

## Louvain School of Management

### Opportunities and risks of investing in an investment fund related to classic & sports cars

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## **I. Introduction**

Ever since the creation of the first road legal automobiles in the late 1800s/early 1900s, some people have developed a real passion and interest related to the beauty, fame and history behind these machines. At that time, most cars were already exclusive items produced in limited numbers, very rare and expensive. They were, therefore, reserved for the upper class and the very wealthy. People who were lucky enough to own one of these cars didn't feel the need to sell them and therefore, keep them to restore & race while they could afford it.

True car enthusiasts saw these machines not only as a transportation item but more so as a real piece of "art" that generated a pure sense of pleasure and self-recognition for the people who owned and drove them. This is when, in the 1930's, the first collector's car market emerged.

Indeed, true car enthusiasts became car collectors and saw their classic car collection exponentially grow in value throughout the century. Indeed, values of some of these collectible automobiles have increased so much in the last decades that institutional/private investors as well as investment funds manager have developed a real interest in these "alternative" assets as a way to further diversify their portfolios and generate over then expected returns.

According to some of the most famous classic car market-tracking indexes, Kingston500 or the Historic Classic Index (HAGI), prices of the most valuable and sought after classic cars in the market have increased by 467% (Knight Frank, 2016) from 2006 to 2016. This figure alone represents almost twice the growth in the Wine market (245%) and more than twice the growth of the Art market (206%), two of the closest luxury alternative assets in finance today. Furthermore, according to assistant Professor Stephen G. Martin in his review of the classic car market: The Case for Collectible Automobiles as an Asset Class, The annual returns of 96 collectible automobile types from 2007 till 2016 came out at 8,39 % (Stephen G. Martin (assistant professor of finance at Winthrop University in Rock Hill, 2016), outperforming major financial indices such as the DJIA (Dow Jones Industrial Average) and the S&P500 (Standard & Poors 500).

In the case of collectible cars as an attractive alternative asset, a number of investments funds specialized in this type of asset have emerged in 2006. Indeed, classic car investments funds

such as the Classic Car Fund (Custoza), the IGA Automobile Fund and Velocity Classic Auto Fund offer institutional/private investors the opportunity to invest in these tangible assets, and therefore benefit from both risk diversification and higher expected returns, without having to bear the costs of ownership (insurance, restoration, service and storage).

Still, these specialized funds appeared as a result of the constant growing trend in the value of the classic car market. Since the beginning of 2017, the market has come to a standstill and this exceptional growth has reached its peak and is now levelling off.

This current situation raises the following question; What are the real advantages/disadvantages of investing in these investments funds, from an investors' point of view?

In order for the reader to fully comprehend the issue at hand, we will start by doing a complete analysis of the classic car market with a certain emphasis on the classic car segmentation, past and current market trends. We will then focus on reviewing Classic Car Investments Funds by first presenting all the specifics of Classic Car Funds (Functionality, legal structures, entry obligations, investor's packages, guidelines), continuing with a closer look at the different methods of valuation for these funds and finishing with a list of opportunities and risks for any institutional/private investors willing to invest in those funds. Our final part will consist in analysing the financial performance of collectible automobiles as an alternative asset class. Thus, we will create a fictitious portfolio of 10 carefully handpicked classic cars from 4 distinct criteria's, investigate their return characteristics and potential diversification benefits in the last 10 years (2007-2017), compare these returns with other alternatives investment class (Art and Wine), examine risk adjusted ratios and finally compare those results with past performance results from market or financial experts.

## **II. Analysis of the current market**

### **A. The Classic car market**

#### **1) “Classic cars”: The definition**

Classic vehicles have been built since the birth of the automotive industry in the 1900s. Indeed, the very first automobiles were already luxury items only reserved to the wealthy and famous of this world. This trend continued to exist until the early 20<sup>th</sup> and can also be seen in today's sports & luxury automobile's market.

The very first classic car market emerged in 1930's, right after the American car manufacturer: Ford, launched its first mass-produced car: The Ford Model T. By 1927, 15 million units were produced. Still, a certain passion for special series car with higher specification, built in small numbers, well preserved and often hand-made, persisted. Over the years, the classic car market grew and eventually led to the first ever-classic car auction in 1970. Ever since that auction organised by the English fine-art auction Sotheby's, the demand for the classic car market has never stopped growing, reaching a substantial growth of 467% in value, from 2006 till 2016, according to the Knight Frank 2016 annual wealth report. In the UK alone, the classic car industry was worth “5.5 billions of pounds in 2016” (Classic & Sports Finance, 2016).

There is a certain level of ambiguity when it comes to defining a car as a “classic”, simply because each country has its very own definition, which varies according to the age and price of the vehicle in question.

In America, the CCCA (Classic Car Club of America) recognises a car as “classic” when it is made between 1925 and 1948 (Delbridge, 2017). However, there are many exceptions, which sometimes depends on the model or brand. In Belgium, the regulation states that the age limit for historic vehicles is 25 years but in France the limit has gone up to 30 years (FBVA (Federation Belges des Vehicules Anciens) asbl, 2015).

In the UK, Insurance Company consider a car classic when it has at least 15 to 20 years old. Furthermore, in the United Kingdom, a car is defined as ‘classic’ when it is produced before the 1<sup>st</sup> of January 1976 (Wiseman, 2016). However, some people would still consider some more recent car such as a 1989 Ferrari Testarossa to be a classic as opposed to a VW Passat from the 70's.

So, it is safe to say that there are additional criteria that can further define if a car should be a classic or not.

There need to be aesthetic appeal to it: it could be the design credentials, it's racing history or element of timeless engineering beauty. Indeed, the constant movement of the car's value associated with racing history, rarity and desirability makes it an important aspect of the classification of the car. Thus, a particular model of the same car might pose more as a classic because it was driven by a celebrity in a movie or because of its racing history.

In general, the development of the collectors' motorcar sector is of parallel developments, which have culminated in today's market: Ever since the 19<sup>th</sup> century, cars were only made available to the wealthy and famous, as they were very expensive. As mentioned earlier, they were an exclusive item right from the start. However, with the arrival of mass produced cars, the price of used cars started to follow a certain declining pattern. At this stage, big automakers started to produced cars with a "planned obsolescence". It is actually, at this stage in the development of the car industry, that previous "limited edition" car model started to gain interest from collectors and eventually lead to their increase in value.

Still after the arrival of mass-produced cars, some brands continued to make more costly, specialized and limited cars that were directed to a wealthier group. Those models are the one that some call "classics" today. For some people, they represent the highlights of their youth: the dream car they always wanted. As a result, most experts will say that demand for certain types of classic vehicles moves with the generation of buyers but in the end, it's a matter of pure passion. This is how the modern market for classic cars was born and will remain so for many years to come.

To conclude, here is a list of criteria that defines a car as being a "classic" (Hatlapa, Better Than Gold : Investing In Historic Cars, 2014)

- Rarity, soul, glamour
- Small production numbers
- Lifestyle and leisure associations
- Historic motorcars documenting the development of the automobile industry
- Motor racing and racing history
- Associations with famous racing drivers and celebrities

## 2) Market segmentation

The classic car market can be very complex to analyse and understand for non-expert individuals. An efficient way to explain this market is to separate it into multiple segments, not equally as important to investors/collectors but still crucial to the analysis of this subject.

### a. Brand

Almost every recent car dealer has a number of cars that can be seen today's as "classic". Indeed, the classic car world is not only restricted to the famous sports car brands like: Ferrari, Maserati, Mercedes-Benz, Audi, Bentley and Alfa Romeo. You can also find very desirable collectible model from common brands like Toyota, Peugeot and Renault. Of course, you will find more expensive and rare models of Ferraris than of Peugeot. But amongst all the auto car manufacturers, Ferrari has the most recognisable brand when it comes to classic cars: Most of their pre-war models were produced in limited numbers; not until 1957 did it produce more than 100 cars per year and four figures volume in 1971. Its worldwide recognition is also due to years of success in Formula 1 and multiple wins in historic car races (The Mille Miglia). Still today, the brand continues to build sports cars and limited-edition collectible cars for wealthy customers. Other brands are not as recognisable and most of them have changes ownership after the financial crisis of 2008.

Here is a small list of the most recognisable brands (Hatlapa, Better Than Gold: Investing In Historic Cars, 2014): Alfa Romeo – 6C 1750, 1929, Aston Martin - DB5, 1963, Bentley – R-type Continental, BMW – 315/1, 1934, Bugatti – Type 57, 1936, Ferrari – 365, GTB/4 Daytona, 1970, Ford – GT40, 1964, Mercedes-Benz – 300 SL, 1954, Maserati Tipo 61, 1959, Jaguar XK 120, 1948, Porsche 356 A, 1955

### b. Value

As previously mentioned, the price of classic cars has a diverse range depending on the brand/model and the year of production. The price of a classic car can vary between US\$15,000 - US\$34 Million (Bekker, 2016). We can create multiple price groups of cars according the types of clients/collectors. This segment can be of significant importance to investors, with limited car knowledge, who are looking to invest in cars within a certain price range. In general, the value of a classic car is associated with the level of rarity or popularity, whether it comes from its racing history or simply its recognition over the years. So, the value

of a classic car represents a good indicator for non-experts' individuals who want to make a safe investment.

### **c. Geographic origin**

In terms of geographic distribution, as most manufacturers come from Europe; the most expensive/rare models are produced there. Indeed, the big majority of collectible cars come from Italian, German, British and French manufacturer. Aside from these European countries, there are only two other countries that produced a substantial number of classic cars: The United States (Ford GT40) and Japan (Datsun 240 Z). Still, many classic cars from Europe were exported to United States and therefore have received price adjustments. Some imported classic cars from Europe will actually sell for a lot more in USA because of their rarity and popularity. The segment is not really relevant to this particular market but still worth mentioning for foreign investors.

### **d. Segment by period or age group**

The age of the car is probably one of the most crucial criteria when it comes to choosing a collector's car. This is where a qualified investor can make a great investment by betting on a portfolio of cars within a certain age groups. Indeed, certain age groups of classic car have appreciated in value more rapidly than other group purely based on the generation of buyers. In the end, it all depends on personal taste of the clients, whether the car appeared in the favourite movies or has always been a childhood dream. For instance, collector's cars from the 50s to 70s are increasingly popular because some of these cars were poster cars for our current older generation and now that they have the capital to afford these cars, the value of some particular examples (e.g. Ferrari F40) are reaching all time high numbers. However, as younger collectors come to the market, new age group cars like "young timers" (70s till early 90s) are increasing in popularity. Pre-war cars or vintage cars (1919-1936) still attract a certain type of clientele due to their very small production numbers but are limited in terms of usability. Indeed, most of these cars are driven only once or twice a year and are found hidden in some museum or big private collection. In the end, the whole joy of owning a classic car is being able to drive it on the weekend or for special occasions. As a result, wealthy individuals have shown interest in a new category of classic, modern classics (1990's) and supercars (Porsche 959, Honda NSX, McLaren F1, BMW Z8, ect)

### **e. Production number**

The production number is another fundamental aspect of the classic car market. In general, limited production number is one of the criteria that make a car a “classic”. Furthermore, a small production model makes the investment more interesting if the demand easily exceeds the supply. Therefore, prices of this particular model are more likely to increase than a mass-produced car. For instance, if you compare a Jaguar E-type from 1964 with a production number of more than 72 000 (Los, 2002) and a Ferrari 275 GTB of the same year with only 735 examples were made. The Jaguar will sell for a tenth of the price of the Ferrari.

To conclude, from an investor’s perspective, the most relevant segment of the classic car market would be the value, the age group (including history of model), the production number and finally the brand. There are other segments of the classic car market such as the engine size, the geographic region or the type of vehicle. Unfortunately, those criteria are not as significant for our subject as the 4 mentioned earlier.

## **B. Macro-environment analysis**

PESTEL analysis – classic car market

### **1) Political factor**

Law and regulations have always been very important when it comes to the automotive market. For a while now, governments are becoming stricter when it comes to environmental impact of cars. As many classic vehicles actually pollute more than new “greener” cars, some cities have decided to ban the use of classic cars as a means to tackle air pollution.

Therefore, this current situation could impact the potential sale of this kind of cars even if, in most cases, classic cars aren’t being driven in the city but usually shown at private events or concourse.

However, for most parts, the fundamental technology of historic cars is more environmentally friendly than in modern cars. The percentage of plastic used is lower and the electronic proportion is negligible.

## **2) Economical factor**

The market for classic sports cars can easily be associated with the trends in wealth developments. This market is mostly linked to the wealthy class as many high net worth individuals hold multiple classic cars in their collection.

According to the World Wealth Report, the number of HNWI has not stopped growing since 2009. (Capgemini (consulting technology outsourcing), 2016)

In general, the automobile industry has a substantial impact on each country's economy and is one of those sectors whose influence seems to infuse into nearly every part of an innovation and technology based economy.

When it comes to currency and exchange rate, unlike mass-produced vehicles, classic car is a "currency-neutral" or "currency-independent" asset. It means that the current value of a classic car is adjusted in any currency. The same goes for the exchange rate: for instance, if the value of a currency declines, the value of the cars will almost automatically adjust itself.

## **3) Social factors**

Social factors in relation to the classic car market are difficult to depict. Different car models /brands are seen differently by people from different country or background. Demographics do not affect the purchasing decision. It is rather the change in culture and income that influences the buying behaviour of these cars. Indeed, as mentioned previously, classic car prices can vary between US\$15,000 - US\$34 Million.

Buying a classic car is more a purchase related to the history / passion rather than the practicality. For instance, a particular model / brand will mean everything to a specific client because of the history behind it but represent nothing to another client. However, there are some models that have become iconic over the years due to their limited production numbers, racing history.

## **4) Legal factors**

Governments are putting more pressure on car manufacturers to build cars that are safer to drive. Therefore, the automobile industry is constantly being forced to obey ever-increasing safety regulations. These government policies do represent a big threat for the classic car market as these cars only obey safety standards from their production year, which was 10 to

more than 50 years ago. Still some governments (ex: The UK) make special exemptions for classic cars. For instance, in the UK, no retro fitted seat belt is required on classic cars. The law only prohibits children under 3 years old to sit in a car without seat belts. (footmanjames , 2014)

### **C. Microenvironment analysis**

#### **➤ Trends in the classic car market (Porter's five forces)**

Classic cars are not just a good investment plan for wealthy individuals; they represent an object of timeless beauty very similar to a work of art. There are in most cases, a strong connection between owner and the car itself, whether it is a childhood dream or a simple admiration of the history/style behind the model. In the end, it is that passion and the history behind the car that keeps this market alive.

#### **1) Competitive rivalry**

According to Dietrich Hatlapa (founder of the Historic Automobile Group International), the number of classic cars transactions, auction events, private sales and classic car dealers hasn't stopped increasing in the last 10 years (Breeze, 2016). We have witnessed an increase in the demand for cars manufactured between 1950-1970's because of the current generation of buyers. Most of these buyers want to own the car they dreamt about when they were kids and therefore look for models within this specific age group. However, most of the time, these dream cars were produced on a limited number and the market is faced with a higher demand. As a result, inside this specific age group, there are cars that will sell for double or triple the amount purely based on limited production number and popularity. For instance, the Aston Martin DB5 (1963-1965) is probably the most famous classic model from Aston Martin because of its appearance in multiple James Bond movies. Furthermore, the limited number produced has made this particular model 3 times more expensive than its successor the DB6 (1965-1970) (ref: Hatlapa). This surge in prices has caught the eye of many car specialists that have decided to create their own classic car fund and therefore attract investors from all places. As a result, you can now fund multiple classic car funds that specialize in this kind of investment and that will guarantee a constant return while minimising the risk for the investor.

To sum up, in the last decade, the performance of mid-to-high end classic cars has outgrown all expectations, reaching billions in revenue and surpassing all other alternative asset classes such as Art, Wine and Coins in term of valuation. In 2015, the winners were 80 & 90's classics, affordable classics below GB£100,000. (Classic & Sports Finance Classic Car , 2016)

## **2) Bargaining power of suppliers**

Today the current market for classic cars has shown a slight stabilization, especially the market for average classic cars (limited numbers of famous brands like Porsche or Ferraris). Indeed, lots of desired classic cars have been sold in the past 10 years. As a result, the market is left with models that are not in pristine state or with the same specifications as those sold previously. Therefore, classic car sellers (auction houses, dealers...) are losing their bargaining power over a clientele that is warier and demanding. (Breeze, 2016)

Still, this price stabilization is related to a specific kind of classic cars. It is up to the seller to find the age group of classic car that will satisfy the next generation of buyers and enable him/her to regain that power.

## **3) Bargaining power of buyers**

Furthermore, with the access of online data about car sales from dealers, auction houses, private sales, car reviews and magazines, the clients are more informed and therefore more careful about the pricing of the wanted model. Clients are more selective and are able to compare more rigorously similar models based on rarity, history and quality. As a result, they would rather wait and hope for a decrease in price than pay more for a car model that they deemed overpriced. So, there is a slight shift regarding the balance of power from seller to buyer.

However, this shift will no longer hold if a seller happens to hold a famous limited production model in excellent condition.

#### **4) Threat of substitutes**

The 2017 predictions show an important interest in a new category of classic cars called ‘‘Modern’’ classics. Modern classics are cars produced between 1990 and early 2000, especially those with a manual gearbox, low mileage with a limited production number. Furthermore, the affordable classics market (sub GB£100,000) is expected to rise as collectors look to buy cheaper collectible cars from brands other than Ferrari or Porsche. Indeed, collectors want to find affordable classic cars that they can use every day and not worry about them losing too much value. They want to find the car model that has been put aside, misjudged or simply forgotten by other collectors. (Sass, 2014)

## D. SWOT analysis

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>➤ Object of timeless beauty that will always guarantee demand: passion investing</li> <li>➤ Stronger demand: increase in number of auction houses, classic car dealers, and private sells.</li> <li>➤ Inelastic supply: price increase</li> <li>➤ New substitutes: “Modern classics”</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>➤ Stabilization of market: demand has stabilized after a 20 years surge in prices (Verhage, 2016)</li> <li>➤ Shift in Bargaining power: increase in customer bargaining power:             <ol style="list-style-type: none"> <li>1. Information about classic car transactions / specifications more accessible to general public</li> <li>2. Best car models have been sold: market is left with over-priced models.</li> </ol> </li> <li>➤ New substitutes: “Modern Classics”</li> </ul>
<p><b>Opportunity</b></p> <ul style="list-style-type: none"> <li>➤ Increase number of High Net Worth Individuals on the planet.</li> <li>➤ Classic car industry has a substantial impact on the economy (high revenues, high employment rate...) (MacLeman, 2016)</li> <li>➤ Currency- neutral asset (no affected by change in currency)</li> <li>➤ Not affected by the economic crisis 2008</li> <li>➤ Signs of a diversification effect: asset<sup>1</sup></li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>➤ Stronger government regulations to promote greener cars</li> <li>➤ Social factors are difficult to depict: Passion investing / depending on each individual preference.</li> <li>➤ Stronger regulations on safety standards: banning road use of historic cars.</li> <li>➤ Obsolescence of classic cars due to ever increasing technological developments in auto industry.</li> </ul>

<sup>1</sup> APPENDIX VI

### **III. Investment fund in classic automobiles**

#### **A. Overview of Funds**

##### **1) SICAV/SICAF (Luxembourg Consulting Group, 2013)**

While looking at the different types of investment funds specialized in tangible assets, we realized that many countries have their own designation of what is known as a collective investment scheme. As a result, we decided to focus on two specific types of investment funds, that are commonly used in Western Europe, especially in Luxembourg, Switzerland, Italy, Belgium and France: SICAV/SICAF.

Indeed, we found out that most funds related to classic automobiles located in Europe are called: SICAV (Societe d'Investissement a Capital Variable) or SICAF (Societe d'Investissement a Capital Variable). A SICAV is, in most cases, regarded as an open-ended mutual fund whereas a SICAF can either be opened-ended or closed-ended.

