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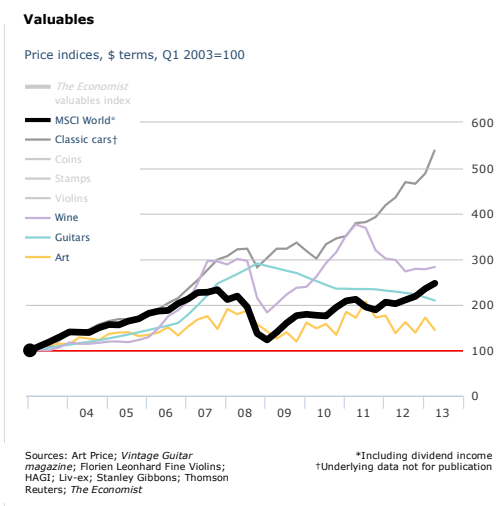
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### The Economist valuables index

# Fruits of passion

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Investing in luxury items can yield high returns. The risks are commensurate  
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THE 1957 Ferrari 250 GT 14-Lower Berlinetta is a beautiful car with a stunning price tag. One of just eight remaining examples was due to be auctioned at Pebble Beach Automotive Week in California on August 17th. It has a guide price of \$9m-11m, and could easily fetch more if previous auctions are a guide. An index of the 50 finest and most valuable Ferraris, Porsches and other marques compiled by the Historic Automobile Group increased by 53% in the two years to July 2013.

Vintage cars are not the only collectables for which prices are racing ahead. Price indices for vintage wine, fine art, rare stamps, precious coins and even classic guitars and violins have for the most part done well, too. *The Economist* has collated recognised indices for each of these assets to create a "valuables index". We have weighted each asset in the index according to rich individuals' holdings, as reported by the wealth-management arm of Barclays: 36% fine art, 25% classic cars, 17% coins, 10% wine and 6% stamps. Instruments are not reported by Barclays but we assume every self-respecting plutocrat has at least one vintage Gibson Les Paul on his wall: the final 6% is equally weighted between guitars and violins.

Our index has shot up by 211% in nominal terms since 2003 and by 54% since the first quarter of 2009. In comparison, the MSCI World, a rich-world stockmarket index, has increased by 147% since 2003, including income from dividends (see chart on next page). Funds are springing up to meet investor demand in everything from wine, the largest collectables market, to equine bloodstock. Stanley Gibbons, which has been publishing stamp catalogues since 1881, hopes to set up a £15m (\$23m) stamp fund this year. Anchorage Capital in London plans to launch a \$100m fund for classic guitars.

Comparisons between these exotic items and other assets can mislead, however. Philip Hoffman, the boss of the Fine Art Fund, which manages \$210m in assets for 100 clients in 23 countries, takes art indices with a pinch of salt since they only include auction sales, where prices tend to go up, and not the private sales where losses are quietly realised. "As a guide indices are useful but way off accurate," he says. His fund buys 90% of its art privately.

Whereas the cost of purchasing and owning equities is negligible, valuables have high transaction costs and need to be insured, stored and maintained. Funds charge hedge-fund-like fees. Illiquidity is another problem. Offloading something like a 1957 Ferrari is not easy, and most funds lock in investors' money for at least five years. Those wine funds that do allow quick redemptions invest in the most traded grapes, like Bordeaux.

At least investors can derive more enjoyment from owning valuables than they can from a framed share certificate. Art can be admired, and vintage cars can be driven—albeit carefully. Classic cars clock up only 80 miles (130km) a year on average, according to Hagerty, an insurer.

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# Credit to the lender

Rather than storing their prized instruments in a bank vault, investors should be loaning them to top players, says **Jonathan Moulds** – for the benefit of owner and musician alike

**MY PASSION, OUTSIDE OF MY** profession as an investment banker and my support for a number of philanthropic causes, is collecting, loaning and preserving great stringed instruments, in particular violins and violas. Over the past 15 years or so I have been fortunate enough to acquire a number of rare and well-preserved instruments. Many of these are lent to players of exceptional talent, each time with a specific goal: that the instruments may be heard not just in concert halls but also in settings such as schools and local communities, where the potential to inspire creativity through music is extraordinary. I ask all those musicians who play my instruments to share that goal. I am just as impressed by Nicola Benedetti's ability to articulate the importance of music education and be at the centre of many of the ongoing music debates as I am with her ability to play the violin.

While the significant majority of the instruments in my collection can be freely loaned out, there are some which, after taking advice, I have decided not to lend. These instruments have a great deal of original varnish that is especially fresh in appearance, and the instruments' interiors are practically as they were when they left the hands of Stradivari, Guarneri 'del Gesù' and other great makers. In these cases the argument to preserve outweighs the argument to have them played, in order that they can be enjoyed by future generations.

Clearly there is a compelling case for conserving some instruments, but something I find perplexing are those patrons who own great instruments and choose to store them inside a vault. This means they are never heard, and nor can they be used to help boost an exceptional performer's career. Unless it is for reasons of preservation, locking away great instruments means that a significant opportunity is squandered, and I would encourage all owners of fine instruments to consider whether



their asset could be used to help build and sustain a developing career.

**AS A BANKER** I have spent many years looking at investment performance, and to my knowledge top-end antique stringed instruments have historically out-performed almost all other asset classes. Given a long enough period of time, they may prove to outperform all other asset classes. Instrument dealers are at the centre of a great market – the opportunities are huge, both in existing markets like the US, Europe and parts of Asia, and also in emerging markets such as China, and the next ten years will be very interesting. Stringed instruments are without question worthy of serious consideration to potential investors, but I have learnt through my contact with many of the main dealers that a balanced, constructive and consistent assessment of these instruments requires more work. There are clearly variations in the level of expertise among stringed instrument dealers, and there are also differences in the quality of the information that is shared during a major instrument sale.

Anyone interested in buying an instrument needs to ask difficult questions, do their own research and develop a level of trust with the dealer.

Many times a week, musicians across the world ask me to lend them instruments. Given the steeply increasing prices top-end instruments regularly fetch at auction, it is becoming increasingly difficult for up-and-coming performers to access an instrument that reflects their talents. In such an environment the importance of the donor is obvious, and I can think of few other investments more rewarding than owning an instrument made by one of the great Italian makers, or one of the leading contemporary makers, and loaning it to the right individuals or ensembles. Once potential donors understand the benefits (and the economics) of allowing emerging talent to bring to life the instruments in their collection, it will make the conversation a little easier. Indeed, it should make it compelling. ■

*Jonathan Moulds is the principal sponsor of the 2015 London Symphony Orchestra International Violin Festival. Visit: <http://lso.co.uk/violinfestival>*



**Investing in a fund that buys remarkable, rare violins and cellos and then loans them to gifted musicians benefits the instrument itself, the players' careers - and even one's bank balance, says Claire Wrathall. Photograph by George Ong.**

**B**ack in 2002, a 12-year-old from Cheshire called Jennifer Pike was named BBC Young Musician of the Year. She won the competition playing the Mendelssohn Violin Concerto in E Minor on a Stradivarius borrowed from the Royal Academy of Music, one of an estimated 550 such instruments still in existence. Six years on (she's completed a postgraduate degree at the Guildhall School of Music & Drama), during which time she has performed as a soloist with a range of international orchestras across Europe, the Middle East and US, Pike plays a violin made in 1708 by Matteo Goffriller, the first important Venetian luthier, as violin-makers are properly known.

