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*Master's Degree in*  
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Final Thesis

*The Allure of Luxury*  
*Exploring the investment power of Art, Fine Watches*  
*and Diamonds*

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## ***Introduction***

In the latest years, the allure and investment potential of luxury assets have captured the attention of both the academics and the investors. This thesis aims to explore the multiple layers and aspects of investing in luxury goods, particularly Art, Fine Watches and Diamonds. The research explores both the financial and emotional valuation of these goods. In fact, by examining the intersection of financial returns and aesthetic pleasure, it provides a broad understanding of luxury assets' role in investment strategy.

The primary objective of this thesis is to investigate the rationale behind investments in luxury assets, focusing on their dual role as financial vehicles and emotional assets. It attempts to explain how and why luxury goods, despite their risks and challenges, continue to attract investors and collectors.

The first chapter begins with a broad overlook at the luxury goods market, focusing on Art, Fine Watches and Diamonds, including their economic impact and market dynamics.

The second chapter provides a dual analysis of the financial and psychological motivations behind the choice of an investor to allocate wealth into luxury goods.

The third chapter focuses on an empirical investigation of the financial performance of luxury assets, assessing their viability as an addition into a balanced traditional portfolio of investments.

The fourth and last chapter, instead, takes a look at the risks and challenges an investor must face when deciding to allocate wealth in luxury assets.

It is important to stress that, throughout this thesis, the terms "luxury goods", "luxury items" and "luxuries" will be used interchangeably.



# ***1. Market For Luxury Assets***

## ***1.1 Overview of the Market for Luxury Goods***

The Luxury Goods market is a segment of the consumer goods industry that target HNWI or UHNWI and that offers high-end, premium products and experiences characterised by exclusivity, brand reputation and superior quality.

This market is not easily accessible, it is characterised by a big entry barrier: high initial investment. That is why most of the actors in the market are HNWI or UHNWI. A High Net Worth Individual (HNWI) is an individual with liquid assets worth more than \$1million, while an Ultra High Net Worth Individual (UHNWI) is an individual with liquid assets worth more than \$30million. By liquid assets it's meant Cash and Cash Equivalents (assets that can be easily and quickly converted in cash), that excludes the individual's primary residency and all the other kind of possession that are hard to sell in a quick way.

As we can see from figure 1, according to Capgemini (2023), there were 21.7 million HNWI in the world in 2022, the population dropped 3.3% compared with the previous year.

While this downward sloping trend could be interpreted as a bad sign for the returns on luxury assets, it doesn't necessarily mean that also the aggregate wealth in this group has declined .

In fact, despite the reduction in the number of HNWIs, the overall wealth could remain constant and concentrated among fewer individuals.

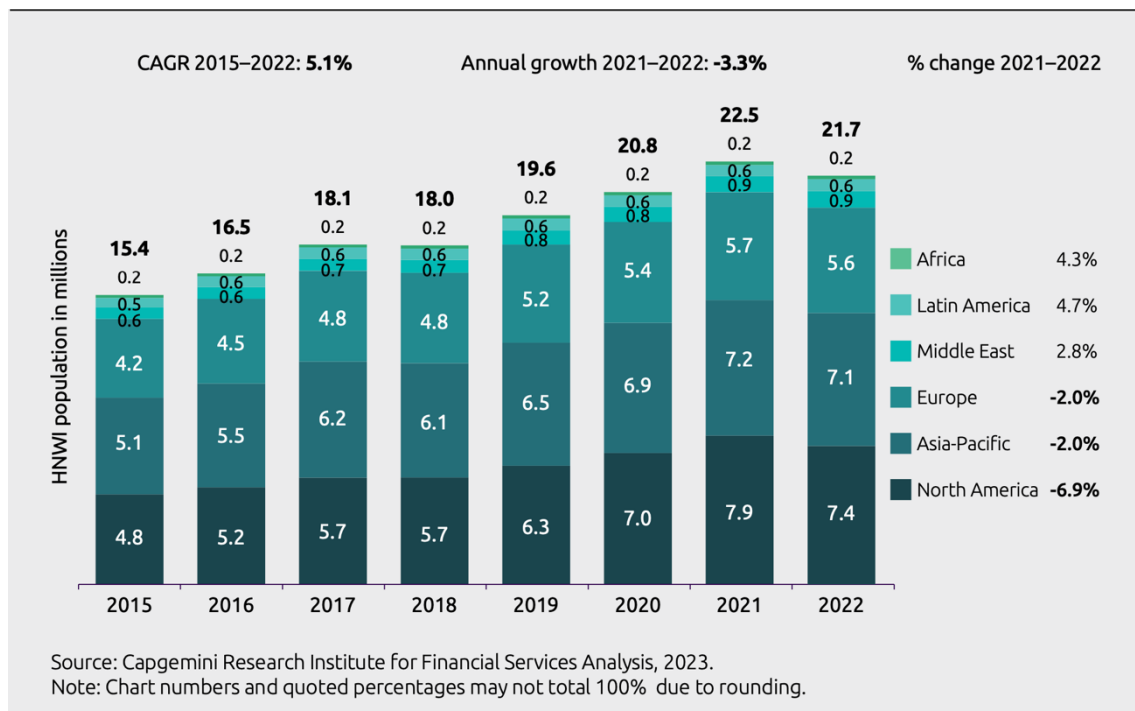
The decline in HNWI populations could signal a shift in market dynamics, potentially affecting luxury brands' strategies and product offerings.

As the market adapts, there might be an increased focus on creating products that not only embody luxury but also hold potential as investment pieces, catering to the growing trend of viewing luxury items as assets. This could lead to a more nuanced

approach in marketing and product development, aiming to balance exclusivity with investment appeal.

In fact, even though generally, HNWI buy Luxury in order to enjoy of the physical good or experience, in the past few years more and more consumers have been buying Luxury with investment purposes.

Figure 1.1 HNWI population evolution over the past 7 years



Source: Capgemini, World Wealth Report 2023

According to Deloitte (2023), the UHNWI’s wealth associated with Art and Collectibles was \$2.174 trillion in 2022. They predict this wealth to grow up to \$2.861 trillion in 2026.

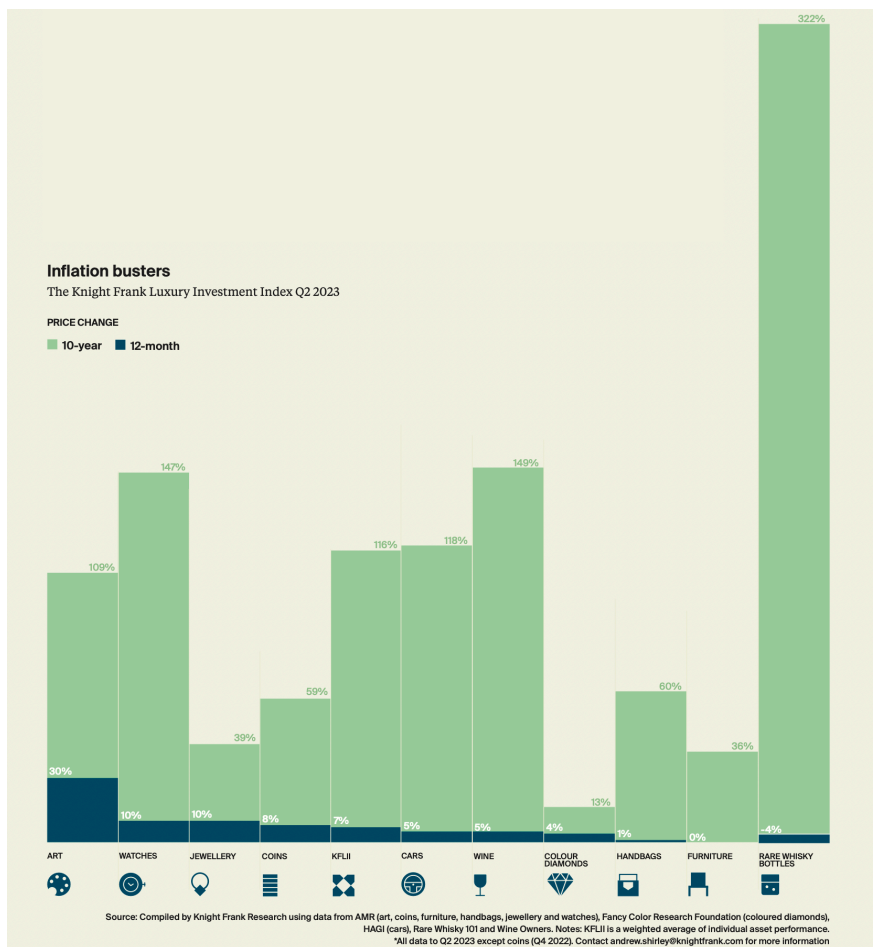
The global properties consultancy firm Knight Frank produces the “Luxury Investment Index” which is based on the weighted average of the individual performance of ten asset classes which are the most influential classes at the moment of publication. As of the Q2 of 2023 these classes are Art, Classic Cars, Colour Diamonds, Coins, Rare Whisky, Jewellery, Watches, Furniture, Handbags and Wine.



The Knight Frank Luxury Investment Index gives us a perspective on how much luxury investments are growing. In the past year the overall index grew a 7% and in the past 10 years it grew a 116%.

The greatest growth was recorded for Art in the past year (30%) and for Rare Whisky Bottles in the past 10 years.

Figure 1.2 Growth for Collectibles over the past 12mo and 10y according to Knight-Frank



Source: Knight-Frank, The Wealth Report Series: Luxury Investments

### 1.1.1 Definition of Luxury Assets and Collectibles

Forbes defines Collectibles as “items that are worth more now than they were when they were originally sold. Art, antiques, stamps, books, coins, trading cards and

comic books are common types of collectibles. Rare collectibles often fetch higher prices, and the value of collectibles tend to appreciate over time.”<sup>1</sup>

The quest of this dissertation, though, wants to focus on a more specific category of collectibles: Luxury goods.

Differently from most collectibles these special goods are often associated with luxury and are considered both an investment and a symbol of wealth and prestige. Some of these assets are Artworks, Jewels, Wine, Bags, Cars, Watches, Whiskey etc...

*Knight Frank* provides a definition of Luxury Investment: “What are luxury investments or, as they are also often referred to, investments of passion? First, there need to be similar elements to any other investment market – liquidity (a community of likeminded collectors really helps); accessible trading platforms to allow you to buy and sell; the potential for values to rise over the long term (that’s why we don’t put private jets or superyachts in this category); and, preferably, some element of data that allows market performance to be tracked. Second, and crucially, collecting the asset class in question must be enjoyable regardless of any change in value. If no passion is involved, if the joy of ownership doesn’t make up for any potential drop in value, then it’s just another investment.”<sup>2</sup>

It is the passion and joy involved in collecting and investing on these kind of assets that also give them the name of “Passion Investments”.

Passion investments usually involve buying tangible assets such as Artworks, Classic Cars, Fine Watches, Jewellery, Bags etc. with the hope of them appreciating over time.

Contrarily to traditional financial assets, they are not electronically exchangeable and are not fungible. In fact, Luxury assets are characterised by a high degree of heterogeneity and are not replaceable: e.g. every diamond is different from the others and is valued differently according to specific characteristics.

“A share of Apple Inc. is a perfect substitute for another share in the equity of Apple. In contrast, a Penny Black stamp is not a perfect substitute for another

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<sup>1</sup> <https://www.forbes.com/advisor/investing/how-to-invest-in-collectibles/>

<sup>2</sup> Knight Frank, (Q2 2023), *Luxury Investments*, The wealth Report

Penny Black, and a Picasso painting can be utterly different from another Picasso painting.”<sup>3</sup> (Dimson and Spaenjers, 2014).

In the past few years, the attention of the media has been very focused on luxury investments due to unprecedented highs in auction closing prices:

“Leonardo da Vinci painting sells for \$450m at auction, smashing records” (The Guardian, 2017)

“11.15 Carat Williamson Pink Star Diamond Fetches \$57.7 million, a World Record Price” (Forbes, 2022)

“Patek Philippe Watch Sells for \$31 Million in Record Auction” (Bloomberg, 2019)

Yet, high prices do not necessarily imply high returns (Renneboog and Spanjers, 2013). An example proposed by Renneboog and Spanjers is Monet’s painting “Dans la prairie which was closed in London at Christie’s for **GBP**11.241.250. This painting, though, was sold two other times in the past centuries for **GBP**14.3m in 1988 at Sotheby’s London and for **USD**15.4m at Sotheby’s New York.

### 1.1.2. A focus on Art, Watches, Diamonds and Precious Stones

The focus of this study will be on three specific luxury assets: Artworks, Diamonds and Fine Watches.

In the past few years, the market for these kinds of assets has seen an unprecedented growth and an exceptional interest from the investors.

Before diving into the specifics of these goods, it is useful to correctly classify these assets in terms of economics good type.

As we already mentioned, before being classified as a financial instrument, Art, Watches and diamonds are considered consumption goods, and, more specifically, luxury goods, as their owners take pleasure from their intrinsic value.

“Unlike “pure” financial instruments, art is also a consumption good. Art owners take pleasure in its intrinsic value (e.g., for aesthetic pleasure or as a “storehouse of

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<sup>3</sup> Dimson, E. & Spaenjers, C. (2014). Investing in Emotional Assets. *Financial Analysts Journal*, 70(2), pp.20-25.

an artist's deftness), and to the extent that this is a luxury good, they derive additional enjoyment from the signal of wealth that owning a masterpiece transmits."<sup>4</sup>

In fact a further categorisation of these goods can be found in Veblen goods and Positional goods.

A Veblen good is defined by Investopedia as "a good for which demand increases as the price increases due to its exclusive nature and appeal as a status symbol. This runs counter to the prevailing circumstance of demand falling as price rise. Thus, a Veblen good has an upward-sloping demand curve rather than the typical downward-sloping curve"<sup>5</sup>. Basically, a Veblen good doesn't follow the usual laws of demand and supply. In fact, it becomes more appealing to the consumers, the more its price increases. This happens because, as stated by Veblen himself in his *Theory of the Leisure class* "In order to gain and to hold the esteem of men, wealth must be put in evidence, for esteem is awarded only on evidence"<sup>6</sup>.

The concept of Positional good has been introduced by Hirsch (1977), he speaks about a positional economy which is composed of "all aspects of goods, services, work positions and other social relationships that are either (1) scarce in some absolute or socially imposed sense or (2) subject to congestion and crowding through more extensive use"<sup>7</sup>.

A Positional good, similarly to a Veblen good, derives its value from its relative standing to other goods rather than its intrinsic value. This means that the value of a positional good is subjective and driven by its role in signalling status or achievement within a social context. Both Art, Diamonds and fine watches' value is somehow rooted in their ability to confer a social status to those who own them.

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<sup>4</sup> Mandel, B.R. (2009). Art as an Investment and Conspicuous Consumption good. *American Economic Review* 99:44 pp.1653-1663

<sup>5</sup> <https://www.investopedia.com/terms/v/veblen-good.asp>

<sup>6</sup> Veblen, T. (1899). *The Theory of the Leisure Class*

<sup>7</sup> Hirsch, F. (1977). *Social Limits to Growth*

## Art

It is easy to think about high-end Watches and Haute Joaillerie as luxury, but can Art be considered luxury? At which point an Artwork becomes a piece of luxury?

As we will discuss in the following paragraphs, the valuation of a piece of art is an extremely difficult and delicate process. Overall, we can say that what separates luxury art from “general” art is the exclusivity, scarcity, craftsmanship, how the art market reacts to a particular piece etc.

In a less conceptual and more “empirical way”, Pownall et al. (2019) gave an answer to this question by estimating error correction models between British art prices from 1895 to present and capital gains and total returns. These models provided estimates of the elasticity between art and the two variables which resulted quite high, implying that art prices are very responsive to changes in capital gains and total returns. Based on these results Pownall et al. define art as a luxury good.

“As a luxury good, relative art demand is an increasing function of wealth.

Therefore, positive shocks to income increase the demand, price and returns to art in periods of high consumption utility, implying a high risk premium” (Mandel, 2009)<sup>8</sup>.

As we saw in Figure 1.2, among luxury goods, the market for Art is what registered the most significant growth in the past 12 months and one of the highest growth in the past 10 years.

The market for artworks is a very complex and multifaceted reality which includes many actors such as artists, art dealers, auction houses, galleries, art fairs etc.

Like others, also the art market is influenced by trends and is susceptible to cycles. Unlike other markets, though, the art market is influenced by many specific factors and challenging points such as authenticity issues, provenance disputes and lack of transparency.

According to the Art Basel and UBS “Survey of Global Collection 2023”, the global art market totalled USD 67.8billion in 2022, growing by 3% in respect to 2022 and registering it’s second highest level ever. For the first time, the market exceeded its pre-pandemic level of 2019.

