Interview

Finance and Society
2016, 2(2): 151-67
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10.2218/finsoc.v2i2.1728

Plotting the art market: An interview with Clare McAndrew

Clare McAndrew
Arts Economics, UK

Suhail Malik
Goldsmiths, University of London, UK

Gerald Nestler
Artist and independent researcher, Austria

Abstract

Clare McAndrew is a leading analyst of the global art market. Here the guest editors of this special issue interview McAndrew on the structures of the art market, its sectorial and regional arrangements, and transformations in its historical, technical, and monetary operation. Their discussion highlights the rapid increase in prices for art and the global extension of the art market since the early-to-mid 2000s, as well as further changes to its operation wrought by the rise of online trading in the early 2010s.

Keywords

Art market, alternative asset class, auctions, market models, online art sales, valuation

Suhail Malik (SM)/Gerald Nestler (GN): To begin, could you say how your career began and developed? How did you become professionally involved with analyzing the art market and its players? And what motivated you to change from being an academic to developing a business in this field?

Clare McAndrew (CM): My interest in the art market started at an early post-graduate level. My doctoral thesis was based on an extension of Jan Tinbergen's (1962) gravity model of international trade. This model, inspired by Newton's Law of Gravity, looked at bilateral trade

Corresponding author:
Suhail Malik, Department of Art, Goldsmiths, University of London, Lewisham Way, London SE14 6NW, UK.
Email: s.malik@gold.ac.uk

https://doi.org/10.2218/finsoc.v2i2.1728 Published online by Cambridge University Press

flows and what draws two countries to trade with each other: mass (GDP) and the distance between them. I was interested in considering how this applied to the international art trade. In this context, GDP per capita is critical to measuring the economic weight of trade, and distance includes cultural proximity, with things like a common language and historical cultural links making countries 'closer'. My main contribution was adding in the regulatory perspective – how things like import VAT, export restrictions, artists' resale royalties and tax incentives affect the art trade. This background gave me a very keen interest in policy related to the art market, and got me involved in working externally on projects for the Arts Council of England and others which aimed at analyzing artists' careers and how they might be improved or otherwise with policy measures.

At that time, as now, there were relatively few economists working in the visual arts outside of academia. There was a strong network of academics via the Association of Cultural Economists International, but for most, research on the arts was a sideline from their mainstream interests. Through my efforts scouring for data during my PhD research I had been in touch with virtually every company that produced or used art data. Through these interactions and some consulting work I had been engaged in, I was offered a role in the United States (US) as the Chief Economist at Kusin and Company, which was a small boutique investment firm working exclusively in the art market. At Kusin we carried out economic research and analysis for institutions, art funds, art fairs, auction houses and others.

During this period I also initiated some research work with Rex Thompson at the Cox School of Business at Southern Methodist University, Texas. We had been looking at basic return data in art and other markets, but the most promising area in terms of investment considerations seemed to be the risk metrics. There had been many papers on returns and various indices derived from them using standard techniques such as hedonics and repeat sales regressions,[1] so our first efforts concentrated on the other side of the investment decision, focusing on risk and, in particular, how we might measure things like credit risk and how a financial institution might underwrite art as collateral for a loan. One area we examined was how the buy-in option at auctions critically affects downside risk assessment, and how it had been perhaps overly optimistic to only consider successful sales when indexing the market and in Value-at-Risk (VaR) analysis.

It was common for banks to lend to wealthy clients using their homes or other tangible assets as collateral, but they generally avoided lending on art works, which were seen as difficult to value or traded in too volatile or risky a marketplace (although this had never been quantified). But around this time (2000-2005) there had been renewed interest in the idea of art-based lending, especially as High Net Worth Individuals (HNWIs) were looking for different ways to finance investing and divesting after the dot com crash at the turn of the century and high profile corporate scandals like Enron.[2] I think many investors were looking for alternative, less volatile investments, and ways to reduce risk in their overall asset portfolios. Many HNWIs were asset rich but cash poor, and hence interested in ways to leverage their assets to maintain and advance their net worth. Some institutions were offering the service for creditworthy clients, but there was no systematic process in place for underwriting art and loan amounts and advance rates were based around tradition, reference to other types of lending, or character assessments. The art trade itself also had virtually no form of trade financing, leading to liquidity problems for many dealers who could not access inventory financing. At the same time, companies such as Artnet, Artprice, and Artfact, which had been established in the late 1980s, started to offer easy access to an increasing range of price data in the auction market, enticing and enabling individuals and companies such as Kusin to look in more depth at the properties of art as a financial asset. We developed a model for

https://doi.org/10.2218/finsoc.v2i2.1728 Published online by Cambridge University Press

assessing VaR for art, incorporating buy-ins and the downside risks in the context of loans, and tested it on a couple of sets of data in different art sectors. While these models could provide valuable tools for lenders, as is the case in many areas of the art market, practice lags or sidesteps the developments in theory, and the prevailing commercial reality seems to still be a preference for rules of thumb and tradition.

After four years in the US I returned to Europe and there were absolutely no jobs available in my area. Determined not to give up on this market that I had become so fascinated with, I went about setting up my own firm offering economic research services in the art market, and carving out a career where one did not really exist. I set up Arts Economics in 2005 to focus my efforts on art market research and analysis, and I now work with a network of private consultants and academics in providing research and consulting services to the global art trade and financial sector. We do mainly macro-level research, largely for institutional clients (art fairs, auction houses, foundations, dealer associations and other institutions), as these are really the main bodies with budgets for research and an appreciation of its value.

SM/GN: Is the movement of your own career path indicative of broader transformations in art markets over the same period?