Goffriller may not be quite as celebrated as the Cremona-based Antonio Stradivari, and violins bearing his name may not have quite the pecuniary value – in 2006, a Stradivarius ("The Hammer") sold at Christie's, New York, for \$3.54m – but stringed instruments authentically inscribed "Matheus Goffriller fece in Venezia anno..." still command remarkable prices. A Goffriller the year before went for \$620,800.

If these prices seem high, then it is worth noting that the sums realised by instruments sold privately can be

steeper still. According to Stradivari Invest, a Danish organisation that strives to "facilitate investments in rare stringed instruments", a Stradivarius, "La Pucelle", as well as three Guarneri del Gesù violins, have recently fetched \$6m apiece. (Rarer even than "Strads", there are "only around 135 violins and one cello built by del Gesù", says its founder, Staffan Borseman.) While a Goffriller cello can command \$1.5m. As one dealer told me, "Unlike the art market, you don't tend to get the prime examples at auction, and you may risk getting a problematic instrument. It's usually much safer to buy through a reputable dealer because it's such a very small world, and dealers don't want to risk their reputations."

So how does an 18-year-old, barely out of school, have exclusive use of an instrument worth perhaps £300,000? Young virtuosos have always depended on patronage. Nicola Benedetti, who at 16 became BBC Young Musician of the Year two years after Pike, now plays the "Earl Spencer" Stradivarius (c1712), courtesy of Jonathan Moulds, Bank of America's president for Europe, the Middle East, Africa and Asia. Scan the biographical note in the programme at one of

# a second string to



Pike's concerts, however, and you'll see that her instrument belongs to "the Jennifer Pike Violin Trust established by Nigel Brown". Former chairman of the NW Brown Group, the Cambridge-based venture capitalist Brown – who now runs IQ Capital Partners and also runs musical instrument schemes through The Stradivari Trust – made his money in investment management and has long loved music (he is himself an amateur violinist and plays a copy of a del Gesù once owned by Paganini, known as "Il Canone"). Rather than simply acquire and lend instruments of the highest quality to outstanding young musicians, which would inevitably limit the number he could help, Brown – who has provided "grand" instruments to "24 or 25" string-players to date – applies a business model to his philanthropy.

As he explains: "A musician will usually come to me having fallen in love with an instrument. What I do is gather a group of people – professionals, the kind you would expect to see at chamber music concerts at the Wigmore Hall – prepared to put up the money and form a syndicate, rather like you would for a racehorse. We then set up a bare trust [which HMRC defines as "one in which each beneficiary has an immediate and absolute right to both capital and income"] and go out on the stump with a selling document that describes the instrument, the musician and what their need is and how the trust works, and try to find 'investors'."

He is, however, wary of talking about these trusts as a vehicle for investment – "you could fall foul of the Financial Services Act and I'm very keen for that not to happen" – preferring to describe the scheme as philanthropic. But, he adds, "The people who have put the money up have done reasonably

## Nigel Brown gathers "a group of people prepared to put up the money [for an instrument] and form a syndicate, rather like you would for a racehorse".

well." As have many of the musicians he has helped – among them the cellists Steven Isserlis (who now owns a 1740 Montagnana) and Natalie Clein (a 1777 Guadagnini), and the violinists Matthew Trusler (a 1711 Stradivarius) and Nigel Kennedy, for whom Brown acquired a 1707 Stradivarius, "La Cathédrale", in 1986 at a cost of £370,000. The idea was that Kennedy would buy back at least one-hundredth of the instrument each year at its current market value – a figure that is reassessed annually. "Then in the middle of 1990," says Brown, "the year the fine art market fell over big time, he decided he was doing well enough to buy the whole thing outright. By that time the instrument was worth £680,000 or thereabouts because the violin market wasn't affected like other parts of the fine art market." So the investor who had put up the original sum did rather well. As did Kennedy himself, who was then able to acquire a prized Guarneri del Gesù called "Lafont", which suited him better.

But what if a musician's career doesn't work out like Kennedy's? "We set up these trusts with a time period of between 10 and 20 years depending on the age of the individual," says Brown, who for all his profound knowledge of music and violins remains essentially a realist and a businessman. "When you get to the end of the period, if the musician hasn't made it, then the instrument is put on the market and sold, unless by going on

bended knee to the contributors the musician can persuade them to extend the life of the trust."

In Pike's case, Brown appeared as something of a white knight. She had been loaned the Goffriller that now belongs to Brown's trust by an individual, who had decided to sell it. Although the UK's foremost dealer and restorer of stringed instruments, John & Arthur Beare (winner of a Queen's Award for Enterprise this year, proof indeed that violin sales are big business) kindly lent her a Cagliano, it just wasn't the same. Pike and her father approached Brown, who first provided her with a prized bow, an 1870 Voirin that Yehudi Menuhin had used, before establishing a trust to buy the Goffriller. Three individuals put up the money for its purchase, but there are places for more in the syndicate, members of which Brown is still seeking. "She is a sensational musician," he says. "I think she could be quite something. And it is a huge treat to be able to help a musician, to see someone whom one has helped really blossom. The right instrument can really open out their playing."

In other words, this is a kind of philanthropy that in addition to the sense of pride and involvement brought by invitations to concerts, credits in programmes and on CDs and the sense that you are really making a difference to someone's art and career, can also make you money.

According to François Mann Quirici, formerly an investment banker with Lazard and now co-founder and business development director of a London-based violin investment fund, the Fine Violins Fund, "Prices of rare

Above: Jennifer Pike, 16, and her Goffriller violin, which is owned by the Jennifer Pike Violin Trust established by Nigel Brown.

18th century violins have been increasing steadily for 300 years. There is a scarcity value, with an average return of about 11 per cent, but with very low risk, which is about half the level of the public equity market."

Launched in August, the Fine Violins Fund – which has the backing of Natixis Private Banking International – has to date raised €20m out of a target figure of €60m, which it aims to spend on 50 instruments, 30 of which will then be loaned to musicians selected by the fund's board. The latter includes the cellist Julian Lloyd Webber (who plays the "Barjarsky" Stradivarius); Sir Curtis Price, former principal of the Royal Academy of Music, which itself owns a remarkable collection of more than 200 stringed instruments, 12 of them Stradivariuses; and the cultural historian Theodore Zeldin. The remainder of the instruments bought by the fund will be restored if necessary, and sold on. As its co-founder, Florian Leonhard, says: "The aim is to buy slightly under the full value of an instrument. That way we have the potential for growth." And if anyone is able to identify such instruments and, indeed, restore them, it ought to be Leonhard, who describes himself essentially as an "expert in violins" with a vast database based on 25 years' experience as a dealer, restorer, adviser to the likes of the virtuoso violinist Maxim Vengerov and the London Symphony Orchestra, and luthier. (His workshop makes about five new concert instruments a year.) Over the past eight years, his dealings have generated annual returns of 31 per cent. But, as he puts it, "This fund is going to be extra secure," which may limit the potential for such growth. "I wouldn't want to promise more than we were able to deliver."

