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Art as an Investment under High Inflation: An Empirical Study on Turkish Paintings

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Abstract:

Investment in art objects as a means of portfolio diversification is receiving increasing attention since the returns on alternative investments such as paintings are generally found to be uncorrelated with the returns on conventional financial portfolio items. In this paper, we investigate the relationships between the return on investments in art objects and other financial investments for a developing country with a volatile macroeconomic environment and high inflation rates. In doing so, we take Turkey as a case study. Our estimation results from a hedonic price regression for the market for paintings by Turkish artists indicate that the art market in Turkey is -driven by fundamentals, such the real GDP growth rate, liquidity conditions in the market, and the return on other investment alternatives. Nevertheless, the market for paintings has its own peculiarities and still represents a different habitat than other investments.

Key words: Art investment, Hedonic price index, Portfolio diversification, Macroeconomic crises in Turkey

JEL Classification: Z11, G11, L16, L82

1. INTRODUCTION

Investment in art objects as a means of portfolio diversification is receiving increasing attention since the returns on alternative investments such as paintings are generally found to be uncorrelated with the returns on conventional financial portfolio items.

Art is often considered as a superior consumption good.[1] An *"aesthetic good"* has certain peculiarities of its own. The aesthetic good is unique[2]: two art objects on the same subject even if it is produced by the same artist are not perfect substitutes, thus heterogeneity is inherent in the art market. There is a monopoly in the art market: each seller of the unique painting is a monopolist. There also need not be a continuum of sales: there are many paintings which are just sold once. Resale of the same art objects is not frequent: i.e., secondary markets with limited participation. There are asymmetries of information regarding the price and quality of the art object. Sellers may not be willing to reveal the true value of the painting to the buyer. Its supply is fixed.[3] That means it is not capable of responding to changing demand conditions. The price of an art object which is bought and sold may increase over time. This implies an investment asset characteristic to the art object. Therefore it can be hoarded and considered as a store of value[4]. The future price of a current painting depends on fashion, tastes, stylistic trends, and other non-economic factors which are difficult to predict ex-ante.[5] Moreover, there are considerable transactions costs of trading art assets.

There are also psychic returns derived from holding of an art asset.[6] They can be summarized as aesthetic enjoyment, prestige and status symbol of owning a painting of a famous painter. This benefit is far from looking for financial gains of owning blue chip stocks. This can be, to some extent, similar to owning jewelry: when buying it is very expensive but if you sell you will lose money. The riskiness of the paintings arises not only because of future price fluctuations but also from its own peculiarities as durable consumer goods. Paintings can be

[1] See Pommerehne and Feld (1997).
[2] An art object can be copied but not reproduced, in the sense that each piece is original.
[3] Unless, the artist of course is tempted to produce similar products, answering positive demand conditions.
[4] However, selling an art object is a timely process. It may not be quickly and easily sold. International auction houses operate in general twice a year. Disorganized markets may provide some additional movement to the market.
[5] After September 11 bombing attacks, there is a strong decline in the demand for orientalist and islamic art in the US.
[6] Stein (1977) and Frey and Pommerehne (1989) try to model and incorporate psychic returns of investing in art objects.

damaged by fire or they might be stolen. Even though insuring can be an option for such risks, the annual cost of insurance against fire and theft may reach on average 0.2 percent to 1.0 percent of the painting's appraised value.[7] They can be also fakes or issue of forgeries.[8]

An aesthetic good can also be considered as a public good when it is hung on museum walls. Hence, there are positive externalities. From this perspective, art museums, collections of various artistic works should be considered as part of a nation's cultural heritage. Therefore the role of the government in preserving and promoting art deserves also closer examination.

The functioning of the arts markets have been studied mostly in the context of developing countries. Studying the dynamics of the market for arts in developing countries poses its own problems. From a purely financial aspect, for example, how do the macro conditions, foreign exchange and debt crises, and the returns to other investment alternatives affect the returns to investments in art objects. In this study, we investigate the relationships between the return on investments in art objects and other financial investments for a developing country with a volatile macroeconomic environment and high inflation rates.[9] In particular, we focus on the market for paintings by Turkish artists. Turkey is an interesting case since it is middle-income developing country with rather developed industrial structure and financial markets (including the availability of auction data for art objects since 1989), but one which experienced frequent macroeconomic crises and persistently high inflation rates until recently. For instance, after the major financial crisis of February 2001 several private and public banks in Turkey went into bankruptcy. The government targeted to recover some portion of the sunk costs of private banks' bailout operation by selling their assets through an auction system. For example, the painting titled *The Turtle Educator* of Osman Hamdi Bey was sold for 5 trillion TL (US$ 3.5 million) in December 2004. As a result of the wholesale public auctions, art market has started to attract the attention of several classical Turkish investors as well. The recent entry of few new private art museums, Sabanci Museum, Istanbul Modern, Pera Museum, and Santral Istanbul (whose opening is due in late 2006) has accelerated the observed prices at

[7] Frey and Pommerehne (1989).
[8] Frey and Pommerehne (1989) argue that out of 8000 paintings by French painter Camille Corot owned by private collectors whereas his works total to 3000. Same problem arises for several other artists throughout the world, in particular for the pictures of van Dyck and Utrillo.
[9] Several studies find evidence that art objects and collectibles can provide hedge against inflation. For example Ibbotson and Brinson (1987) correlate prices of coins, stamps, Chinese ceramics and Old Masters paintings against various financial assets and find a negative correlation with financial rate of returns. For the period 1947-1988 Cardell et al. (1995) confirm that stamps have negative correlation with inflation and other financial assets' returns. See also Kane (1984).

higher levels.[10] Media's willingness to promote this trend by introducing new art programs on different TV and radio channels, presenting popular artists, painters and alike and various art magazines and newspapers' editorial pages dedicated solely to art have further increased public interest in art as investment as well as a prestige good. Hence a new and sophisticated collector-investor profile has being formed since then.

Nevertheless, to date, there is no price index for the market for art objects in Turkey. Therefore, as a first step, we construct a hedonic price index for Turkish paintings. The methodology follows, among others, Hodgson and Vorkink (2004) and Higgs and Worthinghton (2005). An advantage of constructing a hedonic price index is the additional information provided when characteristics of the objects included in the sample are controlled for. For instance, one can test whether there is a "masterpiece effect", "death effect" (for the paintings of a deceased artist), or whether investing in certain types of paintings (such oil versus watercolor), or the paintings by a known artist provide a better hedge against inflation. This is important since a general price index may hide such particular information from different segments of the market.

In our study, we examine in particular whether hedonic prices for Turkish contemporary paintings move in line with macroeconomic fundamentals. An interesting question is the examination of the art market reaction to economic crises (such as the one in 2001) in Turkey. Finally, we compare the performance of art market investments vis-à-vis the investment in stocks, foreign exchange, gold, and bank deposits.

The remainder of the paper is organized as follows: Section 2 provides the literature on the economics of arts, especially on the measurement of rates of return of art objects. Section 3 presents a brief review of the history of Turkish painting. Section 4 presents the data and the econometric method as well as results obtained. Section 5 concludes the paper.

2. A REVIEW OF THE LITERATURE ON ART INVESTMENT

During the 1950's and 1960's, parallel to the increase in the world output and trade, a similar boom was observed in the volume of trade and prices for the art objects. In the following

[10] Sabanci Museum organized a Picasso exhibition in November 2005 and it was very popular with the highest exhibition attendance reached so far in Turkey.

decade, starting with Stein, economists discovered an interesting research area and since then an excellent literature and study path has been developed as "economics of the arts". The field of cultural economics became established with its association founded in 1973, with its first journal published in 1977 and first international conference held in 1979, aiming to redefine art within the theoretical and empirical framework of the mainstream research.[11]

The studies by Stein (1977), Baumol (1986), Frey and Pommerehne (1989), which used the so-called repeated-sales regression approach to examine the rate of return on paintings, have been some of the important contributions to this literature. In his 1977 article, Stein first analyzed the quantitative appreciation of paintings in order to verify whether paintings could be considered and treated as risky financial assets. Using U.S. and U.K. auction prices over the period 1946-1968 for the paintings by artists who died before 1946, Stein constructed the first art price index. He also applied modified capital-asset pricing model to describe the behavior of the rate of return of paintings. He argued that paintings have two types of returns: financial return due to price increases and non-financial returns due to "non-pecuniary" viewing services. He concluded that only if non-pecuniary viewing pleasure were valued above 11.5 per cent per annum would paintings be estimated to be an efficient investment.[12] Over the period examined, Stein found an annual compounded nominal rate of return of paintings as 10.5 percent while the annual compounded nominal rate of return of stocks was 14.3 per cent.

