Investment Characteristics of

Traditional Chinese Art

by

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ABSTRACT

Traditional Chinese art as an investment is a growing area of interest which has the financial and art markets discussing its value to an investor's portfolio. 1,158 repeat-sale pairs of traditional Chinese art were collected from Sotheby's and Christie's auction catalogues and with purchase and sell price information a traditional Chinese art index was created. Index prices are increasing with moderate compound annual returns; however returns from the art do not perform better than the S&P 500, FTSE 100 and some of the regional indices in China. The art index does have a low and even negative correlation with some of these indices which suggests that the inclusion of traditional Chinese art in an investor's portfolio can be an important tool for diversification.

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1 Introduction

The initial hubris of the art market in the wake of 2007's unfolding financial crisis was short-lived. With overall poor sales at 2008 and 2009 auctions, collectors, dealers, and artists were becoming wary of the future. However one specific market remained stolidly unshaken—Chinese buyers were bullish and began redefining the traditional Chinese auction market. In recognition of the world's fastest-growing auction market, Sotheby's recently hoisted China's flag outside its New York headquarters. Hong Kong has become the world's third largest auction hub after New York and London, thanks to the rising political and economic prowess of China. Recent enthusiastic bidding for works at Sotheby's and Christie's Chinese art auctions pushed many lots to extraordinarily high prices. Most recently, on March 25th 2010, Yu Zhiding's "Happiness through Chan Practice" earned $3.4 million on the block at Christie's, the highest price ever paid for a classical Chinese painting at auction in the U.S. The phenomenon reflects China's growing wealth and increasingly sophisticated taste for fine art, but also a desire to assert its status as a global superpower. To complement its new-found political and economic importance, the Chinese are buying back many of the treasures taken away from China when it was under the weak Manchu (Ch'ing Dynasty) government (Hui, 2010). Events like this have led both media and experts to suggest that the traditional Chinese market's recent surge has yet to run out of momentum, and that this art emerging market may have been outperforming equities for some time.

Art's performance in comparison to other assets has become increasingly studied. However, much of the attention has been focused on western-art categories. A number of different researchers have come to different conclusions about the risk-return characteristics of art as an investment by employing various methods of research and analysis. William Baumol (1986) found that art prices behave randomly, calling it a "floating crap game" and found a better investment to be the stock market. William Goetzmann (1993) found a positive correlation with the equities and an upward growth in prices over the years. Using repeat sales of the print market, James Pesando (1993) found that returns were below stocks, bonds and bills. And most recently, Jianping Mei and Michael Moses (2002) found that art underperforms stocks, but outperforms some fixed-income securities and can be a useful tool in portfolio diversification.

Thus, while a breadth of research has been conducted on the investment characteristics of artwork in general, figures for the traditional Chinese genre remain undiscovered. My research brings the discussion of art as an investment to this centuries old category of traditional Chinese art. My data set includes 1,158 repeat-sales pairs from Sotheby's and Christie's locations around the world and follows the Mei and Moses (2000) repeat-sales regression model by creating an index for traditional Chinese art.

This paper explores the investment characteristics of traditional Chinese art and attempts to answer the following questions: How does the traditional Chinese category compare to other categories explored and earlier findings? How does the index compare to the FTSE 100 and major indices of the home country? What are some other investment characteristics the data exhibits?

2 Art as an Investment

Recent research by *Barclays Capital* and *The Economist* indicates that art has outperformed both equities and property over both short and long periods of time, demonstrating that art has emerged as a viable and attractive asset class. With the emergence of fine art funds as vehicles to gain exposure to art, recognition of art as an investment is set to grow in acceptance in the coming years. Furthermore, the relative inefficiency of the art market offers attractive and significant opportunities to well advised investors. According to *Art Market Monitor* the market was worth approximately $40 billion in 2008. The primary question to be asked is—can art be considered an asset? The *Dictionary of Economics* defines an asset as "an economic resource having future earning potential" (Shim, 1995, p.18). This future earning potential represents a utility or "qualitative measure of the degree to which a good or service satisfies human wants" (Moffat, 1983, p.311). The price of an art object which is traded may increase over time. This implies an investment asset characteristic to the art object. Therefore it can be collected and considered as a store of value. In addition, there are psychic returns derived from holding an art asset. They can be summarized as aesthetic enjoyment, prestige and status symbol of owning a painting of a famous painter. This benefit is different that the financial gains obtained from owning blue chip stocks (Seçkin, 2006, p.1). Using these definitions, art can be considered an asset because it possesses monetary value which its owner can take advantage of as a lucrative asset, and secondly provides utility to its owner in the form of enjoyment.

Gerald Reitlinger (1961) wrote that the money value of art is "also a yardstick of taste" (p.xi). Money value (prices) measures taste, fashion and interest in art and prices used in the sample come from auction houses because prices in the art market tend to be non-transparent especially when transactions take place between dealers and private collectors. The prices used in this analysis have been settled in auction houses that use the English auctioning system. Ashenfelter and Graddy described how prices are determined:

> Almost all art is auctioned in this ascending prices format. Bidding starts low, and the auctioneer subsequently calls out higher and higher prices. When the bidding stops, the item is said to be “knocked down” or “hammered down,” and the final price is the “hammer price.” […] Sellers of individual items will set a reserve price, which is usually secret, and if the bidding does not reach this level, the item will go unsold. Auctioneers say that an unsold item has been “bought in.”(2003, p.764).

According to *The Economist*, in 2009 selling art at auction made up about 45% of the art trade by value. This is the basis for a considerable amount of analysis of the art market because much auction-sale data is publicly available. Auction houses publish catalogues for each sale and provide information for each item (lot) including medium, dimensions and provenance. Included with lot information are high and low estimates provided by the specialists of the category. “The auction houses do commonly observe an unwritten rule of setting the secret reserve price at or below the low estimate, but the auctioneer is careful about revealing anything about the reserve price during the bidding process” (Ashenfelter & Graddy, 2003, p.765).

Later in this paper, traditional Chinese art, through the use of the Traditional Chinese Art Index (TCAI), is compared to the FTSE 100, some of the major indices from the Chinese region, as well as the S&P500. In 1986, Baumol described the differences between securities and arts:

> First the inventory of a particular stock is made up of a large number of homogeneous securities, all perfect substitutes for one another. Widely known paintings and sculptures are unique, and even two works on the same theme by a given artist are imperfect substitutes.

> Second, a given stock is held by many individuals who are potentially independent traders on the near perfectly competitive stock market. The owner of a Cranach or a Caravaggio holds what may be interpreted as a monopoly on that work of art.
>
> Third, transactions in a given stock take place frequently, indeed, almost continuously. The resale of a given art object may not even occur once in a century.
>
> Fourth, the price at which a stock is exchanged is, generally, public information. The price at which an art is acquired is frequently known only to the parties immediately involved […].
>
> Finally, in the case of a stock we know, at least in principle, what its "true" (equilibrium) price should be—it is the stock's pro rata share of the discounted present value of the company's expected stream of future earnings. But, for a work of art, who would dare to claim to know the true equilibrium price? (p. 10-11).