That said, it is not just about the money. He stresses that this is one of the few funds that will not expect the musicians who use its instruments to have to pay their own insurance and maintenance costs. "The risks are very low," he says, "and the premiums are not so high. People take care of these instruments as though they were babies and protect them like their children." That's why, he says, on the very rare occasions a musician leaves a Goffillon on a train or a Stradivarius or Montagnana in a New York cab, as Robert Napier, Philip Quint and Yo-Yo Ma have all been guilty of, it makes international news.

To date, members of the Fine Violins Fund include "a couple of billionaires, a handful of high-net-worth individuals and a family company" (Leonhard properly won't name names) for whom the musicians they support perform private concerts. And their number may yet increase thanks to Heather Maizels, a director of the private bank Barclays Wealth, who introduced a number of her clients to the fund when she invited Leonhard to speak at a dinner she hosted last May. "We're always trying to find

## The Fine Violins Fund has a target figure of €60m, which it aims to spend on 50 instruments, 30 of which will be loaned to musicians selected by its board.

interesting ways for our clients to enjoy their wealth," she says, and from time to time, "we invite them to dine with us and meet other clients and guests who share their interests and concerns." On this occasion, the theme was music – "music in hospitals, music in prisons, music to reach the disadvantaged, nurturing new talent, increasing audiences and so on" – but also violin funds, for as the two points out, in addition to the opportunities a violin fund provides "to engage with young artists; to nurture the living partnership between player and instrument; and to leave a legacy beyond money," they may also "provide a potential financial return. Academic studies find that fine violins have outperformed most asset classes over the past 20 years for lower levels of risk."

As with the art market, the rise in the price of rare stringed instruments has to some extent been pushed up by interest from buyers in Russia, long a nation with a deep love of classical music, and China, where enthusiasm for the western classical repertoire is growing at speed. Unlike the art market, however, there's no sense that anything contemporary is ever going to outsell an old master.

(One of the reasons late 17th and early-18th century instruments have never been so successful is thought to be that they were made in the 300 years ago was cooler than it is today,



which meant that trees grew more slowly, resulting in wood that was denser and more resonant.) Though you can still buy a hand-crafted violin from a workshop in Cremona, where the luther industry continues to thrive (prices start at about €5,000 [about £4,000], €10,600 [about £8,400] for a cello; those curious to take a look can tour a workshop or luthier through [www.cremonatravel.com](http://www.cremonatravel.com)), the market for instruments from the time of Stradivari is more than just finite. It is potentially diminishing. As Steven Smith, a director of John & Arthur Beare, points out, "Every year we see some instruments that are damaged." Only last December, the German-American violin soloist David Garrett tripped down the steps as he came off the stage at London's Barbican. He landed on his 1772 Guadagnini (believed to be a pupil of Stradivari), causing about €60,000-worth of damage, despite the fact that it was in its case.

Perhaps it's accidents like this that cause collectors such as the Moscow-based lawyer Maxim Viktorov to see ownership of a rare and remarkable instrument as an end in itself. His trust, the Violin Art Foundation, owns more than 15 instruments, among them a Bergogni once owned by Paganini, for which he paid €568,000 in 2005. Last February, however, it bought a c1741 del Gesù, of which only about 150 exist. This one, which once belonged to Tsar

Nicholas I's court soloist, Henri Vieuxtemps, was sold for a reported record-breaking \$39m in a private sale by Sotheby's, London. His foundation, however, exists principally to stage competitions and fund recordings and scholarships, rather than provide musicians with long-term loans of great instruments. He is of the opinion that such violins should be touched only by true greatness. "I tried out the del Gesù a little in London before I bought it," he said at the time, before entrusting it for a one-off recital to the Israeli virtuoso Pinchas Zukerman. "But since then I haven't been able to touch it."

It will be a real shame if this particular violin languishes untouched. For the greatest reason to invest in an instrument of this calibre is surely the music that will be made on it and the pleasure that will give. In any case, as Florian Leonhard points out, "Use improves a violin because the constant vibrations make the wood more resonant." And it isn't only the violin itself that benefits from use. "A young musician can experience a step change in their career as a result of having a better instrument," says Nigel Brown. The instrument benefits, the player benefits, and, with any luck, the philanthro-investor will too. \*

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Above: **Florian Leonhard**, co-founder of the Fine Violins Fund, which he launched in August and has already raised €20m.

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# Fine violins as an alternative investment: Strings attached?

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## R.A.J. Campbell

completed her PhD on risk management in international financial markets at Erasmus University, Rotterdam in 2001. She currently works at the University of Maastricht as an assistant professor of finance. Her work has been published in a number of leading journals, including the *Journal of International Money and Finance*, *Journal of Banking and Finance*, *Financial Analysts Journal*, *Journal of Portfolio Management*, *Journal of Empirical Finance*, *Journal of Risk and Derivatives Weekly*. She teaches for Euromoney Financial Training on art investment and works as an independent economic advisor for The Fine Art Fund in London, and for Fine Art Wealth Management, UK. She currently is a member of the supervisory board of ARTESTATE GmbH, based in Germany.

**Abstract** The continual search to reap higher risk-adjusted returns has led to a number of highly alternative assets to be considered for financial investment purposes. Recently, a number of funds have emerged to indirectly invest in the arts sector. The focus has been on fine art, wine and more recently into the possibility of investing into other collectible items and memorabilia. One such area is musical instruments. In this paper, we take a look at the violin sector in particular, which has shown steady annual growth in market value over the past half century; fuelled by a combination of a shortage in supply at the high end of the market and a continued increase in global demand. Using data collected from auction houses and private dealers, we analyse the risk-return characteristics of the violin sector, compare it to other financial assets and assess the implications for portfolio diversification and the ability of pension houses to benefit from this sector.

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**Keywords:** *art markets, risk and return, portfolio optimisation*

## Introduction

The violin sector may at first sight appear an obscure sector of financial investment. However, with prices at the high-end instrument market reaching over \$3m<sup>1</sup> and a recent hedge fund — The Fine Violins Fund — pledging at least \$26m into old violins there is a growing interest in the market as a means to reaping high returns.

The market for high-end musical instruments is similar to investments in fine art and wine, with return series showing little correlation with other financial asset classes. Although returns are moderate, the low correlation results in an appealing means of diversifying an investment portfolio to achieve the highest risk-adjusted returns.

In this paper, we analyse the violin sector as a potential avenue for alternative investments. In the next section we look at the data and methodology of the price series available. In the subsequent section we focus on the violin sector as a means of portfolio diversification against a number of alternative financial asset classes. In the penultimate section we look at the implications for the pension sector for an investment into the fine violin sector. The final section IV concludes.

## Data and methodology

To estimate the average return for musical instruments, we look at repeat sales data, and estimate an average annual rate of return for violins specifically.