Using Reitlenger's extensive data set on art works, Baumol (1986) found a similar result that investment in paintings is not a lucrative business as it had been argued by the public. Baumol studied the period between the years 1652 and 1961 for 640 transactions of multiple sales, with sales intervals 20 years more for any single item. He found 0.55 % as the annual compounded real rate of return on paintings, implying a significant loss when compared with the average rate of return of 2.5% of the British government bonds. Furthermore, investment in paintings performed worse when compared with the one of the stock market. Baumol also emphasizes the importance of the aesthetic return of art investment to painting holders even though it underperforms financially. Baumol also argues that art prices cannot be estimated

[11] See Throsby (1994).
[12] Even today we do not observe widerange art rental activities. This is limited to several museums in US and in Europe for limited period and specific items.

even if by the experts of the subject under considerations since better information about the behavior of the art market does not help predicting future changes in tastes, fads and bubbles.

Frey and Pommerehne (1989) undertake a similar investigation. The high prices paid for French impressionists, old master's paintings lead to a widespread belief that investing in art is a financially rewarding activity. On the search for the verification of this claim, and using the same data source as Baumol (1986) they expand the data span until 1987 over 350 years and for several countries between 1635-1987, including transaction costs of paintings of only deceased artists with 1937 buy/sell transactions .[13] They also divide the data set into two sub-periods as to examine whether there had been any change in financial profitability of investing in paintings before and after the Second World War. They calculate the real rate of return on paintings as 1.5 percent per year whereas the long term real rate of return on financial investment is 3 percent per year. Thus, they also come up with the same conclusion that investing in painting implies a net loss to art investors. They argue that the reason of an increased attractiveness of investing in art is not due to higher real rate of return of paintings. Investing in art implies not only financial but also "psychic" returns, the enjoyment of owning the work of art and viewing and looking at it rather than not owning it have provide additional benefits to the collectors. They also point out the tax evasion or tax lift possibilities related to owning or donating art objects to museums may lead more private investors to be interested in art markets.

Coffman (1991) and Pesando (1993) examine the efficiency in the art market. Coffman (1991) argues that in disorganized markets it may be possible to obtain higher rates of return on art investment. Art markets do not only consist of internationally organized auction houses. He gives as examples flea markets, garage sales, local art fairs, art and antiques markets where art investors may have a chance to make above normal returns due to the asymmetries of information. Some owners may not know the true value of the painting and may want to get rid of it for a trivial price. Lack of expertise, random acquisition as a gift or acquisition from unsophisticated sellers may be some of the reasons why owners are capable of pricing correctly the art object.

[13] Transaction costs (which may be quite substantial) are the auction houses commission fees received for each sale from sellers and buyers. As mentioned by Frey and Pommerehne (1989) in 1985, sales commissions were at varying rates, at least 18% in the United States, up to 32 % in France.

Using the repeat sales method for modern prints at auction, Pesando (1993) estimates a semi-annual index of prices for the period 1977-1992 to examine whether one can earn excess returns on the basis of known information. Several impressions of the same print may be sold in a single season and this enables to work with a high number of repeat sales. Pesando finds the annual average rate of return of print portfolio as only 1.51 percent well below the real returns on stocks, U.S. government bonds. He as well relates this finding to the consumption effect of art holdings. He also finds no masterpiece effect.

Anderson (1974) and Goetzmann (1993) examine rate of return in art market by constructing art price indexes from repeat sales transactions. Anderson (1974) applies repeat sales method using the auction prices of paintings in general covering the period 1780-1970 to estimate the rates of return of paintings. He finds annual real rate of return of 3.0 percent over the period considered compared to 2.6 percent obtained using hedonic regressors for the period 1780-1960. He finds that modern works such as Impressionists and Twentieth century paintings' auction prices increase at a higher rate than other schools. He attributes the spread between rates of return of stocks and paintings to the crucial psychic effects of art consumption.[14]

Goetzmann (1993) estimates the decade-average returns to paintings during the period 1715-1986. He finds smaller rate of return for investing in paintings when compared with the return to long-term bonds during the period under examination but this result is reversed after 1850 until 1987. For the period 1716-1986, Goetzman finds a real rate of return of 2 percent on art investment with the bank of England rate being 3.3 percent for the same period. His high estimates for the rates of return to art investment reflect the inability of the sample period to capture the collapse of art prices in the early 1990's. Goetzmann also argues that art prices mimic stock prices with a considerable lag and the increase in the wealth of consumers pushes further up the demand for art.[15] He further points out that wealth is not the only factor which shapes up the demand for art. Uniformity and internationalization of tastes is also very crucial in determination of art prices. Globalization of aesthetic values will increase the demand for similar art objects, thus leading to ever higher prices.[16]

[14] Basically, decorative and status/prestige effects together with bequest motives of the collectors.
[15] This can be an interesting hypothesis to test for Turkish art market since stock market boom of the 1990's also led to a art price boom.
[16] Goetzmann gives example for the increased universal passion for the French impressionists and higher auction prices for their corresponding works.

Throsby (1994) summarizes that the difference in return of financial assets and art objects is the value of the benefit generated from aesthetic pleasure, status symbol and prestige of owning a particular piece, which is the consumption value of art investment. Stein (1977) tries to capture these benefits through rental rates charged by several museum and galleries for particular paintings, sculpture and related art work. Throsby also points out the fact that the price of a painting or a similar art work may also influence the aesthetic considerations of art investors, besides the work history, career path of each individual artist.

Frey and Eichenberger (1995) present a survey of more than twenty studies on the art investment examining the rates of return of art objects of various types. They define pure collectors and pure speculators. They argue that pure speculators leave the market in case of high volatility and increased uncertainty in art prices. Pure collectors are insensitive to risk in the sense that they are prone to endowment and sunk cost effects dominating opportunity cost effect.[17]

Frey (1997) also provides an interesting survey on the economics of art markets. He particularly emphasizes a number of studies on three different categories. The first category of studies try to answer the rationality of art investment when compared to other stores of values such as government bonds, stocks, or real estate and the nature of the psychic benefits received from owning a work of art. Candela and Scorcu (1997) estimate a price index of the Italian art market based on a "representative painting method" and compare the performance of the art index with the rate of return on other financial assets. During the period 1983-1994 they find that art prices increased parallel to inflation, with returns on paintings being lower than the ones of the financial assets. They find evidence for the low relationship between long-run art prices and financial assets prices but a positive relationship between real estates prices.[18]

The second category consists of more detailed studies of Czujack (1997) and Pommerehne and Feld (1997) on auctioned paintings. Czujack (1997) examines the market for Picasso paintings sold at auction between 1963 and 1994. Using the hedonic regression method she

[17] Frey and Eichenberger (1995) argue that collectors are prone to anomalies: they prefer to own a painting rather than not to own it, defined as endowment effect. Collectors' past efforts to initiate a collection encourage them to keep up with hoarding, sunk cost effect.
[18] Their findings are in parallel with Stein (1977), Baumol (1986), Frey and Pommerehne (1989) and Goetzmann (1993).

finds that collectors pay more for works during periods of low activity. Furthermore she finds that average prices and turnover are higher in the U.S. than in the U.K. The assumption that buyers behave less selectively during boom periods turns out to be wrong.

Pommerehne and Feld (1997) examine how art museum purchasing policy influences the auction prices of paintings. They find empirical evidence for the hypothesis that the public museums outside the U.S. pay above average prices in auction markets leading higher returns to private sellers.

The third category is about studies on various art objects and all forms of collectibles. Ross and Zondervan (1989) examine the rates of return on Stradivarius violins.

Burton and Jacobsen (1999) provide an excellent survey almost all the studies on the rates of return of various art objects and collectibles. For each study they provide, for the period covered, the nominal and real rates of return over that period and the two measures of opportunity costs, the U.S. stock market index and long-term government bonds.

Mei and Moses (2001) argue that there are two major difficulties attached to art markets: heterogeneity of art objects and the non-existence of continuous trade. They overcome these problems by constructing a new repeated-sales data set based on art auctions and obtain 4896 price pairs covering the period 1875-2000. They also construct annual sub-indices for American, Old Masters, Impressionists and Modern paintings to compare the rate of returns of paintings and traditional financial assets such as stocks and bonds. They conclude that investing in art may outperform government bonds but not the stock prices since the systematic risk on art compared to bonds is higher implying that paintings should earn higher return than bonds over the long-run.[19] Their index implies less volatility and much less correlation with other financial assets. As a result, they argue that a diversified portfolio of art objects may be a good way to disperse risk for long-term investors. Similar to Pesando (1993) they confirm the underperformance of masterpieces. Furthermore, they find mixed evidence regarding the violation of the law of one price.

[19] Mei and Moses (2001) find a significant art beta of 0.78 with single systematic risk factor being S&P 500 index.

