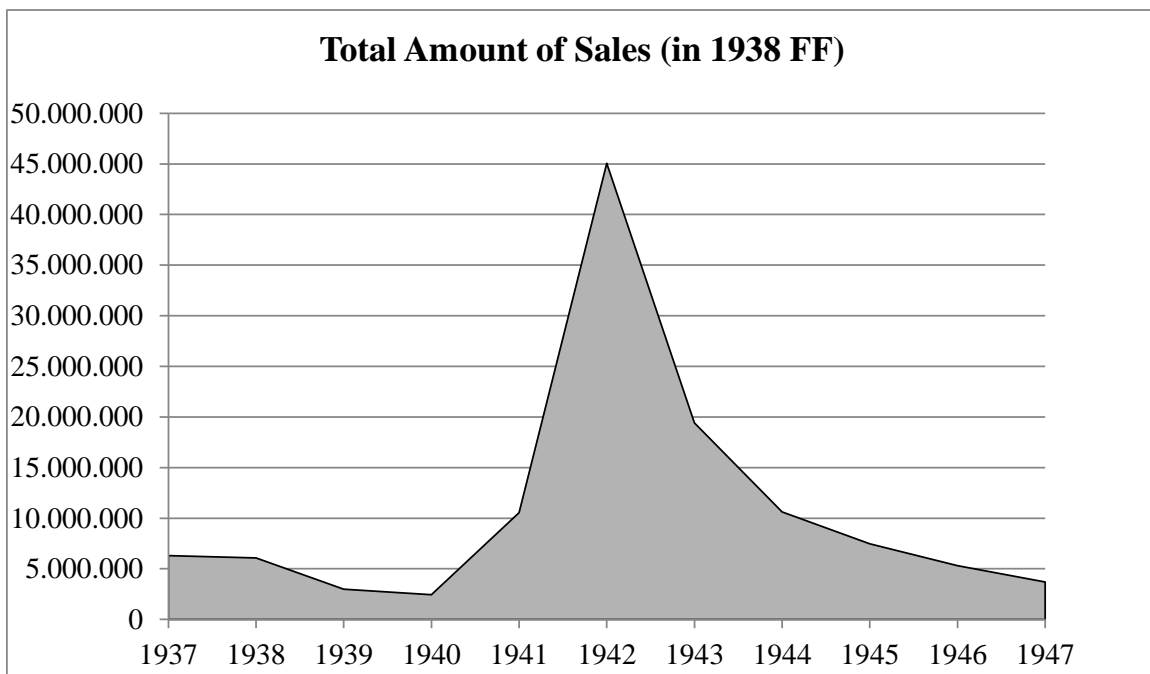


Sources: Gazette de l'Hôtel Drouot (1937-1947) and Drouot (1942, 1943, 1944 and 1945)

Figure 1 shows clearly that Drouot experienced a very high level of activity during the Occupation. The years 1942 and 1943 proved to be the most active, in line with testimony from contemporaneous actors. This high level of activity can be confirmed by tracking the number of months during which sales occurred. The art market usually works on a seasonal basis but in 1942 and in 1943 it was open every month apart from August and September.

The number of artworks sold gives a first overview of the art market during the war. The yearly proceeds of the sales provide another way to gauge its dynamism. Figure 3 shows the total amount raised by the sales of canvasses at Drouot between 1937 and 1947. To take into account the effect of inflation all prices have been converted in 1938 French francs on basis of the monthly index of retail prices published by INSEE⁷ (1936-1948).

Figure 2: Total amounts raised by the sale of canvasses at Drouot (in 1938 French francs)



⁷ The Institut National de la Statistique et des Etudes Economiques.

The high value observed in 1942 may be attributed to the war but also reflects the sale of the famous Georges Viau collection in December 1942.

Methodology

Even though the number and price of artworks sold during the war give an indication of activity, only an art market index can provide a precise view of price movements. Artworks differ from traditional investments in many ways. Whereas bonds or equities are homogeneous goods, artworks are characterized by their uniqueness. The heterogeneous character of artworks makes it complicated to construct indices. In order to overcome this problem of heterogeneity, economists have relied on two methods: repeat sales and hedonic regression⁸.

For non-economists, the repeat sales method is probably the more intuitive. In this method, researchers track the prices of artworks sold at different moments in time. The underlying idea is that, unless time has altered the work, artworks remain the same and it is therefore legitimate to use their prices to compute an index. For most collectibles, this assumption seems reasonable since collectors take care of their collection. This approach has widely been used for analysis related to real estate but also for paintings. Baumol (1986) applied it to 640 repeat sales collected in Reitlinger's (1961) book. Subsequent research (Goetzmann, 1993; Pesando, 1993, Mei and Moses, 2002 among others) relied on this approach. Depending on the sample used, the authors found both evidence that the art market was (Pesando, 1993) or that it could be dominated as an investment vehicle (Goetzmann, 1993). On the basis of a slightly larger database, Mei and Moses (2002) conclude that art performed better than fixed income securities and provided diversification benefits.

Despite its intuitive appeal, the repeat sales method suffers from a series of drawbacks. Ginsburgh, Mei and Moses (2006) stress the following:

⁸ For a clear and up to date review of both methods, see Ginsburgh, Mei and Moses (2006)

- The use of repeat sales strongly limits the size of the database. Based on the Mei and Moses Art Index, Ginsburgh, Mei and Moses (2006) show that for a ten-year time-span, the proportion of repeat sales is a meager 7% of all sales, a figure which increases to 13% and 15% if the period is extended respectively to 20 and 30 years.
- This data limitation often prevents the analysis of price movements in a segment of the market, be it a movement – the Impressionists for example – or an individual artist
- Furthermore, the repeat sales approach is likely to suffer from sampling biases. Some works are quite likely resold because their price has increased, whereas others never come back onto the market because they have fallen out of fashion and there is no longer an active market for them.

In hedonic regressions, the price of the artwork is regressed on several of its attributes. All sales may thus be included in the sample. Time dummy variables are used for each period. The coefficients of these dummies are then used to construct the price index (corrected for the characteristics of the objects).

Hedonic regressions make it possible to control for the differences in the transacted goods since it gives implicit values to the characteristics. The regression may then take the following standard form:

$$\ln p_{it} = \sum_{k=1}^m \alpha_k X_{ik} + \sum_{t=0}^T \beta_t \delta_{it} + \sum_{t=0}^T \sum_{j=1}^n \theta_{jt} \omega_{ijt} + \varepsilon_{it}$$

where p_{it} is the price of good i at time t , X_{ik} is the value of the time-invariant characteristic k of artwork i , ω_{ijt} is the value of the time-variant characteristic j of artwork i at time t and δ_{it} is a time dummy variable which takes one if the artwork is sold on t and zero otherwise. To introduce interaction terms between time and characteristics new variables (defined as $\omega_{kt} = \alpha_k \delta_t$) may be introduced in the model. The antilogs of the β_t coefficients are then used to construct the hedonic price index. The use of the antilogs

leads to a bias estimate. This bias being usually fairly small it is often ignored. We correct for it by using a standard approach consisting in adding half of the coefficient's squared standard error to the estimated coefficients (Ginsburgh, Mei and Moses, 2006).

The number of characteristics used in the hedonic regressions are usually limited and most often include several dummies (artist, auction house, medium, signature, artist still alive when the artwork is sold) and just one continuous variable (the size of the artwork). In addition, Sagot-Duvaurox (2003) mentions the provenance and the medium. Additional variables are found in just a few instances. Lazzaro (2006), analyzing the market for Rembrandt's prints, adds, the state of the prints (original, posthumous etc.), the number of posthumous states and the existence of proofs, among other factors. Czujak (1997), includes also the presence of the artwork in the artist's *catalogue raisonné* (as proof of authenticity), the number of times an artwork was exhibited, pre-sales estimates and the artist's working period. Renneboog and Spaenjers (2013) also use a large number of original variables related to the artist (reputation⁹, death at the time of the sale, nationality, presence at the Documenta exhibition in Cassel), to the work (attribution¹⁰, authenticity (signature, date, inscription), medium (oil, print or paper), additional print dummies (when the print is numbered), a watercolor dummy, the size, and topic dummies¹¹) or to the sale (half year and month dummies and auction house dummies)

In this paper, we focus on the hedonic approach. In two instances only, the *Répertoire* explicitly refers to a previous sale.¹² It seems however, that other repeat sales

⁹ Captured by the word count of each artist's article in the Grove Art Online database and by a dummy variable if the artist is mentioned in the Gardner textbook.

¹⁰ The authors distinguish work attributed, from the school, the studio, the circle, made after, and in the style of.

¹¹ The authors consider eleven categories based on search strings: Abstract, Animals, Landscape, Nude, People, Portrait, Religion, Self-portrait, Still-life, Untitled and Urban.

¹² *La toilette de Psyché* attributed to Joseph Paelinck, which was sold for 10 000FF on November 16th, 1942 and resold for 700 FF on June 25th, 1943 and Caude Monet's 1907 *Nymphéas* sold for 295 000FF on June 5th, 1942 and resold for 360 000FF on February 3rd, 1944.

occurred during the war. In fact, there are 95 pairs for which the artist, title, size (height and width), signature (if present), and date (if present) are exactly the same. In addition, there are six artworks that seem to have been resold three times. This would leave a repeat sales ratio of 0.92%, which seems consistent with the above figures on repeat sales, but is too low to infer the overall trend in the market. Furthermore, even though for some pictures there is little doubt that we are in presence of a repeated sale because the title is quite explicit¹³, in other cases the risk of error is much higher¹⁴.

