

PORTFOLIO MANAGEMENT WITH ART ASSETS

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ABSTRACT

The art market, embracing its different disciplines and its different supports, it is nowadays considered an alternative investment to other assets. This fact has made many economists feel interested in the art market. However there is a gap in the literature related to the empiric study of diversified portfolios of art combined with other financial assets, such as stocks. This fact can due to the informative asymmetry that characterizes the art market from others

This paper tests two propositions: the first one states that a classical investor (an investor who trades with stocks) maximizes his returns investing in portfolios combining art and stocks in order to get higher returns with the same risk level that he would assume investing only in the Stock Exchange Market. The second one states that an art investor reduces the high volatility of this class of assets diversifying his investments in stocks.

I. INTRODUCTION

Fine arts are nowadays considered an alternative investment to other assets. This fact has made many economists feel interested in the Art market. The first economic studies about the art market focused on the relationship between art and investments. Baumol (1986) promoted the research of the financial returns of art purchases, comparing it to the profit obtained with other kinds of investments.

II. ART AS INVESTMENT

Although many economists have tried to model the art market through different methodologies, they have only been able to model a segment of it, not all market. We find the reason in the heterogeneity of goods the art market embraces and their peculiar features.

So far the different methodologies used for modelling the art market can be grouped in 4:

A.-Geometric price method: A significant application of this index was carried out by Stein (1977) for estimating the financial returns of investing in the pictorial art market during the period of time (1946-1968).

B.-Repeat sales regression method: This method has been used to know the trend of the art market prices. Used by several economists as Baumol (1986), Frey and Pommerehne (1989), Goetzmann (1993), Pesando (1993), Scorcu and Candela (1997) and Mei and Moses(2002). This method only takes in account those works of art sold in the market several times. This fact reduces the sample of study, as whether a work of art is acquired by a museum, rarely will be sold again.

C.- The hedonic price method: The first papers written about this topic were published in 1997, examples include such papers as the Czujack (1997), Ginsburgh and Penders (1997) and Pommerhne papers (1997).

D.-Sotheby's method: This index embraces antiques and also painting works of art. It was used by Auction House Sotheby's for providing information to the market and promoting its transparency.

Though, art market has been studied from the sixties, there is a gap in the literature related to the empiric study of diversified portfolios of art combined with other financial assets, such as stocks. This fact can be due to the informative asymmetry that characterizes the art market from other markets, such as the real estate market.

The goal of the paper is to test two propositions: the first one states that a classical investor (an investor who trades with stocks) tries to maximize his returns investing in portfolios combining art and stocks in order to get higher returns with the same risk level that he would assume investing only in the Stock Exchange Market. The second proposition states that an art investor will try to reduce the high volatility of this class of assets diversifying his investments in stocks.

The paper is organized as follows. The sources of information are illustrated in next section. After this the models are presented. Following the results are discussed and the final section concludes the paper with considerations and possible extensions of the work.

III. SOURCES OF INFORMATION.

The art market is divided into two submarkets; primary markets based on the direct sales from art galleries, whose prices rarely are published. This market segment is characterized by the informative asymmetry. The validity of data depends on the source of information they come from. In the secondary market or market of the auction houses, prices are published; what makes information more trustful in the secondary market.

This research has been carried out using as information resource the Stock Exchange Market Dow Jones and the database Art price. There is not an international index for the art market, because of this the authors have used the database Art Price for building an international art market index and estimate the performance of the art market.

