# **Assessing Economic Growth and Income Inequality in the Fine Art Market**

A Senior Thesis Presented to
The Faculty of the Department of Economics
Bates College

In partial fulfillment of the requirements for the
Degree of Bachelor of Arts

by

Adah Grace Lindquist
Lewiston, Maine
April 11, 2019

Abstract

Recent rapid growth in the fine art market has led to structural changes within the industry, specifically changing how art is bought and sold. An expansion in global wealth as well as an increase in High Net Worth Individuals globally, has created a larger circle of buyers within the fine art market, therefore contributing to changing buyer taste and motivation that ultimately drives art sales. This paper examines how economic growth and income inequality affect price levels in the fine art market, specifically looking at the United States and Europe.

## Introduction

Over the last decade, the art market has experienced tremendous growth. The rapid growth can be attributed to the ever-expanding pool of buyers who can now afford high level works of art. The recent growth and unprecedented price levels occurring in today's art market, fueled the research question being examined in this paper: How do prices in the fine art market vary depending on economic growth and income inequality? This research paper, further investigates driving differences in price levels between different sectors and mediums of art within the fine art market, and to what extent art prices depend on the health of the economy and increasing wealth.

Art is a commodity, a luxury good, that is used as a social product within society. Artwork is typically purchased for three reasons: social, commercial, or aesthetic value. Generalizing the engine driving the art market can be difficult due to changing buyer taste or motivation. This is true whether a buyer is purchasing artwork for money, beauty, or power. Recently, an expansion in global wealth as well as an increase in High Net Worth Individuals (HNWI) has created a larger circle of buyers who have been increasingly interested in the financial and/or social value of art. Such buyers can now afford high priced, major works of art, thus contributing to the expanding growth of value sales in the market.

The fine art market can be compared to other financials markets in the sense that the market is constructed of buyers and sellers, and assets are bought and sold in a primary or secondary market. However, an important feature of the fine art market that separates itself from other financial markets is the formation of unique and independent sectors that are defined by artists and periods, "many of which exhibit very different performance from year to year in terms of sales and prices."[1] The unique and independent sectors that make up the fine art market are; Old Masters, 19th Century, Modern, Post-war, and Contemporary. In order to consistently analyze the performance of sales within the market, each sector is defined differently based on artist's date of birth, the date of their work, and the importance of the artist to a particular movement.[2] Economist Clare McAndrew defines each sector accordingly; Old masters are defined as artists born between 1250 and 1821, 19th century artwork includes Impressionists to Post Impressionists, modern art includes artists born between 1875 and 1910, and post-war and contemporary art are artists born after 1910, with contemporary art being a subset of post-war that includes living artists. Typically, when buying contemporary art, there is more risk associated because artists are still living, thus their artistic reputation is not fully developed and their supply of artwork is not limited.

The paper goes on to analyze how economic growth and income inequality in the United States and Europe affect price levels in the fine art market. Specifically, how prices of artwork vary in the market depending on sector or medium. First, the paper individually analyzes each index by providing summary statistics to gauge the volatility and strength of each sector and medium as well as the fine art market as a whole. The paper then continues to examine how economic growth and income inequality in the United States and Europe affect each given index.

---

[1] McAndrew, Clare. *The Art Market 2018.* Art Basel and UBS Global. 2018. 27.

[2] Ibid. 126.

**Literature Review**

Economic growth and increased wealth globally has led to continued growth in the fine art market. As Georgia Adams, art-market expert explains, growth in the contemporary art sector since the end of the 20th century can be traced to fundamental changes in globalization, the amount and nature of wealth, and emerging markets.[3] Globalization, new wealth, and emerging markets have not only contributed to contemporary art but the market as a whole. From the mid 1990s onward, the appearance of emerging economies has been a key element in transforming the rapidly growing industry.[4] Although emerging economies have decelerated since 2013, the rapid growth of HNWI continues to increase. New buyers that have entered the art market since the end of the twentieth century have shifted buyer taste, behavior, and motivation for purchasing works of art. Globalization continues to increase the number of people who are able to access the market on an international scale, while an increase in wealthy individuals around the world has contributed directly to driving prices of artwork upwards. Together, leading works of art to reach unprecedented price levels. In order to understand such price levels and why paintings are consistently selling for millions of dollars, it is essential to have an appreciation for how the art market functions and is organized.

Since the sixteenth century, international trade and communication has expanded access to the art market, however, the modern age of artwork dealing is credited to nineteenth century art dealer Paul Durand-Ruel. Before Durand-Ruel, the art market was rarely acknowledged. Durand-Ruel was one of the first art dealers to successfully support and discover artists. His

---

[3] Adam, Georgina. Big Bucks the Explosion of the Art Market in the Twenty-first Century. Farnham: Lund Humphries, 2014. 181.