The hedonic regression used here focuses on canvasses only, which represent the largest segment of the art market. In order to concentrate on the most important artists, the sample only includes artist for whom five canvasses at least were sold during the Occupation. This allows focusing on the painters for which there was a relatively large volume of sales. As pointed out by Bocart and Hafner (2012) such a choice is warranted if one wants to analyze artworks which the market viewed both as consumption and investment goods. By contrast, artists with a very limited number of sales were more likely to be bought just for consumption motives. Eventually artists for which only one artwork was sold would artificially drive up the adjusted R-Square of the model since the artist dummy would capture all the residual variance.

Homonyms and paintings for which the size was not available were then excluded from the sample. In order to avoid attribution-related issues, artworks “attributed to”, “from the school”, or “in the genre of” were also excluded.¹⁵ The proportion of works with a mention of attribution moves from 30% before the war to close to 40% during the occupation to fall back to close to 14.5% after the war. As attributions were expert-dependent, there is a strong likelihood that even experts of good faith could have attributed a similar work to different artists. Furthermore there is evidence that the variation in proportion is likely to reflect the sale of fake artworks on the art market.

¹³ For example, two watercolors attributed to Jan Borel entitled *L'Amour fouetté. La Faune brimé* and dated 1780.

¹⁴ For example Dora Bianka's *Bouquet de Fleurs* or Auguste Renoir's *Paysage*.

¹⁵ This decision explains why artists active prior to the 19th century are almost absent from the sample.

Indeed if auctioneers had any doubt they were more likely to sell a fake as a work “attributed to” rather than as an original one. This phenomenon was by no means limited to occupied France. Euwe (2008, pp. 123-127) documents some flagrant fakes for the Dutch market. Euwe’s recent work even shows that auctioneers signaled fakes to potential buyers by for example by mentioning a work as from one (less famous) artist even though there was a “signature” from another (more famous) one. In the end, the data consists of 4,339 canvasses by a total of 199 artists, listed in appendix 2, Most artists are French and were active during the 19th and 20th century. Appendix 3 details the lists of the most frequently sold artists and of those with the highest overall sales during the Occupation.

The following variables were used for the regressions¹⁶:

Period Dummies: Takes a value of one if the artwork is sold during the period (year, semester or month) in question, zero otherwise. In order to get coherent results, the analysis considers only periods for which the number of artworks sold is high enough (a minimum of 5 artworks sold at least during a given period).

Size: Height and width (measured in cm) as well as the works’ surface area (in cm²) capture the impact of the object’s size.

Date Dummy: Takes a value of one if the work is dated.

Degenerate: Takes a value of one if the artist would have been considered as degenerate by the Nazis. In practice, the artists are abstract painters or their work belongs to one of the following movements: Cubism, Expressionism, Fauvism, Nabis, Impressionism, Post-Cubism Post-Impressionism¹⁷. The dummy also takes a value of one if the artist was Jewish.

Signed Dummy: Takes a value of one if the work is signed.

¹⁶ Since the signed, stamp and date dummies were only available for the occupation period they were used as robustness check.

¹⁷ The artists belonging to these groups were determined on basis of their biographical notice in Benezit (1999).

Stamp Dummy: Takes a value of one if the work bears the stamp of the artist's atelier.
Topic Dummies: We follow the methodology developed by Renneboog and Spaenjers (2013) and categorize the canvasses on the basis of word in the titles. Since our sample is more limited we check whether the words make sense for a given painting¹⁸. We distinguish seven categories: animals, landscape, nude, people, portrait, still-life and urban. The associated search strings are listed in Appendix 4.

In many hedonic regressions an additional variable aiming at measuring the so-called “death effect”, a price increase following the death of an artist, is included (see for example Ekelund, Ressler and Watson, 2000 and Renneboog and Spaenjers, 2013). Ruskin (1889, p. 122) already suggested that “The moment he [the artist] dies, his pictures, if they are good reach double their former value”. In view of the limited time-span of the current study, such a variable is highly collinear with artist dummies and can therefore not be included.

3. Results

Regressions are conducted on two periods with different frequencies. The first (1937-1947) puts the episode of the Occupation in a broader perspective. In view of the number of auctions held during the pre-war period and to take into account the two lengthy cessations of activity (June 1939 - April 1940 and August 1944 - February 1945), regressions are conducted with semi-annual data. For the second period (the Occupation period: June 1940 – August 1944), business at Drouot was much more intense, so it is possible to use a monthly frequency. Furthermore for this period the database is richer, making it possible to control for the attribution of the artworks (thanks to the signed, dated and stamp dummies).

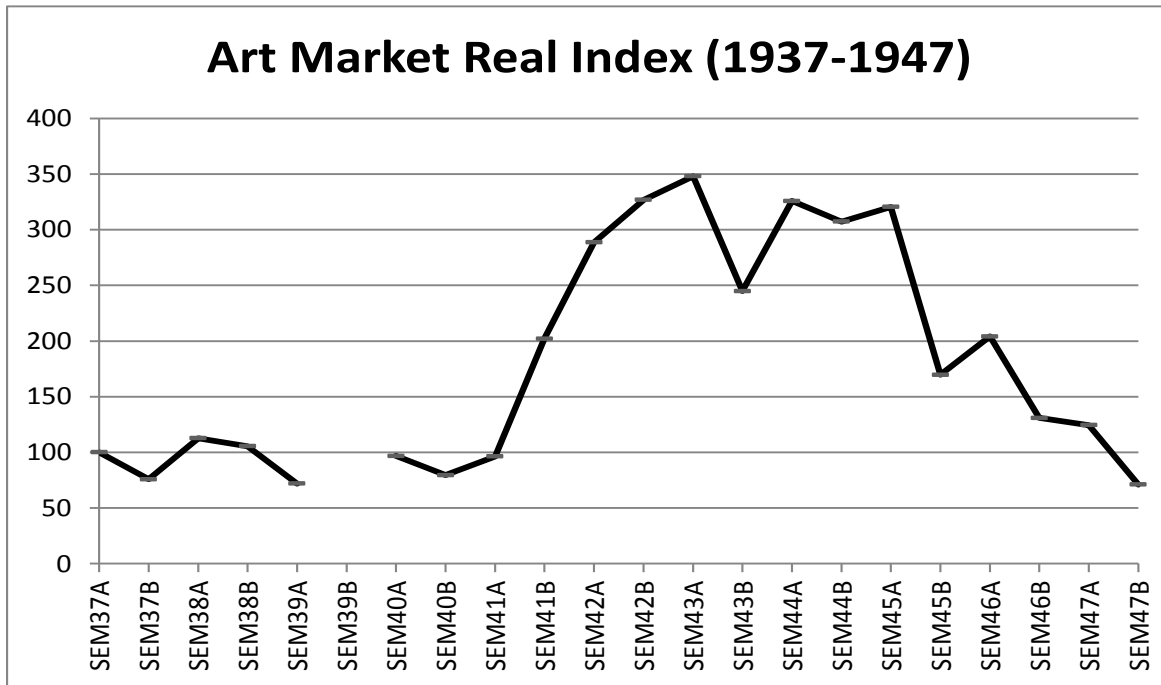
¹⁸ For example, the word “mer” is used as a search string for landscapes; however we do not include Theodule Ribot's *Le vieux loup de mer*, which is a French expression for a seasoned sailor.

An Art Index for 1937-1947

Several specifications have been used and the results of each are listed in Appendix 5. In all models the dependent variable is the natural logarithm of the real price. The base case model (Model 1) includes size variables (height, width and area) as well as the artist, period, and topic dummies. This specification contains all the variables but the “degenerate” dummy, which had to be removed because of colinearity issues, as well as the date, signed and stamp dummies which were only available for the Occupation period. The adjusted R-Square of the model is slightly above 74%. However and, as is traditional in art market studies, the bulk of the explanatory power comes from the artists’ dummies. The results are consistent with most priors: as in most hedonic regressions, price is a concave function of dimensions. Only two topic variables are statistically significant. Paintings depicting urban settings seem to fetch higher prices whereas canvasses representing animals tend to trade at a discount. The landscape and still-life dummies are not statistically significant. The results are almost unaffected by gradually removing the least significant topic and attribution variables (Model 2).

The coefficients of the time dummies make it possible to reconstruct an art index for the Occupation. The model used here is the baseline model, Model (1). The art index is represented on Figure 3. A clear and marked rise during the Occupation stands out. Broadly speaking three periods may be distinguished in the art market index.

Figure 3: Change in the canvas index. 100 = first semester of 1937.



During the first part of the pre-war period (1937-1938), the index revolves around the base figure (100). The first semester of 1939 is marked by a decline, with the index falling to a low of 71. This result, as well as the absence of sales at the auction house from June 1939 to August 1940, is most likely linked to the outbreak of war. The summer months (July and August) were usually not very active before the war. The mobilization in September 1939 prevented the market from reopening. In the absence of data, it is impossible to estimate the extent to which the market would have declined had sales occurred. If anything, the impossibility to sell artworks suggests that the declining trend would have continued. Activity on the art market resumed in April 1940 but stopped when France was invaded two months later.