This research paper synthesizes and reinterprets burgeoning new research and developments to shed light on the investment characteristics of traditional Chinese artwork through improved data collection and the regression model discussed below.

2.1 *Earlier Research in Art as an Investment*

The following presents a selected review of the empirical literature on the financial economics of art from Dr. Aylin Seçkin's 2006 paper, "Art as a Financial Investment in an Emerging Market:

An Empirical Study of the Market for Paintings in Turkey". Research on art investment has been scarce and concentrated primarily on Western paintings. Gerald Reitlinger's three volumes of The Economics of Taste were the first major study on the investment of paintings. Volume I describes the rise and fall of prices on paintings for the period from 1760 to 1960, while Volumes II and III are about other art objects. Although this study is a qualitative survey of the rise and fall of picture prices, Reitlinger concluded that art prices behaved in a random fashion.

During the middle of the 20th century, with an increase in world trade, a similar boom was seen in art prices and the volume of trade for art objects. Starting with Stein in the late 1970's, economists began developing ideas about the economics of the arts. The studies by Anderson (1974), Stein (1977), and Baumol (1986) first used the repeated-sales regression approach to examine the rate of return on paintings. Anderson (1974) specifically applied the repeat-sales method using the auction prices of paintings in general, covering the period 1780-1970 to estimate the rates of return on paintings. He found that the annual real rate of return was 3.0 percent over the period considered compared to 2.6 percent obtained using hedonic regressions for the period 1780-1960. He also found that modern works such as Impressionists and Twentieth century paintings' auction prices increased at a higher rate than other schools. He attributed the spread between rates of return of stocks and paintings to the crucial psychic effects of art consumption.

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 the US and UK 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 the capital-asset pricing model (CAPM) 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. 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 (Seçkin, 2006, p.4).

Using Reitlenger's (1961) extensive data set on art works, Baumol (1986) found a similar result that investment in paintings are not as lucrative a business as 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 an annual compounded real rate of return on paintings of 0.55%, 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 equity markets. Baumol also emphasizes the importance of the aesthetic return of art investment to painting holders even though it underperforms financially.

Using the repeat sales method for modern prints at auction, Pesando (1993) estimated 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 found that the annual average rate of return of print portfolio was only 1.51 percent, well below the real returns on stocks, US government bonds (Seçkin, 2006, p.5).

Goetzmann (1993) examined rate of return in art market by constructing art price indexes from repeat sales transactions and estimates the decade-average returns to paintings during the period 1715-1986. He found a smaller rate of return for investing in paintings when compared with the return of long-term bonds during the period under examination, but this result is reversed after 1850 until 1987. For the period 1716-1986, Goetzmann 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. 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. He further points out that wealth is not the only factor which shapes up the demand for art. He argues that uniformity and internationalization of tastes are also very crucial in determination of art prices. In analyzing the traditional Chinese category it is interesting to note Goetzmann's vision and emphasis on the fact that the globalization of aesthetic values would increase the demand for similar art objects, thus leading to ever higher prices.

Throsby (1994) summarized that the difference in return of financial assets and art objects is the value of the benefit generated from aesthetic pleasure, status symbol, and the prestige of owning a particular piece, which is the consumption value of art investment. Stein (1977) tried 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 (Seçkin, 2006, p.6-7).

Mei and Moses (2002) argue that there are two major difficulties attached to art markets: the heterogeneity of art objects and the non-existence of continuous trade. They overcame these problems by constructing a new repeat-sale data set based on art auctions and obtained 4,896 price pairs covering the period 1875-2000. They also constructed 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 concluded that investing in art may outperform government bonds but not stock investments. The systematic risk on art compared to bonds is higher implying that paintings should earn higher return than bonds over the long-run. 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.

Ashenfelter and Graddy (2003) put together a well developed survey on art auctions and rates of return on paintings and collectibles. They examined the effects of the auction houses on price formation. Then, they constructed yearly price indices for modern and impressionist art using both hedonic and repeat sales methods. They found that the "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 that there may be a problem of under-representation in the repeat sales model (Seçkin, 2006, p.9).

Using multivariate co-integration procedures, Granger non-causality tests, level VAR and generalized variance decomposition, Worthington and Higgs (2003) examined 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 between major stock markets and art markets. Their results point the possibilities of portfolio diversification among several alternative painting markets.

Most recently, Locatelli-Biey and Zanola (2005) used a joint model of repeated-sales and hedonic prices construct a semi-annual price index for Picasso prints for the period 1988-1995. They concluded that a combination model performs better since it is successful in reducing the random price level volatility (Seçkin, 2006, p.11).

Scholarly work on Chinese art investments is seriously lacking. The Chinese art market has become much more active after 1990 with some of the most prominent international auctions now being held in Hong Kong. Among the different sectors of Chinese art, the one that has captured wide media attention in the past several years is the modern Chinese painting market. By studying modern Chinese paintings as a financial investment, Mok et al. (1993) found that when adjusted for risk, the rate of return per unit risk of modern Chinese paintings was 0.74 while that of the market portfolios in Hong Kong, Singapore and Taiwan are 1.96, 1.34 and 1.4 respectively (Seçkin, 2006, p.6). With prices in the traditional segment of the Chinese art market, including ceramics, jades, paintings and calligraphy also rising to record highs, my intention is to capture the investment characteristics of this market in this study.

2.2 Methodology and Data

The homogeneity of art, the transparency of prices and the infrequency of trading was a concern of Baumol (1986) and many of the researchers discussed above have worked to mitigate these weaknesses through repeat-sale and auction published data. I collected repeat-sale pairs from the Watson Library in the Metropolitan Museum of Art. The sell (most recent price) and purchase information (earlier price) of the repeat-sales pairs are derived mainly from Sotheby's and Christie's New York, London, Paris and Hong Kong houses.

I collected data in the same fashion data was collected for the Mei and Moses art index. "If a painting had listed in its provenance a prior public sale at any auction house anywhere, [I] went back to that auction catalogue and recorded the sale price. […] Some paintings had multiple resales over many years, resulting in up to [three] resales from some works of art. Each resale pair was considered a unique point in [my] database that now totals 1,158 entries" (Mei & Moses, 2000, p.1657).

The compound annual returns for the underlying assets ranged from a loss of nearly 76 percent for a 19th Century Grayish-White and Brown Jade Snuff Bottle held from 1980 to 1981 to a gain of almost 300 percent for a T'ang Dynasty Polychromed Terra-Cotta Figure of an Official which was held from 1970 to 1972. A Finely Cast Bronze Ritual Covered Wine Vessel from the Shang Dynasty was the most expensive piece sold in the sample at 1,407,500 dollars. There are auction intervals as short as half a year and as long as 69 years, with an average of 15 years found. An Imperial Blue and White Bowl was the longest held piece in the sample for 69 years, purchased in 1925 and sold in 1994. 7 pieces were held for half a year, some losing as much as 36 percent and others gaining as much as 236 percent.

