How is it Worth to Invest in Luxury Stocks?

– *Hogyan érdemes luxusrészvénybe fektetni?* –
„Én, Sánta Eszter felelősségem teljes tudatában kijelentem, hogy a jelen szakdolgozatban szereplő minden szövegrész, ábra és táblázat – az előírt szabályoknak megfelelően hivatkozott részek kivételével – eredeti és kizárólag a saját munkám eredménye, más dokumentumra vagy közreműködőre nem támaszkodik.”
Thanks to my amazing friends and family for all their support

Table of Contents

Table of Contents ...................................................................................................................... 2

Abstract .................................................................................................................................. 3

1. Introduction .......................................................................................................................... 4
   1.1. Motivation and limitations .............................................................................................. 4
   1.2. The structure of the essay .............................................................................................. 5

2. Theoretical Background ......................................................................................................... 7
   2.1. Portfolio theory .............................................................................................................. 7
   2.2. The CAPM, factor-models and APT .............................................................................. 10
   2.3. Portfolio performance evaluation .................................................................................. 16

3. Methodology .......................................................................................................................... 20
   3.1. The source of data ........................................................................................................... 20
   3.2. Return, volatility and beta estimation ............................................................................ 21
   3.3. Portfolio construction ..................................................................................................... 22

4. Analysis .................................................................................................................................. 25
   4.1. Luxury investment opportunity set ................................................................................. 25
      4.1.1. Defining luxury ........................................................................................................... 25
      4.1.2. Introduction to the luxury industry ........................................................................... 27
      4.1.3. Ways to invest in luxury ............................................................................................ 30
      4.1.4. The benchmark indices ........................................................................................... 32
      4.1.5. Segmenting the luxury stock universe ....................................................................... 33
   4.2. Portfolio performance evaluation .................................................................................... 38
      4.2.1. Dow Jones and S&P Luxury Indices vs. MSCI World .............................................. 38
      4.2.2. Total Luxury Universe Index vs. Benchmark Indices .............................................. 43
      4.2.3. Geographical Luxury Indices vs. Benchmark Indices ............................................. 47
      4.2.4. Sub-sector Luxury Indices vs. Benchmark Indices ................................................... 52
      4.2.5. Prestige Luxury Indices vs. Benchmark Indices ....................................................... 57
      4.2.6. Alpha Luxury Fund vs. Benchmark Indices .............................................................. 62
How is it Worth to Invest in Luxury Stocks?

by Eszter Sánta

2014, Corvinus University of Budapest

Abstract

The aim of the essay is to review the publicly traded stocks of luxury firms and to identify which segments of the companies drive profitability in the industry – using the tools of portfolio performance evaluation.

Based on data from 2009 to 2013 the paper introduces the luxury universe of one-hundred stocks then it contrasts the performance of simulated sub-portfolios with market and luxury benchmark indices. The essay presents that stocks focusing on the American region, the luxury asset, travel and casino sub-industry and the premium-accessible prestige range are the best performers in the geographical, product category and prestige-level segmentation analysis.
1. **Introduction**

The aim of this paper is to review the stock market performance of the public companies of the luxury industry and to identify which segment of the sector provided the most attractive investment opportunities in the 2009-2013 period. Therefore, I segmented the stocks of the luxury universe according to their geographical focus, product category and the prestige of their brand portfolios and contrasted their performance with broader market and luxury index benchmarks. This overview may serve as a starting point for gaining knowledge on the capital market presence and performance of the luxury sector. It also provides context for deeper investigation into specific segments of the industry. Still, an investment strategy should be supported by further analysis.

1. 1. **Motivation and limitations**

The status of the luxury industry is often discussed in the media. Especially after the current financial crisis, numerous voices said that the luxury industry was booming as the rich flew to quality\(^1\) and the emerging middle-class of China fueled great demand for luxury goods.\(^2\) However, some years ago rumors appeared about the end of the luxury boom as the European crisis took place\(^3\) and the Chinese growth gradually slowed down.\(^4\) As for today, many articles still report on the huge opportunities in the luxury industry illustrated with the success of companies like Michael Kors.\(^5\) But journalists also publish stories of failure, such as the case of Burberry.\(^6\)

The current paper aims to capture how the trends and believes about the **luxury industry** are reflected **in the capital market**. The approach of the analysis is to combine two mutually reinforcing aspects: investment analysis related to portfolio performance evaluation and business analysis linked to strategic industry segments. This way the paper may provide a novel perspective on how to discuss the luxury industry.

As for limitations there are three points to mention. First of all, a significant number of luxury firms are **privately held** so could not be included in the analysis based on stock performance. A historical reason for that may be the fact that many companies were founded by a family or controlled by the key designer. Even as large brands as Chanel and Rolex are in private hands.

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\(^1\) Fellowes, 2008  
\(^2\)Economist, 2011  
\(^3\) Wolf, 2013  
\(^4\) Chan – Chui, 2012  
\(^5\) Begany, 2014  
\(^6\) Roberts, 2012
Secondly, the portfolio performance evaluation presented in the paper is mainly based on **risk adjusted performance measures** and raw portfolio rebalancing techniques. Market timing examination and performance attribution procedures were out of scope. The **portfolio construction** is less sophisticated as the goal of the analysis was to gain an insight into the ranking, the relative performance of the sub-portfolios, not to offer a real investment solution.

Thirdly, some input data for the analysis was object to **subjective judgment**, such as the broader sub-sector categories and prestige peer-groups of the companies. In every case, I aimed to provide an unbiased and reasonable solution based on justification from multiple sources including corporate annual reports, opinion of experts expressed in industry reviews and primary interviews, for example.

1. 2. The structure of the essay

After the introduction the essay outlines the **theoretical** background for the latter analysis. It summarizes the relevant aspects of modern portfolio theory, the capital asset pricing model and factor models, such as the arbitrage pricing theory. The notions of risk adjusted return, efficient portfolio algorithm, beta and market equilibrium are highlighted. Then a brief introduction of risk-adjusted portfolio **performance measures** follows. The Sharpe-ratio, M-Square measure, Treynor ratio, T-Square measure, Jensen’s alpha and finally the Appraisal Ratio are presented in correspondence to three different investment scenarios. Thereafter a short section outlines the methodology of data collection, parameter estimation and portfolio construction techniques.

The first part of the analysis defines the relevant aspects of luxury and provides a **review of the luxury industry**. After the business discussion it outlines the ways to invest in luxury in the capital markets then defines the market and luxury benchmark indices used in the performance analysis. In closing, it provides rationale behind the segmentation of the luxury investment universe of over one-hundred stocks.

The second part concerns the **portfolio performance analysis**. First, it discusses the performance of the benchmark luxury indices relative to a general market index using the above mentioned performance measures and data from 2009 to 2013. Then it provides a similar analysis regarding the performance of the **total luxury sector** portfolio, as well as fictitious **subsector-portfolios** where the luxury stocks are segmented based on their **geographical** focus, **product category**, the **prestige** of their brand portfolio and finally based on their high **alpha**.
So the portfolio performance analysis comprises of six parts:

- Benchmark Indices: Dow Jones and S&P Luxury Indices vs. MSCI World
- Total Luxury Universe Index (LUI) vs. Benchmark Indices
- Geographical Luxury Indices vs. Benchmark Indices
- Sub-sector Luxury Indices vs. Benchmark Indices
- Prestige Luxury Indices vs. Benchmark Indices
- Alpha Luxury Fund vs. Benchmark Indices

The closing part draws conclusions regarding the capital market presence of the luxury industry and its segments’ relative performance to the general stock market and existing luxury indices.

Based on the business analysis my initial hypothesis was that the best performing stocks would arise from the securities focusing on the Asian region, the apparel and leather goods product category and the high-end prestige segment.

<table>
<thead>
<tr>
<th>Region:</th>
<th>America</th>
<th>Europe</th>
<th>Asia-Pacific</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prestige:</strong></td>
<td>Coach</td>
<td>LVMH, Kering (Gucci), Hermès, Burberry, Ferragamo</td>
<td>Prada</td>
</tr>
<tr>
<td><strong>Traditional and High-end</strong></td>
<td>Toll Brothers, Northern Trust, Williams-Sonoma</td>
<td>Julius Baer Group</td>
<td>Sparkle Roll; Hotel Shilla, Shangri-La, Crown Resorts, MGM China, Sands China, SJM Holdings, Echo Entertainment, Galaxy Entertainment, Wynn Entertainment, Wynn MacauGenting Singapore, Melco Development</td>
</tr>
<tr>
<td></td>
<td>Tiffany, Pandora, Sotheby’s, Tesla Motors, Polaris; Orient Express, Melco Crown, Wynn Resorts</td>
<td>Richemont, Movado, Benetau</td>
<td></td>
</tr>
<tr>
<td><strong>Diffusion</strong></td>
<td>Michael Kors, Ralph Lauren, Nordstrom, Saks</td>
<td>Tod’s, Hugo Boss, Yoox</td>
<td>Ports Design, Trinity, Stella International, Golden Eagle</td>
</tr>
<tr>
<td></td>
<td>Harman</td>
<td>Nobel Biocare, Sonova</td>
<td>Treasury Wine, Pola Orbi</td>
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<td></td>
<td>Blue Nile, Harley-Davidson; Royal Caribbean, Carnival, Callaway Golf, Starwood Hotels, Marriott Hotels, Las Vegas Sands</td>
<td>BMW, Daimler; Millenium Hotels, Intercontinental</td>
<td>Emperor Watch, Hengdeli; Accordia Golf, Resorttrust</td>
</tr>
<tr>
<td><strong>Premium and Accessible</strong></td>
<td>Guess, PVH (CK), L Brands, Nike, Deckers Outdoor, Under Armour, VFC (Nautica, Wrangler)</td>
<td>Cruciani, Stefanel, Adidas, Ted Baker</td>
<td>Belle International, David Jones</td>
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<tr>
<td></td>
<td>Elizabeth Arden, Estée Lauder, Interparfums, Brown-Forman, Beam, Mead Johnson, Ethan Allen, Select Comfort, Tempur Sealy</td>
<td>Luxottica, Lindt-Springli, Diageo, Pernod Ricard, Campari, Rémy Cointreau, Dufry, Essilor</td>
<td>Shiseido</td>
</tr>
<tr>
<td></td>
<td>Signet Jewelers</td>
<td>Swatch</td>
<td>Luk Fook, Chow Thai Fok, Chow Sang Sang; HIS Co.</td>
</tr>
</tbody>
</table>

*Figure 1: Geographical, product category and prestige-level segments of the luxury stock universe in 2013*
2. Theoretical Background

This introductory section summarizes the relevant aspects of modern portfolio theory, the capital asset pricing model, factor models and the arbitrage pricing theory. Then it introduces the portfolio performance evaluation measures used in the analysis.

2.1. Portfolio theory

According to the Markowitz portfolio selection model delineated in 1952, investors are rational mean-variance optimizers maximizing expected return based on a given level of market risk. So portfolio theory emphasizes that risk is an essential component of higher reward relating to the concept of risk adjusted return.

The mean-variance criterion

Risk occurs if the outcome of an event is uncertain but the probability distribution of the possible outcomes is known. The risk of an investment can be captured by the standard deviation of its returns. As a stylized fact, investors tend to be risk averse so they may engage in risky investments only if they are compensated by a risk premium large enough, namely a reward that is the difference between the expected rate of return of the risky investment and that of alternative less risky or risk-free options.\(^7\)

The trade-off between risk and expected return can be captured by the mean-standard deviation, or identically, mean-variance (M-V) criterion. An investment option (A) dominates an alternative one (B) if \(E(r_A) \geq E(r_B)\) and \(\sigma_A \leq \sigma_B\) and not less than one inequality is strict. Furthermore, investors’ preferences about risk-return profile of a portfolio may be represented by a utility function that assigns higher value for dominating portfolios according to the mean-variance criterion. For example, \(U = r - 0.005A \sigma^2\) where A is a parameter of risk aversion. Graphically, preferences can be expressed by indifference curves that are of different slope for investors of varying degrees of risk aversion.

The expected return of a portfolio is simply the weighted average of the expected returns of the composing assets so \(E(r_p) = \sum_{i=1}^{n} w_i E(r_i) = w \bar{r}\) where \(\sum_{i=1}^{n} w_i = 1\cdot w = 1\). The standard deviation of a basket of multiple assets is a function of the variance of each component, as well as the correlation between them, namely \(\sigma^2(r_p) = \sum_{i=1}^{n} \sum_{j=1}^{n} w_i w_j \text{Cov}(r_i, r_j) = w \Sigma w\) where \(\text{Cov}(r_i, r_j) = \rho(r_i, r_j) \sigma^2(r_i) \sigma^2(r_j)\).\(^8\)

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\(^7\) Bodie-Kane-Marcus, 2001, pp. 155-157
\(^8\) Markowitz, 1952, pp. 77-84
Diversification

The risk of an investment could be reduced by diversification or hedging. Diversification involves combining **not perfectly correlated** securities in the portfolio in order to smooth out idiosyncratic risk events. Namely, the strong performance of some assets will neutralize the weak performance of others. Lower correlation leads to higher potential benefit from diversification. In the extreme case, a correlation coefficient of -1 represents a perfect **hedging** opportunity, namely investors can compose a zero-variance portfolio. Based on the definition of risk, an asset with zero volatility, so a single expected return outcome, is considered to be **risk-free**.  

As an empirical fact, a portfolio of 25-30 stocks may be considered **well-diversified**. The rates of return on such portfolios are assumed to be approximately a normally distributed for relatively short holding periods. As for volatility, firm-specific risk can be diversified away so well-diversified portfolios are left with mainly systematic risk. This concept will have an important role in discussing factor models, such as the arbitrage pricing theory.  

The two-fund theorem

Another way to reduce risk is shifting funds to less risky or even risk-free assets. According to the **separation property** or two-fund theorem, the portfolio choice process may be split into two separate steps.

The first task is defining the optimal risky portfolio involving the **asset allocation** decision. This technical step determines the distribution of risky assets across broad investment classes (w), such as equity, fixed income or real estate, and is refined by **security selection**, by choosing the particular components of each asset class. This first step is independent from risk preferences, the optimal risky portfolio may be the same for all investors facing the same universe of investment opportunities.  

The second task is **capital allocation** between the optimal risky portfolio and the risk-free asset (if it is available). This process concerns personal risk tolerance as it determines the proportion of the so-called **complete** portfolio to be appointed to risky versus risk-free assets (α). This linear choice set of the investors can be graphically represented in the expected return-standard deviation plane by the **capital allocation line**, CAL (Figure 2). The slope of the CAL is called reward-to-variability ratio as it captures the incremental return per incremental standard deviation, as well as

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9 Bodie-Kane-Marcus, 2001, p. 226
10 Bodie-Kane-Marcus, 2001, p. 177
11 Bodie-Kane-Marcus, 2001, p. 183
it equals the Sharpe ratio, the volatility-adjusted excess return. The equation of the CAL is $r_c = \alpha r_p + (1 - \alpha) r_f = r_f + S \sigma_p$ where $S = \frac{E(r_p) - r_f}{\sigma_p}$.

The investment decision can be summarized by the following optimization problem:

$$\min_{\alpha, w} w^T C w \quad \mu = \alpha w^T \bar{r} + (1 - \alpha) r_f.$$  

The solution for different $\mu$ values is represented by the **efficient frontier**, namely the set of portfolios that maximize expected return for each level of portfolio risk. Rational investors will choose a portfolio on the efficient frontier. In contrast, the **minimum-variance frontier** is a set of portfolios with the lowest possible variance that can be attained for a given expected return so the dominating subset of the efficient frontier. The global minimum-variance portfolio is the portfolio with the lowest standard deviation so the risk-free asset if it is available.  