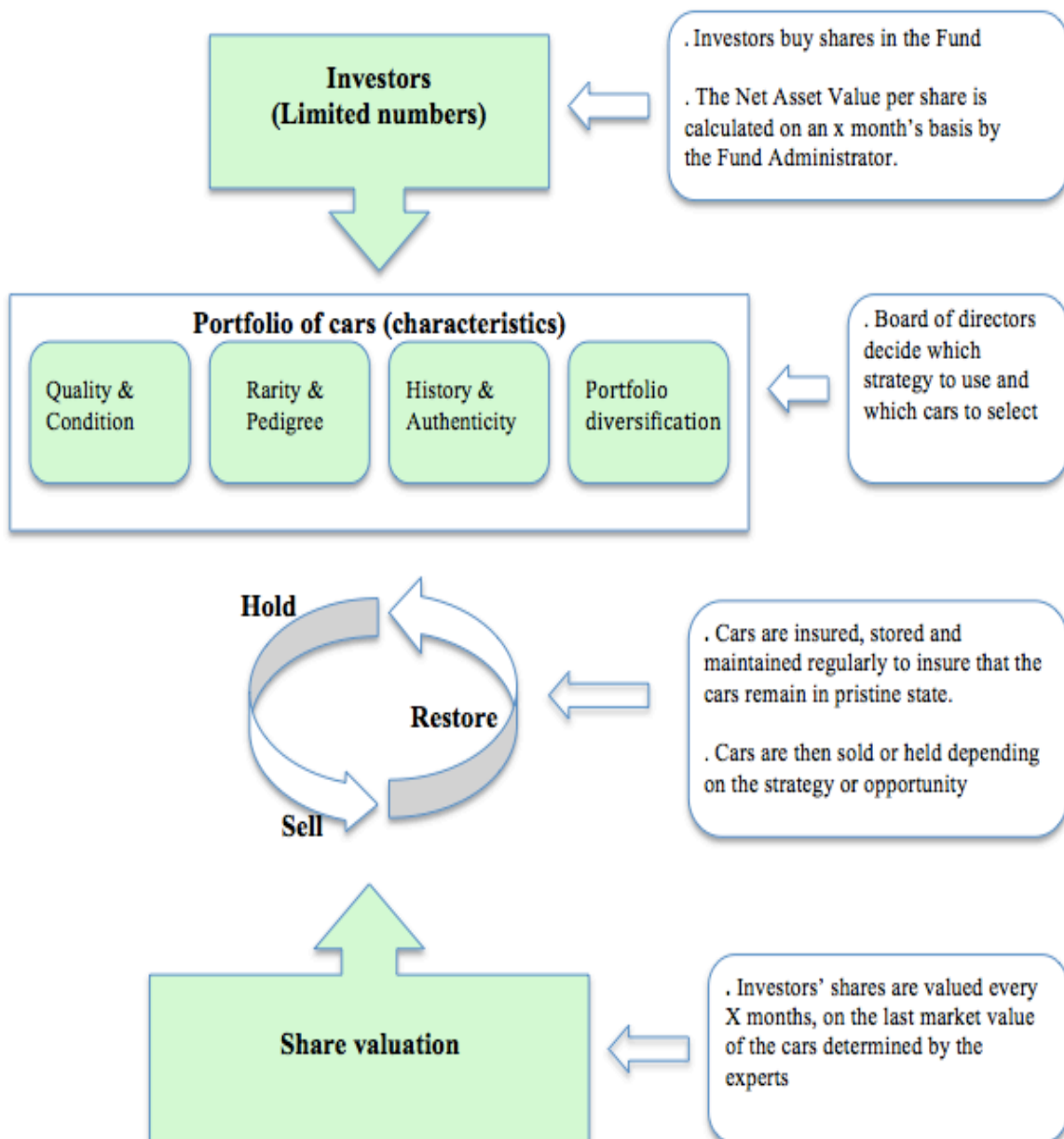
The particularity of the SICAV is that they have no limit in regard to the number of issued shares. As a result, when an investor buys shares in the mutual fund, more shares are then created. When he/she sells his/her shares the shares are taken out of circulation. Finally, when a big number of shares are sold, the fund manager may have to sell some of the cars in order to pay the investors. When it comes to special funds related to alternative tangible assets like cars, fund managers might establish a 'lock-up period', which will prevent investors from selling their shares within a certain fixed period. This technique is used to avoid any liquidity problems while the capital is being put in place and invested in tangible assets such as cars.

On the second hand, some funds might decide to be closed-ended or choose a SICAF (Societe d'Investissement a Capital Fixe) depending on their policy. As opposed to an open-ended fund, a closed-ended will only issue a limited number of shares. However, the market will determine the net value of the fund, which might be less or more than the fund's net asset value. Whereas in the case of an open-ended fund, the price of the share remains at the current net asset value of the fund.

Finally, a SICAF works with the same principle as a SICAV but instead of having no limit on the capital needed to start the fund, the fund manager is able to work out a fixed capital to successfully launch the fund and reach its future objectives.

## 2) How does it work?

Figure 1: Open-ended SICAV with a lock-up period



### **3) Legal & Entry obligations (Lawyers-Luxembourg, 2017)**

When it comes to creating a mutual investment fund, the location of the fund is a primary concern for the manager/s as most European countries have a strong fiscal policy related to the creation of those funds. As a result, most of these funds can be found in Luxembourg, Switzerland, and Malta. For instance, Belgium still has one of the strongest fiscal policies with a 25% tax on dividend, which is not the best possible outcome for investors.

So as mentioned above, some funds have decided to set up in Luxembourg or Switzerland. Our analysis will focus on Luxembourg, as it directly borders Belgium and is therefore the closest alternative for Belgian investors.

In Luxembourg, they are normally created as a SICAV or SICAF. Both investment funds can take the form of Undertakings for Collective Investment of Transferable Securities (UCITS) or as a Specialized Investment Funds (SIF). (Lawyers-Luxembourg, 2017) A Specialized Investment fund would be reserved to a certain type of “qualified investors” whereas the UCITS is open to any investors. Furthermore, since both Funds do not have a legal personality, they are either self-managed or externally managed by a bank.

#### **a. Taxation (*Luxembourg Consulting Group, 2013*)**

In Luxembourg, both SICAV/SICAF are exempt from corporate taxation. They only have to pay the “subscription tax” which is set at an annual rate of 0.05% on their net assets or 0.01% if they are formed as SIFs. Another positive incentive for foreign investors, both funds are exempt from the net wealth tax and from withholding tax on dividend to non-resident investors.

Finally, Fund management services rendered by a local management company will not be liable to any VAT.

#### **b. Formation (*Luxembourg Consulting Group, 2013*)**

This is the one criteria where both investments funds differ; while a SICAV may only be organized as a Public Limited Company (PLC.,Corp./SA), a SICAF can be set up in almost every available business form in Luxembourg: Public Limited Company (PLC,Corp/SA), Partnership Limited by Shares (SCA), Limited Liability Company (LLC, Ltd/SARL) or a Co-operative in the form of the Public Limited Company (SCOSA).

**c. Capital requirement (*Luxembourg Consulting Group, 2013*)**

First of all, the minimum capital requirement for SICAV/SICAF investments funds at the time of its authorization is €300,000. But most importantly, the subscribed share of capital of any of the two investment funds must reach €1.25 millions within 6 months after the company begins its activities. However, in the case of Specialized Investments Funds, the deadline is extended to 12 months.

**d. Supervision (*Luxembourg Consulting Group, 2013*)**

The Luxembourg's Financial Market Authority (CSSF) must approve the incorporation documents and is in charge of supervising both funds.

Once created, those companies are subjected to the company law in Luxembourg. In both cases, a licence is required for these funds to begin their activities. The licence should be delivered by the CSSF.

Finally, they must give out annual and half-yearly accounts to be analysed by independent auditors and disclose their account no later than 4 months after conclusion of the year.

**e. Investment & Distribution (*Luxembourg Consulting Group, 2013*)**

Managers of a SICAV/SICAF based in Luxembourg have the liberty to issue and cancel new shares not exceeding its NAV (Net asset value). Still every asset of the funds must be transferred to a depositary bank, based in Luxembourg, to ensure that shares issued/cancelled are in compliance with statutory provisions.

In terms of distribution, both funds are free to dictate the terms of the distribution of dividends or any form of repayments to their investors.

**4) Exit strategy**

In term of exit strategy, as it would be the case for assets in other class, the investment might be as short term as it is with stocks and bonds. The return to cash value at the end of the investment period can also be planned to use financial techniques such as: ‘stop-loss’.

As previously mentioned, certain funds have a strict policy for selling shares before a certain fixed period. Indeed, some small car funds might decide on issuing a limited number of shares and agree on a policy that states that all shareholders should come in the fund at the same time and leave at the same fixed time.

### **5) Existing car funds & Investor's package**

The very first investment fund related to Classic & Sports automobiles was created in 2006 and became active in 2011. The Count of Custoza Family office is a limited company that was incorporated in August 2006 under the Swiss law with offices in Zurich, Switzerland. Ever since the creation of this fund, many other individuals, with past experience in finance and/or historic cars, saw the investment potential of this market and decided to create their own fund. Indeed, quickly after the creation of the Count of Custoza classic car fund, a group of British entrepreneurs and old racing drivers created a Limited partnership car fund called IGA Automotive Fund. This particular Fund had a big publicity around it, as celebrities like Nick Mason or Gordon Murray became part of the fund. However, unlike the Custoza fund, IGA Automotive Fund is a closed-end fund with a limited number of investors.

Over the years, classic cars funds have grown in popularity in response to spectacular market performance and an ever-growing demand from institutional investors/private collectors. As a result, today you will find dozens of classic car funds, mostly located in tax heavens such as Malta, Luxembourg, and Switzerland. Indeed, the most popular funds today remains:

- The Count of Custoza Family (Swiss) – Open-ended
- The IGA Automobile Fund (UK) – Closed-ended
- The Ultimate Classic Car Fund (USA) – Open-ended
- Velocity Classic Auto Fund (Malta) – Open-ended
- Opus Classics (Luxembourg) – Closed-ended

Still, even if the purpose of each fund is to invest in classic cars, they have their very own legal structure and offer each a different investment package with specific guidelines for investors.

For instance, if we compare the Count of Custoza fund and the IGA automobile Fund, you will see that they both have different company structures and offers different packages & terms to their respectful investors.

➤ The Count of Custoza Family (Count of Custoza, 2012)

The Classic Car Fund is an open-ended fund with a lock up period of 3 years that offers two types of investment packages depending on the level of capital available to the investors. They offer two classes of shares: Class P and I. In both cases, the initial investment is fixed at 100 Euros but where they both differ is for the initial amount of subscription. Indeed, Class I shareholders are required to put an initial capital of €200,000 whereas Class P shareholders<sup>2</sup> are only required to put an initial investment of €10,000<sup>3</sup>. Furthermore, the unit of investment of this classic car fund is 20 euros. The plan is that these units can be traded and encashed on the Hamburg Stock Exchange. The valuation of shares is done on a monthly basis and the balance of the fund will be reinvested in a mixture of cash deposits, money market funds and the securities in companies related to the automotive field; all this to provide managers with enough liquidity for further car purchases and investor encashment. The management fee is set at 1.5% for Class I shareholders (2% for Class P shareholders) per year of the value of the fund. There will be a further 15% performance fee for Class I and 20% for Class P. Unlike most classic car fund, di Custoza allow certain classic car within the fund to be driven by investors. This a good diversification factor for investors who also wishes to experience the joy of driving this spectacular piece of machinery.

Finally, each of the fund's cars will receive a bi-annual valuation, which will then apply to the overall performance rating of the fund and the activity of buying and selling.

➤ The IGA Automobile Fund

Unlike the Classic Car Fund presented above, the IGA automobile fund is a limited partnership fund (closed-ended) with a minimum requirement of US\$500,000 from each investor (Emmison, 2011). The idea behind the fund is to reach a fixed capital of US\$150 million. The fund will be available to a limited number of Non-US investors, due to strict regulatory actions towards selling securities to US investors. Again, unlike the classic car fund (Custoza), the IGA fund will represent a long-term investment, as investors won't be able to cash out whenever they want. Indeed, they will only be able to sell their share and encash their investment once the fund has sold all its cars. As a result, investors who are willing to take part in this fund would have to be very wealthy and possess enough

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<sup>2</sup> APPENDIX II

<sup>3</sup> APPENDIX I

knowledge/confidence in the market to hold their investment for a period of 7 to 10 years. On the other hand, the fund will hold only the most collectible & sought-after car on the market while insuring a strong diversification of risks. Amongst others, the fund's collection will hold many Ferraris (250 GTs) and Aston Martins (DB4 Zagato).

Now, in terms of costs, the annual management fee is 1.5% of the net asset value of the fund plus a performance fee once a minimum return of 8% compound interest has been returned to the investor.

➤ Velocity Classic Auto Fund (Velocity Classic Auto Fund, 2015)

The Velocity Classic Auto Fund is, like the Classic Car Fund, an open-ended fund with a lock-up period of 3 years. However, the fund offers only one investor's package with a minimum investment of €75,000 and a share price of €33,399.92. The Net Asset Value per share is calculated on a quarterly basis. The management fee is set at 2% with a performance fee of 20% with high Watermark. Similarly, to the IGA automotive fund, Velocity Classic Auto is reserved to "Qualified Investors" licenced and regulated by the Malta financial Service Authority. Furthermore, Velocity distant itself from other Auto fund by actively managing its own portfolio and therefore offering the best service. Indeed, the fund actively restores and refurbishes their cars on a daily basis so that each one of them remains in pristine concourse condition. Finally, in terms of security, the fund assures to be fully vetted and regulated with partners such as AlterDomus, Ernst & Young and Hagerty.

➤ Opus Classics (Luxembourg) ( (Ouderaen, 2017) <sup>4</sup>

Opus Classics is a Luxembourgian "closed-ended" fund that was set up by a group of Belgian car enthusiasts in 2014. Their objective was to create a specialist fund with a limited number of "qualified investors" that would need to put a minimum of €250,000 each to eventually reach a fixed capital of €6 millions. The fund manager evaluated the lock-up period at 7 years. So, every investor would not be able to leave and cash out before 2022. Unfortunately, the fund never reached its objective and was forced to close. Indeed, after the AXA scandal of "the elite fund", the Luxembourgian Banking Commission, in charge of monitoring those types of funds, was accused of bad surveillance, decided to back off and therefore prevented

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<sup>4</sup> APPENDIX III

those funds to be established unless they are run by a professional financial entity (Bank). The problem was that the banks ask for 2-2,5% of the annual return. It was too expensive for Opus Classics so they decided stopped.

## **B. Financial analysis**

### **1) Methods of valuation**

Financially speaking, historic and classic automobiles represent an asset class in their own right. They represent a particular set of tangible assets that provided a high degree of capital preservation with attractive returns. Those” *tangible assets are expected to be consistent, average; long-term capital appreciation combined with currency independence and non-correlation with other investments classes.*” (Hatlapa, Better Than Gold: Investing In Historic Cars, 2014)

In order to properly evaluate the profitability of those funds, the availability of reliable data from which to derive statistical inference is crucial. Indeed, the funds valuation relies entirely on financial indices, research reports, and specific car analysis. However, individual records related to car purchase/sold over the years are almost inaccessible to the general public.

There are multiples ways to value those funds such as car indexes, private auctions sales, specialized dealer sales, and experts.... For instance, the manager of a classic car fund (Opus Classics) we interviewed<sup>5</sup> relied solely on data shown from a website that records all Auction sales worldwide. With a simple subscription to the website (Kingston500), the manager can easily monitor the movement in value of its portfolio of cars. Indeed, the website provides reliable financial information about 500 of the most collectible cars on the market today. They’ve decided to rate each one of the cars out of 100 points, in terms of value and desirability. They also give out technical specifications and records about the wanted cars/model and their personal recommendation about the market potential, appreciation/depreciation and future prediction of the car. Finally, they have created their own index (K500 index) which “*tracks the movement of the classic car market through tens of thousands of verifiable and qualified auction sale results*”. (Kidston, 2017) Each car has its own index value with a nominal value at 100, based on valuations from 1994.

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<sup>5</sup> APPENDIX III

Furthermore, Fund managers can also refer to, already existing, classic car indexes such as HAGI index, KnightFrank, Hagerty, Hemmings, K500 .... Those independent investment research houses that specialized in the rare classic car sector are becoming more common nowadays. They are using the same financial technique used on more traditional investments and are therefore able to create benchmarks, which can track this alternative asset class. Indeed, they offer all the necessary information for any investors to make informed decisions. They gather data from multiples sources such as dealers, private contacts, marque specialist and auction results. With this kind of data, they are able to update daily their indexes.

## 2) How Classic car indices are built

In order to successfully create an index on classic cars, you need to carefully evaluate the price movement (depreciation and appreciation) over the life of the car.

Experts such as Dietrich Hatlapa say that:

*The shape of generic price curve for the rare collector's car is a J-curve, often used to represent financial and economic trends in which the value of any venture goes down and It's IRR is negative in its early stage before climbing subsequently.* (Hatlapa, Better Than Gold: Investing in Historic Cars, 2014)

A Classic car index is usually built around ‘time series’ valuation based on trends in values. Indeed, in the financial markets, traders and analyst have developed a series of financial techniques to predict future market movements. These techniques can also be applied to the classic car market, as this particular market is known to follow certain trends during specific period of time. Unfortunately, unlike other alternative asset class, there is a lack of reliable and statistically practical data, which makes some of the group of cars difficult to evaluate.

Still, we can use sampling as an easy way to draw conclusion on a whole population. Indeed, you don't need to have all the data about all classic cars to draw conclusions. All you need is a sample of 30-40 % of data to create an index that will reflect the current trends.

Now in terms of valuation, the index has a standard par value fixed at 100 which is used to measured price movement over time and therefore enables the investor to see the evolution of the price of the index since its first appearance. Furthermore, some experts such as the ones behind the HAGI index have decided to create multiple sub-indices or sub-groups to allow the investor/collectors to compare the evolution of a specific sub-group with another one. Sub-

indices will generally be based on famous classic auto brand like Ferrari, Mercedes or Porsche.

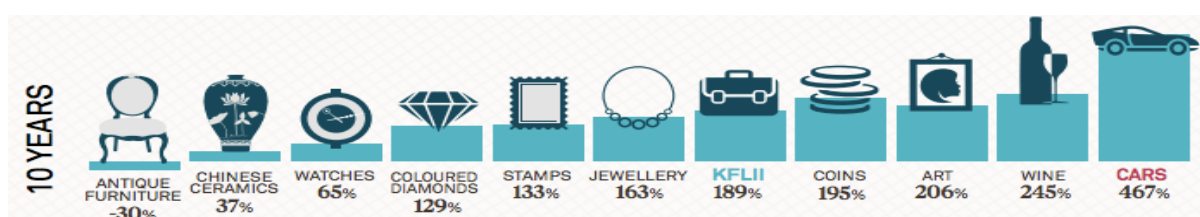
So, the basic 100 points values of the index is fixed at a certain point in time, it can be 5 or 10 years from the creation of the index. Furthermore, some classic car indices have decided to construct historic back test of the actual index by regressing the prices and returns of the index cars backwards in time. Once more, this method will allow the investor to see the evolution of the price from an earlier period of time.

Another important aspect of the classic cars indices is that they are capitalisation-weighted, which means that the average price of each model in the index is multiplied by the number of known surviving cars of that model. This would then mean that the weighting for each model in the index is the current total value of that model. For instance, if a certain model has a current average price of US\$100,000 and there are still 50 cars on the market nowadays, it means that the market size for that car model equates US\$5 millions. (Hatlapa, Better Than Gold: Investing In Historic Cars, 2014)

So, If you have another model with a market size of US\$10 millions, this would mean that the second car will have double the weighting than the first one. As a result, during a similar price change of both cars, car number two will influence the index 2 times more.

### 3) Analysis of past performance of classic cars (2006-2016)

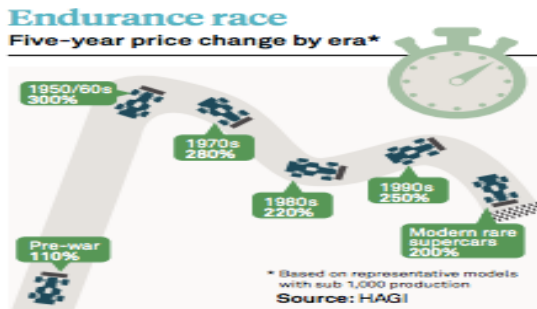
Figure 2: Asset Performance Valuation - 10 years



(Knight Frank, 2016)

According to the Luxury Investment Index Q1 of 2016, published by Knight Frank, the performance of classic cars in the last 10 years has surpassed many other alternative asset classes such as Art, Wine and Watches. Indeed, since 2006, the general value of classic cars has increased by 467% whereas the value of Art and Wine has increased by 206% and 245%. This represent double the growth of its main rivals (Art and Wine) and more than double the growth of the Knight Franks Luxury Investment Index (KFLII).

Figure 3: Car Price Evolution - Age Groups

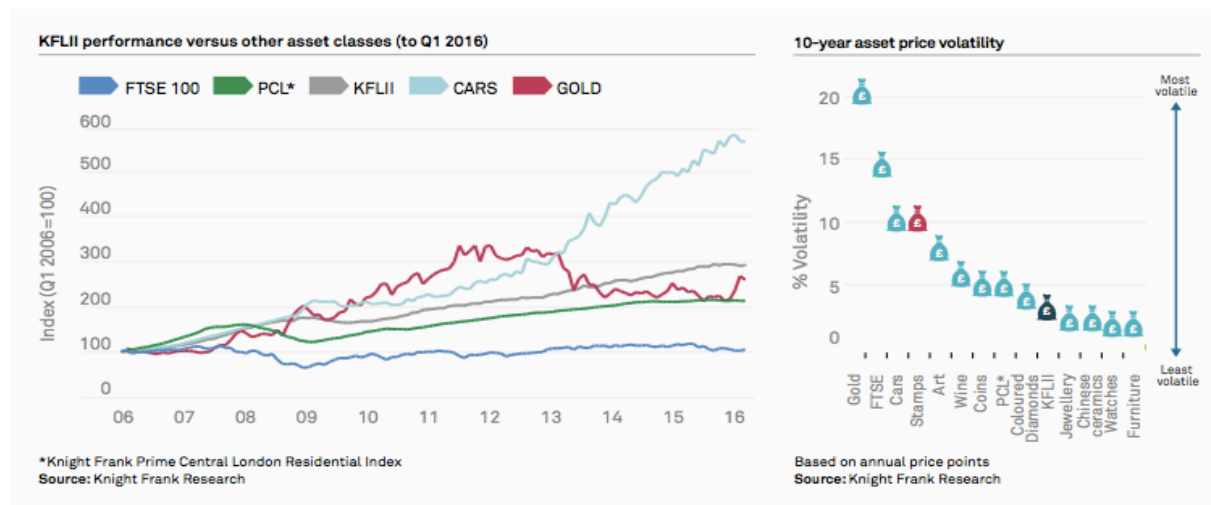


(Knight Frank, 2016)

Amongst these classic cars, the sub-group of cars made between 1950/1960s were the most popular with a value increase of 300% in the last five years. The age group that showed the least increase in value was the Pre-war cars, with a 110% increase.