The database of over 1,158 entries contains contiguous data beginning in 1943 which allowed me to begin the index in 1957. The years 2008 and 2009 were excluded to minimize data incongruities as a result of the exaggerated effects of the recession. I created an index using a simplified repeat-sale regression based on the regression used in Mei and Moses (2000). The response variable, y, in the regression is the log of the sale price divided by the purchase price. Dummy variables were used for β_k to control for how long a piece of art was held. For example, if it was purchased in 1975 and sold in 1980, the dummy variable accounted for years 1976 to 1980, but not 1975 or after 1980. From the regression, the index was created by setting the base year, 1956, to 1 and each year thereafter was the previous year's value times the current year coefficient, which is produced by the regression. The regression formula used is below:

(1) $$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k + e$$

where: y = log of (sale price divided by purchase price)

β_0 = No intercept was used because sample is small.

B_k = Coefficient created by the regression

x = 0 or 1; 1 if the piece of art was held in that year, 0 if it wasn't

e = Standard error term

3 Traditional Chinese Art Category

Sotheby's held its first auction of traditional Chinese art in London in 1922. Its department has gone from strength to strength opening sale locations across the world. Today sales are held twice yearly in Hong Kong, New York, London and Paris, with teams of specialists travelling the globe to bring to the market some of the greatest masterpieces of Chinese art. Most recently Sotheby's has dispersed the collection of Carl Kempe, the collection from the estate of Emile Guimet, the Albright-Knox collection, the Speelman collection of Buddhist gilt-bronzes as well as many other important collections. In March 2007 at Sotheby's New York, the firm sold an extraordinary Shang dynasty bronze wine vessel from the Albright-Knox collection for US$8,104,000, which shattered previous records of Chinese art sales in America. In April 2008, Sotheby's Hong Kong sale series totaled a staggering US$97,0534,000, a world record for a sale of Chinese art. A month later in London, the spring sales series brought US$32,550,000, more than three times its pre-sale estimate, a record for Sotheby's London (Sotheby's, 2010).

Christie's has also been an important auction house for many of the private and institutional collections that have come up for sale in recent years, including Important Chinese Lacquers from the Lee Family Collection, Property from the Ping Y. Tai Foundation, the Robert Chang Collection of Imperial Porcelain, the Alan and Simone Hartman Collection of Jades, the Manno Museum Collection, the Falk Collection, the C. Ruxton and B. Love Collection and cloisonné enamels from the Amezaga Collection, all of which were record breaking sales in their respective categories. The 2008 season began in March in New York, with Christie's setting a record for the highest total for a series of Chinese works of art sales held at Christie's New York with a total of US$26,299,588. London achieved the second highest sale total for a Chinese sale at Christie's London with just over £9,000,000 (US$13,500,000). This was followed in Hong Kong by the highest ever total for a Chinese Ceramics & Works of Art auction series at Christie's totaling over US$94 million. Among the outstanding successes of the year was the sale of the Von Oertzen collection of jades in London which set the world record for an archaic jade; sales in both Hong Kong and New York of property from the Ping Y. Tai Foundation including the spectacular famille rose 'butterfly' vase which became the third most expensive Qing porcelain ever to have sold at auction at HK$53,300,000 (US$6,900,000); and the ground-breaking sale of lacquers from the Lee Family Collection this Autumn in Hong Kong which established a world record for a Chinese lacquer with a spectacular Yongle bowlstand inscribed by the Qianlong Emperor selling for HK$33,140,000 (US$4,294,944) (Christie's, 2010).

Chinese bidders are beginning to represent a more important force at Western auctions. Nicolas Chow, Sotheby's international head of Chinese ceramics and works of art, said by acquiring works of art from their glorious past, Chinese buyers were rebuilding their identity as the country emerged as from a long period of civil wars, defeats by foreign powers, and economic backwardness. "Holding a seal of an emperor in their hand is like holding a piece of that history," he said. In Christie's March 2010 auction in New York, the Chinese attended in such large numbers that Christie's decided to hold the auction in the room usually reserved for Impressionist and Contemporary art. Roughly two thirds of the 611 lots that came on the block in the two-day sale went to Chinese dealers and collectors. The acquisition of Yu Zhiding's "Happiness through Chan Practice", mentioned in the introduction and shown below, epitomizes the complex mix of motivations driving Chinese buyers.

Exhibit 1.

Happiness through Chan Practice, Yu Zhiding (1647-1716).

It had earlier been in the possession of Xiang Hanping, a general in the nationalist army whose collector's seal dated 1934 appears on the frontispiece. This provenance made the recovery of the painting even more desirable. More important, the message of the painting transformed its acquisition into a personal statement at a higher level. "Chan," pronounced Zen in Japanese, is the name of the esoteric movement that took off in Song times and left a deep imprint in the psyche of the Chinese elite. The hand scroll, on the other hand, is the work of an artist who was one of the Kangxi emperor's official painters. This indirectly gives the painting the aura of an imperial connection that all Chinese buyers, regardless of social background, find irresistible. Not least, the subject honors a scholar and famous man of letters, further enhancing its attraction to those who admire traditional culture. The hand scroll portrays Wang Shizhen, a friend of the painter and a famous poet, seated at a table laden with books, in a mountainous setting, presumably a retreat that he had chosen after leaving the court. The 15 colophons signed by Wang Shizhen's friends, most of whom had been in government service, praise his virtues. They celebrate him as the living incarnation of Chan ideals. As a work of art, the hand scroll suffers from the dry formalism that prevailed in Kangxi court painting. But the auction house experts underestimated the emotional charge of its multiple messages. To the buyer and his Chinese underbidders, it proved overwhelming (Melikian, 2010).

Theow Tow, who deftly negotiated the consignment of the various parts of the Sackler collection sold at Christie's and raised Christie's market share to 73 percent from 25 percent in 1986, largely through his many connections in China, is amazed at the speed with which the Chinese have established their control over the market. Mr. Tow concluded recently: "We just witnessed a tectonic change (China Daily, 2010).

3.1 History of Traditional Chinese Art

The following presents a brief history of traditional Chinese art work from the Columbia University Encyclopedia. Chinese art has varied throughout its ancient history, divided into periods by the ruling dynasties of China and changing technology. Different forms of art have been influenced by great philosophers, teachers, religious figures and even political leaders.

Neolithic cultures produced many artifacts such as painted pottery, bone tools and ornaments, and jade carvings of a sophisticated design. Excavations at B'ei-li-kang near Luo-yang date materials found at that site to 6000–5000 B.C. An excavation in the early 1970s of the royal tomb of Shih-huang Ti revealed an array of funerary terra-cotta images. In Henan, the village of Yang-shao gave its name to a culture that flourished from 5000 to 3000 B.C. Ban-p'o pottery wares were handmade and the area produced a polished red ware that was painted in black with designs of swirling spirals and geometric designs, sometimes with human faces. Later, at Ma-jia-yao in Gansu, brush-painted pottery became more sophisticated in the handling of the design. Knowledge of ancient Chinese art is limited largely to works in pottery, bronze, bone, and jade.