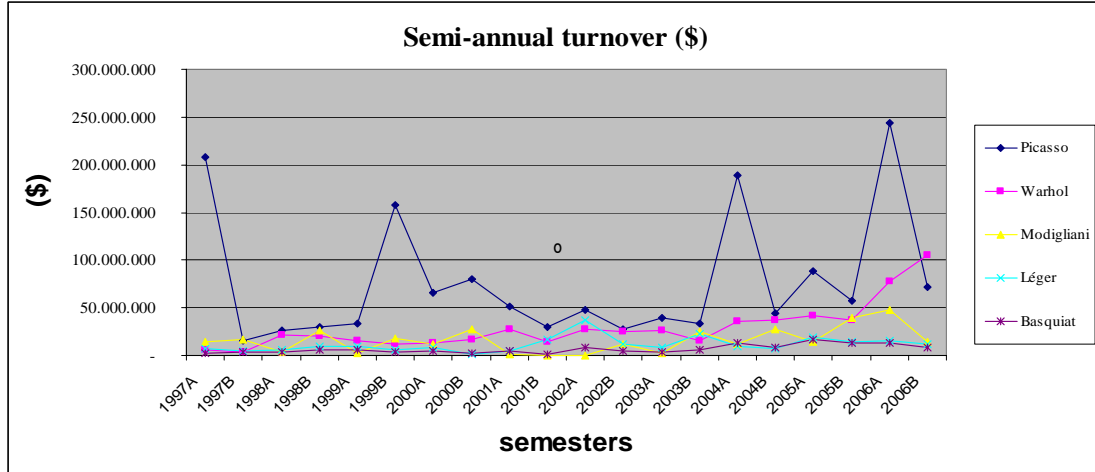
Firstly it was built the annual ranking of the top 40 artists in terms of turnover in the international auction houses of Christies and Sotheby's in London and New York for each semester for the period of time 1997-2006. Both auction houses in New York and London handled in 2006 the 76% of the global fine art market's turnover. However they just celebrated the 9,15% of the total auction numbers in 2006. Also, Art Price Data Base publishes every March since 2002 and reports about the art market. The annual art market report was not published in previous years (1997-2001). It has been necessary to carry out an accurate search of the artists that composes the ranking of the 40 more quoted artists in terms of turnover for building it. The database embraces all artistic disciplines, paintings, sculpture...without distinction from ones to others.

Secondly, from the 40 most quoted artists in the international market during the period of time 1997-2006 only 5 remained every year in the ranking of the 40 more quoted artists.

We selected the 5 artists that remained in the top 40 for the period of time considered (1997-2006) according to their turnover. The artist selected will compose the art portfolio.

The international ranking of the art market has been estimated every semester for the period of time considered. Figure I shows the turnover per artist and semester for the period of time studied. The Spanish painter Picasso was number one in the ranking every year, not only for the number of artworks coming up for auction each year, but also for the turnover reached.

FIGURE I. TREND OF THE TURNOVER PER ARTIST AND SEMESTER FOR THE PERIOD OF TIME STUDIED.



IV. METHODOLOGY

The methodology used is the Markowitz Efficient Portfolio, which is easy enough for any investor to understand and use it. In this study there is considered two kinds of assets, art and stocks.

The first proposition stated that a classical investor (an investor who trades with stocks) tries to maximize his returns investing in mixed-assets portfolios combining art and stocks in order to get higher returns with the same risk he would assume investing only in the Stock Exchange Market. This way the expected return would be:

$$MaxE(R_p) = \sum_{i=1}^n w_i r_i$$

$$(1) \quad var(R_p) = \sigma_p^2 = \sum_{i=1}^n \sum_{i=1}^n w_i^2 \sigma_i^2 + \sum_{i=1}^n \sum_{j=1}^n w_i w_j \sigma_{ij} = H^*$$

$$(2)$$

$$\sigma_p = \sqrt{\sigma_p^2}$$

$$(3)$$

$$\sum_{i=1}^n [r_i] = 1$$

$$(4)$$

$$w_i \geq 0$$

$$(5)$$

Where R_p is return the investor will obtain as a result of the weighted combination of assets' returns (w_i) of the mixed portfolio, considering as risk the

standard deviation of the portfolio's return ($\delta_p=H^*$). According to the model, an investor will take on increased risk only if compensated by higher expected returns.

The second proposition states that an art investor who already diversifies his investments between several artists will try to reduce the high volatility of the art assets for a determined level of returns, investing in mixed-assets portfolios which combine artworks with stocks. The objective function to optimize would be:

$$MIN \text{ var}(R_p) = \sigma^2_p = \sum_{i=1}^n \sum_{i=1}^n w_i^2 \sigma_i^2 + \sum_{i=1}^n \sum_{j=1}^n w_i w_j \sigma_{ij}$$

(6)

$$\sum_{i=1}^n w_i [r_i] = E^*$$

(7)

$$\sum_{i=1}^n [r_i] = 1$$

(12)

$$w_i \geq 0$$

(13)