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<sup>8</sup> Mandel, B.R. (2009). Art as an Investment and Conspicuous Consumption good. *American Economic Review* 99:44 pp.1653-1663

In 2022, the U.S. continued to lead the global market, accounting for 45% of total sales value. It saw an 8% annual increase, reaching a record high of USD 30.2 billion. This growth was driven mainly by a surge in high-end auction sales and some increase in dealer sales. After a -25% drop in 2020, the U.S. market witnessed one of the strongest recoveries among global markets.

## **Watches**

The market for Luxury watches is characterised by a combination of heritage, craftsmanship, exclusivity and status. In fact, the purchase of a luxury watch is usually associated with a milestone reached in the academic/professional life. Luxury watches are known for their exquisite craftsmanship and very high-quality materials. Many luxury watches include intricate movements, usually built with hand-made components. The material used are usually precious and rare, such as gold, platinum, precious stones and exotic alloys. Brands which produce luxury watches tend to keep a sense of exclusivity and scarcity by maintaining a low level of production. This is one among the numerous factors which have contributed to the collectability and to the investment opportunities that watches today have in the market. The latest trends have seen more and more investors choosing luxury watches as a form of alternative investment. From the Knight Frank index, which gets the data on watches from AMR (Art Market Research), we can see that investments in watches grew by a whopping 147% in the past 10 years and by 10% in the past 12 months.

Home to the most important Fine Watches manufacturers in the world, Switzerland plays the role of biggest Luxury Watches exporter in the world.

According to the Federation of the Swiss Watch Industry, Swiss wrist-watch exports rose to CHF 24.8 billions, 11.4% more than 2021, benefitting from the strong demand for luxury products and the increase in global wealth.

In 2022, the American continent, led growth in the swiss watch exports with a 23.9% increase, representing 19% of total exports. Asia's growth was more modest at

4.4%, also its import declined to 49% of global exports from over 50% in previous years. Europe saw a 15.8% growth, bringing its share to 30%.<sup>9</sup>

## **Diamonds**

Another very important sector to consider in the luxury market is the Diamonds sector. Often, fine jewellery pieces and stones are characterised by unicity. This creates a sense of exclusivity that makes them very desirable and sellable at huge prices in auctions. Precious stones, in particular, are extremely rare and reach incredibly high closing prices. Just as art and watches also Diamonds are very susceptible to market trends and cycles.

According to the Knight Frank Luxury Index, which, for diamonds, is based on the Fancy Colour Research Foundation (FCRF) data, shows us that investments in coloured diamonds grew by 13% in the past 10 years and by 4% in the past 12 months.

After the end of the DeBeers monopoly, at the beginning of the 2000s, the market for diamonds became much more liberalised.

According to the Diamond Insight report 2023 produced by DeBeers, Polished diamonds generated US\$27.8b, 0.3% more than in 2021, showing a steady but slow growth. We need to make a distinction between standard, industrial diamonds and rare, precious ones. In fact, Diamonds are traditionally divided in three different market segments: industrial, jewellery and investment. Industrial diamonds value does not depend on the quality or rarity, usually industrial diamonds are considered the “ugly diamonds” left-over by the jewellery or investment segment of the market. Their value depends on the level of economic activity in general and the volume of manufacturing production.

Jewellery Diamonds prices, instead, have been found highly correlated with disposable income.

Investment Diamonds have been found sensitive to real interest rates, to USD exchange rates and to disposable income. (G. Ariovich, 1985)

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<sup>9</sup> Federation of the Swiss Watch Industry - Press Release, Jan 2023, *Swiss Watch Exports in 2022*.

Major producers like Botswana, Russia, and the Republic of Congo dominate African nations as well, even after the Kimberly Process<sup>10</sup>, continue to be heavily reliant on diamonds exports. In 2022, according to DeBeers, the major consumers are the US, China and India, with respectively 53%, 12% and 10% of the total global demand.

The major trading centers for diamonds, globally, are:

- Antwerp, Belgium: Known as the “diamond capital of the world”, Antwerp has been a focal point for diamond trading for centuries.
- Mumbai, India: Mumbai is a major hub for diamond cutting and trading, with a significant portion of the world’s diamonds being processed here.
- New York, USA: The New York diamond district is a key centre for the sale and distribution of diamonds in the Western Hemisphere.

The value of diamonds is determined by the “4Cs”: Carat Weight, Colour, Clarity and Cut. These four characteristics are critical in establishing a diamond’s rarity and worth:

- Cut: Refers to the diamond’s proportions, symmetry and polish. A well-cut diamond will have increased brilliance and sparkle, and hence a higher value.
- Colour: Diamonds are graded based on their colour, ranging from colourless to light yellow or brown. The most valuable diamonds are those with little to no colour.
- Clarity: This measures the presence of blemishes or inclusions within a diamond. Higher clarity means fewer imperfections and higher value.
- Carat Weight: Carat refers to the weight of the diamond. Larger diamonds are rarer and thus more valuable.

The final value of a diamond is a combination between the “4Cs”.

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<sup>10</sup> The Kimberly Process is an international agreement established in 2003 to prevent conflict diamonds from entering the global market. It brings together governments, the diamond industry, and civil society organisations to enforce strict controls on diamond production and trade, aiming to reduce the financing of armed conflicts through diamond sales.



## ***1.2 Costs and Liquidity of the Luxury Market***

“Alternative investment instruments (fine wine, art, diamonds, stamps, etc.) are characterised by several specific features compared with traditional ones. These features include high entry barriers and high investment risks, issues with the valuation of the assets, higher transactional costs including diligence costs and lower trading volumes, lack of data and information”. (Fischer & Fifer, 1985).

In this section we will analyse the barriers and costs that characterise Investments in Luxury goods.

Compared with traditional financial investments, luxury collectible goods have to bear higher and more important investment costs (Dimson & Spaenjers, 2014).

If not considered, these costs risk causing a misleading evaluation of the returns. This section attempts to describe the most relevant costs.

### *1.2.1 Transaction Costs*

When investing in luxury collectibles, the transaction costs can be significant and tend to vary considerably compared to traditional investments. These costs impact the short-term performance of the investment, with implications especially notable due to the often-limited liquidity and specialised nature of these assets. This aspect is crucial for investors to consider, as it can affect the overall profitability and viability of investing in such non-traditional assets.

A big part of transactions for luxury goods goes through intermediaries such as auction houses or resellers (e.g. gallerists in Art’s case). This portion of sales which take place through intermediaries imply transaction fees that can vary from seller to seller and from country to country. For example, auction houses usually charge a premium to the buyer and a fee to the seller. Dimson & Spaenjers (2014) estimate that, together, these two components can get to be responsible for up to one fourth of the total cost of the asset. It is a huge percentage if we think that for traditional financial assets such as stocks the transaction fee is very small, usually not greater than 1% of the cost.

The impact of these huge transaction costs is inversely correlated with the time of detention of these assets. This means that the costs can spread through the years and the more the asset is retained the less the impact of the transaction cost will be. For example, Campbell (2009) suggests a retention time window of at least 25 years for art to remain an attractive portfolio allocation.

### *1.2.2 Illiquidity*

Luxury assets bear a hidden transaction cost, which is implicit: Illiquidity. Contrary to traditional financial assets, they navigate in an extremely illiquid market: this is because artworks, watches, jewels and other kind of collectibles cannot be sold quickly, unless they are heavily discounted.

One of the reasons is that, as we previously commented, these kinds of assets are generally exchanged through auction houses, and auctions, unlike sales on the stock market, are not held in a continuous way. That's because, before being sold at an auction, a piece of art or any luxury asset must be authenticated, valued and placed in the right lot with other pieces. Auction houses and resellers could also refuse to sell an item if they think that is not convenient for them or that the demand is not appropriate. It must be taken into account that sales through resellers such as gallerists can be also very sporadic for the same reasons. It can take months or even years before a collectible item can reach the market.

Searching for a potential buyer in autonomy is even more problematic and costly.

### *1.2.3 Other Costs*

Unfortunately, Transaction Costs and Illiquidity are not the only costs that an investor needs to bear in order to access the luxury collectibles market.

Other expenses must be taken into account: storage, insurance, transportation, restauration can contribute in lowering even more the net returns on collectibles. These costs are entirely borne by the owner of the asset and change based on the specific asset taken into consideration.

### ***1.3 Auction Houses and their role in defining a market for luxury assets***

As previously stated, auction houses play a huge role in the sale and valuations of luxuries such as Art, Fine Watches and Diamonds.

These kinds of institutions date back as early as 600BC when they were used as a mean, for Babylonians, to sell women in marriage.

They later developed in ancient Greece and Rome as a way to liquidate the assets of debtors, similarly to modern banks auctioning collaterals that debtors put as a guarantee for their debit.

The modern auction house began to take shape in the 17<sup>th</sup> century, with Sotheby's and Christie's, established in 1744 and 1766 respectively, becoming prominent in London.

The internet's advent revolutionised auctions, enabling broader participation across diverse commodities and leading to the invention of new auction types like the multi-attribute auctions. This evolution culminated in the rise of online auction platforms like e-Bay, where individuals can globally auction rare items, attracting bids from a wide audience.

As of today, the most prominent auction houses are considered Christie's, Sotheby's, Phillips and, more recently Bonhams.<sup>11</sup> Christie's and Sotheby's are the ones who developed the most used "English"<sup>12</sup> or "ascending prices" auctions. They offer a diverse range of artistic movements and types of collectible assets and during their auction seasons they focus on specific assets, genres, artists or styles. These key players not only auction antiques pieces and historical artworks but also shape and promote trends by carefully selecting and featuring certain pieces in their collections.

Global auction houses are central to identifying luxury assets market trends, where the financial performance of artists is a key indicator. While sector fairs and

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<sup>11</sup> Bonhams started to be considered part of the most relevant auction houses in 2022, with the acquisition of four other smaller auction houses.

<sup>12</sup> The "English" auction starts with lower bids followed by higher and higher bids, the item is sold to the highest bidder. It actually has Roman origins, the word derive in fact from the latin "auctio", which means "to ascend".

exhibitions are significant, auctions offer a quicker, more dynamic insight into what's currently in demand in the art world. This is due to the rapid nature of collectibles auctions compared to the longer preparation time required for expositions, making them a crucial pulse point in the international collectibles market.

This paragraph aims to analyse and describe how these institutions are pivotal to the good functioning of the market.

### *1.3.1 Price Setting*

As we already mentioned, Auction Houses play a pivotal role in determining prices for collectible items. In fact, they help establish market values for luxuries through their auction results. High sale prices at prestigious auction houses can set benchmarks for similar items.

According to Ashenfelter and Graddy (2006), Art auctions shape prices through these key factors:

- Estimate Accuracy: Auction Houses' high and low estimates are vital for pricing, with studies showing these estimates often align closely with actual sale prices and outperform other pricing models .
- Estimate Variance: The difference between high and low estimates indicates potential price fluctuations and ties into the reserve price<sup>13</sup> set by sellers.
- Unsold Item Impact: Artworks not sold at auction typically see a roughly 30% drop in value and are considered "burnt".
- Variation in Sales Rates: Different auction types exhibit varying sale rates, influenced by sellers' reserve prices, often a percentage of the lower estimate.
- Price-Fixing Indices: Past occurrences of price-fixing in auction houses have significantly impacted both market prices and the reliability of auction outcomes.

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<sup>13</sup> A reserve price in an auction is the minimum price set by the seller that must be met for the item to be sold. If bidding does not reach this price, the item remains unsold, ensuring the seller does not have to accept a price lower than they are willing to.

These elements reflect the intricate relationship between auctioneer expertise, market forces, and seller tactics in determining prices in the art auction markets.

### *1.3.2 Authenticity and Provenance Verification*

Verifying the authenticity of a luxury good is crucial, as it significantly influences both our aesthetic judgment and the object's monetary value. The accurate determination and attribution of collectible pieces are essential in numerous scenarios, including sales, loans, inheritance matters, insurance policies, taxation considerations and, in our case, investment purposes.

Auction houses play a vital role in averting counterfeit sales and maintaining auction integrity by adopting the following precautions:

Before each sale, Auction houses compile catalogues detailing each item's creator, origin, date and provenance<sup>14</sup>, mostly based on visual assessment and historical documentation.

They occasionally perform technical analyses for attribution.

Following market authentication rules, auction houses consult relevant experts for consigned works' authenticity, often anonymized to protect them from legal issues.

In the absence of external experts, in-house experts verify attributions, also relying on consignor-provided documents like previously issued authenticity certificates. Catalogue descriptions are often strategic, focusing on marketing while minimising liability. Auction houses, in fact, do not take responsibility, by stating in their "conditions of business"<sup>15</sup> document that the attributions given to the item are only an expression of their opinion.

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<sup>14</sup> Provenance refers to the history of ownership and transfer of a collectible item. It documents the item's journey from its creation to its current holder. Provenance can include records of previous owners, places of storage, and sales transactions. This information is crucial for authenticating and valuing pieces, as it helps to establish an item's legitimacy and history.

<sup>15</sup> A "condition of business" document typically outlines the terms and conditions under which the Auction House operates and engages in transactions. It includes details on payment terms, delivery, liability, dispute resolution and other operational and legal aspects of conducting business. These conditions ensures clarity and protect the interests of both the business and its clients.

“Overall, auction houses adopt a practical approach in authentication which is conducted on a daily basis as part of its business.”<sup>16</sup>

### *1.3.3 Market Trend Identification*

Auction Houses influence trends by showcasing diverse styles and focusing on specific artists/brands or genres.

Their sales set market trends, especially when certain pieces fetch high prices. This creates a ripple effect across galleries and museums for art and resellers for watches and diamonds, shaping global perceptions.

In fact, successful sales at prestigious auctions often signal the market’s acceptance of certain trends, leading to increased demand and prices for similar items.

A good example of this mechanism is the sale of Paul Newman’s Rolex Daytona (ref. 6239): in 2018, after its record sale of USD 17.753.000 at Phillips New York in 2017, prices in the second-wrist market for the “modern” Daytona doubled the retail price, becoming one of the most popular models of the year.

By combining expertise and digital tactics, auction houses are the best at identifying and promoting new trends. In fact, they usually have teams devoted to digital strategy to identify and promote key movements for upcoming sales.

This creates a feedback loop, where auction houses both respond and shape market preferences.

### *1.3.4 Accessibility and Exposure*

Auction Houses provide a platform for collectors and sellers from around the world, increasing the visibility and accessibility of collectibles.

They provide sellers a unique platform to sell items, along with expert evaluations to help determine the value of the items.

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<sup>16</sup> Bandle, A.L. (2015). Fake or Fortune? Art Authentication Rules in the Art Market and at Court. *International Journal of Cultural Property* vol.22 pp.379-399

For buyers, auction houses are a centralised location that offer a diverse range of items to choose from, they are particularly relevant for those seeking specific purchases. Most of the time, in fact, buyer searching for niche products such as luxuries look for them at auctions and keep up to date with the publication of catalogues from major auction houses.

Auction houses leverage their reputation, expertise, and marketing channels to attract potential buyers from around the world. This expanded reach increases the visibility of items, especially rare or unique pieces, to a diverse group of collectors and investors. Auction houses' online presence and digital catalogues further broaden access, allowing people from different regions to participate, thus democratising the process of buying and selling in the art and collectibles market.

According to the Art Basel and UBS "Survey of Global Collection 2023", auctions remain the most popular sale channel for art and luxury goods, with approximately three quarters of the respondents having made purchases at auctions in the first half of 2023. This is also due to the continuously growing trend of in-person purchasing after the stop caused by Covid-19.

In 2022, Christie's, Sotheby's and Phillips all reached new peaks, collectively reaching annual revenues totalling USD 17.7 billion.





## ***2. The Rational and Behavioural Dynamics of Investing in Luxury Assets***

### ***2.1 Contextual Overview of Consumer Collecting***

With its surging popularity and with more and more people entrusting their finances into these special assets, one may find himself asking what brings an investor to choose luxury assets.

As noted earlier, the value of luxury assets, such as Art, Diamonds or Fine watches, cannot be found uniquely on its potential financial outcome but must be also searched for in its role of creating a pleasant and joyful experience to its owner.

This chapter wants to focus on the role of luxuries as both a pleasurable hobby and a significant financial opportunity.

Literature has analyzed different perspectives on collecting, and, in general, it divides the motifs of investing in collectibles into two main branches: financial appeal and psychological appeal.

These motives are also applicable to the luxury side of collecting.

A consensus on the inconvenience of Art and other collectibles as an alternative financial investment has spread after 2013, when Renneebog and Spaenjers analysed a huge sample of nearly 1.1million auction sales to examine the returns in the art market for the period 1957-2007. They conclude that during those years, art prices have increased of 3,97% per year, comparable to corporate bonds but far riskier and much less than returns on stocks for that period. Most of the times, though, what's not been taken into account is the intangible returns that an investment in collectibles carries.