A leading violin dealer, Florian Leonhard, has compiled a sector price index, which includes around 100 constituent instruments. The data

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are based on both auction house sales and data collected from private dealers. The index is comprised of violins at the high end of the market that are sold at repeated intervals on the market. The average period between transactions is seven years. The market is therefore highly illiquid which leads to a smoothing in the subsequent annual returns between sales. The index starts in 1945 and data are available on an annual basis.

The second source of data is provided by Art Market Research. The data unfortunately only starts in 1986 and stops in 2001. Average prices are used, and are then smoothed by a three-month moving average. We include these indices as they give us an alternative indication of price developments over time. The series include Italian, English and French violins, with a total number of 4,443 transactions for violins. The index is comprised of the central 80 per cent of transaction data from sales collected from auction houses only.

In Figure 1, we compare the data for the various indices over the period 1986 until 2001 for the AMR data, and until December 2006 for Florian Leonhard. For comparison we have rebased the series to 1000 in 1986. We see a general upward movement in the price indices over time.

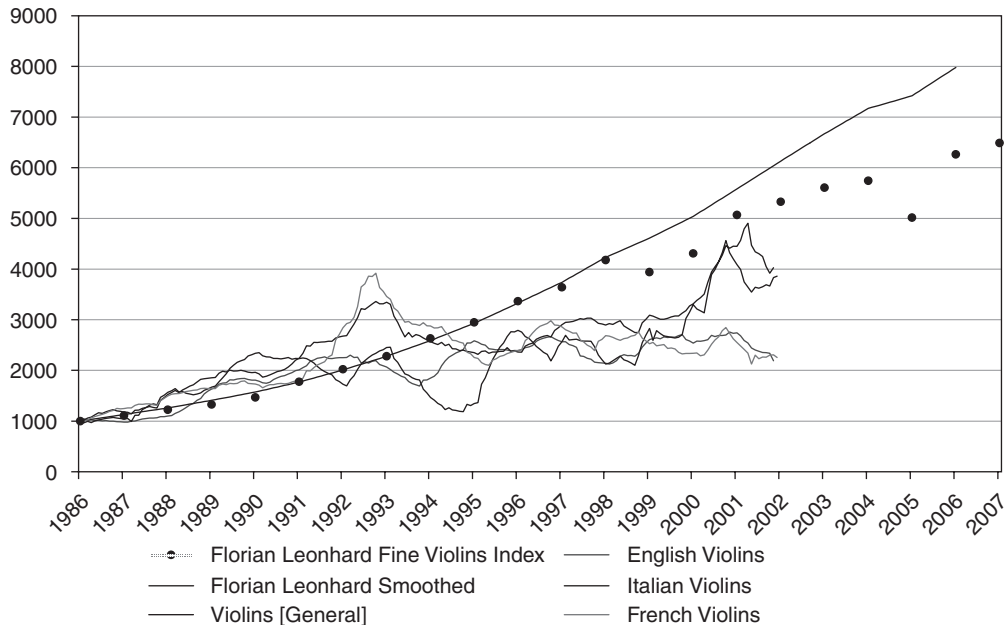
There are however a number of issues concerning the data, which lead to difficulties in estimation of risk-adjusted returns which need to be taken into careful consideration.

**Selection bias**

First, there is a spurious bias in the data collected. Naturally only those violins reaching auction or sold privately via a dealer are included in the data series. This upward bias in the prices reached for famous musical instruments brought into the marketplace is offset, albeit to a small degree, by forced sales which bring many unpopular or untimely items up for sale.<sup>2</sup> This selection bias is common in many other areas of heterogeneous goods markets, notably in the arts sector, however is also common to real-estate and is noted by Stein<sup>3</sup> and Goetzman<sup>4</sup> as a concern in estimating the price return over time. Obviously, this is a cause for concern in both indices looked at as it occurs in both types of indices compiled here.

**Market illiquidity**

A second concern is the significant smoothing of prices that are derived in the index methodology. Observation of the volatility of the index for



**Figure 1:** Fine violin indices  
Data is provided by Florian Leonhard Fine Violins Index, from January 1986 to December 2006 and Art Market Research (Central 80 per cent) from January 1986 to December 2001.

prices over time would lead an investor to the belief that violin price returns contain only a low element of risk, as the variation in price is small. This however, is unwarranted, as the smoothed series occurs because of transactions occurring at longer intervals than the frequency of the index. This means that when taking annual averages the data appear to have less volatility than would be the case if items were sold at auction more frequently. The actual risk is therefore much higher to the investor than at first glance and needs to be accounted for. In fact, the very nature of an illiquid market increases the risk, as there is only likely to be a small number of buyers when items appear on the market for sale. Furthermore, illiquidity risk can be great and should also be accounted for. This issue is common to other types of appraisal-based financial assets. Therefore, the data series need to be desmoothed. We follow the methodology of Okunev and White<sup>5</sup> also used by Campbell<sup>6</sup> for fine art, and commonly used in the real-estate finance literature and for hedge fund returns. To desmooth the data, we take into account the degree of autocorrelation that the return series exhibits. Significant positive autocorrelation means that the series suffers from appearing less volatile than the true data generating process underlying the return structure. We find that desmoothing the series using the Okunev and White approach leads to a substantial increase in the price risk, with volatility increasing from 2.7 per cent, which seems highly unrealistic to 8.41 per cent, which is much more in line with the volatility of the AMR data.<sup>7</sup>

In Table 1, we provide summary statistics on the Violin sector using the Florian Leonhard Fine Violins Index and average price data from Art Market Research.

The slightly higher average returns obtained by the Florian Leonhard Fine Violins Index is likely to be due to the focus on the high end of the market for fine violins. It would appear that the average returns made in the top end of the market are slightly greater than taking the overall market as a whole.

Taking into account the upward bias in the size of the returns, we could expect a lower average return than generated here. The exact reduction is hard to estimate, and depends highly on the prognoses for the continued fashion for a class of a particular violin. The same occurs in the estimation for expected returns for fine wine, artworks, and of course in equity markets, as well.

Secondly, the risks are greater than captured in the original index, due to the illiquid nature of the market, results in a worsening of the risk-adjusted returns in practice from a buy-and-hold strategy in the fine violin sector. The desmoothing procedure increases the volatility by a significant amount, and should capture the true underlying volatility in the market. A further reduction in the average returns occurs from the significant transaction costs that are incurred when buying and selling at auction. However, in relative terms, the underlying volatility of the fine violin sector is about half that of public equities resulting at first glance in a superior Sharpe ratio.

**Table 1:** Summary statistics

	<i>Florian Leonhard smooth</i>	<i>Florian Leonhard desmooth</i>	<i>Violins general</i>	<i>English violins</i>	<i>French violins</i>	<i>Italian violins</i>
Average annual return	11.1%	9.64%	8.34%	5.04%	4.91%	8.80%
Average annual standard deviation	2.7%	8.41%	8.66%	7.48%	10.13%	15.18%
Average monthly return	0.009	—	0.007	0.004	0.004	0.007
Average monthly standard deviation	0.002	—	0.025	0.022	0.029	0.044
Skewness	-1.154	-0.871	0.215	0.018	0.417	0.977
Kurtosis	1.046	1.737	2.001	1.389	2.595	3.735

Florian Leonhard Fine Violins Index and Art Market Research Data on English, French and Italian violins using monthly data from January 1986 until December 2006.