For the first part of the Occupation, the index remained close to its original value. This suggests that in the first phase (end 1940- beginning 1941) the market recovered and activity resumed at the pre-war level. The following period is in sharp contrast, with the index experiencing a huge increase in value. The index peaks at 335 for the first semester

of 1943, representing more than a three-fold increase in value in real terms! Following a short-lived dip during the second semester of 1943, the art market index recovered to approximately the same value at end-1944, after which it goes into dramatic decline until 1947.

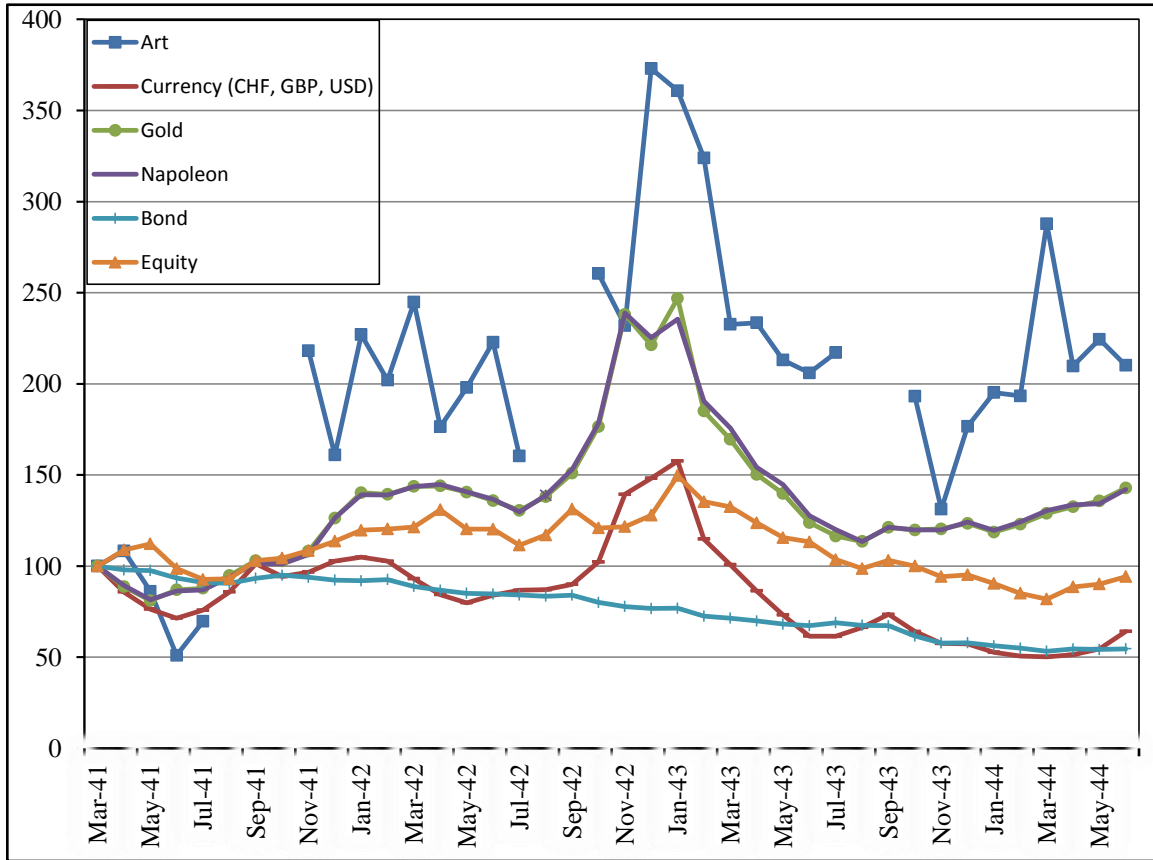
A Monthly Art Index for the Occupation

The literature has analyzed market reactions to low-probability economic disasters. Barro (2006) shows that rare economic disasters may explain many asset-pricing puzzles. In the same vein, the results shown on Figure 3 are in sharp contrast with the literature on art markets. Art is known to be procyclical, and one would have expected a sharp decline during the war. Since the database contains additional information for the war period, and to better understand the changes in prices during the Occupation, a monthly index is computed and then compared to alternative investment opportunities (sovereign bonds, equities, gold and foreign currencies traded on the black market).

Figure 4 presents the real-term change in six indices representing six investment opportunities, three of which were traded on legal markets: art, equity, sovereign bonds, and three on the black market: Gold (Napoleon coin), Gold (index made of the price of the Napoleon coin, the Sovereign coin and the Gold-dollar) and Foreign currencies (an index based on price fluctuations of GBP, USD and CHF notes). The comparison starts in March 1941 since the Paris stock exchange was not allowed to trade stocks before that date¹⁹.

¹⁹ An alternative approach would have been to use data from the Lyon stock exchange which remained opened (and benefited) from France's separation into a free and an occupied zone. (Oosterlinck and Riva, 2010). To be able to take into account black market data, we preferred to keep the comparison on one given city, Paris.

Figure 4: Real price movements of the 6 indices from March 1941 to July 1944.



Sources: Le Bris (2008) and Le Bris and Hautcoeur (2010) for the equity, Vigreux (1948) for the black market data (gold and foreign currencies), and Oosterlinck (2003 and 2010) for the bond prices.

The comparison of price movements of the different indices puts the art market in a very positive position. Table 2 details the realized returns²⁰, standard deviation and Sharpe ratio for all investments. In terms of realized returns the art market outperforms all alternative investment opportunities. Obviously, returns should be compared by taking risk into account. The standard deviations of the returns for the art market are computed on basis of the estimated index following what Bocart and Hafner (2013) call the classical methodology. Bocart and Hafner (2013) show that this approach leads to an

²⁰ Realized returns are often used as a proxy for expected returns. This approach is debatable in peace time (see Elton, 1999 for example) and even more so in view of the high volatility of the art market. The analysis here only presents estimates of realized returns for a set of assets.

upward bias estimate of volatility of approximately 8% compared to an alternative based on a Maximum Likelihood Estimator they propose. Even if one takes this difference into account the standard deviation of the returns for the art market is considerably higher than for the other investments. If anything keeping the estimated standard deviation should play against art investments as a lower standard deviation would lead to a higher Sharpe Ratio. Despite this the Sharpe ratios suggests that gold was the most profitable investment, art coming second. However, investing in gold would have been possible only if investors were ready to face the risks associated with the black market. The low realized returns for Equity and French sovereign debt may be surprising at first. These results should however be interpreted bearing in mind that investors were facing extraordinary conditions. During the Occupation, investment opportunities were indeed dramatically altered (Oosterlinck, 2010).

Table 2: Arithmetic²¹ real returns, standard deviation and Sharpe ratio for wartime investments

	Monthly Real Return	Standard Deviation	Sharpe Ratio ²²
3% French Rente	-1.55%	2.35%	0.000
Equity	-0.08%	6.66%	0.221
Foreign currencies (USD, GBP and CHF)	-0.54%	11.66%	0.087
Gold Napoleon	1.45%	9.42%	0.319
Gold	1.51%	9.88%	0.310
Art Market	5.63%	24.90%	0.288

Sources: Le Bris (2008) and Le Bris and Hautcoeur (2010) for the equity, Vigreux (1948) for the black market data (gold and foreign currencies), and Oosterlinck (2003 and 2010) for the bond prices.

In wartime, and especially in an occupied country, investors probably looked at more variables than the ones usually relevant in peacetime. Investors in occupied France

²¹ The ranking of the various return is robust if one choses geometric instead of arithmetic returns.

²² For the Sharpe ratio we consider the French rente as being the riskfree asset.

needed to take into account that their investment opportunities were in fact sharply restricted. Foreign markets were closed and even within France gold, foreign securities and foreign currencies had to be declared and were therefore unavailable on a legal market. Other investments (real estate for example) were certainly riskier in wartime since they faced a destruction risk. In terms of state control, real estate transactions became conditional, following a law passed on November 16, 1940, on an official agreement from the local authorities. Eventually real estate investment was furthermore not very discreet and sometimes led to questions at the Liberation.

Direct intervention by the occupying forces or the Vichy government was another fear. Indeed, for both state bonds and equity, archive sources show that interventions existed and in some cases were significant. For example securities which used to be in a bearer form had to be registered during the occupation thus removing anonymity (Oosterlinck, 2010). In some instances the occupying forces requested that the market for equity go down leading to panics on the exchange. As a matter of fact contemporaneous observers such as Léon-Martin (1943, p. 199) contrasted the supervision exercised by the occupying forces over the stock exchange with the freedom of the auction houses²³. Stockbrokers themselves shared this view²⁴. There is no evidence of direct interventions on the art market to force prices down or to control the market. In The Netherlands Hans Posse, the man in charge of collecting artworks' for Hitler museum actually complained to Bormann that prices were too high because of the competition of German buyers. He therefore suggested either prohibiting private German purchases or price caps at 1,000 or 2,000 florins per item (Wittmann, 1945-1946). This suggestion was to the best of our knowledge never applied. Fear of looting may have existed but looting was only directed to specific target groups (mostly Jews and Free-Masons). Citizens which didn't belong to these target groups were in fact facing very limited expropriation risk. Indeed when safes belonging to gentiles were erroneously looted, their contents were given back to their owners by the ERR (le Masne de Chermont and Schulmann, 2000).