[4] Ibid. 133.

efforts of discovering and exhibiting individual Impressionist artists and their work attributed to the creation of the current art market. Durand-Ruel is known for openly recognizing the market and making constant references to price, which at the time was unheard of.[5] Since Durand-Ruel, the art market has increasingly become more focused on the monetary value of a work of art. In October of 1973 at Sotheby's New York, The Scull Sale officially defined art as a financial investment.[6] The sale consisted of fifty contemporary American works of art including, Robert Rauschenberg, Jasper Johns, and Andy Warhol. Robert and Ethel Scull bought each piece of art for thousands and then sold each at auction for hundreds of thousands. The sale showed buyers the potential for high financial gains and investment opportunity in the art market. The success that the auction generated from the sale was a key turning point for the art market because it led auction houses to believe in the success of contemporary art and turned the art market into an investment or commodity market.[7]

> "Artists today know more. They are aware of the market more than they once were. There seems to be something in the air that art is commerce itself."
>
> -Jasper Johns, 2008[8]

Artists have not always been aware or taken advantage of the market as we see today. Andy Warhol was one of the first artists to commodify art in the mid to late twentieth century. His obsession with media and celebrity, along with his anticipated link-up with luxury goods, has

[5] Metcalf, Stephen. *The Enigma of the Man Behind the $110 Million Painting*. The Atlantic. July 06, 2018. Accessed December 06, 2018. 11.

[6] Adam, Georgina. Big Bucks the Explosion of the Art Market in the Twenty-first Century. Farnham: Lund Humphries, 2014. 33.

[7] Adam, Georgina. Big Bucks the Explosion of the Art Market in the Twenty-first Century. Farnham: Lund Humphries, 2014. 33.

[8] Findlay, Michael. The Value of Art: Money, Power, Beauty. Munich: Prestel, 2014. 134.

massively contributed to today's growing market and created a new norm of commodifying art.[9] The commodification and industrialization of contemporary art along with increased globalization, economic growth, and newly found wealth, has placed changes on the structure of the art market in the twenty-first century. Today, living artists acknowledge the market and are able to produce more artwork in order to satisfy demand, which has enabled prices to soar upwards.[10] Escalating prices of contemporary art, accompanied by enormous increases in purchases, have led to an intensified focus on the sector and the market in general. Over the last decade, post-war and contemporary art have experienced tremendous growth compared to old masters, 19th century, and modern art.

Unlike other luxury goods, the possession of a work of art is an indication of wealth as well as good taste. Since art is a social product, it is constantly evolving with the societies that produce it. The same is true for the art business. The art business is "strongly dependent on social, socio-structural and economic framework conditions."[11] The art market is cyclical as the ups and downs of the market follow economic cycles but exogenous, as art prices will not affect the overall economy. Throughout the second half of the twentieth century, the number of American collectors increased during each boom period and contracted accordingly when the market slowed.[12] Art is a positional good so as ones wealth increases, the desire to buy art will follow. Art is also used as a symbol of status and power within society. According to art dealer

---

[9] Adam, Georgina. Big Bucks the Explosion of the Art Market in the Twenty-first Century. Farnham: Lund Humphries, 2014. 70.

[10] Ekelund, Robert B., John D. Jackson, and Robert D. Tollison. The Economics of American Art: Issues, Artists, and Market Institutions. New York: Oxford University Press, 2017. 181.

[11] Ibid. 182.

[12] Findlay, Michael. The Value of Art: Money, Power, Beauty. Munich: Prestel, 2014. 30.

Michael Finlay, “Americans continue to outrank all other nationalities in spending on art, simply because there are many more extremely wealthy people in America than in any other single country.”[13] In 2017, the United States accounted for 42 per cent of sales by value in the global art market.[14]

The rapid growth of HNWI around the world has shifted buyer taste in the fine art market. As new buyers enter the market, the changing profile of art collecting has had a major impact on art sales. Buyer taste in the art market has become increasingly more focused on monetary value rather than cultural experience. This is due to the fact that wealth this century is largely self-made rather than inherited so buyers of art today do not have the same cultural references that previous generations once had.[15] Yet, no matter the motivation for entering the market, buyers generally start collecting art from their own country, and will often begin their collection by purchasing works of art from the nineteenth century before buying contemporary artwork.[16] The reason being that older art and artists have a more established reputation and therefore are considered a safer investment.

Currently, there is an explosion of prices in the art market as art, especially contemporary art, reach unprecedented price levels. The extraordinarily high prices thrown at contemporary art may make the sector appear on the outside to be the most flourishing, though the market for

---

[13] Findlay, Michael. The Value of Art: Money, Power, Beauty. Munich: Prestel, 2014. 29.

[14] McAndrew, Clare. *The Art Market 2018.* Art Basel and UBS Global. 2018. 26.

[15] Adam, Georgina. Big Bucks the Explosion of the Art Market in the Twenty-first Century. Farnham: Lund Humphries, 2014. 87.