In his research on Art Collectors, Baekeland (1981) identifies a range of psychological reasons behind the act of collecting. Thus, collecting luxuries should be viewed as a fundamental economic behavior which cannot be strictly classified

as either a mere consumption or investment activity, but rather as influenced by numerous psychological factors. Even for collectors who are motivated by investment, non-monetary motivations play a significant role.

The following paragraphs will delve into more detail onto these motives.

## ***2.2 Traditional Investment Appeal***

Investing entails the acquisition of assets in anticipation of economic returns over time. It is defined by Bodie et al., in strict terms, as “the current commitment of money or other resources in the expectation of reaping future benefits”.<sup>17</sup>

Conventional assets like stocks or bonds offer returns through income (such as dividends for stocks or coupon payments for bonds) other than potential capital gains. In contrast the profitability of luxury goods like fine art, diamonds, and fine watches stems solely from their value appreciation over time. These kinds of assets usually do not yield any income while they are held; their financial upside lies in their escalating market value.

“Unlike an equity, art offers no claim on an underlying stream of payments”.<sup>18</sup>

Investments in collectibles, and especially luxury collectibles, poses unique considerations. Unlike frequently traded traditional financial assets, luxury goods trades are rare, often with long holding periods. For example, according to Lovo & Spaenjers (2018) the average holding period for art is around 13 years (12.8 to be precise).

The luxury market dynamics further complicate return calculations: collectibles can be bought directly from artists/producers, galleries/resellers or at auctions. Generally, auctions are the primary source for public transaction data. This limits empirical analysis to auction sales data, which significantly shapes the calculation of art returns. (Skinner & Jackson, 2018)

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<sup>17</sup> Bodie, Z., Kane, A., Marcus, A.J. (2014). Investments. *McGraw-Hill Education*

<sup>18</sup> Mandel, B.R. (2009). Art as an Investment and Conspicuous Consumption Good. *American Economic Review* 99:4 pp.1653-1663.

As documented by recent literature though, luxury assets are taking big steps in becoming purely investment vehicles:

*“Art as Investment has become an increasingly prominent feature of the art world. It is now common for investors to collect pieces based largely on their anticipated future resale value rather than their aesthetic value. Surveys have found that half of art collectors consider investment returns to be an important motivation for their art purchases, and 88% of wealth managers think art and collectibles should be included as part of a wealth management offering, up from 55% in 2014.”*<sup>19</sup>

That said, following literature, we will now explore the main factors that brings rational investors to choose art as an addition to their portfolio.

### *2.2.1 Diversification and Risk Management*

“Diversification is a risk management strategy that creates a mix of various investments within a portfolio. A diversified portfolio contains a mix of distinct asset types and investment vehicles in an attempt to limit exposure to any single asset or risk. The rationale behind this technique is that a portfolio constructed of different kind of assets will, on average, yield higher long-term returns and lower the risk of any individual holding the security.”<sup>20</sup>

This subsection will describe how luxury assets can offer portfolio diversification and risk management benefits.

On the past years, literature has not been united on the perks of adding a piece of art or a luxury good in a portfolio. Some authors have been opposed to the idea of collectibles positively affecting asset optimisation.

Goetzmann, in 1993, suggests in fact that that the unprecedented growth in art prices and returns shows little evidence of it being an attractive investment, given its pronounced risk. Overall, according to Goetzmann, investing in art may not be convenient for risk-averse investors since holding a significant portion in art could result in challenges managing portfolio volatility. “Art, absent its aesthetic dividend

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<sup>19</sup> Xiang, A. (2018). Unlocking the potential of art Investment Vehicles. *The Yale Law Journal*, vol.127(6), pp.1698-1741.

<sup>20</sup> <https://www.investopedia.com/terms/d/diversification.asp>

flow, is only potentially attractive to an agent who would otherwise choose a relatively volatile portfolio”.<sup>21</sup>

Another scholar, during that same year (1993), shares similar ideas, James E. Pesando. Pesando, in its research, using Markowitz’ model, notes that including art in an investment portfolio may not be convenient due to its low average real return and to its high risk comparable to stock or long-term bonds. According to its study, in fact, the average return on art is lower than traditional financial assets like stocks, government bonds or Treasury Bills. For this reason, according to Pesando, art represents a less attractive investment option for those seeking risk-adjusted returns comparable to financial assets.

However, certain studies highlight the weak correlation between the performance of investments in luxury goods and traditional assets like stocks and bonds. This characteristic supports the idea that luxury goods can be an effective tool for diversifying an investment portfolio.

Among these, the study conducted by Mei and Moses in 2001, stands out. In their study “Art is found to have lower volatility and lower correlation with other assets, making it more attractive for portfolio diversification than discovered in earlier research”.<sup>22</sup> According to Mei and Moses, in fact, including Art in an investment portfolio can be advantageous due to the fact that, over a long period, it presents returns comparable to government bonds and lower volatility than stocks. Art also shows low correlation with other asset classes, enhancing its role in diversification. However, investing in high-priced masterpieces may not yield high returns due to the “winner’s curse”, where overbidding leads to lower future returns. The paper also notes that art investments may be more suitable for long-term strategies to offset transaction costs.

Another paper that contributed to the understanding of the role of luxury assets in portfolio diversification has been produced by Worthington and Higgs in 2004. They

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<sup>21</sup> Goetzmann, W.N., 1993. Accounting for Taste: art and the financial markets over three centuries. *American Economic Review*. 83(5), pp.1370-1376.

<sup>22</sup> Mei, J. and Moses, M. (2001). Art as an Investment and the underperformance of masterpieces. *American Economic Review* 92:1656-1668.

analyse major paintings market during the period 1976-2001. According to the paper, art investments, while they offer lower returns and higher risk compared to traditional financial assets, exhibit low correlations with financial assets. This low correlation suggests potential diversification benefits for portfolios, however, when considering broader asset classes, the risk-return attributes of art are not favourable enough to support its inclusion for diversification purposes in financial assets portfolios.

More recently (2023) Ma & Qi have studied the Chinese mainland art market to explore its investment returns and asset allocation effects. Using Harry Markowitz portfolio theory, they incorporate artworks into investment portfolio discovering that doing so can optimise their efficient frontier. This effect becomes more pronounced the lower the risk aversion of the investor is. This means that incorporating artworks into investment portfolio benefits especially risk-seeking investors. This positive asset allocation effect is evident when considering both the Chinese financial assets and major global financial assets. The impact, though, varies across artwork types, with modern art and masterpieces driving the results.

In 2020, Barbi et al., compared diamonds to precious metals and their role in reducing portfolio tail risk. They found out that diamonds can play a valuable role in reducing risk in a diversified equity portfolio, especially in terms of mitigating tail risk. The study shows that certain diamond indices can enhance the overall risk-reward balance of a portfolio, a result not achievable with gold or other precious metals. Their study is hence supportive of a superior diversification effect of diamonds. This benefit is specific of investments in diamonds and is not replicated by investing in shares of diamond-mining companies.

Overall, the evidence from these studies brings us to the conclusion that the effect of the inclusion of luxury goods in a portfolio is complex and varies significantly based on factors like the type of good and the dynamics of the market analysed.

In general, though, we can say that even if it offers lower returns and higher risks, luxury goods present low correlation with traditional financial classes, suggesting a potential for portfolio diversification. This potential becomes more evident for risk-

seeking investors. However, the benefits of including luxury goods in investment portfolios are nuanced and depend on the condition of the market and the specific segment taken into analysis.

### *2.2.2 Value Appreciation*

“Appreciation, in general terms, is an increase in the value of an asset over time. The increase can occur for a number of reasons, including increased demand or weakening supply, or as a result of changes in inflation or interest rates. This is the opposite of depreciation, which is a decrease in value over time”.<sup>23</sup>

The aspiration of a future value appreciation can be viewed as the one of the primary motive that brings an investor to choose luxury assets as an alternative investment.

This can be closely linked, as we have already seen, to the rising popularity of these assets as investments, largely driven by the unprecedented closing prices we are witnessing at the most important auction houses and which have been catching the attention of the media for a long time now.

We will now look at the long-term value appreciation of luxury assets, supported by the most relevant studies on their performance over time.

Art has been, undoubtedly, the major focus of studies on alternative investment on luxury assets and collectibles, but its diverse nature and infrequent trading make it challenging to measure its performance systematically. In fact, the studies that we are about to present, show contrasting results.

The first significant research on Art’s financial returns dates back to the 1970s, with Robert G. Anderson publishing the first paper on the subject in 1974. Using both Repeat-Sales and Hedonic Regression methods, Anderson found that Art appreciated at an average rate of 3.3% per year from 1780 to 1960. He also noted

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<sup>23</sup> <https://www.investopedia.com/terms/a/appreciation.asp>

that the five-year return rates varied depending on the art school and the period taken under consideration.

The big expansion on Art Return's literature truly took place after Baumol's study on art prices in 1986. His analysis focused on 640 transactions spanning from 1652 to 1961. The results showed a very weak 0.55% real annual rate of return, far lower than government bonds returns for that period (2,5%). Baumol's conclusion is that "It (art) may well represent a very rational choice for those who derive a high rate of return in the form of artistic pleasure" but finds the purchase of art not fit purely for investment purposes.

In 1989, Pommerehne and Frey expanded the research scope, analysing 1198 transactions from 1625 to 1987 and including data from non-Anglo-Saxon auction houses in countries like France and Germany. They also considered transactions post-1960, unlike earlier studies. Their findings showed an average annual return rate of 1.5% with a volatility of 5%, equal to half the average rate of return for Government Bonds (3%) for that period.

In 2001, Mei and Moses analysed 4896 transactions from 1875 to 1999 and, using the Repeat Sales method, they created the famous and still widely used "MeiMoses All Art Index". Their findings contrast with earlier studies, showing that art can be comparable to government bonds as a long-term investment. They observed a real annual rate of return of 4.9% for art, which is higher than the 1.8% for bonds, but lower than the 7.4% return for stocks in that period.

During the following 10 years, two studies stand-out.

Campbell's 2008 study on art, using data from the period 1980-2006 showed a 6.56% average annual return and 8.08% volatility, highlighting the diversification power of art due to a low correlation with other financial assets.

Renneboog and Spaenjers, in 2013, analysed 1.1 million auction sales from 1957 to 2007, finding a 3.97% annual increase in art prices. However, art underperformed compared to stocks and was found to be very volatile. It showed a negative correlation with the S&P 500 and with Government Bonds.

Among the most recent studies on this subject we can find the papers from Korteweg et al. (2016) and Li et al. (2022).

Korteweg et al. analysed 32,928 paintings sold between 1960 and 2013, emphasizing the need to adjust indices for selection biases. They found significant differences between a standard RSR index and one corrected for selection biases. The correction reduced the average annual return by 28% (from 8.7% in the standard index to 6.3% in the corrected index) and showed 21% higher volatility in the RSR index.

Li et al., using 2,874,654 auction records over 60 years, found a real annual rate of return of 2.49% for paintings. Higher-end art showed higher returns but also greater volatility. Interestingly, paintings did not consistently outperform other collectibles; they fared better than sculptures but were surpassed by classic cars, Bordeaux wines, stamps and white diamonds in terms of performance.

And it is also on white diamonds that the literature has very much posed its attention.

The study on diamonds returns began with G. Ariovich in 1985, while DeBeers still dominated the market. He categorized diamonds into Industrial, Jewellery and Investment. He found jewellery diamonds to be highly correlated with disposable income and Investment diamonds with inflation rates and inversely correlated with real interest rates.

In 2012, Renneboog and Spaenjers analysed diamond investment performance from 1999-2010, covering 3952 auction sales. Their study yielded annual returns above inflation, particularly between the 2003-2010 period. In fact they observed an annual real return of 10% for diamonds, 5.5% for coloured diamonds and 6.8% for other gems.

Research on the financial returns on Fine Watches is quite limited, with only one notable study by Köstlmeier and Röder in 2023.



This study focuses on the risk-return profile in the global secondary market for luxury watches from July 2010 to March 2022, using data from the Chrono24 marketplace. The findings reveal that luxury watches achieved monthly returns of 0.64%, outperforming gold, bonds, and commodities.

Overall, these studies have indicated that luxury assets like art, diamonds and watches tend to appreciate in value over time.

Though, their performance as potential financial investments varies greatly and it's influenced by many factors like market trends, economic conditions and the unique characteristic of each asset type.

### 2.2.3 *Inflation Hedge*

Inflation is defined by Investopedia as “a rise in prices, which can be translated as the decline of purchasing power over time. The rate at which purchasing power drops can be reflected in the average price increase of a basket of selected goods and services over some period of time. The rise in prices, which is often expressed as a percentage, means that a unit of currency effectively buys less than it did in prior periods. Inflation can be contrasted with deflation, which occurs when prices decline and purchasing power increases.”<sup>24</sup> While the Inflation Rate is “the rate at which the price level increases over time”.<sup>25</sup>

By “Inflation Hedge” it's meant an investment tailored to preserve or enhance its value as time progresses, thereby safeguarding against the diminishing effects of inflation on the power to purchase. Essentially, it's a method or asset selected to counterbalance the detrimental consequences of inflation, with the goal of ensuring that the returns from the investment remain at the same level, or surpass, the inflation rate.

Luxury Goods have the potential to serve as a hedge against inflation, though this depends on a variety of elements and is not straightforward.

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<sup>24</sup> <https://www.investopedia.com/terms/i/inflation.asp>

<sup>25</sup> Blanchard, O. (2017). *Macroeconomics*. Pearson.

For instance, as we saw previously, luxury assets like Fine Watches, Art and Diamonds, often maintain or increase in value over time. This appreciation can keep up or even outpace the inflation rate, helping to protect the investment.

In fact, a key factor in whether luxury goods can effectively hedge against inflation is market demand. If people consistently increase their desire for high-end items, their prices could rise, potentially offsetting the impact of rising prices in the economy.

The uniqueness and rarity of these items also play a big role: limited edition pieces or special items often see their value grow over time.

However, it is important to remember that broader economic conditions and market trends can influence how well luxury goods perform as an inflation hedge. In fact, during times of economic uncertainty or fluctuating market conditions, even high-value luxury items may not be as effective in guarding against inflation. So, while luxury goods have the potential to act as a shield against inflation, their performance in this role can be quite unpredictable and varies depending on the market's ups and downs.

We will now take a look at how the already existing literature read the role of collectibles and luxury goods as a potential instrument for inflation hedging.

In 2008, R.A.J. Campbell, conducts a study analysing the MeiMoses and the Art Market Research art indices concluding that “these indices show that historically, average real returns for art are moderate. Returns are above inflation”.

These results, show that art can be a good hedge for inflation since returns for art outperform inflation.

In 2014, Dimson and Spaenjers conduct a study on the investment performance of emotional assets, finding out that, over a long period, items like art, stamps and violins have yielded higher returns than traditional investments such as bonds, bills and gold. More specifically, these collectibles showed significant nominal returns from the early 1900s to 2012, outperforming the average rate of inflation during that time. The study also points out that collectibles have not only provided strong

returns over the long term but also have the potential to act as hedges against inflation, especially during periods characterised by high inflation rates.

In 2013 Renneboog and Spaenjers, analysing return on diamonds, find out that white diamonds in particular have the potential to serve as an inflation hedge due to their ability to maintain or increase in value, outpacing inflation especially during period of financial instability.

In the period object of the study (1999-2010), which included two financial crises, diamonds demonstrated strong performance with USD returns for white and coloured diamonds at 6.4% and 2.9% respectively, above the inflation rate.

The examination of existing literature reveals a complex view of luxury goods and collectibles as tools for hedging against inflation. Studies indicate that while assets like art and diamonds have historically demonstrated the capability to outperform inflation rates, this is subject to various conditions and does not provide a uniform outcome.

The effectiveness of these assets in offsetting inflation is very influenced by other factors like the overall economic climate, so, although there's evidence suggesting luxury assets can grow or maintain their value during inflationary periods, their performance is not immune to broader market shifts and economic variances.

Also, the unique nature of collectibles, their volatility and the need for a long-term holding period should be considered.

### ***2.3 Psychological Appeal***

In the previous paragraph we have seen how investment in luxury assets can represent the acquisition of said assets in anticipation of economic returns over time. But there's another interpretation that can be given to the investment in luxury goods: the acquisition of them in anticipation of an intangible emotional return.

Luxury goods, in contrast to stocks or bonds, possesses an intrinsic emotional value. Collectors frequently develop strong attachments to their pieces, which is an aspect that goes beyond simple financial motives. This combination of emotional and

monetary value allows luxury assets to function not only as an investment but also as something that creates an emotional bond with the owner. Usually, this bond encourages investments in luxury goods and collectibles even in the face of economic instability.

This part of our analysis will delve into the various emotional and psychological implications that influence investments in luxury assets.