As shown by this analysis, made by HAGI, the classic car market has been on a constant rise since 1990. However, one must not forget that the HAGI index is based on 50 of the most expensive and collectible classic cars on the market. There are many classic cars that have not seen any increase in value or even decreased considerably since their production. As a result, one must be very careful as to what to add to its portfolio of cars.

Figure 4: Asset Performance Comparison - Index Values & Price Volatility



Source: (Knight Frank, 2016)

Now when you compare the performance of the classic car market with the Financial Times Stock Exchange (FTSE 100), you can understand why current investors might be looking to invest in these alternative assets. Indeed, as you can see on the line graph above, the FTSE 100 hasn't shown any growth in value between 2006-2016. In fact, its index value has slightly decreased over that same period whereas the PCL (Prime Central London Residential) index

and HAGI car index has followed a constant growth pattern over the same 10 years. Indeed, the HAGI index value has gone up 5 times its base value (100) since 2006, almost reaching 600 at the end of 2015. Again, it is important to mention that both, the HAGI and PCL index represent the very high-end of the classic car and the housing market respectively. Therefore, they are not to be used as a generalization of both markets. Still, this chart gives the investor a pretty good idea of how the classic car market is performing in comparison to other assets (stocks, gold, real estate...).

Still you can see, at the very end of 2015, that car index value is decreasing and will continue to do so the following year as Mr Hatlapa said: “2016 was the year of the slowdown”. (Andrew Shirley, 2017) Annual growth remained at a respectable 9% but still two times less than in 2015 (17%). This substantial growth seen in the past 20 years has finally slowed down and levelled off. Mr Hatlapa added: “Those who were in it just for the money have moved on”. “The market is now more in the hands of the collectors and specialists, which I think is good news for the real enthusiast”. (Andrew Shirley, 2017) Furthermore, while looking at the number of cars sold at international auctions in 2016, the volumes are down 6% from 2015. Indeed, according to the market-tracking index (Kidston500), 78% of auction cars were sold during 2016 compared to 84% in 2015.

So, we can safely assume that the market is not what it was 5 years ago and has finally decided to stabilize but still remains fairly profitable. Though, those who are looking to invest will have to be well advised and rigorous if they want to achieve a long-standing ROI (Return on Investment).

Finally, before making an investment decision, an investor will always look for the price volatility of an asset. The level of price volatility will tell them the amount of uncertainty/risk they will have to take due to a change in asset price. In the chart above, you will notice that the classic car market remains one of the most volatile in terms of asset pricing behind Gold and Stocks. Therefore, the price of a classic car (asset) can change dramatically over a short period of time, which represents a higher potential risk for any investor willing to invest in this kind of market.

To conclude, past financial performance of the top-end classic car market has shown that this market can reach very high levels of return over a long period of time. However, today's return is not what it was 5-10 years ago. In 2016, the market has finally “hit a wall” and stabilized at an annual growth of 9% which is relatively low compared to the 151% growth

rate of the past five years. As a result, most money-driven investors have left this market and only the real car enthusiasts remain. Finally, individuals who are still looking to invest in this market have to be aware of the higher level of price volatility associated with this kind of asset, which ultimately brings higher risk for them.

## **C. Risks/Opportunities for Investors**

### **1) Opportunities**

#### **a. High potential return**

The first and most direct opportunity for an investor is that if you invest carefully in a well selected and maintained portfolio of classic cars, you will see that this strategy can guarantee a long-term capital appreciation and valuable return. In fact, there are a number of characteristics related to this asset class that can guarantee a long-standing portfolio return.

To start off with, there is no infinite supply of historic cars. Indeed, this sector of classic automobiles is a perfect example of inelastic supply. In most cases, classic cars have been built in small limited production number decades ago and only a few examples remain in spectacular state due to restorations and regular maintenance, which only increase their desirability as an investment asset for investor. As a result, this characteristic alone presents a good point for the investor.

Secondly, the growing number of participants (auction houses, classic car funds, dealers) makes this market more attractive to foreign investors as competition is continuously getting stronger to respond to a growing demand from clients. As explained in the part: trends of the market; currently the market has hit a stabilization level but nobody is referring it as a bubble bursting phenomenon. Analysts are taking more about a “cooling off” period in respect to the market long-term success of the past 20 years. There will always be a demand for this kind of automobiles because the Passion is limitless. Indeed, there will always people who show a deep connection, a great love for this market. (Breeze, 2016)

Thirdly, the classic market can be seen as inefficient which can result in significant excess in returns or huge loss depending on the market. This result can be explained by a high volatility of classic car prices on the market, which then leads to the mispricing of assets. Therefore,

some assets will end up overpriced and others under-priced, thus deviating from their true discounted value of their future cash flow.

Lastly, the lack of financial analysis has prevented the sector from being accessed by big investment institutions or other experienced investors. Therefore, this factor leaves new investors, the possibility to exploit the real financial potential behind this market and eventually reach higher than expected return on investment.

After interviewing a car fund manager and looking at past financial results made by experts, we can confidently say that a classic car fund will guarantee a return of 7-10% yearly (not including extra costs)

#### **b. Diversification effect/ uncorrelated assets**

As any other fund or venture, diversification of a portfolio of classic car is as important as any other fund when it comes to reducing investment risk.

For instance, when it comes to comparing 2 portfolios of identical size (number of cars), a collection worth of US\$10 million dollars might present less investment risk than a US\$500,000 car collection. Indeed, the US\$10 million collection might hold cars that are completely distinct in terms of diversification criteria (age group, brands, models, **uncorrelated price history**) while the US\$500 000 collection will have cars that are identical in many of the diversification criteria (same age group, **identical price movement** etc..). Therefore, the US\$500,000 collection might present more risk for investors. (Hatlapa, Better Than Gold : Investing In Historic Cars, 2014)

The ultimate quest for any portfolio of cars is to maximise the amount of return relative to risk. Indeed, the idea is to find a collection of cars that have shown that greatest increase in value with the lowest degree of risk over the same period. In other words, we look out price volatility (or standard deviation of compound returns) to reflect the amount of risk perceived in any portfolio. For that, the portfolio manager will have to choose a collection of cars with distinctive historical returns (uncorrelated cars) in order to minimise its risk.

As described in the HAGI book (Hatlapa, Better Than Gold : Investing In Historic Cars, 2014) there is evidence of a diversification effect if the portfolio reaches a number of 15 to 20 cars over a period of 28 years.

Now, while looking at past performance of a classic car index (HAGI index) and comparing it with the stock market (FTSE100) or other investments classes (Gold or Real Estate), we can clearly see that classic car values have a completely independent behaviour and non-correlative characteristics in relation to stocks and other assets classes.

This non-correlative characteristic between cars and other financial assets would represent a good diversification strategy for investor who would be looking to add these assets to their portfolio. This move could considerably decrease the overall risk of their portfolio.

### **c. Currency adjustments**

A favourable characteristic for investors looking to invest in this market is the fact that classic car is a currency-independent asset. Therefore, the value of the car is expressed in a currency at any particular moment in time and automatically adjusted itself to any movement in the currency or the exchange rate.

For instance, if a car is sold for US\$100,000 and in the next month, the dollars goes down against another currency, the market has a tendency to reflect the new exchange rate almost immediately. As a result, if the dollar goes down by 5% then the new price of the car will be US\$105,000.

On the opposite side, if the currency goes up, that does not necessarily mean that price of the car will be lower. So, it seems that investors can benefit from this in both cases.

As a matter of fact, many classic car dealers have used this currency movement to generate a profit out of selling car internationally at attractive prices.

HAGI have calculated the statistics on correlation between the US/GBP exchange rate and the HAGI Top index using (log returns) and their results shows values indicating weak or no meaningful correlation. (Hatlapa, Better Than Gold: Investing In Historic Cars, 2014)

### **d. Flexibility of investment fund**

As mentioned in the review of existing classic car funds, the possibility of investing in a dream classic car without having to actually buy it and bear all the extra costs (maintenance, licence, storage, restoration) represents a real opportunity for an investor.

Indeed, these investment funds specialized in rare classic cars are a real alternative for any car enthusiasts who want to invest in rare classic cars but doesn't have the capital and expertise to

build a personal collection. Therefore, they can invest in a fund that holds the car model/s they always dreamt of collecting/owning when they were young.

Still, even though investors are not buying the cars, they still have to put an initial capital that can easily reach €200,000 euros (more details at Existing car funds & Investor's package). So, it is safe to say that these funds are not directed to small investors looking for a quick return but rather qualified investors with relatively high disposable income.

Finally, investors within the fund can also benefit from the knowledge and expertise of portfolio managers with years of experience in the classic car industry. These managers also surround themselves with experts in all fields of the industry (consultants, former CEOs of car manufacturers, famous racers) to make sure that the investor receives a constant positive return. However, that doesn't mean that investors must fully trust funds' managers. They are a lot of factors to be taken into account when selecting a car and mistakes can happen. As a result, investors must educate themselves about the market and the different criteria of the car selection.

#### **e. Usability**

Aside from its investment potential, this tangible asset has the benefit of offering the investor the pleasure of driving. In many cases, investors are in fact real car enthusiasts and see these machines as timeless beauty powered by a state of the art engine that demands to be driven. Indeed, being able to drive these vehicles on open roads, whether it is private or legal, makes for a good percentage of the client's emotional attachment to a car. The pleasure of driving and feeling the engine on the road can make any car enthusiast smile and fall in love with the car. After all, these machines were meant to be driven and not just stand in a museum or a private collection like a painting or any other piece of art.

Unfortunately, some funds won't allow investors to drive these cars, as some of them are very unique and if damaged, will cost more to repair than their actual value.

## 2) Risks

### a. High entry requirements / extra costs

Classic car funds are generally closed to average investors and favour a limited number of passionate investors that possess certain knowledge of the classic car market. Therefore, in order to prevent the access to all investors, the funds generally request a minimum investment of thousands of euros (e.g. €75,000 for Velocity Classic Auto Fund).

Furthermore, even if this market has shown impressive return on investment over the past decades, the basic average yearly return that investor is looking out is closer to 7-10%<sup>6</sup>. However, this yearly return does not include management fees, storage costs, maintenance costs and insurances. Indeed, classic cars require a lot of maintenance and time to keep them in perfect selling condition. Fund managers will need to regularly take them out on the road, replace old/broken parts, clean and restore them.

As a result, investors will be looking out a yearly return of around 5-6%.

### b. Exit strategy

When it comes to investing in a classic car fund, the investor must be aware that the fund might apply a lock-up period or some sort of policy that prevent investors from shorting their position /cash-out after a few months. Funds manager use this policy to avoid any liquidity issue, while they gather enough capital to build their portfolio of cars. Indeed, as shown previously this market is subject to significant changes in available liquidity which makes them difficult to convert quickly to cash without winning or losing value on the asset.

As a result, investor who might be looking to invest in this asset class will have to wait a certain amount of time before leaving the fund.

### c. Unpredictable market change

Even if price of certain classic cars has been increasing dramatically in the past 25 years, the market is not immune to another bubble crash such as the one witnessed in the 1980s and early 1990s. Indeed, during the 1980s, Europe and USA experienced substantial growth

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<sup>6</sup> APPENDIX V

triggered by a new culture of money and entrepreneurship, which led to a growing number of wealthy people. As a result, prices of classic & sports automobiles went through the roof from 1985 till 1990. (The Telegraph , 2000)

However, this speculative car bubble collapsed after the savings and loan crisis that resulted in the closing of more than 700 savings and loans associations in the United States and Globally. (Hatlapa, Better Than Gold: Investing In Historic Cars, 2014)

For instance, the HAGI top index went from 3200 to 1300 in 3 years. The whole classic car market collapsed because savings and loan institutions, that previously provided the money to purchase those cars, crashed. Still, the number of wealthy people continued to grow throughout the crisis, bringing prices of classic cars up again until today.

To conclude, investors interested in diversifying their portfolio must be aware that this market could fail at any time if hit by any sort of financial crisis. It is not immune to any big economic downturn.

#### **d. High degree of knowledge/expertise**

A Classic car in itself is very complex and requires a certain level of expertise and knowledge in order to avoid a few risks such as: provenance risks and valuations risks

##### ➤ Provenance risk:

If an investor is looking to invest in a classic car fund, he needs to make sure that the cars in the portfolio are not replicas, thus, the need to check historic documentation. Indeed, car documentation must have any records/photos of repairs, services and restoration made to the vehicles as well as matching numbers of the chassis. All these papers are critical to selling of these cars, as this market is not very well regulated and might end up costing the investor a lot of money.

##### ➤ Valuation risk:

There is no fixed valuation system for this market. Value is set based on the comparative transactions and the current trend in the market. The investors must be aware of what's going on the market, which age group/car models is gaining value or decreasing. Investments in the wrong types of assets will eventually lead to a substantial loss of principal. For instance, if an investor invests in a car that underwent some wrong restorations, overlooked by the people who bought it, the value of the cars will lower considerably. Therefore, the car itself has been wrongly overvalued.

#### **e. Price volatility**

As previously mentioned in the performance analysis (2006-2016), the classic car as a financial asset has shown a high level of price volatility in the past 10 years (Knight Frank, 2016). As a result, the market suffers from dramatic changes in prices in relatively short period of time. This factor alone represents a direct risk to any risk-averse investor who is looking to diversify their portfolio. On the other hand, an investor who is a risk taker might see the opportunity to realize a long-standing return by taking on above average risk.

To sum up, based on a review of the classic car market, an analysis of both the functionality & practicality of investment funds specialized in classic cars as well as a study of past performance results of this asset, we would recommend to any qualified investors, with a large amount of capital, to invest in a Classic Car Fund. If chosen wisely, they could benefit from long standing returns, risk reduction through diversification, advice & knowledge from classic car experts within the fund and even the possibility of driving some of the cars. However, investors should bear in mind that the car market suffers from unpredictable market changes. Indeed, car prices are very volatile and represent, therefore, a substantial risk for non-qualified investors looking for a quick return. As a result, investors must educate themselves about the market and the cars within the fund to avoid facing provenance or valuation risks.

## **IV. Investment analysis: Car portfolio (practical part)**

### ➤ Introduction

After carefully reviewing the classic car market, the different aspects of the classic car investment funds and the positive/negative impact on investors, we thought that the best way to reflect the performance of this asset was to adopt an active investment strategy by creating a fictitious portfolio of 10 cars and make an investment analysis over the past 10 years, from January 1, 2007, to January 1, 2017. Our main objective is confirming some of the assumptions made by classic car experts: diversification effect/uncorrelated assets, long-standing return and relatively low risk & return ratios but also comparing our financial results with other similar type of markets; Art and Wine.

We will begin this analysis with some specifications about our portfolio (origin of data, assets selection and choice of benchmark). Before looking at the financial performance of our portfolio, we will first try to assess whether there is evidence of any diversification affect, then present some observations about our portfolio's returns & standard deviations and finish with a comparison of other traditional and alternative investment classes (K500, S&P500, Art.com, Liv-ex 100).

We will then start our portfolio performance analysis by using different risk & return measures such as Sharpe ratios, Treynor ratios and Jensen's alpha. We've chosen these ratios as, all three, combine risk and return performance into a single value and therefore represent the most effective tools to measure how well an investor's money has been invested.

Finally, we will close this analysis by comparing our financial performance results with past academic studies of the classic car market.

## **A. Portfolio Construction**

### **1) Origin of Database**

Classic cars are seen as a specific type of ‘asset class’, which can be held to generate a positive economic value converted into cash. However, unlike other financial securities such as stocks or bonds, cars have a sale price (rather than a market price), they trade at a much lower frequency and have no shares. Therefore, in order to successfully carry out our financial analysis, we have decided to build a database using only the quarterly index value of each car over the past 10 years.

Indeed, due to the complexity of the valuation of this type of asset, the market tracking index K500’s team of experts have created an index that reflect the price movement of any classic cars in their portfolio. In this particular case, the index is struck at a base value of 100, starting in 1994. As mentioned earlier, in order to sufficiently reflect the market trends of the past 20 years, we’ve decided to analyse our portfolio within a 10-year period.

As a result, we’ve collected 40 quarterly index values, starting from January 1, 2007 to January 1, 2017, for each car in the portfolio<sup>7</sup>. We’ve also added the quarterly index values of our benchmark: S&P500 and the K500 indices. Finally, we’ve collected quarterly risk-free rates (Short-term T-Bill) of the past 10 years to successfully compute the different risk adjusted ratios for our analysis.

### **2) Car selection**

Our portfolio currently holds 10 collectible cars that were personally hand-picked from a pool of 500 cars, put together by the K500 team of experts.

Amongst other reasons, according to Dietrich Hatlapa in his book: Better than gold, investing in historic cars, you need at least 9 cars to notice any portfolio diversification effect so it seems that 10 cars would be enough to show the past trends and performance results of the last 10 years.

Furthermore, in order to clearly reflect the potential of this market and its trends while also building a well-diversified portfolio, the car selection was a very delicate task. While going over the collection, you’ll notice that there are some ‘blue chip’ classics such as the Ferrari

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<sup>7</sup> APPENDIX IV

275 GTB or the Alfa Romeo 6C 1750 and some cars that have not yet reach that same level of recognition: Lancia Stratos. Bmw 2002 turbo. So, during the constructing of the portfolio, the most important diversification criteria were the age group of the car, the car rating, the brand and model.

Table 1: *Portfolio - Car Selection*

<b>Brand</b>	Alfa Romeo	Bugatti	AC	Alpine	Ferrari	Bmw	Lancia	Audi	Aston Martin	Ferrari
<b>Model</b>	6C 1750	Type 35	Aceca	A110	275 GTB/4	2002 Turbo	Stratos	Sport Quattro	Vantage	550 Maranello
<b>Year</b>	1930- 1933	1924- 1930	1954- 1963	1961- 1977	1966- 1968	1973- 1974	1974- 1975	1984- 1985	1992- 2000	1996- 2001
<b>Car ratings (Kidston, 2017)</b>	77	80	48	50	75	38	62	58	65	32

So, as you can see above, some of the selected cars have nothing in common when it comes to the year of production or ratings, the portfolio is spread out across all age groups. We have 2 pre-war models (6c and Type 35), one model from 1960s (Aceca), 2 models from 1970s (A110, 275 GTB/4), 2 models 1980s, one from 1990 and finally 2 modern classics (AM Vantage, Ferrari 550 Maranello).

Furthermore, the selection of cars covers almost all ratings. It goes from 38 to 80. Those car ratings are an indication of the level of performance within the K500 portfolio. Indeed, any car in the K500 portfolio will receive a rating between 1 and 100 based on different criteria (rarity, market demand, price...) judged by a team of experts with years of experience in the classic cars world. Still, some cars in the portfolio might have a low rating, but that doesn't mean that demand for these cars are not growing, bringing their prices with them (BMW 2002 Turbo).

Finally, you will see that there are 9 different brands of cars in this portfolio with a few in particular that are relatively famous (Ferrari, Alfa Romeo, BMW, Audi, Aston Martin) but also a few less popular (AC, Alpine, Bugatti, Lancia). As a result, we've managed to put together 10 very distinct classic cars to reach a maximum of diversification within the portfolio.

The brand alone represents a good diversification criterion as explained on section II.A.2.a (p7). Indeed, there are brands that have built a reputation for delivering the most beautiful, powerful and well finished classic cars such a Jaguar, Aston Martin, Ferrari, Porsche, Bugatti. The guarantee of price appreciation if you own a good example of these cars, is almost certain. Whereas, if you look at other less popular brands of the classic car market such as Renault, Peugeot, BMW etc, the guarantee of price appreciation is less certain.