During the Shang dynasty (c.1750–1045 B.C.), some of China's most extraordinary art was created—its ritual bronzes. Cast in molds, these sacrificial vessels display stylistic developments that began with early bronzes at Erh-li-tou and reached their apex at Anyang, the Shang capital city, where excavations in have yielded numerous ritual bronze vessels that indicate a highly advanced culture in the Shang dynasty. The art of bronze casting of this period is of such high quality that it suggests a long period of prior experimentation. The ritual bronzes represent the clearest extant record of stylistic development in the Shang, Chou, and Early Han dynasties. The adornment of the bronzes varies from the most meager incision to the most ornate plastic embellishment and from the most severely abstract to some naturalistic representations. The Later Han dynasty marks the end of the development of this art, although highly decorated bronze continued to be produced, often with masterly treatment of metal and stone inlays.

The advent of Buddhism (1st cent. A.D.) introduced art of a different character. Works of sculpture, painting, and architecture of a more distinctly religious nature were created. With Buddhism, the representation of the Buddha and of the bodhisattvas and attendant figures became the great theme of sculpture. The forms of these figures came to China from India by way of central Asia, but in the 6th cent. A.D. the Chinese artists succeeded in developing a national style in sculpture. This style reached its greatest distinction early in the T'ang dynasty. Figures, beautiful in proportion and graceful in gesture, show great precision and clarity in the rendering of form, with a predominance of linear rhythms. Gradually the restraint of the 7th cent. gave way to more dramatic work. For about 600 years Buddhist sculpture continued to flourish; then in the Ming dynasty sculpture ceased to develop in style. After this time miniature sculpture in jade, ivory, and glass, of exquisite craftsmanship but lacking vitality of inspiration, was produced in China.

Little painting remains from the early periods except for that on ceramics and lacquer and tiles, and tomb decorations in Manchuria and N Korea. It is only from the 5th cent. A.D. that a clear historical development can be traced. Near Dunhuang more than a hundred caves (called the Caves of a Thousand Buddhas) contain Buddhist wall paintings and scrolls dating mainly from the late 5th to the 8th cent. They show first, simple hieratic forms of Buddha and of the bodhisattvas and later, crowded scenes of paradise. The elegant decorative motifs and certain figural elements reveal a Western influence. A highly organized system of representing objects in space was evolved, quite different from Western post-Renaissance perspective. Rendering of natural effects of light and shade is almost wholly absent in this art, the greatest strength of which is its incomparable mastery of line and silhouette. One of the earliest artists about whom anything is known is the 4th-century master Ku K'ai-chih, who is said to have excelled in portraiture.

The art of figure painting reached a peak of excellence in the T'ang dynasty (618–906). Historical subjects and scenes of courtly life were popular, and the human figure was portrayed with a robustness and monumentality unequaled in Chinese painting. Animal subjects were also frequently represented. The 8th-century artist Han Kan is famous for his painting of horses. The T'ang dynasty also saw the rise of the great art of Chinese landscape painting. Lofty and craggy peaks were depicted, with streams, rocks, and trees carefully detailed in brilliant mineral pigments of green and blue. These paintings were usually executed as brush drawings with color washes. Little if anything remains of the work of such famous masters as Yen Li-pen, Wu Tao-tzu, Wang Wei, and Tung Yuan of the Five Dynasties.

In the Sung dynasty (960–1279) landscape painting reached its greatest expression. A vast yet orderly scheme of nature was conceived, reflecting contemporary Taoist and Confucian views. Sharply diminished in scale, the human figure did not intrude upon the magnitude of nature. The technique of ink monochrome was developed with great skill; with the utmost economy of pictorial means, suggestion of mood, misty atmosphere, depth, and distance were created. During the Sung dynasty the monumental detail began to emerge. A single bamboo shoot, flower, or bird provided the subject for a painting. Among those who excelled in flower painting was the Emperor Hui-tsung, who founded the imperial academy. Hundreds of painters contributed to its glory, including Li T'ang, Hsia Kuei, and Ma Yüan. Members of the Ch'an (Zen) sect of Buddhism executed paintings, often sparked by an intuitive vision. With rapid brushstrokes and ink splashes, they created works of vigor and spontaneity.

With the ascendance of the Yüan dynasty (1260–1368) painting reached a new level of achievement, and under Mongol rule many aspects cultivated in Sung art were brought to culmination. The human figure assumed greater importance, and landscape painting acquired a new vitality. The surface of the paintings, especially the style and variety of brushstrokes, became important. Still-life compositions came into greater prominence, especially bamboo painting. During this time, much painting was produced by the literati, gentlemen scholars who painted for their own enjoyment and self-improvement.

Under some of the emperors of the Ming dynasty (1368–1644) a revival of learning and of older artistic traditions was encouraged and connoisseurship was developed. We are indebted to the Ming art collectors for the preservation of many paintings that have survived into our times. Bird and flower pictures exhibited the superb decorative qualities so familiar to the West. Shen Chou, Tai Chin, Wen Cheng-ming, T'ang Yin, and Tung Ch'i-ch'ang are but a few of the many great masters of this period.

Under the Ch'ing dynasty (1644–1912) a high level of technical competence was maintained, particularly in the applied arts, until the 19th cent., when the output became much more limited. The famous four Wangs imitated the great Yüan masters. Among painters of less orthodoxy, Shih-T'ao and

Chu Ta were outstanding as artists of remarkable personal vision. The Shanghai School was a very important Chinese school of traditional arts during the Ch'ing Dynasty and the whole of the 20th century. Under efforts of masters from this school, traditional Chinese art reached another climax and continued to the present in forms of Chinese painting. The Shanghai School challenged and broke the literati tradition of Chinese art, while also paying technical homage to the ancient masters and improving on existing traditional techniques. Members of this school were themselves educated literati who had come to question their very status and the purpose of art, and had anticipated the impending modernization of Chinese society. In an era of rapid social change, works from the Shanghai School were widely innovative and diverse, and often contained thoughtful yet subtle social commentary (Andrews, 2010).

Throughout the history of Chinese painting one characteristic has prevailed—the consummate handling of the brushstroke. Paintings were executed in a dry or wet-brush technique, with an incredible versatility ranging from swirling patterns to staccato dots.

The fine art of Chinese ceramics followed to some degree the development of painting, reaching its highest perfection in the Sung dynasty and its extreme technical elaboration and decorative style in the Ming. In enamel ware, lacquerware, jade, ivory, textiles, and many other of the so-called minor arts, the world owes an incalculable debt to China. The influence of Chinese art upon other cultures has been profound. It has extended to the Muslim countries and, since the 14th cent., has affected the art of Western Europe as well (Gallery of China, 2010).