[16] Ibid.135.

contemporary art remains the most volatile for individual artists.[17] Purchasing works of art in the contemporary market is dictated by what is currently 'trending,' whether or not an artist is considered "hot" at the time of the sale. Due to this phenomenon, contemporary artists easily go in and out of style compared to modern or 19th century art. During the 2008 recession, the overheated contemporary art market tripped on its heels alongside the general economic downturn and Impressionist and modern art "swung back into view as new buyers looked for the type of blue-chip works of art that traditionally maintain value throughout recessions."[18] Such blue-chip works of art refer to more established artists such as Picasso, Francis Bacon, Andy Warhol and Gerhard Richter. Blue-chip works of art are considered to be "safer" brand names and maintain value in the long run while providing a level of security and insurance to buyers. It is important to note that many HNWI are driving sales when competing for the same name brand artists. Artnet magazine found that in the first half of 2017, just twenty-five artists were responsible for 44.9 per cent of all post-war and contemporary art auction sales; "As increasingly wealthy buyers compete for a shrinking supply of name-branded artists, the art market has become highly concentrated at the top."[19] From 2007-2017, the more affordable sectors of art declined in value while higher level pieces of art made up majority of the value generated for auction sales. It was reported that between the span of those ten years, "nearly all segments up to $1 million declined in value, whereas the market for works priced over $1 million grew."[20]

---

[17] Schultheis, Franz, Erwin Single, Stephan Egger, Thomas Mazzurana, and James Fearns. When Art Meets Money: Encounters at the Art Basel. Köln: Verlag Der Buchhandlung Walther König, 2016.

[18] Findlay, Michael. The Value of Art: Money, Power, Beauty. Munich: Prestel, 2014. 28.

[19] Adam, Georgina. Dark Side of the Boom: The Excesses of the Art Market in the 21st Century. London: Lund Humphries, 2018. 136.

[20] McAndrew, Clare. *The Art Market 2018.* Art Basel and UBS Global. 2018. 102.

## Data

The data obtained to measure price movement in the art market comes from 'Art Price Global Indices.' The data set is from ArtPrice, an art price database that has been a leader in art market information for over twenty years. ArtPrice collects auction sale results and has partnerships with 6,300 auction houses in 72 countries. The indices are calculated by repeat-sale-regressions and contain quarterly data with a base of 100 starting in January 1998. I will be analyzing the indices; Global (US, EU), Medium (Painting, Print, Sculpture, Photograph, Drawing), Sector (Old Masters, 19th century, Modern, Post-war, Contemporary), and Currency (USD, GBP, EUR), over the span of January 1998 to October 2018. For summary statistics, each index within global, medium, sector and currency are observed. In order to aid my research, an analysis of the data allows inference into which indices may experience the most success and demonstrates the average art price and variance for each individual index relative to the different indices.

For the Global Index, Global USD experienced a higher mean, standard deviation, and max than compared to Global EUR. The same remains true when analyzing the currency index, however, the UK (GBP) experiences a higher mean, standard deviation, and max than the US. This statistic is surprising because according to the 2018 Art Market Report, the United States accounted for 35% of auction sales while the UK accounted for 16%.[21] From the summary statistics, there is evidence that the United States is more volatile than Europe in the fine art market.

---

[21] McAndrew, Clare. *The Art Market 2018.* Art Basel and UBS Global. 2018. 102.

When analyzing the sectors in the fine art market, old masters has the lowest mean at 108.62 and standard deviation of 21.43, while post-war and contemporary have significantly higher means and standard deviations than old masters, 19th century, and modern. Post-war has a mean of 192.44, and a standard deviations equal to 57.33. Both mean and standard deviation of post-war art remain higher than contemporary, thus implying post-war is the most volatile sector in the art market and on average produces higher priced works of art. Contemporary has a mean of 179.42 and standard deviation of 50.98, just beneath post-war.

For the fine art market medium indices, painting and print are almost identical while photograph and drawing vary greatly compared to the other three mediums. Drawing has the highest standard deviation of 58.00 and sculpture has the lowest at 26.57. Drawing also experiences the highest mean at 181.84 while sculpture has the lowest mean at 136.75. An explanation for why drawing tends to be higher than the other mediums can be traced to the rise of the Chinese Art Market. Calligraphy and traditional painting do not use canvas but various sorts of papers are then therefore accounted in the drawing index rather than painting which one would expect to have the highest mean.

***Summary Statistics:***

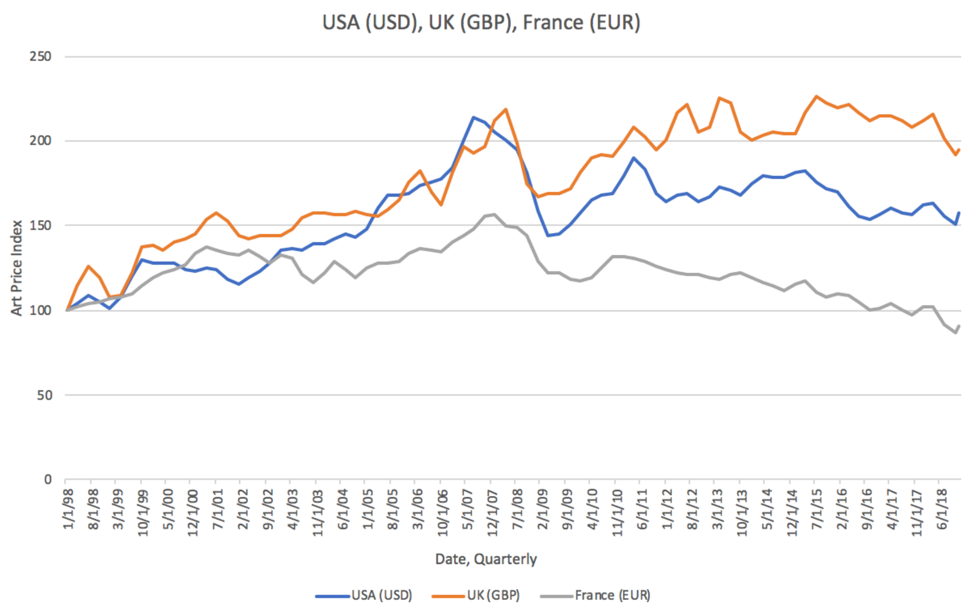
| Global Index Summary Statistics | | | | | |
|---|---|---|---|---|---|
| | **Observations** | **Mean** | **Std. Dev.** | **Min** | **Max** |
| **Global_USD** | 84 | 152.4713 | 33.27098 | 100 | 224.3493 |
| **Global_EUR** | 84 | 141.5131 | 18.16003 | 100 | 180.8366 |