### **3) Benchmark**

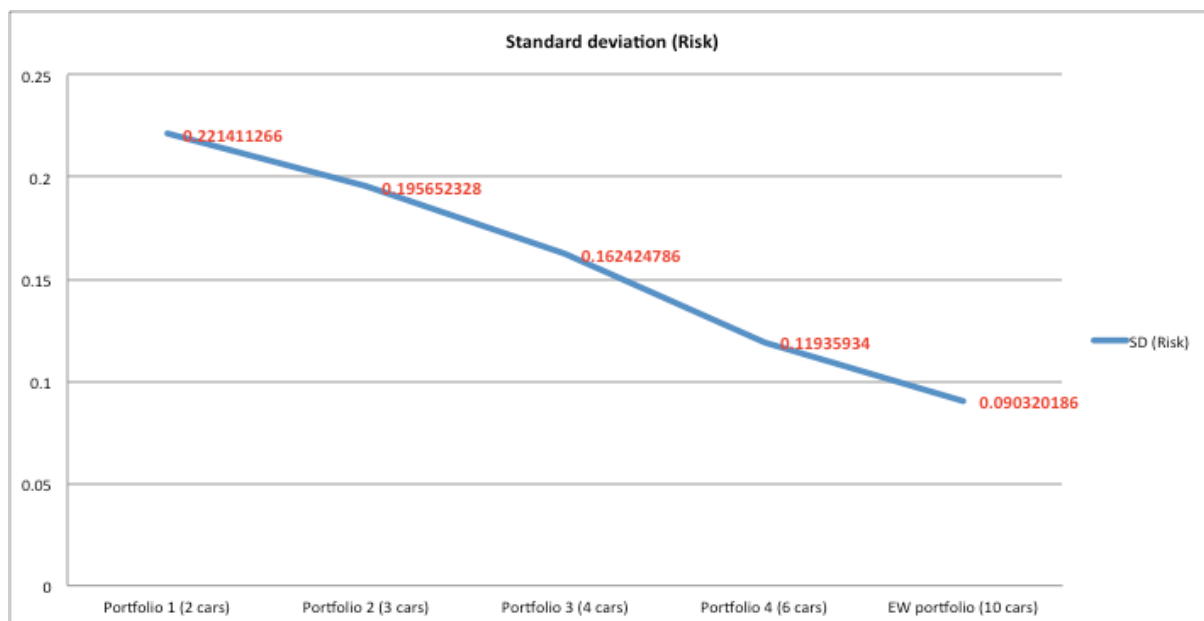
Now, we have looked to broad the INDEX S&P 500 as benchmark for our portfolio analysis, firstly to compare the performance of these alternative assets with the U.S. stock market and secondly, to show the benefits/weakness in terms of risk/return from an investor's point of view. We've chosen to gauge the S&P 500, as it is the leading indicator of U.S equities and only reflect the performance of the 500 largest capital companies, chosen by experts based on size, liquidity and mergers. Our benchmark uses a market cap methodology (higher weighting to larger companies), which is best known to reflect the real market structure of a country. Finally, not only does the S&P 500 provides a broader scope of the U.S economic health then other popular indices (DJIA's 30, Midcap or Smallcap indices), it is updated on a quarterly basis which fits perfectly with our portfolio's data collection. (Investopedia, 2015)

Furthermore, we have decided to include the INDEX Kingston500 to reflect the performance of the current classic car market in general and compare its performance with both, our portfolio and the stock market (S&P 500). After all, the Kingston500 is one of the most famous and well-established market-tracking indexes available to the general public. It tracks the price of 500 collectibles cars from 30,000 auction sales for over 20 years of sales. It is the perfect index to reflect past and future performance of the classic car market.

## B. Portfolio's performance observations

### 1) Diversification effect<sup>8</sup>

Figure 5: Diversification Chart



(Source: excel file)

The graphic presented above represent the evolution of the standard deviation (volatility of returns around the mean) in regard to number of cars in a portfolio. The idea is to confirm the existence of a diversification affect within the classic car market. In order to clearly show that unsystematic risk can be reduced through diversification, we created 4 equally weighted portfolio samples, each with a different number of cars. Indeed, we wanted to show that by adding more cars to a portfolio of classic cars, the level of risk taken by an investor would reduce considerably. We started with a portfolio (portfolio1) of 2 cars, both with the highest standard deviations (the riskier to invest in) and worked out the portfolio's standard deviation to get a sense of the risk faced by any investor. Then we took the same portfolio and added another car; we then worked out the new standard deviation to see how the new car would impact the level of risk. Our result, as seen on the graph above, shows that if you increase the number of cars in your portfolio, the level of risk or the historical volatility of portfolio return reduces considerably. As a result, we can confidently confirm our assumption that there is evidence of diversification within this market.

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## 2) Return Computation & EW portfolio construction

Now that we have gathered our data, we can compute the rates of returns for our 10-car portfolio and both index (K500 and S&P500).<sup>9</sup> We realised that our returns were relatively small and we needed a more approximate value since our data was calculated on a quarterly basis. As a result, we opted for the logarithmic return formula  $R_i = \ln(p_i/p_{i-1})$ , which allows for easier time-aggregation, instead of the arithmetic return  $R_i = (p_i - p_{i-1})/p_{i-1}$ .

As we have decided to analyse our portfolio for long holding period, the log return represent a more suitable option.

When building/investing in a portfolio, the first and most direct issue is the “weighting” of each asset in the portfolio. In our case, our portfolio holds different types of cars with different market capitalization so we’ve decided to divide each of the 10 assets into equal weights. Therefore, each asset holds a 10% weight in the portfolio (100/10). Thus, each member influences the portfolio in the same way, achieving equal representation. After multiplying each asset’s return by its giving weight, we were able to come out with a EW portfolio which would then serve as the main representation of the classic car market performance over the last 10 years.

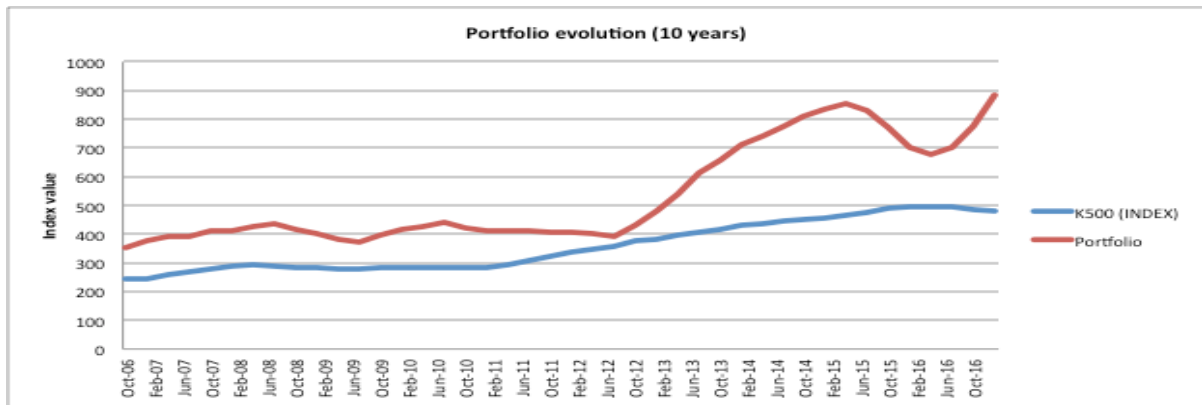
Having carefully selected our 10 assets and created a portfolio based on the equal weighted method, we can now measure and compare its performance with our benchmark index (S&P500) and see if it outperforms the already established classic car index (K500). As we know the market moves and changes rapidly due to certain unexpected events. As a result, we’ve decided to extend our analysis within a 10-year gap to allow enough time to show how well the market has been evolving and possibly adjusting.

Before beginning our performance analysis, it is interesting to look more closely at the evolution of the index values over the past 10 years for our fictitious portfolio and compare it with the main classic car index, the K500.

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Figure 6: Portfolio Evolution - Index Values (10 years)

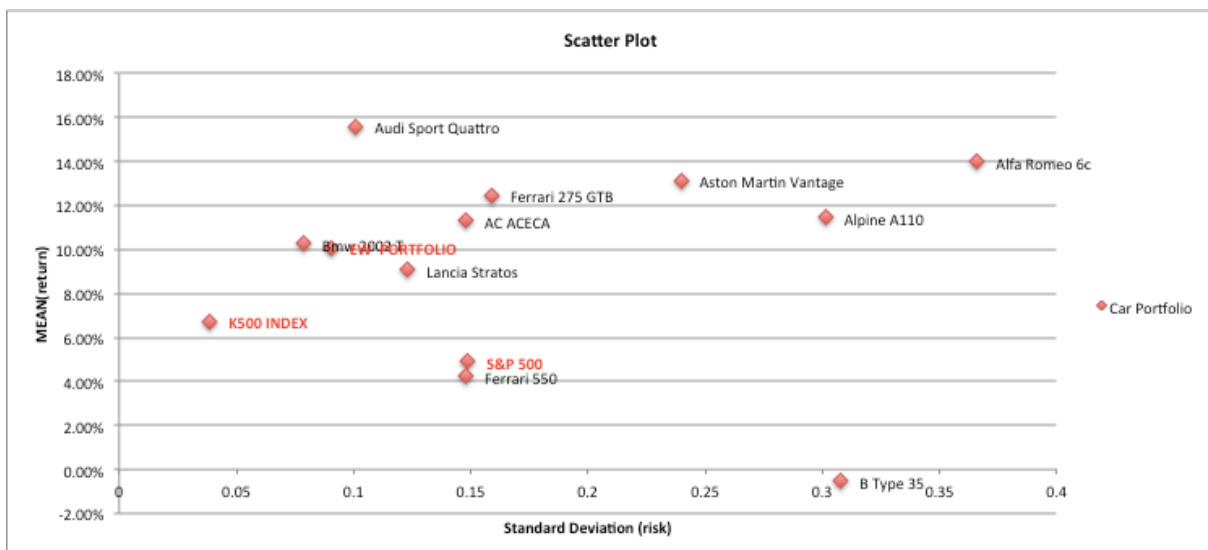


(Source: Excel file)

Our first observation is that, the K500 index and our portfolio both follow the same increasing pattern over the past 10 years. However, while the K500 index line has been showing a more constant growth throughout our investment period, our portfolio has shown more fluctuations in its evolution. Indeed, in the beginning, our portfolio showed a lot of fluctuations with a slight increase in value from 352.8 in the last quarter of 2006 to 408, 6 years later. It's only at the end of 2012 that our portfolio value skyrocketed and doubled in value, reaching 854. After the value dropped to 661 in February 2016 and finally reach its highest peak in January 2017. As previously said, the K500 index has kept a constant growth line until July 2016 where it reached 494. After that, we can now see a slight decrease in the market that was mentioned earlier in our microenvironment analysis.

### 3) Risk & Return observations

Figure 7: Scatter Plot - Risk & Return



(Source: excel file)

Our first analysis consists in gathering the yearly average return (mean) and standard deviation (risk) of each asset, portfolio, indices and to create a scatter plot which will allow us to visualize the return and risk of our EW portfolio in regard to the stock market and the K500 index. Our first observation is that our EW portfolio is more profitable than the stock market index and the classic car index with a yearly average return of 10.10%. In general, the classic car index K500 outperforms the S&P500 by almost 2%.

Secondly, in order to evaluate our portfolio's risk, we decided to include the standard deviation, which measures how much return is deviating from the portfolio mean. Therefore, the higher the standard deviation for a portfolio, the greater risk exposure for the investor.

By looking at the scatter plot, the S&P500 is clearly the riskiest index whereas the EW portfolio is riskier than the K500 index but still offers a higher yearly return.

To conclude, after carefully reviewing our return & risk scatter plot, we can clearly see that, over the last 10 years, both our classic cars portfolios outperforms the stock market index.

Still, while our EW Portfolio proves to be more profitable throughout our investment period, it remains a riskier investment than the K500 index.

#### **4) Comparison with the Art and Wine markets**

While evaluating the performance of the classic car market, we used the stock market (S&P500) as a benchmark. Indeed, we thought that it would be interesting to see how these new alternative assets would perform in relation to the ever-popular stocks index.

However, there are other types of luxury tangibles assets which are subject of intense investment that are worth comparing with our classic car portfolio.

For instance, the Art and Wine markets have been present in the financial world far earlier than classic cars and still remains a well sought out investment products for some investors.

The Art market and classic cars have more in common that most people would realize. They are both object of collection that is driven by a certain "passion" from an individual. A particular car or painting might be worth everything to a particular individual and absolutely worth nothing to another. It's all about the history behind the object that relate to a certain type of investors. Another notable resemblance with the Art market is the aesthetic aspect of a classic car's coachwork, its design and lines, which many car collectors see as a trace of

“art”. Therefore, some car designers have become famous for their signature coachwork found on different classic cars brands/models. The most famous coachbuilders in the classic car market remains: Zagato, Pininfarina and Bertone.

However, there are considerable interactive and tactile differences between collecting art and wine or cars. You cannot drive or taste art. It is purely a decorative object to the eyes of all. The art market is by nature large, extremely diversified and far bigger in terms of revenue than the classic car market. In 2014, the art market reached its highest record in revenue, €51 billions worldwide (McAndrew).

Furthermore, another notable difference with classic cars is the uniqueness of each piece of art, since every object of art is a one-off unlike a classic car model with 500, 1000 or more copies.

Figure 8: Evolution of Art Prices - Index (10 years)



Artprice Com SA (Financial Times , 2017)

Now in terms of performance of the art market over the past 10 years, if you look closely at the evolution of the Artprice Com index over the last decade, the value of the index has fluctuated heavily reaching its highest value in beginning 2012 at €52 a share (more than 3 times its value in July 2007, €16.25). However, ever since 2012, the value has been decreasing constantly until late 2016, where it's been picking up a bit and reaching €14 euros in June 2017.

As a result, while the art market has been used as an investment asset for far longer than classic automobiles, its financial performance over the past 10 years has been way more instable and less promising than the up and coming collectors' car market. Still, in spite of all

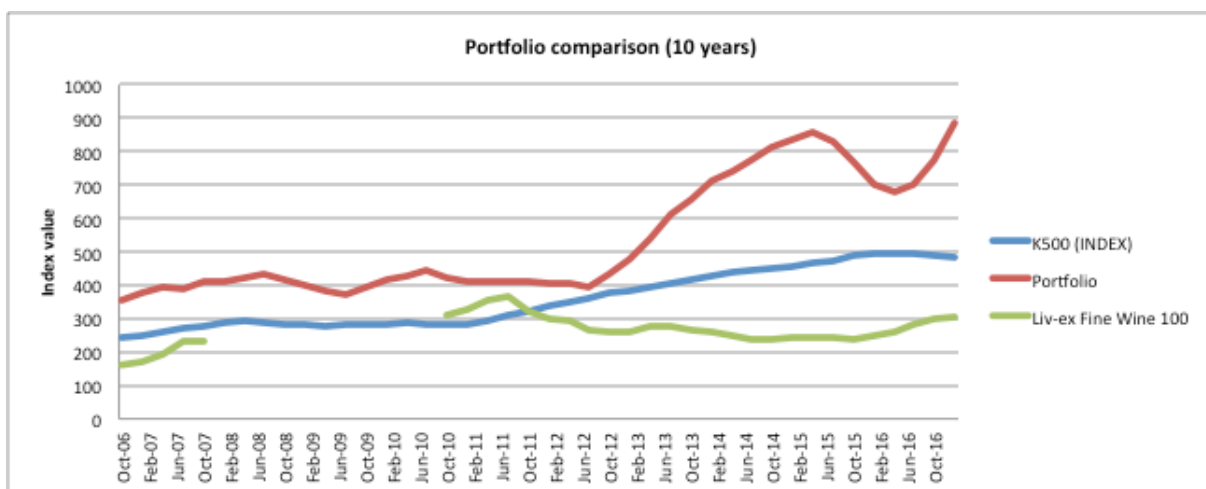
the difference between these two luxury assets, most collectors would easily describe their collections of cars as an art gallery.

Art is not the only collectibles that have attracted the interest of investors throughout the years. Fine Wine has become an extremely popular investment object because of its unique taste associated with the rarity of the bottle. The aspect of the wine market that resembles the most the classic car market is how maturity of the object affects the popularity and therefore, the price of the object. Like a classic car, a very good bottle of wine will reach its maturity after a few years. It can vary from 1-12 years depending on producer and type of wine. Investors will often bet on a newly produced wine and hope for it to grow in popularity and mature just in time to realize a good investment.

However, unlike both other markets, the supply and demand of the wine market is very complex and requires extra attention on the changes in taste from customers. Unlike classic cars, after a certain period of time, a bottle of wine is no longer drinkable. Indeed, a pre-war classic car can be kept in excellent condition by having been carefully looked after and restored over the years. Unfortunately, a wine bottle cannot be restored. As a result, the consumer can no longer enjoy it and therefore it will become worthless. Still some wines might become even more valuable even if they cannot be drunk.

Furthermore, the supply of wine might be disrupted by external events such as the weather. In the end, wine ‘behaves like a long-dated option with an expiry date’ (Better than gold-D.H).

Figure 9: Portfolio comparison - Index values (10 years)



(Source: excel file)

Finally, in order to measure the financial performance of the wine market during the past 10 years, we've decided to use the Liv-ex Fine Wine 100 index (Quandl, 2017) as our main source of comparison to the K500 index and our portfolio.

Still, you'll notice that we couldn't find the index value between February 2008 and June 2010 but we managed to find the missing data at [www.quandl.com](http://www.quandl.com).

Thus, our analysis shows that Wine market started at 161.63 and has continually increased between 2007 until mid 2011 where it reached its maximum value at 364.69. Just like the Art market, the index value decreased to reach 236.71 in October 2015. But for 2 years now, the value has been growing again and stabilizing at 304 today.

To conclude, just like the Art, Wine is a fluctuating market with a complex supply and demand situation that requires patience and expertise to invest. While looking at our portfolio comparison graph, we can clearly see that the classic car market (K500) has followed a more constant growth over the years and represent, therefore, a less risky investment in comparison to our two other luxury investments objects.

## **C. Portfolio Performance analysis**

### **1) Kurtosis & Skewness**

Kurtosis & Skewness are both very interesting statistical measures to take into consideration when analysing the behaviour of a portfolio in relation to the normal distribution. When analysing carefully using Kurtosis & Skewness, investors can make more informed decisions on where/when to invest. These measures will show the distribution of probability of losses and their extent.

Skewness represents the symmetry from the normal distribution; it can be negatively skewed if the data points are skewed to the left or positively skewed if data are to the right. A negatively skewed portfolio would indicate higher probability frequent little gains and few extreme losses. On the contrary, a positively skewed distribution would mean that an investor would face frequent small losses and few extreme gains.

Kurtosis is a measure that focuses on the shape of a distribution's tails compared to the normal distribution. If the extreme kurtosis is positive (kurtosis by itself being equal to 3 in case of normal distribution), the distribution is leptokurtic or more peak means lower probability of extreme losses or profits. If kurtosis is negative, in this case platykurtic or flatter, there is a higher probability of extreme outcomes.

Now, while observing our EW portfolio's skewness and kurtosis, our first impression was that our results confirmed what experts were saying about this market. The positively skewed and platykurtic distributions are signs of small frequent losses and extreme gains or outcomes which clearly define the high potential outcome of this market. Indeed, with the right investment, in the right portfolio of cars, the returns can be substantially high.

On the contrary, the stock market shows a much stronger leptokurtic distribution (lower probability of extreme results) with more little gains and less extreme losses

## 2) Ratio Analysis

While many investors used to evaluate the success of their portfolio on the returns only, we know that the most efficient way to measure a portfolio's performance, while being in an active portfolio management scenario, is to look at both risk and return together. This is why we have selected 3 performances ratios: Sharpe ratio, Treynor ratio and Jensen's alpha, which combines both risk/return into a single value and therefore provides the necessary information to guarantee a good investment strategy for investors.

- Sharpe ratio (Sharpe, 1994)

The Sharpe ratio is a commonly used method for calculating risk-adjusted return. You can obtain this ratio by subtracting the portfolio return by the risk-free rate and dividing the results by the standard deviation of portfolio return.

$$SR_p = E(rp)/\sigma(rp),$$

where  $rp = R_p - R_f$  is the return of the portfolio  $p$ , net of the risk-free rate ( $R_f$ ), and  $\sigma(rp)$  is the volatility of the portfolio excess return. The Sharpe ratio is then used to measure *the degree to*

*which a portfolio is able to yield a return in excess of the risk-free return to cash, per unit of risk.* (Ferson, 2008)

Now, unlike the previous performance indicators, our EW portfolio does not show the best risk-return combination. It's in fact, the K500 index that has the highest Sharpe ratio of 1.674, easily outperforming our EW portfolio with 1.0922 and the S&P500 index with 0.3147.

These performance gaps could already be seen in our risk & return scatter plot analysis. While our EW portfolio offers more return than the K500, the investment risk is higher. A solution would be to diversify even more our portfolio to reduce current risks. Again, you can see that the classic car index outperforms the S&P 500.

- Treynor ratio (Treynor, 2009)

The Treynor ratio is also a risk/return performance ratio but uses the Beta, instead of the standard deviation with SR, as a measure of risk.

$$Tp = E(rp) - E(rf) / B_p$$

As a result, the Treynor ratio only takes into account the systematic risk and not the risk that disappears through diversification. Systematic risk, also known as "market risk" is a type of risk that cannot be avoided pro-actively by investors. Systematic risk cannot be reduced/limited through diversification.

Therefore, since our EW portfolio's Sharpe ratio was lower than the K500s, we thought it would be interesting to see how those two would compare if you only keep the "systematic risk". Thus, we should find much smaller performance figures than with the Sharpe ratio.

Our results show that the K500 index is still the most performing index of the three. The focus on the "market risk" hasn't changed the rankings seen on the Sharpe Ratio. Our EW portfolio is still showing better figures than our Benchmark (S&P 500) but remains below the classic car market index (K500).

- Jensen's alpha (Jensen, 1967)

The Jensen's alpha is a risk adjusted performance measures that indicates if a portfolio is earning sufficient amount of return for the level of risk it is taking.

If the value is positive, then the investor has beaten the market by investing in a portfolio with a return higher than the expected return of the market (considering systematic risk only).

There are multiple ways to compute the Jensen's alpha but the most accurate one is using the CAPM model. Both our EW portfolio and K500 index have positive results, which means that in both cases, an investor would have beaten the market. Still, The EW portfolio has a higher alpha than the K500 index. Therefore, if our results are accurate, our cars selection within the portfolio has generated returns higher than the risk adjusted return. It has even surpassed the classic car market index's alpha.