### *2.3.1 Behavioural Biases*

Traditional economic and financial theories often assume that people make rational choices and utilize all accessible information in their decision-making, while also considering markets to be efficient.

Take as an example the CAPM, the famous model invented by William Sharpe. This model is built on the premise that investors have the ability to analyse the entire spectrum of securities to gather all necessary inputs for the model, such as returns and variances for each security, along with the covariances between them.

Yet, humans are imperfect and specific cognitive constraints could make the expectations of some models unrealistic. In fact, human perception and memory are not always accurate in filtering information, and the way in which information are filtered can affect interpretation. During their evolution, given the challenge of processing an overload of information, individuals have adopted shortcuts to facilitate the process of decision-making: Heuristics.<sup>26</sup>

However, these heuristics can often result in biases, in particular when applied in out-of-context circumstances.

Let's start by defining what is a Behavioural Bias and why it is important in understanding why investors may choose luxury assets as an addition to their investment portfolio.

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<sup>26</sup> In psychology, heuristics are simple, efficient rules, either learned or inculcated by evolutionary processes. These psychological heuristics have been proposed to explain how people make decisions, come to judgements, and solve problems. These rules typically come into play when people face complex problems or incomplete information. Researchers employ various methods to test whether people use these rules. The rules have been shown to work well under most circumstances, but in certain cases can lead to systematic errors or cognitive biases. (Wikipedia <https://en.wikipedia.org/wiki/Heuristic> )

“The first dictionary definition of biases is consistent with faulty cognitive reasoning or thinking, while are more consistent with impaired reasoning influence by feeling or emotion. Behavioural bias is defined as a pattern of variation in judgement that occurs in particular situations, which may sometimes lead to perceptual alteration, inaccurate judgment, illogical interpretation or what is largely called irrationality.”<sup>27</sup>

Investors are victims of many different biases that affect their investment choices. In the following sections, two common biases that affect investment choices in the market for luxury goods have been identified: Home Bias and Tangibility Bias. We will also discuss the Personality Traits most common to the typical investor that choose collectibles and luxury goods.

### 2.3.2 Home Bias

One of the most common behavioural biases that concern investors is the Home Bias. We have evidence supporting that this bias has been affecting also investors choosing luxury assets as alternative investments (Steiner et al. 2013).

But what is the Home Bias?

In the field of Behavioural Finance, Home Bias refers to the inclination of some investors to predominantly allocate their portfolio to domestic stocks, often ignoring the advantages of including foreign stocks that would lead to diversification benefits.

Initially, this bias was thought to stem from the challenges associated with investing in the international equity market, like legal barriers and higher transaction costs. Additionally, some investors might prefer to invest in familiar domestic market rather than exploring unfamiliar territories, with the hope of being able to keep under control more the domestic, rather than the international, market.

To support the fact that this phenomenon is present also in the market for luxury assets we look at a study conducted by Steiner, Frey and Resch in 2013.

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<sup>27</sup> Mittal, S.K. (2018). Behaviour Biases and Investment Decision: theoretical and research framework. *Qualitative Research in Financial Markets, Vol.14(2), pp.213-228.*

Steiner et al. investigate the distribution of private art collectors globally and the biases of collectors towards the origin of artworks.

It reveals a pronounced home bias in art collecting across all continents and nations. Yet, this bias has been found to be most significant in Asian and African collections, followed by South American and Arabian collections, while being somewhat less pronounced, but still present, in European and North-American collections.

The paper identifies several reasons for this home bias.

The first reason being that collectors often exhibit a preference for art related to their own country due to cultural affinity and special attachments for local artists.

Another reason to prefer local art is that, most often, legal barriers and trade restrictions significantly impact the international art market, influencing collectors' preferences. Correlated to this reason are the export restrictions on art, the high transportation costs and tariffs on imports. A good example of that is the Italian rule that prohibits the export of paintings by Old Masters.

This study on the Home Bias for the Art market is applicable also to individuals that choose to invest in other luxury assets. In fact, just as art collectors often prefer pieces connected to their own culture of region, collectors of other luxury assets such as Fine Watches might also show a preference for items that have cultural significance or result familiar to them. This could lead to a concentration of investments in luxuries that are locally or domestically produced.

The legal and logistical barriers that influence art collecting can also be relevant in other collectibles markets. For instance, import and export restrictions, tariffs and transportation costs can affect the accessibility and desirability of certain assets, steering collectors towards domestically available items.

Overall, the emotional attachment to art from one's culture or region, likely plays a role in other areas of luxury collectibles as well and this emotional aspect should be recognized as a significant factor influencing investment decisions.

### 2.3.3 *Tangibility Bias*

The most common way of accumulating wealth is through tangible and intangible goods.

Tangible goods can comprehend gold, real estate and other commodities or, in our case, luxury goods such as Art, Diamonds and Fine Watches.

Intangible goods instead can comprehend stocks, bonds, and other more complex financial instruments such as derivatives.

Many investors have a preference for investing in tangible goods as they are perceived as less risky and attach to them a sense of permanence, especially during times of financial turmoil.

This preference can lead to the so-called Tangibility Bias. In a loose way, Tangibility bias describes a preference for things that are visible, tangible and quantifiable.

In 2022, Atasoy et al., analyse the investors behaviour and their perceived risk associated with tangible and intangible assets. They discover a tangibility bias, where tangible assets are perceived as less risky due to their physical presence, creating a false sense of financial safety.

Through five experiments, the paper shows that tangibility characteristics linked to an investment influence its perceived market risk. One of the experiments involved contrasting tangible gold bars with gold securities, the results revealed that physical gold was perceived as more permanent, leading to a lower risk assessment. In fact, the research identifies the use of tangibility as a heuristic in financial-risk judgment because tangible assets are attributed with lower risk especially since they are associated with a sense of permanence.

By applying the Tangibility Bias to the context of luxury assets we can discover that many investors may prefer these kind of assets as an investment also because of their tangible property.

As we have already discussed, the allure of owning tangible goods like Art, Fine Watches and diamonds often transcends just their financial value. This is where the emotional value of these assets plays a significant role, sometimes becoming more important than the financial valuation. The ability to touch, see and, in some cases,

wear them, brings a sense of satisfaction and pride to the owner. This sensation is not quantifiable, which often leads to decisions driven more by personal attachment than by a sterile financial analysis.

The tangibility bias on luxury assets can also be transposed to the fact that they encourage a long-term investment. Tangible luxury assets, in fact, are frequently viewed as heirlooms to pass on from generation to generation. However, this belief may lead investors to overlook important factors such as the short-term market volatility and liquidity issues, focusing instead on the perceived long-term stability and physical endurance of these items.

*"A Diamond is Forever"*<sup>28</sup>

The tangibility bias highlights even more the need for a comprehensive risk assessment when investing in luxury assets. In fact, while the tangible nature of luxury assets might offer physical and emotional satisfaction, recognising and mitigating the potential influence of tangibility bias is crucial to avoid bad risk judgments.

#### 2.3.4 *Personality Traits*

One's way of investing is not only influenced by Behavioural Biases, but also by one's own specific Personality Traits.

By analysing previous literature on this subject, in this section we will explore which are the personality traits most common to the investors who are generally more prone to invest in luxury assets.

People's consistent, yet distinct, responses to situations are influenced by psychological predispositions resulting from a combination of genetic, psychological, hormonal, and environmental factors. Key examples of these

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<sup>28</sup> DeBeers advertisement campaign (1948)



individual differences include personality traits, motivations, and performance abilities, encompassing aspects like how individuals feel, think, behave, their drives, interests, learning styles and intelligence. (Coate and Hoffmann, 2021)

According to Coate and Hoffmann (2021), in the field of cultural economics, these individual differences are particularly relevant given the wide variety of tastes and preferences in art and the unique role of the individual in cultural production.

In their study, in fact, they stress the importance of integrating behavioural economics within cultural economics. They find this approach particularly relevant in the cultural sector, where decision-making often deviates from traditional economic assumptions.

Another important study that delves into the specific personality traits common to people that consider collectibles as alternative investments is the one published by Kleine et al. in 2020. In this paper, the complex behavioural phenomenon of collecting with an investment motivation is addressed.

The study's methodology involves the use of the "Big Five" personality model. This model categorizes personality traits into five main factors: Neuroticism, Agreeableness, Extraversion, Conscientiousness and Openness.

The findings indicate that people that collect with investment purposes differ in personality from other survey participants, particularly in higher levels of Openness and Extraversion and lower levels of Agreeableness and Neuroticism.

High Openness is associated with a willingness to try new experiences and a broad range of interests. Low Agreeableness suggests that investors in collectibles are less cooperative and considerate than other survey participants.

About the demographics of the survey, the authors found that investors who choose collectibles as an alternative investment are predominantly male (about 70%), with above-average education, income and financial assets. Their age distribution does not show a consistent detectable pattern, implying that there is not a specific age range in which investors fall.

The overall findings of the study imply that collecting with an investment motive tends to attract individuals who are not solely driven by financial motivations. These individuals possess a combination of above-average education, sufficient financial

means, and a personality that is open to new investment experiences along with external, non-financial utility gains.

The studies presented in this section have further highlighted the fact that investment decisions in the realm of luxury assets and collectibles are not just influenced by financial motivations but also significantly shaped by individual personality traits.

Moreover, these studies underline the complex nature of investment in luxury assets by remarking how traditional economic theories are not sufficient to cover the diverse factors influencing investment decisions. Instead, this matter also requires an understanding that integrates behavioural economics to comprehend the interplay of financial and non-financial motivations, personal characteristics, and the broader socio-economic context shaping these investment choices.

### ***3. Historical Performance Analysis of a Luxury Assets Portfolio***

This chapter focuses on the historical performance analysis of a luxury assets portfolio. It offers a comprehensive examination of the data and the methodology employed to assess the viability and the impact of including luxury items, such as art, fine watches and diamonds, in a portfolio of investments.

It begins with a thorough examination of the data by examining the source, criteria and scope of each asset considered in the analysis.

By employing Markowitz's Modern Portfolio Theory, this chapter aims to highlight the intricate dynamics and the potential benefits of incorporating luxury assets into a diversified investment strategy.

#### ***3.1 Data***

In this section, the data used for the research is discussed and analysed.

Some premises need to be set:

With the objective of developing a comprehensive analysis on the on the role of luxury assets in a portfolio, the chosen data does not focus on a specific geographic market. Instead, it adopts a global perspective, aimed at fully exploiting the diversification power that international markets can offer.

To ensure consistency, the data chosen for this research is denominated in U.S. Dollars.

All data has been extracted, but the historical prices for fine watches and art, from a Bloomberg terminal which ensures reliability and accuracy. Bloomberg is, in fact, considered one of the most trustworthy sources for financial data.

The data for Fine Watches has been extracted from Chrono24<sup>29</sup>, which is considered the leading marketplace for luxury watches.

The data for Art has been extracted from the Art Market Research which is the most important and reliable source for art market data and is widely used by professional in the art sector to source for data.

The time frame for the data spans from March 2018 to March 2023, a period chosen with the intention of capturing the most recent trends and developments of luxury goods as a form of alternative investment.

To assess the risk associated with these alternative investments, the U.S. 10-year Treasury Bill rate for our time frame has been employed as a proxy for the risk-free rate. The use of the 10-year Treasury Bill as a proxy is a standard practice in financial analysis, as it offers a benchmark for evaluating the risk and return profile of an investment to a virtually risk-free rate.

We will divide the discussion in three areas, *Traditional Investment Vehicles*, *Alternative Investment Vehicles* and *Luxury Assets*.

### 3.1.1 *Traditional Investment Vehicles*

By *Traditional Investment Vehicles* we refer to the most common and widely used forms of investments, characterised by their long-standing presence in the financial markets and their relatively straightforward and well-understood nature. These investments are most often part of a traditional portfolio of investments. In our analysis we will exploit the following indices to proxy the market for equity and bonds.

As a proxy for the global equity market, two indices have been exploited:

1. The *Standard & Poor's 500 Index (SPX)*, which is an index tracking the stock performance of the 500 largest companies listed in the United States. It is a

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<sup>29</sup> <https://www.chrono24.com/chronopulse.htm>

go-to index to grasp the state of the U.S. equity market as it captures about 80% of the market cap for American public companies. The index weighs companies based on their market capitalisation and is regularly updated. Companies can be added or removed based on the committee's criteria. This process ensures the index actually reflects the current market environment and the U.S. economy. Rebalancing occurs quarterly to adjust the weightings of the companies in the index. The value of the S&P 500 is calculated by totalling the adjusted market caps of all 500 companies and dividing this by a divisor. The divisor is a proprietary figure developed by Standard and Poor's and is adjusted for stock splits, special dividends, or other structural changes in the index.

2. The *MSCI World ex USA Index (MXWOU)*, which tracks large and mid-capitalisation companies across 22 of 23 Developed Market (DM)<sup>30</sup> countries, excluding the United States. The index is composed by 871 constituents and covers around 85% of the free float-adjusted market capitalisation in each of the country it covers. Companies contributing to the comprising of the index are regularly updated.

For the fixed income component, the following indexes have been exploited as proxies:

1. The *Bloomberg U.S. Aggregate Index (LBSTRUU)*, which is a major bond index that provides a market capitalisation-weighted representation of the investment-grade, U.S.D. denominated, fixed-rate taxable U.S. bond market. In fact, it is widely used as a benchmark to track the overall performance of the U.S. market. The index includes Treasuries, government-related and corporate securities, MBS (agency fixed-rate pass-throughs), ABS and CMBS (agency and non-agency).
2. The *FTSE MTS Eurozone Government Bond IG 3-5Y (EMIGB5)* can be taken as a benchmark for the European sovereign bond market. It is designed to

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<sup>30</sup> DM countries include: Australia, Austria; Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland and UK.

improve index replicability by limiting each Eurozone sovereign issuer to two bonds per maturity range, with the exception of the 15+ years range. Independent total return indexes measure the performance of the largest and most widely traded securities in the euro bond market. The data underlying the FTSE Eurozone Bond Index Series is drawn from real-time tradable prices on MTS, which is the first electronic marketplace for cash bond trading across Europe.

### *3.1.2 Alternative Investment Vehicles*

Alternative investments vehicles encompass a wide and varied segment of the financial market, distinct from more traditional investment options like stocks, bonds and cash. These alternatives include a diverse array of assets and strategies, providing investors with opportunities to expand their portfolios beyond standard investments.

The following alternative investments are taken into consideration in the portfolio analysed for this research: Real Estate and Gold.

Incorporating Real Estate into an investment portfolio is a strategic move that offers several benefits and considerations. Real Estate investments can diversify and potentially enhance the overall performance of a portfolio.

In this research, as a proxy for real estate, the *MSCI US REIT Index (RMZ)* has been chosen. This index is a market capitalization-weighted index adjusted for free float. It consists of equity Real Estate Investment Trusts (REITs). This Index is derived from the MSCI USA Investable Market Index (IMI), its broader parent Index, which encompasses the large, mid and small-cap segments of the US market. With 120 components, it covers approximately 99% of the US REIT market. The securities in this index fall under the Equity REITs category within the Real Estate Sector, as defined by the global Industry Classification Standard (GICS). The index focuses on core real estate activities, meaning that only certain specialised REITs are included, and all components must have REIT tax status.

*Gold* is often used as a proxy for the broader commodity market due to its unique characteristics and historical role. As a precious metal, gold is seen as a store of value and a hedge against inflation and currency devaluation. Its price movements can reflect broader trends in the commodity market, especially during times of economic uncertainty or market volatility. For this reason, gold is also considered a safe haven in turbulent times, as it tends to maintain its value or even appreciate when other asset classes are in decline.

### 3.1.3 *Luxury Assets*

Luxury assets have already been discussed in the first chapter, but, for the sake of completeness, here we provide a brief description. They are part of the alternative investment vehicles, but, for practicality, we will discuss them in a separate section. Luxury collectibles are unique and high-value items that stand out due to their rarity, exceptional craftsmanship, and often their significant cultural or historical importance. These items go beyond mere functionality, capturing the interest of collectors and investors alike for their aesthetic beauty and collectible value. One of the defining features of luxury collectibles is their rarity. Whether it is a limited-edition piece, an antique, or a one-of-a-kind item, the scarcity of these items often drives their monetary value. The allure of owning something rare or unique is a strong attraction for many collectors.

In this research we study the influence on a portfolio of investments on three luxury collectibles in particular: Art, Fine Watches and Diamonds.

These assets are proxied by the following indexes:

1. The *AMR All Art Index (AMR)* has been developed by the Art Market Research as a mean to track the performance of the art market. It compiles and examine monthly data from art auctions, offering a window into prevailing trends and shifts in value within the art industry. Rather than focusing on a selection of artists, the All Art Index emphasizes a sample of leading auction

houses. Top auction houses in fact exercise selectivity in the artworks they accept to sell. From its sales records, AMR calculates the average value for each artist in its database, a figure known as the Artist Price (AP). These Artist Prices are then aggregated to create the overall All Art chart. This curated selection forms the foundation for the monthly tracking of artists providing a comprehensive view of the market.