| Currency Summary Statistics | | | | | |
|---|---|---|---|---|---|
| | Observations | Mean | Std. Dev. | Min | Max |
| **USD** | 84 | 155.4672 | 26.64068 | 100 | 214.0821 |
| **GBP** | 84 | 178.2185 | 33.29747 | 100 | 226.372 |
| **EUR** | 84 | 121.8736 | 14.34038 | 86.54584 | 156.2918 |

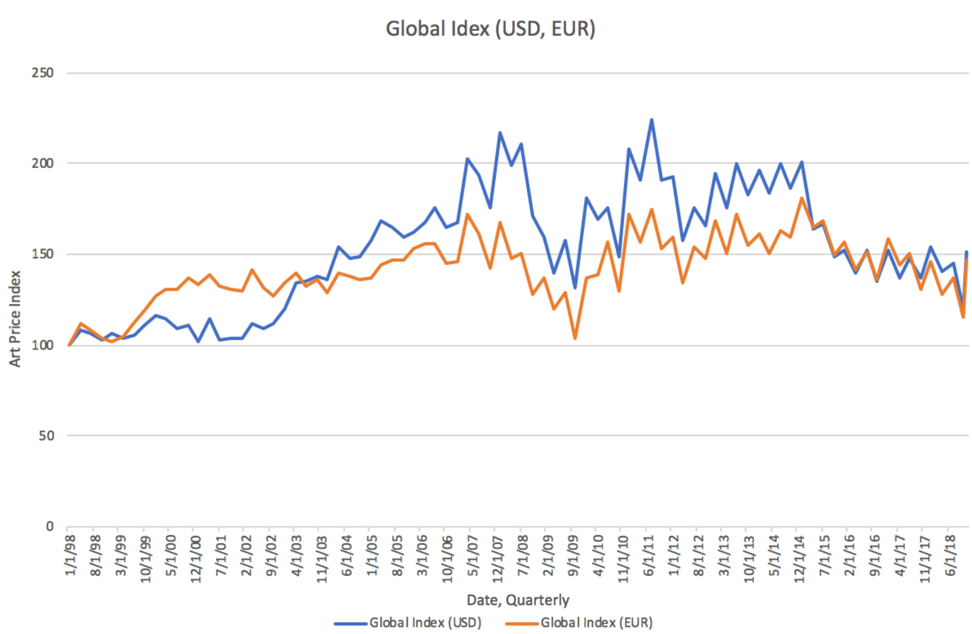
| Fine Art Market Sector Summary Statistics | | | | | |
|---|---|---|---|---|---|
| | **Observations** | **Mean** | **Std. Dev.** | **Min** | **Max** |
| **Old Masters** | 84 | 108.6204 | 21.43394 | 67.7761 | 157.573 |
| **19th Century** | 84 | 110.3893 | 23.1385 | 66.78026 | 162.4911 |
| **Modern** | 84 | 130.0408 | 26.57992 | 99.73841 | 201.9142 |
| **Post-war** | 84 | 192.4402 | 57.33098 | 95.04626 | 306.8218 |
| **Contemporary** | 84 | 179.42 | 50.98107 | 98.30239 | 290.651 |

| Fine Art Market Medium Summary Statistics | | | | | |
|---|---|---|---|---|---|
| | **Observations** | **Mean** | **Std. Dev.** | **Min** | **Max** |
| **Painting** | 84 | 142.7324 | 30.74251 | 100 | 223.6774 |
| **Print** | 84 | 142.7381 | 30.75403 | 100 | 224 |
| **Sculpture** | 84 | 136.7549 | 26.56643 | 96.05384 | 202.8616 |
| **Photograph** | 84 | 150.3235 | 32.09218 | 83.52636 | 222.7083 |
| **Drawing** | 84 | 181.839 | 58.00292 | 100 | 310.5599 |