In order to see the significance of these results, we decided to carry out statistical tests around our Alpha results. Our first hypothesis ( $H_0$ ) is that our alpha is equal to 0 and our second hypothesis ( $H_1$ ) that alpha is different than 0. The idea is to show that our past result is significantly different than 0.

After calculating the Z-values of our alpha, with a confidence interval of 95%, we can safely reject our first hypothesis that alpha is not significant (equal=zero). Therefore, we can confidently draw conclusions from these results.

To conclude, our Equally Weighted portfolio of 10 classic cars has shown some highly positive growth over the past 10 years. In terms of yearly average return, our portfolio has easily outperformed our benchmark (S&P 500) and the classic car market index (K500). Still, while our portfolio is less risky than the stock market, it remains a riskier investment strategy in comparison with the K500. Indeed, by looking at the Sharpe/Treynor ratio, which both represent risk/return performance measures; the classic car market index outperforms our portfolio and the benchmark index. However, after testing the significance of our alpha results, we can say that our EW portfolio is earning excess return and has beaten the market.

As a result, a risk-averse investor would favour the K500 index because of its highest risk/return ratios while a risk taker might favour our EW Portfolio with higher expected return for more risk.

Finally, past financial data have showed that the classic car market has been growing constantly, outperforming other well-established indices (S&P500, Artprice.com, Liv-ex) over the past 10 years and therefore represent a profitable investment strategy for experienced investors who are looking to diversify their portfolio.

## D. Comparison with past performance results

The final part of our financial analysis consists in comparing our EW portfolio and the Classic Car Market Index performance results with past empirical results made by financial experts. Prof, Stephen G. Martin, an assistant professor of finance at Winthrop University in Rock Hill, SC (USA) wrote an article called: The Road Less Travelled: The Case for Collectible Automobiles as an asset class in winter 2016, where he discussed the role of collectible automobiles as an alternative asset class and carried out yearly return/standard deviation calculation as well as risk adjusted returns ratios (Sharpe, treynor and betas). (Stephen G. Martin (assistant professor of finance at Winthrop University in Rock Hill, 2016) He based his calculation on the Hagerty Collector Car Indices, which tracks the price movement of 96 collectible cars from 2007 till now. Prof, Martin made a 10-year analysis from January 1, 2007 to January 1, 2016, which is similar to our investment period. However, he computed his risk-adjusted returns ratios based on a 4 months data sample whereas we did it on a quarterly basis. Thus, our results might not be similar to those found by Mr Martin's but still, if accurate enough, should reflect the same growing pattern.

Tableau 2: *Performance Results - Yearly*

Performance tools (Yearly)	EW Portfolio	K500	Index (S&P 500)	RF
Average Return (Annualized)	10.10%	6.72%	4.91%	0.23%
Standard deviation (Annualized)	0.09032019	0.03873946	0.148538059	0.00248793
Average Excess Return	9.87%	6.49%	4.68%	/
Beta	0.16280235	0.04377078	0.998099695	/
Jensen alpha	2.33%	1.63%	/	/
Sharpe Ration	1.09228912	1.67453737	0.314735905	/
Treynor ration	0.60598483	1.48205453	0.046839269	/
Skewness	0.29337812	-0.05655301	-1.801545837	
Kurtosis	-0.33394933	-0.90176694	4.331822916	

(Source: Excel file)

Our first step is comparing average yearly return and standard deviation of our EW portfolio and K500 index with the average returns for all collectible cars. Our EW portfolio and the K500 market index average a yearly return of 10.10% and 6.72%. The Hagerty Index

positions itself between the two with an 8.39% return<sup>10</sup>. However, whilst the Hagerty Index is showing higher return than the K500 Index, it shows a far greater standard deviation at 0.1258 than the 0.0387 of the K500 and 0.0903 of our EW portfolio. Therefore, the Hagerty index represents a greater risk of investment in comparison to our portfolio. However, a portion of this risk can disappear through diversification.

So, we can focus now on the risk of our portfolio in comparison to market as a whole, we estimate the beta coefficient using the S&P 500. While all the betas in our chart are lower than 1, meaning that a classic car (the asset) is less volatile than the US stock market, the beta of all collector automobiles (0.0946) is lower than our EW portfolio (0.1628) which means that it remains less risky compared to our fictive portfolio. However, in the end, it's the K500 index that has the lowest beta (0.0437) and therefore remains the lowest risk option.

Tableau 3: *Performance Results - Quarterly*

Performance tools (Quarterly)	EW Portfolio	K500	Index (S&P 500)	RF
Average Return	2.52%	1.68%	1.23%	0.06%
Standard deviation	0.045160093	0.019369732	0.07426903	0.00124397
Beta	0.162802354	0.043770779	0.998099695	/
Sharpe Ratio	0.507420538	0.7469845	0.133821388	/
Treynor ration	0.140754467	0.330560482	0.009957707	/

(Source: excel file)

Now in terms of risk adjusted return ratios, as mentioned above, Prof. Martin computed the ratios based on the four-months data sample, which deviates slightly from our data sampling (quarterly). When comparing our EW portfolio's Sharpe & treynor ratios (quarterly) results with those of Prof. Martin, our ratios are almost identical: SR (EW portfolio): 0.546; 0.575 (Prof.Martin) and TR (EW): 0.151; 0.1839 (Prof.Martin).

Finally, after comparing our portfolio performance with past empirical results made by a scholar in finance, we can conclude that, while our results are not identical to those found by Prof. Stephen G. Martin, they both show the same risk & return tendencies and a strong reflection of the classic car market's growing potential of the last 10 years.

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<sup>10</sup> APPENDIX VIII

## V. Conclusion

To conclude, we can confidently confirm what many classic car/finance experts were saying about the investment potential of this alternative asset class. Indeed, in the last decade, classic car as an investment asset generated an annual return of 6-8%<sup>11</sup> with a level of risk well below other traditional investment classes such as Stocks, Gold, Art and Wine. Therefore, for years now, this asset proved to be a certifiable way for any investors willing to diversify their investment portfolio and generate over then expected returns.

However, after carefully reviewing the classic car market and its current trends, the market has finally levelled off and slightly decreased, mostly due to a shortage of classic cars presented in ‘‘pristine/concourse’’ state and an increase in customer’s bargaining power.

As Mr Hatlapa said: ‘‘those individuals who were in if for the money have moved on’’, only the true car enthusiasts remain and are still looking to find the next best investment in this market, which appears to be ‘‘affordable classics’’ and ‘‘modern classics’’. (Andrew Shirley, 2017)

As part of this growing trend, many financial and car experts decided to create investment funds specialized in these cars. Most of these funds are located in tax heavens, have their own legal structure and offer each different investment packages with strict guidelines. Undoubtedly, they are generally reserved to qualified investors with knowledge of the classic car market and with high disposable income as most of them operate with a lock-up period of up to 10 years. Still, they offer investors the opportunity to invest in this asset without acquiring the car and bearing the costs of ownership. Some funds will even let investors drive their cars.

Finally, although this asset offers many advantages for institutional investors such as high constant return, diversification effect /uncorrelated assets, currency independent, we noticed that this asset showed a reasonably high price volatility as well as signs of positively skewed and platykurtic distributions. These factors are symbols of an inefficient market with dramatic changes in prices, which represent substantial risks for investors, especially those without any market knowledge. However, after testing the financial performance of our EW portfolio, our results remain inconclusive as to whether this asset will stay profitable in the years to come.

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Still, before investing in this type of asset, we would advise investors to educate themselves about the classic car market, to always be wary about market changes and to carefully pick the cars within their portfolio.

On a final note, we finally realized why true classic car enthusiasts are calling this type of investment: “passion investing”. Even if demand fluctuates through time with the generation of buyers, the “passion” for this luxury asset will always remain.

## VI. Bibliography

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## **VII. Appendices**

### **List of Appendices:**

- I. Count of Custozza (Subscription Form – Class P)
- II. Count of Custozza (Subscription Form – Class I)
- III. Interview of a Classic Car Fund (Opus Classics)
- IV. Index prices (Data collection)
- V. Return Computation Chart
- VI. Diversification Effect Charts
- VII. Comparaison with Art Index prices (Live-ex Fine Wine 100)
- VIII. Descriptive Charts (The Road Less Traveled : The Case for Collectible Automobiles as an Asset Class)
- IX. Knight Frank Wealth Report 2016 (Classic Car Special)

## Appendix I: Count of Custoza (Subscription Form – Class P)

Subscription Form  
for private clients

The Classic Car Fund Limited – Class P  
ISIN: VCP282281150

### I. Fund unit holder details

Surname:

Firstname:

Address:

Postcode/Postal address:

Country:

Telephone or e-mail:

### II. Subscription units/amount

The Fund's units could be subscribed in the fund's currency or in units. Please choose only one.

Total Amount of subscription

Total number of units of subscription

**EUR**

In this case the subscriber must transfer an estimated amount before the cut-off time.

### III. How to invest

The following information is necessary in order to invest in the fund:

Private clients

1. Subscription form
2. Payment (incl. receipt of payment)
3. Dealing Instructions
4. Certified copy of your proof of identity\*

For complete information regarding required documents and the investment procedure, please visit [www.fortuna.vc](http://www.fortuna.vc).

Please note that no subscription will be made or account opened until the order is complete, i.e. necessary documentation as well as payment has been received by the fund. Additional information regarding the fund etc. is available on the website [www.fortuna.vc](http://www.fortuna.vc).

\*(Proof of identity shall contain a photograph, signature, date of birth and/or personal identity number and shall be legalised by a notary public or other official authority, such as the police, bank, lawyer or an approved foreign financial institutions under the jurisdictions of an approved financial regulator.)

Subscription account and bank currency routing information

**Receiving Bank:** Banque Havilland (Liechtenstein) AG, Austrasse 61, FL-9490 Vaduz

**Clearing-Number:** 8814

**Account holder:** The Classic Car Fund Limited

**IBAN (Account):** EUR LI26 0881 4004 0018 6100 0

**Swift:** SFBALI22

**Reason for payment:** „Subscription“ (In case of payment in multiple instalments, please mention (i.e. 1<sup>st</sup> instalment)).

### IV. Source of funds

Select the source of funds for the investors's subscription by ticking the applicable box(es) below. This is required for anti-money laundering compliance.

Salary or bonus       Loan       Profit from sale of property       Profit from sale of investment

Savings       Inheritance or gift       Profit from sale of business       Investment income

Other (please specify)

Subscription Form  
for private clients

The Classic Car Fund Limited – Class P  
ISIN: VCP282281150

**V. Are you a politically exposed person (“PEP”)?**

Yes  No

**Who is a PEP?**

A PEP is a person who presently or previously has had an important official function, such as head of government, minister, vice and deputy minister, member of parliament, supreme court judges, ambassadors, diplomatic officials as well as military high rank officers. Therefore please advise if you are yourself are a PEP or close family member or close associate to PEP.

**Why do we ask?**

Pursuant to the anti-money laundering legislation we are compelled to ask all investors certain questions in order to identify so called politically exposed persons (“PEP”), and their closed family members and close associates. We do apologies for the inconvenience and hope for your understanding. Please do not hesitate to contact us should you have any questions with regard to the above.

**VI. Authorisation**

The investor accept that this subscription will be governded by the terms of this form, the current Offering Memorandum, articles of incorporation and by-laws of the fund. The Investor confirms that they had the opportunity to receive, read and understand these documents.

Date and place:

Signature (authorised signatory): .....

Clarification of signature:

Fax the completed Suscription form to +423 231 34 38 For further assistance, contact us:  
in advance, but the original must be sent to:

Fortuna Administration Limited  
Austrasse 15  
P.O. Box 673  
9490 Vaduz  
Liechtenstein

Phone +423 231 34 34  
Fax +423 231 34 38  
www.fortuna.vc  
info@fortuna.vc

**Subscription Form**  
for private clients

**The Classic Car Fund Limited – Class P**  
ISIN: VCP282281150

**VII. Information table**

Minimum investment amount:	10'000 EUR or equivalent
Subsequent subscription:	100 EUR or equivalent
Dealing day:	31 <sup>st</sup> March, 30 <sup>th</sup> June, 30 <sup>th</sup> September, 31 <sup>st</sup> December
Cut-off time:	4 pm (CET)

**VIII. Notes to Subscription Form**

**Investment**

- This form must be used for initial and subsequent subscriptions in the fund. Additional copies of this Subscription Form, the Offering Memorandum and further documents may be found at [www.fortuna.vc](http://www.fortuna.vc) or requested from Fortuna Administration Limited free of charge.
- The fund and the administrator reserve the right to request additional information to verify the identity of the investor, source of payment and source of funds. The fund will not accept a subscription until the investor provides originals of the requested information. Funds received without requested original documents will be held for ten dealing days then returned. Investors will be informed by Fortuna Administration Limited of the supporting documents required.
- For a subscription to be considered acceptable on a dealing day, a correctly completed Subscription Form together with the requisite payment confirmation must be received at Fortuna Administration Limited by the applicable cut-off time.

**Payment**

- The Investor must wire funds to the fund's account by the cut-off time.
- The subscription must be in accordance with the terms of the Offering Memorandum of the fund shares being acquires in order for the subscription to be accepted on that dealing day. All payments must include a reference to this registered name of the fund.
- The fund and the administrator reserve the right to request anti-money laundering documentation when subscription proceeds are not sent from an account held in the name of the investor shown in section 1 (fund unit holder details). Where subscription proceeds are sent from a person or entity other than the registered investor and the fund and the administrator do not have anti-money laundering documentation for the third party there may be a delay in the matching of the subscription proceeds. This could result in the investor missing their desired dealing day. The investor should contact Fortuna Administration Limited if sending subscription proceeds from a bank account that is not in their name.

**Costs and Fees**

- Subscription fee: up to 5%; Lockup-period: 3 years.
- Transfer agent fee: 0.20% or in minimum EUR 80/maximum EUR 500 of the subscribed amount.

**Performance and Risk**

Investments in mutual funds always involve certain risks which are displayed in the Offering Memorandum. Past performance is no guarantee of future performance. The future performance will be depend, among other things, on movements in the market, the manager's skills, the fund's level of risk and the subscription, management and redemption costs. The value of the fund may decline as a result of all in shares prices and it is not certain that you will recover your invested capital. The performance may vary considerably during the year. The individual unit holder's loss or gain will therefore depend on the exact date of subscription and redemption.

**Private data**

The fund and the administrator treat private data and have therefore a duty of confidentiality concerning information about others' business it is party to, unless otherwise expressly stipulated in Acts or regulations or the unit holder has granted permission to supply information that is subject to this obligation. Unit holders have the right to inspect the company's routines for handling private data and the information that is registered. Unit holders can demand that incorrect/unnecessary information corrected or deleted.

## Appendix II: Count of Custozza (Subscription Form – Class I)

Subscription Form  
for private clients

The Classic Car Fund Limited – Class I  
ISIN: VCP282281077

### I. Fund unit holder details

Surname:

Firstname:

Address:

Postcode/Postal address:

Country:

Telephone or e-mail:

### II. Subscription units/amount

The Fund's units could be subscribed in the fund's currency or in units. Please choose only one.

Total Amount of subscription

Total number of units of subscription

**EUR**

In this case the subscriber must transfer an estimated amount before the cut-off time.

### III. How to invest

The following information is necessary in order to invest in the fund:

Private clients

1. Subscription form
2. Payment (incl. receipt of payment)
3. Dealing Instructions
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\*(Proof of identity shall contain a photograph, signature, date of birth and/or personal identity number and shall be legalised by a notary public or other official authority, such as the police, bank, lawyer or an approved foreign financial institutions under the jurisdictions of an approved financial regulator.)

Subscription account and bank currency routing information

**Receiving Bank:** Banque Havilland (Liechtenstein) AG, Austrasse 61, FL-9490 Vaduz

**Clearing-Number:** 8814

**Account holder:** The Classic Car Fund Limited

**IBAN (Account):** EUR LI26 0881 4004 0018 6100 0

**Swift:** SFBALI22

**Reason for payment:** „Subscription“ (In case of payment in multiple instalments, please mention (i.e. 1<sup>st</sup> instalment)).

### IV. Source of funds

Select the source of funds for the investors's subscription by ticking the applicable box(es) below. This is required for anti-money laundering compliance.

Salary or bonus       Loan       Profit from sale of property       Profit from sale of investment

Savings       Inheritance or gift       Profit from sale of business       Investment income

Other (please specify)

Subscription Form  
for private clients

The Classic Car Fund Limited – Class I  
ISIN: VCP282281077

**V. Are you a politically exposed person (“PEP”)?**

Yes  No

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9490 Vaduz  
Liechtenstein

Phone +423 231 34 34  
Fax +423 231 34 38  
www.fortuna.vc  
info@fortuna.vc

**Subscription Form**  
for private clients

**The Classic Car Fund Limited – Class I**  
ISIN: VCP282281077

**VII. Information table**

Minimum investment amount:	200'000 EUR or equivalent
Subsequent subscription:	100 EUR or equivalent
Dealing day:	31 <sup>st</sup> March, 30 <sup>th</sup> June, 30 <sup>th</sup> September, 31 <sup>st</sup> December
Cut-off time:	4 pm CET

**VIII. Notes to Subscription Form**

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Appendix III: Interview of a Classic Car Fund (Opus Classics)

*This interview took place on the 10<sup>th</sup> of April 2017 in Brussels (BE). I interviewed Mr Nicolas Hollanders de Ouderaen, Managing Director of Opus Classics, a Classic Car Fund based in Luxembourg.*

***Antoine: Hello, good afternoon. Could you please tell me your name and your relation to the fund?***

*Nicolas Hollanders de Ouderaen: I left my corporate career 3 years ago, and I wasn't sure what I would do next but for long I had the idea of setting up some sort of business in the classic car world. I ended up with two friends setting up a small structure that we funded with our own money. We added to that some leverage and started buying/selling cars. Now buying/selling in the meantime, we could either restore them as a project or do some historical research, the idea was to create some value by some sort of intervention. After a while I was also joined by a number of people ask if they could also join our undertaking and become investors as well which for all sorts of reasons, wasn't very practical. We had governing system where we were taking all the decisions unanimously, the 3 of us, whether it was about buying or selling. Adding a third voice was a bit difficult. People were not willing to put the same amount of money we'd originally put so we had to create a voting system and it was becoming tricky.*

*Actually, one I woke up and started thinking, actually, if there is real demand in classic cars I should set up a fund. I looked around if there is some and they were indeed some. They are not always very transparent and the information isn't always accessible but I knew something existed.*

*But we decided that if we would to set up a fund, we wouldn't be the fourth or fifth fund. We would need to specialize in something different. The idea was to put together a specialist fund. A category within the category and we chose what is currently referred to as young timers. That is what we called next generation classics.*

***Antoine: So, these cars would be between 1970's and today? What would be the age group of those cars?***

*Nicolas:* I would say late 70's until for some cars, early 2000.

*Antoine:* Because I have checked your website and some of the cars in your garage are much older.

*Nicolas:* The website has nothing to do with the fund, some cars that you will find on the website. Some we bought some cars with the intention of putting them in the fund. So, you will find some cars that are exactly spot on the target but we have also all the other cars that we bought in the initial approach, the 3 of us.

***Antoine: In terms, of setting up the fund, where is it easier to create one? In Luxembourg, because of the tax regime or elsewhere?***

*Nicolas:* You have to make a fundamental choice whether you want your fund to get a EU passport or not and in other words, either you put it up within the EU union or you go outside and most of the funds today are in exotic location and essentially for tax reasons and also because the structures whether it's in the Bermuda or caiman islands, they have very low requirements in terms of reporting and governance so it's easy to set up and doesn't cost that much money. The downside is you cannot sell these funds within the European union and you have a low credibility factor when it comes to people that are not familiar with those exotic locations. When people see that the fund is incorporated with turc and kakos islands, sounds like panama papers.

So, we looked up where else we could put our fund and we found 2 countries: Malta and Luxembourg. No possibility in Belgium simply because of the tax regime, you can set a fund in Belgium but it's going to be under the normal corporate tax regime, which means that you get 35% tax on the gains.

***Antoine: What is the accurate denomination of this kind of fund in Belgium?***

*Nicolas:* We usually do it in a form of a SICAV, which means Societe d'investissement a capital variable, which means that the people can come and come out whenever they want.

Now a sicav itself is only a qualification because you can do a sicav with a Societe anonyme, sprl or with a commandite. So, we choose to do a SICAV as societe anonym in Luxembourg because the reputation of Luxembourg was higher than the reputation of Malta. That simply was a reason of creating marketing and building some kind of a trust within the company. So, we choose Luxembourg and this reason why we failed in the end.

***Antoine: What are the general basic entry requirements for any investors that want to come into your fund?***

*Nicolas:* 2 things you need to consider. 1, which is the legal requirements and then you, have your commercial approach. In our case, the legal requirement for such a fund in Luxembourg is that each investor needs to bring at least 125 000 euros. The reason for that is to put an entry barrier so that less experience people, less well-informed people cannot get in. It only targets such people with a certain wealth and phase out the small investors that would be too risky.

2, we had long debates about how much to ask and we ended up with a minimum contribution of 250 000 euros. 1 share was 250k. We create two classes, one that was the founding shareholders that was 500k and they would get exactly the same rights in term of their investment but as a founder shareholder, you get a sit on the advisory board which honorific.