²³ "l'Hôtel Drouot échappant aux restrictions est l'une des dernières oasis de liberté".

²⁴ ACAC, Minutes of the annual meeting December 21st, 1942.

Wars were also known to generate inflation, and occupied France was no exception. The Occupation costs imposed on defeated France were considerable even when compared with the reparations demanded of Germany after World War I (Occhino, Oosterlinck, White, 2007 and 2008). To cover these occupation costs the French government relied on money creation and bond issues. Inflation was thus a factor that investors had to take into account. Eventually, investors might have considered the resale value of their assets abroad if they had to flee. Table 3 provides some insights into the risks and benefits of each investment over five dimensions: discretion, legality, liquidity abroad, inflation and market intervention.

Table 3: Benefits of each investment for five dimensions: discretion, legality, liquidity, inflation and market intervention.

	Discretion	Inflation proof	Legality	Liquidity abroad	Market intervention
3% French Rente	No	No	Yes	No	Yes
Equity	No	+/-	Yes	No	Yes
Foreign currencies (USD, GBP and CHF)	Yes	+/-	No	Yes	No?
Gold Napoleon	Yes	Yes	No	Yes	No?
Gold	Yes	Yes	No	Yes	No?
Art Market	Yes	Yes	Yes	+/-	No
Real Estate	No	Yes	Yes	No	No?

Legend: “Yes” and “No” indicate whether the assets had a given characteristic, +/- stands for a partial characteristic, a question mark is added when there is insufficient information to fully confirm the “Yes” or “No”.

Gold and artworks were the two most attractive investments in occupied France. Table 3 shows that these two classes of assets shared common features: investing in them was discreet; they provided good hedges against inflation in markets where the occupying forces were not intervening. Compared with artworks, gold was easier to resell abroad.

On the other hand investing in gold implied that one was ready to take additional risks, since it was illegal to own (let alone buy) undeclared gold. Empirical evidence shows that investors were ready to go to the black market to possess assets that could easily be resold abroad. For those who preferred to remain legal, the art market provided an interesting alternative. Even though artworks were less liquid than gold, they could be sold if needed.

Even though the analysis is concerned with artworks the price other goods also experienced a dramatic rise. In December 1942, in the framework of the annual report of the French stock brokers association, the head of the Paris bourse mentioned that to buy land, real estate and goods one had to face regulation and a lack of offer, buyers were redirecting all their money to the stock exchange and the auction house²⁵. In general it seems thus that all goods sold at Drouot experienced a steep price increase. Without data series it is impossible to test whether discreet goods (stamps, jewels or diamonds) experienced a higher price increase than other goods (antiques and furniture). Contemporaneous analyses tend however to suggest that this was the case. Rivet (1947) singles out the extraordinary speculation which took place for stamps and precious stones. Rivet (1947, p. 889) attributes this speculation to the fact that these goods have a small volume and can thus be easily hidden or exchanged²⁶. Sédillot (1979) mentions ten-fold price increases for stamps and sharp price increases for diamonds and collectible books. Some Austrian stamps, diamonds and paintings by Degas would, according to the same author (Sédillot, 1959, p.98), have seen their prices multiplied by a factor 50 to 80. Léon-Martin (1943, pp. 193-194) mentions diamonds reaching a price ten to fifteen times

²⁵ ACAC, Minutes of the annual meeting December 21st, 1942, “On achèterait volontiers de la terre, des immeubles, ou des marchandises mais, en cette direction, l’on se heurte au double barrage de la réglementation et de la pénurie. Les seules issues possibles au torrent de disponibilités sont offertes par l’Hôtel des Ventes et par la Bourse”.

²⁶ “Enfin, une spéculation extraordinaire s’est exercée à diverses reprises sur les timbres-postes et les pierres précieuses, valeurs se présentant sous un faible volume et pouvant se dissimuler et s’échanger facilement.”

higher than before the war and jewels and stamps reaching incredible values²⁷. The price increase of discreet assets such as stamps or diamonds is thus well established.

Art as a wartime investment: Procyclicality, Discretion and Conspicuous Consumption?

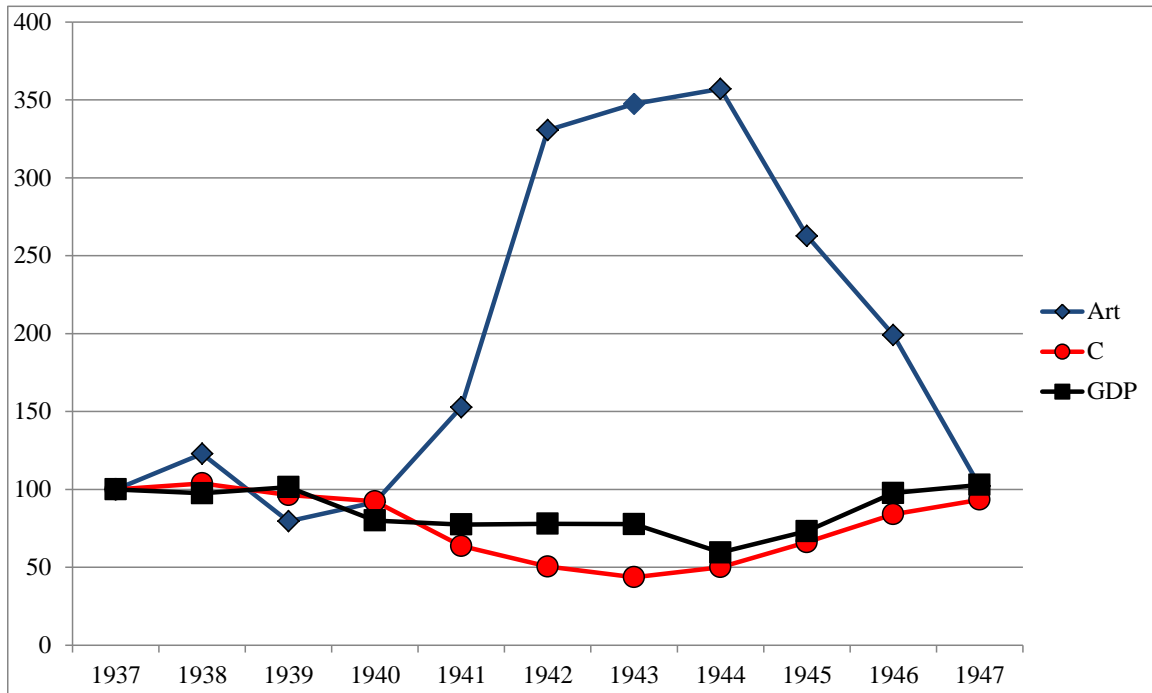
In peacetime, demand for artworks is likely to be an increasing function of wealth, with richer people willing to consume more luxury goods. A healthier economy would lead to a higher number of wealthy people driving up prices on the art market. As a result the correlation between art prices and the state of the economy (GDP) or real per capita consumption (C) should be positive in normal times.

Figure 5 plots the changes in GDP, Consumption and the Art Market Index. Data on GDP and real per capita consumption, C, come from the Barro-Ursúa Macroeconomic dataset. For many reasons developed in Barro and Ursúa (2008), this dataset is currently the most reliable and comprehensive one. Since C and GDP are available on a yearly basis the art market index is computed with annual dummies (Model (4), Appendix 5). The art index moves in opposition to C or GDP. This observation is confirmed by the negative covariance as well as the negative coefficients of correlation between the real returns on the art index and C and GDP²⁸.

²⁷ Léon Martin (1943, p. 197) lists a series of exceptional prices among others a ring with a 7.87 carat diamond fetched 1.6 million, a necklace with 63 pearls 1.5 million, stamps reaching 21,000FF; 17,500FF or 15,000FF.

²⁸ Correlation and covariance values between art and C and art and GDP are respectively worth -0.92 and -2265 and -0.75 and -1201. Even though these figures should be taken with caution, in view of the limited sample size, figure 5 strongly suggests the existence of a negative relationship.

Figure 5 GDP, Real Per Capita Consumption, C, and Art Market Index (1937-1947)



Sources for C and GDP: Barro-Ursúa Macroeconomic Data (2010), available at <http://rbarro.com/data-sets/>. For a complete description of the data see Barro and Ursúa (2008) as well as Ursúa (2010a and 2010b).

With negative covariance between the real art market returns and C and GDP, it seems clear that the art market was countercyclical between 1937 and 1947. This seemingly counterintuitive result may be explained by the search for safe-haven investment during troubled times. The similar movements of the gold and art market indices would tend to confirm this explanation. Artworks had an additional advantage compared with gold or foreign currency: it was legal to buy and hold art whereas gold and foreign currency had to be purchased on the black market with all the risks this could entail. As real assets, artworks protected their owners from inflation and, in addition, could be transported and resold abroad if the holder needed to flee France.