CM: The development of my professional career has been enabled in part by the increasing transparency of the market and the availability of data. However, while there has been a lot of progress in some areas, such as the availability of public auction data online, the market has also regressed in other areas since I began working professionally. For example, new online auction companies for the most part publish limited or no results, and there are continuing challenges assessing the dominant private sector of the market (which accounted for 53% of total sales in 2015). Because of the importance of private sales, I rely heavily on surveys, sentiment testing and other qualitative research methods (alongside quantitative analysis). I have also increasingly embraced the importance of more subjective art expertise, which is quite different than when I began at Kusin, where I believed that quants, data and econometric modelling could solve most of the problems in the art market.

There are still relatively few economists working in this area professionally, but there has been a big increase in consultants of all kinds connected to the art market. In the past, art buyers generally relied on dealers, museum curators or their own personal tastes to guide them. Now art advisors and consultants have sprung up to offer a range of services. Art consultants have not only grown in number, but also in terms of the services they provide, ranging from the more traditional artistic advice (such as what paintings to buy and how to access them) to offering specialised tax, legal and financial advice, as well as investment services.

SM/GN: What is the role of investment consultancy in the growth of the art market? Investment consultancy is a huge and important sector for channeling financial capital, but it is only recently that art has become a focus for luxury-based investment strategies (as an alternative asset class or investment pool) and accepted as collateral by banks.

CM: Collectors value the independence of consultants and their ability to provide more impartial advice on quality and value than traditional vendors with interests in the sale. The growth of art advisors has also moved in tandem with the increased size of the market and the spending budgets of collectors. However, I have found that there is a great variation in the quality of consultants. With no professional framework, qualifications or vetting, you can get

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really under-qualified people controlling large sums of money on behalf of wealthy clients, so this development has certainly also had its drawbacks.

Buyers in other investment markets would not approach any major purchase without a team of highly vetted and professional advisors. In the art market, however, it has been common for buyers to rely on reputation, personal judgement and opinion. Even in areas where forensics, science, legal and other due diligence are available, collectors have often deferred to promises and the opinions of advisors. Recent high profile lawsuits such as that of the Knoedler Gallery, which sold an estimated $60 million worth of fake Abstract Expressionist paintings to reasonably sophisticated art collectors, have highlighted the dangers of relying on even very well established advice and reputations, and have pushed the duty to investigate provenance and authenticity back on to the buyer.

While there are increasingly sophisticated methods to help establish the authenticity of artworks, many collectors also use advisors as they are wary of relying on their own tastes when purchasing art. For goods that are purchased and consumed regularly and about which there is abundant and publicly available information, it is easy for consumers to recognize a product's quality and utility and essentially rely on their own taste to drive purchasing decisions. As art is a luxury good, however, many buyers do not enter the market until they have reached a certain level of wealth, and even then, they buy art relatively infrequently, so have often not built up a great deal of experience in the process or confidence in their decision-making. So while intuitively personal tastes and preferences are on the one hand central to driving the purchase of art, at the high end of the market particularly, many buyers are very reticent or lack confidence in their own taste for art. Because of this they either have to face devoting significant amounts of time and effort to researching the market (and the value or opportunity cost of their time has often increased with their increasing wealth), or they rely on experts already in the art market, who are pivotal in forming and shaping the current public taste for art.

SM/GN: Does this reliance lead to a concentration of the market, and a concomitant narrowing of visibility of artists?

CM: This is a very real issue in the market at present and there is an intense focus on a very small number of artists at the high end, which has driven up their prices, while creating higher barriers to entry for new artists and a winner-take-all type market scenario. One way to reduce the search and information costs for those buyers unfamiliar with the market is to only purchase well-recognized works or those by famous artists. By doing so, the buyer is relying on the established preferences of previously successful buyers or other agents who have already purchased an artists' works or publicly lauded their creative talent, hence reducing their risks and insecurities about relying on their own taste in making the right choice. Collectively these risk-reducing techniques tend to reinforce the 'superstar phenomenon' in the art market, whereby the works of the most famous artists (living or dead) are demanded the most and achieve by far the highest prices in the market, while emerging artists face ever higher hurdles in gaining entry.

American economist Sherwin Rosen (1981) pioneered the study of the economics of superstars and believed that some superstar artists or 'masters' reached their position justly because they were more talented, but the differences in their talent versus those less successful was much less than the differences in success. He felt also that some were in fact no more talented than their less-recognized peers, but their greater success was driven by the need of consumers for common tastes and culture or to 'consume as others are consuming'.

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The problem associated with the superstar ethos in the art market is not just that it drives up prices, but also that it can deprive other artists of the opportunity to work by concentrating demand on just a few successful artists.

Alongside this issue, as nearly all that the mainstream media reports on, are the multi-million dollar sums paid for a small number of mostly Modern and Contemporary artists. New buyers are led to believe that the art market is out of their reach, and that you can only get a quality work of art if you have a budget of over $1 million, when in fact there are still many other less publicized artists and works available at much lower prices. The reality is that despite the attention given to the top end, most transactions in the art market are at much lower prices. For example in 2015, 90% of the volume of fine art auction sales were for prices of less than $50,000, whereas less than 1% were priced at over $1 million. This million-dollar plus segment, however, accounted for the majority (57%) of the value of the market and has been by far the fastest growing in the last ten years. While 'low end' sales (of works priced at less than $50,000) grew in nominal value by about 65% in the ten years between 2005 and 2015, the segment priced at over $1 million increased in value by over 400%. Even within that highest segment, the 'ultra-high' end (works sold for over $10 million) outperformed the rest, increasing by more than 1000% in ten years, and with a CAGR [Compound Annual Growth Rate] of 27% per annum, far outpacing all other segments and more than doubling rapidly growing commodities like gold. These sales of over $10 million were of works of a tiny fraction of artists selling at auction (just 0.1% in 2015 or around 80 artists worldwide), and this was the only value segment of the market that saw a rise in sales in 2015. This shows the polarized nature of the current market, with a very thin, value-dominant top end, where most strength in sales has been in recent years, making the market more susceptible to certain risks.