2. The *Chrono24 Chrono Pulse Watch Index (CHRO24)* represents a good indicator for the global secondary market of luxury watches. The index is based on a robust analysis of over 600.000 transactions and is supported by the expertise of industry specialists. It evaluates the performance of 14 top watch brands, encompassing the 140 individual models most traded in the pre-owned market. The data at the base of the index is sourced from real sales figures supported by Chrono24's extensive 20-year history as a top fine watch re-seller. The index offers a comprehensive view of historical and current price trends in the luxury watch sector, making it a valuable benchmark. It tracks models, among the others, from brands such as Rolex, Patek Philippe, Audemars Piguet and Omega. As of January 2024, the top three highest weights in the index are taken by the *Rolex Datejust 41 (126334)*, the *Rolex Daytona (116500LN)* and the *Rolex GMT-Master II (126710BLNR)* representing respectively 9.04%, 5.39% and 4.8% of the index.
3. The *Universal Standard Diamonds Evaluation 100 Index (USDE)* has been created by Market Vector, an index provider, in order to capture the global market of cut and polished wholesale diamond industry. The index is based on sales volume, measured by amount of diamonds, of the top 100 traded diamonds, from most to least. The index is only composed of lab graded diamonds, this means, diamonds certificated by one of the big labs such as the International Gemmological Institute (IGI) or the Gemmological Institute of America (GIA).



Table 3.1 **Portfolio Assets Composition**

<b>Name of the Asset</b>	<b>Asset Class</b>	<b>Bloomberg Ticker</b>
S&P 500 Index	Equity	SPX
MSCI World ex USA Index	Equity	MXWOU
Bloomberg U.S. Aggregate Index	Fixed Income	LBSTRUU
FTSE MTS Eurozone Government Bond IG 3-5y	Fixed Income	EMIGB5
MSCI U.S. REIT Index	Real Estate	RMZ
Gold	Commodity	XAUUSD
AMR All Art Index	Luxury Collectible	—
Chrono24 Chrono-Pulse Watch Index	Luxury Collectible	—
Universal Standard Diamonds Evaluation Index	Luxury Collectible	USDE

### **3.2 Methodology**

In this paragraph, the methodology used to develop the analysis of this research, is discussed.

This part is dedicated to the Markowitz’s Modern Portfolio Theory, the framework he has proposed will be exploited to build the portfolio efficient frontier that will be later analysed.

Markowitz Modern Portfolio Theory (MPT) is considered one of the most important theories in the field of Financial Economics. It was established in 1952 with the publication of Harry Markowitz’s paper “Portfolio Selection”, published in the “Journal of Finance”.

This work fundamentally changed the way that investors look at portfolio construction and is still widely used to these days.

#### *3.2.1 Returns and Risk Measures*

Markowitz’s theory starts with the basic premise that investors are rational and risk-averse; they hence aim to maximise their expected returns for a given level of risk. Conversely, for a given expected return, they strive to minimise risk.

For this reason, the first analysis begins with an examination of the risk and returns characteristics for each security under scrutiny.

Using Historical Prices, returns for a generic security  $i$  are computed as follows:

$$r_{t+1} = \frac{P_{t+1} - P_t}{P_t},$$

where  $r_i$  is the return on a security  $i$ ,  $P_{t+1}$  is the price of the security at time  $t+1$  and  $P_t$  is the price of the security at time  $t$ .

The *standard deviation* indicates, the extent to which the returns on investments vary from the average of their probability distribution. In other terms, it is a measure of risk which informs investors about how much the actual return on their investments will deviate from its expected return.

Hence, once the returns have been obtained, the *standard deviation* has been computed:

$$\sigma = \sqrt{\sigma^2} = \sqrt{\frac{\sum_{t=1}^n (r_t - \mu)^2}{n - 1}},$$

where  $\mu$  is the average of the returns and  $n$  is the number of observations in the sample.

To measure the risk-return trade-off of each asset, we exploit the *Sharpe Ratio*.

This ratio has been introduced by William F. Sharpe in 1966 as part of his work on the Capital Asset Pricing Method (*CAPM*).

“The Sharpe Ratio is designed to measure the expected return per unit of risk for a zero-investment strategy”<sup>31</sup>, it can be seen as the “price” of the risk. For example, when considering two assets, the one showing a higher Sharpe ratio is considered to provide a better return for the same risk.

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<sup>31</sup> Sharpe, W.F. (1994). The Sharpe Ratio. *The Journal of Portfolio Management*, vol.21(1), pp.49-58.

The *Sharpe ratio* is computed as follows:

$$\text{Sharpe Ratio} = \frac{\text{risk premium}}{\text{standard deviation}} = \frac{r_i - r_f}{\sigma_i} ,$$

where  $r_f$  is the risk-free rate.

It is common to proxy the risk-free rate with Treasury bills as, given the backing of the government, are assumed to have the lowest possible default risk.

As already mentioned, the Modern Portfolio Theory posits that investors are inherently risk-averse. Therefore, investors are willing to assume greater risk only if they anticipate higher expected returns. Consequently, from a rational standpoint, an investor will not choose to invest in a given portfolio if there exists an alternative portfolio that presents a more advantageous balance of risk versus expected return.

The expected return of the portfolio represents the proportion-weighted combination of the returns on each asset:

$$E(r_p) = \sum_i^k w_i E(r_i) ,$$

where  $r_p$  is the return on the portfolio and  $w_i$  is the weight of asset  $i$  in the portfolio containing  $k$  assets.

The sum of the weights of the assets represents 100% of the portfolio, in fact:

$$\sum_i^k w_i = 1$$

The standard deviation of the portfolio depends not only on the standard deviation of each asset in the portfolio, but also on the co-movements between pairs of securities, expressed by the correlation coefficient. A greater level of standard deviation implies a higher degree of risk associated with the investment.

The standard deviation of the portfolio is expressed as

$$\sigma_p = \sqrt{\sum_i w_i^2 \sigma_i^2 + 2 \sum_i \sum_{j \neq i} w_i w_j \sigma_i \sigma_j \rho_{ij}} ,$$

where  $\sigma_p$  is the Standard Deviation of the portfolio and  $\rho_{ij}$  is the correlation coefficient between the returns of asset  $i$  and  $j$ , where

$$\rho_{ij} = 1 \quad \text{for} \quad i = j .$$

The correlation coefficient is a standard measure that quantifies the strength and direction of a relationship between two variables and it ranges between -1 and 1. When  $\rho = 1$ , the two securities are perfectly correlated, meaning they perfectly move together in the same directions.

On the other hand, when  $\rho = -1$ , the two securities are perfectly inversely correlated, meaning they move in opposite directions.

When  $\rho = 0$ , there is no relationship between the returns on the two securities.

### 3.2.2 Diversification

Imagine a portfolio composed of only one risky asset, this portfolio would be exposed to two major kinds of risk: systematic risk and idiosyncratic risk.

The first type of risk is associated with the overall economic conditions, these can be business cycles, inflation, interest rates or exchange rates. These macroeconomic factors are unpredictable and influence an asset's returns.

The second type of risk, the idiosyncratic risk, are specific to the asset. For example, imagine a portfolio only composed of diamonds, the unique risk of this investment could be linked with jewellery market preferences and trends, source and ethical concerns, quality and authenticity etc.

We have stressed how important it is, for the typical investor, to reduce the risk from its portfolio as much as possible, but how can an investor achieve this goal? By holding a mix of instruments that do not correlate perfectly with each other.

This practice is called *diversification* and can lead to maintaining the expected return of the portfolio while simultaneously reducing its risk.

The idiosyncratic risk is the one that is affected by diversification, while systematic risk is left behind. This risk, in fact, is generally not correlated with market movements. Thus, when a portfolio is diversified across different assets or sectors, the negative impact of a specific event on one asset can be offset by the stable or positive performance of others.

This reasoning leads to the concept of optimal portfolio construction which balances expected return and risk.

If all of the assets in a portfolio are perfectly and positively correlated, and hence  $\rho_{ij} = 1$ , the portfolio return presents the highest possible standard deviation, and consequently the portfolio is extremely risky. As the correlation coefficient lowers, the standard deviation drops. When the securities are completely uncorrelated, and hence  $\rho_{ij} = 0$ , the standard deviation depends only on the risk of the single securities.

### 3.2.3 Efficient Frontier

In this part of the analysis, the risk-return spectrum, and hence the different combinations of risky assets available to the investor, are analysed.

As already stated, the Markowitz's Modern Portfolio Theory is exploited for our analysis.

The construction of the *Minimum-Variance frontier* is achieved by optimising the combination of risky assets that minimise its variance, and consequently also its standard deviation. Hence that:

$$\begin{aligned}
 & \underset{s.t. \ 0 \leq w_i \leq 1; \ \mu_p = \sum_i^k w_i \mu_i \text{ and } \sum_i^k w_i = 1}{\operatorname{argmin}} \sigma_p^2(w_i, \sigma_i, \rho_{ij}) = \\
 & \underset{s.t. \ 0 \leq w_i \leq 1; \ \mu_p = \sum_i^k w_i \mu_i \text{ and } \sum_i^k w_i = 1}{\operatorname{argmin}} \sum_i w_i^2 \sigma_i^2 + 2 \sum_i \sum_{j \neq i} w_i w_j \sigma_i \sigma_j \rho_{ij} .
 \end{aligned}$$

Or, as defined by Bailey (2005):

$$\left\{ \begin{array}{l} \text{minimise } \sigma_p^2(w_i, \sigma_i, \rho_{ij}) = \sum_i w_i^2 \sigma_i^2 + 2 \sum_i \sum_{j \neq i} w_i w_j \sigma_i \sigma_j \rho_{ij} \\ \text{subject to } 0 \leq w_i \leq 1; \mu_p = \sum_i w_i \mu_i \text{ and } \sum_i w_i = 1 \end{array} \right.$$

The formal optimisation problem just introduced finds the minimum-variance portfolio, which displays the least amount of risk attainable by the investor for some given target return. In fact, the optimisation problem is subject to three main constraints. First, each weight ( $w_i$ ) is bounded between 0 and 1, indicating that an asset's allocation cannot be negative and cannot exceed the total investment. Second, the portfolio's expected return is predefined, meaning that the portfolio needs to achieve a specified level of return ( $\mu_p$ ). Third, the sum of the weights ( $\sum_i^k w_i$ ) must be equal to 1, ensuring that the entirety of the capital is allocated.

However, besides this, we want to obtain the *Efficient Frontier*.

The *Efficient Frontier* is actually a subset of the *Minimum-Variance frontier*. It is represented by the part of the frontier that lies above the global minimum-variance portfolio. It consists of all the portfolios that provide the maximum possible expected return for a given level of risk or the minimum level of risk for a given expected return. In a nutshell, the *Efficient Frontier* represents the best or "most efficient" portfolios.

To get the optimal portfolio, we need to find the slope of the *Capital Allocation Line* (CAL), tangent to the efficient frontier, which is called *Capital Market Line*.

The CAL is represented by the following equation:

$$E(r_p) = R_f + \frac{E(r_m) - r_f}{\sigma_m} \cdot \sigma_p \text{ ,}$$

where  $E(r_m)$  is the expected return on the market portfolio and  $\sigma_m$  is the standard deviation of the market portfolio's returns.

The point where the CAL touches the efficient frontier is the market portfolio, which has the highest *Sharpe Ratio*.

The weights of the risky assets in the market portfolio can be found by solving the optimisation problem that maximises the *Sharpe Ratio* of the portfolio (Bodie et al. 2014).

$$\begin{aligned} & \operatorname{argmax} \quad \frac{r_p - r_f}{\sigma_p} \\ \text{s.t. } & 0 \leq w_i \leq 1 \text{ and } \sum_i^k w_i = 1 \end{aligned}$$

or

$$\left\{ \begin{array}{l} \text{maximise } S = \frac{r_p - r_f}{\sigma_p} \\ \text{subject to } 0 \leq w_i \leq 1 \text{ and } \sum_i^k w_i = 1 \end{array} \right.$$

For the sake of simplicity, a few limitations and constraints have been applied to the model. Firstly, the weight of each asset must be greater than zero, and hence short selling is not allowed. Secondly, cash is not considered as part of our portfolio. This approach ensures a more straightforward interpretation of the model's output.

### ***3.3 Results of the Analysis and Interpretation***

In this section, the results of our analysis are presented.

The analysis has been divided in two parts, the first part concerned with Risk, Return and Correlation and the second part concerned with portfolio analysis.

Note that to perform the analysis, two software have been used: Excel and MatLab.

### 3.3.1 Risk-Return Analysis

The Risk-Return analysis begins by computing returns on every asset and, later by computing some descriptive statistics on these returns such as mean, standard deviation and Sharpe ratio.

In the following table, these moments are summarised by asset:

Table 3.2 Descriptive Statistics on the Monthly Returns of every Asset

	SPX	MXWOU	LBUSTRUU	EMIGB5	RMZ	XAUUSD	CHRO24	AMR	USDE
Mean	0,008831	0,002264	0,000874	-0,003038	0,003527	0,007425	0,008423	0,008249	-0,000106
St. Deviation	0,053769	0,051489	0,015769	0,023002	0,059783	0,040846	0,021177	0,085438	0,020076
Max	0,126844	0,152145	0,036776	0,052032	0,115958	0,109435	0,089024	0,330692	0,052436
Min	-0,125119	-0,145755	-0,043209	-0,062087	-0,221901	-0,071720	-0,045636	-0,160687	-0,043161

As we can see from the table, the *Standard & Poor's Index (SPX)* has the highest mean return among the assets (0,88%), suggesting it had a strong average performance during the period analysed. However, it also exhibits significant volatility, as indicated by its standard deviation, which is among the highest.

The *MSCI World ex USA Index (MXWOU)* instead, shows a very low mean return (0,23%), with moderate volatility. Its maximum and minimum value indicate a narrower range of returns compared to SPX.

The *Bloomberg U.S. Aggregate Index (LBUSTRUU)* also shows a low mean return, which is expected for a bond index. For the same reason, it shows the lowest volatility (1,57%), as bonds are typically less risky than stocks. Its maximum and minimum values confirm this lower volatility.

The *FTSE MTS Eurozone Government Bond IG 3-5Y (EMIGB5)* shows a slightly negative mean return (-0,35%), indicating a loss over the analysed period. Its volatility is higher than LBUSTRUU but lower than the equity indices.

The *MSCI US REIT Index (RMZ)* exhibits a high standard deviation (5,97%), and despite its volatility, its mean return is on the lower side.

*Gold* shows a very low mean return with a moderate level of volatility. The maximum value is quite positive, but the minimum shows that there have been significant declines as well. This range between min and max values suggests that, while gold



can be a stable store of value over long periods, it can still be subject to short-term volatility.

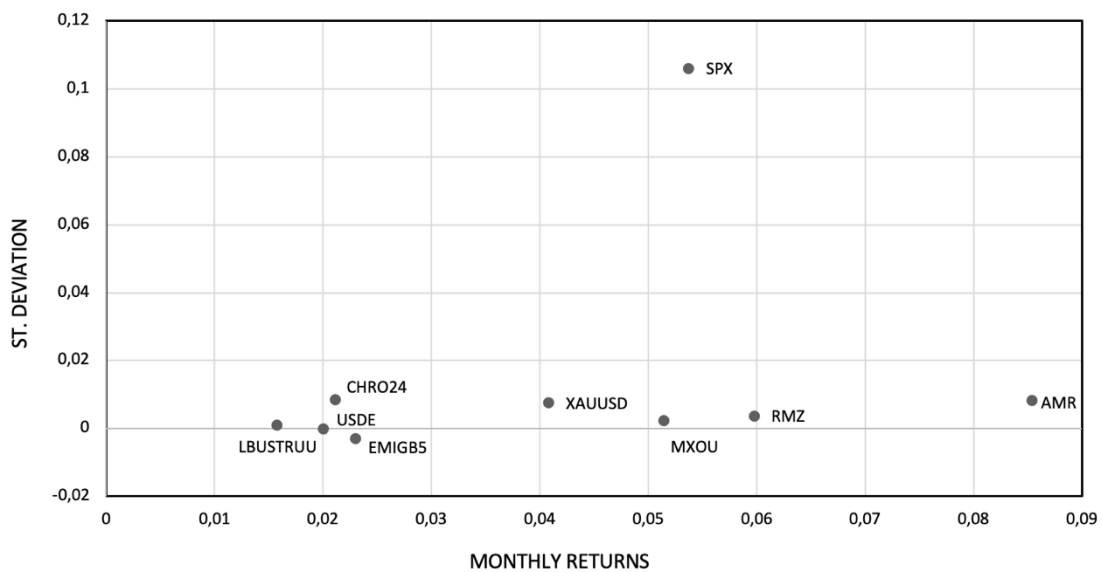
The *Chrono24 Chrono Pulse Watch Index (CHRO24)* has a relatively high mean return (0,84%) compared to most of the others, yet it shows the highest volatility. It's important to note that the period analysed includes the “Luxury Watch Bubble” that took place after 2020, during the COVID-19 pandemic.