***Antoine: What about, when you are in the fund, can the investor apply some investment techniques like a ‘stop-loss’?***

*Nicolas:* No in our fund, we have taken an approach which is the approach of a closed fund where everybody gets in at the same time and everybody gets out at the same time which means that there is no possibility to join in later or depart earlier. For the very simple reason that with these types of assets the critical question is always the valuation. Because law requires it, you can publish the valuation every 3 months, that doesn't mean that the valuation is precise enough to truly reflect the value of the cars. Take per example, the elite fund in Luxembourg.

The ELITE Fund in Luxembourg is an investment SICAV in jewellery, wine and they wanted to have cars as well. They have a first compartment in Wine, which worked well. They had a major shareholder called AXA insurance. Problem is that they have chosen to buy wine en

primeur. Which means that between the time they buy and the time they sell, nobody knows what is going to be the value of that wine because you can buy your primeur for a certain period then you have to wait for  $\frac{3}{4}$  years then the wine comes to the market and you see if you had made a good and bad investment. Their opinion was usually, it goes up by 30 % so for the fund in the fund accounting, every year they would had 10% to the value of the stock. At some point in time, AXA says we are leaving at the last value that you have published which is for example +20% and as AXA holds a big part of the asset and then realised that it's never gonna sell for what they hoped for so they have to sell more than anticipated and at the end AXA goes back with the theoretical value and all those that are left, are left with the remainder that they have lost the biggest money.

So as a result, we decided to invest in young timers and we believe that we need a certain period of time before we can essentially increase the bright increase in value and we decided that the fund would be for seven years with no possibility of getting out or going in simply because it's too risky to put value on a car and realise the day after that actually you don't get it or you get more. So, we simply find the structure and the functioning.

***Antoine: In terms of evaluating the fund itself, the expertise you would need to evaluate the cars, what did you personally use for your fund?***

We had 3 complementary approaches. First thing was the database in which we would record all the auction prices for cars, or for the type of cars, or similar enough to be representative. Second thing was to look at all the ads on the Internet and put together another database, which is then priced on asking prices and the third one was to have those two elements vetted by a small committee of experts who would agree on: yes, seems like the right number or no doesn't seem like the right number. The rule was that it could never go higher but it could always decrease the gain. In a view of protecting the investor, they could only minor, the can never major.

***Antoine: So you mean you have partnership with auction houses such as Bonhams, Artcurial?***

You don't need a partnership, you can buy the data.

***Antoine: In the book “Better Than Gold: Investing in Historic Cars”, Mr Hatlapa has based his analysis on the HAGI index, did you use the similar Index for your fund?***

No because Mr Hatlapa’s index is essentially called a Top Index for proven cars. So, what he takes is the cars that, in his view, are the cars that are the most collectible cars. He doesn’t look at cars that are upcoming and will join that status one day. Hatlapa is slightly different but he is the first one that has applied to the classic car world some of the techniques that are used in the financial world. But for example, I asked Hatlapa if he could produce a study for me, showing overtime the evolution of the price of some cars depending on the differential between time T and the time these cars were introduced to the market. In other words, what I would call a generation affect.

Is it true that pre-war cars enjoy less interested today because you and I have never seen these cars on the road? Is it true that cars from the 70’s should enjoy more interested tomorrow because those who have seen them on the road or in magazines in the 70’s are the people who have enough money to afford finally the car they have dreamt of?

***Antoine: So, you saying that is the reason why this market is becoming so popular amongst investors?***

My theory is, the interest of people is moving over time, according to the age of bulk of the buyers on the market.

***Antoine: Now if we focus more on the portfolio and the cars within your portfolio, can we talk of a diversification affect?***

As I told you, the fund rule was that everybody would come in the fund at the same time. We’ve made up a list of about 60 cars from that period (young timers), which we considered to be significant enough in the history of automobile combined with performance. But the ‘significance’ part was very important; the first four-wheel drive or the last rally car in-group B.

If you were to put together the best collection of cars, what would it be? Only on the intrinsic quality, which includes the historical significance. That was one thing. In terms of diversification, you can look in two ways, if I invest in cars, am I diversifying? am I diversifying my risks compared to other assets? The answer is probably. Hatlapa said it’s

uncorrelated so by definition, you have spreading the risk. I think we don't have enough data but based on the data we have, yes you are diversifying. So, are we still in a diversification mode if we offer that fund, we are targeting 60 cars of that type of period? the answer was no we are not as strong If you want to diversify compared to other assets but if you owned already a collection of cars from the 20's up to the 70's. We don't know what your investment is going to do in the future so you might invest also in something other like 'young timers'.

***Antoine: Let's say I am an investor, what would be the advantages and possible risks of investing in this kind of fund?***

First is, we believe that this type of asset will grow in value overtime and if chosen well, will give you a reasonable return. We are not looking for amazing returns; we are talking about 7-10% a year, which is already quite a bit. What we do is allow you to invest in a car while spreading your risk over a number of cars and benefiting from real advice from the market in order to choose the best ones. Compared to someone who would say, I want to invest in classic cars but I would rather buy one myself. Point 1 would be, you invest in a lot of cars, so you spread you risk. Two you are counting on experts to pick the best cars on the market. And three, you also have experts that would insure that the specific car that we buy is actually in perfect condition, has the right history and not pretend to be something else. Because authenticity is important.

***Antoine: What about the possible risks? Are we talking about some sort of Bubble as seen in the book from Hatlapa?***

The graph from the book are not representative of the market of classic cars, it is representative of the best cars in the world. It is same as taking the best chalet in Courchevel or an apartment overlooking central park. In the end, it may have done better than the cars. We compare cars with other things but we don't compare the right category of other things. If you go deeper into the market, you see some cars went down over that period, some cars remain flat and some went up. Those who went up are essentially the best cars. That is understandable if you imagine that these cars are bought by collectors who emerged and for whom getting to a certain amount of wealth include buying a top as well as buying a top place etc. that certain linked to the growth of GDP and the number of billionaires. You'll that pre-second world war car are going down with one exception, the ones before 1904. Because they

can do the London to Brighton rally. These cars are really rare. Everything after 1904 until the late 30s, beginning of the 50s is going down. Then you have a middle segment that went up. So, it is true to say that the market went up for certain cars but not every segment of the market has increased. So yes, there is a risk, absolutely. If there was no risk, there would be no return. If the price goes down, you still have a car. That's at the end of the fund, we'll still have all these cars. We cannot sell them because the market has collapsed. Fine, we will organise a system where we will allocate the cars to the people that are there. At least you will still get a car.

***Antoine: Can the people in the fund drive the cars?***

No, they can't. The simple reason is that if someone is driving a car and the engine is exploding, the person will say I didn't do anything. It just happened and all the others will say, you drove like a mad guy and you broke it.

But there are other funds that will say, we will buy some cars for you to enjoy and some cars for you to keep.

***Antoine: I found that the information/data regarding the classic car market can be difficult for people like me to get a hold of, is it really true for non-experts that car data is difficult to find?***

I would challenge you on that. It is pretty easy when you know which website to out. For example, take per example, the website K500. It is a website that gives you all the values of auction values of 500 cars. They gave you everything; they gave you valuation over a period of 25 years, the evolution of the price at auctions. That will cost 75 euros a year.

K500 is a top website. You can go to sports car market. they go even further back, like 35 years back. So essentially it is, more easily accessible and cheaper than finding information on paintings or modern art.

***Antoine: One of the thesis's chapter will be dedicated to building a fictive portfolio of cars and to measure its financial performance over a period of time, could you tell me how to get the data for my analysis?***

Take a subscription to the K500 website and Hagerty. Hagerty is the insurer and they have database with higher price than K500 because on top the auctions they take the value the cars are insured for. Also, while using Hagerty, you'll see that American cars from 50 to the 70's is not doing that well compared to European from the same period.

***Antoine: Could you tell me why your fund never actually launched?***

Oh, very simple, regulatory reasons. So initially Luxembourg was accepting these funds (specialized alternative investment fund). In anything, you could buy cameras, cars, jewels etc. They accepted those with relatively low regulations. The banking commission in Luxembourg said it's pretty simple to set it up but we will look very closely at what you do. The Banking commission is very much involved in the surveillance of the operation of the funds and when the elite fund (AXA) happened 1,5 years ago. Some investors blamed the commission for not exercising carefully enough its duty of surveillance. So, the banking commission said that our fund might be too risky so we will back off and will no longer allow these funds to be established if they are not run by a professional finance entity who have to go through a lot of steps before you get your accreditations. Basically, it comes down to, you have to be a bank.

So, when it came back to me, I had two choices, I either go to the bank with my projects but the bank takes 2-2,5% a year to run your fund.

***Antoine: Thank you so much for your time.***

## Appendix IV: Index prices (Data collection – Excel)

Portfolio	1	2	3	4	5	6	7	8	9	10	RF Rate (TB3months) (%)	K500 (INDEX)	S&P 500	Portfolio
Brand	AC	Alfa Romeo	Alpine	Aston Martin	Audi	Bugatti	Ferrari	Ferrari	Lancia	BMW				
Model	Aceca	6C 1750	A110	Vantage	Sport Quattro	Type 35	275 GTB/4	550 Maranello	Stratos	2002 Turbo				
Year	1954-1963	1930-1933	1961-1977	1992-2000	1984-1985	1924-1930	1966-1968	1996-2001	1974-1975	1973-1974				
Oct-06	139.24	461.17	176.66	119.17	138.97	1241.23	333.19	95.92	349.5	473.79	0.41	242.27	1377.93994	352.884
Jan-07	142.04	653.45	226.53	117.28	147.6	1141.21	344.29	96.9	406.76	487.2	0.44	246.44	1438.23999	376.326
Apr-07	143.58	901	296.26	118.83	156.22	961.98	338.91	98.31	418.88	500.6	0.44	258.81	1482.37	393.457
Jul-07	145.11	1062.2	346.49	118.27	164.84	703.53	360.37	99.73	392.7	514	0.4	269.19	1455.27002	390.724
Oct-07	146.65	1317.5	357.37	115.62	173.47	526.45	381.32	101.14	446.32	527.4	0.32	277.52	1549.38001	409.324
Jan-08	148.19	1429.99	328.91	110.85	182.09	430.74	433.03	102.56	419.41	542.89	0.21	288.77	1378.55005	412.866
Apr-08	149.72	1486.01	291.54	103.99	190.72	416.38	515.5	103.98	429.31	560.46	0.18	292.89	1385.58997	424.761
Jul-08	151.26	1506.34	290.86	100.01	195.26	455.86	490.29	105.39	470.32	580.13	0.15	289.78	1267.38001	434.572
Oct-08	152.8	1310.51	308.16	98.94	195.73	478.43	468.09	106.81	449.17	601.88	0.08	284.63	968.75	417.052
Jan-09	154.33	1135.46	343.42	99.58	192.11	484.09	430.72	107.52	428.02	623.63	0	281.25	825.880005	399.888
Apr-09	165.46	981.18	366.21	100.56	184.42	472.83	378.17	107.54	406.88	645.87	0.01	277.76	872.809998	380.912
Jul-09	186.18	826.91	370.27	98.97	176.72	472.18	405.57	106.85	385.73	668.6	0.01	280.55	987.47998	369.798
Oct-09	217.03	1022.74	374.32	94.83	169.03	471.52	446.04	105.46	364.59	691.81	0	282.97	1036.18994	395.737
Jan-10	218.03	1170.15	378.38	96.83	161.34	470.87	486.51	101.99	357.17	715.51	0	285.12	1073.87	415.678
Apr-10	222.9	1269.16	382.43	106.36	153.64	464.87	477.67	96.45	363.48	739.2	0.01	285.28	1186.68994	427.616
Jul-10	223.04	1400.05	385.7	123.43	149.62	453.53	449.38	88.83	383.52	762.9	0.01	282.77	1101.59998	442
Oct-10	208.1	1212.72	388.17	134.44	149.28	436.84	415.62	79.53	417.3	786.6	0.01	282.7	1183.26001	422.86
Jan-11	218.08	1105.66	389.86	131.86	152.61	414.81	367.09	70.63	451.07	810.3	0.01	284.49	1286.12	411.197
Apr-11	234.7	1084.26	360.96	134.06	159.61	392.78	344.62	66.66	484.84	834	0	292.54	1363.60999	409.649
Jul-11	248.5	1068.21	302.28	113.25	166.61	375.65	395.73	67.64	518.61	857.69	0	308.03	1292.28003	411.417
Oct-11	239.72	1028.64	253.17	102.63	173.61	363.42	415.44	70.04	552.38	881.39	0	323.81	1253.30005	408.044
Jan-12	239.72	965.21	213.63	102.21	180.62	356.1	430.42	73.87	586.15	905.09	0	337.2	1312.41003	405.302
Apr-12	218.75	872.57	213.44	93.61	187.62	353.68	476.59	74.59	619.93	928.79	0	348.58	1397.91003	403.957
Jul-12	210.29	658.37	265.54	101.57	194.62	351.26	476.59	72.55	653.7	952.49	0	359.03	1379.31995	393.698
Oct-12	233.32	835.96	330.56	106.48	201.62	348.84	536.9	70.9	687.47	979.19	0.01	374.98	1412.16003	433.124
Jan-13	256.46	1092.2	408.51	108.33	208.62	346.42	588.52	74.99	721.24	999.88	0	384.07	1498.10999	480.517
Apr-13	254.54	1427.09	499.37	107.13	215.63	343.99	665.34	79.51	755.01	1023.58	0	396.08	1597.56995	537.119
Jul-13	254.31	1933	590.23	108.61	222.63	341.57	767.34	84.1	788.78	1047.28	0	407.27	1685.72998	613.785
Oct-13	266.37	2125.45	681.09	112.79	241.78	339.15	859.28	87.24	842.28	996.97	0	414.9	1756.54004	655.24
Jan-14	290.73	2317.91	771.95	119.66	273.07	336.73	992.79	83.55	915.49	997.94	0	429.19	1782.58997	709.982
Apr-14	357.27	2261.39	700.17	129.21	316.51	382.4	1114.85	78.36	1008.42	1050.18	0	437.68	1883.94995	739.876
Jul-14	423.82	1955.91	567.83	182.57	372.1	685.58	1225.45	93.57	1143.62	1111.86	0	445.81	1930.67004	776.231
Oct-14	447.39	1714.21	445.3	279.71	427.69	956.35	1303.87	94.8	1192.28	1256.97	0	450.07	2018.05005	811.857
Jan-15	428	1627.54	332.57	353.93	477.31	1194.71	1325.23	124.99	1157.39	1347.46	0	454.42	1994.98999	836.913
Apr-15	391.84	1578.58	352.79	405.22	495.6	1352.58	1323.94	148.81	1115.53	1383.3	0	466.33	2085.51001	854.819
Jul-15	338.92	1567.23	403.86	389.79	511.23	1220.53	1300	165.58	1015.23	1406.36	0	474.41	2103.84009	831.873
Oct-15	326.26	1280.82	415.43	307.65	524.22	1088.48	1249.78	172.23	965.87	1353.09	0	488.72	2079.36011	768.383
Jan-16	353.86	907.56	387.48	299.35	540.52	956.44	1198.15	162.24	967.45	1236.27	0.01	496.03	1940.23999	700.932
Apr-16	396.9	814.03	368.04	364.9	582.52	824.39	1160.61	157.66	940.4	1159.3	0.01	494.09	2065.30005	676.875
Jul-16	455.39	1000.22	359.94	408.68	630.51	816.74	1137.15	149.58	914.63	1122.16	0.02	494.41	2173.6001	699.5
Oct-16	470.82	1466.13	379.68	464.55	664.25	933.49	1148.65	148.39	896.81	1188.42	0.02	486.45	2126.1499	776.119
Jan-17	443.18	1932.04	570.9	458.67	686.75	1174.63	1195.12	148.33	886.94	1358.07	0.04	482.45	2278.87012	885.463

## Appendix V: Return Computation (2007-2017)

Portfolio	1	2	3	4	5	6	7	8	9	10	RF Rate (TB3months)	K500 (INDEX)	S&P 500	EW PORTFOLIO
Brand	AC	Alfa Romeo	Alpine	Aston Martin	Audi	Bugatti	Ferrari	Ferrari	Lancia	BMW				
Model	Aceca	6C 1750	A110	Vantage	Sport Quattro	Type 35	275 GTB/4	550 Maranello	Stratos	2002 Turbo				
Year	1954-1963	1930-1933	1961-1977	1992-2000	1984-1985	1924-1930	1966-1968	1996-2001	1974-1975	1973-1974				
Jan-07	1.99%	34.85%	24.87%	-1.60%	6.02%	-8.40%	3.28%	1.02%	15.17%	2.79%	0.44%	1.71%	4.28%	8.00%
Apr-07	1.08%	32.12%	26.84%	1.31%	5.68%	-17.09%	-1.57%	1.44%	2.94%	2.71%	0.44%	4.90%	3.02%	5.55%
Jul-07	1.06%	16.46%	15.66%	-0.47%	5.37%	-31.29%	6.14%	1.43%	-6.45%	2.64%	0.40%	3.93%	-1.85%	1.06%
Oct-07	1.06%	21.54%	3.09%	-2.27%	5.10%	-29.00%	5.65%	1.40%	12.80%	2.57%	0.32%	3.05%	6.27%	2.20%
Jan-08	1.04%	8.19%	-8.30%	-4.21%	4.85%	-20.07%	12.72%	1.39%	-6.22%	2.89%	0.21%	3.97%	-11.68%	-0.77%
Apr-08	1.03%	3.84%	-12.06%	-6.39%	4.63%	-3.39%	17.43%	1.38%	2.33%	3.19%	0.18%	1.42%	0.51%	1.20%
Jul-08	1.02%	1.36%	-0.23%	-3.90%	2.35%	9.06%	-5.01%	1.35%	9.12%	3.45%	0.15%	-1.07%	-8.92%	1.86%
Oct-08	1.01%	-13.93%	5.78%	-1.08%	0.24%	4.83%	-4.63%	1.34%	-4.60%	3.68%	0.08%	-1.79%	-26.87%	-0.74%
Jan-09	1.00%	-14.34%	10.83%	0.64%	-1.87%	1.18%	-8.32%	0.66%	-4.82%	3.55%	0.00%	-1.19%	-15.96%	-1.15%
Apr-09	6.96%	-14.60%	6.43%	0.98%	-4.09%	-2.35%	-13.01%	0.02%	-5.07%	3.50%	0.01%	-1.25%	5.53%	-2.12%
Jul-09	11.80%	-17.11%	1.10%	-1.59%	-4.26%	-0.14%	6.99%	-0.64%	-5.34%	3.46%	0.01%	1.00%	12.34%	-0.57%
Oct-09	15.33%	21.25%	1.09%	-4.27%	-4.45%	-0.14%	9.51%	-1.31%	-5.64%	3.41%	0.00%	0.86%	4.81%	3.48%
Jan-10	0.46%	13.46%	1.08%	2.09%	-4.66%	-0.14%	8.68%	-3.35%	-2.06%	3.37%	0.00%	0.76%	3.57%	1.89%
Apr-10	2.21%	8.12%	1.06%	9.39%	-4.89%	-1.28%	-1.83%	-5.59%	1.75%	3.26%	0.01%	0.06%	9.99%	1.22%
Jul-10	0.06%	9.82%	0.85%	14.88%	-2.65%	-2.47%	-6.11%	-8.23%	5.37%	3.16%	0.01%	-0.88%	-7.44%	1.47%
Oct-10	-6.93%	-14.36%	0.64%	8.54%	-0.23%	-3.75%	-7.81%	-11.06%	8.44%	3.06%	0.01%	-0.02%	7.15%	-2.35%
Jan-11	4.68%	-9.24%	0.43%	-1.94%	2.21%	-5.17%	-12.42%	-11.87%	7.78%	2.97%	0.01%	0.63%	8.34%	-2.26%
Apr-11	7.34%	-1.95%	-7.70%	1.65%	4.48%	-5.46%	-6.32%	-5.78%	7.22%	2.88%	0.00%	2.79%	5.85%	-0.36%
Jul-11	5.71%	-1.49%	-17.74%	-16.87%	4.29%	-4.46%	13.83%	1.46%	6.73%	2.80%	0.00%	5.16%	-5.37%	-0.57%
Oct-11	-3.60%	-3.77%	-17.73%	-9.85%	4.12%	-3.31%	4.86%	3.49%	6.31%	2.73%	0.00%	5.00%	-3.06%	-1.68%
Jan-12	0.00%	-6.36%	-16.98%	-0.41%	3.96%	-2.03%	3.54%	5.32%	5.93%	2.65%	0.00%	4.05%	4.61%	-0.44%
Apr-12	-9.15%	-10.09%	-0.09%	-8.79%	3.80%	-0.68%	10.19%	0.97%	5.60%	2.58%	0.00%	3.32%	6.31%	-0.57%
Jul-12	-3.94%	-28.17%	21.84%	8.16%	3.66%	-0.69%	0.00%	-2.77%	5.30%	2.52%	0.00%	2.95%	-1.34%	0.59%
Oct-12	10.39%	23.88%	21.90%	4.72%	3.53%	-0.69%	11.92%	-2.30%	5.04%	2.76%	0.01%	4.35%	2.35%	8.12%
Jan-13	9.46%	26.74%	21.17%	1.72%	3.41%	-0.70%	9.18%	5.61%	4.80%	2.09%	0.00%	2.40%	5.91%	8.35%
Apr-13	-0.75%	26.74%	20.08%	-1.11%	3.30%	-0.70%	12.27%	5.85%	4.58%	2.34%	0.00%	3.08%	6.43%	7.26%
Jul-13	-0.09%	30.34%	16.72%	1.37%	3.19%	-0.71%	14.26%	5.61%	4.38%	2.29%	0.00%	2.79%	5.37%	7.74%
Oct-13	4.63%	9.49%	14.32%	3.78%	8.25%	-0.71%	11.32%	3.67%	6.56%	-4.92%	0.00%	1.86%	4.11%	5.64%
Jan-14	8.75%	8.67%	12.52%	5.91%	12.17%	-0.72%	14.44%	-4.32%	8.33%	0.10%	0.00%	3.39%	1.47%	6.59%
Apr-14	20.61%	-2.47%	-9.76%	7.68%	14.76%	12.72%	11.60%	-6.41%	9.67%	5.10%	0.00%	1.96%	5.53%	6.35%
Jul-14	17.08%	-14.51%	-20.95%	34.57%	16.18%	58.38%	9.46%	17.74%	12.58%	5.71%	0.00%	1.84%	2.45%	13.62%
Oct-14	5.41%	-13.19%	-24.31%	42.66%	13.92%	33.29%	6.20%	1.31%	4.17%	12.27%	0.00%	0.95%	4.43%	8.17%
Jan-15	-4.43%	-5.19%	-29.19%	23.53%	10.98%	22.25%	1.62%	27.65%	-2.97%	6.95%	0.00%	0.96%	-1.15%	5.12%
Apr-15	-8.83%	-3.05%	5.90%	13.53%	3.76%	12.41%	-0.10%	17.44%	-3.68%	2.63%	0.00%	2.59%	4.44%	4.00%
Jul-15	-14.51%	-0.72%	13.52%	-3.88%	3.11%	-10.27%	-1.82%	10.68%	-9.42%	1.65%	0.00%	1.72%	0.88%	-1.17%
Oct-15	-3.81%	-20.18%	2.82%	-23.66%	2.51%	-11.45%	-3.94%	3.94%	-4.98%	-3.86%	0.00%	2.97%	-1.17%	-6.26%
Jan-16	8.12%	-34.45%	-6.96%	-2.73%	3.06%	-12.93%	-4.22%	-5.98%	0.16%	-9.03%	0.01%	1.48%	-6.92%	-6.50%
Apr-16	11.48%	-10.88%	-5.15%	19.80%	7.48%	-14.86%	-3.18%	-2.86%	-2.84%	-6.43%	0.01%	-0.39%	6.25%	-0.74%
Jul-16	13.75%	20.60%	-2.23%	11.33%	7.92%	-0.93%	-2.04%	-5.26%	-2.78%	-3.26%	0.02%	0.06%	5.11%	3.71%
Oct-16	3.33%	38.24%	5.34%	12.81%	5.21%	13.36%	1.01%	-0.80%	-1.97%	5.74%	0.02%	-1.62%	-2.21%	8.23%
Jan-17	-6.05%	27.60%	40.79%	-1.27%	3.33%	22.98%	3.97%	-0.04%	-1.11%	13.34%	0.04%	-0.83%	6.94%	10.35%