Using a modified repeat sales technique to a sample of 1446 repeat sales, Locatelli-Biey and Zanola (1999) examine the performance of investment in paintings during the period 1987-1995. They find that investing in paintings between 1987 and 1991 produce higher rates of return when compared with alternative financial assets such as U.S. stocks, U.S. 30 year government bonds and gold in contrast with the period 1992-1995 where art returns are much lower with the exception 1993.[20]

Applying a general hedonic price model to a large data set on American paintings sold at auctions between 1971 to 1996, Agnello (2002) finds a rate of return of investing in American paintings to be 4.2 percent per annum, which lags behind the long and short-term government bonds' return of 8.5 percent and 7.1 percent respectively and much lower than the stock market performance of 11.6 percent. Furthermore, art returns are even below the inflation rate of 5.4 percent. Agnello comes to the similar conclusion obtained by the previous studies on art returns, that investing in painting is not particularly a lucrative business. However, knowledgeable, lucky and rich art investors buying the names may outperform the market as it is also suggested by Singer and Lynch (1997).[21]

Another great survey on art auctions and rates of return of paintings and collectibles is the article by Ashenfelter and Graddy (2003). They review the latest findings on the studies related to the time series behavior of the auction prices in the major art markets. In particular, they examine the effects of the auction houses on price formation. Then they construct yearly price indices for modern and impressionist art using both hedonic and repeat sales methods. They find that "hedonic index underestimates the returns for very short period of time because it is unable to correct for quality differences that occur during sales in the early part of the year". They also suggest the problem of under-representation of the repeat sales model.[22]

Using multivariate co-integration procedures, Granger non-causality tests, level VAR and generalized variance decomposition, Worthington and Higgs (2003) examine the short-run and long-run linkages of prices among major art and stock exchange markets for the period 1976-2001. They find strong evidence for the high level of integration of international art markets for short as well as long time spans together with significant interrelationships

[20] Locatelli-Biey and Zanola (1999) captured well the art bear market of the early 1990's.
[21] Singer and Lynch (1997) find no or little consumption cost in terms of return for the high-end works.
[22] Pesando (1993) tries to overcome this problem by using auction data on prints.

between major stock markets and art markets. Their results point the possibilities of portfolio diversification among several alternative painting markets.[23]

Edwards (2004) uses hedonic price indices and a large data of more than 12,600 observations on 115 artists from seventeen countries for the period 1978-2001 to analyze the nature and artistic creative process of Latin American Art and its performance as investment.[24] He is interested in particular the age-artistic evaluation of the painters. He finds higher rates of return for the Latin American art but with volatility and standard deviations of the returns being also quite high. Furthermore, Edwards concludes that Latin American art with low degree of correlation, that is, a very low beta with international portfolio composed equities, deserve to be included in an international portfolio to reduce its overall risk exposure.

Throsby (2004) proposes contingent valuation methods for measuring the non-market, non-pecuniary value of art consumption if one considers art is a case for market failure. Then, he argues that one can obtain a complete picture of the value of an art object.

Hodgson and Vorkink (2004) use a data sample for the period 1968-2001 of the major Canadian painters for the period 1968-2001 and run hedonic regressions to analyze various factors, such as age and identity of the painter, auction prices. They furthermore construct an art index for Canadian painters to examine whether Canadian art can be considered as investment. They also apply capital asset pricing model to further analyze the behavior of art and Canadian stock prices. They find results consistent with the earlier studies on rates of return of art investment. In particular they find lower art returns compare to stock market returns implying lower systematic risk for the paintings.

Using a data set of 37,605 paintings by 60 well-known Australian artists sold at major auction houses over the period 1973-2003, Higgs and Worthington (2005) estimate a hedonic model and obtain an average rate of return for Australian art as 7 percent over the period with a standard deviation of 16 percent. Their model also captures the willingness to pay for perceived attributes of the artwork, such as the death of a painter, the type of the work, the auction house itself playing an important role on the behavior of paintings' prices.

[23] Chanel (1995) concludes that if profits obtained from financial markets are invested in art markets then stock prices may be used as advanced signals to predict art prices.

More recently, Locatelli-Biey and Zanola (2005) use a joint model of repeated-sales and hedonic prices construct a semi-annual price index for Picasso prints for the period 1988-1995. They conclude that combination model performs better since it is successful in reducing the random price level volatility.[25]

As Throsby (2003) argues acquiring a taste for aesthetic goods takes time: from this perspective they are considered as experimental or "habitual" goods with cumulative and dynamically unstable demand.

3. A BRIEF HISTORY OF TURKISH PAINTING

Various branches of occidental art, in particular painting, have not been developed until the very end of the Ottoman era. The Islamic tradition does not allow the representation of human faces through painting. Islamic art, through Koran writing and calligraphy, develops a different path of artistic expression. Islamic art gave its most successful fruits between 15th and 18th centuries during the glamorous period of Ottoman Empire. The major artistic master pieces were the ones of Sinan, the great architect of mosques of Selimiye and Suleymaniye. Moreover, miniature painting was a different figurative representation without the concept of perspective, which was the basis in the western classical painting. Although the economic and political ties were not so weak between Europe and the Ottomans, artistic interaction was almost non-existent with completely different cultural codes, due to the influence of Islam in every day life as well as in the artistic arena. That is why we do not observe parallel art movements between 15th and 18th centuries in Ottoman lands and Europe. During Renaissance, the ornamentation of churches and palaces with holy figures helped western artists to develop new styles, improve their techniques. The use of light and perspective of the classical painters in Europe such as Velasquez, Rembrandt, Ingres prepared the new paths to their followers. New artistic schools of thought developed in consequence: impressionism, expressionism, cubism, surrealism, fauvism to name a few.

In the Ottoman period, we observe the education on western painting for the first time in the late 18th century within the curriculum of military academies. It is important to note that the

[25] Locatelli-Biey and Zanola (2005) argue the difficulty of applying the combination model to art markets for paintings and other art objects may be difficult due to the difficulty in identifying time-varying variables.

first generation of Turkish painters is originated from the military. Their themes were the portrait of the Sultans and their relatives, the landscapes and still nature. In the 19th century, Sultans started to be interested in art and invited many western artists to the Palace to work on their portraits.

This interest of the Ottoman bourgeoisie gave rise to a series of new painting courses in the non-military schools. The first exhibition of paintings takes place in 1873 in Istanbul. Osman Hamdi Bey, a distinguished Turkish intellectual and a famous painter, was the founder of the School of Fine Arts in 1883 in Istanbul. In 1910 a group of painters were sent to Europe to pursue their education at a further level. With the breakup of the First World War, they had to come back. This group of Turkish impressionist painters found a group, which is considered as the first artistic movement in Turkish painting: "The Independent's". Calli belongs to this group. They had a great impact on Turkish art scene in the following years. They tried to show the misery of the war and the suffering of Anatolian people during the war years 1914-1918. Their work was presented at that time in major art exhibitions of the allied forces, especially in Berlin and Vienna.

With the birth of a new state, the republican era represents a complete transformation in social, political, economic and cultural scenes during 1923-1933. Atatürk, the President of the new Turkish Republic assigned a great role on plastic arts as a key catalyst in promoting new social arena and shaping daily lives of Turks. To do this, a group of young artists were sent to major art centers of Europe, particularly to Paris. Cubism was considered as the best style to express the effect of dynamism created by a series of reforms in cultural, economic and social circles between the years 1923 and 1933. In 1933, a group of painters founded Group-D and organized more than fifteen exhibitions until 1951. Dino, and Eyuboglu were among them. Mualla was also a close friend of Dino. He just moved from Paris and stayed in Istanbul and work as high school teacher at Lycée de Galatasaray. He had a successful lyric style combining expressionism and fauvism. He left Istanbul for Paris in 1939 and stayed in France until his death. Dino can be considered more as an "illustrator" and Eyuboglu's work reflects more local and national aspects. They were against academicism and artificial modernism. They refuse all kind of sentimental act and emphasize the power of logic through cubism. They aimed to bring art to people and improve their artistic appreciation towards a modern point of view. For this purpose they organized various educative meeting, exhibitions and panels to meet people and contemporary art work. Group-D was very dynamic, fresh art

movement however it ended up being what it hated most: they started teaching at the art academy. Concentrating more on education led them to loose their dynamism but helped many young artists to obtain better education on painting and enter the art market.

Cubism was the best way to express the willingness of the young republic towards modernity. In 1937, the first art museum was founded in Istanbul. Between the years 1938 and 1943 state organized six national excursions to painters to enable them to discover Anatolian landscape, people and their daily lives. Various artists participated to this project and many produced series of different paintings. Until the multi-party political system which came into place in 1946, the state organized several exhibitions and was most of the time the unique buyer of the exhibited art works.