A minimum-variance portfolio can be formed by investing in the optimal combination of a set of efficient portfolios. Thus choosing the appropriate proportion of funds to be allocated in two different efficient portfolios, one can create any efficient portfolio. Eventually, if there is a risk-free asset available, the relative percentage of investments in individual risky assets will be the same in every risky efficient portfolio. Namely, investors will only hold the risk-free asset and the efficient portfolio of the highest reward-to-variability ratio, i.e. the **tangency portfolio**.  

Finally, it can be shown that the expected return on every efficient portfolio equals to $E(r_p) = r_f + \frac{\text{Cov}_{p,E}}{\sigma_E^2} (E(r_E) - r_f)$, where $\frac{\text{Cov}_{p,E}}{\sigma_E^2} = \beta_{p,E}$, the beta of the portfolio. The beta will be a central concept of the below described pricing models.

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12 Tulassay, 2009
13 Makara, 1996
The Markowitz portfolio selection model describing the investment decision process of rational investors, how the best allocation of funds is based on the efficient portfolio algorithm, was a large step towards the capital asset pricing model.

2. 2. The CAPM, factor-models and APT

The hereby overviewed popular **pricing models** have the same goal, namely to explain the relationship between the **expected return and the risk** of securities. However, they approach this problem in a different way, based on partially different assumptions. Nevertheless, some terms, such as beta, security market line and security characteristic line are relevant for every model.

The **capital asset pricing model** is a central concept of financial economics developed in the sixties by Sharpe, Lintner and Mossin.\(^\text{14}\) The CAPM is an **equilibrium** model based on rational utility maximization. It delineates the relationship between the **expected** excess return and the volatility of risky assets. Thus it provides an ex-ante benchmark rate for evaluating possible investments and predicts a fair rate of return on non-traded assets estimating cost of capital.

Contrastingly, **factor models** relate to **ex-post** returns specifying the **statistical-econometric process** by which asset returns are generated.\(^\text{15}\) The process may be based on a single well-diversified index or also on multiple common economic factors. Accordingly, one can distinguish between **single-index** and multi-factor models. A well-known example of a **multifactor** model was developed by Fama and French who proposed three factors, such as the market index, the excess return of small over large stocks and the excess return of securities of high over of those of low book-to-market ratios.\(^\text{16}\)

A further popular model that can be regarded as a factor-model is called **arbitrage pricing theory** and was developed by Ross in 1976.\(^\text{17}\) The APT concerns the relationship between **expected** returns and risk of well-diversified portfolios as an alternative to the CAPM. As its name implies, it is centered on concept of arbitrage so on the **law of one price**. Namely, if the market is in equilibrium, the prices rule out arbitrage opportunities.

**Model assumptions**

The underlying assumptions of the CAMP model can be segmented in two categories as they relate to the conformity of **investor behavior** or the institutional context. Firstly, there are numerous

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\(^\text{14}\) Sharpe, 1964; Lintner, 1965; Mossin 1966

\(^\text{15}\) Bodie-Kane-Marcus, 2001, p. 300

\(^\text{16}\) Fama-French, 1996 in Bodie-Kane-Marcus, 2001, p. 311

investors with relatively small wealth compared to the total invested funds. According to the microeconomic concept of perfect competition they are price takers with little market power. Additionally, all investors are rational mean-variance optimizers with a utility function of $U(E(r_c), \sigma^2_c)$ corresponding to the portfolio composing algorithm of modern portfolio theory. Furthermore, they have homogeneous expectations, practically the same input data to for the Markowitz model, e.g. expected returns or covariance matrices. Investors have no other income but the return on their investments and finally, they all consider a single, identical investment period.

Secondly, the assumptions of the CAPM about the institutional environment are related to the idea of the perfect market. Namely, there are no taxes, transaction costs or costs of getting information. As a result, all trades are public and known to every investor immediately. Though the investment opportunity set is limited to publicly traded financial assets, these securities are indefinitely divisible and short selling is allowed. Lastly, investors are able to lend or borrow an optional amount of founds at a fixed, risk-free rate.\(^{18}\)

The hypothesized homogeneous expectations and the above listed simplifying institutional assumptions are also valid for the factor models, including the arbitrage pricing theory.

The key assumption of factor models is the belief that security returns are generated by the following linear statistical model: $r_i = a_i + b_{i1}F_{i1} + \ldots + b_{ik}F_{ik} + \varepsilon_i$. $F_i$ denotes the difference between the expected and realized value of an economic factor, $b_{ij}$ is the sensitivity of the asset to the respective systematic factor, while $a_i$ and the error term, $\varepsilon_i$ relate to firm-specific factors. There are no restrictions on investor behavior or the distribution parameters of factor returns. However, factor models assume that the systematic and nonsystematic factors are independent among themselves and also from unique errors. $E(\varepsilon_i) = 0$, as well as frequently $E(F_i) = 0$ then $E(r_i) = a_i$.

Similarly, the APT does not rely on assumptions on investors nor an unobservable market portfolio but it builds on the above described portfolio return generating model. Furthermore, the APT is heavily based on the concept of asymptotic arbitrage. Namely, there is a virtually indefinite number of securities for well-diversified portfolios to be composed of.\(^{19}\)

**Key conclusions**

Though the three models take different approaches and are based on different assumption, the main results are similar.

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\(^{18}\) Bodie-Kane-Marcus, 2001, p. 264

\(^{19}\) Tullassay, 2009
The main conclusion of the CAPM is that in equilibrium the market portfolio (a well-diversified portfolio including all traded assets proportionally to their relative market capitalization) is efficient, consequently it is the tangency portfolio, the ultimate optimal risky portfolio. This implies that the passive investment strategy is efficient, no investor can beat the market. So all investors allocate their funds along the capital market line (CML), which is the CAL including the market portfolio and the risk-free asset. The slope of the CML equals to \( \frac{E(r_M) - r_f}{\sigma_M} \) and represents the market price of risk for efficient portfolios. As the formula implies, from the total risk of an investment asset only the systematic part is rewarded by excess return. The systematic risk of the investment universe is the volatility of the market portfolio denoted by \( \sigma_M^2 \). The risk premium on individual securities is determined by the beta of the asset to the market portfolio and the excess return of the tangency portfolio itself. More specifically,

\[
E(r_i) - r_f = \frac{\text{Cov}(r_i, r_M)}{\sigma_M^2} (E(r_M) - r_f) = \beta_i (E(r_M) - r_f)
\]

which is also a variation of the equation of the security market line (SML).\(^\text{20}\) The notion of beta, CML and SML is explained in the next section in more detail.

The single-index model can have similar implications as the CAPM if the additional assumptions are made that an observable market index perfectly correlates with the theoretical market portfolio and the historical patterns of ex-post returns are a valid base for estimating ex-ante returns because of their stationary probability distribution.\(^\text{21}\) However, the two models differ regarding the alpha of the securities. According to the CAPM, the expected alpha is zero for every investment option, while the index model compromises that the realized alphas are independent from each other and average out to zero over a sample historical period.\(^\text{22}\)

The main conclusion of the APT is the following pricing formula:

\[
E(r_i) - r_f = \sum_{j=1}^{n} b_{ij}(E(r_{FP_j}) - r_f).
\]

So the risk premium of every well-diversified portfolio equals the beta-weighted average of the risk premia of the factor portfolios. A \( F_{P_j} \) factor portfolio is a well-diversified portfolio with a beta of one relative to \( F_j \) and with betas of zero relative to all other factors. Additionally, it can be proved that if the no-arbitrage relationship holds for an infinite number of well-diversified portfolios, it

\(^{20}\) Bodie-Kane-Marcus, 2001, pp. 265-266

\(^{21}\) Bodie-Kane-Marcus, 2001, p. 340

\(^{22}\) Bodie-Kane-Marcus, 2001, p. 303
must hold for virtually all individual securities.\textsuperscript{23} The market price of risk is the same for every well-diversified portfolio, specifically the risk premium of a factor portfolio so the incremental reward for an additional unit of risk (here beta).

**Beta and unique risk**

In the context of the CAPM, the index-model and factor models, beta measures systematic risk, the degree to which returns on the stock or portfolio and the market portfolio or index or factor move together, respectively. The beta can be also regarded as a regression coefficient so that the excess return on the risky asset is the dependent variable (Y) and the average risk premium is the independent variable (X). Mathematically, the beta can be expressed as $\beta_i = \frac{\text{Cov}(r_i,r_M)}{\sigma_M^2}$\textsuperscript{24}

Beta is a key parameter in the pricing formula of each model discussed above. According to the CAPM, the expected return of individual securities is $E(r_i) = r_f + \beta_i (E(r_M) - r_f)$ where M stands for the market portfolio. As for the single-index model, $r_i = \alpha_i + r_f + \beta_i (r_m - r_f) + e_i$ where m stands for the market index, $\alpha_i$ is the realized firm-specific excess return or the intercept of the regression. The CAPM assumes $\alpha = 0$ as only the systematic risk is rewarded.

Another index model bears the name of Merrill – Lynch and operates with returns instead of risk premiums: $r_i = a_i + b_i r_m$. It can be proved that if the risk-free rates are constant over the sample period, the beta parameters are numerically the same as in the above mentioned index model. However, $a_i$ is practically an estimation of $\alpha + r_f (1-\beta)$. As a further step, Merril – Lynch adjusts the raw betas based on the empirical idea that stock betas seem to converge to one over time and the average beta of the whole investment universe is 1. Accordingly, $\beta_{\text{adjusted}} = \frac{2}{3} \beta_{\text{raw}} + \frac{1}{3} 1$.\textsuperscript{25}

As for the APT, the risk premium of a well-diversified portfolio is

$$E(r_p) - r_f = \sum_{j=1}^{n} b_{pj}(E(r_{FPj}) - r_f)$$

$FP_j$ denotes factor portfolio $j$ based on factor $j$. For factor portfolios $b_{FPj} = 1$ and $b_{FPi} = 0 \ i \neq j$.

Besides being a parameter in the pricing formulas, beta also determines the proportion of systematic risk from the total risk of the security or portfolio. In the CAPM, as well as in the single-index model the total risk of a security can be separated into a systematic and an idiosyncratic component: $\sigma_{\text{total}}^2 = \beta^2 \sigma_M^2 + \sigma^2(e)$. Furthermore, in the index model $\text{Cov}(r_i-r_f, r_j-r_f) = $

\textsuperscript{23} Bodie-Kane-Marcus, 2001, p. 339
\textsuperscript{24} Bodie-Kane-Marcus, 2001, p. 273
\textsuperscript{25} Bodie-Kane-Marcus, 2001, p. 304
Cov (βᵢ (rₘ - rₖ), βⱼ (rₘ - rₖ)) = βᵢβⱼσᵢ². So knowing the factor betas, there is no need to estimate the covariance matrix. Finally, the following relationship holds for portfolios: \( \sigma_p^2 = \beta_p^2 \sigma_M^2 + \sum_{i=1}^{N} w_i \sigma_i^2 \). If the portfolio is well-diversified, so \( w_i \to 0 \), the unique risk is negligible and virtually \( \sigma_p^2 \approx \beta_p^2 \sigma_M^2 \).²⁶

**SML versus SCL**

As one may distinguish between the total and systematic risk of a risky asset, one may contrast the capital market line (CML) with the security market line (SML).

\[
\text{CML: } E(r_T) = r_f + \frac{E(r_M) - r_f}{\sigma_M} \sigma_T \\
\text{SML: } E(r_S) = r_f + \beta_S(E(r_M) - r_f)
\]

The CML depicts efficient portfolios in a total volatility-expected return plot. The total variance represents total risk. The CML is the capital allocation line including the market portfolio. The slope of the line is the reward-to-volatility or Sharpe ratio, as mentioned above.

In the case of the SML, the beta, so the measure of systematic risk, is on the horizontal axis. All well-priced assets and portfolios are on the line. If they are above the SML, they are underpriced having a positive alpha. Contrarily, assets below the line showing negative alphas are more expensive than its systematic risk would imply.²⁷

An additional term is the security characteristic line (SCL), which has a slope of beta and an intercept of alpha in a realized market risk premium – realized asset risk premium graph. Thus it is related but not at all identical with the SML. SCL is often used in the first-pass regression of the beta estimation process with the equation of

\[
r_{i,t} = \alpha_i + \beta_{i} (E(r_{M,t}) - r_{f,t}) + e_{i,t}.
\]

²⁶ Bodie-Kane-Marcus, 2001, p. 301-302
²⁷ Tulassay, 2009
**Critiques and solutions**

Although the above described models are widely used, they are also frequently debated. They have shortcomings related to theory, estimation process as well as practical implementation.

The **theoretical** critiques of the **CAPM** include that investors may not have homogeneous expectations – if the market would be constantly in equilibrium, there would be zero trading activity. A further limitation is that the CAPM as a static, single-period model hypothesizing myopic investors. Moreover, investors are more irrational than perfectly optimizing utility-maximizers. Besides the first two momentums, they may be concerned also about other characteristics of the distribution of expected returns.\(^{28}\)

As for **practical** shortcomings, the above mentioned distribution of asset returns is not normal but leptokurtic empirically. The estimation process of CAPM requires an enormous amount of input data, e.g. the covariance matrix of securities, and the insufficient length of time series may result in high estimation errors. Additionally, the beta does not capture the risk of a security comprehensively (e.g. economic cycles are also relevant), it may be beaten by other risk measures.\(^{29}\) Also, there is no perfectly risk-free asset. Finally, transaction and information costs do occur, and the investment decisions of real investors are also influenced by their tax brackets.\(^{28}\)

One major shortcoming of the CAPM is the so-called **Roll’s critique**, also referred to as benchmark error. Namely, the key hypothesis that the market portfolio is mean-variance efficient is not testable since there is no correct observable proxy of the theoretical market portfolio that is assumed to be composed of all individual traded assets.\(^{30}\)

The single-index model solves the problem of excessive required input data by approximating the market portfolio by a broad, well-diversified **market index**, such as the S&P500 or MSCI World. Besides the beta, multifactor models also incorporate other determinants of risk, such as **economic cycles**. But the **ex-post** return generating statistical process of factor models provides little guidance concerning the estimation ex-ante returns.

As the **APT** is based on factor models, it also requires **less data estimation**. Another major advantage of the APT over the CAPM is that it handles the **absence of equilibrium** more realistically. According to the CAPM, every investor is supposed to adjust his investment a little since all portfolios contain the same risky assets including the mispriced security. Whereas the

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\(^{28}\) Tulassay, 2009  
\(^{29}\) Fama-French, 1992  
\(^{30}\) Roll, 1977
APT simply requires that only a few investors would spot the arbitrage opportunity and their extra demand or supply would correct the mispricing. However, an important weakness of the APT is that it provides no guidance on how to select the factors and how to define the risk premiums on the factor portfolios. investors may rely on studies identifying valid factors for historical sample data. But the relationships observable in past periods do not necessarily hold for the future.

2. 3. Portfolio performance evaluation

This section first shortly introduces the efficient market hypothesis, as well as defines passive and active investment strategies. Then it gives an overview on portfolio performance evaluation focusing on risk-adjusted performance measures. As it points out at the end, choosing appropriate performance measures is highly important and determined by the investment scenario.

Market efficiency

According to the contemporary finance theory, the movement of security prices follows a random walk. As a result, stock prices reflect all current information in the market and relative stock price changes are not predictable. This idea is referred to as the efficient market hypothesis (EMH). Market participants may consider three levels of efficiency. The weak version of EMH claims that all past information is reflected in the stock prices. Thus technical analysis would make no sense. The semistrong form states that prices signal also all publicly available knowledge. If this second level of efficiency holds, fundamental analysis is bound to fail. Finally, according to the strong form, all information, even the knowledge of insiders, is demonstrated in the stock prices.