### Quarterly Basis

Mean (Return)	2.82%	3.49%	2.86%	3.29%	3.90%	-0.13%	3.12%	1.06%	2.27%	2.57%	0.06%	1.68%	1.23%	2.52%
SD (Total Risk)	0.0738445	0.1829436	0.15059345	0.11979448	0.05044887	0.15398321	0.07948355	0.07401541	0.06159041	0.03930163	0.001243966	0.01936973	0.07426903	0.045160093
Variance	0.00532001	0.03265206	0.02212525	0.0140007	0.00248301	0.02313252	0.00616355	0.00534466	0.00370086	0.00150694		0.00036604	0.00538135	0.001989692
Average excess R	2.77%	3.44%	2.80%	3.23%	3.84%	-0.19%	3.06%	1.00%	2.21%	2.51%		1.62%	1.17%	2.47%
EW (Weight)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%				
Beta	0.1518155	0.52653974	0.20263038	0.25909458	0.0452446	0.10888911	0.1786513	-0.0735193	0.19905573	0.02962184		0.04377078	0.9980997	0.162802354
Alpha	2.65%	2.88%	2.62%	2.98%	3.84%	-0.26%	2.91%	1.15%	2.04%	2.53%		1.63%	0.06%	2.33%

### Yearly Basis

Mean (Return)	11.30%	13.98%	11.44%	13.15%	15.59%	-0.54%	12.46%	4.25%	9.09%	10.27%	0.23%	6.72%	4.91%	10.10%
SD (Total Risk)	0.147689	0.3658872	0.30118689	0.23958896	0.10089775	0.30796643	0.1589671	0.14803081	0.12318083	0.07860325	0.002487932	0.03873946	0.14853806	0.090320186

## Appendix VI: Diversification Effect

	Alfa Romeo	Bugatti	Portfolio 1
	6C 1750	Type 35	
	1930-1933	1924-1930	
Jan-07	34.85%	-8.40%	13.22%
Apr-07	32.12%	-17.09%	7.52%
Jul-07	16.46%	-31.29%	-7.41%
Oct-07	21.54%	-29.00%	-3.73%
Jan-08	8.19%	-20.07%	-5.94%
Apr-08	3.84%	-3.39%	0.23%
Jul-08	1.36%	9.06%	5.21%
Oct-08	-13.93%	4.83%	-4.55%
Jan-09	-14.34%	1.18%	-6.58%
Apr-09	-14.60%	-2.35%	-8.48%
Jul-09	-17.11%	-0.14%	-8.62%
Oct-09	21.25%	-0.14%	10.56%
Jan-10	13.46%	-0.14%	6.66%
Apr-10	8.12%	-1.28%	3.42%
Jul-10	9.82%	-2.47%	3.67%
Oct-10	-14.36%	-3.75%	-9.06%
Jan-11	-9.24%	-5.17%	-7.21%
Apr-11	-1.95%	-5.46%	-3.71%
Jul-11	-1.49%	-4.46%	-2.98%
Oct-11	-3.77%	-3.31%	-3.54%
Jan-12	-6.36%	-2.03%	-4.20%
Apr-12	-10.09%	-0.68%	-5.39%
Jul-12	-28.17%	-0.69%	-14.43%
Oct-12	23.88%	-0.69%	11.60%
Jan-13	26.74%	-0.70%	13.02%
Apr-13	26.74%	-0.70%	13.02%
Jul-13	30.34%	-0.71%	14.82%
Oct-13	9.49%	-0.71%	4.39%
Jan-14	8.67%	-0.72%	3.98%
Apr-14	-2.47%	12.72%	5.12%
Jul-14	-14.51%	58.38%	21.93%
Oct-14	-13.19%	33.29%	10.05%
Jan-15	-5.19%	22.25%	8.53%
Apr-15	-3.05%	12.41%	4.68%
Jul-15	-0.72%	-10.27%	-5.50%
Oct-15	-20.18%	-11.45%	-15.82%
Jan-16	-34.45%	-12.93%	-23.69%
Apr-16	-10.88%	-14.86%	-12.87%
Jul-16	20.60%	-0.93%	9.83%
Oct-16	38.24%	13.36%	25.80%
Jan-17	27.60%	22.98%	25.29%
Mean			0.016797748
SD (risk)			0.110705633
<b>Yearly</b>			
Mean			0.067190993
SD (risk)			0.221411266

	Alfa Romeo	Bugatti	Alpine	Portfolio 2
	6C 1750	Type 35	A110	
	1930-1933	1924-1930	1961-1977	
Jan-07	34.85%	-8.40%	24.87%	17.10%
Apr-07	32.12%	-17.09%	26.84%	13.96%
Jul-07	16.46%	-31.29%	15.66%	0.28%
Oct-07	21.54%	-29.00%	3.09%	-1.45%
Jan-08	8.19%	-20.07%	-8.30%	-6.72%
Apr-08	3.84%	-3.39%	-12.06%	-3.87%
Jul-08	1.36%	9.06%	-0.23%	3.39%
Oct-08	-13.93%	4.83%	5.78%	-1.11%
Jan-09	-14.34%	1.18%	10.83%	-0.78%
Apr-09	-14.60%	-2.35%	6.43%	-3.51%
Jul-09	-17.11%	-0.14%	1.10%	-5.38%
Oct-09	21.25%	-0.14%	1.09%	7.40%
Jan-10	13.46%	-0.14%	1.08%	4.80%
Apr-10	8.12%	-1.28%	1.06%	2.63%
Jul-10	9.82%	-2.47%	0.85%	2.73%
Oct-10	-14.36%	-3.75%	0.64%	-5.83%
Jan-11	-9.24%	-5.17%	0.43%	-4.66%
Apr-11	-1.95%	-5.46%	-7.70%	-5.04%
Jul-11	-1.49%	-4.46%	-17.74%	-7.90%
Oct-11	-3.77%	-3.31%	-17.73%	-8.27%
Jan-12	-6.36%	-2.03%	-16.98%	-8.46%
Apr-12	-10.09%	-0.68%	-0.09%	-3.62%
Jul-12	-28.17%	-0.69%	21.84%	-2.34%
Oct-12	23.88%	-0.69%	21.90%	15.03%
Jan-13	26.74%	-0.70%	21.17%	15.74%
Apr-13	26.74%	-0.70%	20.08%	15.37%
Jul-13	30.34%	-0.71%	16.72%	15.45%
Oct-13	9.49%	-0.71%	14.32%	7.70%
Jan-14	8.67%	-0.72%	12.52%	6.82%
Apr-14	-2.47%	12.72%	-9.76%	0.16%
Jul-14	-14.51%	58.38%	-20.95%	7.64%
Oct-14	-13.19%	33.29%	-24.31%	-1.40%
Jan-15	-5.19%	22.25%	-29.19%	-4.04%
Apr-15	-3.05%	12.41%	5.90%	5.09%
Jul-15	-0.72%	-10.27%	13.52%	0.84%
Oct-15	-20.18%	-11.45%	2.82%	-9.60%
Jan-16	-34.45%	-12.93%	-6.96%	-18.12%
Apr-16	-10.88%	-14.86%	-5.15%	-10.29%
Jul-16	20.60%	-0.93%	-2.23%	5.81%
Oct-16	38.24%	13.36%	5.34%	18.98%
Jan-17	27.60%	22.98%	40.79%	30.45%
Mean				0.02073498
SD (risk)				0.09782616
<b>Yearly</b>				
Mean				0.08293992
SD (risk)				0.19565233

Alfa Romeo	Bugatti	Alpine	Ferrari	Portfolio 3
6C 1750	Type 35	A110	275 GTB/4	
1930-1933	1924-1930	1961-1977	1966-1968	
34.85%	-8.40%	24.87%	3.28%	13.65%
32.12%	-17.09%	26.84%	-1.57%	10.07%
16.46%	-31.29%	15.66%	6.14%	1.74%
21.54%	-29.00%	3.09%	5.65%	0.32%
8.19%	-20.07%	-8.30%	12.72%	-1.86%
3.84%	-3.39%	-12.06%	17.43%	1.46%
1.36%	9.06%	-0.23%	-5.01%	1.29%
-13.93%	4.83%	5.78%	-4.63%	-1.99%
-14.34%	1.18%	10.83%	-8.32%	-2.66%
-14.60%	-2.35%	6.43%	-13.01%	-5.89%
-17.11%	-0.14%	1.10%	6.99%	-2.29%
21.25%	-0.14%	1.09%	9.51%	7.93%
13.46%	-0.14%	1.08%	8.68%	5.77%
8.12%	-1.28%	1.06%	-1.83%	1.52%
9.82%	-2.47%	0.85%	-6.11%	0.52%
-14.36%	-3.75%	0.64%	-7.81%	-6.32%
-9.24%	-5.17%	0.43%	-12.42%	-6.60%
-1.95%	-5.46%	-7.70%	-6.32%	-5.36%
-1.49%	-4.46%	-17.74%	13.83%	-2.47%
-3.77%	-3.31%	-17.73%	4.86%	-4.99%
-6.36%	-2.03%	-16.98%	3.54%	-5.46%
-10.09%	-0.68%	-0.09%	10.19%	-0.17%
-28.17%	-0.69%	21.84%	0.00%	-1.75%
23.88%	-0.69%	21.90%	11.92%	14.25%
26.74%	-0.70%	21.17%	9.18%	14.10%
26.74%	-0.70%	20.08%	12.27%	14.60%
30.34%	-0.71%	16.72%	14.26%	15.15%
9.49%	-0.71%	14.32%	11.32%	8.60%
8.67%	-0.72%	12.52%	14.44%	8.73%
-2.47%	12.72%	-9.76%	11.60%	3.02%
-14.51%	58.38%	-20.95%	9.46%	8.09%
-13.19%	33.29%	-24.31%	6.20%	0.50%
-5.19%	22.25%	-29.19%	1.62%	-2.62%
-3.05%	12.41%	5.90%	-0.10%	3.79%
-0.72%	-10.27%	13.52%	-1.82%	0.18%
-20.18%	-11.45%	2.82%	-3.94%	-8.19%
-34.45%	-12.93%	-6.96%	-4.22%	-14.64%
-10.88%	-14.86%	-5.15%	-3.18%	-8.52%
20.60%	-0.93%	-2.23%	-2.04%	3.85%
38.24%	13.36%	5.34%	1.01%	14.49%
27.60%	22.98%	40.79%	3.97%	23.83%
				0.02333958
				0.08121239
				0.09335833
				<b>0.16242479</b>

Alfa Romeo	Bugatti	Alpine	Ferrari	Lancia	BMW	Portfolio 4	EW Portfolio
6C 1750	Type 35	A110	275 GTB/4	Stratos	2002 Turbo		
1930-1933	1924-1930	1961-1977	1966-1968	1974-1975	1973-1974		
34.85%	-8.40%	24.87%	3.28%	15.17%	2.79%	12.09%	8.00%
32.12%	-17.09%	26.84%	-1.57%	2.94%	2.71%	7.66%	5.55%
16.46%	-31.29%	15.66%	6.14%	-6.45%	2.64%	0.53%	1.06%
21.54%	-29.00%	3.09%	5.65%	12.80%	2.57%	2.78%	2.20%
8.19%	-20.07%	-8.30%	12.72%	-6.22%	2.89%	-1.80%	-0.77%
3.84%	-3.39%	-12.06%	17.43%	2.33%	3.19%	1.89%	1.20%
1.36%	9.06%	-0.23%	-5.01%	9.12%	3.45%	2.96%	1.86%
-13.93%	4.83%	5.78%	-4.63%	-4.60%	3.68%	-1.48%	-0.74%
-14.34%	1.18%	10.83%	-8.32%	-4.82%	3.55%	-1.99%	-1.15%
-14.60%	-2.35%	6.43%	-13.01%	-5.07%	3.50%	-4.18%	-2.12%
-17.11%	-0.14%	1.10%	6.99%	-5.34%	3.46%	-1.84%	-0.57%
21.25%	-0.14%	1.09%	9.51%	-5.64%	3.41%	4.92%	3.48%
13.46%	-0.14%	1.08%	8.68%	-2.06%	3.37%	4.07%	1.89%
8.12%	-1.28%	1.06%	-1.83%	1.75%	3.26%	1.85%	1.22%
9.82%	-2.47%	0.85%	-6.11%	5.37%	3.16%	1.77%	1.47%
-14.36%	-3.75%	0.64%	-7.81%	8.44%	3.06%	-2.30%	-2.35%
-9.24%	-5.17%	0.43%	-12.42%	7.78%	2.97%	-2.61%	-2.26%
-1.95%	-5.46%	-7.70%	-6.32%	7.22%	2.88%	-1.89%	-0.36%
-1.49%	-4.46%	-17.74%	13.83%	6.73%	2.80%	-0.05%	-0.57%
-3.77%	-3.31%	-17.73%	4.86%	6.31%	2.73%	-1.82%	-1.68%
-6.36%	-2.03%	-16.98%	3.54%	5.93%	2.65%	-2.21%	-0.44%
-10.09%	-0.68%	-0.09%	10.19%	5.60%	2.58%	1.25%	-0.57%
-28.17%	-0.69%	21.84%	0.00%	5.30%	2.52%	0.14%	0.59%
23.88%	-0.69%	21.90%	11.92%	5.04%	2.76%	10.80%	8.12%
26.74%	-0.70%	21.17%	9.18%	4.80%	2.09%	10.55%	8.35%
26.74%	-0.70%	20.08%	12.27%	4.58%	2.34%	10.89%	7.26%
30.34%	-0.71%	16.72%	14.26%	4.38%	2.29%	11.21%	7.74%
9.49%	-0.71%	14.32%	11.32%	6.56%	-4.92%	6.01%	5.64%
8.67%	-0.72%	12.52%	14.44%	8.33%	0.10%	7.22%	6.59%
-2.47%	12.72%	-9.76%	11.60%	9.67%	5.10%	4.48%	6.35%
-14.51%	58.38%	-20.95%	9.46%	12.58%	5.71%	8.44%	13.62%
-13.19%	33.29%	-24.31%	6.20%	4.17%	12.27%	3.07%	8.17%
-5.19%	22.25%	-29.19%	1.62%	-2.97%	6.95%	-1.09%	5.12%
-3.05%	12.41%	5.90%	-0.10%	-3.68%	2.63%	2.35%	4.00%
-0.72%	-10.27%	13.52%	-1.82%	-9.42%	1.65%	-1.18%	-1.17%
-20.18%	-11.45%	2.82%	-3.94%	-4.98%	-3.86%	-6.93%	-6.26%
-34.45%	-12.93%	-6.96%	-4.22%	0.16%	-9.03%	-11.24%	-6.50%
-10.88%	-14.86%	-5.15%	-3.18%	-2.84%	-6.43%	-7.22%	-0.74%
20.60%	-0.93%	-2.23%	-2.04%	-2.78%	-3.26%	1.56%	3.71%
38.24%	13.36%	5.34%	1.01%	-1.97%	5.74%	10.29%	8.23%
27.60%	22.98%	40.79%	3.97%	-1.11%	13.34%	17.93%	10.35%
						0.0236261	0.02524687
						0.05967967	0.04516009
						0.0945044	0.10098746
						<b>0.11935934</b>	<b>0.09032019</b>

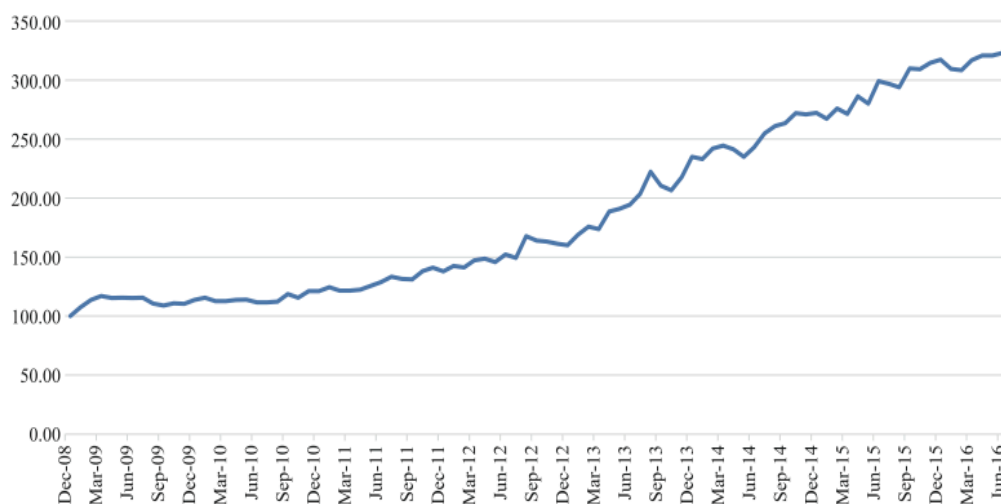
## Appendix VII: Comparison with Art Index prices (Live-ex Fine Wine 100)

Date	K500 (INDEX)	Portfolio	Liv-ex Fine Wine 100
Oct-06	242.27	352.884	161.63
Jan-07	246.44	376.326	172.27
Apr-07	258.81	393.457	191.11
Jul-07	269.19	390.724	232.68
Oct-07	277.52	409.324	232.68
Jan-08	288.77	412.866	
Apr-08	292.89	424.761	
Jul-08	289.78	434.572	
Oct-08	284.63	417.052	
Jan-09	281.25	399.888	
Apr-09	277.76	380.912	
Jul-09	280.55	369.798	
Oct-09	282.97	395.737	
Jan-10	285.12	415.678	
Apr-10	285.28	427.616	
Jul-10	282.77	442	
Oct-10	282.7	422.86	308.12
Jan-11	284.49	411.197	329.16
Apr-11	292.54	409.649	357.45
Jul-11	308.03	411.417	364.69
Oct-11	323.81	408.044	322.66
Jan-12	337.2	405.302	297.96
Apr-12	348.58	403.957	293.55
Jul-12	359.03	393.698	265.12
Oct-12	374.98	433.124	260.08
Jan-13	384.07	480.517	257.55
Apr-13	396.08	537.119	276.31
Jul-13	407.27	613.785	274.22
Oct-13	414.9	655.24	267.95
Jan-14	429.19	709.982	258.46
Apr-14	437.68	739.876	249.02
Jul-14	445.81	776.231	236.86
Oct-14	450.07	811.857	238.58
Jan-15	454.42	836.913	241.03
Apr-15	466.33	854.819	244.32
Jul-15	474.41	831.873	241.65
Oct-15	488.72	768.383	236.71
Jan-16	496.03	700.932	250.12
Apr-16	494.09	676.875	259.71
Jul-16	494.41	699.5	281.23
Oct-16	486.45	776.119	297.33
Jan-17	482.45	885.463	304.3

## Appendix VIII: Descriptive Charts (The Road Less Traveled : The Case for Collectible Automobiles as an Asset Class)

### EXHIBIT 1

Historic Automobile Group International Top Index (December 2008–June 2016)



### EXHIBIT 3

Descriptive Statistics

	German Collectibles	1950s American	Affordable Classics	Blue Chip	British Cars	Muscle Cars	All Collector Automobiles	DJIA	S&P 500	NASDAQ	Bonds	Gold
HPR	2.8539	0.1240	0.3318	3.2297	0.5832	0.1250	1.2079	0.3981	0.4411	1.0730	0.1448	0.6659
Mean Return (Annual)	0.1822	0.0232	0.0380	0.1810	0.0470	0.0323	0.0839	0.0522	0.0611	0.1129	0.0192	0.0749
Standard Deviation	0.2278	0.0742	0.0472	0.2324	0.0597	0.1133	0.1258	0.1682	0.1955	0.2435	0.0964	0.1933
Kurtosis	5.1077	5.8263	1.4682	2.8561	2.3390	-0.4900	2.8512	4.0319	3.4188	2.2239	-0.4268	-0.3260
Skewness	2.1336	2.2248	1.2766	1.5022	-1.2585	-0.8182	0.8434	-1.6090	-1.5098	-0.9689	0.1258	-0.4394
Max Gain	0.7368	0.2069	0.1377	0.7022	0.1139	0.1590	0.3427	0.2650	0.2960	0.4389	0.1587	0.3120
Max Loss	-0.0215	-0.0523	-0.0097	-0.0966	-0.0837	-0.1491	-0.0688	-0.3384	-0.3849	-0.4054	-0.1303	-0.2725

Note: Data are based on returns in U.S. dollars from January 1, 2007, to January 1, 2016.