In the mid-1940's, a new artistic movement was on the scene: Yeniler (The New's) was a group of painters refusing the state's official art policy promoted by Group-D artists and the independent artists. They argued that art should reflect current problems, sociological and cultural aspects of people leaving in a community. Iyem, Arbas, Devrim as well as Dino (who just left Group-D) were among the leading painters forming the New's. Between the years 1941-1952 they organized various exhibitions and artistic gatherings reflecting social life and everyday problems of people. They believed that only if they return to national roots they could come up with original and true piece of art. However, they could not prevent of being influenced by western artistic styles and they converged to abstract art forms. However, Arbas and Dino succeeded to stay popular and unique even after 1970's.

In the early 1950's, the abstract forms became much more preferred among young artists such as Devrim. Abstract painting followed a parallel path as its western counter part. Some artists chose abstract and geometric forms. Others concentrated more on lyrical and to some extent expressionist style.

During the 1960's, like in Eyuboglu's works, figurative painting took more folkloric forms. This is followed by the reflection of social realism on paintings. The figure of Anatolian farmer was effective in shaping the artistic minds of some painters. Iyem was one of them, painting Anatolian farmers especially, women faces on large size canvas.

1970's were the years of pluralism in styles and forms of the art works. Parallel to the social and political movements, Turkish artistic scene started to attract new investors, shaping the art forms and further deepening the existing art market. Five main stylistic forms were apparent: 1) Abstract forms 2) Avant-garde tendencies 3) Lyric combination of abstract forms and figures 4) Social and local expressions 5) Symbolic and abstract expressionist forms.

New abstract artists brought the main art forms of 1960's and 1970's of America and Europe to Turkish art scene: pop-art and photo-realism, conceptual art, new expressionism, bad painting and collage. Dogancay, Guleryuz, Akyavas, Baykam, Komet are among the leading artists. Each has his own artistic style such that one can easily recognize each one's work without much difficulty. Their main similarity is the success in which they gracefully combine figurative and abstract forms and achieve differentiated lyrical pieces. One can also find nationalistic details and historical forms together with abstract expressionism. Akyavas is a very powerful example. Guleryuz is very successful in his humanistic figures within an abstract design.

4. ECONOMETRIC MODEL AND THE RESULTS

In this section, we first present the econometric model we use for estimating the returns on investments in Turkish paintings. Then, we discuss the estimations results. Next, we compare the performance of the returns on the portfolio of art market investments considered in this paper to other more conventional financial investments in Turkey. Finally, we draw conclusions and indicate the directions for further research.

4.1 The Model

In the literature on the economics of arts markets, various approaches have been proposed to estimate the returns on art investments. The two most commonly used methods are the hedonic price regressions and the repeat-sales models. In the repeat-sales approach, transactions on the same paintings are tracked over time. Since the characteristics of these paintings are the same (except for damages or any other changes in the information set regarding the painter), the changes in their prices over time can be taken as an indicator of the art market price developments. Nevertheless, it is not often that the same painting is sold at an auction or at an art gallery and it is difficult to track down such information. The result is that

there may be too few observations to make any generalizations for a given year. The hedonic price approach is a more flexible one and it has originally been used to develop a price index for computers, cars, real estate markets, etc.[26] The idea is to capture the physical characteristics of the item at hand by accounting for its directly observable properties (or by using various proxies) on the right side of a regression equation. At the same time, an index for the time dimension is represented by a dummy variable which takes the value "1" for the period the transaction takes place and "0" for all other periods. Assuming that there are M characterics on K items (say, paintings) sold over T time periods, the estimable hedonic regression model takes the following form:

$$\log(P_{kt}) = \alpha_1 X_{11t} + \alpha_2 X_{21t} + \ldots + \alpha_M X_{MKT} + \beta_1 Z_1 + \beta_2 Z_2 + \ldots + \beta_T Z_T + \varepsilon_{kt} \qquad (1)$$

where log (P_{kt}) is the natural log of the price of the item (k = 1,…, K) sold at time t (t = 1,…,T), X_{mkt} is a set of the quantifiable characteristics (m = 1,…,M) of the item k at time t, and ε_{kt} is a well-behaved error term.

In the context of the market for paintings, the measurable characteristics are generally represented by the name of the painter, the date of the painting's making, the dimensions (height, weight, and/or total area, as well as the square of the total area), the medium it was painted on, the technique used, the type / genre of the painting, and any other information on the painting (e.g., signed or not, titled or not) and the painter (e.g., the painter's age when the painting was made).[27] Then, the estimates of the α's in the above equation indicate how much impact such characteristics have on the price of the painting, while the estimates of the time dimension dummies (β's) show the average market price of the item at a given time after accounting for the differences in the characteristics of the product under investigation. Since the price index for the market for paintings will be based on the estimates of β, it is imperative to obtain unbiased estimates of the β's by including as many characteristics on the painting and the painter as possible and by estimating the equation with an efficient and consistent method. The main problem in the estimation of equation (1) is the likely non-normality of the

[26] Hedonic price indices nitiated by Court (1939), developed by Griliches (1971) for car prices and Ridker and Henning (1967) for housing. Shiller (1991) observes that a repeat sales estimator is a hedonic estimator where hedonic variables consisting of only commodity dummy variables one for each commodity.

[27] Chanel et al. (1996) use hedonic regressors to estimate art price returns for paintings by impressionists and their followers. Following Chanel et al. Agnello (2002) also uses hedonic log price model to estimate the rate of returns of American paintings sold at auctions from 1971 to 1996.

error-term, which may invalidate the use of the significance tests (t-test) on the coefficients, and the heteroscedasticity due to the possible inclusion of both very high and very low prices in the sample.

In our study, we use the hedonistic price model since the Turkish art market is already thin, which is unlikely to allow for a repeat-sales approach. Our approach follows, among others, Hodgson and Vorkink (2004) and Higgs and Worthington (2005).[28] Nevertheless, we leave it as a further research topic to compare the results of the hedonistic regression approach to the repeat-sales model as more data become available in the future.

We start with a small list of Turkish painters. As such, we do not claim to calculate a general price index for the whole paintings market, but rather for a selected portfolio of Turkish painters. Nevertheless, the choice of the painters is diverse enough and covers some well-known Turkish old masters as well as currently active newer generation painters. The names of the painters and the number of their works included in our study are as follows: Abidin Dino (163), Avni Arbaş (173), Bedri Baykam (41), Burhan Doğançay (97), Erol Akyavaş (19), Komet (33), Mehmet Güleryüz (6), Nejat Devrim (36), Nuri İyem (169), Osman Hamdi Bey (14), İbrahim Çallı (82), Bedri Rahmi Eyüboğlu (60), and Fikret Mualla (137). The total number of observations is 1030. More information on the historical significance of some these painters and their styles have been provided in Section 3.

As the medium on which the painting was made, we considered the following: canvas (347), paper (373), wood (52; includes wood and plywood), cardboard (141; includes carton, cardboard, and prestual), and duralite (117). There were many different techniques applied to these media, but we considered only those for which there are enough observations to generate meaningful results and aggregated all others (e.g., collate, lithography, pencil, various pressing/printing techniques, acryl, pastel, etc.) into an "other technique" category. Overall, the techniques included are: oil (549), watercolour (96), gouache (126), mixed techniques (126), ink (48), and others (58).

The auction data that were obtained from www.lebriz.com by subscription cover the period from 1989 to 2006. The data on the price of the paintings sold are available in Turkish Liras

[28] Chanel et al. (1996) suggest that hedonic price method applied to extended data set provide a better basis for studying the predictability of returns and the efficiency of the art market.

(TL) and US dollars (USD) in nominal terms. It should be noted that the Turkish art markets are rather shallow and that the auction houses have become active rather in the more recent times. As discussed in previous sections, private art galleries and houses, as well as those operated by commercial banks were the main outlets for the sale of art pieces in the earlier periods. As a result, the distribution of the auctioned paintings by the above list of artists is heavily skewed towards the post-2000 period (827 of the total of 1030 transactions took place between January 2000 and March 2006). However, the inclusion of the 1990's data allows us to have more efficient estimates for the post-2000 period and also provides a first glimpse to the developments in the paintings market in the 1990s. We plan to increase the number of observations in the 1990s by including more painters in our sample and by making use of data on sales through art galleries. The following are the auction houses through which the information on the sales of the paintings in our dataset was obtained: Portakal (119), Maçka (264), Artium (135), Koleksiyon (42), Antik (188), Artı Mezat (183), Pera (44), Eskidji (3), Burak (12), Alif (19), Bali (20).