The *AMR All Art Index (AMR)* shows a low mean return value compared to the other assets and moderate volatility. The maximum return is quite high (33,07%), but the minimum value suggests it can experience significant downturns. This can be explained by the renowned seasonal nature of the art market.

Lastly, the *Universal Standard Diamonds Evaluation 100 Index (USDE)*, presents a mean return close to zero, indicating a relatively stable performance with the lowest volatility among all assets (2%). This very low volatility could make the index comparable to Treasury bills.

In the following table, a scatter plot visually displays the Risk-Return Trade off for each asset.

Figure 3.1 Risk-Return Trade off



A very important metric to analyse is the correlation, which measures, among the other things, the diversification power of each asset and the degree of diversification of the portfolio as a whole. In the following table, correlation between each pair of assets has been analysed.

Table 3.3 **Correlation Table**

	SPX	MXWOU	LBSTRUU	EMIGB5	RMZ	XAUUSD	CHRO24	AMR	USDE
SPX	1								
MXWOU	0,901435493	1							
LBSTRUU	0,398785294	0,402359476	1						
EMIGB5	0,466027751	0,60744796	0,651038391	1					
RMZ	0,844794533	0,79575886	0,417640862	0,33161352	1				
XAUUSD	0,194331714	0,256145383	0,506742522	0,62709348	0,200517689	1			
CHRO24	-0,11967265	-0,132467734	-0,252694885	-0,1862167	0,01005259	0,0549991	1		
AMR	0,126446933	0,145532356	0,330931163	0,20819274	0,154875001	0,18130833	-0,1673298	1	
USDE	0,181302868	0,193895287	0,009385371	0,20056718	0,183806861	0,13911176	0,19872618	0,06125154	1

The *S&P 500 (SPX)* and the *MSCI World ex USA Index (MXWOU)* show a very high positive correlation, indicating that they often move in tandem, as they both reflect the performance of large-cap equities.

Bonds, represented by *The Bloomberg U.S. Aggregate Index (LBSTRUU)* and the *FTSE MTS Eurozone Government Bond IG 3-5Y (EMIGB5)*, show moderate positive correlations with these equity indices, suggesting a mild correlated movement, even if influenced by different market factors.

*Gold (XAUUSD)*, demonstrates low to moderate positive correlations with the given assets, reinforcing its role as a potential diversifier and a hedge against market volatility, given its unique drivers compared to traditional equities.

The *MSCI US REIT Index (RMZ)* highly correlates with stock indices, suggesting that it could share common economic drivers with the broader equity market.

The *Chrono24 Chrono Pulse Watch Index (CHRO24)*, on the other hand, displays negative correlations with several assets, equities in particular, indicating its price

movements are typically independent of, or in the opposite direction to, traditional financial markets. This characteristic could offer diversification benefits within an investment portfolio.

The *AMR All Art Index (AMR)* shows positive, but still low correlations with the equity market proxies represented by SPX and MXOW. It also shows low correlations with the fixed equity indices, suggesting that the art market can serve as a useful diversification tool. Interestingly, the AMR index shows very low or even slightly negative correlations with the watch index (CHRO24) and the diamond index (USDE), indicating that the price movements in the art market do not align with those in the market for watches and diamonds.

The *Universal Standard Diamonds Evaluation 100 Index (USDE)* maintains low positive correlations across all the assets, showing an independent behaviour from both the traditional asset classes and the alternative asset classes. These characteristics highlight the potential of diamonds as a diversificator in a portfolio. Overall, the correlations suggest that while equity indices often move together, alternative assets like watches and gold, as well as diamonds, can provide a hedge against financial turmoil.

### 3.3.2 Portfolio Analysis

In the following section we will focus on the construction of the optimal portfolio including luxuries.

The aim is to unravel the unusual interplay between conventional securities and luxury items, in particular art, diamonds and fine watches, and analyse their collective influence over the performance of a portfolio.

We consider two portfolios: one containing luxuries (art, watches and diamonds), and another omitting these assets. In the following table, the composition of the two portfolios:

Table 3.4 Composition of the two Portfolios

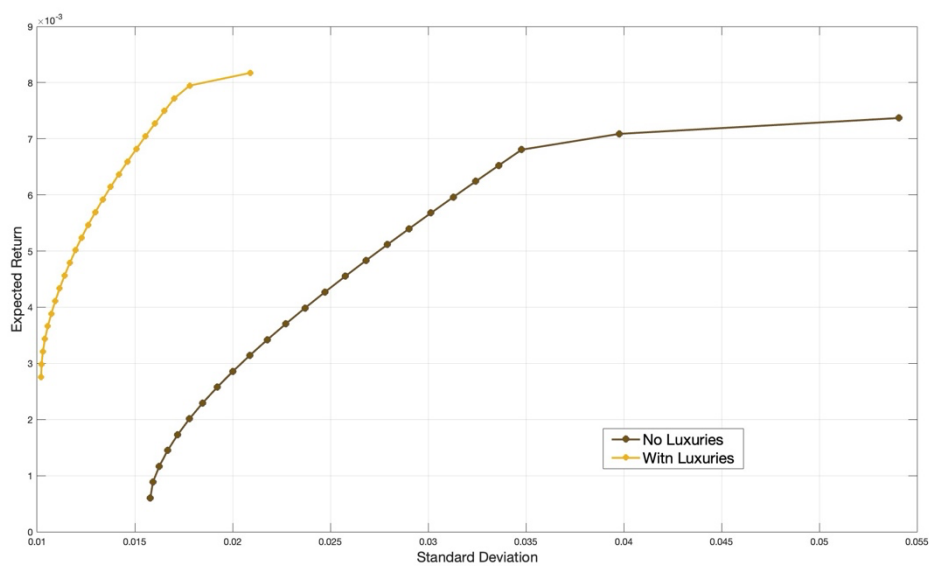
With Luxuries	No Luxuries
S&P 500 Index	S&P 500 Index
MSCI World ex USA Index	MSCI World ex USA Index
Bloomberg U.S. Aggregate Index	Bloomberg U.S. Aggregate Index
FTSE MTS Eurozone Government Bond IG 3-5y	FTSE MTS Eurozone Government Bond IG 3-5y
MSCI U.S. REIT Index	MSCI U.S. REIT Index
Gold	Gold
AMR All Art Index	
Chrono24 Chrono-Pulse Watch Index	
Universal Standard Diamonds Evaluation Index	

Next, the efficient frontier for both portfolios has been built.

The efficient frontiers show the two portfolios analysed based on their expected return and standard deviation.

By computing 25 portfolios with different weightings, we obtained the following frontiers:

Figure 3.2 Efficient Frontiers the two Portfolios



Mind that no constraints have been applied to the weights. This choice has been purely made for the sake of simplicity and the exploratory nature of the study, in fact in this phase the interest is focused on studying the properties of the portfolio without the influence of constraints.

As we can see from the graph, the portfolio containing luxury is shifted upwards compared to the portfolio omitting luxury assets. This means that the luxury portfolio tends to offer higher expected returns for a given level of risk across most of the standard deviation spectrum. This suggests that the inclusion of luxury assets in a portfolio could potentially enhance its performance.

Initially, looking at the left side of the graph, for lower levels of risk, the Luxury portfolio shows a steeper ascent, indicating that adding luxury assets could provide superior returns for only a small increase in risk.

As we move further to the right along the standard deviation axis, and hence increasing the risk, the difference in expected returns between the two portfolios slightly narrows, implying that the risk-return characteristics of the luxury portfolio have a more pronounced effect at lower levels of risk.

Towards the higher hand of the risk spectrum, both portfolios reach a closer level of expected return. This suggests that the diversification benefit of luxury assets diminishes as risk increases, or that at high levels of risk, the portfolio's performance is increasingly dominated by the traditional assets.

It is important to note that the portfolio not containing luxury assets also demonstrates an increase in expected return with higher risk, which is consistent with the fundamental principle that to higher risk correspond higher returns.

However, its curve is less steep than the luxury portfolio, especially at lower levels of risk.

Overall, the graph shows the potential benefits of including luxury assets in a portfolio, particularly in terms of diversification and better returns at lower levels of risk. However, it is crucial to keep in mind that this analysis doesn't account for the peculiar dynamics specific to luxury assets. These market dynamics, in fact, can impact the portfolio in ways that the efficient frontier cannot fully capture. Moreover, the efficient frontier does not account for the intangible "dividend" that luxury assets provide to the investor such as the enjoyment of the asset. Lastly, it

must be noted that these results should be interpreted also based on each investor's risk tolerance.

In the following two figures, the weights for each asset, used in the 25 portfolios to build the efficient frontier, are displayed:

Figure 3.3 Asset Allocation of the "No Lux" portfolios

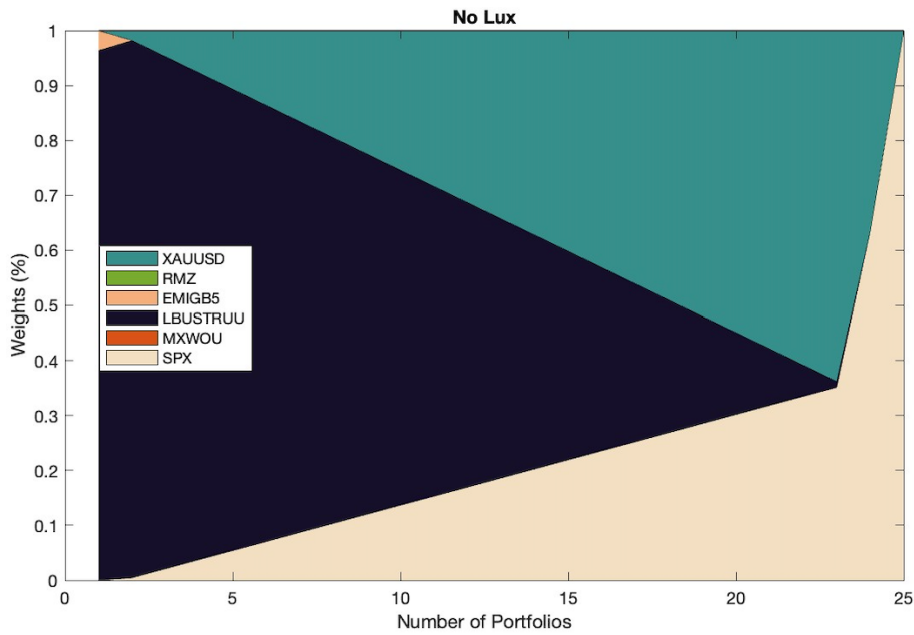
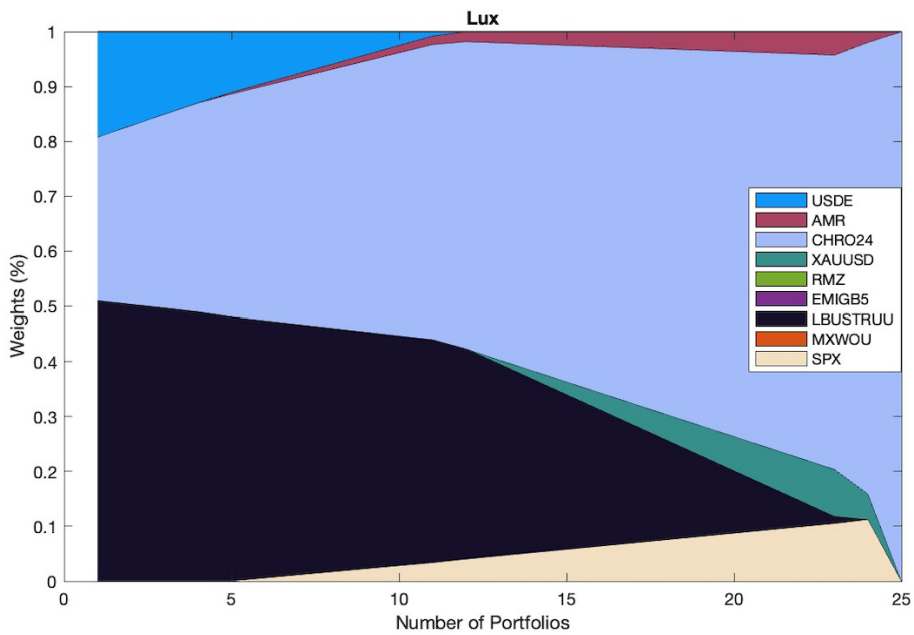


Figure 3.4 Asset Allocation of the "Lux" portfolios



As we can see from these two figures, there is a noticeable shift in the asset allocation when luxuries are added to the portfolio. Some assets from the “No Lux”, in fact, have seen their weightings highly reduced or completely excluded in the “Lux” portfolio. Gold, for example, represents a very high percentage of the “No Lux” portfolio, but its weighting is lowered when art, watches and diamonds are introduced.

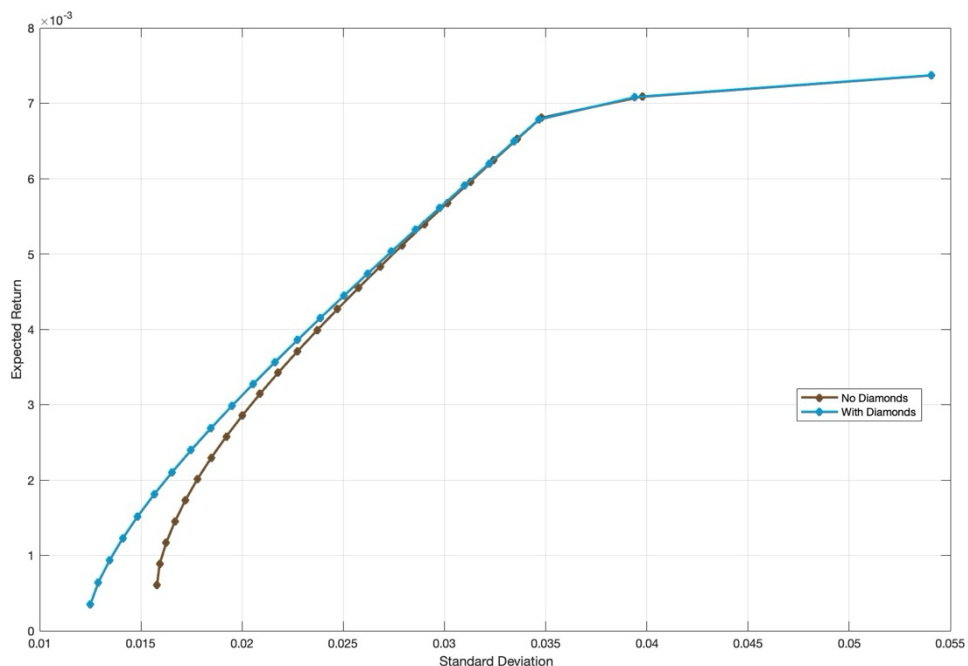
As we can observe, the weight of watches (CHRO24), represents the highest portion of the “Lux” portfolio and, together with art and diamonds, represents more than 50% of the total portfolio.

This result is purely empirical and not realistic, it is in fact highly improbable that a rational investor would decide to allocate such a big portion of his wealth on luxuries as an investment.

In order to get the idea of how each asset influences the “Lux” portfolio, the behaviour of the luxury assets when singularly inserted in the “No Lux” portfolio is now analysed.