SM/GN: What do you perceive to be the key changes in the general structure of art market since the turn of the century?

CM: The first decade and a half of the twenty-first century saw possibly more changes in the art market than there had been for 100 years, and it has emerged as a very different global trading ground than it was 20 years ago. Some of the biggest changes have been in its size, its geographical distribution and the polarization of values at the top end and in Modern, Post-War and Contemporary art.

We have witnessed astonishing growth in sales values in the last 15 years. From 2000 through 2007 the whole market grew to nearly three times its initial size, reaching a historic peak at that time of just under $66 billion. Things began to turn in 2008 and 2009 however. The global economic downturn strongly affected income and personal wealth, and spending in most markets contracted, leading to a strong decline in consumption, especially in the US and Europe. Art fared relatively well during the downturn compared to other luxuries because of its long-term, tangible value. Nonetheless, few sectors of the art market were spared from the contraction in sales values and volumes during 2009. Global sales fell by 40% between 2007 and 2009, one of the biggest declines in the art market since its previous recession in the early 1990s. However, unlike the early '90s, when the market took nearly 15 years to regain its earlier level of sales, the global market bounced back strongly in 2010 and despite some ups and downs, reached its highest ever level of $68.2 billion in 2014.

It was perhaps not surprising that we saw some cooling in growth in 2015, and the market fell 7% annually to just under $64 billion. I think some of this slowdown was inevitable. As sales have reached a much higher level during the last ten years, it has become harder to

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maintain continued growth, particularly in a supply-limited market such as art. This has caused an unavoidable slowdown as some sectors struggled to keep up the pace. Another reason for the more subdued results has been the different performance regionally and by sector, with clear winners and losers emerging over the last few years. One of the best performing regions has been the US, which ran counter to trend, with a positive year of sales growth (of 4%) bringing the market to its highest ever level (of $27.3 billion). The biggest drag on growth was China which, after an unprecedented boom up to 2011, has seen several years of poor growth and experienced a very significant decline in 2015 (of 23%, to $19.5 billion). Europe, on the other hand, saw stagnant and patchy growth, and sales in the dominant UK market dropped 9% in 2015. While sales in the UK have performed better than most other European markets since 2009, the UK's recovery in sales since the market's contraction has been less than half that of US, and there is a growing perception of Europe generally as a costly and complex place to transact in the art market.

Despite this aggregate decline in 2015, the growth of the market from under $10 billion in the early 1990s to its current level is impressive, and by sheer size alone it is easy to see why it has sparked the interest of economists and the mainstream investment community. The art trade is big business.

SM/GN: You've just mentioned some recent divergences between regional markets. What are the significant changes in the regional organization of art markets over the period?

CM: One of the key factors supporting the current size of the market is that it is now a truly global business, with sales of art literally all around the world. The global distribution of the art market has altered substantially since 2000. From the 1960s, when Paris lost is central position in the art market, the US has dominated sales alongside the UK. During the late 1980s and most of the 1990s, the US held a majority share of the value of sales, with London and New York accounting for at least three-quarters of the market during those decades. One of the biggest changes came around 2004/2005 when China emerged as global player. From 2008, China has overtaken France as the third largest market worldwide by value, eroding the global share of the US to just over one third. By 2010, it was the second largest market ahead of the UK and then in 2011, albeit by a small margin, it was temporarily the biggest market in the world. China's art market had taken off on a huge boom around 2009, when the rest of the world was suffering in the fallout from the global financial crisis. This is an example of how a more global art market has really protected its downside, helping it bounce back much quicker than when it was so solely dominated by the US. It has made it more competitive internally though, and the gains to China and the US have to some extent been at the detriment of the European art market.

But it was the emergence of China as the leader in the global art market in 2011 that really emphasized one of the biggest transformations in the market over the last decade, namely the emergence of a number of new art markets in Asia, the Middle East, Russia and elsewhere, challenging the position of the US and Europe, which have dominated for over 50 years. While many of the other new markets have been more important for introducing buyers, China has been by far the most significant in terms of domestic sales. This is made all the more remarkable by the fact that until the death of Mao in 1976 it had been illegal to even own, inherit or exchange works of art in China, and the first auction houses were not even allowed to operate until the mid-1990s.

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SM/GN: What other significant changes have there recently been to the organization of the art market?

CM: A key development is the polarization of the market over the last few years at the top end, and particularly in the Modern, Post-War and Contemporary art sectors. In the last ten years, and particularly in the recovery of the market from 2009, the best performing part of the market has been the segment of works priced over $1 million, and within that segment, works over $10 million have far-outperformed others. It has become a very skewed marketplace where the majority of value is concentrated in a tiny proportion of sales. Much like the distribution of global wealth, the top 1% of transactions now accounts for the majority of sales values, and the focus of high end collectors is on a very narrow group of artists, most of which are in the Modern, Post-War and Contemporary sectors.