It should be noted that since we denote the price variable in the equation (1) in natural logs, the percentage difference between a given characteristic (painter, medium, technique, auction house, etc.) with respect to the variable taken as the base for that category is given by $\exp(\alpha_j)-1$. With respect to the time dummies, the rate of change from period t to t+1 can be calculated by $\exp(\beta_{t+1}- \beta_t)-1$.

In terms of equation (1), the number of time periods is 18 covering the 1989-2006 period. Of course, the 2006 data are those available at the time of writing, i.e., up to April. The number of characteristics associated with the paintings in our sample is made of 13 painters, 5 types of media for paintings, 6 types of techniques, 8 auction houses, a dummy for whether a particular painting has a title (name), and the size of the painting. We do not use a constant term in equation (1). In addition, a category had to be omitted from each type of characteristics in order to avoid perfect multicollinearity in the presence of full set of time period dummies for the time of the auction. The choice was made as follows. For the painters, we take Nuri İyem as the basis, and exclude him from the estimation. As a result, the estimated coefficients on other painters reflect how much higher or lower their work was auctioned with respect to Nuri İyem's paintings in our sample. Nuri İyem is a good choice for such a comparison not only because the number of his paintings is high in our sample but especially also because his life span (1915 – 2005) coincides with both older and newer

generations of painters. For the medium of paintings, we took the cardboard category as the basis. This is because; "cardboard" represents a medium of durability between canvas and paper. For the techniques, we exclude the "other technique" category and compare the performance various techniques against it. Similarly, we excluded the auction house "Artium" in the assessing the differences in the prices of paintings sold through various auction houses. All in all, the number of characteristics (M) included in our set-up of equation (1) is 34, T=18, and the number of items auctioned (K) is 1030.

Note that we include two measures for the size of paintings. The first one is the usual overall area of the paintings in cm-squares (height times width), and the second one is the square of the area. This measure is also included in many studies since there may exist a non-linear relationship between the size of the painting and its price. That is, larger size paintings generally sell for more, but the increase in the price need not be a linear function of the size. Indeed, as the painting size increases, the market for oversized paintings may shrink, and this may limit the increase in their prices. Therefore, the expected sign on the squared-size variable is negative.

4.2 Estimation Results

As discussed earlier, the estimation of equation (1) poses econometric problems. We deal with them by estimating it by the weighted least squares method and employ White's (1980) robust covariance matrix correction. It is, of course, possible to employ alternative methods, such as the least absolute deviations or other robust estimators. We leave it as a future exercise to compare the results of alternative estimators in terms of efficiency gains.

With the above remarks in mind, we present the estimation results in Tables 1, 2, and 3 both for nominal US$ and Turkish Lira prices of the paintings. Please note that the results in the following Tables are those obtained from a single jointly estimated regression equation, but they are presented separately for convenience.

Table 1. Hedonic Price Regression for Turkish Paintings

Part 1: Painters

	USD		TL	
Variable	**Coefficient**	**Probability**	**Coefficient**	**Probability**
DINO	-0.438302	0.0000	-0.466819	0.0000
ARBAS	-0.228029	0.0046	-0.242954	0.0032
BAYKAM	-1.689774	0.0000	-1.687605	0.0000
DOGANCAY	0.072062	0.5650	0.069069	0.5975
AKYAVAS	0.311398	0.1073	0.313930	0.1572
KOMED	-0.442474	0.0002	-0.565567	0.0000
GÜLERYUZ	-0.751094	0.0104	-0.852242	0.0087
DEVRIM	-0.755800	0.0000	-0.844936	0.0000
OSMAN HAMDI	3.462691	0.0000	3.409020	0.0000
ÇALLI	1.598003	0.0000	1.574058	0.0000
EYÜBOGLU	0.014158	0.9173	-0.006233	0.9646
MUALLA	0.964154	0.0000	0.897714	0.0000
Title	0.257203	0.0000	0.265371	0.0000
Size	0.000184	0.0000	0.000189	0.0000
Size-squared	-2.95E-09	0.0001	-3.13E-09	0.0004

Table 1. shows that Dino, Arbas, Baykam, Güleryüz, Komed, and Devrim's paintings were valued (statististically) lower than those of Iyem in the market. Paintings by Osman Hamdi Bey, Fikret Mualla, and Ibrahim Çalli had higher values than Iyem's in the auctions considered in our dataset. Furthermore, no statistically significant differences between the value of Iyem's paintings and those of Dogançay, Eyüboglu, and Akyavas were found. (In Akyavas's case, the estimated coefficient is statistically significant only at the 10-15% level.) We have also found that whether a painting has a name or not matters. The paintings with a name were sold for about a 30% higher price. The size of the painting is also a significant determinant of the price, which is in line with the literature and *a priori* expectations. Also, the square of the size of the painting has a negative and statistically significant coefficient – a result which is again in line with our previous discussion.

Table 2 shows the segment of the estimation results that covers various types of media on which the paintings were made and the techniques used in making them as well the auction houses they were sold through. Again, the results are those obtained against the base

variables, namely “other techniques”, “cardboard”, and “Artium”, for the techniques, medium, and the auction house categories, respectively.

Table 2. Hedonic Price Regression for Turkish Paintings

Part 2: Medium, Techniques, and Auction Houses

	USD		TL	
Variable	**Coefficient**	**Probability**	**Coefficient**	**Probability**
OIL	0.863579	0.0000	0.966991	0.0000
WATERCOLOUR	0.302098	0.0058	0.391528	0.0004
GOUACHE	0.844170	0.0000	0.934224	0.0000
INK	-0.199027	0.1107	-0.035177	0.7817
MIXED TECH.	0.463167	0.0002	0.522754	0.0000
PAPER	-0.264892	0.0014	-0.286001	0.0009
CANVAS	0.239404	0.0113	0.230853	0.0170
WOOD	0.053415	0.6917	0.024851	0.8500
DURALITE	0.290931	0.0122	0.229470	0.0476
PORTAKAL	0.302200	0.0180	0.292243	0.0245
MACKA	-0.088461	0.3287	-0.043477	0.6469
KOLEKSIYON	-0.058740	0.6145	0.027140	0.8180
ANTIK	0.146118	0.0883	0.198851	0.0276
ARTI	0.270238	0.0008	0.291044	0.0004
BALI	0.262164	0.1450	0.311065	0.0623
PERA	-0.194558	0.1759	-0.213421	0.1299
ALIF	0.334119	0.0556	0.358805	0.0484
BURAK	-0.004038	0.9880	0.050869	0.8376
ESKIDJI	0.656630	0.1274	0.739226	0.0952

As Table 2 shows, paintings that were made by using OIL, WATERCOLOUR, GOUACHE, and MIXED TECHNIQUE were valued higher than those made with a variety of other techniques, while INK paintings/drawings did not have any statistical difference in price to “other techniques”. It also turned out that paintings made on CANVAS and DURALITE had higher values than those on CARDBOARD. Interestingly, paintings on paper had a lower value, and those on various types of wood (including plywood) did not have any significant difference to CARDBOARD. These results indicate that the durability of the medium of the painting is a factor that increases its value. CARDBOARD is more durable than paper, and CANVAS and DURALITE are more durable than CARDBOARD. This distinction is also

important in considering the "investment" value of paintings made on different types of media.

With respect to the auction houses, there appears to be some differences as well. PORTAKAL, ANTIK, ARTI, BALI, ALIF, and ESKIDJI sold their paintings at higher prices than ARTIUM, while no differences between the prices at ARTIUM and of those at MACKA, KOLEKSIYON, PERA, and BURAK was found. This does not necessarily imply that some auction houses are more successful in selling at higher prices. First of all, the number of observations on some auction houses is rather low to draw any sharp conclusions. Secondly, it may be that some auction houses obtained higher valued paintings or they were more selective. Third, the distribution of the auctions over time also matters. If the data for a particular auction house concentrated on a year where the market was not doing well, this may result in lower estimates for that auction house.

Finally, Table 3 displays the estimates of the time-period dummies and the year-over-year percentage changes in the average price of a representative painting in the Turkish art market. A few first observations on the results presented in Table 3 are in order. First, it is clear that the returns on the art market in Turkey have been quite volatile. This is in line with the history of economic developments in Turkey which comprises an environment of persistently high inflation (but not hyperinflation) and frequent macroeconomic and banking crises. For instance, the 1998-1999 and 2001 crises are very well captured by our estimation results. There was indeed another serious economic crisis in 1994, but our results indicate that the art market has boomed in that year. We will come back to this point when we compare the performance of the art market investments to other investment alternatives in Turkey.