3.2 Return and Risk for Traditional Chinese Art

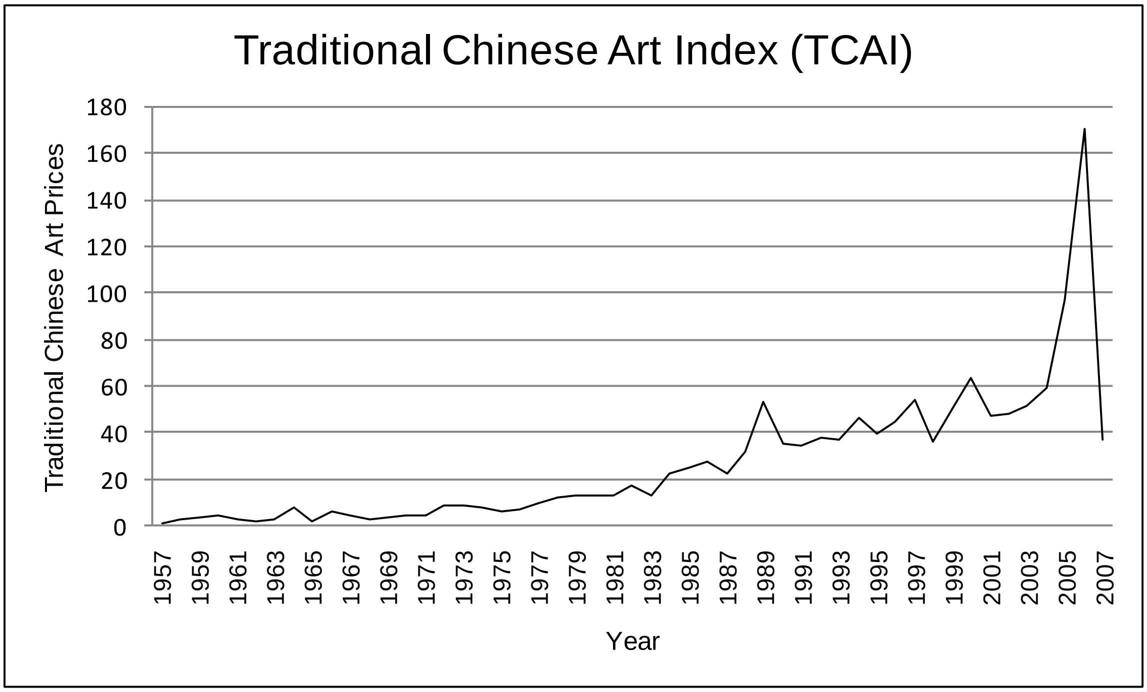
The created Traditional Chinese Art Index (TCAI) has an adjusted R-square of 0.7582. 75.82 percent of the art's return variance is explained by the index. In Figure 1 below, a linear graph of traditional Chinese art, the index shows the base year set to 1 and traditional Chinese art prices increasing.

The compound annual return for the index is 7.43 percent; the mean annual return is 19.09 percent and the index has a standard deviation of 57.36 percent for years 1957 to 2007. The index has a moderate return and a very high standard deviation; it is very volatile.

The pieces of traditional Chinese art, the index's underlying assets, have a mean compound average return of 8.91 percent and a standard deviation of 22.07 percent. The median return of the 1,158 pairs provided 7.30 percent return. The average auction interval (holding period) found for the art is 15 years.

Figure 1.

The Traditional Chinese Art Index from 1957 to 2007, base year (1957) set at 1.



In comparing the index with what business periodicals and newspapers projected for the traditional Chinese art category, the data generally overlaps with the increases and decreases anticipated. For example, the increase in prices for the category beginning in the late 1980s reflects the increasing popularity of the category and several important sales at auction. In 1988 a 14th-century Ming copper-red on white pear-shaped vase, awash with scrolling peonies, was sold at Sotheby's in Hong Kong for $2.18 million, setting one of the first records at auction for a Chinese work of art and for any ceramic (Reif, 1988). One year later a Tang horse was sold during December at Sotheby's in London for $5.95 million, then another record for Chinese art. The TCAI shows annual returns for 1988 and 1989 of 41 and 61 percent. James J. Lally, a New York dealer of traditional Chinese art described the state of the market during this periods saying it "went forward in leaps and filled in the gaps. The Tang horse had that tugging effect, that tractor effect (Reif, 1990)." Prices for traditional Chinese art increased through 2006. Experts say the traditional category was bolstered by the huge demand for Asian contemporary art. In 2006 Sotheby's and Christie's, the world's biggest auction houses, sold $190 million worth of Asian contemporary art, most of it Chinese, in a series of record-breaking auctions in New York, London and Hong Kong. In 2004 the two houses combined sold $22 million in Asian contemporary art. Henry Howard-Sneyd, global head of Asian arts at Sotheby's said "This has come out of nowhere," when asked about the surge in prices for traditional Chinese art (Barboza, 2007). At the end of 2006 the auction frenzy did spark some debate as to whether sales are artificially inflating prices and encouraging speculators, rather than real collectors to enter the art market. Auction houses "sell art like people sell cabbage," said Weng Ling, the director of the Shanghai Gallery of Art. "They are not educating the public or helping artists develop. Many of them know nothing about art"

(Barboza, 2007). Sure enough in November of 2007 Sotheby's shares lost more than a third of their value in the wake of the U.S. credit crunch in July and August on concerns that its wealthy clients would have less money to spend on art. This is reflected by the TCAI where mean annual returns went from a gain of 76 percent in 2006 to a loss of 78 percent in 2007. JMP Securities analyst Kristine Koerber said the U.S. credit squeeze may not have directly affected auction house clients, but potential bidders may have been spooked by fears of an economic slowdown. At this time lower auction sales suggested a possible slowdown in a few key drivers of the art market – U.S. hedge funds, Russian commodities and Chinese economic growth (Skariachan, 2007).

3.3 Traditional Chinese Art Compared to Earlier Findings

Mei and Moses (2000) found for the categories of American, Impressionist and Old Masters sold in Christie's and Sotheby's, a compound annual return of 8.2 percent and a standard deviation of 21.3 percent, from 1950-1999. I re-calculated the compound annual return for the index for the same period. Comparing the studies, my compound annual return is higher at 9.46 percent; however the standard deviation is 64.28 percent, reflecting greater volatility. This is could be due to the sample size which is what Mei and Moses (2000) said created a less volatile portfolio when they compared their index to Goetzmann (1993). "In comparison to Goetzmann's findings, our art index also has less volatility (and lower correlation with other asset classes. This could be the result of our larger sample, which makes our art index portfolio better diversified and less volatile" (Mei & Moses, 2000, p. 1662).