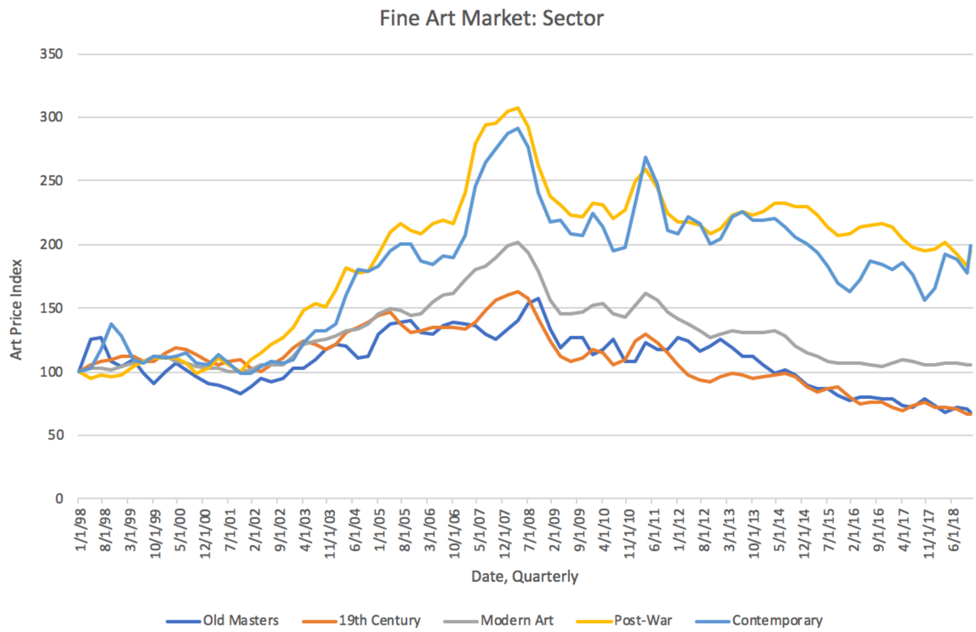
*Currency; USD, GBP, EUR*



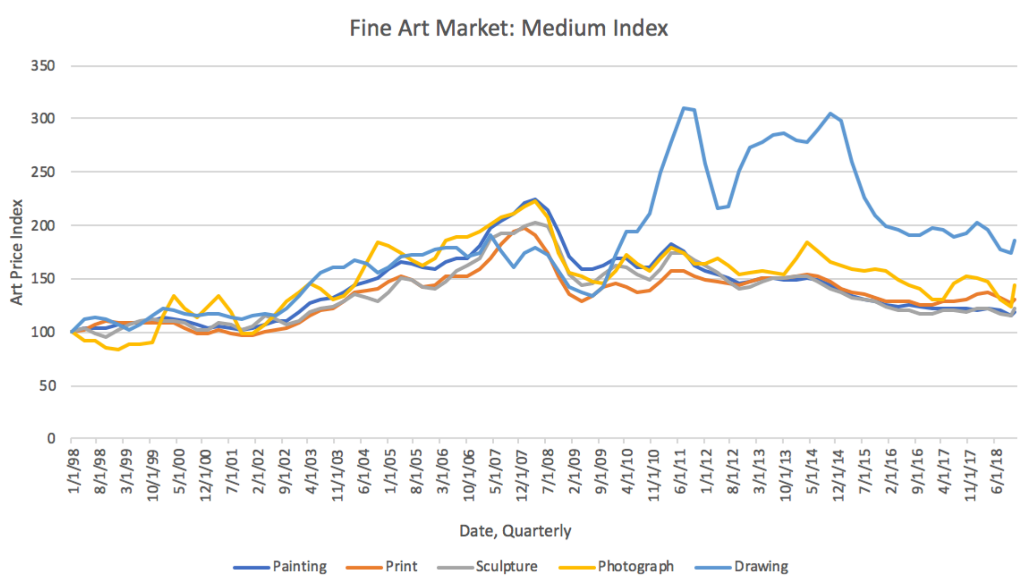

*Global Index; US, Europe*



*Fine Art Market: Sector*




*Fine Art Market: Medium*



***Descriptive Statistics:***

*Currency; USD, GBP, EUR*

USD, GBP, and EUR indices peak in 2007 before hitting a trough in 2009. According to this graph, from early 2000s to December 2007, the start of the Global Recession, art prices experienced a steady rise for each USD, GBP, and EUR. Art prices then dropped and have remained steady in the long run ever since. USD, GBP, and EUR, still exhibit smaller scaled patterns of volatility. According to the graph, France (EUR) has experienced the least amount of volatility while the UK and the US prove to be more volatile.

*Global Index; US, Europe*

The graph ‘Global Index; US, Europe’ illustrates art price indices: Global USD and Global EUR. Both global art price indices experience a gradual incline until the fourth quarter of 2007. For the US, the index reaches a peak in the third quarter of 2011 and for EUR, the peak is met in January of 2015. Since 2014, the graph illustrates that for both US and EUR, price levels have gone down, but recently there is evidence to suggest a slight upward trend.

*Fine Art Market: Sector*

The ‘Fine Art Market: Sector’ graph illustrates each sector of the fine art market from January 1998 to October 2018. It is clear from this graph that post-war and contemporary art experience the most volatility and have the greatest increases or decreases in price. For all sectors excluding old masters, the peak occurred in April 2008. Old masters peak in October 2008. Each sector experienced growth between 1998 to 2008. After April 2008, old masters, 19th century, and modern art have experienced the least variability. While post-war and contemporary do not display a steady pattern and exhibit the most variability.

*Fine Art Market: Medium*

The 'Fine Art Market: Medium' graph compares mediums within the fine art market; painting, print, sculpture, photograph, and drawing. From the graph, art prices for each medium increase until 2008, and do not display a visible upward trend again, excluding drawing. Painting, print, photograph, and sculpture remain pretty consistent with one another, photograph being the next most volatile after drawing.