Table 3. Hedonic Price Regression for Turkish Paintings

Part 3: Estimates for the Time Periods 1989-2006Q1

	USD			TL		
	Coefficient	**Std. Error**	**YoY % Change**	**Coefficient**	**Std. Error**	**YoY % Change**
1989	5.585447	0.281405	---	13.19916	0.284314	---
1990	6.302902	0.574891	104.9	13.84150	0.466437	124.3
1991	5.797311	0.205846	-39.7	14.08384	0.209085	20.7
1992	5.632135	0.200152	-15.2	14.30393	0.204789	23.7
1993	5.022204	0.546084	-45.7	14.30351	0.480354	36.8
1994	5.567670	0.385870	72.5	15.62480	0.361215	452.3
1995	5.899917	0.198753	39.4	16.64589	0.202182	34.2
1996	5.997098	0.239318	10.2	17.12269	0.231920	111.5
1997	6.497466	0.215342	64.9	18.56355	0.221943	218.5
1998	6.367183	0.398319	-12.2	18.70509	0.421025	48.1
1999	6.302987	0.260040	-6.2	19.17015	0.264972	127.8
2000	6.699197	0.168756	48.6	19.85046	0.164982	27.6
2001	6.138984	0.166185	-42.9	19.82826	0.169471	10.4
2002	6.488627	0.148948	41.9	20.54763	0.150632	85.3
2003	6.615289	0.148091	13.5	20.69405	0.153849	13.1
2004	6.800392	0.165129	20.3	20.78434	0.170361	12.3
2005	6.709440	0.172132	-8.7	20.63510	0.179670	-7.2
2006Q1	6.806438	0.256067	10.2	20.71124	0.254659	4.6

The adjusted-R^2 of the weighted regression equation is 0.878. This is considered high in cross-section equations. The Jarque-Bera test for the normality of the residuals yields a value of 27.02, which indicates that the residuals are distributed non-normal. Nevertheless, the statistics on skewness and kurtosis is 0.12, and 3.75, respectively. For the normal distribution, skewness is zero (symmetry) and the kurtosis is 4. As such, the residuals appear to be only slightly skewed to the right and the distribution is a bit flatter than the normal distribution. The existence of some outliers, any remaining heteroscedasticity may have led to these small deviations from normality. In any case, the WLS method is shown to yield consistent parameter estimates under non-normality and heteroscedasticity. As future work, we will consider estimating the model with a robust method, such as the least absolute deviations (LAD) as an alternative to the WLS.

4.3 The Price-Return Relationship in the Turkish Paintings Market in view of Other Investment Alternatives and Macro Conditions in Turkey

In this section, we investigate the risk-return relationship in the market for paintings by Turkish artists in more detail. We begin by placing the results shown in Table 3 in perspective with respect to the returns on other conventional investments and inflation and real GDP growth developments in the 1989-2005 period in Turkey. Table 4 repeats the year-over-year returns on Turkish paintings (in USD and TL terms) from Table 3 and adds the year-over-year changes in the TL/USD exchange rate, price of gold (bullion, 24 carat) in TL, Istanbul Stock Exchange, and the level of the interest rates on 12-month TL and USD deposits at Turkish banks. As an indicator of the developments in the macroeconomic environment, we also present the annual real GDP growth and inflation (CPI) for the period in question.

Table 4. Returns on Art and Other Investments and Macro conditions in Turkey (%)

	Art TL	Art USD	TL/USD (Forex)	Gold (24kt)	12M TL Rates	12M USD Rates	Stock Market (ISE)	CPI	Real GDP Growth
1990	90.1	104.9	22.9	23.4	59.4	8.1	348.8	59.8	9.3
1991	27.4	-39.7	60.2	51.4	72.7	8.9	-8.5	60.7	0.9
1992	24.6	-15.2	64.6	56.9	74.2	4.9	7.4	65.6	6.0
1993	0.0	-45.7	60.5	68.7	74.8	4.2	164.7	65.9	8.0
1994	274.8	72.5	169.9	181.5	95.6	5.0	106.4	108.9	-5.5
1995	177.6	39.4	54.0	55.7	92.3	6.1	91.8	92.4	7.2
1996	61.1	10.2	78.0	78.2	93.8	7.3	63.7	67.8	7.0
1997	322.4	64.9	86.8	58.7	96.6	8.1	199.1	82.1	7.5
1998	15.2	-12.2	71.6	54.0	95.5	10.1	58.3	83.0	3.1
1999	59.2	-6.2	61.0	52.0	46.7	12.5	78.7	59.0	-4.7
2000	97.4	48.6	48.5	49.1	45.6	10.8	149.9	50.0	7.4
2001	-2.2	-42.9	96.5	91.3	62.5	10.1	-30.0	58.8	-7.5
2002	105.3	41.9	22.9	41.6	48.2	4.4	8.4	40.6	7.9
2003	15.8	13.5	-0.8	14.9	28.6	4.6	11.7	21.8	5.8
2004	9.4	20.3	-4.7	8.0	22.1	4.5	62.3	7.9	8.9
2005	-13.9	-8.7	-5.7	2.4	20.4	5.2	47.6	5.5	7.4

Note: All figures except for the "Rates" are in year-over-year percentage change. Interest rates are in levels.

There are various ways to evaluate the data shown in Table 4, including the use of time-series analysis methods to investigate the response of the returns in the Turkish paintings market to macroeconomic shocks. Before undertaking such an analysis, we provide a descriptive summary of the risk-return relationships for the overall period. In doing so, we first calculate the average annual rates of changes (levels for the interest rates) for various sub-periods. The results are shown in Table 5.

Table 5. Annual Average Returns and Risk Profile of Various Investments

	1989 -2005	**1989 -1999**	**1999-2005**	**2002-2005**
ART TL	54.87	72.08	23.28	2.21
…Std. Deviation	99.73	114.12	48.52	52.34
ART USD	6.84	6.74	5.98	5.68
…Std. Deviation	44.03	50.81	31.71	20.83
TL/USD	46.16	61.78	18.03	-2.86
…Std. Deviation	42.91	36.83	39.15	13.49
12M TL Rates (level)	57.60	70.07	31.02	17.24
…Std. Deviation	26.08	17.77	15.72	12.76
12M USD Rates (level)	6.71	6.80	5.59	3.54
…Std. Deviation	2.68	2.58	3.53	0.38
GOLD (24kt)	47.46	57.06	26.34	6.19
…Std. Deviation	40.86	42.08	31.27	17.34
Stock Market (ISE)	60.91	79.94	26.11	27.88
…Std. Deviation	92.28	100.07	58.45	26.63
Memoranda				
CPI	51.53	65.31	24.53	8.52
…Std. Deviation	28.24	15.98	23.01	16.11
Real GDP Growth	3.91	3.41	4.12	5.47
…Std. Deviation	5.40	5.17	6.74	1.31

The figures presented in Table 5 provide a rich forum for discussion. First of all, the return on Turkish paintings for the overall 1990-2005 period is 54.9% on an annualised basis. Given that the average annual inflation rate for the same period is 51.5 percent, the real return per annum turns out to be 3.4 percent. As a result, investing in the arts market (even in Turkish Liras) appeared to have produced positive returns and protected one's investment against inflation. Then, the question is how the arts markets investments fared compared to more conventional ones, such bank deposits, buying stocks or gold, or just buying and keeping foreign exchanges (US$) at hand. Table 5 shows that investing one's US dollars in Turkish paintings or just keeping them as a term deposit (12 months) at a bank produced the same returns in the 1990-2005 period (6.7 – 6.8 percent). In the more recent period (1999-2005), however, investment in the art market produced slightly better returns. Investing in gold turned out to be inferior to investment in paintings in the 1990-1999 period, while gold investments did better than the art market in the post-2000 period. Compared to the investment in stocks at the Istanbul Stock Exchange, the art market appears to compete well, but produces somewhat lower returns with a slightly higher risk profile (i.e., with a higher standard deviation of returns) in the 1990-1999 period. During the 1999-2005 period, however, the stock market proved to be more volatile than the art market investments. Figure 1 shows the returns on paintings, stocks, and holding foreign exchange, while Figure 2 displays the developments in the macroeconomic conditions (real GDP growth, inflation, and interest rates) during the 1990-2005 period.