If investors accept that the market is efficient and prices are fair, they may follow a passive investment strategy. Such an approach involves establishing a well-diversified portfolio based on mostly buy-and-hold decisions. If the CAPM is valid, there is no change to beat the market, indeed. In reality, however, investors may advocate an active investment strategy aiming to find under- or overvalued securities, so seeking for alpha. Nevertheless, active portfolio management has to justify the highest costs induced by stock analysis procedures. Historically, there is evidence for some hot hands but average individual investors do not tend to outperform the market.

31 Bodie-Kane-Marcus, 2001, p. 334
33 Bodie-Kane-Marcus, 2001, p. 341-347
Performance measurement may be sensitive to risk measures, high turnover, taxes and transaction costs, as well as exposed to survivor bias and behavioral factors.\textsuperscript{34}

**Timing and asset allocation**

Usually portfolio returns are noisy thus performance analysis requires a sample period that is long enough to rule out the effect of pure luck. During a longer period, the constituents of the portfolio may change, which complicates performance analysis further.

In case of changing portfolio composition, the **market timing** ability of the investors can be also evaluated. As a result of component variation, not only the mean and variance but also the beta of the active portfolio may change. Adding a quadratic term to the equation of the SCL can be useful to analyze timing ability. Namely, investors can benefit from predicting bull and bear markets correctly as they shift more funds to the market when there is an upswing – manipulating portfolio beta in a favorable way.\textsuperscript{35}

However, this essay focuses on asset allocation decisions. Market timing abilities and performance attribution procedures are rather out of scope considering the size limit of the paper.

**Risk-adjusted performance measures**

The most widely used tools for portfolio performance evaluation are the risk-adjusted performance measures explained in this section. The role of the portfolio in the respective investment **scenario** determines which measure when to use.\textsuperscript{36}

When the portfolio represents the **total investment** of an investor, the **Sharpe ratio** is the appropriate performance measure. It is identical to the reward-to-variability ratio so calculated by dividing the excess return on the portfolio by its standard deviation. The superiority of some investments to the others can be graphically represented by the higher slope of their related capital allocation line in a total risk – reward plot.

The **M-Square** measure is an economic interpretation of the Sharpe ratio ranking the investment option identically. The numerical value of M-Square expressed in percentage points representing the difference between the return on the market portfolio and the volatility adjusted return on the managed portfolio. Namely, to compute the M-Square value, one may shift the evaluated portfolio (P) along its CAL in a way that the adjusted portfolio (P*) would match the volatility of the market

\textsuperscript{34} Jensen, 1968  
\textsuperscript{35} Graham-Harvey, 1994, 1997 In BKM, pp. 822-825  
\textsuperscript{36} BKM, pp. 812-813
benchmark (M). Graphically, the M-Square value is the vertical distance of the expected returns between portfolios P* and M as shown on Figure 4.\(^{37}\)

\[
S = \frac{E(r_i) - r_f}{\sigma_i} = \frac{\alpha_i}{\beta_i} + \rho_{iM}S_M
\]

\[
M^2 = (S_i - S_M)\sigma_M
\]

Figure 4: The CML and the M-Square measure

If the chosen portfolio (P) is to be **combined with other risky investments** in a larger investment fund, the **Treynor ratio** is the relevant performance evaluation tool. It is computed by dividing the excess return by the beta of the sub-portfolio. So it adjusts performance by systematic risk only assuming that in the combined investment fund the idiosyncratic risk of the component portfolios would be diversified away. The Treynor ratio is visually represented by the slope of the T-line, which corresponds to the security market line in the beta-return space.

The relationship of the Treynor ratio and the illustrative **T-Square** measure is analogous to that of the Sharpe ratio and M-Square. T-Square is also a percentage expressing the difference between the expected return of the market benchmark (M) and the reward on a hypothetical portfolio (T*), which is on the T-line of the evaluated portfolio (T) but has a beta of 1. Again, the vertical difference between M and T* illustrates the T-Square value as showed by Figure 5.\(^{38}\)

\[
T = \frac{E(r_i) - r_f}{\beta_i} = \frac{\alpha_i}{\beta_i} + T_M
\]

\[
T^2 = (T_i - T_M)\beta_M = T_i - T_M = \frac{\alpha_i}{\beta_i}
\]

Figure 5: The SML and the T-Square measure

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\(^{37}\) Modigliani - Modigliani, 1997

\(^{38}\) Bodie-Kane-Marcus, 2001, pp. 817-820
Another relevant performance measure in this scenario is **Jensen’s alpha**, which is the abnormal excess return on the portfolio beyond the risk premium predicted by the CAPM. In other words, it is the alpha from the index-model regression. So it may be applied to evaluate single securities, as well. A **positive** alpha indicates that an investment option is underpriced so it is above the security market line. This may imply a buy recommendation.\(^{39}\)

\[
\alpha_i = E(r_i) - \left[ r_f + \beta_i \left( E(r_M) - r_f \right) \right]
\]

The third investment scenario involves evaluating a portfolio (P) as the **entire active risky investment** to be mixed only with the market portfolio or another passive fund (M). The aim of an investor is to maximize the Sharpe ratio of his total risky investment, which is the optimal combination of P and M with a ratio of \( S_R^2 = S_M^2 + \left[ \frac{\alpha_P}{\sigma(e)_P} \right]^2 \). As in the single-index model and similarly to Jensen’s alpha, \( \alpha_P \) here also denotes the excess return on the active portfolio that is not justified by its beta. \( S \) stands for Sharpe ratio and \( \sigma(e)_P \) for the unique risk of the portfolio.

The quotient of alpha and the idiosyncratic risk measure is called **appraisal ratio** or **information ratio**. It expresses the relative benefits to the costs of including an additional unit of risk so it evaluates how the assessed portfolio improves the Sharpe ratio of the optimal risky investment.

The concept of the appraisal ratio is also applicable for individual securities. The quotient of mispricing and nonsystematic risk captures the how each security contributes to the overall performance of the optimal risky portfolio.\(^{40}\)

\[
S_R^2 = S_M^2 + \sum_{i=1}^{n} \left[ \frac{\alpha_i}{\sigma(e)_i} \right]^2 \quad AR_i = \frac{\alpha_i}{\sigma(e)_i}
\]

As a conclusion, appropriate performance measures depend on the investment situation. Evaluating a portfolio as the entire investment, one may use the Sharpe ratio and M-Square measure. The Treynor ratio, the T-Square measure and Jensen’s alpha are relevant when the evaluated investment is one sub-portfolio or security of many others composing an active portfolio. Finally, assessing the performance of an active portfolio or individual security that is to be mixed with a passive index, investors may rely on the appraisal ratio.

\(^{39}\) Bodie-Kane-Marcus, 2001, pp. 817-819

\(^{40}\) Bodie-Kane-Marcus, 2001, p. 934
3. Methodology

This section defines the source of data, the estimation techniques and the portfolio composition procedures used in the subsequent analysis.

3.1. The source of data

Primary sources

I used Bloomberg Finance Professional Terminal as the major source of financial data. Through Excel I downloaded stock prices and market capitalization for the 103 luxury companies, index value data for the MSCI World, Dow Jones Luxury and S&P Global Luxury Indices, as well as returns for Germany Generic Govt 10Y Yield Index for the years 2008-2013 on March 28th 2014. Besides using a single platform for the sake of more consistent data, the frequency of all the above listed data was uniformly daily but the market capitalization. Also, I retrieved all the information in the same currency, namely USD, except for the risk-free yields, which were annualized and in percentage points.

In case of date mismatch or leakage I simply erased the excessive data point or completed the missing data with the arithmetic average of the two closest data points. If the market capitalization at the end of 2013 was missing, I manually added it as in Bloomberg.com as of March 28th 2014. So I ended up with consistent and complete daily time series from December 31st 2008 to December 31st 2013 for the 103 stocks and four benchmarks.

Additional source of financial data were the annual reports and other statements of the companies available on their websites. So I could investigate their revenue segments in terms of geographical region, sub-industry and prestige level, for instance.

Another crucial data source were the component lists of the existing luxury indices, usually available in the factsheets or annual reports of luxury funds on the websites of the asset or fund manager companies. As going through the constituent lists of the Dow Jones Luxury and S&P Global Luxury Indices, the BNP Paribas World Luxury Index,41 the Amundi Global Luxury & Lifestyle Fund,42 the Julius Baers EF Luxury Brands Fund,43 the ING Luxury Consumer Goods Fund44 etc. a luxury stock universe of 103 stocks emerged.

41 Index Portrait Composition World Luxury Index 2014
42 Annual Report of Amundi Funds, 2011, p. 33
43 Factsheet of Julius Baers EF Luxury Brands Fund, 2013, p. 1
44 Factsheet of ING Luxury Consumer Goods Fund, 2013, p. 3
However, I did not automatically include every component of the existing luxury indices but only the ones that were consistent with the luxury definition provided at the beginning of section 4.1. *Luxury investment opportunity set.* For example, Toyota, McDonalds and Time Warner are not part of this analysis.

Considerably different kind of primary sources I used in the analysis were *interviews* aiming to investigate the perception of the *prestige* level of several luxury brands. Namely, I conducted several interviews with international students who were personally familiar with the positioning of the respective brands in their home market. The interviewees were my CEMS MIM classmates at HKUST Business School, such as one Italian, two French, two Canadian and five Chinese business students, also all familiar with at least basic marketing and branding concepts.

**Secondary sources**

The discussed features of the luxury industry, such as business models, trends and segments are based on two key secondary sources. Firstly, I relied on the *Luxury Goods Worldwide Market Study* series by Bain & Company and Fondazione Altagamma as an often referenced source of insights for the luxury sector. Secondly, I based the industry analysis on the curriculum of the course Managing Fashion and Luxury Companies I attended at Bocconi University. These two key sources were supplemented by additional reviews and articles about luxury brands and companies.

### 3. 2. Return, volatility and beta estimation

In this section I explain the calculation methods of the return, volatility, beta, idiosyncratic risk figures, as well as performance evaluation measures, such as the Sharpe ratio, M-Square, Treynor ratio, T-Square, alpha and appraisal ratio.

Having the daily stock prices and index values as input data I calculated daily *returns* for each security. Based on these 103 + 4 time series I computed arithmetic averages, *standard deviations* for each of the five years in the 2008-2013 period. I also annualized these measures by multiplying the daily return data by 261 and the volatility by $261^{0.5}$. Namely, the Bloomberg Terminal provided 261 data points each year (but 260 in 2011).

For estimating *beta*, I divided the covariance between the daily returns of a security and the MSCI World Index in one year by the variance of the daily returns of the market benchmark in the respective year. For example, I considered the daily returns of LVMH from January 1\textsuperscript{st} 2013 to

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45 Bain-Altagamma, 2008-2013
December 31\textsuperscript{st} 2013 and computed their covariance with the similar returns of MSCI World. Then I divided this covariance by the variance of the daily returns of the market proxy in the same period. Having the raw betas I adjusted them according to the Merryl Lynch formula.\footnote{Bodie-Kane-Marcus, 2001, p. 304}

\[ \beta_{\text{adjusted}} = \frac{2}{3} \beta_{\text{raw}} + \frac{1}{3} 1 \]

Knowing the total deviation and the beta of each security, as well as the volatility of the market, one could easily calculate the \textit{idiosyncratic risk} of each single asset with the formula mentioned above in the theoretical background part.

\[ \sigma_i^2(e) = \sigma_{\text{total}}^2 - \beta_i^2 \sigma_M^2 \]

For the portfolio performance evaluation I computed annual \textbf{Sharpe ratios} with annual returns in the nominator and annualized standard deviation as the denominator. The \textbf{M-Square} measures were calculated based on this annual Sharpe ratios and also annualized standard deviation figures for the sake of consistency.

\[ S = \frac{E(r_i) - r_f}{\sigma_i} \quad M^2 = (S_i - S_M)\sigma_M \]

The \textbf{Treynor ratios} were also based on annualized returns and adjusted betas in the denominator. I computed the T-Square measures simply as the difference between the figure of a security and that of the market benchmark.

\[ T = \frac{E(r_i) - r_f}{\beta_i} \quad T^2 = T_i - T_M \]

The \textbf{Jensen alphas} were obtained by the inserted formula where the returns are annualized figures and the beta denotes the adjusted beta of the respective security. The appraisal ratios were simply the ratios of the alphas to the unique risk measures. The daily figures may be multiplied by 261\textsuperscript{0.5} resulting in annualized information ratios providing the same ranking of securities.

\[ \alpha_i = E(r_i) - [\bar{r}_f + \beta_i (E(r_M) - \bar{r}_f)] \]

\section*{3. 3. Portfolio construction}

In this section I review the index value calculation and portfolio rebalancing algorithms. The segmentation criteria for the geographical, sub-sector and prestige sub-indices are explained in part 4.1.5. \textit{Segmenting the luxury stock universe}, here I focus on the methodological aspect.

Since all three benchmarks were modified \textbf{market capitalization weighted} indices, I decided to construct similar value weighted portfolios. Moreover, I chose to \textbf{rebalance} the portfolio annually,
on the last trading day of every calendar year. Also, I added the newly-listed luxury companies on the date of rebalancing. In the case of the Alpha Luxury Fund, I changed the constituents likewise only at rebalancing.

The input data for the index simulation were the matrix of the **stock prices** from December 31\textsuperscript{st} 2008 to December 31\textsuperscript{st} 2013 for all components of the sub-index and the six row vectors of the **market capitalization** of the stocks at the end of the years 2008-2013. I summed the stock capitalizations resulting in total market cap figures for each of the five examined years. In relation to this total value I calculated the **relative portfolio weight** of each component.

As the aim of my analysis was to determine which sub-segment contributed the most to the performance of the luxury industry and not to offer actual investment opportunities, I did **not** apply any **cap** on individual securities. However, weights higher than 15\% but not exceeding 23\% in 2013 were observed only in six cases, namely: LVMH, Diageo, BMW, Daimler, Sands China and Las Vegas Sands are the six biggest luxury companies.

After computing the relative weights of the components at the year-ends, I calculated the **market value of the index** as the scalar product of the first relative market cap row vector and the stock price row vector for the base date December 31\textsuperscript{st} 2008. I set 1 as base value.

In order to achieve comparability I also adjusted the benchmark index values simulating a base date on December 31\textsuperscript{st} 2008. So one could better compare the performance of the simulated luxury indices with the results of the selected benchmarks. This is illustrated in **Figure 6**. Nevertheless, the base date change does not affect the time series of the daily returns of the benchmarks and thus none of the above calculated risk and performance measures.

![Benchmark Indices 2008-2013](image)

**Figure 6**: The index values of the benchmarks with a simulated base date of December 31\textsuperscript{st} 2008
Simply dividing the initial index market value by the initial index value resulted in the **index divisor** that was constant between two rebalancing dates. Keeping the relative market cap vector as a multiplier, I continued to compute the daily index market values as scalar products until the rebalancing. The daily index value resulted quotient of the index market value and the divisor.

On the **rebalancing** day besides updating the **relative market cap vector**, it is also necessary to modify the divisor for the sake of index basket continuity. Namely, the index value after rebalancing must be equal to the index value before rebalancing so to the market value before rebalancing divided by the previous divisor. Accordingly, the **updated divisor** is the quotient of the market value after rebalancing and the index value before/after rebalancing.47

After each rebalancing, I continued to compute the daily index market values as before but with the updated relative market cap vector and index divisor. The last rebalancing took place on December 31st 2013.

Based on the index values I computed **daily returns** for the constructed portfolio. Then I calculated average returns, standard deviations, betas, idiosyncratic risk figures, as well as performance evaluation measures, such as the Sharpe ratio, M-Square, Treynor ratio, T-Square, alpha and appraisal ratio as explained in the previous section. So I gained comparable measures to those of the benchmark indices as a basis for sound analysis.