I compared the Traditional Chinese Art Index to the S&P 500 because much of the art was sold in the New York auction houses and their prices are reflected in dollars. Using a simple linear regression model, Formula 2:

(2) $$y = \beta_0 + \beta_1 x + e$$

where: y = Traditional Chinese Art Index Return

β_0 = Value of the Traditional Chinese Art Index when the S&P 500 Index return is 0.

β_1 = For every one unit change in the return of S&P 500 Index, a corresponding change of a unknown value (known once regression is run) will change in the Traditional Chinese Index

x = Value of S&P 500 Index return for a given year

e = Standard error term

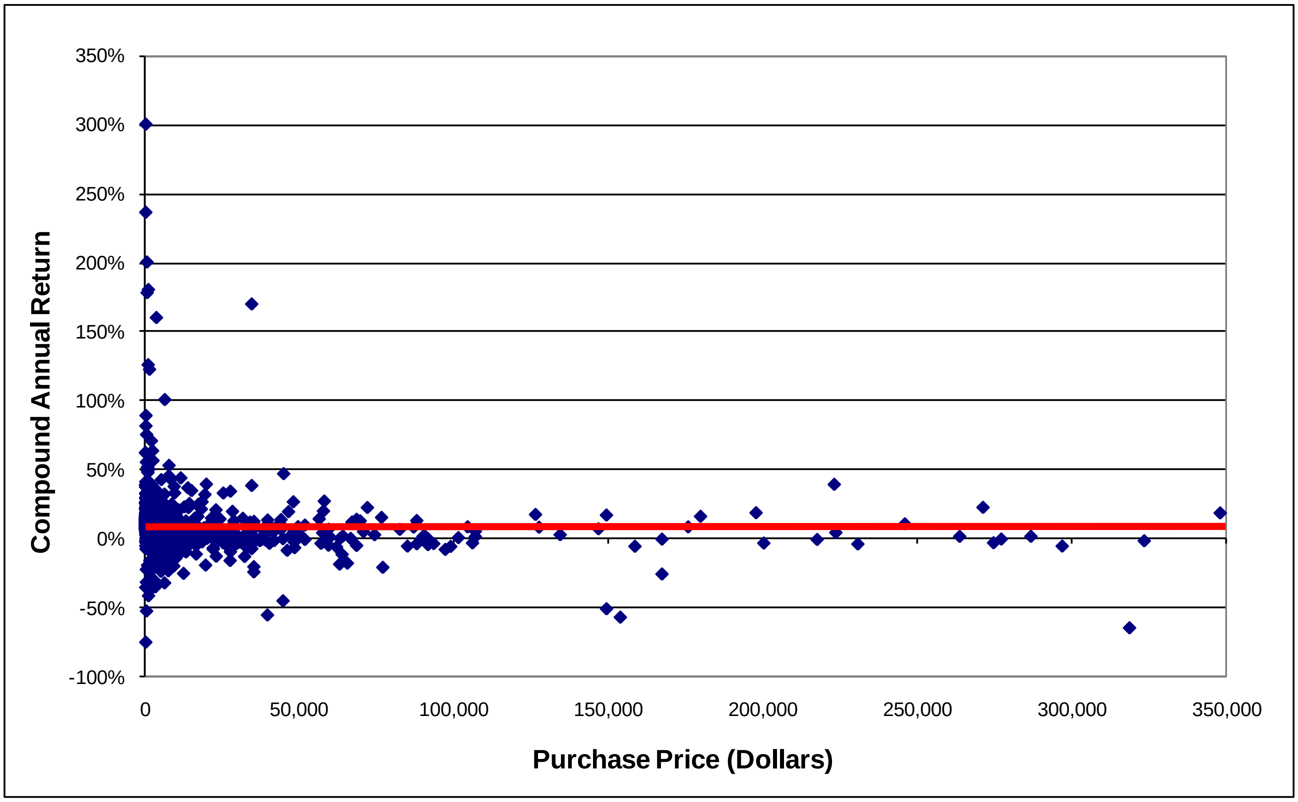
I found a correlation of .106. This suggests that the Traditional Chinese art category and American securities do move together, however with a weak relationship. This could be favorable for portfolio diversification. Mei and Moses found a lower correlation between their art index and the S&P 500 of .04. My finding adds to what Mei and Moses found in 2000 regarding portfolio management; "our study suggests that a diversified portfolio of artworks may play a somewhat more important role in portfolio diversification" (p.1663). The S&P 500 outperforms the TCAI from years 1957 to 2007. The S&P500's compound annual return is 10.56 percent with a standard deviation of 16.22 percent. This underperformance is consistent with what Mei and Moses found for their index.

3.4 *The "Masterpiece" Effect and Other Findings*

Pesando (1993) and Mei and Moses (2000) found in their research that masterpieces underperform. Edward Merrin, an art dealer quoted in Pesando's article, tells customers, "...it's always better to buy one $10,000 object than ten $1,000 objects, or one $100,000 object—if that is what you can afford—than ten $10,000 ones" (1993, p.1083). Pesando's and Mei and Moses' findings suggest lower priced paintings outperform the masterpieces when comparing compound average returns to the purchase prices of the underlying pieces of art. I was interested to see if this holds true for traditional Chinese art. See Figure 2 below.

Figure 2.

The "Masterpiece" Effect. Compound Annual Return vs. Purchase Price.