We start from Diamonds, the efficient frontiers when diamonds are introduced are shown in the following figure:

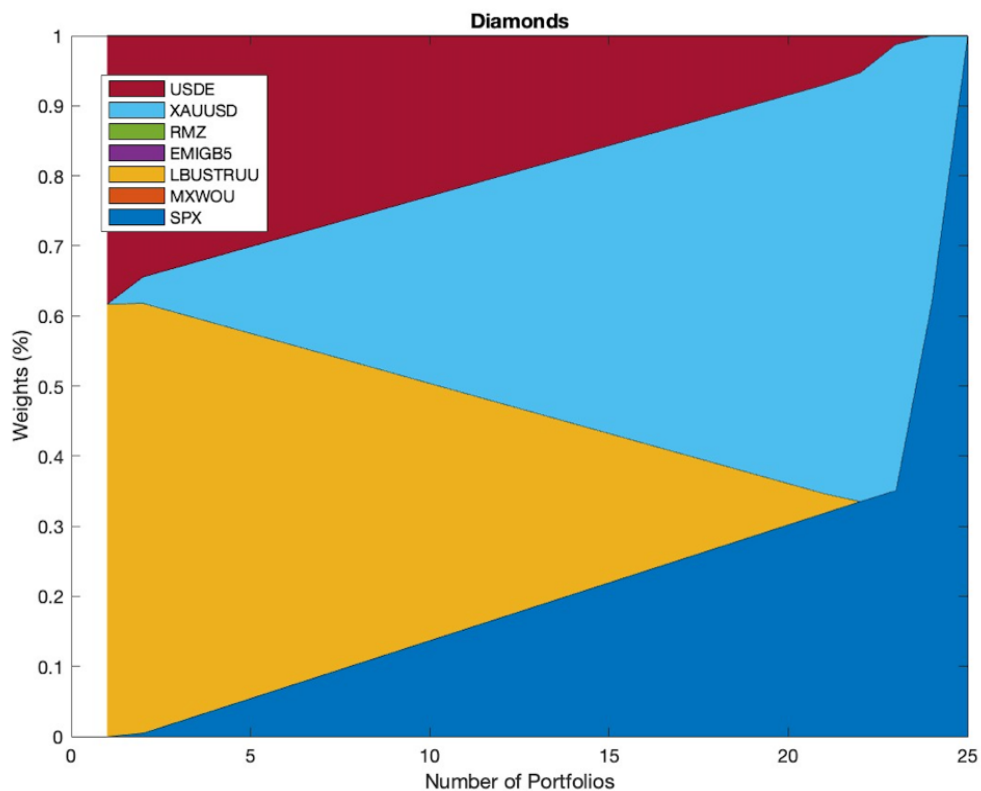
Figure 3.5 Efficient Frontiers for the “No Diamonds” and “Diamonds” Portfolios



The inclusion of diamonds seems to offer notable diversification advantages, especially in the lower risk spectrum, where the curve is steeper, signifying a more substantial incremental return per unit of risk. As risk appetite increases, however, the incremental benefit of including diamonds diminishes, reflected by the two curves nearly overlapping. This pattern implies that while diamonds can enhance a low-risk portfolio, their impact on higher risk portfolios might be limited.

In the following figure, the weights for each asset are shown in the case diamonds are introduced in the portfolio:

Figure 3.6 Asset Allocation of the Portfolio Including Diamonds

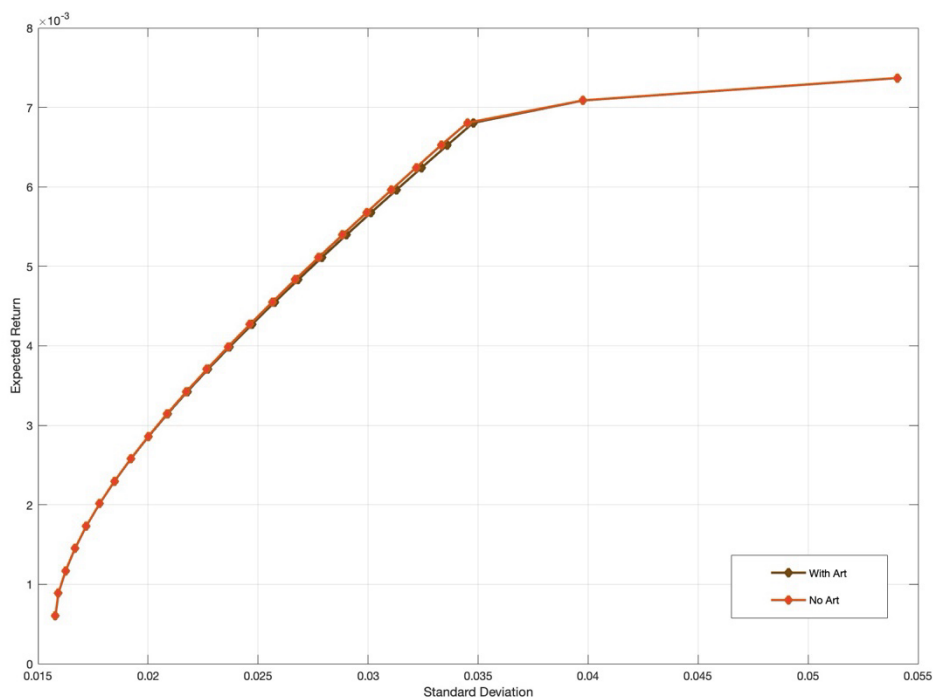


As we can see, a big portion of the portfolio has been dedicated to Diamonds. On the other hand, some assets such as bonds have been altogether excluded.



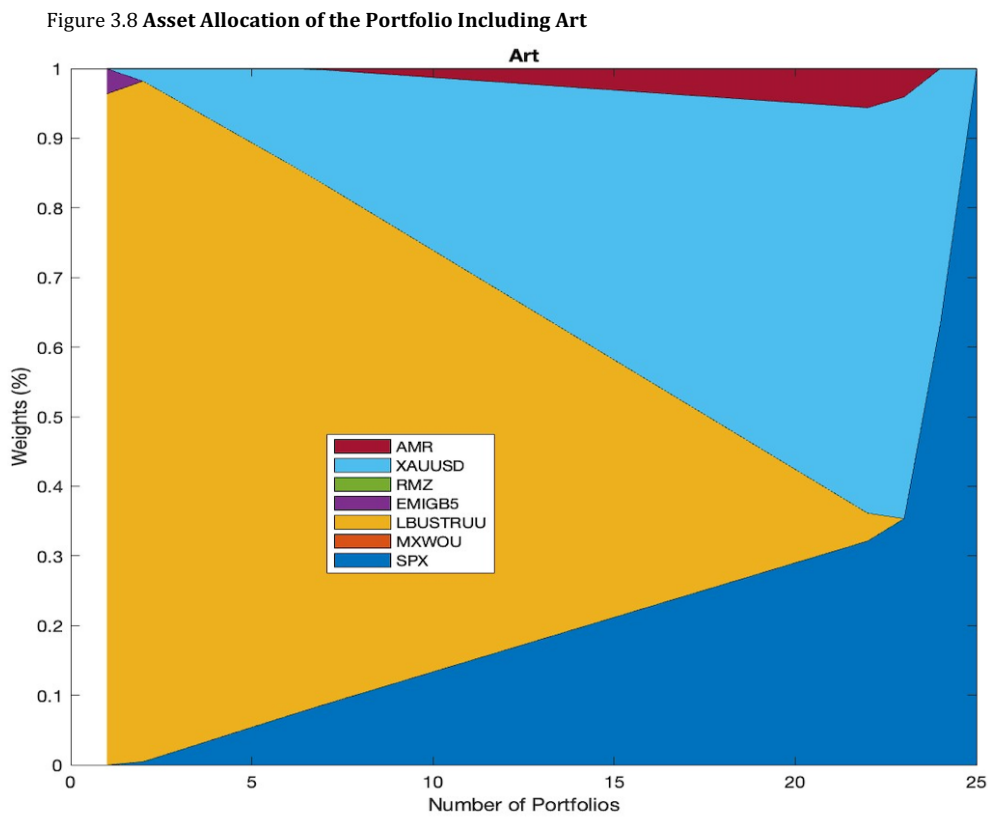
Next, we take a look at the efficient frontiers when art is introduced:

Figure 3.7 Efficient Frontiers for the “No Art” and “Art” Portfolios



The art-inclusive portfolio shows slightly higher expected returns than the “No Art” portfolio for a given risk level, suggesting some diversification benefit. However, as risk increases, the benefits of including art diminish, with both portfolios eventually offering similar returns at high risk levels. The convergence of the two portfolios implies that art’s contribution to portfolio performance is slightly more pronounced at lower risk levels. The two frontiers shown in the figure above suggest that the inclusion of art in a portfolio does not change greatly the risk-return profile of a portfolio which doesn’t include art except for a specific risk level where art could provide some small diversification benefits.

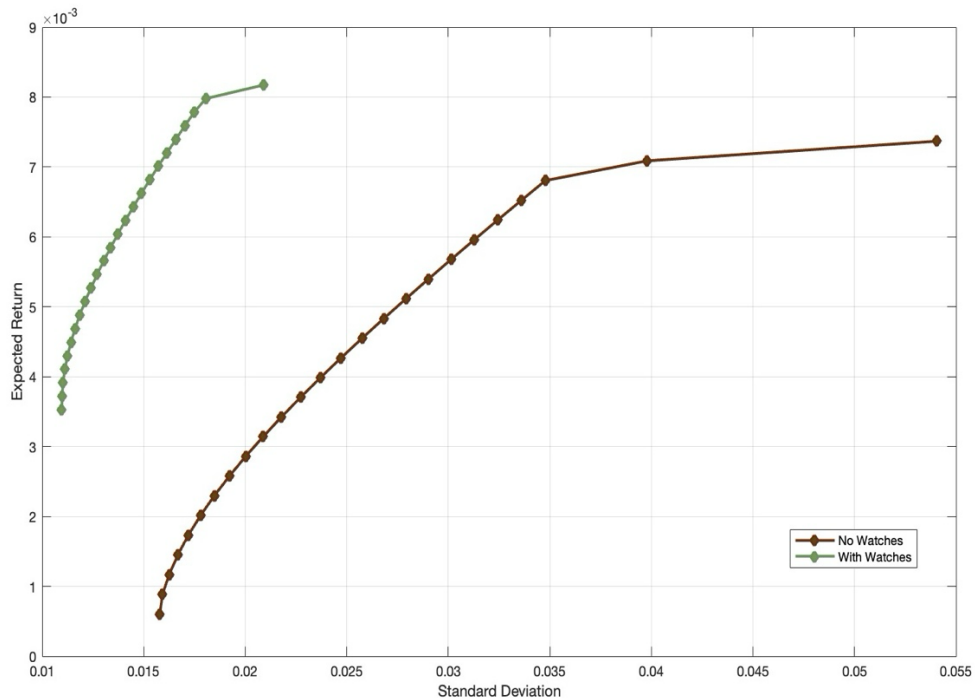
In the following figure, the weights for each asset are shown in the case art is introduced in the portfolio:



From the figure above we can notice that, when art is introduced into the mix, the allocation dynamics of the “No Art” portfolio alter quite a bit, indicating that art could act as a good diversifier to potentially enhance the overall risk-return profile of the portfolio.

Finally the frontiers displaying the effect provided by the inclusion watches are shown:

Figure 3.9 Efficient Frontiers for the “No Watches” and “Watches” Portfolios

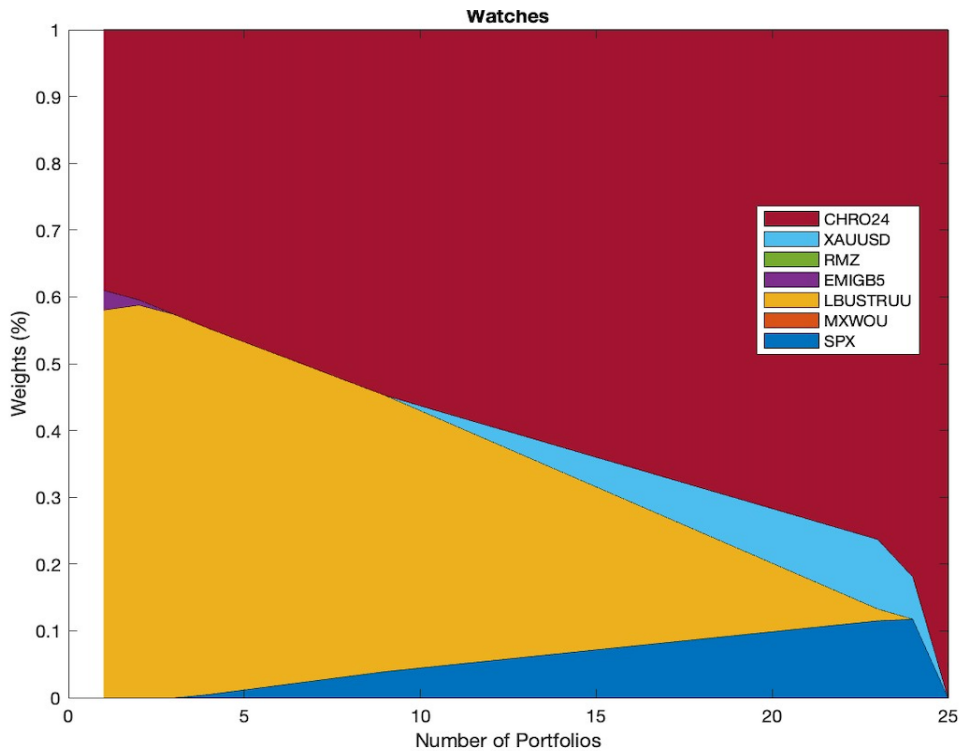


The portfolio including watches shows a higher level of expected return for a given level of risk, up until a certain point on the standard deviation. This suggests that adding watches to the portfolio may provide a diversification benefit, enhancing the return without proportionally increasing the risk up to that point.

However, beyond this point of inflection, the incremental risk appears to increase at a faster rate than the incremental return. It implies that there is a level of risk where incorporating watches into the portfolio does not yield a sufficient return to compensate for the additional risk taken. Conversely, the efficient frontier for the portfolio not containing watches consistently rises, but at a lower rate of return for a given level of risk when compared to the portfolio with watches.

In the following figure, the weights for each asset are shown in the case watches are introduced in the portfolio:

Figure 3.10 Asset Allocation of the Portfolio Including Watches



The figure above displays a profound shift in asset allocation when watches are introduced. The inclusion of watches, in fact, results in the allocation of more than 50% in these assets, which is extremely unlikely to happen in real life.

In conclusion, adding luxury assets to a portfolio can improve expected returns while also lowering the risk involved in the investment.

However, it is important to notice that the approaches used in this research cannot fully take into account every aspect an investor should consider when choosing to allocate wealth into luxury goods. Further analysis and methodologies may be conducted to consider and shed light on the full potential of these assets for portfolio diversification purposes.



## ***4. The Challenges and Risks of Investing in Luxury Goods***

“There are a number of risks associated with ownership and investment in art, some of which do not exist for other financial asset classes”. (Fischer & Arnold, 2010)

Investing in Luxury Items such as Art, Fine Watches and Diamonds is not as easy as buying a traditional security. In fact, contrarily to traditional financial instruments, these assets hide different risks and challenges.

In this chapter we will explore the most common difficulties that an individual choosing to invest in luxuries must face.

### ***4.1 Entry Barriers***

Investing in a luxury item always involves purchasing and, hence, entering in the possession of that item. This process comes with a series of entry barriers.

In our case, we can define an entry barrier as an obstacle that could prevent new investors from choosing a luxury item as their investment vehicle.

The most evident barrier to entry for luxury items are the very high start-up costs and difficulty to access the market and source for the items. As discussed in the first chapter of this dissertation, in fact, the typical audience for this kind of investments and purchases are HNWIs and UHNWIs. These items, apart from being extremely difficult to source, result to be very expensive.

Most of the time, the only way to source for luxury items is through the secondary market where prices for an item can reach sky-rocketing amounts based on the current demand.

Entry barriers, though, vary substantially based on the type of assets considered. We therefore structure the following section by analysing the entry barriers per type of asset.

#### 4.1.1 Art

The most evident entry barriers, for Art, is the very high price usually fetched by artworks. In fact, especially with the kind of art we are focusing on this research, investment-grade art, prices tend to be inaccessible for the average individual.

Artworks, particularly from eminent artists, are often very scarce and possess an element of uniqueness, which of course makes prices go up. Moreover, investment-grade artworks, most of the time hold cultural significance linked to a particular movement or time-period and hence are highly valued. Another trait of investment-grade artworks is the popularity and significance of the artist: the more renowned are the artists, the higher the prices of their artworks will be.

It is extremely rare to acquire a piece of art from the artist himself. Almost all the time art is brokered by auction houses and hence we can say that art is mostly traded on a secondary market, especially for investment pieces.

Generally, the access to this secondary market is not as easy as it may seem, especially on the higher levels. The entry to this market, most of the times is not linked merely to financial capabilities. Behind the art market, there exist numerous dynamics that makes it elitist. In fact, access to the market is quite limited to a selected group of investors who are not only extremely wealthy but also socially well-connected within this niche community.

In order to access, a great network of players specific to this market is required. In fact, “The development of connections between market participants has often been recognised as crucial for their ability to earn a profit”<sup>32</sup>.

This network could include actors in the art market from curators and critics to collectors and consultants, each of whom holds a certain degree of power over market access and information flow. In this context the saying “it’s not what you

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<sup>32</sup> De Silva, D.G., Kosmopoulou, G., Pownall, R., Press, R. (2023). Surviving in the Marketplace: The importance of network connectivity for art dealers. *Economics Letters* 231.

know, but who you know” fits perfectly. Great connections are pivotal for having access to previews and having a priority on art sales.