The market for Post-War and Contemporary art has grown phenomenally over the last 30 years from a tiny, precarious sector frequented only by the most avant-garde dealers and unconventional collectors, to by far the largest in the market by value and the most popular category for new and established art buyers. In the 1980s, the most valuable sectors of the global art market were Impressionist and Modern, while the Contemporary sector was small and perceived as high risk. Even the earliest investment-driven collectors such as the British Rail Pension Fund refused to invest in Contemporary or Modern art as they were seen as being too volatile (whereas now financially-motivated investors primarily look at these sectors for purchases and sales). During the 1990s, and particularly in the last ten years, the popularity of Post-War and Contemporary art has rocketed and prices have risen dramatically. It is now the largest sector of the art market, has been one of the fastest growing, and this has been where most of the multi-million dollar record prices have been in recent years.

SM/GN: Are these transformations related to the increasing concentration of wealth across the world since the late-1990s?

CM: The polarization of the art market does parallel what is happening in the wider economy, and the growing dislocation of the higher end has been supported by the changing international infrastructure of world wealth. The group of HNWIs and UHNWIs has continued to expand rapidly, and while this provides many positive outcomes and incentives in the art market and other industries, growing income inquality has raised concerns. Globalization has brought about a polarization of incomes in emerging and developing economies, while the global financial crisis has squeezed the middle classes in developed economies.

Estimates of the distribution of wealth in 2015 from Credit Suisse showed that around 70% of adults worldwide had personal wealth below $10,000, while millionaires (representing less than 1% adults) owned 45% of global wealth. The wealth owned by this top 1% has been growing the most rapidly and creating ever greater income inequality. The growth in average incomes of the middle classes in many mature regions has significantly fallen behind average incomes of the highest-income tiers, while any gains in aggregate wealth have shown an even more significant lag, with the financial crisis and property market collapse wiping out significant gains made by the middle class segment up to 2007 (much more than the highest tiers, which hold a greater share of their wealth in financial assets). The US data from The World Wealth and Income Database shows that the fastest growth in incomes has been in the very top segments. From 1980 to 2014, the growth in incomes in the top 10% has been a substantial 77%, but in the very highest 0.01% segment, it was 486%. This contrasts substantially with a fall in the average for the bottom 90% of -3%. In the more recent period

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from 2004 to 2014, average incomes in all of the upper segments grew by over 7%, whereas for the bottom 90% of the population it fell 7%. According to this data, the US has returned to levels of income inequality last experienced in the 1920s.

Rising income inequality has led to a change in spending patterns over time and introduced opportunities and incentives for businesses at both ends of the economic spectrum, especially in the luxury industries. In the economy generally, increasing wealth inequality can have both growth promoting and growth inhibiting effects, as well as inducing more specific changes in spending patterns over time, particularly in industries like art and other luxury goods. Undoubtedly more income available to upper income households has helped to support the art market over the last five years and to keep prices buoyant in sectors like Modern and Contemporary art. But it has also created a narrow market (by value), where much of the successful performance of the last five years has been concentrated in the top end, exposing the market to certain risks limitations.

SM/GN: Could you elaborate further on the possible consequences of this concentration of wealth for the art market? How do these changes connect with the broader concerns you've just introduced?

CM: Income inequality influences the mix of goods people buy, and in particular the balance between luxuries and necessities. While the general implication is that most people buy and consume a greater share of luxuries as incomes rise, the shares of the very top and very bottom percentiles have often varied the least. A greater share of income in the top few deciles would therefore be a potentially more positive trend for the art market than the increasing share of the top 1% or less. As noted, the spending of this top 1% has been critical for the development of art markets in many regions: in emerging markets such as the BRIC regions, increasing prices for art and the value of art sales have been driven by a tiny share of the nation's populations. However, there are limits to the extent of the development and depth of the markets in these regions unless more middle class and upper middle class consumers enter the market and start to purchase art.

But while the group of buyers at the high end of the art market *is* increasingly narrow, with a subsequent focus also on a limited range of artists, some fear that this concentration of value in a small segment of the market puts it at risk of becoming increasingly polarized by creating prices out of tune with values elsewhere. Alongside this has been a rise in status-seeking and competitive consumption by some of the highest earning newer collectors in the art market, which has increased this over-narrow focus and created a false hierarchy of prices. As art is now a luxury good, these collectors not only derive enjoyment from its aesthetic qualities, but also from the signal of wealth and cultural status that owning a high end piece of art transmits. Thorstein Veblen described the concept of conspicuous consumption in his treatise *The Theory of the Leisure Class* (2009 [1899]). This presented the prospect of the consumption and ownership of certain goods being used to communicate (superior) economic social status. People purchase highly priced luxury goods to publicly display or signal economic power – via their income and wealth level – as a means of attaining or maintaining a given social status. Because of this function, purchases yield incremental utility when their prices are higher (which ties into the concept of art as a Veblen good – a good with an upward sloping demand curve – where consumers want more, the more expensive it is). And it is this mix of financial and non-financial returns to ownership that have made works of art so compelling to purchase and at the same time difficult to value.

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SM/GN: What financial methodologies and instruments or sectorial pressures enabled the broad transformations to the markets you've just outlined?