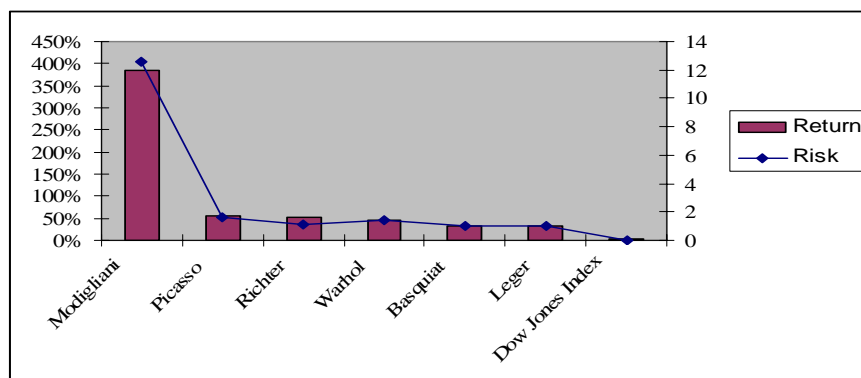
The model assumes that investors are risk averse. This means that given two assets that offer the same expected return, investors will prefer the less risky one. The proposed model implies that a rational investor will not invest in a portfolio if a second portfolio exists with better risk-return characteristics.

V. RESULTS

Assuming a classical investor is the one who only invest in stocks, i.e.the Dow Jones index; he would get a semi-annualized average return of 3% with a volatility of a 1% for the period of time 1997-2006. According to proposition one, the conservative investor will try to maximize his returns by holding a mixed-assets portfolio.A diversified portfolio combining the two different assets before exposed, art and stocks will increase the investor's returns for the same risk level.

The mixed-asset portfolio returns are a function of the semi-annualized average returns of each asset showed in figure II, and the risk's volatility results is the average standard deviation of each asset for the period of time considered (figure II)

FIGURE II. SEMI-ANNUALIZED RETURNS AND RISKS (SEMI-ANNUAL DATA JANUARY 1, 1997 THROUGH DECEMBER 31, 2006).



On the other hand, an art investor who already diversifies his investments between different artists will try to reduce his portfolio' risk, for the return level. This way, he would invest in the alternative asset.

Volatility is not the only relevant measure of risk. Joint to the returns-risk characteristics of various portfolios, it was estimated the risk-adjusted returns by calculating the Sharpe Ratio. Sharpe ratio represents a measure of the amount of additional return (above the risk-free rate) a portfolio provides compared to the risk it carries. For estimating it, it was considered the U.S. 6 months T-Notes whose semi-annualized return was a 1,98% over the period of time of this study.

Optimizing the objective functions, it have been obtained the returns-risk characteristics of the different portfolios showed in Table I.

TABLE. 1. PORTFOLIO ASSET ALLOCATION WITH RISK AND RETURN.

Type of Investor	Returns and Risk (%)			Portfolio Asset Allocation (%)						
	Semi-annualized Return	Standard deviation	Sharpe	Dow Jones	J.M. Basquiat	F. Léger	G. Richter	A. Warhol	A. Modigliani	P. Picasso
Classical: stocks	3	1	1	100	0	0	0	0	0	0
Just art	40	26,11	146,5	0	15,23	37,29	20,41	12,78	2,0	12,26
Mix	10,97	1	8,96	85,49	1,06	5,96	4,56	1,76	0,69	0,44
(max return)	24,2	5	4,44	60,28	1,19	14,17	13,05	5,02	1,47	4,77
	33,22	10	3,12	43,11	1,28	19,77	18,84	7,24	2,01	7,72
Mix	40,03	15	2,53	30,14	1,35	24	23,21	8,91	2,41	9,95
(adverse to risk)	50,00	24,4	1,96	11,75	0	30,25	30,46	11,09	3,00	13,42
	60,00	37,33	1,55	0	0	29,62	37,63	12,26	4,27	16,19

The portfolios' return-risks characteristics show how a classical investor would increase his returns (3%) diversifying his portfolios, which means, investing in art and stocks. He would get for the same risk level (1%) over a 10% return. In contrast, an art investor who obtains a 40% returns diversifying his art investments, would reduce his portfolios' volatility from 26,11% to 15% investing in mixed-assets portfolios. The performances of the portfolios are confirmed by the Sharpe Ratio.

VI. CONCLUSIONS

Successful investment in art requires not only extensive know-how about the artistic quality and authenticity of the object to be acquired but also about peculiarities of the art market. Additionally, it requires the investor to establish a scenario of future economic and social developments, also including international factors such as exchange rate movements, special cultural factors and market preferences.

This paper has tested how a classical investor maximizes his returns investing in portfolios combining art and stocks in order to get higher returns with the same risk level that he would assume investing only in the Stock Exchange Market. Also, the paper has tested how an art investor reduces the high volatility of this class of assets diversifying his investments in stocks.

As a result, a mixed-asset portfolio of artworks and stocks play an important role in portfolio diversification. Despite the informative asymmetry that characterizes the art market from others, it is concluded that this market shows a good opportunity of investment, considering the mixed-assets portfolios.

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