“Art fairs play a major part in the market for contemporary art. (...) They are meeting points for various actors in the art market, namely galleries, artists, collectors, museum representatives, curators, art critics, and art lovers.”<sup>33</sup>

Of course, the best way of creating a network is to frequent the artistic environment and hence art fairs, expositions, events etc... One of the best example is the “Biennale d’Arte di Venezia” which occurs every other year and serves as a pivotal environment for the exhibition and discourse of contemporary artistic expression. It is a central event that puts together in the same place, for 6 months, artists, critics, curators, investors and collectors from all over the world. It is renowned for its ability to establish trends and set the agenda for the international art scene, hence it is one of the best environments to create meaningful connections and try to break down entry barriers.

#### 4.1.2 *Fine Watches*

Fine watches, just like other luxury goods, are characterised by extremely high prices that make the market penetrable only by a few individuals.

Let’s take as an example one of the most popular watches right now. As of February 2024, the Rolex Daytona (ref. 116500LN) retails for \$17.200,00 on the primary market<sup>34</sup>, while the Market price on average for the same period is almost double: approximately \$33.000 (+91,86%).

Of course, this is a price point which is not accessible to everyone. Moreover, buying on the primary market is extremely difficult as production is scarce, and sales are exclusive to certain customers.

One of the reasons why buying on the primary market is problematic, is the extremely scarce annual production of fine watches: for example, the Swiss

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<sup>33</sup> Yogev, T. & Grund, T. (2012). Network Dynamics and Market Structure: The Case of Art Fairs. *Sociological Focus*, vol.45, pp.23-40

<sup>34</sup> Retail price extracted from <https://www.rolex.com/watches/cosmograph-daytona>



“Vacheron Constantin”, which is considered one of the most prestigious fine-watch brands, only produces 20.000 units per year.

Hence, an individual that desires to buy a luxury watch, most of the times, is forced to turn to the secondary market which, as we’ve seen, presents prices with some very significant increases from retail.

The primary market is in fact reserved to individuals who have a long spending history with the brand. Recently, a habit has begun to spread among watch sellers on the primary market, which is creating “waiting lists” to enhance a form of desire in the customers longing to buy a piece.

The determination of waiting lists for acquiring a luxury watch can be a quite intricate process, shaped by an array of elements such as the desirability of specific models, production processes and the stock available in the selected dealers.

These waiting lists can extend from a few months to multiple years for the most popular models. As an example, we are going to display the waitlist duration of some of the most popular models from Rolex:

Table 4.1 **Waitlist Duration for Popular Rolex Models**

<b><i>Rolex Model</i></b>	<b><i>Waitlist Duration</i></b>
<i>Rolex Submariner</i>	<i>6 months – 1 year</i>
<i>Rolex Daytona</i>	<i>1-3 years</i>
<i>Rolex Oyster Perpetual</i>	<i>3-18 months</i>
<i>Rolex Sea-Dweller</i>	<i>6-12 months</i>
<i>Rolex GMT-Master II</i>	<i>1-2 years</i>

Source: <https://watchexchange.sg/blog/guide/rolex-waiting-list/>

Well-connected individuals, with a strong spending history are usually exempt from these waiting lists as they can access the models arriving at the dealer with priority.

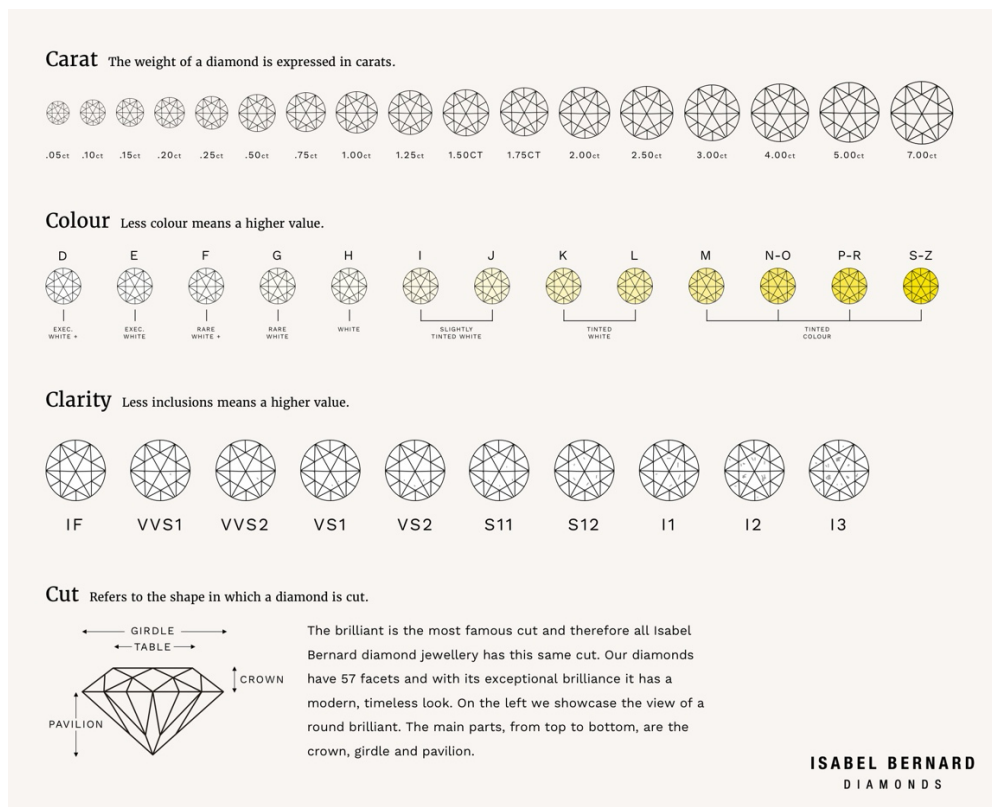
### 4.1.3 Diamonds

Diamonds share the same two main entry barriers with Art and Fine Watches: high start-up costs and difficulty to access the market in a competitive way.

As stated before, in this research we focus on investment-grade diamonds which typically refer to those diamonds which are characterised by high quality, hence, for white diamonds, D-E-F color, F-IF-VVS clarity, EX-VG cut and high carat weight (>0.5ct). Diamonds with these characteristics share high purchasing prices which are reflected in the high start-up costs entry barrier. Of course, just like art and watches, the rarer the diamond, the higher the price.

The grading system for diamonds has been described already in the first chapters of this dissertation but, for explanatory purposes, the following table shows the chart with the 4Cs to grade diamonds:

Figure 4.1 **Diamonds' 4Cs**



Source: Isabel Bernard Diamonds

To invest in a stone on the bigger side (>2.5ct), most of the time it is necessary to rely on auction houses, or on big suppliers that typically don't sell to the public.

For this reason, just like art, developing a specialised network of diamonds actors is crucial to access the stones and having privileged information about sales or suppliers. Polished diamonds became available around the 1400s thanks to the invention of a Jewish diamond merchant called Lodewyk van Berken from Belgium. From that moment on, the market has always been dominated by the Jewish people, with Antwerp in Belgium as their main operational centre for Europe and New York for the Americas. Like art and watches, attending specialised sectorial fairs is crucial to build a network, getting to know suppliers and attempt to break down this important barrier.

Accessing the diamonds market is a bit more straightforward for people investing on quantity rather than size, in fact it is easier to buy more diamonds on the smaller side rather than buying a few bigger diamonds. For small diamonds, most of the times, it is sufficient to rely on a typical jewellery store. Jewellery stores, in fact, usually hold smaller diamonds (between 0.5ct and 2.5ct) typically employed to create jewellery pieces.

## ***4.2 Risk of Fraud***

One of the most common risks that investors incur in while choosing luxury goods as their investment vehicle is Fraud.

Fraud is the “crime of getting money by deceiving people”<sup>35</sup> and can take on different forms. In the following sub-sections we will describe the most frequent kind of fraud in the luxury world.

### *4.2.1 Forgery and Counterfeits*

Forgery is a type of fraud which involves the making, adaptation, or falsifying of documents, signatures, or the overall piece of luxury with the intent to deceive the buyer or the investor. It is required, for every sale of luxury items, to be accompanied

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<sup>35</sup> Definition by The Cambridge English Dictionary.

by a certificate and other documents that guarantee the authenticity of the piece, this rule is indifferently applied to both Art, Fine Watches and Diamonds. We can say that the certificate is the “passport” of the luxury item an investor is about to buy. In the case of art, the certificate is usually issued by the artist himself, if he is alive, or, if the artist is not alive, by institutions such as foundations, archives or scientific committees. In the case of Fine Watches, certificates are usually issued by the Brand producing that particular model. Finally, in the case of diamonds, certificates are issued by specialised laboratories which grade the diamond, based on the 4Cs we have seen previously, and issue a valuation and a certificate.

Certificates contain all of the information related to a specific piece of luxury, its provenance, its characteristics, its technical specifications and, in the case of art and watches, year of realisation and number of copies.

Buying a piece of luxury without certificate exposes the investor to fraud and scams. Most of the times, a piece is sold without a certificate because it’s a counterfeit and, with the most recent technologies, counterfeits are as close as undetectable even from the most experts. Even if a piece is sold with certificate, it doesn’t mean that it’s authentic, in fact certificates can be forged. Overall one must be extremely careful about the luxury he buys, avoiding parallel markets and choosing only renowned resellers and auction houses with a strong reputation.

#### *4.2.2 Online and Digital Frauds*

One of the markets for luxuries most affected by fraud is the online and digital market. When buying online, an investor doesn’t have the chance to see the piece in person and can’t prove the authenticity or even the existence of that piece.

Hence, with the increasing digitalisation of the luxury market, investors face more and more online scams which include fake auction sites, counterfeit online stores and fraudulent digital certificates.

An example that made news is the huge online scam that stroke investors convinced into thinking they were investing in art: in 2019 “A UK Watchdog Has Shut Down Two Fraudulent Art Investment Companies That Scammed Unsuspecting Backers

Out of \$1.3 Million – Participants thought they were investing in works by Picasso and Dalí.”<sup>36</sup>

### ***4.3 High Costs and Maintenance***

As we previously mentioned, investing in luxury goods involves physically buying the item and entering in its possession. This aspect of investing in luxuries indicates that additional expenses, such as insurance and storage costs, are required other than the initial acquisition cost. Luxury goods, in fact, present unique challenges in terms of costs and maintenance. The intrinsic value and often the delicate nature of these items necessitate specialised handling, storage and insurance solutions to preserve their worth and ensure their security. This section explores the significant aspects of storage costs and insurance related to the possession of Art, Fine Watches and Diamonds.

#### *4.3.1 Storage and Surveillance Costs*

The storage of luxury goods goes beyond the mere requirement of space. In fact, most luxury goods, especially art and fine watches, demand a controlled environment where temperature, humidity, and light are specifically set in order to prevent damage. This aspect is particularly crucial for fine art, in fact “the works of art and artifacts that constitute our cultural heritage are subject to deterioration, both from internal and from external factors”<sup>37</sup>.

The deteriorating tendencies of artworks force art owners to store art in climate-controlled, light-controlled, dust-free environments. In order to manage that, high-

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<sup>36</sup> <https://news.artnet.com/art-world/uk-watchdog-fraudulent-art-investment-schemes-1680919>

<sup>37</sup> Carretti, E., Bonini, M., Dei, L., Berrie, B. H., Angelova, L.V., Baglioni, P. and Weiss, R.G. (2010). New Frontiers in Materials Science for Art Conservation: Responsive Gels and Beyond. *Accounts of Chemical Research*, vol.43(6), pp.751-760.

end and sophisticated technology are employed. These technologies represent a very important extra cost, also because it is a continuous cost.

If the deterioration problem is extremely relevant for artworks and quite relevant for fine watches, it becomes negligible in the case of diamonds.

Diamonds are renowned for their unparalleled hardness; they are indeed the hardest known natural material on Earth. This characteristic makes diamonds extremely resistant to scratches, abrasions, and deterioration from most acids and corrosive materials. This doesn't mean they are indestructible, it is necessary to handle with care also this kind of luxury asset.

Controlling the environment in which luxury assets are stored is not only relevant to prevent deterioration, but also to prevent robberies. For this reason, security is another extremely important concern which represents an additional cost that recur continuously for the entire period of time the piece is in one's possession.

Luxury items in fact are targets for theft and, hence, include some extra costs like advanced security methods, surveillance systems, security personnel and rigid access control mechanisms.

#### *4.3.2 Insurance*

As noted earlier, luxuries are subject to various tangible risks such as deterioration, fraud and theft. It's been addressed that some of these risks are mitigated through proper care of the assets, however, others fall beyond the direct control of the owners. For this reason, while holding luxury pieces, it is fundamental to identify these risks and cover them with an insurance.

Fischer & Arnold (2010), define insurance as "a transfer system, formalised by a legal contract addressing the duties and responsibilities of two parties. It exists as a transfer system by which one party (the insured) transfers the financial risk or uncertainty of loss to another party (the insurance company). By transferring the risk to an insurance company, the insured is exchanging a policy premium for the promise of payment, formalised through an insurance contract, or policy, at the time of loss." Without insurance coverage, individuals investing in luxuries, would be vulnerable to significant financial losses in the event of unexpected occurrences.

The practice of measuring and mitigating risk through insurance is relatively recent. The concept of insuring started to emerge after the Great Fire which struck London in 1666. The fire, which caused immense damages to innumerable buildings, led to the foundation of the first insurance company by Nicholas Barbon. The late 17<sup>th</sup> century, later, saw the rise of London as a maritime hub, boosting the demand for marine insurance, eventually leading to the foundation of Lloyd's of London, pioneers of the insurance market. The domain of art insurance, which is applicable also to other luxury items, developed later, around 1960s. The first insurance company to expand into art insurance was the German Nordstern Versicherungs AG. This company recognised the needs for art, luxury items and collectibles beyond standard insurance due to their irreplaceable nature. This expansion led Nordstern to become a dedicated insurer for the luxury items world, offering specialised coverage for collectors, dealers, and institutions globally. The landscape of insurance for luxury goods has grown since, and now it includes numerous specialised providers and larger insurers.

The standard type of insurance used today for luxuries is the "Inland Marine Insurance". The concept of inland marine insurance originated during a time in which businesses transported big amounts of merchandise via wagons by land or via ships by sea. To safeguard these goods from the dangers encountered during transit, owners sought insurance cover. Today, inland marine insurance, also known as personal articles insurance, serves to shield valuable personal possessions such as, in our case, Art, Fine Watches and Diamonds. Inland marine insurance is particularly well-suited for luxury goods which are frequently in transit, for example a watch which is worn daily or a diamond that is set on a ring. This also includes art transported for exhibitions. The policy covers a range of risks including transportation accidents, theft and environmental damage. It does not include covers for the risk of deterioration or damage by natural disasters, such as an earthquake.

In conclusion, holding a comprehensive insurance for luxury items is vital for mitigating the risks associated with the transportation, storage and theft of the items.





## ***Conclusions***

This thesis has presented an examination of the advantages and diversification potential offered by luxury assets, particularly Art, Fine Watches and Diamonds. In fact, the research examines the role of luxury assets as both investment vehicles and objects of personal pleasure, uncovering the layers of economic, behavioural and cultural dynamics that influence investment decisions. Its primary contribution consists in the construction of a portfolio containing these assets to unravel the investment potential of luxuries for investors aiming to diversify even more their traditional investment universe.

Firstly, the research analyses the complexities of the luxury market, posing a focus on the Art, Fine Watches and Diamonds market. It highlights the peculiar characteristics that differentiate this market from the market for traditional financial vehicles. The allure of luxuries, driven by their rarity, craftsmanship and status symbol, plays a pivotal role in their investment appeal. However, this allure is contrasted by the challenges that these investments bear: low liquidity, difficult valuation and market volatility.

Secondly, the analysis revealed the behavioural motivations of luxury investments and the biases attached to it. It is shown that, most of the time, emotional satisfaction, social status and the tangible pleasure of ownership outweigh the more purely financial considerations. This emotional dimension, together with the financial potentials of luxuries, supports a larger view of the value that these assets can bring to potential investors.

In a following stage, based on empirical data, a portfolio of investments containing luxuries has been analysed. The results have shown that including luxury assets to a portfolio can improve expected returns while lowering volatility, thus showcasing a quite potent diversification power. The main limitation is that the approaches used in this research cannot fully account for every aspect an investor should consider when allocating wealth into luxuries. Looking forward, this leaves space for further analysis and methodologies to assess the full potential of the inclusion of luxury assets in a portfolio of investments.

Lastly, the challenges and risks of investing in luxury items have been addressed. It has been illustrated that luxuries hold many intrinsic costs that are linked with their maintenance and safety. In fact, their physical nature adds many layers of complications to their ownership, stressing how important it is to hold insurance against potential deterioration, damage and theft.

To conclude, investing in luxury assets encompasses a complex interplay of financial and emotional benefits which can range from economic returns to enjoyment of ownership. However, they also bear many risks and challenges that must be accounted for when deciding to invest in these assets. As the market continues to evolve, new approaches and instruments could surge to simplify the access to investments in luxury assets.

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