## Empirical Methods

*Regression Analysis:*

$$\Delta API_t^i = \alpha + \beta_1 GDP_{t-1}^i + \beta_2 Stock_t^i + \beta_3 Wage_t^i + \beta_4 Rate_t^i + \varepsilon$$
$$i = US\ or\ Europe$$
$$\Delta = log\ change\ in\ Art\ Price\ Index$$

OLS regressions used quarterly annual log change of Art Price Index as the dependent variable, and GDP, stock index, wage, and rate as the independent variables. For each regression, the independent variables were run for both US and Europe. Specifically for US, US GDP, Russell 2000, medium usual weekly earnings (employed full time, over 16), and the 10 year treasury rate were used for the independent variables. For Europe, EU GDP, DAX, German pay rates on an hourly basis, and the 10 year German government bond yield were used as independent variables. For each OLS regression, I am using stock market index and wage has a proxy for income inequality. One way to measure changes of wealthy individuals' buying power is to look at stock market returns under the assumption that that equities are typically held more widely among the more affluent.[22] Author of *Talking Prices,* Olav Velthuis explains, "the art

[22] Goetzmann, William, Luc Renneboog, and Christophe Spaenjers. "Art and Money." National Bureau of Economic Research. NBER Working Paper No. 15502. November, 2009.

market is in the end benefiting from a less equal distribution of wealth," so as wealth gets concentrated to a small group of people at the top, and the number of billionaires continues to rise, price levels for art will also rise.[23] Each regression includes stock and wage to test for income inequality with the hypothesis being that as stock prices increase, art prices should have a positive correlation.

The first regression ran quarterly log change in art price index for each sector in the fine art market on US GDP, Russell 2000, US median wage, and the 10 year treasury rate.

| VARIABLES | (1) Old Masters | (2) 19th Century | (3) Modern | (4) Post War | (5) Contemporary |
|---|---|---|---|---|---|
| GDP_US | 0.0173 | 0.0234*** | 0.0179*** | 0.0115 | 0.0156 |
| | (0.0128) | (0.00882) | (0.00631) | (0.00872) | (0.0139) |
| RU2000 | 3.71e-06 | -2.63e-06 | 5.41e-06 | 8.40e-06 | 7.18e-06 |
| | (1.10e-05) | (7.57e-06) | (5.41e-06) | (7.48e-06) | (1.19e-05) |
| Wage_US | -0.000134 | -0.000108* | -4.01e-05 | -3.92e-05 | 2.06e-05 |
| | (8.86e-05) | (6.11e-05) | (4.37e-05) | (6.04e-05) | (9.60e-05) |
| Rate_US | -1.88e-06 | 8.23e-06 | 5.43e-06 | 8.75e-06 | 8.23e-06 |
| | (8.45e-06) | (5.82e-06) | (4.16e-06) | (5.76e-06) | (9.16e-06) |
| Constant | -0.0128 | -0.0156** | -0.00921* | 0.000740 | -0.00246 |
| | (0.0104) | (0.00714) | (0.00510) | (0.00706) | (0.0112) |
| Observations | 83 | 83 | 83 | 83 | 83 |
| R-squared | 0.066 | 0.155 | 0.200 | 0.138 | 0.053 |

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

The results of the log change in art price index for each sector in the fine art market on US GDP show that 19th century and modern art are statistically significant at the 1% level. When there is a 1% increase in US GDP, there is a 2.34% increase in 19th century art and a 1.79% increase in modern art. For each sector of art, there is a positive correlation with US GDP. US wage for 19th century art is also statistically significant at the 10% level. When there is a 1% increase in wage

[23] Adam, Georgina. Dark Side of the Boom: The Excesses of the Art Market in the 21st Century. London: Lund Humphries, 2018. 78.

for the US, there is a 0.011% decrease in 19th century art prices. Besides contemporary art, there is a negative correlation between US wage and old masters, 19th century, modern, and post-war art. The US 10 year treasury rate, has a positive correlation for 19th century, modern, post war, and contemporary art and a negative correlation for old masters. Each sector, besides 19th century, show a positive correlation with the Russell 2000. Modern art displays the highest r-square value compared to the other sectors of the fine art market.

For the next regression, I would like to compare quarterly log change in art price index for each sector in the fine art market to European GDP, DAX, German wage, and the 10 year German government bond yield.