### Transaction costs

Items sold at auction typically include a 20–25 per cent transaction fee, whereas a private dealer's fee is much lower at only 5–10 per cent. In the analysis, we have not accounted for these high fees. It would be appropriate to reduce the expected return on violins in a portfolio optimisation model according to the size of the transaction costs. Depending on whether a dynamic strategy is held or whether a buy-and-hold strategy is undertaken will make a difference in the resounding assumption as to the size of the transaction costs. If a longer time interval is used for the investment period, then the transaction costs are reduced substantially by the length of the holding period.

### Market inefficiencies

The presence of many market inefficiencies in the arts markets, and also in particular the musical instrument market leaves room for much higher returns to be made than estimated from a sheer buy-and-hold strategy which is captured in the indices above. A major source of market inefficiency is the presence of asymmetric information in the market.

### Indirect investment – violin funds

The ability of fund managers, who have an insight into the market inefficiencies, and who

are also able to negotiate lower fees when trading fine violins means that the transaction costs incurred are less to a fine violin fund than to the direct investor in similar musical instruments.

### Portfolio diversification

Having looked at the average annual price series returns for violins in the previous section, we now turn to the possibility of an investor diversifying his portfolio into the fine violin sector. The analysis depends crucially on the estimate for the correlation between fine violins prices and other asset class price returns. The lower the correlation coefficient, the greater the diversification benefits which can be attained to the investor. Assets therefore with fairly moderate average returns can therefore have an appeal, and held in an optimal portfolio of financial assets, due to their ability to offset variability in the overall portfolio and hence a reduction in risk, and thus the overall expected volatility of the overall portfolio. We focus on the violin sector as a means of portfolio diversification against a number of alternative financial asset classes.

In Table 2, we provide the summary statistics for a variety of other financial asset classes over the period 1986–2006. In Table 3, the correlation between all these asset classes in the previous 20 years is shown. The correlation between violins

**Table 2:** Summary statistics

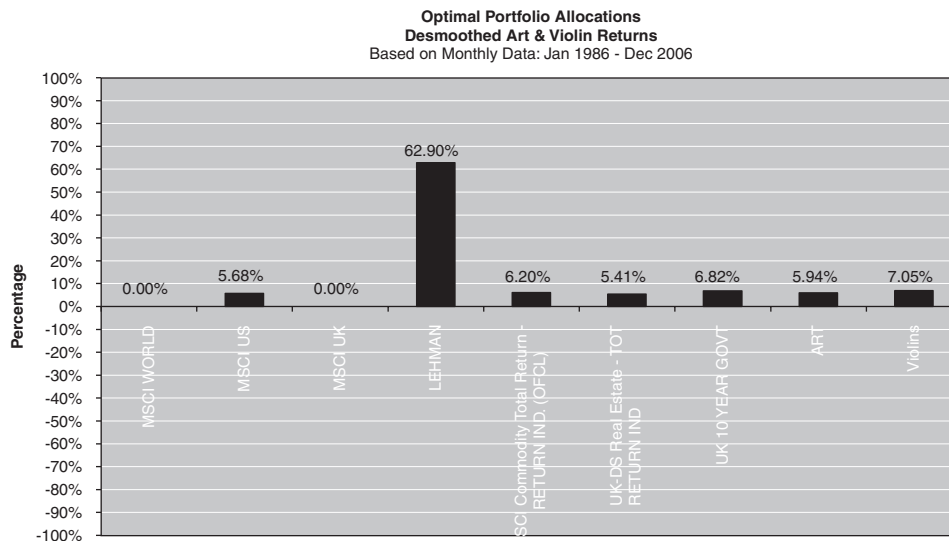
Returns	MSCI WORLD	MSCI US	MSCI UK	LEHMAN	GSCI	UK-DS Real Estate -	UK 10 YEAR GOVT	ART	AMR Violins
Av Annual Return	9.021%	11.217%	10.250%	9.286%	9.263%	12.305%	9.069%	6.581%	8.389%
Annual Stdev	14.275%	15.159%	16.329%	5.475%	18.430%	19.830%	7.594%	8.512%	8.686%
Skew	-1.234	-1.074	-1.414	0.063	-0.061	-1.071	-0.024	-0.716	0.211
Kurt	4.078	4.124	7.130	0.931	0.441	4.586	1.761	3.416	1.978
Max return	0.097	0.125	0.137	0.060	0.170	0.149	0.089	0.083	0.116
Min return	-0.218	-0.239	-0.300	-0.041	-0.150	-0.331	-0.078	-0.103	-0.074
AvRet (monthly)	0.75%	0.93%	0.85%	0.77%	0.77%	1.03%	0.76%	0.55%	0.70%
Stdev (monthly)	4.12%	4.38%	4.71%	1.58%	5.32%	5.72%	2.19%	2.46%	2.51%

Equity indices are from Morgan Stanley Capital Indices for US equity, (MSCI US), UK equity (MSCI UK) and world equity (MSCI World), Lehman Brothers Aggregate Corporate Bond Index (available only for the US) and Datastream Real estate index. We use the UK ten-year Government Bond Index, and UK Government Treasury Bills, which have only been available on a monthly basis from 1980. S&P GSCI data commodity Future data are available from Goldman Sachs. Data are collected from Datastream, Global Financial Data. All Art Index and General Violin Index is from Art Market Research.

**Table 3:** Correlation statistics for violins, fine art and financial markets 1986–2006

	MSCI WORLD	MSCI US	MSCI UK	LEHMAN	GSCI	UK-DS Real Estate -	UK 10 YEAR GOVT	ART	AMR violins
MSCI WORLD	1.000								
MSCI US	0.885	1.000							
MSCI UK	0.807	0.756	1.000						
LEHMAN	0.061	0.173	0.059	1.000					
GSCI	0.004	-0.042	0.006	-0.059	1.000				
Commodity									
UK-DS Real Estate	0.490	0.451	0.690	0.015	0.092	1.000			
UK 10 YEAR GOVT	0.133	0.146	0.270	0.507	-0.056	0.289	1.000		
ART	-0.021	-0.038	-0.051	-0.065	0.083	0.045	-0.016	1.000	
AMR Violins	-0.029	-0.002	-0.074	0.077	0.094	-0.115	0.077	0.002	1.000

Equity indices are from Morgan Stanley Capital Indices for US equity, (MSCI US), UK equity (MSCI UK) and world equity (MSCI World), Lehman Brothers Aggregate Corporate Bond Index (available only for the US) and Datastream Real estate index. We use the UK ten-year Government Bond Index, and UK Government Treasury Bills, which have only been available on a monthly basis from 1980. S&P GSCI data commodity Future data are available from Goldman Sachs. Data are collected from Datastream, Global Financial Data. All Art Index and General Violin Index is from Art Market Research (Central 80 per cent)



**Figure 2:** Optimal portfolio allocation including violins: 1986–2006

Equity indices are from Morgan Stanley Capital Indices for US equity, (MSCI US), UK equity (MSCI UK) and world equity (MSCI World), Lehman Brothers Aggregate Corporate Bond Index (available only for the US) and Datastream real estate index for the UK. We use the UK ten-year Government Bond Indices, and UK Government Treasury Bills, which have only been available on a monthly basis from 1980. S&P GSCI data commodity Future data are available from Goldman Sachs. Data are collected from Datastream, Global Financial Data. All Art Index and the General Violin indices are from Art Market Research.

and other financial asset classes is extremely low. Also with the art market the correlation is very low. It appears that these markets are highly independent from each other, with different factors driving demand and hence prices in these markets. At first glance it would appear that there is some potential diversification benefit available from investing into musical instruments as well as into art.