Figure 1. Returns on Paintings, Stocks, and Foreign Exchange (%)

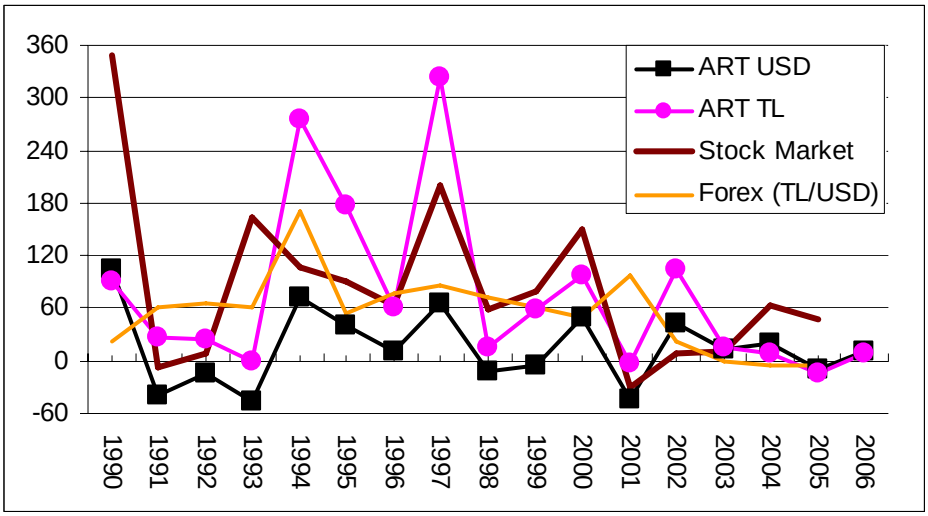
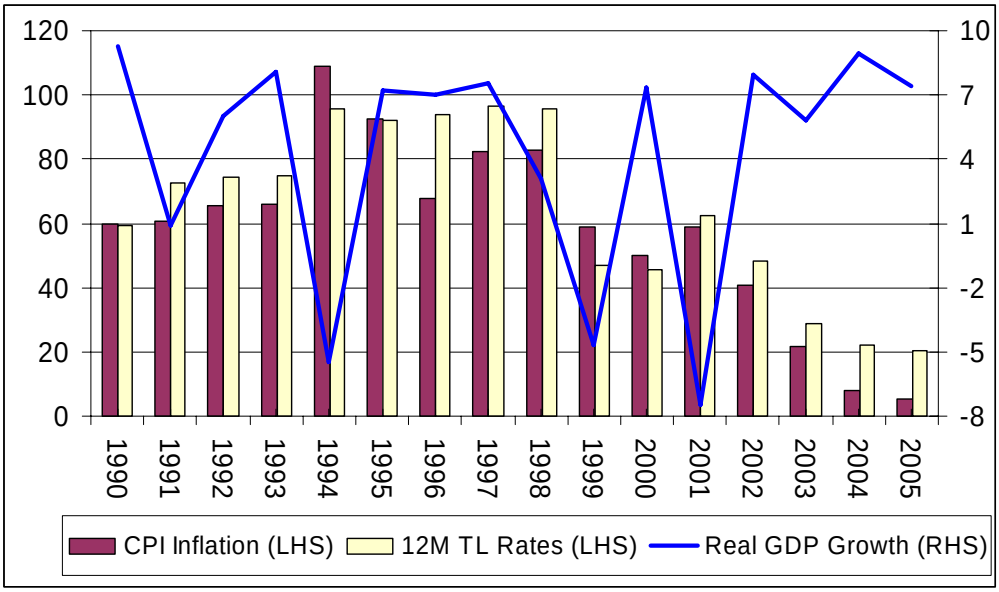


Figure 2. Real GDP Growth, Inflation, and Interest Rates in Turkey (%)



Another way to look at the investments in art market is to investigate the correlation of the returns. It is often stated that art market investments are uncorrelated with other conventional financial investments. Thus, investing in art objects may well lead to a diversified portfolio. As we see, in the above Figures and in Table 4 and 5, the returns on the Turkish paintings market seem to be influenced by the macroeconomic conditions, which also affect other investments, such as the stock market. More formally, we calculate the simple pairwise contemporaneous correlation coefficients between the art market (in USD and TL terms), stocks (ISE), foreign exchange (FOREX), gold (GOLD), and interest rates (TL12M, USD12M). In addition, we also present the correlations of the art market returns with inflation (CPI) and real GDP growth (RGDP). The results are shown in Table 6.

Table 6. Pairwise Simple Correlations of Arts and Stock Market Investments with Other Alternatives and Macro Conditions

	ART TL	ART USD	STOCKS (ISE)
ART TL	1.000000		
ART USD	0.702679	1.000000	
STOCKS (ISE)	0.412321	0.668757	1.000000
FOREX (USD)	0.542910	0.048088	0.013385
GOLD	0.504931	0.084769	-0.032267
TL12M	0.530864	0.087212	0.172124
USD12M	-0.010350	-0.084291	0.104215
CPI	0.617052	0.201248	0.244634
RGDP	-0.046713	0.294360	0.375840

An examination of the correlation structure of the returns on art market investments (both in TL and in USD terms) in Turkey demonstrates that they are most closely associated with the returns on the stock market. High inflation also moves the TL price of the paintings in line with other nominal values. In USD terms, however, there is only very small correlation with investments in forex, or term deposit accounts, but a high correlation with the stock market remains. The correlation between returns on the US dollars invested in Turkish paintings and real GDP growth is positive and moderate (r=0.294) and indeed somewhat lower than that of the stock market and the real GDP growth (r=0.375). As a result, due to its low correlation with gold, and forex, and indeed a negative correlation with USD term deposits, investing in paintings (in USD terms) with the purpose of portfolio diversification in mind can be effective as long as the total exposure to stocks and art investments do not increase.

4.4 Macroeconomic Determinants of the Returns on Turkish Paintings

In this section, we attempt to model the returns on investments in paintings by Turkish artists by means of macro and financial variables. In doing so, we consider the following variables as potential determinants: 1) A proxy for the yield curve in Turkey (the difference between the 3-month and 12-month TL deposit rates), 2) real returns on 12 month Turkish lira deposits (TL12M – CPI), 3) Returns on the Istanbul Stock Exchange on USD basis (ISE-FOREX), 4) Real returns on buying gold (GOLD-CPI), 5) Real returns on converting TL into US dollars and keeping them in a 12-month bank deposit (FOREX+USD-CPI), and 6) real GDP growth.

We estimate the model both for the real returns on Turkish paintings (ARTTL – CPI) and for the returns in USD (ARTUSD) series. Table 7 shows the estimation results.

Table 7. Macroeconomic Determinants of the Returns on Turkish Paintings

	ART USD		**(ART TL – CPI)**	
Variable	Coefficient	Prob.	Coefficient	Prob.
Constant	-6.992752	0.7145	-50.26208	0.2387
TL3M-TL12M	-0.681319	0.2824	-2.00617	0.1519
TL12M-CPI	-3.165745	0.0811	-7.786966	0.0513
ISE-FOREX	0.12789	0.421	-0.154664	0.6466
GOLD-CPI	-0.207283	0.791	-2.059996	0.2387
FOREX+USD12M-CPI	1.092147	0.3042	4.7959	0.0531
RGDP	7.361506	0.1378	21.86165	0.0511
Regression Statistics				
Estimation Period	1990-2005		1990-2005	
R-square	0.5972		0.5022	
Adj. R-Square	0.3287		0.1704	
Durbin-Watson	1.5626		1.8105	
Jarque-Bera	24.54		0.3983	

The returns to art market investments in both US$ and TL terms are found to be inversely affected by a rise in the real interest rates (TL deposits) and a rise in the short-end of the yield curve. The former represents an opportunity cost and thus has the *a priori* expected sign. The latter shows the liquidity conditions in the market. With high short-term rates, there may not be enough liquidity left to be invested in the art market. It should also be considered that this situation is more likely arise in a macroeconomic crisis, when the remaining liquidity having gone elsewhere. In addition, those holders of art objects who are in need of liquidity might have brought their possessions to the auctions at low prices. We also find that increases in the real GDP growth rates have a positive effect on the arts market returns in Turkey. When the economy is growing, the demand for investment alternatives increases, including the investment opportunities in the arts market.

Our findings show that the real returns on stocks and gold holdings stock market returns do not explain the returns on investments in paintings. However, the estimated coefficient on

gold carries a negative sign (and significant at 23% in the ART USD regression) – being again compatible with an opportunity cost variable interpretation. When it comes to the stock returns, the situation is less clear. On the one hand, the stock market is an investment alternative, so one might expect a negative relationship. On the other hand, changes in stock returns may also spill into the art markets as a consequence of wealth effects. In our estimations, we do not find any significant relationship from the stock market to the returns on paintings. Perhaps, the two effects cancel out each other, or it might be that the two markets are different habitats.

The coefficient on the overall real return on US-dollar investments turned out to be positive and statistically significant in both ART TL and ART USD regressions. This is indeed a composite variable, and hence hard to interpret. If it were a mere investment alternative, we would expect a negative sign. Nevertheless, it also acts as a proxy for the foreign exchange crises and the demand for US$ dollars in the market. In general, we have experienced a negative relationship between the macroeconomic crises and the returns on the market for paintings in Turkey. Nevertheless, the 1994 crisis and other less significant crises have shown an opposite (positive) relationship. The economic crises of 1994, 1999, and 2001 need to be analysed in view of this aspect as well. Figures 3 and 4 show the in-sample actual and fitted values from the ART USD and ART TL regression equations.