For the **component analysis** part I examined the mean and median market capitalization of the stock of each sub-index for every year. One could observe well that the distribution of the stock sizes was positively skewed in the case of every sub-index. Furthermore, I computed concentration measures, such as the concentration ratios for the five and ten largest stocks in each portfolio. I also described the geographical, sub-industry and prestige level distribution with simple partition coefficients.

For illustrative purposes I created line diagrams for comparing the changes of the index values, pie charts depicting the regional, sub-sector and prestige distribution and graphs demonstrating the differences between the M-Square, T-Square and appraisal ratio measures of the compared portfolios.

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47 S&P Global Luxury Index Methodology, 2011, p. 7
4. Analysis

The first part of the analysis starts with the definitions of luxury then it reviews the luxury business, as well as the capital market presence of the industry. The second part presents the results of the portfolio performance evaluation.

4.1. Luxury investment opportunity set

As a starting point, I provide definitions of relevant aspects of luxury. Then an overview of the essential characteristics and trends of the luxury industry follows describing segments in terms of business model and product portfolio. This introduction may provide a general strategic understanding that can be useful for analyzing the capital market presence of the industry. After the definitions and business insights I give a brief summary on the capital market presence of luxury companies then I introduce the three benchmark indices used in the portfolio performance evaluation part. Finally, I explain the segmentation aspects the sub-index construction is based on.

4.1.1. Defining luxury

There is no general definition for luxury. However, for the sake of a more valid analysis I distinguish among luxury goods and brands, as well as luxury companies and stocks.

Luxury good and luxury brand

In microeconomics luxury goods are a subset of normal goods for which the demand increases as income increases in contrast to inferior goods with negative income elasticity. Furthermore, a luxury good has an income elasticity greater than 1. That means that the demand for this kind of good increases more than proportionally as income rises contrary to the sort of necessity goods for which 1 percent increase in income leads to a less than 1 percent increase in demand.48

A luxury-related term from microeconomics could be the Giffen good phenomenon. In contrast to ordinary goods, for which the demand rises as their price decreases, for a Giffen good decreasing prices lead to lower demand.49

Similarly, Veblen goods also show an upward-sloping demand curve but they are mostly mentioned in the context of conspicuous consumption and status-seeking. They are considered to be coveted, high-quality products with snob appeal and few substitutes.50

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48 Varian, 2010, p. 285
49 Varian, 2010, p. 114
50 Veblen, 1899
increased demand parallel to price increase may reflect consumer preferences, unlike the case of Giffen goods where higher demand is a direct consequence of rising prices.

Not only economists but business experts discuss the phenomenon of luxury goods, primarily related to luxury brands. As the dictionary of the American Marketing Association states, a brand is "a name, term, sign, design, symbol, or any other feature that identifies one seller's good or service as distinct from those of other sellers". So a key role of a brand is differentiation by adding dimensions related to product performance, such as functional or rational differences, as well as related to customer perception, so symbolic or emotional differences. According to the definition of a McKinsey report from 1990, luxury brands “have constantly been able to justify a high price, i.e. significantly higher than the price of products with comparable tangible functions”. So luxury goods are by definition expensive in their product category. One can add two more criteria based on Bruno Remaury’s definition. Luxury is in the heritage or story of the brand or product. That is related to the origin of the brand, the myth around the founder, the quality of the raw materials and the artisanal know-how. The third criterion is scarcity, namely a luxury product is produced in limited amount and distributed through exclusive channels.

Finally, it is also important to distinguish luxury from fashion. As the fast fashion industry illustrates, fashion is not necessarily expensive or scarce. Though it may also represent an exclusive lifestyle, it is seasonal in contrast to the timeless heritage of luxury products.

Luxury company

Based on the definitions of luxury good and luxury brand, one may grasp the term luxury company as a firm that sells luxury goods and owns luxury brands.

However, many companies build a diversified product or service portfolio ranging from affordable mass-solutions to luxurious offers.

Excluding L’Oréal

One of the most controversial cases was L’Oréal. The France-based cosmetics company has four divisions, namely consumer products, L’Oréal Luxe, professional products and active cosmetics that accounted for 51.0%, 27.5%, 14.0% and 7.5% of its revenues in 2013, respectively.

Although it markets as prestigious brands as Lancôme, Giorgio Armani and Yves Saint Laurent, L’Oréal focuses much more on the mass market than it peers, such as Estée Lauder, Shiseido, Inter Parfums and Elizabeth Arden.

Additionally, keeping the French stock in the luxury universe it would have been the largest in terms of market cap, which would have distorted the results of the portfolio evaluation.

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51 Dictionary of the American Marketing Association, 2014
52 Kotler-Keller, p. 274
53 Kapferer, 1997
54 Interview with Catherine Jubin, 2011
Whether a firm may be regarded as luxury or not, I decided based on the proportion of its revenues from luxury goods and the concentration of its brand portfolio compared to its peers. However, I did not include a company in the analysis that sells less than 30% luxury goods or services.

**Luxury stock**

A luxury stock is simply a luxury company that is **listed on a stock exchange**. This might be trivial but in can be still important to make it explicit as there are many private houses in the luxury business. Even the parent companies of some major brands are unlisted including Chanel, Rolex, Armani or Versace, for instance. Furthermore, several luxury groups were acquired by major conglomerates, such as Dior by LVMH, Gucci by Kering and Porsche by Volkswagen. So it may not be possible in every case to invest in a luxury firm directly in public markets.

**4.1.2. Introduction to the luxury industry**

The luxury industry is considered to be a promising sector with solid long term potential. By definition, the luxury industry is a set of luxury companies. The Porterian generic strategy in this sector is **differentiation** which is relevant in every aspect of the **brand identity**, such as heritage, social context, stylistic, retail and communication identity.\(^{57}\) The luxury companies represent different segments and niches of the market. Accordingly, they rely on **different business models**.

They may use different **distribution channels** as they sell through retail, wholesale or online. Concerning product mix, firms may focus one **single brand** (Salvatore Ferragamo, Nike) or they possess a diversified brand **portfolio** (LVMH, VFC). They might as well use brand extension or **line extension** (Armani). In terms of company structure, there are family businesses, designer brands and multinational conglomerates present in the industry. Nevertheless, **consolidation** and **vertical integration** became important trends relating to economies of scale and quality control.

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\(^{55}\) L’Oréal Annual Report 2013 p. 12; Elisabeth Arden Annual Report 2013, p. 2
\(^{56}\) Volkswagen Annual Report 2013, p.23; Daimler Annual Report 2013, p. 258
\(^{57}\) Saviolo, 2010, p. 155
Besides the different business models, the luxury industry can be segmented based on the **product portfolio** of the companies.

One may rely on horizontal segmentation distinguishing between apparel (Dior), leather goods and accessories (Salvatore Ferragamo), hard luxury (Rolex, Tiffany), Perfumes and Cosmetics (Shiseido), beverages and food (Rémy Cointreau); automotive (BMV), home appliances (Tempur Sealy), health and other services (Essilor, Northern Trust), travel and lodging (Four Seasons) and casino (Las Vegas Sand) **sub-industries**.

As for vertical segmentation, one may rely on the **luxury pyramid** concept. Namely, on the top of the industry there is absolute or high-end (Hermés) and traditional luxury (Louis Vuitton). The diffusion mid-prestige segment includes then and at the bottom accessible luxury (Guess).\(^{58}\)

**Figure 7: Worldwide Personal Luxury Goods Market by Area 2008-2013**

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**Historical overview of the luxury industry 2008-2013**

A detailed history of the luxury business reads in the Appendix under the same title.

After the first signals of the turbulence in 2008, the luxury industry was hit hard by the economic **downturn** in 2009. However, young consumers and the phenomenon of luxury shame pushed the boom of online shopping. At the same time, the flight-to quality phenomenon supported high-end luxury sales and also the **Chinese** market started its triumph. As a consequence, the industry more than recovered in **2010**. As it is explained later, luxury stocks were booming this year.

Tourism and **polarization** fostered further growth in 2011. Then **accesorization** became a trend that surged the performance of the leather goods and hard luxury segments. By 2013, the Chinese growth gradually slowed down and **America** took over the role of the growth engine from Asia.\(^{59}\)

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\(^{58}\) Saviolo, 2012  
\(^{59}\) Bain-Alttagamma, 2008-2013
Bain-Altagamma predicts the market of personal luxury goods to grow 5-fold from 1995 to 2025 reaching the size of 400 billion EUR. Overall luxury, also including luxury automobile, wine, liquor, home furnishings, lodging and travelling is estimated to be 800 billion EUR in 2013.\textsuperscript{60}

Trends for the future

The \textbf{Asian growth} is expected remain still determining based on Greater China and mostly South-East Asia. Mainland China grew from 4.5 in 2007 5.9 in 2008 to 15.3 billion EUR in 2013. Greater China\textsuperscript{61} gradually became the second largest luxury market after the USA with increasingly sophisticated customers.

\textbf{Absolute} and niche segments are predicted to lead the way in the future. Accessories are the largest part of this category made up of mostly European brands. \textbf{Leather goods and hard luxury}, the top performers of the last year, are suspected to remain the champions of the luxury sector.

\textbf{Polarization} is a trend expected to continue so besides top prestige products, accessible luxury, presumably apparel, is anticipated to expand benefiting from the mix-and-match customer attitude. The industry \textbf{concentrating} as big brands and large luxury groups are taking the lead. It seems that individual entrepreneurship is not sustainable in the industry since two-third of luxury sales is captured by luxury groups and the same is the proportion of \textbf{public equity} financing versus entrepreneur or family ownership.

The long term success of the luxury industry is considered to be its consistently \textbf{growing customer base}. Personal wealth, the number of HNWIs and tourism are increasing globally. The power women, luxury-conscious men, and aspirational middle-class segments are emerging.\textsuperscript{62}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{worldwide-personal-luxury-goods-market-by-area.png}
\caption{Worldwide Personal Luxury Goods Market by Area 2008-2013}
\end{figure}

\textsuperscript{60} Bain-Altagamma, 2013
\textsuperscript{61} China, Hong Kong, Macau, Taiwan
\textsuperscript{62} Bain-Altagamma 2013
4.1.3. Ways to invest in luxury

Essentially, there are two ways to invest in luxury. Namely, luxury firms are present either in the private or in the public investment sphere. Both in the case of unlisted and listed companies one may invest in an individual company or in a portfolio of luxury firms.

Private companies

As I mentioned above, the luxury industry is relatively hidden in the sense that many of the major brands are owned by private companies or funds. Primarily, a reason for that may be that historically many of the luxury houses are centered around one key designer or family, who may not want to dilute their control over the brand. Italian companies could illustrate this point well. The Armani Group heavily depends on the seventy-nine-year-old Giorgio Armani, for example. Furthermore, Dolce&Gabbana, Diesel, Zegna and Versace are also owned by the designers or families themselves.

On the other hand, typical family companies, such as Prada or Ferragamo went public in the Hong Kong and Milan stock exchange. The threat of losing control could be demonstrated by the example of Loro Piana, an Italian luxury textiles manufacturer that finally did not go public but was acquired by LVMH last year.  

But not only Italian luxury brands are in private hands. Among the top ten brands, Chanel and Rolex are unlisted. The French maison is a privately held company owned by Alain and Gerard Wertheimer so prominent French investors. The famous timepiece brand is in the hands of the Hans Wilsdorf Foundation, a registered Swiss charity that does not pay corporate taxes.  

Secondly, powerful investor groups may also collect luxury brands. For example, Valentino and Harrods are owned by the Qatari royal family eventually, Jimmy Choo and Bally by the Labelux Group, respectively. The Spain-based Puig Group has collected as precious brands as Carolina Herrera, Jean-Paul Gaultier, Nina Ricci and Paco Rabanne.  

A third reason why luxury companies may not be listed is that they may have been delisted from a stock exchange. This can be illustrated by the case of Gant that went public in Stockholm but since 2008 it is owned by Maus Frères SA.

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63 Passariello – Mesco, 2013  
64 Metcalf, 2013  
65 Helmer, 2011  
66 Doran, 2013  
67 Webpage of Labelux Group  
68 Webpage of Puig Group  
69 Webpage of Maus Frères
Public companies

The total market capitalization of the publicly listed luxury companies has grown from 495 in 2008 to 1,467 billion USD in 2013. This three-fold expansion was not only based on the growth of the incumbent companies but also on the successful newcomers. Namely, 17 luxury firms went public in the 2008-2013 period, representing 15.4% of the total capitalization at the end of 2013. Additionally, 7 out of the 17 newcomers were listed in the Hong Kong stock exchange signaling a trend of opening to Asia.  

An investor may invest in the luxury industry via investing in individual stocks or in a portfolio created and managed by professional fund managers. More than one hundred publicly listed luxury stocks are available for investors choosing the first option. The same luxury stock universe is the basis of the portfolios offered by the fund managers according to the second option. The characteristics of these luxury stocks concerning size, geographical and sub-industry representation, as well as prestige level are discussed in more detail in section 4.2.2. Luxury Universe Index.

The luxury funds and indices may differ in number and size of constituents, geographical focus and sub-industry distribution. For example, the BNP Paribas World Luxury Index has 20 components while the S&P Global Luxury Index represents 80 companies. The luxury funds usually consist of large- and mid-cap stocks as they aim to capture most of the sector while minimizing excessive portfolio turnover. Also, in most cases they offer global coverage without more specific focus on the American or European region, for instance. However, some luxury funds differentiate themselves with a more specific sub-sector focus. The Savigny Luxury Index is exclusively composed of apparel, leather goods and accessories and hard luxury companies, for instance. Further examples could be the Occasio Growth Fund I that focuses exclusively on luxury resort residences or the Knight Frank Luxury Investment Index (KFLII) that tracks the performance of selected collectable luxury assets, such as pieces of art, classic cars, coins or wine. So concerning sub-sectors there is a wider choice for realizing various investment ideas.

70 Rapoza, 2011
71 Savigny Partners, 2014
72 Davis Strauss, 2013
73 Webpage of Knight Frank
4.1.4. The benchmark indices

This short section briefly introduces the benchmark indices used in the performance evaluation part and explains why they were chosen as reference portfolios. All three benchmarks are modified market capitalization weighted indices though with different rebalancing frequencies but reflecting the underlying equity universe in a timely manner. The more detailed features of these indices, such as size, geographical and sub-industry representation are described in more detail in section 4.2.2. *Luxury Universe Index*.

**MSCI World**

In the following analysis, the MSCI World Index is referred to as the *general market benchmark*. Namely, this broad index represents 85% of the free float-adjusted capitalization of 23 developed stock markets including the stock exchanges relevant for the analyzed luxury companies, such as the New York, Hong Kong, Paris and Swiss Exchange etc..\(^74\) Since its launch on March 31, 1986, the index is based on the MSCI Global Investable Indexes (GIMI) Methodology. Besides comprehensively covering the appropriate investment opportunities, the GIMI sets strict requirements concerning minimum size, free float-adjusted market capitalization, liquidity, foreign inclusion factor and length of trading.\(^75\) The MSCI World Index puts and emphasis on index maintenance. The semi-annual index reviews in May and November involve portfolio rebalancing and capitalization cutoff points’ recalculation. The quarterly reviews in February, May, August and November aim to reflect changes in the underlying equity universe up-to-date, without causing excessive index turnover. Additionally, ongoing event-related changes are immediately implemented, such as stocks are added with IPOs of significant size.\(^76\)

**Dow Jones Luxury Index and S&P Global Luxury Index**

As luxury portfolio benchmarks I selected two indices from the S&P Dow Jones Indices family, a well-recognized index provider. While the Dow Jones Luxury Index consists of only 30 stocks, the much broader S&P Global Luxury Index has 80 components. Essentially, the smaller index is a sub-portfolio of the broader one. The constituents of both benchmarks are of various sub-sectors and prestige levels without explicit geographical focus. So one may consider the former one as a

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\(^74\) MSCI World Index Factsheet, 2014, p. 1  
\(^75\) MSCI Global Investable Market Indexes Methodology, 2014, p. 10  
\(^76\) MSCI Global Investable Market Indexes Methodology, 2014, p. 26
general benchmark for smaller luxury portfolios of about 30 components, whereas the latter one as a reference index for a broader portfolio of large- and mid-cap luxury stocks. In the followings I will often refer to the Dow Jones Luxury Index as DJLUX and to the S&P Global Luxury Index as S&PLUX.