Using a standard mean–variance optimal portfolio model, we estimate the optimal portfolio that would have led to the highest risk-adjusted returns over the period 1986–2006. The outcome of the optimal portfolio model is of course specific to the input and thus to the historical returns made for the chosen asset classes over this period. If financial returns are used to estimate

future returns, then we could use the model for an optimal portfolio strategy; however, future returns are by definition unknown, and thus the model only provides the investor of an idea of a diversified portfolio strategy and no guarantee of any future performance.

The outcome of the optimal portfolio strategy is given in Figure 2. We find a low allocation into equities, which given the recent poor performance and the relatively high volatility is not surprising. Corporate bonds have done extremely well in the past 20 years, and hence the model results in a large allocation into this asset which has achieved high annual returns. Interestingly, the model allocates a 6 and a 7 per cent allocation into both art and violins, respectively. Here we have assumed a flat rate 5 per cent point increase in the standard deviation of the series to account for the smoothed data.

## Practical implications

In this section we look at the implications for the pension sector for an investment into the fine violin sector. The pension fund industry is extremely large and the size of the violin sector of the musical instrument market, although growing, is relatively small in comparison. It is therefore implausible for extremely large institutional investors to adapt a strategy of a large investment into fine violins into their investment strategies. More interesting however, is the choice for more tailor-made pension solutions to be offered to high net worth clients, who are aiming for a high-risk investment in an alternative asset.

## Conclusions

The continual search to reap higher risk-adjusted returns has led to a number of highly alternative assets to be considered for financial investment purposes. Recently, a number of funds have emerged to indirectly invest into the arts sector. The focus has been on fine art, wine and more recently into the possibility of investing into other collectible items and memorabilia. One such area is musical instruments. In this paper, we take a look at the violin sector in particular, which has shown steady annual growth in market value over the past half century, fuelled by a combination

of a shortage in supply at the high end of the market and a continued increase in global demand. Using data collected from auction houses and private dealers, we analyse the risk-return characteristics of the violin sector, and find that the high-end violin sector offers the investor an attractive investment on purely financial terms. The low correlation between violins and other financial asset classes, including art, renders an investment into violins high attractive as part of a diversified portfolio strategy. This is also the case when accounting for the smooth nature of the series, and by desmoothing the data to adjust the volatility to something more in line with the true underlying series. Owing to the smaller scale of the market we would not like to advise institutional investors to participate in such a strategy; however, for the private client, an investment into violins could be an interesting alternative asset to include in the portfolio. Optimal portfolio allocations using empirical returns over the past 20 years provide support for investors to consider an investment into violins as an attractive, albeit small addition to their investment strategy. The results depend crucially on the assumption about the risk involved in such a strategy. The highly illiquid market is a factor that should increase the riskiness to the private investor from such a strategy. Also the presence of only a small number of funds which offer an indirect investment into violins means that there are still a few strings attached when investing into musical instruments.

## Acknowledgments

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*Disclaimer:* The views expressed in this paper are the views of the authors only. All errors pertain to the authors. Please ask for the author's permission before reproduction of this paper, in whole or in part.

## References and Notes

- 1 Ruggiero Ricci, a master violinist was reported to have sold his famed violin for \$3m in 1999, and more recently in 2006 a Stradivarius violin at auction reaching \$3.5m.

- 2 Common reasons for forced sales, such as from debt, death and divorce result in a more representative data sample.
- 3 Stein, J. P. (1977) 'The monetary appreciation of paintings', *Journal of Political Economy*, Vol. 85, No. 5, pp. 1021–1035.
- 4 Goetzman, W. (1992) 'Accounting for taste, art and the financial markets over 3 centuries', *AER*, Vol. 83, No. 5, pp. 1370–1376.
- 5 Okunev, J. and White, D. (2003) 'Hedge fund risk factors and value at risk of credit trading strategies', Working Paper, University of New South Wales.
- 6 Campbell, R. (2008) 'Art as an alternative asset class', *Journal of Alternative Investments* (forthcoming).
- 7 See Campbell (2005) for a detailed analysis on desmoothing art series data.

## Appendix A

### Constituents in the Florian Leonhard Fine Violins Index

del Gesu 1743  
 del Gesu 1738  
 Strad 1685  
 Rogeri 1772  
 Fagnola 1923  
 Bergonzi 1739  
 del Gesu 1732  
 Guadagnini 1765  
 Strad 1714  
 del Gesu 1735  
 F Ruggeri 1885  
 Strad 1713  
 Fagnola 1924  
 Pedrazzini 1928  
 G Degani 1900  
 Pedrazzini 1929  
 E Degani 1896  
 C F Landolfi 1758  
 J F Giudantus 1700  
 N Gagliano 1735  
 A&H Amati 1625  
 Strad 1729  
 G Cappa 1690  
 F Gagliano 1780  
 G F Celoniatus 1730  
 F Gagliano 1784  
 Strad 1711 sp crack  
 T Balestrieri 1750  
 A Gragnani 1770  
 G F Pressenda 1846  
 N Gagliano 1750  
 C A Testore 1760

F Gagliano 1785  
 A&H Amati 1635  
 N Gagliano 1770  
 G B Guadagnini 1769  
 E Degani 1899  
 F Gagliano 1772  
 G Degani 1898  
 G Rocca 1852  
 G F Pressenda 1854  
 G Gagliano 1800  
 G Pedrazzini 1928  
 N Gagliano 1750  
 G Guarneri 1703  
 L Storioni 1780  
 Strad 1696  
 N Gagliano 1750  
 G B Rogeri 1670  
 T Eberle 1786  
 G Rocca 1854  
 G Rocca 1861  
 N Gagliano 1770  
 A Amati  
 N Amati (small pattern)  
 N Amati (grand pattern)  
 Ga Antoniazzi  
 Gr Antoniazzi  
 L Arcangioli  
 T Balestrieri  
 C Bergonzi  
 L Bisiach  
 L&T Carcassi  
 G Ceruti  
 E Degani  
 G B Gabrielli  
 A Gagliano  
 N I Gagliano  
 G Gagliano  
 F Gobetti  
 M Goffriler  
 G Grancino  
 G B Guadagnini  
 A Guarneri (grand)  
 P Guarneri (Mantua)  
 P Guarneri (Venice)  
 G f. A Guarneri  
 C Landolfi  
 G P Maggini  
 D Montagnana