| VARIABLES | (1)<br>Old Masters | (2)<br>19th Century | (3)<br>Modern | (4)<br>Post War | (5)<br>Contemporary |
|---|---|---|---|---|---|
| GDPEU | -0.00107 | 0.00272* | 0.00270** | 0.00381*** | 0.00195 |
| | (0.00222) | (0.00157) | (0.00106) | (0.00140) | (0.00241) |
| DAX | 0.000186** | 5.04e-06 | 3.91e-05 | 2.16e-05 | 7.29e-05 |
| | (8.75e-05) | (6.20e-05) | (4.20e-05) | (5.52e-05) | (9.49e-05) |
| Wage_EU | 8.48e-05 | 1.35e-05 | -0.000795** | -0.00137*** | -0.000447 |
| | (0.000722) | (0.000512) | (0.000346) | (0.000456) | (0.000784) |
| Rate_EU | 8.34e-05* | 6.48e-05** | 5.39e-05** | 6.22e-05** | 7.22e-05 |
| | (4.58e-05) | (3.25e-05) | (2.20e-05) | (2.89e-05) | (4.98e-05) |
| Constant | -0.0275* | -0.0319*** | -0.0237*** | -0.0219** | -0.0203 |
| | (0.0156) | (0.0110) | (0.00746) | (0.00982) | (0.0169) |
| Observations | 82 | 82 | 82 | 82 | 82 |
| R-squared | 0.089 | 0.111 | 0.260 | 0.266 | 0.065 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The regression results above show when using European GDP, 19th century, modern, and post war art are statistically significant. 19th century art is statistically significant at the 10% level, a 1% increase in EU GDP leads to a 0.272% increase in 19th century art. Modern art is significant at the 5% level, a 1% increase in EU GDP leads to a 0.270% increase in modern art prices. Post-war art experiences statistical significance at the 1% level, a 1% increase in EU GDP increases post-war art by 0.381%. EU wage is statistically significant for modern art at the 5% level and post-war art at the 1% level. A 1% increase in wage, decreases modern art by 0.0795% and a 1% increase in wage, decreases post-war art by 0.137%. The German 10 year government bond yield is statistically significant at the 1% level for 19th century and modern art, statistically significant at the 5% level for post-war, and statistically significant at the 10% level for old masters. The DAX has a positive correlation for each sector of art and is statistically significant at the 5% level for old masters. A 1% level increase in the DAX leads to a 0.082% increase in old masters. When analyzing each sector of the fine art market, 19th century, modern, and post-war art relative to old masters and contemporary art have the highest r-squared values.

After analyzing the sectors in the fine art market, I was curious to see which mediums of art generate the largest effects when tested against GDP, stock market index, wage, and rate. The regression below displays the log change in art price index for mediums within the fine art market.

| VARIABLES | (1) Painting | (2) Print | (3) Sculpture | (4) Photograph | (5) Drawing |
|---|---|---|---|---|---|
| GDP_US | 0.0195*** | 0.0198*** | 0.0174** | 0.0155 | 0.00418 |
| | (0.00625) | (0.00630) | (0.00766) | (0.0130) | (0.0130) |
| RU2000 | 5.87e-06 | 6.20e-06 | 7.98e-06 | 7.33e-06 | 9.01e-06 |
| | (5.36e-06) | (5.41e-06) | (6.57e-06) | (1.11e-05) | (1.11e-05) |
| Wage_US | -5.73e-05 | -5.04e-05 | -4.87e-05 | -0.000215** | -0.000114 |
| | (4.33e-05) | (4.36e-05) | (5.30e-05) | (8.99e-05) | (8.97e-05) |
| Rate_US | 5.40e-06 | 5.22e-06 | 9.33e-06* | 3.12e-06 | 6.29e-06 |
| | (4.13e-06) | (4.16e-06) | (5.06e-06) | (8.57e-06) | (8.56e-06) |
| Constant | -0.00888* | -0.00919* | -0.00783 | -0.00423 | 0.00499 |
| | (0.00506) | (0.00510) | (0.00620) | (0.0105) | (0.0105) |
| Observations | 83 | 83 | 83 | 83 | 83 |
| R-squared | 0.236 | 0.232 | 0.214 | 0.127 | 0.069 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The regression results show US GDP is statistically significant at the 1% level for painting and print, and statistically significant at the 5% level for sculpture. When there is a 1% increase in US GDP, painting increases by 1.95% and print increases by 1.98%. When US GDP increases by 1%, sculpture increases by 7.14%. Photograph is statistically significant at the 5% level, so when US wage increases by 1%, photograph decreases by 0.0215%. Wage and photograph are negatively correlated.

The next regression analyzes the fine art mediums against European GDP, DAX, EU wage, and the 10 year German government bond yield.

| VARIABLES | (1) Painting | (2) Print | (3) Sculpture | (4) Photograph | (5) Drawing |
|---|---|---|---|---|---|
| GDPEU | 0.00300*** | 0.00298*** | 0.00358*** | 0.00512** | 0.00101 |
| | (0.00106) | (0.00107) | (0.00128) | (0.00214) | (0.00225) |
| DAX | 4.30e-05 | 4.06e-05 | 7.63e-05 | 7.43e-05 | 9.73e-05 |
| | (4.18e-05) | (4.22e-05) | (5.04e-05) | (8.43e-05) | (8.85e-05) |
| Wage_EU | -0.000556 | -0.000595* | -0.000817* | -0.00173** | -0.000767 |
| | (0.000345) | (0.000348) | (0.000416) | (0.000696) | (0.000731) |
| Rate_EU | 6.19e-05*** | 6.19e-05*** | 6.13e-05** | 7.11e-05 | 8.71e-05* |
| | (2.19e-05) | (2.21e-05) | (2.64e-05) | (4.42e-05) | (4.64e-05) |
| Constant | -0.0257*** | -0.0256*** | -0.0280*** | -0.0338** | -0.0225 |
| | (0.00743) | (0.00750) | (0.00897) | (0.0150) | (0.0157) |
| Observations | 82 | 82 | 82 | 82 | 82 |
| R-squared | 0.279 | 0.275 | 0.288 | 0.225 | 0.092 |