**DJLUX** was launched on May 14, 2008 with base value of 1000 on December 31, 2005. The constituents of the index are rather well-established companies chosen by S&P DJI and the editors of The Wall Street Journal. The Dow Jones Luxury Index is weighted by float-adjusted market capitalization with a limit of 10% on individual securities. The portfolio is rebalanced every quarter after the third Friday in March, June, September and December. Besides the price return, also the total return version of DJLUX is calculated, namely with net dividends reinvested.\(^77\)

The base date for both the price return and total return version of **S&PLUX** is July 31, 2005 with base value of 1000. The components are the 80 greatest cap stocks of luxury status based on the opinion of S&P Equity Research considering the company’s sales distribution and market perception. Furthermore, investable stocks should meet certain liquidity criteria and being traded on a developed market exchange. The weighting of the S&P Global Luxury Index is based on the modified market capitalization of the components, none of them representing more than 8% of the total portfolio. The index is rebalanced annually, on the last business day in July, when stocks may be added to the index.\(^78\)

**GDBR10 Index**

It is also relevant to mention that I relied on the Germany Generic Govt 10Y Yield Index as the risk-free rate. Namely, German Bunds are globally accepted safe investments, even after the financial turmoil. Additionally, a ten-year bond is similarly liquid and matches better the investment horizon of a stock than a benchmark rate of shorter maturity.\(^79\)

**4.1.5. Segmenting the luxury stock universe**

In order to determine why the luxury sector is performing so well in the stock market, I segmented the above introduced universe. The aim of my analysis was to investigate which segments boost the performance of the luxury industry the most. I created sub-indices from the components of the Luxury Universe Index splitting the 103 stocks into three sub-portfolios of about thirty components

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\(^{77}\) Dow Jones Thematic Indices Methodology, 2013, pp. 6, 9, 10

\(^{78}\) S&P Global Luxury Index Methodology, 2011, pp. 3-9

\(^{79}\) Damodaran, 2002, p. 216
each. Namely, portfolios of more than thirty constituents are considered to be well-diversified as a rule of thumb. Then I compared the performance of the three sub-indices to each other and also to the above mentioned two benchmark luxury indices.

So after identifying the luxury stock universe and defining the benchmarks, I segmented the luxury shares along three dimensions. First, I assigned each stock to a geographical area, such as Europe, America and Asia-Pacific. Secondly, I created sub-indices based on product category, separating apparel and leather goods, lifestyle items, as well as luxury assets, travel and casinos. Thirdly, I formed peer-groups based on the prestige level of the brands of the companies.

**Geographical segments: Europe, America, Asia-Pacific**

First, I segmented the stocks based on their geographical focus. I principally considered the primary stock exchange where the companies were listed. But I also paid attention to the regional breakdown of their revenues, the location of their headquarters and major assets, the origin of their brands, as well as their recognition in their key markets.

Two fifth of the 103 stocks was listed on the **New York Stock Exchange**. Interestingly, **Hong Kong** proved to be the second most attractive market for luxury stocks with almost twenty listings. So the Asian trading platform beat traditional luxury and stock markets, such as Paris, Switzerland, Milan and London with 7, 7, 6 and 5 firms, respectively. Tokyo, Frankfurt and Sydney also contributed with 4-5 companies each.

![Figure 9: Global luxury listings in 2013](image)

**Examples of Pandora and Movado**

In some cases I did not assigned the stocks automatically based on their primary stock exchange. As an illustration, **Pandora** is originally a Danish jewelry company and also has been listed on the NASDAQ OMX Copenhagen stock exchange since October 2010. The company’s primary revenue source is the American market accounting for 46.2% of sales compared with 41.7% for Europe in 2013. Furthermore, Pandora was ranked as the Nr. 2 luxury jewelry brand in the US. So I added the stock to the American instead of the European sub-index.

Another example is a Swiss-American watch brand, **Movado**. Timepieces originate from Switzerland and 60% of the company’s total assets meaning mostly all of its international assets are located in that European country. Additionally, the firm produces all of its watches in Europe and Asia and each of these two regions account for about 20% and 10% of its revenues, respectively. So although Movado is primarily listed in the USA, I discussed it as a European stock.
Examples of Prada and LVMH
A further example for ambiguous geographic segmentation is Prada, the legendary Italian leather goods manufacturer. Namely, despite of its strong Italian heritage, the company went public on the Honk Kong stock exchange in June 2011. Moreover, the brand’s sales from Asia and Japan overweigh its revenues from Europe. So I considered Prada as an Asian stock.

Nevertheless, LVMH, one of the largest international, multi-brand luxury conglomerates, also earns around 40% of its revenues from Asia (China and Japan). But it is primarily listed in Paris and one of the biggest and most recognized companies in France, as well as lead by one of the most influential French businesspeople. Eventually, I kept LVMH in the European sub-index.

Sub-industry: Apparel and leather goods, Lifestyle items, Luxury assets, travel and casino
Secondly, I arranged the luxury stocks according to their sub-industry representation. Although the firms are operating in several sub-sectors, such as apparel, leather goods and accessories, hard luxury etc., I aimed to create three sub-portfolios with relatively homogeneous components.

I paired the apparel companies with the leather goods and accessories firms as many brands offer products in both of these complimentary categories following a line-extension strategy. The Apparel and Leather Goods Luxury Index consists of 25-31 components, from big players, such as LVMH or Nike to and small-cap stocks like Ports Design or Stefanel. From the luxury conglomerates, I discussed here LVMH and Kering based on the distribution of their revenues.

I also considered lodging, cruising, golf and casino as related sub-sectors and aggregated the correspondent companies in a Travel and Casino sub-index. I also grouped luxury assets, such as hard luxury, art pieces and automobiles together resulting in the Luxury Assets sub-portfolio. Since these two portfolios had relatively few components and their daily returns showed a strong correlation of 0.65 in the 2008-2013 period, I decided to pair them creating the Luxury Assets, Travel and Casino Luxury Index. Finally, LATCI had 39-46 components with Daimler, Sands China and Richemont as big players and Callaway Golf, Emperor Watch and Sparkle Roll as the smallest firms.

The Lifestyle Items Luxury Index merged the other product categories, namely perfumes and cosmetics, beverages, home appliances, health and financial services. All of these sub-sectors involve small personal items, such as a fragrance or a bottle of cognac, or an everyday solution.

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80 Pandora Annual Report 2013 p. 32; Movado Inc. Annual Report 2013 p. 97
81 Prada Group Annualk Report 2013, p. 11; LVMH Annual report 2013, p. 7
82 LVMH Annual report 2013, p. 6; Kering Annual report 2012, p. 10
banking service or a piece of furniture, for instance. LILI comprised of 24-28 stocks ranging from giants like Diageo or Estée Lauder to small companies like Inter-Parfums or Ethan Allen.

**Prestige level: high-end, diffusion, accessible luxury**

The third categorization was based on the prestige of the various brands of the companies. As this information is rather qualitative and subjective, the results of this segmentation may be considered with reservations. However, it could be interesting to examine how the brand positioning strategy of the firms may affect their stock market performance.

The segmentation was partially based on the course material of the Managing Fashion and Luxury Companies course I attended at Bocconi University and also on overviews and other articles about luxury brands. Additionally, I interviewed international students who were familiar with the respective brands in their core market, I asked Chinese students about their perception of Chow Thai Fok Jewelry, for example.

Again, I had to define not too narrow and relatively homogeneous peer-groups for the portfolio creation. Finally, I composed the Traditional and High-end Luxury Index representing the highest category, the Diffusion Luxury Index, as well as the Premium and Accessible Luxury Index representing lower-end luxury. My aim was not to clearly define what high-end, diffusion and accessible luxury would be but to split the analyzed stocks into three more or less homogeneous sub-portfolios. So this segmentation reflects the prestige positions of the discussed luxury companies relative to each other.

**Jensen alpha: top 30 performers**

Finally, I created a portfolio with the highest alpha luxury stocks that was supposed to outperform all benchmarks because of this special selection criterion. So it did as it will be demonstrated at the end of the Portfolio performance evaluation section.

As for the algorithm of this portfolio construction, I ranked all the luxury stocks according to their five-year average alpha. Then I erased those from the list that posted a negative alpha during the
last two years. I ended up with 30 companies, 9 of which were not listed throughout the whole five-year period. So I added further nine top-alpha stocks and gradually changed their portfolio weight to zero as the originally selected components became listed.

As indicated above, it paid off to seek high alphas in the luxury stock universe.

The following matrix summarizes how the luxury stock universe was segmented for the portfolio performance evaluation.

<table>
<thead>
<tr>
<th>Region:</th>
<th>America</th>
<th>Europe</th>
<th>Asia-Pacific</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prestige</strong></td>
<td>104</td>
<td>42</td>
<td>32</td>
</tr>
<tr>
<td>Traditional and High-end</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Diffusion</strong></td>
<td>34</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Premium and Accessible</td>
<td>38</td>
<td>17</td>
<td>14</td>
</tr>
</tbody>
</table>

*Figure 1: Geographical, product category and prestige-level segments of the luxury stock universe in 2013*
4.2. Portfolio performance evaluation

This second part of the analysis presents the results of the portfolio performance evaluation based on the component analysis and basic return and risk measures of the examined sub-portfolios in the 2009-2013 period. First, it discusses the performance of the three selected benchmark indices comparing the Dow Jones and S&P Luxury Index with MSCI World, a general market index. Then it provides a similar analysis of the performance of the Total Luxury Universe Index, as well as simulated subsector-portfolios where the luxury stocks are segmented based on their geographical exposure, product category focus, the prestige-level of their brand portfolios. Finally, the top 30 high-alpha stocks are selected to form a portfolio, showing stellar risk-adjusted performance.

4.2.1. Dow Jones and S&P Luxury Indices vs. MSCI World

Component Analysis

To start with, it is important to mention that the three benchmark indices have a different number of components. MSCI World is the broadest index with 1,611 constituents and also the less concentrated. Namely, the aggregate weight of its ten biggest components, such as Apple, Exxon Mobile, Microsoft and Google, is less than 10%.

S&PLUX is much narrower with 80 constituents and more concentrated as the top ten components represent 41% of the index. The five largest components in the portfolio are Daimler, Diageo, Nike, LVMH and Richemont. Finally, DJLUX is the narrowest index with solely 30 stocks, which is the generally accepted minimum number for a well-diversified portfolio. The DJ index is also the most concentrated as the ten biggest members represent more than 70% of the fund.

The indices also differ on country weights and equity size focus. Namely, MSCI World includes large and mid-cap stocks from 23 developed markets covering about 85% of the free float-adjusted market capitalization in each country. Last year the average market capitalization was around 20.0 with a median of 9.0 billion USD. The index focuses on the American region with a weight of 58.9%, primarily on the United States with 54.8%. Major components from Europe are the United Kingdom with 8.7% and France with 4.3% and from Asia Japan with 8.1% weight.\(^3\)

S&PLUX has somewhat lower average and median market cap, 17.9 and 11.0 billion USD, respectively.\(^4\) In the S&P index Europe has the highest weight (52.2%), mainly France, Germany

\(^3\) MSCI World Index Factsheet, 2014, p. 2
\(^4\) S&P Global Luxury Index Factsheet 2014, p. 2
and the United Kingdom. The United States covers additional 43.6% so the Asia-Pacific area only represents 4.2%. Nevertheless, more than half of the index components have relevant exposure in Asia-Pacific or other emerging regions.\(^{85}\)

The narrower luxury index includes 30 stocks from 9 developed markets with a lower average market capital of 13.7 and a median of 6.1 billion USD. Europe represents 72.2% with Germany, France and Switzerland weighting 26.5%, 20.3% and 16.2%, respectively. However, the United States has the second highest country weight (24.8%) while Canada the lowest (0.4%) adding up to 25.2% for the American region. Finally, the Asia-Pacific area, so Hong Kong and Japan, has only 2.6% weight.\(^{86}\)

As for \textit{sub-sector} representation, MSCI World is much more diversified being a broad market index. The key sectors of the market benchmark are financials (20.9%), information technology (12.2%), consumer discretionary and consumer staples represent 11.9% and 9.8%, respectively.\(^{87}\)

S&PLUX covers only two sectors, consumer discretionary with 84.3% share and consumer staples. In particular, hard luxury, apparel and leather goods companies represented 40% of the index, followed by automotive, beverages, lodging and casino stocks as major sub-segments.\(^{88}\)

Though DJLUX is also primarily present in the consumer goods and consumer services segment with 76.1% and 18.3% weight, respectively, it also includes financial services with 5.2%. The apparel – leather goods and automobile category each represent around 25% of the index. Hard luxury companies also stand out with more than 16% share.\(^{89}\)

\(^{85}\) Measuring the Business of Luxury Living, 2012, p. 16  
\(^{86}\) Dow Jones Luxury Index Factsheet 2014, p. 2  
\(^{87}\) MSCI World Index Factsheet, 2014, p. 2  
\(^{88}\) Measuring the Business of Luxury Living, 2012, p. 31  
\(^{89}\) Dow Jones Luxury Index Factsheet 2014, p. 3

Figure 11: Geographical segments of the three benchmark indices in 2013

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Basic return and risk measures

Since the beginning of 2009 until the end of 2013, the value of the MSCI World, DJLUX and S&PLUX indices grew from 1 to 1.81, 3.10 and 3.37, respectively. In terms of annual return, the luxury indices outperformed the world market benchmark index in every year in the 2009-2013 period but only slightly last year (2013). Nevertheless, the five-year average return of the luxury portfolios was twice as high as that of MSCI World, namely 26.2% and 27.2% versus 13.4%. All three portfolio returns showed a V-shape in the past five years reaching bottom in 2011. S&PLUX was the best performer, it earned a positive return even in 2011 unlike the other two portfolios.

The volatility of the daily returns of DJLUX and S&PLUX was approximately 1.5 times the standard deviation of the market index each year in the examined period. However, since the crisis volatility has gradually decreased from annual 23% to 10% and from 35% to 13% in the case of the market benchmark and the luxury indices, respectively. Accordingly, the idiosyncratic risk of the luxury funds was also lowering. However, the proportion of the unique risk to the total deviation of the indices has increased. Both the total standard deviation, idiosyncratic risk, as well as the proportion of unique risk was consistently higher in the case of DJLUX than S&PLUX so it seems to be less diversified. This may be due to the lower number of its constituents.

<table>
<thead>
<tr>
<th></th>
<th>MSCI World</th>
<th></th>
<th>DJLUX</th>
<th></th>
<th>S&amp;PLUX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Return</td>
<td>Total σ</td>
<td>% of σ(e)</td>
<td>Beta</td>
<td>Return</td>
</tr>
<tr>
<td>2009</td>
<td>26.6%</td>
<td>23.3%</td>
<td>0%</td>
<td>1.00</td>
<td>46.8%</td>
</tr>
<tr>
<td>2010</td>
<td>10.5%</td>
<td>16.8%</td>
<td>0%</td>
<td>1.00</td>
<td>38.5%</td>
</tr>
<tr>
<td>2011</td>
<td>-5.6%</td>
<td>21.5%</td>
<td>0%</td>
<td>1.00</td>
<td>-3.8%</td>
</tr>
<tr>
<td>2012</td>
<td>13.2%</td>
<td>12.8%</td>
<td>0%</td>
<td>1.00</td>
<td>27.2%</td>
</tr>
<tr>
<td>2013</td>
<td>22.1%</td>
<td>10.0%</td>
<td>0%</td>
<td>1.00</td>
<td>22.4%</td>
</tr>
<tr>
<td>Average</td>
<td>13.37%</td>
<td>17.63%</td>
<td>0%</td>
<td>1.00</td>
<td>26.23%</td>
</tr>
</tbody>
</table>

Both luxury indices had relatively high betas. Additionally, the DJ index showed somewhat higher adjusted betas with an average of 1.24 compared to 1.17, the average adjusted beta of the broader luxury fund. Again, a reason for that can be that DJLUX has less than half the number of constituents.
constituents than S&PLUX. Even if the country weights of the S&P index are closer to MSCI World’s, whereas the narrowest index focuses mainly on Europe.