The link between the value of artworks and consumption also changed under the Nazi boot. For much of the population, the war quite logically induced a significant

reduction in consumption. Even for wealthy people consumption patterns were altered as rationing prevented the use of additional means to consume more. Thus consumption followed the general state of the economy. This explains the negative correlation between consumption and art market returns if artworks were indeed viewed as safe-haven investments.

Changes in income inequality might also have played a role in the observed pattern. Higher income inequality has been shown to increase the demand for luxury consumption (Aït-Sahalia et al., 2004, Hiraki et al., 2009, Goetzmann, Renneboog and Spanejers, 2011). During the war income inequality is likely to have increased with the emergence of a class of war profiteers. In this case, demand for art would be disconnected from the observed state of the economy or consumption as black market revenues would escape from GDP measures. This intuition is strengthened by the fact that cultural consumption in general remained high during the war (Riding, 2010). In all likelihood, the biggest change in inequality would have come from the discrepancy between German and French buyers. Unfortunately it has been impossible so far to track the name and nationalities of buyers to test this hypothesis as many go-betweens acted on behalf of the Germans (for example a Jane Weyll bought at Drouot on behalf of Haberstock who served as aid to Hans Posse the man in charge of creating Hitler's museum in Linz).

Discretion

As suggested in Table 3, discretion may have been an additional element valued by investors during the war. Even in peace time, discreet assets may be appealing for investors. The ability to easily store (and if need be, hide) large amounts of value is certainly appreciated if one wishes to avoid taxation. However financial sophistication now makes it possible to transfer massive amounts through tax havens without risking much scrutiny. During the Occupation this was not the case and discretion was certainly more valued than it is today. In fact two types of investors would have valued discreet assets: those who had earned money from illegal wartime activities, and people who

feared they might have to leave at short notice and wanted to be able to take with them assets that could be resold abroad. War profiteers were certainly looking at artworks to hide their illegal profits. In her description of the French art market during the war, Moulin (1967) explicitly mentions these two aspects. She even describes a mechanism by which proofs of the sale of artworks were used as guarantees for international transfers of money (Moulin, 1967, p. 41). She further mentions, in line with contemporaneous accounts of the workings of the art market during World War II, the arrival of many newcomers on the market. According to Moulin (1967, p. 41) these newcomers had idiosyncratic tastes and favored small artworks, landscapes with a preference for 18th century Italian works, still-lives and more precisely paintings of bunches of flowers. She suggests also that Impressionist works were sought after but not more modern works belonging to Surrealism and other later artistic movements (Moulin, 1967, p. 42).

If discretion played an important role during the war, one would expect the impact of size variables to change during the Occupation. Additionally, if illegal motives or the willingness to flee had been important for investors then one would have observed marked changes at the beginning and the end of the war. Since contemporaneous accounts stress the role of newcomers, it makes sense to try separating the impact of these actors from the others. If newcomers were the most likely to favor small artworks, it seems legitimate to test discretion by splitting the sample into two, distinguishing small artworks (defined here for practical purposes as the first quartile in terms of surface area²⁹) and the rest. Regressions are then run on both samples and specific indices computed on basis of the results are presented in Figure 6³⁰.

²⁹ In practice artworks with a surface inferior to 1435 cm² (222.43 square inches) fall into the small category.

³⁰ An alternative way to test the relevance of discretion is to interact time and size variables. Results in this respect are not convincing with almost no interaction terms being significant (Table 11, Appendix 5). With such an approach, a unique coefficient is computed for all variables over the whole period. This may however be questioned in view of the idiosyncratic tastes of the newcomers.

Figure 6: “Small” and “Large” Canvas Market Index (1937-1947).

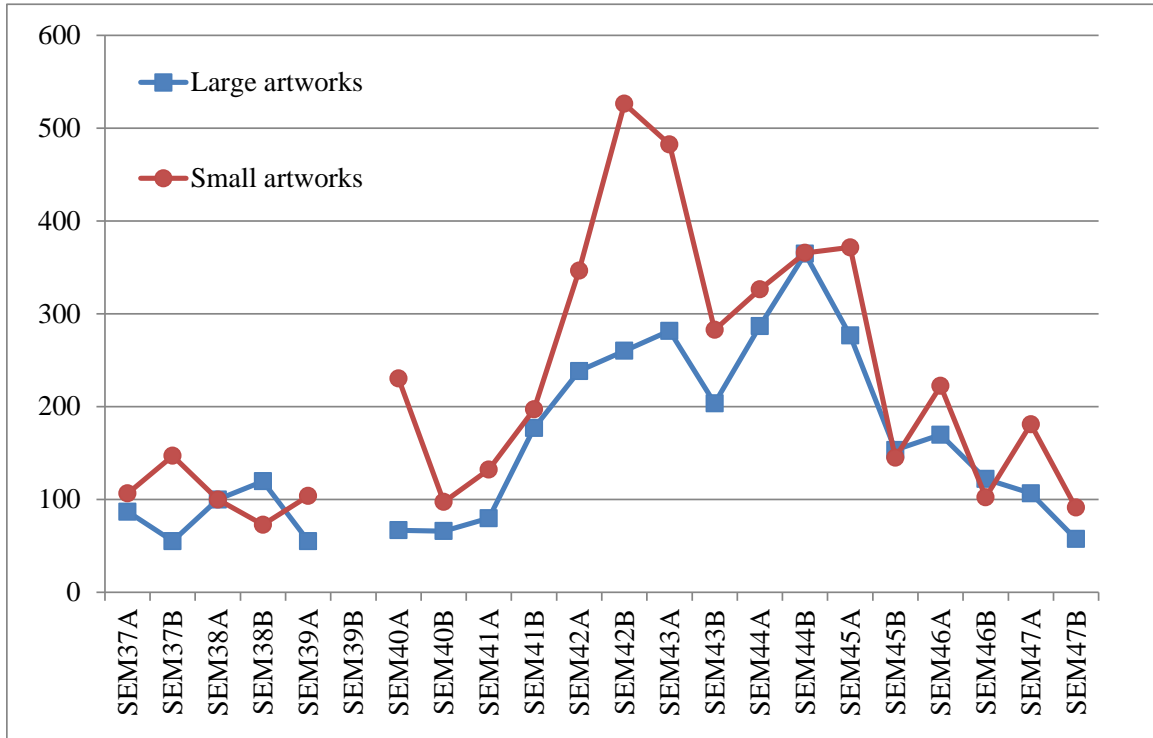


Figure 6 indicates that the price dynamic for small and large artworks differed drastically. The relatively high prices fetched by small artworks during the first semester of 1940 are consistent with priors. The state of war, and expectations that one might need to flee, increased the demand for small artworks, driving up their prices. During the war the difference between small and large artworks increased substantially in 1942. The peak in difference observed during the second semester of 1942 may be linked to the invasion of the Free Zone by German troops. If this military movement had been expected, small artworks would have been more sought after. At the time, black market activities were also very important, with estimates for 1942 ranging from 10% to 30% of GNP (Sanders, 2001, p. 33). The difference between small and large artworks may thus also be attributed to investments of profits made thanks to illegal activities. The decline in difference at the end of the war is logical. With the departure of German troops the need to leave the country probably declined. Black market activities, on the other hand, remained significant up till 1947. In view of these factors, it is likely that discretion was

especially important for people willing to leave the country. For war profiteers who were planning to remain in France, size was certainly less of an issue.

In Mandels (2009) theoretical model, conspicuous consumption limits the negative effect of art's procyclicality leading investors to accept (and eventually to realize) low returns. Both conspicuous consumption and the art market's response to overall changes in the economy explain the poor returns observed on the art market. Changes in risk perception, combined with the Occupation, transformed a procyclical asset into a countercyclical one. This change may explain the sharp increase in prices observed during the Occupation. As artworks were viewed as a safe-haven investment, the required return during the Occupation fell. This automatically led to an increase in artworks prices. The decline following the Liberation could then be attributed to expectations of a return to normal peacetime conditions. This leaves however open the question of conspicuous consumption.

Conspicuous consumption

The sharp price increase observed on the art market might also be linked to changes in conspicuous consumption. In the absence of conspicuous consumption, investors would require a higher premium to compensate for its loss. Intuitively conspicuous consumption may have been reduced during wartime. For World War II and for the artworks viewed as degenerate by the Nazi regime it was anything but counterproductive. So how would the Mandel (2009) model change if conspicuous consumption was absent for a given period of time?

To test the role of conspicuous consumption in art market pricing, the arbitrary rule imposed by the Nazi regime is used. If conspicuous consumption plays a role in art market valuation, one would expect prices of "degenerate" artworks to behave differently than prices of "non-degenerate" ones. To test this hypothesis, the sample is segmented into two and regressions are run separately on each subsample (degenerate and non-degenerate). This approach allows all coefficients to change. In other words, it implicitly

assumes that buyers of degenerate artworks did not value size and artworks' topics in the same way as buyers of non-degenerate works³¹. This seems reasonable since the degenerate category is linked to specific artistic movements, and previous research has shown that artistic movements could have very different price trajectories (Mei and Moses, 2002 for example).