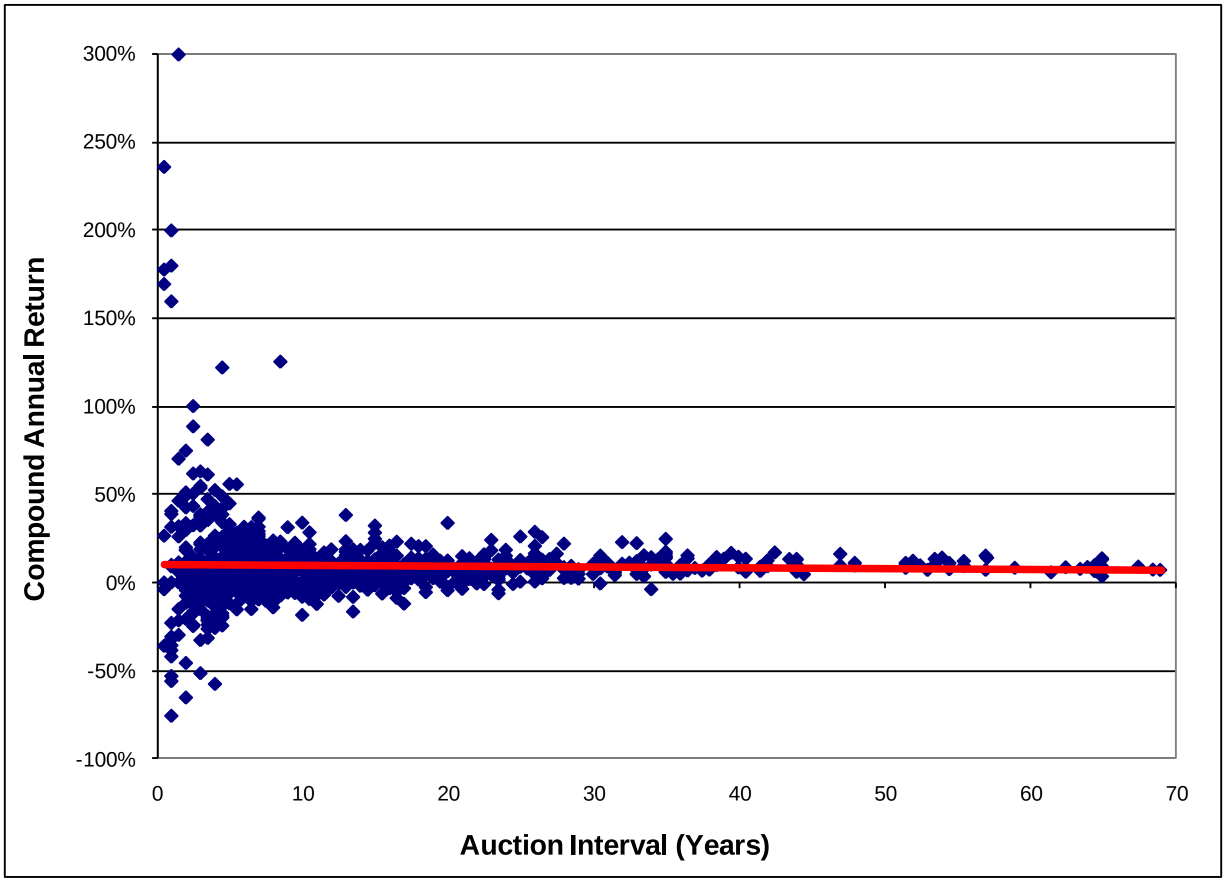


From the scatter plot and trend line in Figure 2 above, a slight negative relationship exists, but the line is nearly flat. This suggests that masterpieces do under perform and is consistent with Pesando (1993) and Mei and Moses (2000) who also found larger returns are for lower priced pieces. I would expect a more negative relationship similar to Mei and Moses' findings if the sample size is increased.

Another concern regarding the value of art investments is the high fixed transaction costs associated with purchasing and selling. If high returns are seen in very short auction intervals, the high fixed costs will not be spread over a long period making the investment less attractive. In Figure 3 below, there is a slight negative relationship between the returns of the underlying assets and the years held. This suggests larger returns are found with shorter auction intervals. As with the masterpiece effect figure above, my sample is smaller so an increase in observations could change the degree of the relationship.

Figure 3.

Compound Annual Return vs. Auction Interval



Because the underlying data set includes sales from Christie's New York and London, as well as Sotheby's New York, London, Hong Kong and Paris, I was able to compare mean compound annual return, standard deviation, and average holding period statistics for each sale location below in Table 1. The highest mean compound annual returns were achieved at Sotheby's Hong Kong; however this includes a smaller data set of 16 repeat-sale pairs. The largest sample was from Sotheby's New York which achieved returns of 10.16 percent and had a standard deviation of 26.41 percent. It is interesting to note that the second largest sample, 359 sales at Christie's New York has a much lower return of 5.78 percent and standard deviation of 11.29. This suggests that while mean compound annual returns when selling a piece at Christie's New York are lower, the volatility of achieving this return is also much lower. Finally, statistics from Sotheby's London suggest these market participants prefer a lengthier holding period which also allows them to capture a greater part of the mean compound annual return post-transaction costs.

Table 1.

Mean Compound Annual Return, Standard Deviation, and Average Holding Period by Sale Location.

(Reported in percentage except for average holding period.)

	Mean Compound Annual Return	**Standard Deviation**	**Average Holding Period (Years)**
Christie's New York *359 pairs*	5.78	11.29	14.04
Christie's London *33 pairs*	7.73	38.93	11.37
Sotheby's New York *400 pairs*	10.16	26.41	16.47
Sotheby's London *115 pairs*	11.22	10.44	23.09
Sotheby's Hong Kong *16 pairs*	16.75	24.15	6.62
Sotheby's Paris *184 pairs*	9.89	25.61	9.53

4 TCAI Compared to the FTSE 100 and Regional Indices

After comparing the index to the S&P 500 and finding a small positive correlation, I expected there to be a higher positive correlation between the returns of the index with the returns of the FTSE and major indices of the Chinese region. Using data through Global Insight Financial Market Indexes, accessed through Wharton Research Data Services, I ran a regression of the TCAI annual returns on the annual returns of the FTSE 100, Hang Seng Index, and Shanghai Stock Exchange indices. I used a similar formula to the one used for the S&P500 regression. See Formula 3 below:

(3) $$y = \beta_0 + \beta_1 x + e$$

where: y = Traditional Chinese Art Index return

β_0 = Value of the Traditional Chinese Art Index when the Country's Index return is 0.

β_1 = For every one unit change in the return of the Country's Index, a corresponding change of a unknown value (known once regression is run) will change in the Traditional Chinese Art Index

x = Value of the Country's Index return for a given year

e = Standard error term

The following table provides the regression output between the TCAI and the major indices.

Table 2.

The Compound Annual Return, Standard Deviation, and Correlation with the TCAI.
(Reported in percent except for correlation.)

	Compound Annual Return	Standard Deviation	Correlation with TCAI
FTSE 100 1985-2007	7.74	14.917	.235
-TCAI (1985-2007)	*1.73*	*35.269*	
Hang Seng Index 1987-2007	12.65	23.000	-.002
-TCAI (1987-2007)	*2.48*	*36.984*	
Shanghai Stock Exchange 2000-2007	14.10	32.992	.027
-TCAI (2000-2007)	*-7.39*	*48.644*	

The TCAI returns for the same sample periods underperformed the FTSE 100 and regional indices. The Hang Seng Index has a negative correlation with the TCAI. This suggests that the annual returns of the TCAI and of the Hang Seng Index move in opposite directions; buyers and sellers in the auctions are not closely aligned with China. The Shanghai Stock Exchange has a very low correlation with the TCAI. Investing in this art category presents a portfolio diversification opportunity for investors functioning in the Chinese equity markets. The highest correlation is with the FTSE 100, suggesting that the London auction market and the TCAI have a positive relationship. However, the standard deviation for the TCAI for the same sample periods was higher than all indices which indicates the art from the region is a more volatile investment.

It is interesting to note that there is a lower volatility found in the sample periods of Table 1 which indicates that traditional Chinese art was a riskier asset in years prior to 1985. The standard deviation of the whole index is 57.36 percent. This suggests that there are large changes in return for the years 1957 to 1985.