Figure 3. Real Returns on Investments in Turkish Paintings in TL (Actual vs. Fitted)

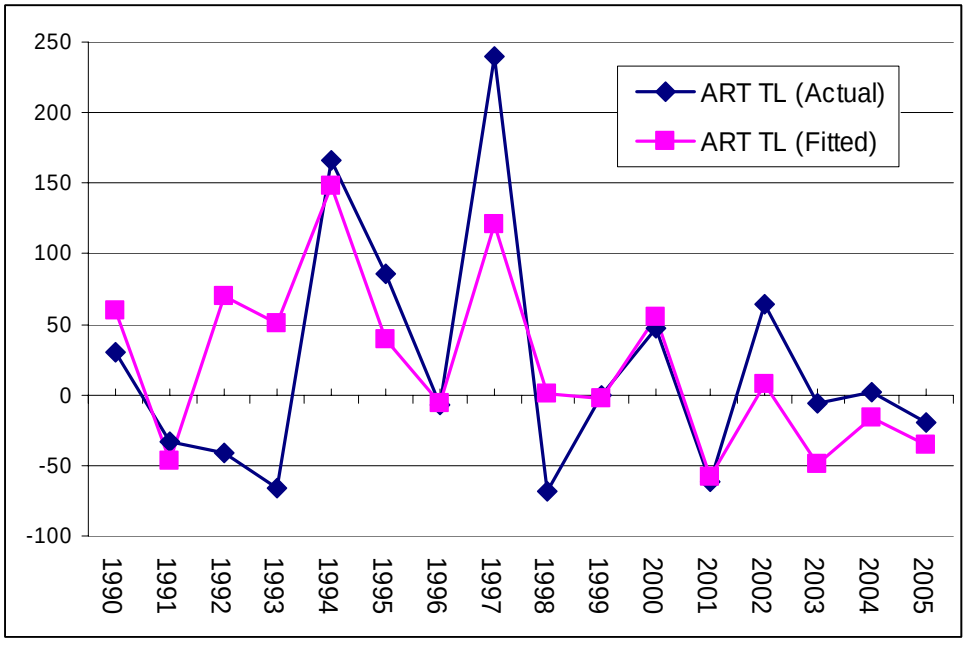
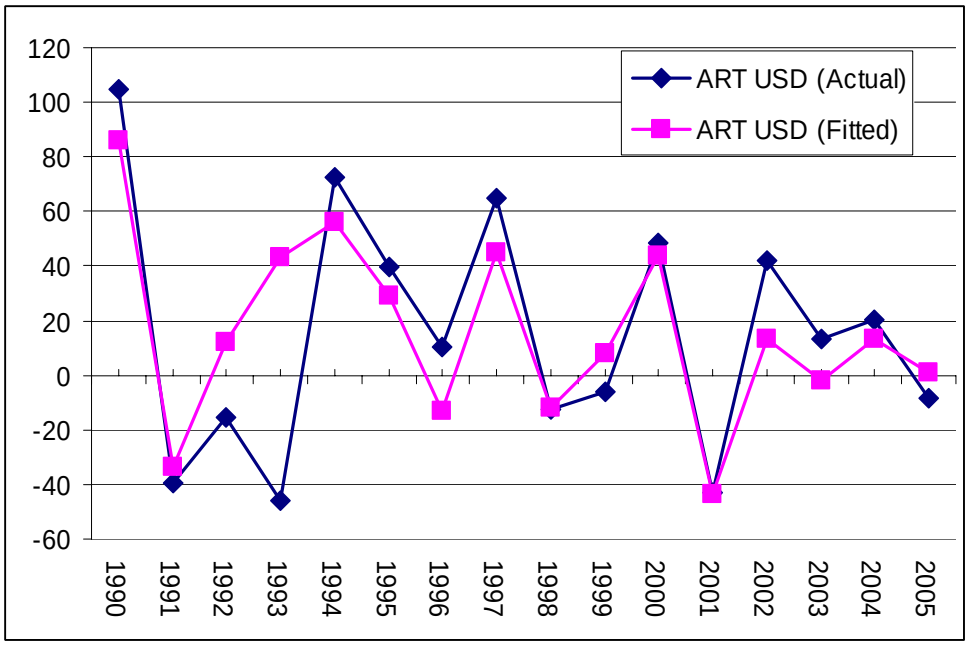


Figure 4. Real Returns on Investments in Turkish Paintings in USD (Actual vs. Fitted)



Overall, it can be said that investing in the art market is a viable alternative to conventional investments even in an environment of high inflation and large macroeconomic volatility. Indeed, it produced positive real returns at a rate compatible with the long-term real GDP growth rate. Furthermore, it appears to compete well with the investment in stocks. In an emerging market with an instable macroeconomic environment, holding foreign exchange is generally considered to the safest investment to hedge one's savings against inflation. In the case of Turkey, returns of holding US dollars yielded lower returns than investing in art. It is only when the forex holdings are invested in a term deposit (12 months) the returns on investing in foreign currency catches up with investing in paintings. It is true that the returns in the art market is more volatile than those in the forex market, but one must then also calculate with the default risk, appropriation risk, etc. associated with holding currency at a bank in times of economic crises. In this case, a reallocation of USD investments between stocks and paintings lead to a better portfolio diversification. (See Table 5 for a risk – return comparison of the USD invested in paintings and in the stock markets).

5. CONCLUSION

Contrary to some common beliefs, there are no extraordinary financial returns from investing in art compared to other investments. Such beliefs may arise due to the fact that some pieces

of art, every now and then, make large returns and such events make headlines. Nevertheless, the same is true for a stock market as well. Some stocks in some sectors shoot up and produce returns which are well in excess of the overall stock market returns. In view of this analogy to the stock market returns, we leave it as a future research topic to analyze the risk-return profile of the individual artists' paintings.

It should be emphasized that we consider only the financial returns to investment in art in our study. The much-discussed psychic returns due to aesthetic good nature of the paintings are not included in our figures. Even so, we have seen that works by the portfolio of painters considered in our sample performed well, and produced positive real returns during the 1989-2006 period. The overall returns should indeed be higher. The psychological valuation of owning certain objects of art is a subject to investigate; perhaps by using experimental economics methods.

Another further research topic is the analysis of the asymmetric response of the art market investments to macro economic shocks in Turkey.. As we have seen, the returns on art market investments appeared to boom during the 1994 crisis, but there was rather a crash during the 1998 and 2001 crises. This may be first arise due to data-related problems (e.g. lack of enough observations for 1994), or it may be a base effect due to a slump in the market in the two previous years. In any case, the behaviour of the art market is compatible with the behaviour of the stock market in 1994, which also registered a large increase. The key here may be comparison of the interest rate environment during the 1994, 1999, and 2001 crises. For example, there were positive real rates in 1994, while the real rates turned into negative in 1999 and 2001. Liquidity concerns and the debt profile (short-term vs. long-term) also play a role. Investing in art objects is not as liquid as holding foreign currency at hand. There may, of course, be restrictions on transferring foreign currency abroad in times of crises, but the same can be true for taking historical arts object abroad. More research into the microstructure of the market during the 1994, 1999, and 2001 crises is needed. In general, sequencing of the macro events and price developments in the auctions during the crisis period using a large dataset will be required to draw more reliable conclusions. If possible, what should also be considered is the use of the repeat-sales approach to examine how the prices of those paintings which were auctioned prior to 1994 (1999, 2001) changed in 1994 (1999, 2001).

There are further lessons to be drawn from the banking crises that followed the economic crisis of 2001. We see lower returns on art in the 2002-2005 period. As we stated earlier, some of the banks operate art galleries of their own and hold art collections. When some of these banks had to be liquidated, their art collections were sold in auctions, dampening the market.

Last but not least, a comparison of our findings to those in the international markets is needed. In principle, our results are in line with the argument of Frey and Eichenberger's (1995) arguments that analyses of returns on art lead in general to the finding of lower returns than other investment forms. On the other hand, our study is one of the few attempts to look at the behaviour of the arts markets in a developing country environment, which is subject to large macroeconomic fluctuations. A study by Edwards (2004) looks at the Latin American countries and reports large positive real returns (about 9%) on investments in well-known Latin American painters' works. This finding is not validated in the case of Turkey and the Turkish painters. Nevertheless, differences in the institutional and historical factors need to be considered before reaching strong conclusions.

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We would also like to emphasize that the results presented in this paper are strictly preliminary. Therefore, we ask any readers not to quote the paper's results without the authors' permission. As further data are added to the analysis, the results may change! In addition, the results from this paper or its future versions are not intended to be and should not be treated as financial advice in any way.

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