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Painting, print, and sculpture are statistically significant at the 1% level, while photograph is statistically significant at the 5% level. Painting and print display very similar results. When EU GDP increases by 1%, painting increases by 0.300% and print increases by 0.298%. Sculpture increases by 0.004% for every 1% increase in EU GDP, and photograph increases by 0.512% for every 1% increase. Across all mediums in the fine art market, wage is negatively correlated with each and is statistically significant at the 10% level for print and sculpture, and statistically significant at the 5% level for photograph. EU GDP, DAX, and rate have a positive correlation for each medium in the fine art market. The 10 year German bond yield is statistically significant for painting and print at the 1% level, and statistically significant for sculpture at the 5% level. Unlike the United States, European wage and rate proved to have more statistical significance than wage or rate in the US. The model with European dependent variables had slightly higher r-squared values compared to the US.

## Conclusion

The valuation of art is subjective in nature as buyer taste ultimately dictates the price of a piece at auction. However, the health of ones economy and perceived wealth will aide in the decision on where one exactly spends their money in the art market, whether it be a contemporary piece or an old master, painting or sculpture. Economic growth and increased wealth at the top end has created a larger circle of buyers in the art market, thus when the economy is doing well, collectors tend to lean towards purchasing post-war or contemporary art over 19th century or old masters. Post-war and contemporary art are considered to be riskier investments compared to modern, 19th century, and old master art. The volatility found in post-war and contemporary art prices can be linked to the phenomenon that taste in these markets go quickly in and out of fashion, especially for the contemporary art sector.[24] This is because contemporary artist's are still developing their style and their talent is still evolving. Modern, 19th century, and old masters are less volatile because artists in these sectors have established reputations.

[24] Adam, Georgina. Dark Side of the Boom: The Excesses of the Art Market in the 21st Century. London: Lund Humphries, 2018. 138.

When analyzing the affects of economic growth and income inequality in the fine art market, for both sector and medium, economic growth in the United States display larger effects on art prices than Europe. In general, economic growth and art prices have a positive correlation. As for income inequality, the Russell 2000 and wage in the US did not prove to be as significant as the DAX and German wage. In 2017, North America and Europe accounted for 64% of the world's wealth and only 17% of the population, the strong base of wealth, especially in the US, has helped maintain a healthy and growing market for art.[25] Although, I used a stock market index and wage as a proxy for estimating individual wealth, I believe my regression results would have been more accurate if I could have found data on High Net Worth Individuals to truly assess income inequality on art prices.

From my analysis, GDP and a stock market index whether in the United States or Europe had a positive correlation across all sectors and mediums, except for European GDP on old masters which exhibited a negative correlation. As economies grow and the number of High Net Worth Individuals increase, I predict the fine art market will continue to expand in value and art prices for each sector and medium will increase accordingly.

[25] McAndrew, Clare. *The Art Market 2018.* Art Basel and UBS Global. 2018.

**References**

Adam, Georgina. Dark Side of the Boom: The Excesses of the Art Market in the 21st Century. London: Lund Humphries, 2018.

Adam, Georgina. Big Bucks the Explosion of the Art Market in the Twenty-first Century. Farnham: Lund Humphries, 2014.

Anderson, Robert C., "Paintings as Investment", Economic Inquiry, March 1974, 12, 13-26 https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1465-7295.1974.tb00223.x

Baumol, William. "Unnatural Value: or Art Investment as a Floating Crap Game", American Economic Review, May 1986 (Papers and Proceedings), 76, 10-14. https://www.nber.org/papers/w15502.pdf

Ekelund, Robert B., John D. Jackson, and Robert D. Tollison. The Economics of American Art: Issues, Artists, and Market Institutions. New York: Oxford University Press, 2017.

Findlay, Michael. The Value of Art: Money, Power, Beauty. Munich: Prestel, 2014.

Goetzmann, William, Luc Renneboog, and Christophe Spaenjers. "Art and Money." National Bureau of Economic Research. NBER Working Paper No. 15502. November, 2009.

McAndrew, Clare. The Art Market 2018. Art Basel and UBS Global. 2018.

Metcalf, Stephen. The Enigma of the Man Behind the $110 Million Painting. The Atlantic. July 06, 2018. Accessed December 06, 2018. https://www.theatlantic.com/magazine/archive/2018/07/jean-michel-basquiat-artist-or-celebrity/561728/

Schultheis, Franz, Erwin Single, Stephan Egger, Thomas Mazzurana, and James Fearns. When Art Meets Money: Encounters at the Art Basel. Köln: Verlag Der Buchhandlung Walther König, 2016.

Schönfeld, Susanne, and Andreas Reinstaller. "The Effects of Gallery and Artist Reputation on Prices in the Primary Market for Art: A Note." Journal of Cultural Economics: 144-53. doi:10.1007/s10824-007-9031-1.

Taylor, Mark. "Financialization of Art" (January 28, 2013). Capitalism and Society, Vol. 6, Issue 2, Article 3, 2011. Available at SSRN: https://ssrn.com/abstract=2208046

Thompson, Don. The $12 Million Stuffed Shark: The Curious Economics of Contemporary Art. Palgrave Macmillan, 2008.