**EXHIBIT 4****Univariate Analysis: Four-Month Returns**

	<b>German Collectibles</b>	<b>1950s American</b>	<b>Affordable Classics</b>	<b>Blue Chip</b>	<b>British Cars</b>	<b>Muscle Cars</b>	<b>All Collector Automobiles</b>	<b>DJIA</b>	<b>S&amp;P 500</b>	<b>NASDAQ</b>	<b>Bonds</b>	<b>Gold</b>
Mean Return	0.0543	0.0073	0.0123	0.0517	0.0153	0.0106	0.0252	0.0166	0.0186	0.0340	0.0066	0.0232
Standard Deviation	0.0713	0.0319	0.0217	0.0696	0.0279	0.0493	0.0326	0.0902	0.0978	0.1130	0.0571	0.0935
Kurtosis	5.3684	15.9685	9.3775	2.4999	1.2724	3.3020	0.0891	0.9793	2.7917	3.0994	0.0750	0.0688
Skewness	2.1940	3.6055	2.6026	0.9712	-0.8966	-0.5342	0.0670	-0.9030	-1.2548	-1.2654	-0.3335	0.2238
Max Gain	0.3046	0.1497	0.0988	0.2602	0.0651	0.1388	0.0857	0.1337	0.1642	0.2187	0.0976	0.2412
Max Loss	-0.0301	-0.0315	-0.0134	-0.0981	-0.0553	-0.1236	-0.0534	-0.2397	-0.2959	-0.3339	-0.1314	-0.1464
Beta	0.2032	-0.0077	0.0208	0.1666	0.0677	0.1170	0.0946	0.8645	0.9630	1.0618	-0.1303	-0.1069
Sharpe Ratio	0.6434	-0.0203	0.1990	0.6827	0.2663	0.0558	0.5755	0.0951	0.1076	0.2281	-0.0207	0.1666
Treynor Ratio	0.2286	0.0675	0.2146	0.2629	0.1095	0.0237	0.1839	0.0101	0.0112	0.0247	0.0095	-0.1436

*Note: Data are based on returns in U.S. dollars from January 1, 2007, to January 1, 2016. Betas are calculated using the S&P 500 Index. Sharpe ratios and Treynor ratios use the one-year Treasury rate to calculate excess returns.*

**RESIDENTIAL RESEARCH**



# CLASSIC CAR SPECIAL.

Luxury Investment Index Q1 2016



FERRARI SETS NEW  
AUCTION RECORD

CLASSIC CAR  
PERFORMANCE IN FOCUS

BUILDING A CLASSIC  
CAR COLLECTION

## Quality takes centre stage as luxury markets let off steam

*Classic cars set new records at auction, but buyers are becoming more discerning*



*Of the 10 asset classes we include in the Knight Luxury Investment Index (KFLII), classic cars arguably capture the imagination more than anything else. Not only has their performance in terms of price over the past decade been staggering, but the thrill of owning such visceral and often historic vehicles is hard to beat.*

*I'm therefore delighted that this edition of KFLII focuses on these amazing machines, including a host of fascinating facts and figures from our data partner HAGI. I hope you enjoy reading it as much as I did writing and researching it.*

**ANDREW SHIRLEY**  
The Wealth Report Editor

Classic cars were once again the top performing luxury asset on an annual basis (see graphic page 3), according to the latest figures from the Knight Frank Luxury Investment Index (KFLII).

While the overall value of KFLII increased by just 5% in the 12 months to the end of March 2016 – the lowest annual increase since the first quarter of 2010 – cars outperformed with a 17% surge.

Fine wine saw the second strongest growth, up 9%, with rare coins in third position, rising 6%.

The Bordeaux market is bouncing back strongly after falling sharply between 2012 and 2014, while north Italian wines are continuing to enjoy annual double-digit growth, explains Nick Martin of Wine Owners, which compiles the Knight Frank Fine Wine Icons Index.

Coins remain in strong demand as an investment asset, says Keith Heddle of Stanley Gibbons. A rare 1933 Pattern Penny smashed the world auction record for a copper or bronze coin when it went under the hammer with Baldwins for £72,000 in May, while a 1839 Queen Victoria proof set sold for £504,000, double the previous record, last September.

Art and furniture were the biggest losers, dropping by 5% and 6%, respectively.

“We are seeing a natural correction, the rates of growth weren’t sustainable,” says Viola Raikhel-Bolot of art advisor 1858 Ltd. “However, stellar prices are still being paid for really important works of art fresh to the market,” she adds.

Recent figures suggest that the classic car market has also decelerated over the shorter term, despite 2016 seeing the highest price, in sterling and euro terms, ever achieved by a car sold at auction.

Since the beginning of the year, the HAGI Top Index, which tracks the value of 50 of the world’s most desirable motor cars, has risen by just 1%. “May was the first month ever when the index didn’t move at all,” says HAGI founder Dietrich Hatlapa. “The market has been treading water since the end of 2015,” he adds.

But Mr Hatlapa says talk of “bursting bubbles” is premature. “This is more about a market that has gone quiet. Good cars are still selling very well, but buyers are in less of a hurry – the perception is that they now have time to track down what they want via a dealer rather than getting into a bidding war at an auction.”

This is evidenced by some recent relatively lacklustre auctions in the UK and Monaco where many cars remained unsold after failing to meet their low estimates.

James Knight, Group Motoring Director at auctioneer Bonhams, says he is not surprised: “A year or so ago, I said the market was letting off steam for motor cars that had become very fashionable to acquire, but could be bought every weekend of the year.

“We still have many collectors wanting to buy these examples, but they naturally want to feel they’re paying a fair market price. They will find new homes if they’re priced accordingly – perhaps down 20% from the highs of a couple of years ago. Only ‘best-in-class’ examples will knock on the door of the previous high levels.”

Mr Knight says there was interest from 12 bidders willing to pay over £3m for a Jaguar C-Type in original condition that he auctioned in Monaco in May 2016. The car sold for £5.75m.

However, the standout sale of the year has to be our cover star, a gorgeous 1957 Ferrari 335 S Scaglietti, which fetched €32.1m (£24.7m) when it was sold in Paris by Artcurial at the Retromobile Salon 2016 event this February.

Mr Hatlapa says the car’s virtues explain why Ferraris dominate the rankings of that rarefied group of cars – only about 60 in total – that have sold for over the equivalent of £5m (see graphic on page 4). “Ferrari produced hand-made cars in very small series that always had a strong competition pedigree.”

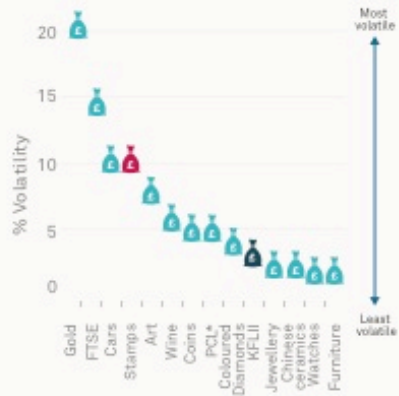
But you don’t need a big cat or prancing stallion on the bonnet to achieve eye-watering prices. At the same Artcurial sale, a rare Citroen 2 CV Sahara fetched almost €192,000, way over its high estimate of €90,000.

**KFLII performance versus other asset classes (to Q1 2016)**



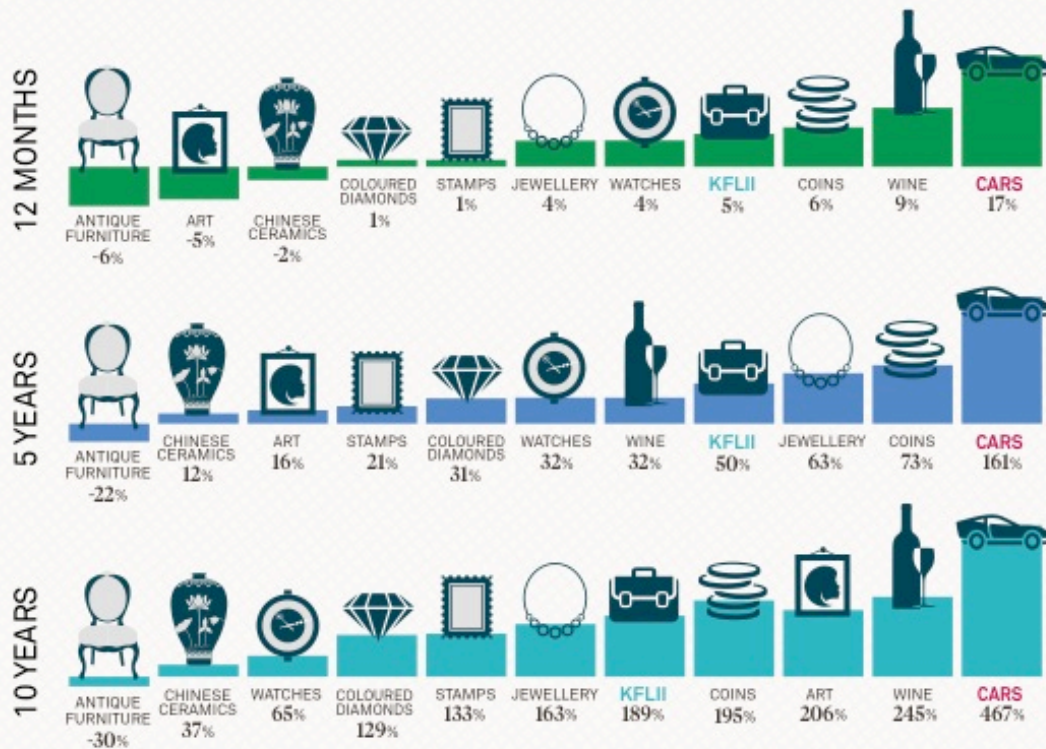
\*Knight Frank Prime Central London Residential Index  
Source: Knight Frank Research

**10-year asset price volatility**



Based on annual price points  
Source: Knight Frank Research

**KFLII performance by asset class (to Q1 2016\*)**



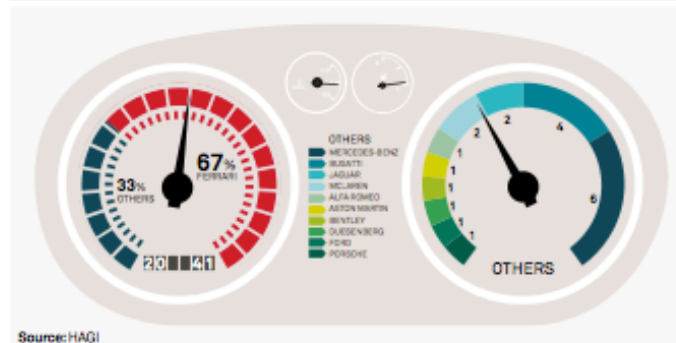
\*Except data for stamps and coins, which is updated annually. Coloured diamond data bi-annual until Q2 2014.  
Source: See back page for details of data suppliers

# Under the bonnet

With the help of HAGI we look at the nuts and bolts of the classic car market

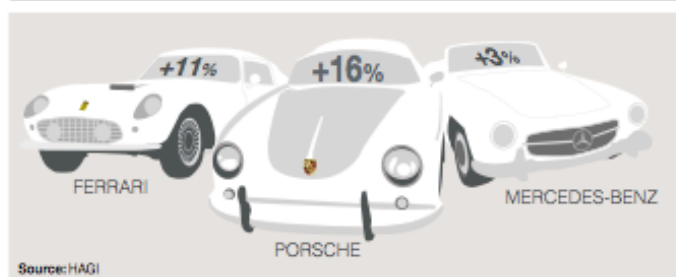
## Top marques

Number of cars sold at auction for over £5m (all time)



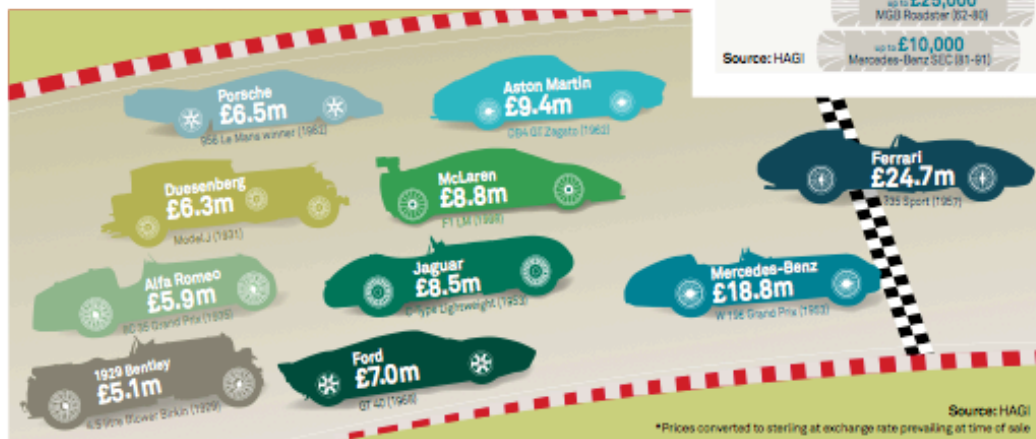
## Podium finish

Annual price change by marque (12 months to May 2016)



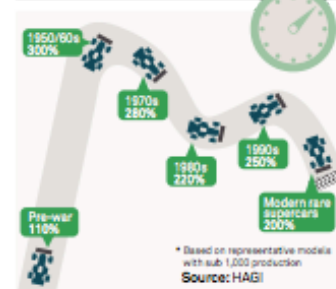
## Chequered flag

Best selling model sold at auction from 10 of the key collectors' marques\*



## Endurance race

Five-year price change by era\*



## Buyers guide

Affordable/overlooked classics by price bracket



## Driving passion

Record-breaking auctions may dominate the classic car headlines, but you don't need to spend millions to build a collection, as entrepreneur and enthusiast Sean Nutley explains to Andrew Shirley



Classic cars with investment potential come in all shapes and sizes, says collector Sean Nutley  
Cars from left to right: 1982 Jaguar XJS Coupe 5.3 V12, 1982 Series 3 88" Land Rover Station Wagon, 1971 Lancia Fulvia Saloon 1.3S

### Andrew Shirley What inspired you to start collecting classic cars?

**Sean Nutley** Cars are in my blood. My dad is a coachbuilder who when I was younger used to hand build new panels for classic cars like Aston Martins that needed repairing – with my brothers I'd spend hours watching him in his workshop. That was where the love affair began, but it really blossomed around 10 years ago. Having just sold a company and bought a modern Jaguar XKR, I walked into the Essex showroom of JD Classics near where I live. I was simply spellbound by the cars, they were just gorgeous and the level of restoration was amazing.

### AS What cars do you have in your own collection?

**SN** I've owned all sorts, quite a few of which I've sold. I had a Mark 2 Jaguar, an E-Type Roadster and a gorgeous 1954 Jaguar XK120, which for a time was the world's fastest production car with a top speed of over 140 mph, I've got a Rolls Royce 1976 Silver Shadow 1 and have just bought two Series 3 Land Rovers. But my favourite is a Jaguar XJ12 I bought from JD Classics – the previous owner had spent £150,000 restoring it and it looks stunning.

### AS Is there anything you regret buying?

**SN** Not really. I even managed to make a profit on a Renault 4 I bought after a

drunken karaoke session in France. My biggest regret is actually not buying something. I almost bought an Aston Martin DB4 for £90,000 in 2007 – it's one of my favourite cars, in my mind even better than the DB5 – but my accountant told me not to invest in classic cars. That same DB4 is worth over £300,000 today.

### AS Do you have a classic car driving experience that stands out as being really special?

**SN** It has to be when I took my dad out in the XK120 after I'd just bought it. We belted it up the A12 and he was grinning from ear to ear. Like many of his generation he wasn't an emotional man, but later I found out he'd told a friend that it was the best experience of his life. It was a car he'd have loved to own when he was younger and I think that explains the motivation for a lot of collectors – owning something they fell in love with when they were growing up.

### AS What would be your advice to anybody thinking of investing in a classic car – should they even be viewed as investments?

**SN** I've definitely made money from buying and selling cars, and have been lucky enough to turn my hobby into a bit of a business. Cars also add diversity to an investment portfolio, but that's not the reason I've done it. I collect

cars because I love them. Definitely do some research and cherry pick cars that you think are undervalued or about to become more popular, but always buy something that you want to drive and that will make you happy. I wouldn't spend money I couldn't afford to lose or rely on any increase in value to fund my pension.

### AS Which cars of more recent times do you think are going to turn into the classics of the future?

**SN** I think the Ferrari 348 is a hidden gem and the Jaguar XJ 220 should be up there with the Ferrari F40. The Ford GT (a reboot of the iconic Le Mans winning GT40 built between 2004 and 2006) will also continue to rise in value. But you don't need to buy a supercar – Jaguars and Mercedes from the late 1980s to early 1990s are in demand and the value of Lancia Delta Integrales is shooting up. Anything with some kind of heritage like VW Camper Vans, or any Italian car built in the 1970s and still in one piece has got to be worth buying. I would also look at early series Land Rovers now they have stopped making the Defender.

**Sean Nutley is CEO of Lumina Prime 8**  
[www.luminaprime8.co.uk](http://www.luminaprime8.co.uk)

## Data digest

The Knight Frank Luxury Investment Index (KFLII) tracks the performance of a theoretical basket of selected collectable asset classes using existing third-party indices (see below). Each asset class is weighted to reflect its relative importance and value within the basket. The third-party indices selected are widely used by the media and analysts to track the performance of each asset class, but Knight Frank can take no responsibility for their accuracy or independence and methodological differences may affect like-for-like comparisons. The index does not take into account any dealing, storage or management costs. Methodological differences could impact like-for-like comparisons.

The Knight Frank Luxury Investment Index				
	Index change	12-month change	Five-year change	10-year change
Mar-06	100			
Sep-06	105			
Mar-07	115	15%		
Sep-07	129	23%		
Mar-08	151	32%		
Sep-08	166	28%		
Mar-09	173	15%		
Sep-09	164	-2%		
Mar-10	166	-4%		
Sep-10	178	9%		
Mar-11	193	16%	93%	
Sep-11	201	13%	92%	
Mar-12	211	10%	85%	
Sep-12	217	8%	68%	
Mar-13	226	7%	50%	
Sep-13	241	11%	45%	
Mar-14	256	13%	48%	
Sep-14	263	9%	61%	
Mar-15	276	8%	66%	
Sep-15	291	10%	63%	
Mar-16	289	5%	50%	189%

Front cover: A 1957 Ferrari 335 Sport Scaglietti from the Pierre Bardinon collection. Auctioned by Artcurial Motor Cars in February 2016 for €32.1m ©Artcurial Photographe Christian Martin

### Contacts and acknowledgements

HAGI [www.historicautogroup.com](http://www.historicautogroup.com); Stanley Gibbons [www.stanleygibbons.com](http://www.stanleygibbons.com); Wine Owners [www.wineowners.com](http://www.wineowners.com); Fancy Color Research Foundation: [www.fcresearch.org](http://www.fcresearch.org); AMRD [www.artmarketresearch.com](http://www.artmarketresearch.com). AMRD also tracks the price movement of: sculpture, silver, porcelain, toys, carpets, clocks, photography, prints and many other collectibles.



**The Wealth Report 2016**

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Stamps	Stanley Gibbons
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Coloured diamonds	Fancy Color Research Foundation

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