V Panorma  
 G F Pressenda  
 G Rivolta  
 G A Rocca  
 E Rocca  
 G B Rogeri  
 F Ruggieri (grand pattern)  
 G Scarampella  
 S Serafin  
 L Storioni  
 D Tecchler (violin)  
 D Tecchler (cello)  
 C G Testore  
 C Tononi  
 L Ventapane  
 G Degani 1897  
 G B Guadagnini 1744  
 Strad 1710 (sp crack)  
 Strad 1697  
 Montagnana 1727  
 Balestrieri  
 Guadagnini 1750  
 P Guarneri (Mantua) 1703  
 N Amati (grand) 1664  
 G B Gabrielli  
 G B Guadagnini 1740  
 J B Vuillaume  
 P Guarneri (Mantua)  
 C F Landolfi (1750)

Léon Bernardel, John Betts, Leandro Bisiach, H. Emile Blondelet, Charles Boullangier, James William Briggs, Antonio Capela, Lorenzo & Tommaso Carcassi, Aristide Cavalli, Georges Adolphe Chanut, Nicolas Augustin Chappuy, Chipot-Vuillaume, Jean Baptiste Colin, Ch.J.-B. Collin-Mézin, Stefano Conia, George Craske, Eugenio Degani, Giulio Degani, Honoré Derazey, Amédée Dieudonné, Thomas Dodd, Richard Duke, Hannibal Fagnola, Giuseppe Fiorini, William Forster, Ferdinando Gagliano, Joseph Gagliano, Gand & Bernardel, Jeffery James Gilbert, William Glenister, Goulding & Co., Antonio Gragnani, Giovanni Grancino, Giovanni Battista Guadagnini, Andrea Guarneri, Matthew Hardie, Hart & Son, Hawkes & Son, Thomas Earle Hesketh, Joseph Hill, Lockey Hill, W.E. & Sons Hill, George Wulme Hudson, John Johnson, Thomas Kennedy, Laberte-Humbert, Antonio Lechi, John Lott, Louis Lowendall, Giuseppe Lucci, Nicolas Lupot, Giovanni Paolo Maggini, Gabriel Magnière, Walter H. Mayson, Emile Mennesson, Domenico Montagnana, Giovanni Battista Morassi, Alfred Moritz, Léon Mougnot, Nicolas Didier Ainé, John William Owen, Vincenzo Panormo, Giuseppe Pedrazzini, Thomas Perry, Perry & Wilkinson, Claude Pierray, Gaetano Pollastri, Gian Francesco Pressenda, George Pyne, Arthur Richardson, William Robinson, Joseph Rocca, Ernst Heinrich Roth, Francesco Ruggieri, Rushworth & Dreaper, Vincenzo Sannino, Giovanni Schwarz, Iginio Sderci, Santo Seraphin, Hippolythe Chretien Silvestre, Pierre Silvestre, Pierre & Hippolyte Silvestre, Alexander Smillie, Thomas Smith, Carlo Storioni, Antonio Stradivari, Carlo Antonio Testore, Charles & Samuel Thompson, Lorenzo Ventapane, Alfred Vincent, Jean-Baptiste Vuillaume, Peter Walmsley and Emanuel Whitmarsh.

## Appendix B

### Constituents in the AMR violin indices

Antonio and Hieronymus Amati, Romeo Antoniazzi, Georges Apparut, Job Ardern, William Atkinson, Paul Bailly, Tommaso Balestrieri, Benjamin Banks, Bruno Barbieri, Francois Barzoni,



# Violins as an Asset Class

## - Characteristics of Violins as an Asset Class

- Historically safe and predictable returns
- If chosen well, the possibility for very high gains
- High degree of security and low cost of ownership
- Ownership of culturally significant antique
- Philanthropy



## String Instruments as Investments

Net returns: double digits are still possible

When prospects for sufficient returns in the capital markets are grim, investors rebalance their portfolios and evaluate other sources of return.

Historically, string instruments have done very well as investments *without a significant risk*. Note the following:

- Over the past 50-odd years top class instruments have increased 10-14% in value per annum and often more as can be seen from the documented examples below
- The assets are irreplaceable for classical performances at the highest level. Hence, they will not lose their value as long as people enjoy music. They have an almost timeless functionality and appeal
- Contemporary violinmakers cannot rival the craftsmanship of the Italian and other European luthiers of the 17<sup>th</sup> and 18<sup>th</sup> century. The results are:
  - Ever increasing scarcity
  - Steadily rising prices

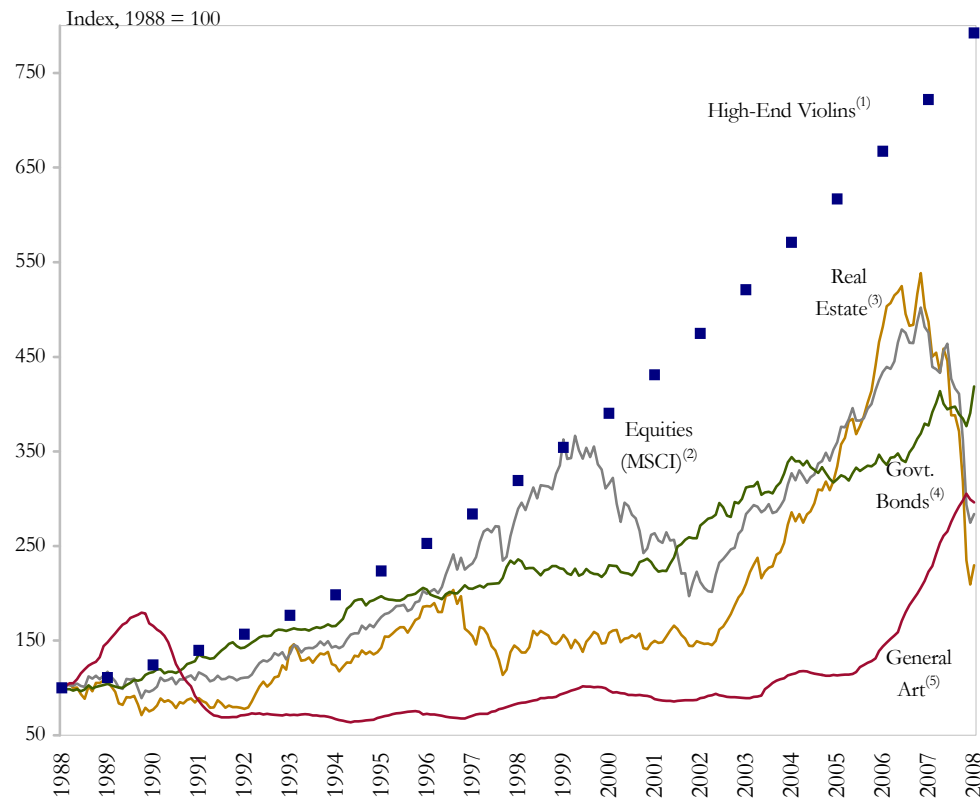
A fine instrument represents a piece of history and a culmination of centuries of craftsmanship and culture, it is valued and respected by collectors and artists in all parts of the world. A fine violin built in the early 18<sup>th</sup> century by Antonio Stradivarius in Cremona, Italy would be sold in the mid seventies for about \$150,000 and today easily fetch between \$4-12 million. It is an exceptional return given the very low probability that Stradivarius' violins ever lose their timeless appeal to both artists and audiences worldwide.