CM: I'm not really sure that any methodologies or instruments have had this effect. The enhanced transparency of the art market has certainly allowed us to track and analyze the changes, through access to data (in some sectors), but most of the big transformations have been driven by broader economic influences (such as the changing distribution of global wealth just mentioned) and things like enhanced global reach through the online channel, as well as things as hard to measure as changes in fashion and tastes. You could say that the assessment of risk and returns, however imperfect, has encouraged greater participation by investive collectors, which has increased the market's size, but I do not believe these collectors dominate the market even now. Some newer market entrants, particularly the Chinese, seem to have been more willing to embrace the concept of art as an investable asset than those in the West, which may have enhanced the global spread of art sales. In the case of China (which has had an overheated property market in recent years, as well as an under-developed bond market and volatile equity markets) a low range of alternative investments, combined with a currency that is not fully convertible, has supported a significant interest in art and antiques. But even as this market has slowed over the last three years, many of the more speculative investors have left the market. The anti-graft campaign and reporting on potential manipulation of prices and illicit practices in the art market, along with the poor performance of many of the art funds launched in China during the market's boom, has also deterred some of the more investive collectors in the market. There were over 70 art funds in the market when it peaked in 2011. Last year, however, the number dropped to around 50, including those investing in art businesses, online ventures and other related companies, with less than 20 specializing solely in the purchase and sale of art and antiques.

Many of the unsuccessful funds in China failed due to their pursuit of unreasonably short maturities, with a typical range of one to three years, making their strategies both limited and risky given the liquidity issues in the market, compounded by an abnormally high rate of buy-ins in the auction market. It was not uncommon for these funds to require an 18-20% return to break even or deliver returns to collectors, which was only possible to do when the market was booming and hence extremely difficult to do after 2012. Outside China and more generally, however, the development of art funds and the activities of institutional and individual investors has helped to legitimize art an investable commodity. But art as an asset class poses a number of issues for investors. It trades on a very thin and very slow moving market, which still makes it difficult to divest in the short and medium term, and therefore it remains most suited to longer term investment approaches. There are dealers and advisors making short term trades based on huge amounts of inside knowledge and access. But they don't reflect the reality of 99.9% of people buying art. They are also buying and then promoting artists. They do affect some of the contemporary art sector, but I'm making a more general point here.

SM/GN: Let's turn to the details of how the art market is constructed. What distinguishes it from other, more regular markets – especially with regard to valuation?

CM: Valuation on the art market is difficult and all of its indices in the art market suffer flaws. Those based on average prices fail to overcome the problem of heterogeneity inherent in the asset class. Hedonic indices are susceptible to modeling issues and repeat sales often require such a long time frame that they become irrelevant for practical decision making, while also ignoring all the valuable information inherent in single sales.

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From as early as the mid-1970s, academics have tried to consider the question of whether art is a viable investment asset, comparing returns to art with returns to financial indices. Several papers have looked into returns on investing in art and the conclusions have varied widely, from indices showing negative real returns to returns of over 50%. Much of the variation is due to measurement differences (and the sectors and time periods chosen) which has left the question largely unresolved as to whether art generally under or out-performs other investments. While these papers have been useful academic exercises, few have offered practical guidance or methods that can be universally applied to buying and selling decisions in the art trade. A useful aspect of these indices has however been to show that certain sectors have a low correlation with broader financial markets in some periods, and the risk aspects of holding art in a portfolio of wealth have had appeal for many collectors and investors.

Another branch of art research that I have been more involved in has investigated the relationship between market prices for artworks and their presale estimates, which brings in periodic expert valuations in looking at prices over time. Most of the papers in this area looked at the average relationship between presale estimates and prices, so we have been interested in taking the next step in actually quantifying the risk surrounding presale estimates with particular attention to downside risk.

When I started looking at this area with Rex Thompson, we realized early on that we couldn't just look at auction sales relative to presale estimates to assess risk because of the buy-in feature I mentioned in the auction data. Presale high and low estimates are set above the reserve price at auction, and if bids don't pass the reserve price, works are 'bought-in'. This is critical in measuring downside risk. In order to buy a work, you must pay more than reserve price, but there are no guarantees it will sell above this in the future. In voluntary sales, people have a notion of what an asset is worth selling for and they don't have to sell below that, and this corresponds to the reserve price at auction, which acts like an internal valuation of what you'll take for it. Looking only at hammer prices therefore was only looking at successful sales or a truncated distribution. The features of unsuccessful sales or buy-ins were critical in measuring downside risk, as the real risk is not only that the work doesn't make the estimate, but that it doesn't sell at all.

Buy-ins are significant in the auction market and average anywhere between 5-30%, and have been as high as 55% or more in Chinese auctions. A key question was how to value these 'non-sales' as auction houses don't publish or indicate the sellers' reserve prices. When we investigated this at the time with the major houses there was a tendency for reserve prices to be set in a range of around 70-80% of the presale low estimate. A paper by Orley Ashenfleter and Kathryn Graddy (2003) used a random effects probit model to estimate the reserve price and came up with an estimate near 75% of the presale low. So we settled on a benchmark of around 75%.

In trying to model this relationship between prices and estimates our key variable was what we called a hammer ratio (HR), which very simply showed the deviations of the hammer prices from the mean presale estimated values. The downside risk associated with the sale of a work of art at auction is captured by the lower tail of the HR distribution, where values were less than 1, or the price turned out to be less than estimated.

SM/GN: Given these (and other) particularities of the art market, how are valuation models and practices set up in it?

CM: Standard practice in the analysis of Value-at-Risk (VaR) is to either examine the empirical

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frequency distribution of the left tail of the error distribution, or approximate that left tail with a theoretical distribution that smooths the frequencies you get from the data. We could have just gone ahead and superimposed a lognormal distribution over the left tail of the error distribution, maximizing the fit for all the hammer ratios below 1. But that would ignore the buy-in data. So what we did instead was to fit a lognormal to the right tail of hammer ratios, recognizing that censoring had taken place in the left, and then estimated the parameters of the log normal of the projected full sample of works representing the expected frequency of HRs that would have occurred if the bought-in works were sold without reserve.