Performance measures
Taking a look at Sharpe ratios, on average both luxury indices outperformed the market in the past five years, especially in the two years after the crisis (2009 and 2010). However, since 2011 the differences between the Sharpe ratios of the market benchmark and the luxury indices seem to diminish. Nevertheless, the MSCI World Index showed an annualized five-year average of 0.81, whereas DJLUX 1.00 and S&PLUX 1.21.

Despite of the generally higher returns of the DJ index, the S&P had higher Sharpe ratios due to its lower volatility. In fact, DJLUX showed a lower Sharpe measure than MSCI World last year.

The M-Square measures show that with the standard deviation of the market benchmark the luxury funds would have yielded 4.5% and 7% higher annual returns on average, respectively. However, the M-Square values of the funds gradually lowered close to zero, in fact DJLUX had 7% lower volatility adjusted return than the market in 2013.

These may imply that luxury stocks have become less attractive for investors as the sole constituents of a risky portfolio.

In terms of Treynor ratios the luxury indexes performed better than the market benchmark, especially in 2010. Both thematic funds had an average ratio of around 0.2, which is double the average Treynor value of the market index. Furthermore, the performance measures of S&PLUX were higher due to its lower betas and despite of its lower returns.

The T-Square values of the luxury portfolios showed a decreasing trend from above 21% in 2010 to 4.3% in the case of S&PLUX and even turning to negative in the case of DJLUX last year.

The Jensen alphas of the two portfolios were mostly remarkably high and positive but only significant in 2010 with t-values of 2.18 and 2.48 for the smaller and broader index, respectively. DJ and S&P performed about the same level showing the highest alpha of almost 29% that year.

However, as a signal of lowering performance, DJLUX even posted a negative alpha last year, which is a general red flag to avoid an investment.

These results indicate that it can be still worth to invest in luxury stocks as an asset class or sub-portfolio whose idiosyncratic risk will be diversified by mixing it with other asset classes or portfolios in an actively managed risky fund. But again, luxury may be less attractive than it used to be around 2010.
Looking at the **appraisal ratios**, the alphas adjusted by the idiosyncratic risk, S&P clearly outperformed the DJ index both because of its higher alphas and lower unique risk. On average, it had an information ratio of 7.6% compared to the 5.2% average of DJLUX. This indicates that when adding a single active portfolio to a passive index portfolio, investors may choose the luxury index labeled by S&P instead of the one from the DJ index family.

**Conclusion**

First of all, the indices heavily differ in the number of their components. The market benchmark is much **broader** and much less **concentrated** than the luxury indices. DJLUX is the other extreme. MSCI World and S&PLUX are similar in terms of geographical and size focus, whereas the narrowest portfolio concentrates more on Europe with and the market capitalization of its typical constituent is one-third smaller. Being thematic indices by nature, DJLUX and S&PLUX mostly focus on consumer discretionary consumer staples sub-industries, which two categories capture only one fifth of MSCI World. The broader luxury index shows higher proportions of apparel-leather goods, while the smallest portfolio favors automobiles more.

The luxury indices showed approximately double returns but only 1.5 times higher volatility than the market benchmark. Both luxury benchmarks are **high-beta** portfolios. The proportion of the idiosyncratic to their total risk is 30-40% so quite high to consider them to be well-diversified portfolios without restrictions.

S&PLUX and DJLUX used to have higher Sharpe ratios than the market index but by end of 2013 they became less attractive candidates for the role of optimal risky portfolio. Moreover, S&PLUX may be chosen to represent the luxury sector in an active fund or to be the entire active portfolio, based on its Treynor-ratio and appraisal ratio, respectively.

Returns and performance measures were **low in 2009 and 2011**. 2009 was one of the weakest years in the history of the luxury industry so weak capital market performance was justified. However, in 2011 the business enjoyed a revival after the crisis and there were still no sign of the slowing Chinese expansion. This implies that the stock market performance of luxury stocks may be more dependent on the general trends of the financial market than the status of the luxury business. Nevertheless, the relative performance of the luxury indices was the **best in 2010**, the year of the revival of the sector after the crisis.
4.2.2. Total Luxury Universe Index vs. Benchmark Indices

Component Analysis

The Luxury Universe Index (LUI) I created merging the components of the already existing luxury indices and funds started with 87 constituents at the beginning of 2009 and has gradually expanded covering 103 stocks by the end of 2013. So LUI is even broader than S&PLUX.

At the end of the examined period the ten biggest components were LVMH, Daimler, BMW, Diageo, Sands China, Las Vegas Sands, Nike, Richemont, Galaxy Entertainment and Swatch. On the fictitious base date the constituents with the largest market cap included Pernod Ricard, Carnival, Hermés and Northern Trust instead of Las Vegas Sands, Galaxy Entertainment, Sands China and Swatch. Nevertheless, the top 10 components covered around 40% of the index in the 2008-2013 period so LUI is less concentrated than DJLUX.

Figure 14: Geographical, sub-industry and prestige segments of the Luxury Universe Index in 2008 and 2013

When I first analyzed the Luxury Universe, I also included Walt Disney as some of the existing luxury funds listed it among their components. However, it would have turned out to be the biggest luxury stock, which would have distorted the conclusions of this thesis. Therefore, I excluded Walt Disney.
In 2008 luxury stocks were typically mid-cap with an average of 5.8 and a median of 2.5 billion USD. By the end of 2013, these statistics reached 14.2 and 8.1 billion USD, respectively. So LUI typically includes large-mid cap constituents, similarly to the S&P luxury index.

As for geographical weights, the proportion of European stocks gradually decreased from 55.1% to 45.5% in the past five years. Meanwhile, the Asia-Pacific stocks gained share from 7.4% to 18.7%, mostly because of the high growth of several firms listed in Hong Kong. The proportion of American stocks stagnated around 35% in the 2009-2013 period.

Considering subsector representation, the proportion of apparel and leather goods companies varied between 29-33%. Also the weight of luxury assets, such as jewelry, watches and automobiles, remained relatively stagnant around an average of 21.8%. Lifestyle items, mostly cosmetics, beverages and home appliances, gradually lost share from 33.5% to 21.4% by the end of 2013. Meanwhile, the index weight of luxury travel & lodging has increased from 12.3% to 26.8%.

Regarding the prestige-based segmentation, the share of the diffusion segment has been stable around 29.3%. The portfolio weight of the accessible and premium segment gradually lowered from 43.6% to 32.7%, while the proportion of the traditional and high-end components increased from 29.9% to 39.0%. So the stocks from the highest prestige category took over the lead from the accessible and premium stocks as the largest prestige segment.

**Basic measures**

During the examined period the Luxury Universe Index grew 2.6 fold. So it outperformed the market benchmark but not the S&P and DJ luxury indices, which more than tripled their value. Accordingly, the average returns of LUI were higher than those of MSCI World but lower than the returns of DJLUX and S&PLUX: 21.9% (annualized) compared to 13.4%, 26.2% and 27.2%, respectively. Nevertheless, LUI was the best performer last year posting an average annualized return of 35.3% supposedly due to the exorbitantly performing casino stocks.  

---

*S&PLUX also includes the twelve casino stocks but they may have a relatively lower weight in the 80-constituent portfolio. So it is possible that the S&P index posted ‘only’ 29.2% annual return in 2013.*
The standard deviation of the Luxury Universe Index showed a decreasing trend after 2008 from 31.7% to 15.8% (annualized). Also, it was consistently somewhat lower than the volatility of the benchmark luxury indices except for the last two years. Similarly to DJLUX and S&PLUX, the idiosyncratic risk of LUI also lowered to half during the past five years, from 1.65% to 0.85%. The proportion of the unique to the total risk of the universe portfolio showed a V-shape touching bottom in 2011 at 47.8% and reaching 74.7% in 2013. On average, LUI had much higher idiosyncratic risk than the other two luxury indices despite of their similar volatility level. This may be due to the big difference between their betas.

Namely, LUI showed adjusted betas averaging at 0.82, which is approximately two-third of the average betas of the other two indices. Furthermore, this measure is even below 1 indicating lower responsiveness to the changes in the market. The luxury lifestyle items segment pulled down the beta of LUI, since cosmetics, beverages and home furnishings tend to be non-cyclical investments. Additionally, different region weights may account for the low beta since two third of the Luxury Universe Index is composed by European and Asian stocks, while the American region has 59% weight in MSCI World. As DJLUX shows a similar weight for the European area the difference can be further explained by the fact that LUI has 86-103 components compared to 30 in the case of the narrowest examined index so it is three times more diversified.

Performance measures

As expected based on the above mentioned lower return and similar volatility levels, the Luxury Universe Index mostly underperformed the two benchmark luxury indices in terms of Sharpe ratios. In fact, LUI showed lower measures than MSCI World in 2009 and 2012. On the other hand, it posted a slightly positive ratio in 2011 when all the other benchmark indices had negative ratios, as well as it was the best performer with an annualized measure of 2.12 in 2013.

According to the observations above, the M-Square values of LUI were negative in 2009 and slightly in 2012, too. Still, the five-year average suggests that the standard deviation adjusted

<table>
<thead>
<tr>
<th>Year</th>
<th>Return</th>
<th>Total σ</th>
<th>% of σ(e)</th>
<th>Beta</th>
<th>Return</th>
<th>Total σ</th>
<th>% of σ(e)</th>
<th>Beta</th>
<th>Return</th>
<th>Total σ</th>
<th>% of σ(e)</th>
<th>Beta</th>
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<tbody>
<tr>
<td>2009</td>
<td>22.32%</td>
<td>31.7%</td>
<td>70.8%</td>
<td>0.73</td>
<td>46.8%</td>
<td>34.9%</td>
<td>31.2%</td>
<td>1.24</td>
<td>45.0%</td>
<td>31.8%</td>
<td>25.1%</td>
<td>1.18</td>
</tr>
<tr>
<td>2010</td>
<td>30.97%</td>
<td>20.9%</td>
<td>56.6%</td>
<td>0.82</td>
<td>38.5%</td>
<td>24.6%</td>
<td>29.2%</td>
<td>1.23</td>
<td>38.3%</td>
<td>23.3%</td>
<td>25.2%</td>
<td>1.20</td>
</tr>
<tr>
<td>2011</td>
<td>4.29%</td>
<td>23.8%</td>
<td>47.8%</td>
<td>0.80</td>
<td>-3.8%</td>
<td>32.7%</td>
<td>29.1%</td>
<td>1.28</td>
<td>0.5%</td>
<td>28.6%</td>
<td>21.7%</td>
<td>1.17</td>
</tr>
<tr>
<td>2012</td>
<td>16.76%</td>
<td>19.3%</td>
<td>61.9%</td>
<td>0.93</td>
<td>27.2%</td>
<td>22.2%</td>
<td>42.2%</td>
<td>1.31</td>
<td>23.1%</td>
<td>18.4%</td>
<td>31.1%</td>
<td>1.19</td>
</tr>
<tr>
<td>2013</td>
<td>35.30%</td>
<td>15.8%</td>
<td>74.7%</td>
<td>0.80</td>
<td>22.4%</td>
<td>15.4%</td>
<td>43.8%</td>
<td>1.16</td>
<td>29.2%</td>
<td>13.3%</td>
<td>30.6%</td>
<td>1.11</td>
</tr>
<tr>
<td>Average</td>
<td>21.93%</td>
<td>22.95%</td>
<td>62.4%</td>
<td>0.82</td>
<td>26.23%</td>
<td>26.89%</td>
<td>35.1%</td>
<td>1.24</td>
<td>27.20%</td>
<td>24.05%</td>
<td>26.7%</td>
<td>1.17</td>
</tr>
</tbody>
</table>

Figure 16: Basic risk and return measures of LUI and the luxury benchmark indices 2008-2013
excess return of LUI was positive, 2.9%. Nevertheless, both DJLUX and S&PLUX performed better with 4.5% and 7.0%, respectively.

Consequently, luxury stocks in general—as represented by the Luxury Universe Index— are not consistently good investments as the only components of a risky portfolio. In 2009 and 2012 it was more worth to invest simply in the market portfolio.

The Treynor ratio of LUI exceeded that of the market benchmark each year and those of the two luxury indices in most cases but not in 2009 and 2012. One reason for the generally good performance may be the lower beta of the Luxury Universe Index. The five-year average of the Treynor values was 0.24, higher than 0.19 and 0.21, those of DJLUX and S&PLUX, respectively.

Accordingly, LUI had the highest T-Square-average in the past five years, 13.2% compared to 8.3% and 10.2%. Its beta-adjusted excess return was especially high in 2010 and 2013.

The Jensen alphas of LUI were constantly positive and relatively high but as not as high as the alphas of the two other luxury indices but in 2011 and 2013. On average, the Luxury Universe Index had an alpha of 13.12%, while DJLUX a slightly lower one, 12.84%, and S&PLUX was the best performer with 14.43%.

The above results imply that it can be still worth to invest in the luxury sector as an asset class that will be further combined with other sub-portfolios of an active investment fund. Furthermore, it may be insightful to investigate the performance of the luxury universe excluding lifestyle items.

In terms of appraisal ratios, LUI was close to the values of the DJ index with a five-year average of 5.20% and 5.18%, respectively. Furthermore, the broader index had no negative values unlike DJLUX. Nevertheless, the information ratios of S&PLUX were clearly superior averaging at 7.6%.

So in the situation of selecting only one actively managed portfolio, investors may prefer LUI over DJLUX but S&PLUX over LUI.
Conclusion

A key difference in the composition of Luxury Universe Index compared to the three benchmarks is that LUI puts a much bigger emphasis on Asian stocks. The broader hypothesized index also showed significantly lower betas and almost double proportion of unique risk. So LUI may not be diversified properly. It is not advisable to hold it as the optimal risky investment.

The above statement is further supported by the fact that this raw luxury index even underperformed the market in terms of Sharpe ratios. As a sub-portfolio or active fund, investors max choose LUI over DJLUX but only if the extreme unique risk could be significantly reduced by diversification. Nevertheless, S&PLUX clearly dominates the simulated index in the role of an asset-class portfolio.

A reason for the inferior performance might be that the managers of the S&P Global Luxury Index filtered out the weakly performing securities from the sector components which was not the case in the raw hypothetic index.

4.2.3. Geographical Luxury Indices vs. Benchmark Indices

Component Analysis

The European, American and Asia-Pacific Luxury Indices (ELI, ALI and APLI) were constructed as geographical sub-portfolios of the Luxury Universe Index (LUI). Selection criteria are explained in the above section 4.1.5. Segmenting the luxury stock universe.