For the whole period, degenerate artworks represent more than 56% of the sample. This figure changes dramatically over time, however. For the two periods during which overall sales were low, the second semester of 1938 and 1944, the number of degenerate works sold is so small (respectively one and two) that these periods are excluded from the degenerate index. On the other hand, during the second semester of 1940, 204 out of 220 artworks belonged to the “degenerate” category. An interpretation of this striking result would be a fire sale of degenerate artwork in the first months of the Occupation when there was still uncertainty regarding the policies that would apply to these works.

Figure 7 tracks changes in the degenerate and non-degenerate art market indices. The degenerate index drops dramatically at the end of 1937 and remains at a low value for all semesters before the Occupation. For the same period the non-degenerate index fared much better. This difference in dynamics might be interpreted in several ways. It could be attributed to the realization that the Nazi policy regarding arts was detrimental to the market for degenerate artworks in general. This would be in line with the poor results of the forced sale in Lucerne of degenerate works previously held by German museums. This difference may also be attributed to the expectations of reduced conspicuous consumption, risk of confiscation or destruction specific for these artworks should Germany invade France. *Ex ante* it was hard for buyers to assess these risks. Following

³¹ An alternative approach to test the relevance of conspicuous consumption is to interact the degenerate and time variables. This approach forces all coefficients to be the same for both degenerate and non-degenerate artists, which is doubtful in view of the nature of the buyers. This probably explains why results based on this approach are not convincing with none of the interaction terms being significant (see Table 10, Appendix 5).

the destruction of artworks deemed as degenerate in Germany in 1939 and the confiscation of these works from German museums, it was reasonable to expect degenerate artworks would suffer a similar fate should France be defeated. Following the defeat, however, confiscations were mostly done on basis of the identity of the owners, not on the basis of the artworks themselves. It is thus likely that by the end of 1941 expectations of confiscation would have been reduced. During the Occupation the difference between degenerate and non-degenerate artworks remained significant up till the second semester of 1943. Under the Nazi rule, conspicuous consumption of degenerate artworks was almost impossible. The difference peaks in 1942, the period when German troops entered the so-called Free Zone and repression of the Resistance increased. It was not before the first semester of 1944 that indices converged when the Liberation of Paris was in sight.

Figure 7: Degenerate and Non Degenerate Art Market Index (1937-1947).

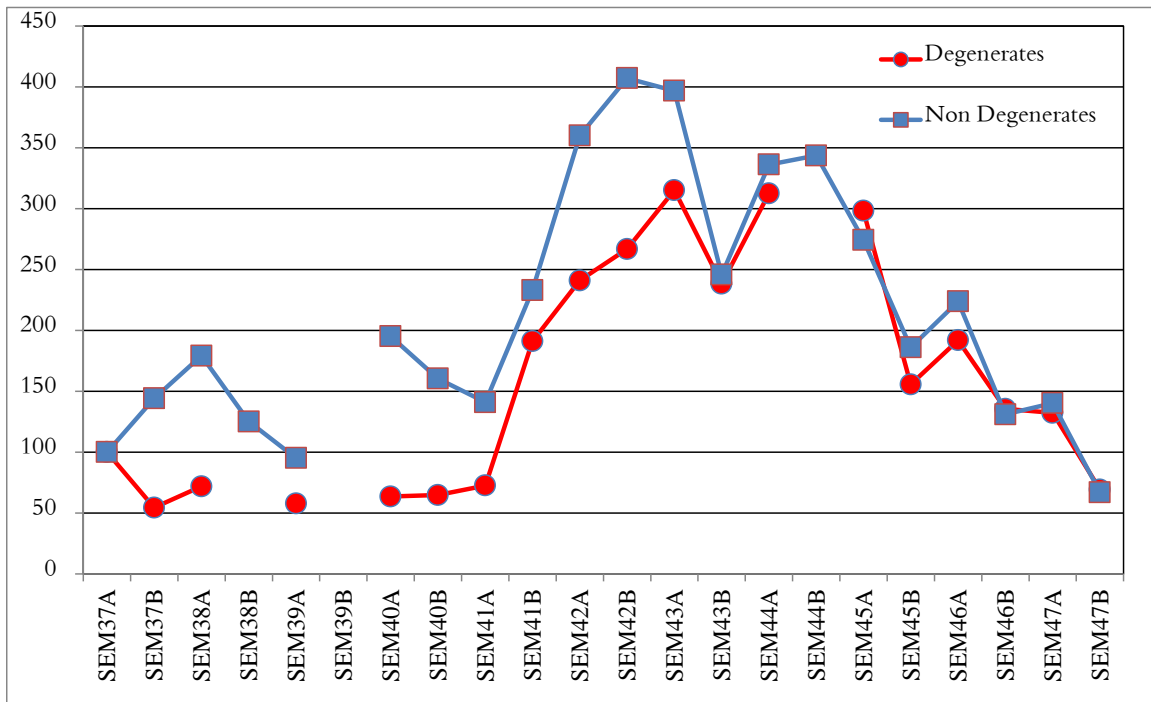


Figure 7 shows that the absence of conspicuous consumption played a role in the art market. The highest prices realized by non-degenerate artworks reflect the added utility derived by agents in terms of conspicuous consumption. This utility was absent for

holders of degenerate artworks. In other terms, the absence of conspicuous consumption increased required returns for the degenerate artworks. This drove down the prices of these works in comparison with non-degenerate artworks. At the end of 1943, as prospects for the Allied became better the two indices began to converge, this might be attributed to either the expectations that conspicuous consumption of “degenerate” artworks would be possible in the near future. In certain circles, conspicuous consumption of “degenerate” artworks may have been increased as owning such artworks may even have been presented as a token of resistance to the Nazi regime.

4. Conclusion

The French art market during the Occupation has been the subject of numerous publications that mostly focused on the fate of looted artworks. According to most authors, the art market itself was considered as having experienced a huge boom during the Occupation. On basis of an original database, this paper recreates an art market price index for the period 1937-1947. The index shows that in occupied France, the art market provided one of the best investment opportunities. In fact, in a risk-return framework, gold was the only serious alternative to art. This observation is attributed to the characteristics of wartime investments. Discretion, the inflation-proof character, the absence of market intervention and the possibility to resell artworks abroad played a crucial role in their valuation. Investors were ready to go to the black market to possess assets that could easily be resold abroad. For those who preferred to remain on the legal side, the art market provided an attractive alternative.

The paper also analyzes the non-pecuniary benefits of holding artworks. By exploiting the difference imposed by the occupying forces between degenerate and non-degenerate artworks, it confirms and quantifies the importance of conspicuous consumption in artworks’ pricing. During the war, conspicuous consumption was anything but impossible for artworks viewed as degenerate by the occupying forces. As a result, investors demanded a higher rate of return to compensate for the loss of

conspicuous consumption driving down the relative price of degenerate artworks. When the Liberation came in sight, the price index of degenerate artworks converged towards the non-degenerate index.

Eventually, the paper defines the concept of discretion, the ability to store a large amount of value in small and easily transportable goods. During wartime, illegal activities and the risk of being forced to flee the country increased the interest of discreet assets. By comparing the price index for small and large artworks, the paper shows that investors were ready to pay a premium to buy smaller artworks. This premium was especially large just before the German invasion and during 1942-1943, when black market activities flourished. The paper thus shows that the respective importance of non-pecuniary and pecuniary motives varies over time and that, in extreme circumstances, artworks may prove extremely interesting investment vehicles.

Appendix 1: Breakdown of artworks sold by medium and average price per medium

For the occupation period close to 24,500 paintings, engravings and drawings were sold in Drouot. In some cases the date of the sale, the name of the artist, or the price are not mentioned. Once excluded, 21,882 works remain. Out of these 47.65% were signed, and 3.67% had a stamp from the artists' atelier. The description of the artworks themselves may be classified into four categories: Wooden artworks (panels, triptychs or paintings on wood), work on paper (mostly engravings and drawings), watercolors (gouaches included) and canvasses. Some descriptions are however either too general ("paintings") or are too specific to be included in any analysis. Eventually, 21,333 artworks may be attributed to one of the four categories. The proportion in terms of number of artworks sold remains almost the same during the war. Canvasses represented 46% of artworks going under the hammer, watercolors 20%, works on paper 18% and paintings on wood 16%.