Past performance is not indicative of future performance.

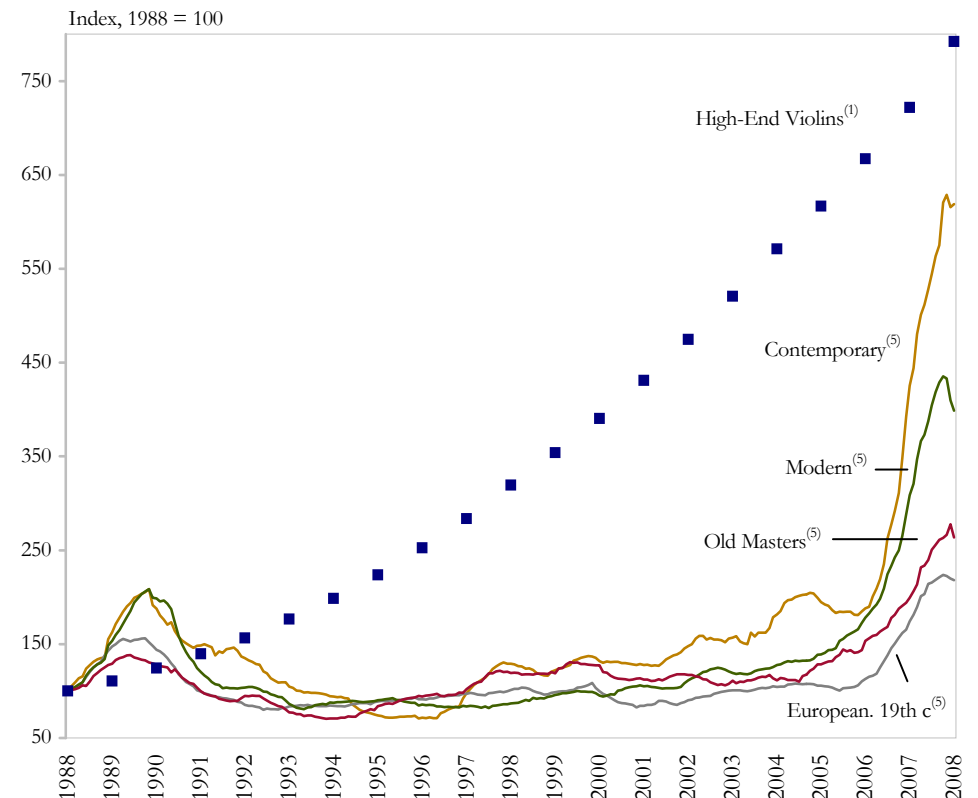
# Historical Sector Performance

- Over the past 20 years, fine violins have outperformed major asset classes with an average yield of c.11% p.a. for lower levels of risk

## 20-YEAR PERFORMANCE RELATIVE TO MAJOR ASSET CLASSES



## 20-YEAR PERFORMANCE RELATIVE TO ART SECTORS



<sup>1</sup> Source: Florian Leonhard Fine Violins Index (approximately 100 constituent instruments) based on auction and dealer transactions. The illiquid nature of the market leads to a smoothing in the returns.

<sup>2</sup> Source: Morgan Stanley Capital Index – World Equity (total return index assumes dividends are reinvested).

<sup>3</sup> Source: Thomson Datastream World Real Estate Index (total return).

<sup>4</sup> Source: Citigroup Global Government Bond Index (total return).

<sup>5</sup> Source: Art Market Research.

# Returns Analysis

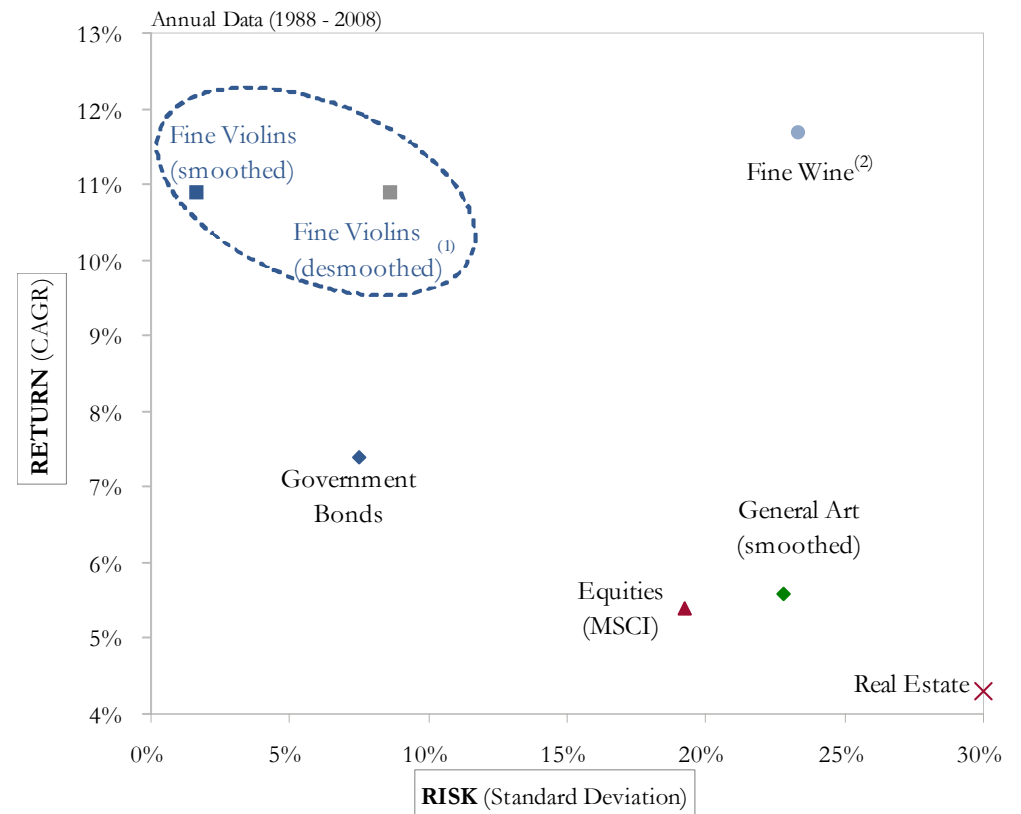
Past performance is not indicative of future performance.

- The combination of strong returns and low volatility implies that fine violins have generated a superior return on a risk-adjusted basis

## ABSOLUTE AND RISK-ADJUSTED RETURNS

	COMPOUND ANNUAL RETURN (1988-2008)	RETURN-TO-RISK RATIO (1988-2008)
<b>Fine Violins</b>	<b>10.9%</b>	<b>1.26</b>
Government Bonds	7.4%	0.99
General Art	5.6%	0.24
Equities	5.4%	0.28
Real Estate	4.3%	0.14

## RISK / RETURN RELATIONSHIP ACROSS ASSET CLASSES



<sup>1</sup> Source: Dr R Campbell, 'Fine Violins as an Alternative Investment', Pensions: An International Journal, Palgrave Macmillan (Vol. 13, 2008).

<sup>2</sup> Data from Live-ex only available since 2001.