5 Conclusions and Areas for Further Research

The repeat-sale pairs collected for traditional Chinese art helped provide a repeat-sale index of prices that show an increase in prices until the financial crisis of 2007 hit. The low correlation between the Traditional Chinese Art Index and the S&P 500 and Shanghai Stock Exchange, as well as the negative correlation with the Hang Seng Index show how art can play a role in a multi-asset portfolio. The TCAI has a very high standard deviation which indicates the market is very volatile. Individual pieces show less volatility and slightly lower compound annual returns to the whole index. The data shows that buying masterpieces or holding a piece of art for a longer period does not necessarily yield a higher return. These results may change once the sample size is increased as trend lines used to show the relationships between return and purchase price and return and holding period were very flat. The highest returns for the underlying pieces were generated from sales at Sotheby's Hong Kong. The lowest volatility in the generation of mean compound annual returns resulted from sales at Christie's New York. The art used in this paper outperformed art examined by Mei and Moses (2000) but had a much higher standard deviation, which also reflects the sample size.

The TCAI underperformed the regional indices and had a higher volatility. However the lower volatility of the TCAI during the sample periods used to compare to the FTSE and regional indices also indicates that much of the volatility of the art index is seen prior to 1985. Further research into this discrepancy provides an area for further research.

Further research with traditional Chinese art can be done in a number of areas. It may be interesting to see if TCAI returns correspond to foreign direct investment flows into China and subsequently look at the importance of currency valuation in relation to this. Foreign currency reserve data correlation also represents an area for future study. Finally, Brazil, Russia, and India have regional art sold at the international auction houses studied in this paper. It would be interesting to see the results of a comparison to the S&P500, FTSE and the regional indices of those emerging markets with the results found for traditional Chinese art. American investors may become more interested in the Brazilian, Russian, and Indian categories if they can diversify risk of their portfolio while increase their wealth and enjoyment similar to what is happening in traditional Chinese art.

Finally, the good response from Sotheby's latest Asian art auction is a sign that the market may have returned full force from the downturn that followed the global credit crunch in 2007 and that there is pent-up demand for great art. Buyers of Asian art have become much more mature, more sophisticated, more discerning, helping lift prices for such works. Analysts at Nomura say that prices are still low compared to what some Western contemporary artists' work can command. "In terms of scale, China still has a long way to go to touch the Japanese exuberance of the 1980s," they wrote. "Total sales between 2000 and 2009 for Chinese arts amount to a little over US$4 billion. This is in contrast to Japan, which experienced a massive investment of around US$19 billion on art in just three years between 1987 and 1990 (NST Online, 2010). As China enters the sweet spot of economic growth and more wealth is created, the art market should maintain its momentum providing exciting opportunities for global art investors.

REFERENCES

Andrews, Julia. "China: 5,000 Years - Innovations in Chinese Painting." *The Huntington Archive*. Web. 25 Apr. 2010. <http://kaladarshan.arts.ohio-state.edu/Exhibitions/5000years/intr/innovintr.html#anchor35888733>.

"Art: Asian Art Sets Records." *NST Online*. Web. 25 Apr. 2010. <http://www.nst.com.my/Current_News/NST/articles/20100410184300/Article/index_html>.

Ashenfelter, Orley and Kathryn Graddy. (2003). Auctions and the price of art. *Journal of Economic Literature*, 41, 763-787.

Barboza, David. "Chinese Art Market Booms, Prompting Fears of a Bubble - Asia - Pacific - International Herald Tribune." *The New York Times*. 4 Jan. 2007. Web. 25 Apr. 2010. <http://www.nytimes.com/2007/01/04/world/asia/04iht-china.4097207.html>.

"In China's New Revolution, Art Greets Capitalism." *The New York Times*. 4 Jan. 2007. Web. 25 Apr. 2010. <http://www.nytimes.com/2007/01/04/arts/design/04arti.html>.

Baumol, William J. (1986). Unnatural value: or art investment as floating crap game. *The American Economic Review*, 76, 10-14.

"Chinese Art Through the Ages." *Gallery of China*. Web. 25 Apr. 2010. <http://www.galleryofchina.net/china-art-history/chinese-art-through-the-ages.html>.

"Chinese Ceramics & Works of Art." *Sotheby's*. Web. 25 Apr. 2010. <http://www.sothebys.com/app/live/dept/DepartmentGlobal.jsp?dept_id=35>.

"Chinese Ceramics and Works Of Art Auction." *Christie's - Fine Art Auctions*. Web. 25 Apr. 2010. <http://www.christies.com/departments/chinese-ceramics-and-works-of-art/>.

Hui, Polly. "Chinese Interest Rules the Auction World." *Asia One: Plush*. 26 Apr. 2010. Web. 25 Apr. 2010. <http://www.plushasia.com/article/8283>.

Goetzmann, William N. (1993). Accounting for taste: art and the financial markets over three centuries. *The American Economic Review*, 83, 1370-1376.

Lagasse, Paul. *Columbia Encyclopedia Sixth Edition*. Los Angles: Columbia, 1993. Print.

Kreps, Jill. (2007). Investment Characteristics of Latin American Art. New York University Stern Undergraduate Honors Program.

Mei, Jiangping & Michael Moses. (2002). Art as an investment and the underperformance of masterpieces. *The American Economic Review*, 92, 1656-1668.

Melikian, Souren. "Chinese Bidders Conquer Market." *The New York Times*. 25 Apr. 2010. Web. 25 Apr. 2010. <http://www.nytimes.com/2010/04/03/arts/03iht-melik3.html>.

Moffat, Donal W. (1983). Utility. In *Economics Dictionary*. New York: Elsevir.

"New World Record for Ming Vase." *China Daily Website*. Web. 25 Apr. 2010. <http://www.chinadaily.com.cn/china/2006-05/31/content_604588.htm>.

Pesando, James E. (1993). Art as an investment: the market for modern prints. *The American Economic Review*, 83, 1075-1089.

Reif, Rita. "Auctions." *The New York Times*. 20 May 1988. Web. 25 Apr. 2010. <http://www.nytimes.com/1988/05/20/arts/auctions.html?pagewanted=all>.

"Rewriting Auction Records." *The New York Times*. 25 Jan. 1990. Web. 25 Apr. 2010. <http://www.nytimes.com/1990/01/25/garden/rewriting-auction-records.html?pagewanted=1>.

Reitlinger, Gerald. (1961). The *Economics of Taste, The Rise and Fall of the Picture Market, 1760-1960*. (1st ed.). New York: Holt, Rinehart and Winston.

Seçkin, A. and E. Atukeren (2007). "Art as a Financial Investment in an Emerging Market: An Empirical Study of the Market for Paintings in Turkey'', International Art Economics Symposium, Çanakkale 18 Mart Üniversitesi, Pozitif Matbaa, Ankara.

Shim, Jae and Joel Siegel. (1995). Asset. In *Dictionary of Economics*. New York: John Wiley & Sons.

Skariachan, Dhanya. "Sotheby's Shares Fall on Disappointing Auction Sales | Reuters." *Business & Financial News, Breaking US & International News | Reuters.com*. 08 Nov. 2007. Web. 25 Apr. 2010. <http://www.reuters.com/article/idUSBNG9886920071108>.