Once we had the mean and the variance of this entire distribution, we could start looking at credit risk and measuring the downside risk of art as collateral. The two main elements of credit risk that any bank considers when making a loan are:

1. The default probability – i.e., the probability that the borrower will fail to service their loan obligations;

2. The loss given default or the coverage in default – i.e., the extent of the loss incurred in the event the borrower or counterparty defaults.

A key determinant of both is the amount and type of *collateral* pledged against a loan.

With art as collateral, however, the context of default occurs in a two stage process: first, when the borrower chooses or is forced to sell the art works to repay their loan (or 'liquidate their collateral'); and, second, once brought to market, if the sale of the work or collection does not raise sufficient funds to cover the amount of the loan. The probability of default is therefore the product of the following:

1. The probability that the borrower chooses to liquidate the portfolio at any given time;

2. The probability that the collateral pledged will fail to cover the loan amount.

The focus of the analysis we did was on the latter part of the default probability: the conditional probability of default given that the decision to monetize the portfolio had been made, which we called the 'probability of a collateral shortfall'. We asked things like what is the probability of a collateral shortfall for a fixed loan-to-value percentage (LTV) of say 60% (i.e., the probability that a loan of 60% of expert valuation would not be covered by an immediate sale of the loan portfolio). Or what is the loan-to-value percentage that could be lent while holding the probability of a shortfall at 1%. Or what percentage of the loan amount is expected to be lost if the portfolio is liquidated or the loss given default (LGD).

As it turned out, if you ignored buy-ins, the advance rates for art were not that far from those offered in property transactions, for example a LTV ratio of more than 70% with 5 uncorrelated works in the data set of French Impressionist works we tested. However, these rates became much more conservative, dropping to around 40%, when buy-ins were considered (and were as low as 20% in some cases based on one work of art). Given that the standard margin requirements for marketable securities allow loan amounts of 50% on single securities, property loan percentages are often around 80% of appraised values and loan practice on oil and gas properties is in the neighbourhood of 50-60% of proven reserves, it looks like art is a more risky venture for lending institutions than the traditional assets they lend on.

But before drawing too negative a conclusion, you have to bear in mind that the probabilities we were looking at were the loss characteristics given that the art portfolio is brought to market. As I mentioned earlier, the actual probability of a loss is the joint probability

https://doi.org/10.2218/finsoc.v2i2.1728 Published online by Cambridge University Press

of a shortfall and the decision to liquidate the portfolio. Some types of assets and borrowing arrangements create a high correspondence between the probability of an asset sale and the probability of loss given that the loan collateral is liquidated. This is usually the case where the value of loan collateral is easy to observe and measure beforehand. But with art lending, most of the loan risk is related to the accuracy of the experts' valuation beforehand. So, the probability of an asset sale is not as tightly linked to the probability of a collateral shortfall. And as long as the correlation is not perfect, the probability of a loss is potentially lower than the rates we came up with.

Overall, it did show that there are ways to effectively approach underwriting art and that advance rates for art should be more conservative than for other financial assets – and much more conservative than implied by just looking at successful prices.

SM/GN: Even if financialization has in some senses sanctioned more standardized forms of valuation, can quantitative measures adequately reproduce investment risks and potentials? You mentioned earlier the crucial role of experts and consultants in setting up trade dynamics in the art market. Do such experts revalorize subjective views and professional networks over price-based metrics?

CM: All of the metrics that have developed in the last decade or two in the art market are very useful, but I have probably come full circle regarding their practical application in guiding specific investment decisions. While indices and other analytics are critical in giving a broad indication of how the market is faring, as well as the relative performance of different sectors and artists, there is still nothing to replace the much more subjective art expertise that guides the choice of one work over another.

From my experience, most collectors are driven by a desire to collect art for its own sake and they are little interested in investment gains, with many averse to selling-on works they have purchased. However, there are some who buy art purely for investment and will divest and re-purchase over time in order to help make their collections work for them financially. Art buyers operate along a spectrum from pure collectors to pure speculators. Those at the speculative end will tend to be highly sensitive to price variations or their financial risk. Changes in the costs associated with buying, selling, storing or insuring art, as well as changes in regulations affecting the art market, such as taxation or export restrictions, can often shift their investment outlook and even drive speculators out of the market into alternative asset classes. Pure collectors, on the other hand, are (in theory) less concerned with changes in the value of art or risks related to its price and are less sensitive to selling costs and regulations, as their primary motivations are to buy and hold their collections regardless of the cost or value of doing so.

The marginal choice between buying art as an investment or purely for collecting will depend on an individual's preferences and financial means. However, arguably neither extreme is an optimal position. Liquidity in the art market is too low to enable the necessary investment tactics to make pure speculation profitable for most, while even collectors with the purest of aesthetic motivations would be highly imprudent not to consider some of the financial implications of their collections, at least to the extent that they might affect the value or tax treatment of other assets in their wealth portfolios, or even what they can bequeath to the next generation.

SM/GN: Two new business models have recently emerged in the art market: online art sale platforms and art flipping. Both have attracted attention from dealers and collectors as well as

https://doi.org/10.2218/finsoc.v2i2.1728 Published online by Cambridge University Press

the media. They share some features – art flipping, for example, makes extensive use of Instagram and Facebook – but they are nevertheless distinct business models. Online sales are already investigated and analyzed by investment companies (as in the Hiscox Online Art Trade Report, 2016). From your perspective, how are these developments influencing the art market and the production of art today? Will they change the art market fundamentally in the future?