Table 4: Proportion in terms of number of works

	Canvas	Paper	Watercolor	Wood
1940-41	47%	17%	23%	13%
1941-42	45%	19%	19%	17%
1942-43	47%	18%	18%	16%
1943-44	47%	16%	16%	17%

Table 5: Proportion in terms of amounts

	Canvas	Paper	Watercolor	Wood
1940-41	51%	7%	11%	30%
1941-42	65%	9%	8%	18%
1942-43	60%	10%	13%	18%
1943-44	62%	9%	10%	20%

Table 6: Most expensive paintings sold at Drouot during the occupation

Artist	Painting	Date of sale	Price (FF)
Cézanne, Paul	La Vallée de l'Arc et la montagne Sainte-Victoire	11/12/1942	5 000 000
Degas, Edgar	Après le bain. Femme s'essuyant	11/12/1942	2 230 000
Pissaro, Camille	La Route du Cœur-Volant, à Louveciennes	11/12/1942	1 610 000
Renoir, Auguste	Baigneuse lisant	11/12/1942	1 530 000
Degas, Edgar	Femme à sa coiffure	11/12/1942	1 500 000
Delacroix, Eugène	Nu assis, de profil à gauche (Mademoiselle Rose)	11/12/1942	1 500 000
Goya Francisco de	Portrait de l'Artiste	11/03/1942	1 450 000
Degas, Edgar	La Causerie	11/12/1942	1 410 000
Degas, Edgar	Portrait de Monsieur de Valerne	11/12/1942	1 400 000
Daumier, Honoré	Portrait d'un ami de l'artiste	11/12/1942	1 320 000
Degas, Edgar	La Coiffure après le bain	11/12/1942	1 300 000
Pissaro, Camille	La Route d'Ennery, 1877	11/12/1942	1 300 000
Ingres, J.-A.-Dominique	Portrait du graveur Desmarais	15/12/1941	1 240 000
Corot, Camille-Jean-Baptiste	Paysage composé. Effet gris	11/12/1942	1 210 000
Sisley, Alfred	Le Loing, à Moret	11/12/1942	1 205 000
Sisley, Alfred	Chemin de Saint-Mammès (1895)	11/12/1942	1 200 000
Ruysdael, Jacob van	Solitude	15/06/1942	1 200 000
Corot, Camille-Jean-Baptiste	Bellevue, vue prise en regardant le mont Valérien	10/02/1943	1 100 000
Gauguin, Paul	Bretagne. Deux figures sur la falaise	11/12/1942	1 100 000
Corot, Camille-Jean-Baptiste	Trois personnages conversant sous les arbres et barque au bord de l'eau	12/03/1943	1 050 000
Delacroix, Eugène	Fleurs dans un vase bleu (1849)	24/06/1942	1 040 000

Appendix 2: List of the painters (and their date of birth and death) for which at least 5 canvasses were sold in Drouot during the occupation

1. Adler Jules (1865-1952)
2. Adrion Lucien (1889-1953)
3. André Albert (1869-1954)
4. Anglade Gaston (1854-1919)
5. Antral Louis R. (1895-1939)
6. Baader, L. M. (Louis) (1828-c.1919)
7. Bail, Joseph (1862-1921)
8. Bando Toshio (1895-1973)
9. Bernard, Emile (1868-1941)
10. Bertram Abel (1871-1954)
11. Bertrand, James (1823-1887)
12. Besnard, Albert (1849-1934)
13. Bianka, Dora (1895-1979)
14. Bissière Roger (1886-1964)
15. Bompard Maurice (1857-1936)
16. Bonheur Rosa (1822-1899)
17. Bonnard Pierre (1867-1947)
18. Boudin Eugène (1824-1898)
19. Boussingault Jean-Louis (1883-1943)
20. Breton Jules (1827-1906)
21. Brown John-Lewis (1829-1890)
22. Caillebotte Gustave (1848-1894)
23. Cals Adolphe Félix (1810-1880)
24. Camoin Charles (1879-1965)
25. Carrière Eugène (1849-1906)
26. Cazin Jean-Charles (1841-1901)
27. Céria Edmond (1884-1955)
28. Charlot Louis (1878-1951)

29. Chériane (1900-?)
30. Chintreuil Antoine (1814-1873)
31. Chirico Giorgio de (1888-1978)
32. Clary-Baroux Adolphe (1865-1933)
33. Colin Gustave (1828-1910)
34. Cordey Frédéric (1854-1911)
35. Corneau Eugène (1894-1976)
36. Corot Jean-Baptiste Camille (1796-1875)
37. Coubine Othon (1883-1969)
38. Cousin Charles Louis-Auguste (1807-1887)
39. Couture Thomas (1815-1879)
40. Creixams Pierre (Pedro) (1893-1965)
41. Damoye Pierre-Emmanuel (1847-1916)
42. Daubigny Charles-François (1817-1878)
43. Debat-Ponsan Edouard (1847-1913)
44. Defaux Alexandre (1826-1900)
45. Degas Edgar (1834-1917)
46. Delacroix Eugène (1798-1863)
47. Delpy Hyppolite-Camille (1842-1910)
48. Denis Maurice (1870-1943)
49. Derain André (1880-1954)
50. D'Espagnat Georges (1870-1950)
51. Deveria Eugène (1808-1865)
52. Diaz de la Pena Narcisse (1807-1876)
53. Dreux, Alfred de (1810-1860)
54. Dufeu Edouard Jacques (1840-1900)
55. Dufrenoy Georges (1870-1943)
56. Dufy Jean (1888-1964)
57. Dufy Raoul (1877-1953)
58. Dupray Henry Louis (1841-1909)
59. Dupré, Jules (1811-1889)

60. Dupré, Victor (1816-1879)
61. Durey René (1890-1959)
62. Duroze Fernand (1876-1961)
63. Duvieux Henri (c.1855-1920)
64. Eberl François Maurice (1887-1962)
65. Effinger Léon (XX)
66. Fantin-Latour Théodore (1805-1872)
67. Fautrier Jean (1898-1964)
68. Favory André (1888-1937)
69. Flameng Marie-Auguste (1843-1893)
70. Flandrin Jules (1871-1947)
71. Forain Jean-Louis (1852-1931)
72. Français François-Louis (1814-1897)
73. Frank-Will (1900-1951)
74. Fraye André (c.1887-1963)
75. Friesz, Emile-Othon (1879-1949)
76. Gagliardini Julien Gustave (1846-1927)
77. Gauguin Paul (1848-1903)
78. Génin Lucien (1894-1953)
79. Gen-Paul (1895-1975)
80. Giran Max, Léon-Maxime (1867-1927)
81. Girardet, Eugène (1853-1907)
82. Goerg Edouard Joseph (1893-1969)
83. Gromaire Marcel (1892-1971)
84. Guardi Francesco (1712-1793)
85. Gudin, Théodore (1802-1880)
86. Guérin Charles (1875-1939)
87. Guillaumin Armand Jean-Baptiste (1841-1927)
88. Guirand de Scevola Lucien Victor (1871-1950)
89. Halicka Alice (1895-1975)
90. Harpignies Henri Joseph (1819-1916)

91. Henner Jean-Jacques (1829-1905)
92. Herbin Auguste (1882-1960)
93. Hode, Pierre (1889-1942)
94. Isabey, Eugène (1803-1886)
95. Iwill, M.J.-Léon Clavel, dit (1850-1923)
96. Jacque Charles (1813-1894)
97. Japy, Louis (1840-1916)
98. Kohl, Pierre-Ernest (1897-1985)
99. Koyanagui, Séi (1896-1948)
100. Kremègne, Pinchus (1890-1981)
101. Kvapil Charles (1884-1957)
102. Labasque, Jean (1902-?)
103. Lacroix de Marseille Charles-François (c.1700-1782)
104. Lagar, Celso (1891-1966)
105. Laglenne Jean-François (1899-1962)
106. Lajoue Jacques de
107. Lamotte, Bernard (1903-1983)
108. Langlace, Jean-Baptiste-Gabriel (1786-1864)
109. Lapostolet, Charles (1824-1890)
110. Laprade Pierre (1875-1931/32)
111. Laurencin Marie (1883-1956)
112. Laurens, Jean-Paul (1838-1921)
113. Lebasque Henri (1865-1937)
114. Lebourg Albert (1849-1928)
115. Lecomte Paul (1842-1920)
116. Lépine Stanislas (1835-1892)
117. Leprin Marcel-François (1891-1933)
118. Lhote André (1885-1962)
119. Lotiron Robert (1886-1966)
120. Louguinine Wolkonsky, Marie (1875-1960)
121. Luce Maximilien (1858-1941)

122. Lurcat Jean (1892-1966)
123. Madelain, Gustave (1867-1944)
124. Maillaud Fernand (1862-1948)
125. Mainssieux Lucien (1885-1958)
126. Manguin Henri-Charles (1874-c.1950)
127. Mare, André (1885-1932)
128. Marquet Albert (1875-1947)
129. Marval Jacqueline (1866-1932)
130. Matisse Henri (1869-1954)
131. Maufra Maxime (1861-1918)
132. Metzinger Jean (1883-1956)
133. Mignon, Lucien (1865-1944)
134. Monet Claude (1840-1926)
135. Montenard Frédéric (1849-1926)
136. Moret Henry (1856-1913)
137. Muraton, Euphémie (1840-1914)
138. Olive Jean-Baptiste (1848-1936)
139. Osterlind Anders (1887-1960)
140. Ottmann, Henri (1877-1927)
141. Palmeiro Jose (1901/03-1984)
142. Pascin Jules (1885-1930)
143. Pelouse Léon-Germain (1838-1891)
144. Pezant, Alexandre (1846-1916)
145. Picabia Francis (1879-1953)
146. Pierly J.
147. Pillement, Jean (1728-1808)
148. Pils, Isidore-Alexandre-Augustin (1813-1875)
149. Pissaro Camille (1830-1903)
150. Poiret, Paul (1879-1944)
151. Prax Valentine (1899-1981)
152. Puy Jean (1876-1960)