The number of constituents of ELI increased from 28 to 32 in the past five years as Julius Baer, Yoox, Ferragamo and Cruciani became listed only after 2008. ALI was the broadest sub-index with 39-43 components from which the latecomers were Mead Johnson, Tesla Motors, Pandora and Michael Kors. APLI was the smallest sub-portfolio with 22-30 stocks since many Asian companies were newly listed.92

92 such as Trinity, Sands China, Wynn Macau, Pola Orbis, Treasury Wine, Echo Entertainment, MGM China, Prada and Chow Thai Fok
The distribution of the market capitalization was positively skewed in the case of all three sub-segments. Additionally, the average and the median were increasing over the past five years. In 2008, a typical European luxury stock had about the same market capitalization as an American one but became relatively smaller by the end of 2013. The average (and median) market cap for ELI doubled from 10.1 (4.6) to 21.5 (8.9) billion USD while for ALI almost tripled from 10.3 (2.9) to 27.7 (10.0) billion USD. The typical size of an Asia-Pacific stock increased dramatically as the average (and median) market cap rose from 3.3 (0.7) to 9.4 (2.4) billion USD. Still, APLI had the smallest typical components.

Top 5 and concentration

The largest components of the European sub-portfolio were LVMH, Daimler, BMV, Diageo and Richemont, the ten biggest stock represented 78.2% of ELI in 2013.

The American stocks with the largest market capitalization were Las Vegas Sands, Nike, Carnival, VF and Estée Lauder, with the five second biggest one accounting for 56.0% of ALI.

Finally, the top five constituents of the Asia-Pacific segment were Sands China, Galaxy Entertainment, Wynn Macau, Prada and MGM Holding so mostly casino firms. The smallest sub-portfolio was the most concentrated, the ten biggest components represented 84.2% in 2013.

---

**Figure 19: Sub-industry and prestige segments of the geographical sub-indices in 2008 and 2013**

As for sub-industry and prestige-level representation, one may observe that apparel and leather goods, beverage and automotive companies mostly come from Europe and America. Also, the home appliance stocks are primarily American and ELI has less travel and lodging constituents. As
indicated above, casino stocks are the major components of the Asia-Pacific sub-portfolio representing 70.1% of the sub-index. Moreover, in APLI there are fewer constituents from the premium-accessible prestige segment than in ELI or ALI.

**Basic return and risk measures**

The sub-indices grew 3.15, 2.6 and 2.1 fold as the American stocks were the best performers followed by European and Asia-Pacific shares. Nevertheless, all three sub-portfolios outperformed the market benchmark but underperformed S&PLUX and only ALI showed higher returns than DJLUX. In terms of annualized returns, in 2009 and 2010 American stocks posted higher values than 40% beating the DJ and S&P indices. On the other hand, APLI contracted in 2011 underperforming even the market benchmark. Finally, all three geographical portfolios posted higher returns than 33% last year exceeding the performance of all three benchmarks.

ALI showed the highest standard deviation, especially in the 2009-2011 period. The volatility of all three regional portfolios showed a decreasing trend, in particular the deviation of ELI halved from 32.7% to 16.5%, that of ALI dropped by two-thirds from 39.4% to 13.6% and that of APLI lowered from 26.3% to 16.4% over the 2008-2013 period. Usually the deviation measures of the geographical portfolios were above the figures of MSCI World and below the values of DJLUX and S&PLUX, except for last year.

According to the trend of their total risk, the unique risk of the sub-portfolios was also lowering. Nevertheless, the proportion of the idiosyncratic to the total risk was extremely high reaching 77.6%, 40.2% and 84.4% in 2013 in the case of the European, American and Asia-Pacific portfolios, respectively. The high idiosyncratic risk indicates that the sub-portfolios were not that diversified. This is not very surprising since the sub-portfolios represent peer groups in this analysis. Interestingly, in the case of all three regional segments the proportion of unique risk showed a U-shape touching bottom in 2011.

The annual adjusted betas of ELI were relatively around an average of 0.81. The betas of APLI were consistently lower, still increasing from 0.46 to 0.65. In contrast to the European and Asia-Pacific portfolios, ALI showed adjusted higher betas than 1, even though they decreased from 1.28.
to 1.05 during the examined five years. It may be logical that the American portfolio had higher betas, namely the market benchmark MSCI World is composed of American stocks by 58.9%. Nevertheless, even ALI had lower betas than DJLUX and S&PLUX.

Europe

<table>
<thead>
<tr>
<th>Year</th>
<th>Return</th>
<th>Total σ</th>
<th>% of σ(e)</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>21.86%</td>
<td>32.73%</td>
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<td>2010</td>
<td>30.71%</td>
<td>21.46%</td>
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<td>2011</td>
<td>4.67%</td>
<td>24.40%</td>
<td>52.1%</td>
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</tr>
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<td>2012</td>
<td>16.92%</td>
<td>18.62%</td>
<td>58.0%</td>
<td>0.94</td>
</tr>
<tr>
<td>2013</td>
<td>35.38%</td>
<td>16.54%</td>
<td>77.6%</td>
<td>0.78</td>
</tr>
<tr>
<td>Average</td>
<td>21.91%</td>
<td>23.44%</td>
<td>64.4%</td>
<td>0.81</td>
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</table>

America

<table>
<thead>
<tr>
<th>Year</th>
<th>Return</th>
<th>Total σ</th>
<th>% of σ(e)</th>
<th>Beta</th>
</tr>
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<tbody>
<tr>
<td>2009</td>
<td>43.37%</td>
<td>39.44%</td>
<td>42.9%</td>
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<td>2010</td>
<td>40.67%</td>
<td>25.03%</td>
<td>38.2%</td>
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<td>2011</td>
<td>1.80%</td>
<td>30.37%</td>
<td>35.4%</td>
<td>1.13</td>
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<tr>
<td>2012</td>
<td>11.51%</td>
<td>17.82%</td>
<td>44.7%</td>
<td>1.03</td>
</tr>
<tr>
<td>2013</td>
<td>35.46%</td>
<td>13.62%</td>
<td>40.2%</td>
<td>1.05</td>
</tr>
<tr>
<td>Average</td>
<td>26.56%</td>
<td>26.86%</td>
<td>40.3%</td>
<td>1.13</td>
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</table>

Asia-Pacific

<table>
<thead>
<tr>
<th>Year</th>
<th>Return</th>
<th>Total σ</th>
<th>% of σ(e)</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>11.31%</td>
<td>26.29%</td>
<td>83.4%</td>
<td>0.46</td>
</tr>
<tr>
<td>2010</td>
<td>24.85%</td>
<td>16.13%</td>
<td>70.0%</td>
<td>0.53</td>
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<tr>
<td>2011</td>
<td>-1.99%</td>
<td>22.77%</td>
<td>63.6%</td>
<td>0.64</td>
</tr>
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<td>2012</td>
<td>15.48%</td>
<td>14.17%</td>
<td>68.9%</td>
<td>0.62</td>
</tr>
<tr>
<td>2013</td>
<td>33.84%</td>
<td>16.43%</td>
<td>84.4%</td>
<td>0.65</td>
</tr>
<tr>
<td>Average</td>
<td>16.70%</td>
<td>19.70%</td>
<td>74.1%</td>
<td>0.58</td>
</tr>
</tbody>
</table>

**Figure 21:** Basic risk and return measures of LUI and the luxury benchmark indices 2008-2013

**Performance measures**

Though the Sharpe ratios of the geographical portfolios were higher than the ratio of MSCI World on average but they did not beat the market benchmark every year. Furthermore, ELI, ALI as well as APLI usually underperformed the benchmark luxury indices with average annual Sharpe measures of 0.96, 1.11 and 0.88, respectively.

Parallel to the findings above, the M-Square measures of the sub-portfolios were low or even negative besides in 2010. Only ALI outperformed DJLUX on average but not consistently every year in the examined period.

So it may not be advisable to invest in only one geographical segment of the luxury industry as the total risky portfolio. Namely, neither of the regional sub-portfolios performed consistently better than the market or the benchmark luxury indices.

**Figure 22:** M-Square and T-Square measures of the geographical luxury indices and the luxury benchmarks 2008-2013

The average Treynor ratios of the geographical segments were higher than those of all the three benchmarks, namely 0.245, 0.21 and 0.25 for ELI, ALI and APLI, respectively compared to 0.11,
0.19 and 0.21, the measures of MSCI World, DJLUX and S&PLUX. Asia-Pacific securities followed by European stocks were the best performers due to their lower beta and despite of their slightly lower level of average returns.

Accordingly, the average T-Square measures of the sub-portfolios were higher than those of the benchmarks. Only ALI underperformed S&PLUX. The beta-adjusted performance of the geographical segments was particularly high in 2010 and 2013. But in other years it was not consistently better than the results of the two benchmark indices.

The Jensen alphas of the geographical sub-portfolios were generally lower than those of the benchmark luxury indices besides last year. On average, ELI and ALI outperformed DJLUX but underperformed S&PLUX, while APLI was the worst performer with five-year average alphas of 13.2%, 13.9% and 10.7% compared to 12.8% and 14.4%, respectively.

The above findings imply that it might be reasonable to select the Asia-Pacific or American geographical segment of the luxury sector as one sub-portfolio of the total active investment. But it is important to note that the relative performance of the regional indices was a lot volatile.

The results regarding the alphas are approximately valid for the appraisal ratios, as well. But in terms of information ratios, only ALI outperformed DJLUX on average. Despite the decreasing trend in the idiosyncratic risk there seem to be no tendency in the appraisal ratios.

According to the above observations, when choosing only one from the discussed five luxury portfolios, investors may select S&PLUX. If it would not be available, they may favor ALI, since DJLUX posted a negative alpha and appraisal ratio last year. Choosing from the three geographical sub-portfolios only, investors may prefer ALI.

**Conclusion**

The American sub-portfolio seems to be the best geographical industry segment. Still it is not an ideal option for any of the examined three investment scenarios. ALI was the less volatile sub-index with the highest return, clearly dominating the other two regions according to the mean-variance criterion. Also, the proportion of idiosyncratic risk was not extremely high so the
American portfolio showed the highest average alpha and appraisal ratio. American luxury stocks were **most attractive in 2010 and 2013**, in the years of the revival of the luxury sector and the American luxury market, respectively. On the other hand, ALI posted a negative alpha in 2012 and did not outperform S&PLUX in most years. Neither its systematic risk-adjusted performance was superior due to its relatively high beta. So the good performance of American luxury stocks maybe mostly based on the positive spillover effect of the rebound of the US stock market.

**European** stocks showed a fair performance usually superior to the market but inferior to the other regional indices and luxury benchmarks. ELI was slightly more volatile than the other sub-indices with not consistently higher Sharpe ratios than MSCI World. Due to its lower beta the regional index showed relatively high and constantly positive Treynor ratios. Also its alphas and information ratios were positive every year but higher only in 2010 and 2013 following the swings of the global luxury business.

The Asia-Pacific index almost functions as a casino-index. Its superior Treynor ratios are due to its lower betas, which may be simply based on the way different country weights of APLI and the market benchmark. Furthermore, the narrowest regional sub-index showed the highest proportion of unique risk as a small-mid cap index focusing on emerging markets.

Altogether, based on the geographical segmentation of luxury stocks investors cannot accurately identify what drives performance in the luxury universe. American stocks seem to enjoy a positive spillover from the US capital market and Asian casino stocks showed a remarkable growth.

**4.2.4. Sub-sector Luxury Indices vs. Benchmark Indices**

**Component Analysis**

Secondly, I segmented the luxury universe according to product categories. I created three portfolios capturing three sub-sectors of the luxury universe, such as the Apparel and Leather Goods Luxury Index (ALLI), the Lifestyle Items Luxury Index (LILI) and the Luxury Assets, Travel and Casino Index (LATCI).

The broadest sub-portfolio was LATCI comprising of 39-46 stocks as four casinos, Chow Thai Fok, Pandora and Tesla Motors became listed only after 2008. I also considered to split this sub-index further into two parts separating Luxury Assets from Travel and Casino stocks. But these two niche portfolios would have been too narrow with less than twenty stocks so not properly
diversified. Furthermore, the correlation between the daily returns of the LA and TC niche segments was quite high and positive, 0.65, so I kept them together eventually.

ALLI had 25-31 components as Trinity, Yoox, Prada, Ferragamo, Michael Kors and Cruciani joined later. LILI was the smallest segment with 23-27 constituents with Julius Baer, Mead Johnson, Pola Orbis and Treasury Wine as latecomers.

The average and median market capitalization of the three sub-sector portfolios was about the same level though LILI showed somewhat less skewed distribution of values. Namely, 9.9 and 4.7, 8.6 and 4.7, 9.4 and 4.3 billion USD were the typical market cap values for ALLI, LILI and LATCI, respectively. The typical size of the components increased during the last five years, especially dynamically in the lodging and casino segment with an average rising from 2.9 to 15.8 and a median from 1.4 to 10.5 billion USD.

Regarding geographical and prestige category representation, apparel - leather goods stocks were mostly European and American with region weights of 49.3% and 41.4%, respectively, representing the high-end (47.4%) or the accessible segment (38.0%). The vast majority of the components of LILI was primarily listed in Europe and one-third of them in America. The lifestyle item stocks were generally of lower prestige representing the premium-accessible segment with 82.7%. LATCI was almost equally-balanced in terms of geographical segments with companies mostly of the high-end or diffusion prestige level.

Basic return and risk measures
The value of the sub-indices grew 3.7, 2.9 and 2.6 and fold over the past five years. So LATCI seemed to be the best performer followed by ALLI and then LILI. Nevertheless, all of them outperformed the market benchmark with annual returns of 31.2%, 24.7% and 21.8%. But only the luxury assets, travel and casino segment beat DJLUX and S&PLUX by 400-500 basis points. In fact, LATCI posted staggering returns over 50% in 2009-2010 and over 30% in 2012-2013. However, the best performers last year were the lifestyle item stocks with 37.5% annual return.
LATCI was the most volatile sub-portfolio with approximately 1.7 times the annual standard deviation measures of the market benchmark ranging from 42.9% in 2008 to 17.1% in 2013. The volatility of ALLI was about the level of DJLUX’s. Finally, the standard deviation measures of the lifestyle items portfolio were lower (33.7%-17.9%) so more similar to those of S&PLUX. The volatility of all three sub-indices halved from 2008 to 2013.

Also the idiosyncratic risk decreased in case of all three sub-sectors but remained consistently higher than the unique risk of S&PLUX and DJLUX. Again, this may be due to the fact that the aim of the segmentation was to create peer-groups so the sub-portfolios may be less diversified.

The proportion of the idiosyncratic to the total risk was extreme in the case of LILI showing a U-shape and reaching 83.6% in 2013. This and the lower beta of the sub-portfolio may be explained by the fact that lifestyle item stocks are based in Europe whereas MSCI World focuses more on America. Also, beverages and cosmetics are regarded to be non-cyclical investments.

As for the apparel and luxury asset-travel sub-portfolios, the proportion of their unique risk to the total risk increased a little during the 2008-2013 period averaging at 41.9% and 42.6%, respectively. These may be considered high values compared to 35.1% and 26.7%, the averages of DJLUX and S&PLUX, respectively.