CM: The Internet has revolutionized communications in the art sector, allowing art and information to be accessed continuously and globally. In particular, the e-commerce of art objects has gained significant momentum, creating increased convenience, efficiency and accessibility for both buyers and sellers, with much greater speed of transactions and wider global reach. And while the increased interest in e-commerce in the art market has been driven in part by the expanding global base of buyers, it is also largely driven by the expansion of technology and the increase in e-commerce in general, particularly in new emerging markets, and also the wider acceptance of e-commerce generally, with those who regularly purchase other goods online looking for the same ease in transacting in the art market. On the selling side, internet sales have lowered barriers to entry and have reduced the costs for accessing new and broader markets worldwide. There haven't been that many hugely successful online companies yet, but there is a growing number of companies all trying to make it work, driven in their efforts by the observation that e-commerce has transformed pretty much every other consumer-facing industry. Basically, no one wants to be caught snoozing while someone else re-invents the art world online.

Although there were online companies selling art as far back as the late 1990s, the period from 2010 to 2014 was the key period in the explosion of art e-commerce companies, with a surge of new entrants. High valuations and correspondingly more accessible funding in the tech sector, together with the rising importance of mobile technology, enticed both entrepreneurs and investors to try new things, including art-based platforms. Yet, despite the emergence of so many new companies, the level of sales is still relatively low compared to offline art sales. The survival of many online companies has therefore been dependent on significant injections of capital investment, which indicates, in some cases, both the continued confidence of some investors in the future of the space and, as yet, the lack of consistent or sufficient revenue streams by these new entrants.

An interesting new trend in the online space that began in 2014 was a consolidation of the competitive landscape, with Leon Black's acquisition of Artspace (2014), Demand Media's acquisition of Saatchi Art for $17 million (2014), and Christie's acquisition of Collectrium for $16 million (2015). 2015 also saw several rounds of refinancing of existing players (such as Paddle8 and Auctionata), but a relative shortage of noteworthy new entrants, aside from De-Pury.com. One might be led to wonder whether the frenzy of activity of the past few years surrounding the online art space might not have subsided or reached a plateau of maturity, without as much disruption to the traditional sectors having occurred as was anticipated by some.

'Disruption' and 'democratization' were the two most promised outcomes in the art market by many of the newly emerging online companies. However, for the most part, the majority of online players are just doing the same thing online that is already being done offline, with the new online channel complementing traditional offline channels. By making fine art and contemporary art more accessible to new audiences, there certainly has been a trend towards democratizing art. However, there has not been any significant signs of disruption, in the sense of a radical overturning of the incumbent offline art market. A reduced

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volume of innovation alongside consolidation and refinancing, the cooling of high growth emerging markets (especially China), and even the maturing of the technology boom, have all led some to believe that 'the burgeoning of the online art space', in terms of the proliferation of new companies, maybe slowing or has stopped.

SM/GN: How do these new trading platforms change the sociology and structure of the art market?

CM: The development of the online art space is very much themed towards the democratization of art, bridging the gap between the elite world of top collectors and the general public, and making art more accessible (a trend also visible offline with, for example, museum exhibitions increasingly seeking to appeal to a broader public audience, as opposed to merely to the art world *cognoscenti*). While the highest spending, top collectors of art may not need any alternatives to the top auction houses and galleries, for art buyers below this level, the online art space makes art more accessible, through online retailers, 3-P retail marketplaces, auction platforms or art on screens.

As mentioned earlier, companies such as Artsy, Paddle8 and others have valiantly attempted to find online business models which would disrupt the art world. However, most of the value in recent years in the offline market is generated at the top end of the market by leading auction houses and branded dealers. Companies such as Christie's, Sotheby's, Gagosian and others currently function as sales intermediaries, and have to date not required new 'meta-intermediaries' to broaden their reach online more than they already have on their own account. This has necessarily limited the size (in value terms) of the online market compared to the traditional offline market. Many companies have essentially become internet intermediaries to the existing intermediaries, and mainly at the lower ends of their markets. The value proposition of most of the current e-commerce companies in the art market is therefore centred on intermediating and bringing online efficiency (in transaction and the flow of information), transparency and liquidity to the offline art market.

The online market has also failed to rival sales via art fairs as an alternative to the traditional choice of gallery versus auction. It seems therefore that while the volume of works sold online is likely to grow considerably and become more competitive vis-à-vis offline sales, the online channel will remain a smaller channel for buying art compared to offline, in terms of value. While the online space has been very successful so far in capturing sales in the mid and lower segments of the market, the highest priced works still remain very much in the domain of offline auction houses and dealers. If these sales were ever to migrate online, the competitive impact of the online art space would be much more considerable than at present.

If you consider the high end segment of the art market, some of its main characteristics include: limited supply, with a small number of artists and works of art for sale at the highest prices; a small number of buyers, which are typically HNW and UHNW collectors and institutions; a small number of sellers (top-tier auction houses and branded dealers); and low volume, high value sales. The combined effect of these characteristics has been that, to date, there has been very little e-commerce by new companies in the highest priced segments of the art market. While the Internet is an increasingly useful tool in this segment for publicity and the dissemination of information, large, high-priced and infrequent purchases are widely accepted as not being well served by e-commerce, and they have not been targeted by most of the new online companies.

The key focus has been on the market for works priced at less than $100,000 and the majority of online sales are for less than $20,000. Despite the rising ceiling of prices paid

https://doi.org/10.2218/finsoc.v2i2.1728 Published online by Cambridge University Press

online in the last two years, it is generally accepted that, above a certain threshold, values are too high for e-commerce to work effectively, and that it works best for lower-value and hence lower-risk purchases.

SM/GN: Do online trading platforms also change the kind of art that is traded compared to what has been prominent in historical art markets? For example, has art been made part of the standard model of the luxury goods sector? Will works suitable to screen display do better than work that is best seen in person?