153. Quizet, Alphonse (1885-1955)
154. Raffaëlli, Jean-François (1850-1924)
155. Ravier François Auguste
156. Redon Odilon (1840-1916)
157. Renoir Auguste (1841-1919)
158. Ribot Théodule (1823-1891)
159. Richet Léon (1847-1907)
160. Robert Hubert (1733-1808)
161. Roche Marcel (1890-1959)
162. Romany Marie-Jeanne Mercier, dit Adèle de Romance, puis (1769-1846)
163. Rosset-Granger Edouard (1853-1942)
164. Rouault Georges (1871-1958)
165. Rousseau Philippe (1816-1887)
166. Rousseau Théodore (1812-1867)
167. Roussel Karl-Xavier (1867-1944)
168. Sabbagh Georges Hanna (1887-1951)
169. Scheffer, Ary (1795-1858)
170. Signac Paul (1863-1935)
171. Simon, Lucien (1861-1945)
172. Simons Paul (1865-1932)
173. Sisley Alfred (1839-1899)
174. Soutine Charles (Chaïm) (1893-1943)
175. Steinlen, Théophile-Alexandre (1859-1923)
176. Tassaert Octave (1800-1874)
177. Ten Cate Siebe Johannes (1858-1908)
178. Terlikowski, Vladimir de (1873-1951)
179. Thomsen René (1897-1976)
180. Trouillebert Paul-Désiré (1829-1900)
181. Troyon Constant (1810-1865)
182. Truchet Abel (1857-1918)
183. Utrillo, Maurice (1883-1955)

184. Utter André (1886-1948)
185. Valadon Suzanne (1865-1938)
186. Valenciennes Pierre-Henri de (1750-1819)
187. Valtat Louis (1869-1952)
188. Van Dongen, Kees (1877-1968)
189. Vauthier, Pierre (1845-1916)
190. Verdilhan, André (1881-1963)
191. Veyrassat, Jules-Jacques (1828-1893)
192. Vignon Victor (1847-1909)
193. Villers Gaston de (1870-1953)
194. Vlaminck Maurice de (1876-1958)
195. Vogler, Paul (1852-1904)
196. Vollon Antoine (1833-1900)
197. Warocquier Henry de (1881-1970)
198. Ziem Félix (1821-1911)
199. Zingg Jules (1882-1942)

APPENDIX 3 Descriptive statistics for the occupation

Table 6: Artists ranking in terms of number of canvasses sold and in terms of total sales

Artist	Number of canvasses		Artist	Amounts (FF)
Trouillebert	106		Corot	13.168.000
Lebourg	83		Monet	9.103.000
Luce	82		Pissaro	6.935.800
Valtat	79		Renoir	5.881.900
Guillaumin	72		Sisley	5.520.100
Friesz	63		Bonnard	5.273.500
Forain	58		Degas	4.631.000
Derain	52		Delacroix	4.510.100
Favory	47		Lebourg	3.608.700
Cals	41		Boudin	2.474.200
D'Espagnat	41			

APPENDIX 4: Topics and search strings

ANIMALS: Baudet, Biche, Bœuf, Caniche, Cerf, Cheval (chevaux), Chat, Chien, Dogue, Lion, Loulou, Mouton, Perroquet, Poules, Tigre, Vache. Animals were excluded if they were used as an attribute (fille au chien) or if they obviously referred to a still-life (lapin écorché).

LANDSCAPE: Bord(s) (when associated to a river), côte, lac, marine, mer, montagne, paysage, rivière, Seine (when associated to a landscape)

NUDE: Nu, nue, nus

PEOPLE: Dame (Notre-Dame excluded), enfant, famille, femme, fille (tte), mère, père, personnage

PORTRAIT: portrait

STILL-LIFE: Bouquet (excluded bouquet d'arbre), Fleurs, Fruits, Nature morte, Vase. When the title contained food names or flower names, these were added too.

URBAN: Avenue, Londres, Lyon, Marché, Marseille, Montmartre, New York, place, port, Paris, Rome, rue, Venise, village.

APPENDIX 5.

Table 8 Results of the hedonic regression

All models are estimated using OLS. The dependant variable is the natural log of the real price. For the definitions of the independent variables see text. Period considered 1937-1947.

Model	Model (1)	Model (2)	Model (3)
Time Dummies (semi-annual, for model 1 and 2, and annual for Model (3))³²	Incl	Incl	Incl
Artist Dummies³³.	Incl	Incl	Incl
Height	0.0041***	0.0040***	0.0045***
Height²	-6.71 10 ⁻⁶ ***	-6.6 10 ⁻⁶ ***	-6.99 10 ⁻⁶ ***
Width	0.0199***	0.0200***	0.0216***
Width²	-6.13 10 ⁻⁵ ***	-6.17 10 ⁻⁵ ***	-6.99 10 ⁻⁵ ***
Animals	-0.2446**	-0.2462***	-0.2052**
Landscape	0.0249	Not incl	0.0678
Nude	0.0124	Not incl	0.0443
People	-0.0949*	-0.0998**	-0.0731
Portrait	-0.0444	Not incl	-0.0082
Still-Life	-0.0078	Not incl	0.0264
Urban	0.1579***	0.1539***	0.1817***
# of observ.	4 339	4339	4339
Number of variables	230	226	218
Adjusted R-square	75.97%	75.98%	74.53%

³² In all regressions significant at the 1% level but for the year 1939 in Model (3) significant at the 5% level

³³ Artist 43 (Debat-Ponsan Edouard) never included because of colinearity. For Model (3) artist 182 was also not included for the same reason.

Table 9 Results of the hedonic regression

All models are estimated using OLS. The dependant variable is the natural log of the real price. For the definitions of the independent variables see text. Period considered October 1940- July 1944.

Model	Model (1)	Model (2)
Time Dummies (Monthly) ³⁴	Incl	Incl
Artist Dummies	Incl	Incl
Height	0.0036***	0.0036***
Height²	-5.1 10 ⁻⁶ ***	-5.11 10 ⁻⁶ ***
Width	0.0189***	0.0190***
Width²	-5.65 10 ⁻⁵ ***	-5.68 10 ⁻⁵ ***
Dated	0.157***	0.1561***
Stamp	0.3483***	0.3482***
Signed	0.4092***	0.4071***
Animals	-0.091	Not incl
Landscape	0.0024	Not incl
Nude	-0.075	Not incl
People	-0.0108*	-0.0108*
Portrait	-0.0977	Not incl
Still-Life	-0.0313	Not incl
Urban	0.144**	0.1507***
# of observ.	2 731	2 731
Number of variables	249	245
Adjusted R-square	79.52%	79.54%

³⁴ All significant at the 1% level.

Table 10 Results of the hedonic regression (Interaction between Degenerates and Time Dummies)

All models are estimated using OLS. The dependant variable is the natural log of the real price. For the definitions of the independent variables see text. Period considered 1937-1947

Model	Interaction between Degenerate and Time Dummies	Degenerates	Non Degenerates
Time Dummies ³⁵	Incl	Incl	Incl
Artist Dummies.	Not Incl	Incl	Incl ³⁶
Height	0.0009	0.0167***	0.0079***
Width	0.0062***	0.0243***	0.0179***
Surface	-8.33 10 ⁻⁶	-0.0002***	-8.01 10 ⁻⁵ ***
Animals	-0.0794	0.2273	-0.3676***
Landscape	0.0169	-0.0004	0.0832
Nude	0.0501	-0.0152	0.0865
People	-0.0806	-0.0964	-0.1363
Portrait	0.1489	-0.0739	0.0470
Still-Life	-0.3763***	0.0011	-0.0144
Urban	0.0335	0.1247**	0.2395***
Degenerate	1.181	Not Incl	Not Incl
Deceased	1.0154***	Not Incl	Not Incl
Interaction Terms Degenerate * Time Dummies	Incl ³⁷	Not Incl	Not Incl
# of observ.	4 234	2 436	1 901
Number of variables	54	110	148
Adjusted R-square	19.69%	78.22%	72.89%

³⁵ All significant at the 1% level

³⁶ Artist 1 removed because of colinearity

³⁷ None significant, the interaction term with the least data (Second Semester 1944) excluded because of colinearity

Table 11 Results of the hedonic regression (Small versus Large)

All models are estimated using OLS. The dependant variable is the natural log of the price. For the definitions of the independent variables see text. Period considered 1937-1947

Model	Interaction between Size and Time	Small	Large
Time Dummies ³⁸	Incl	Incl	Incl
Artist Dummies ³⁹	Incl	Incl	Incl
Height	0.0112***	0.076	0.0029**
Width	0.0188***	-0.003	0.0112***
Surface	-0.0002***	0.007**	-3.54 10 ⁻⁵ ***
Animals	-0.2355**	-0.2104	-0.2324**
Landscape	0.0298	0.0526	0.0353
Nude	0.0075	-0.2142	0.02
People	-0.0989*	-0.112	-0.1032*
Portrait	-0.0767	-0.2665	0.004
Still-Life	-0.0103	-0.0155	-0.0071
Urban	0.1367***	0.1341	0.1346**
Interaction Terms Surf*Time Dummies ⁴⁰	Incl	Not Incl	Not Incl
# of observ.	4 339	1 083	3 255
Number of variables	249	185	230
Adjusted R-square	75.65%	73.34%	78.07%

³⁸ All significant at the 1% level

³⁹ In function of the specification artists were or were not included because of colinearity (the dummies for artists with no small works are logically excluded from the regression on small works).

⁴⁰ None significant but for the two semesters of 1937 and the second semester of 1938 and 1946 (at the 10% level).

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