CM: The comparison to other online luxury sales is difficult as there are many reasons that online art sales differ from other luxury goods, and are likely to grow at a slower and less certain pace. In 2015, sales of art online were estimated conservatively to have reached $4.7 billion, or around 7% of global art and antiques sales by value (including online sales by traditional offline dealers and auction houses, plus estimates for online companies selling on their own account). Estimates for online sales growth in the luxury market as a whole have been set as high as over 20% per annum. The annual growth in this sector was just 7% year-on-year which, although lower than those forecasts, still represents a relatively strong result set against the backdrop of declining aggregate art sales. Many goods within the luxury market are purely consumables (with much more commodity-like characteristics than art) whereas art has the characteristics of both a consumption good and a financial asset at the same time, with investment considerations not apparent in other luxury items. For most luxury goods, the brand most relevant to consumers is the producer (for example Chanel or Louis Vuitton), while for art, the identity and branding of the seller is also highly important to value creation (for example Christie's and Sotheby's or Gagosian), which presents an additional obstacle, relative to the luxury market, for the e-commerce of art. The fact that art works are essentially unique and value is determined by aspects such as their condition and provenance also sets them apart from luxuries, which are, in many cases, newly manufactured goods.

The market is also limited in terms of supply because of scarcity and the fact that many artists selling on the market are dead. Even if works are in high demand, there is only ever going to be a limited number of total works available to sell (obviously for deceased artists, but also for contemporary artists in the short and medium term), and then, a much narrower amount available on the market at any particular point in time. The average cycle to market is 30-40 years, and supply on the dominant secondary market is often generated exogenously by distress sales or the famous 4 D's – death, divorce, disaster or debt. Art prices are therefore driven by scarcity value, the factor that increases their relative price based on their low or fixed supply (and not the usual costs of production, inputs, and so on). The highest priced lots really drive the market up and down, but it's very competitive between suppliers to access these works from vendors and get them to market. Furthermore, I think it's important to note that the Post-War and Contemporary artists driving the high end currently are predominantly not living/primary market artists. But even for living artists, although they are technically able to replenish the supply of their works to meet demand, there are limits on their abilities or desire to do that. We have seen the primary market react negatively several times to oversupply by emerging and well-established artists and its often the result of a dealer who failed to manage them from a long-term perspective, or an artist focusing on shorter-term financial goals.

Looking forward, there will hopefully continue to be more innovations in the sector. In the last three years some new players have begun to explore business models that would disrupt the mode of consumption of art, as opposed to merely seeking to intermediate and bring online efficiency to the market for buying and selling art objects. Flatscreen monitors and

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other screens are likely to become a more common way of consuming visual art, particularly for segments such as photographs and digital art. There are several practical reasons for their potential increase in popularity, such as the ability to rotate images on a wall by simply pushing a new image to a screen instead of having the burden of printing, framing and installing a new physical print. Important also is the rapid and continually improving display quality, with 4K screen resolutions already rivalling those of a 300 dpi. print.

A small number of companies have begun to explore a platform for the display of art on screens as opposed to traditional media and innovative new economic models this can allow, for example, streaming or subscription to art as a service as opposed to the purchase and ownership of art objects, drawing parallels to recent transformations in digital consumption in other industries such as music and film (via Netflix, Pandora, Spotify). These new companies provide a further level of democratization of art, as they are targeted at a mass-market audience, while leaving the traditional offline market to its own devices. The streaming of art as a service would not displace the collector spending on high-end art works or attempt to intermediate in transactions, as is currently the model of many online sellers, but rather act as a further layer, complementary to traditional art sales and to the popularization of contemporary art in general.

Clare McAndrew is managing director of Arts Economics, a private Dublin-based firm providing research-based analysis to the global art trade and financial sector. She is editor of *Fine Art and High Finance: Expert Advice on the Economics of Ownership* (Wiley, 2010), and since 2008 has produced an annual report on the macroeconomics of the global art market for the European Fine Art Foundation. She was recently commissioned by Art Basel to provide the Art Basel and UBS Global Art Market Report from 2017.

Notes

1. Average price indices pose problems in the art market because of the uniqueness of each artwork and their low turnover. Due to the market's heterogeneity, an average price increase during an apparent boom may be due to better quality paintings coming up for sale (and vice versa for contractions), so movements in an index of average prices may be based around movements in the quality of items offered rather than movements in prices for similar objects. Two main alternatives have therefore been put forward to try to deal with these issues, although each has its own set of drawbacks. Hedonic modelling, which is also commonly used in property markets, is a method that tries to homogenize the data to account for changes in the quality of artworks sold over time by subtracting from their price, the implicit price of as many of the works different and unique characteristics as possible. Through (subjectively) identifying all of the measurable and identifiable characteristics of the work that contribute to its valuation, such as its size, location of sale or artist's name, and then extracting these from the price, what is left is the pure time trend (and the influence of random elements) or a 'characteristic-free' index of art prices. Repeat sales indices also tackle the problem of heterogeneity by only looking at sales of identical paintings tracked over time, and hence overcoming some of the quality issues as an individual work is compared only with that same work in a paired sale. To be included, a work must have been re-sold during the period (thus excluding a large amount of possible auction transactions) and the method also assumes that the characteristics of works do not change over time.
2. High Net Worth Individuals (HNWIs) denotes individuals with at least $1 million in liquid financial assets. Ultra High Net Worth Individuals (UHNWIs) have investible assets of at least $30 million.

https://doi.org/10.2218/finsoc.v2i2.1728 Published online by Cambridge University Press

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