<table>
<thead>
<tr>
<th>Apparel and leather goods</th>
<th>Lifestyle items</th>
<th>Luxury assets, travel and casino</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return Total σ % of σ(e) Beta</td>
<td>Return Total σ % of σ(e) Beta</td>
<td>Return Total σ % of σ(e) Beta</td>
</tr>
<tr>
<td>2009 42.8% 33.08% 35.9% 1.13</td>
<td>19.8% 33.69% 78.2% 0.67</td>
<td>55.6% 42.77% 40.6% 1.41</td>
</tr>
<tr>
<td>2010 39.7% 27.79% 40.8% 1.27</td>
<td>29.0% 21.96% 68.5% 0.74</td>
<td>50.3% 28.07% 39.5% 1.30</td>
</tr>
<tr>
<td>2011 6.7% 31.32% 33.8% 1.18</td>
<td>6.8% 24.62% 62.4% 0.70</td>
<td>-14.3% 36.44% 35.5% 1.36</td>
</tr>
<tr>
<td>2012 17.7% 22.06% 48.6% 1.23</td>
<td>15.6% 18.82% 64.6% 0.87</td>
<td>30.1% 24.71% 45.1% 1.43</td>
</tr>
<tr>
<td>2013 16.5% 15.73% 50.3% 1.11</td>
<td>37.9% 17.86% 83.6% 0.72</td>
<td>34.4% 17.07% 52.2% 1.18</td>
</tr>
<tr>
<td>Average 24.70% 26.76% 41.9% 1.19</td>
<td>21.83% 24.07% 71.5% 0.74</td>
<td>31.21% 31.13% 42.6% 1.34</td>
</tr>
</tbody>
</table>

Figure 25: Basic risk and return measures of the sub-sector luxury indices 2008-2013
Though the annual adjusted betas of the sub-portfolios lowered somewhat in 2013, they remained about the same level throughout the past five years averaging at 1.34, 1.19 and 0.74. So luxury assets, travel and casino stocks were the most cyclical followed by the apparel and leather goods segment, while luxury lifestyle items appeared to be rather non-cyclical. Both ALLI and LATCI had higher average beta than S&PLUX but only the broader sub-portfolio was more sensitive to the market than DJLUX.

**Performance measures**

Taking a look at the Sharpe ratios one may observe that none of the sub-portfolios consistently outperform nor the market, neither the benchmark luxury indices. Nevertheless, ALLI, LILI, as well as LATCI had higher average ratios than MSCI World, such as 0.87, 0.93 and 1.10 compared to 0.81, respectively. So only the broadest sub-sector performed better than DJLUX but still worse than S&PLUX.

Accordingly, the M-Square measures of the sub-portfolios were rather low and often negative. Again, only LATCI beat DJLUX on average but mostly because of its good results in 2010, in the year of the rebound of the luxury industry after the crisis. The generally inferior performance may be due to the much higher volatility of the three hypothetical portfolios.

Consequently, investors may consider none of the sub-sectors of the luxury industry as the sole constituent of their risky investment.

*Figure 26: M-Square and T-Square measures of the sub-sector luxury indices and the luxury benchmarks 2008-2013*

Regarding the Treynor ratios all sub-sector portfolios performed better than the market, LILI and LATCI even better than the DJ and S&P luxury indices. In fact, LILI was the best performer with a five-year average ratio of 0.26 due to its much lower betas and despite of its lower returns.

Accordingly, the lifestyle items sub-portfolio showed the highest T-Square measures averaging around 14.5% and an astonishing figure of 28.1% in 2013. LATCI posted an average of 10.8% and consistently higher annual measures than both DJLUX and S&PLUX except for 2011. The average
beta-adjusted performance was the lowest for ALLI, only 7.8%. Furthermore, the apparel - leather goods sub-portfolio reported rather low and negative T-Squares in the last two years.

The Jensen alphas of the three hypothetical portfolios were generally positive and particularly high in 2010. On average, LATCI was the best performer with a five-year average alpha of 16.7% beating S&PLUX with 14.4%, LILI with 13.7%, DJLUX with 12.8% and eventually ALLI with 12.0%. However, the apparel sub-portfolio showed a negative alpha last year, which is considered to be a warning to avoid an investment.

Consequently, investors may select the luxury lifestyle items or the luxury asset, travel and casino sub-sector as an asset class in their total active investment. However, they should be aware of the high volatility of the sub-indices.

However, regarding the appraisal ratios the S&P luxury index confidently beat all the others almost every year with a five-year average of 7.6%. LATCI came second with 5.7% then DJLUX with 5.2%. LILI showed an average of 4.8% though being the best performer last year with 8.8%. ALLI was the weakest sub-portfolio with an average of 3.8% and posting a negative ratio in 2013.

Therefore, in the scenario of choosing only one portfolio to include in a risky investment, investors may select S&PLUX or LATCI if the former is not available. They could also consider the luxury lifestyle item segment based of its good performance in 2013. Nevertheless, they may avoid the apparel and leather goods sub-portfolio.

Conclusion
The Luxury Assets, Travel and Casino Index was the best performing sub-sector of the luxury industry in 2008-2013. It beat the luxury benchmarks in terms of average Jensen’s alpha. Nevertheless, regarding other performance measures it must be noted that the returns of LATCI not always compensate for its higher inherent systematic and idiosyncratic risk. The sub-sector performed particularly well in 2009, 2010 and 2012, in the years when investors may have foreseen a future upswing in the hard luxury, supercar and luxury travelling business.
The Lifestyle Items Luxury Index performed relatively well. Its total volatility-adjusted performance was not always satisfying but due to its lower betas it posted the highest Treynor measures. Prestigious beverages, cosmetics and home appliances performed especially well in 2010, 2011 and 2013 so they followed with some delay the more cyclical and more high-end luxury assets – travel subsector.

Interestingly, the triumph of the leather goods segment advocated in the business analysis did not seem to be reflected in superior capital market performance. In fact, the returns of ALLI did not compensate for its systematic risk and it even posted a negative alpha last year, which is an explicit red flag. The reason behind the divergence of the financial and business performance could be the fact that apparel and leather products are usually marketed by the same companies as a result of brand extension and the trend of creating lifestyle brands. So even if leather accessories are booming, the aggregated performance of the companies is ambiguous as the luxury industry is shifting away from apparel.

All in all, based on the results of this analysis investors may investigate deeper into the hard luxury, supercar, luxury travel and casino segments. Furthermore, they should be careful with apparel and leather goods stocks in order to avoid the trap of overconfidence based on their stellar performance in the business arena.

4.2.5. Prestige Luxury Indices vs. Benchmark Indices

Component Analysis

Thirdly, I constructed sub-portfolios based on the prestige level of the brands of the companies. I separated the components of the Luxury Universe Index in three portfolios again, creating the Traditional and High-end Luxury Index (THLI), the Diffusion Luxury Index (DLI) and the Premium and Accessible Luxury Index (PALI).

This latter accessible segment was the largest one both in terms of market capitalization and number of components. PALI included 36 stocks in 2008, Mead Johnson, Chow Thai Fok and Cruciani joined later. The high-end sub-portfolio had 25-34 components with Julius Baer, Pandora, Tesla Motors, Prada, Ferragamo and four casinos as latecomers. DLI was the narrowest portfolio with 28-33 constituents as Trinity, Yoox, Treasury Wine, Pola Orbis and Michael Kors was only listed in the 2009-2011 period.
In terms of the five-year average and median market cap, stocks of the highest prestige category were bigger than those of the lowest with figures of 10.3 and 5.6, 8.9 and 3.9 billion USD, respectively. Additionally, the typical high-end stock tripled while the typical accessible stock only doubled over the 2008-2013 period. Eventually, traditional luxury stocks can be considered to be the peer-group with the largest capitalization. Though the stocks from the diffusion prestige category were dynamically growing in size, they still remained slightly smaller with an average of 8.7 and a median of 2.8.

As for geographical and sub-industry representation, Asia-Pacific stocks mostly appeared in the highest prestige segment, capturing 42.1% of THLI – of which 40.9% are casinos. Europe and America was only represented by 37.9 % and 20.2%, respectively. Besides casinos, the apparel - leather goods segment was significant with 35.0% weight in the high-end portfolio and hard luxury to a lesser extent with 11.1%. European and American stocks almost equally split DLI and automobile companies captured 44.5% of the sub-portfolio followed by lodging, casino and apparel stocks. Finally, luxury lifestyle items dominated the accessible sub-portfolio accounting for 54.1% while apparel had 33.4% stake. In this lower prestige segment Europe had the highest region weight of 50.7% and America almost covered the rest.

**Basic return and risk measures**

The sub-indices grew 3.1, 2.8 and 2.6 fold as the diffusion stocks were the best performers followed by the high-end and the traditional segment. However, none of the three hypothetical sub-indices performed better than the DJ or the S&P benchmark luxury index but all of them outperformed MSCI World, at least. This is reflected in the five-year average annual return figures of THLI, DLI and PALI, such as 24.2%, 27.1% and 22.1%, respectively. Nevertheless, the diffusion and the accessible segment posted annual returns of 30.8% and 37.6%, respectively beating both benchmark luxury indices last year. On the other hand, the high-end prestige category even underperformed the market benchmark with only 17.2% return in 2013.

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**Top 5 and concentration**

The biggest stocks from the high-end prestige level were LVMH, Sands China, Richemont, Galaxy Entertainment and Kering. This segment was relatively less concentrated with the top ten representing only 64.7% in 2013.

From the diffusion companies Daimler, BMV, Las Vegas Sands, Carnival and Ralph Lauren stood out. With the five second biggest stocks they captured 83.1% of DLI.

Finally, Diageo, Nike, Swatch, Pernod Ricard and VF dominated the premium-accessible segment. The ten biggest players accounted for 70.2% of the lowest prestige category.
All three sub-portfolios showed gradually decreasing though still higher standard deviations than the DJ and S&P luxury indices and the market benchmark. Especially the mid-prestige category was highly volatile. During the 2008-2013 period, the annualized standard deviation of DLI decreased sharply from 41.5% to 15.3%, and that of THLI and PALI halved from 34.9% to 17.6% and 33.5% to 17.2%, respectively. Correspondingly, the idiosyncratic risk of the sub-portfolios also showed a lowering trend but remained above the level of the unique risk of the two luxury benchmark indices. Despite of having the most components, the accessible sub-portfolio showed an extreme proportion of unique to total risk reaching 81.7% last year and averaging at 69.4% in the five-year period. The ratio of the idiosyncratic risk of the diffusion segment remained relatively stable around 38.5%, whereas it increased from 37.1% to 55.9% in the case of the Traditional and High-end Luxury Index.

DLI showed the highest betas every year averaging at 1.33 for the five years. Also the beta of THLI was higher than 1, namely 1.23, which was only slightly lower than the figure of DJLUX. However, the Premium and Accessible Luxury Index had a lower beta of 0.76, which is consistent with the fact that cosmetics, beverages and home appliances are rather defensive investments. The level of the beta figures of the hypothetical portfolios remained approximately unchanged over the five-year period.
Performance measures

In terms of Sharpe ratios, all prestige sub-portfolios were beaten by the DJ an S&P luxury indices. The high-end segment performed only slightly better than the market benchmark with an average ratio of 0.81. PALI posted an average of 0.96 and DLI 0.99, which was close to 1.00, the Sharpe ratio of DJLUX.

Accordingly, the M-Square measures of the sub-portfolios were rather low or negative, especially in the last few years. Still, the volatility adjusted excess returns of all three sub-portfolios were positive on average, namely 3.5%, 2.4% and 2.2% in the case of the diffusion, accessible and high-end segment, respectively.

As a conclusion, it is rather not advisable to invest only in one prestige segment of the luxury industry as the total risky portfolio. Investors may prefer the benchmark luxury indices or simply the market portfolio.

Regarding Treynor ratios, the accessible segment was the best performer with a five-year average of 0.26. However, both the diffusion and high-end sub-portfolios performed slightly worse than the DJ and S&P luxury indices with ratios of 0.187 and 0.18 compared to 0.193 and 0.21, respectively. As the negative T-Square measure of THLI indicates, this sub-portfolio even underperformed the market benchmark last year. Comparing the beta-adjusted performance of the other two hypothetical portfolios one may observe that PALI had an average almost double as that of DLI, namely 15.3% compared to 7.7%.

The Jensen alphas of the prestige-portfolios were lower on average than those of the benchmark luxury indices. Interestingly, the lower the prestige category, the higher the five-year average alpha of the sub-portfolio turned out to be, namely 10.9%, 12.7% and 13.8%. Nevertheless, the diffusion segment was the best performer in 2009, the high-end sub-portfolio in 2010 and 2011 and the accessible category last year.
So investors may consider selecting the premium - accessible sub-portfolio of the luxury stock universe as an asset class in their total actively managed risky portfolio.

Based on the appraisal ratios the lowest prestige segment was the best hypothetical sub-portfolio, again. However, 4.97%, the average ratio of PALI is still lower than 5.18% and 7.55%, the figures of DJLUX and S&PLUX, respectively. THLI posted the lowest average appraisal ratio of 3.37%, moreover, a negative figure of -3.17% last year.

Therefore, investors may choose S&PLUX from the five discussed portfolios or PALI, if the former is not available. Nevertheless, they may avoid selecting the high-end prestige portfolio due to its negative alpha and appraisal ratio.

**Conclusion**

The **Premium and Accessible Luxury Index** turned out to be the best prestige-portfolio. The sub-index showed relatively low returns but also lower deviation and lower betas. The good stock market performance can be related to the business trends of **down-trading and polarization**. Namely, after the crisis, customers focused their purchases more on entry-level products, as well as indulged in the mix-and-match of high-end accessories and lower prestige items.

The Diffusion Luxury Index showed varying performance in the examined period. The best year of the mid-prestige category was 2010 according to general industry trends.

Despite of the flight-to-quality phenomenon and polarization, the Traditional and High-end Luxury Index underperformed the other prestige segments. It even posted a negative alpha last year as a clear warning sign. The reason for the weak capital market performance might be the fact that absolute luxury is a niche segment and companies usually not exclusively focus their brand portfolios on it but diversify with lower prestige offers via line-extension. However, it is necessary to include the highest-end segment in order to support brand heritage in the long term.

Altogether, investors interested in luxury investments may analyze the **accessible** segment further, **Chinese jewelry** and **American apparel** companies, in particular. They also might be careful with the stocks of the highest prestige category.
4.2.6. Alpha Luxury Fund vs. Benchmark Indices

Component Analysis

Finally, I built a portfolio of the highest-alpha luxury stocks. The Alpha Luxury Fund (ALF) was constructed to have 30 components every year. 9 of the best performers turned out to be a casino stock, including the five largest components of the portfolio. Especially Sands China and Las Vegas Sands had high weights, such as 16.4% and 16.0%, respectively. Together with Galaxy Entertainment, Melco Development and Wynn Macau they accounted for 53.0% of the fund. Including the second five biggest stocks, such as Wynn Resort, SJM Holdings, MGM China, Tesla Motors and Michael Kors, the concentration measure increased to 74.6%.

The top performing latecomers, who were not listed five years ago, still has become one of the most attractive stocks, were Wynn Macau, Sands China and Yoox joining in 2009, Tesla Motors in 2010, MGM China, Ferragamo and Michael Kors in 2011, and finally Cruciani in 2012.

In terms of market capitalization, ALF represented 19.6% of the luxury stock universe on average and 25.6% last year. Both the average and the median market capitalization figures of the alpha portfolio increased dramatically since 2008, namely from 3.2 to 13.4 and 1.5 to 8.7 billion USD, respectively. So a typical high-alpha luxury stock was smaller than a typical ordinary luxury stock in 2008 but the size difference has diminished by now.\(^3\)

As for geographical, sub-industry and prestige segments, it was an important aspect during the portfolio creation process to base on the conclusions of the analysis of the previous three portfolio segmentation. So I favored the American region with an area weight of 44.7% and the luxury assets, travel and casino sub-sector with a 77.8% weight in the portfolio.

\(^3\) As a comparison, the average and median market capitalization in the case of the Luxury Universe Index was 6.3-15.1 and 2.6-8.2 billion USD, respectively.
As for prestige representation, the greatest bulk of the Alpha Luxury Fund is from the high-end category because of the strong presence of the casino stocks. That might seem to contradict the recommendation to prefer the accessible segment but I made sure that the best performing stocks from the two lower segments would be included in ALF. Namely, I selected Las Vegas Sands, Michael Kors, Yoox, Hugo Boss, Harman and Saks from the diffusion level and Cruciani, Ted Baker, Signet Jewelers, Under Armour, Chow Sang Sang, L Brands, Dufry, PVH and Interparfums from the accessible category.

Basic return and risk measures

ALF showed an immense 6.2-fold growth in the past five years outperforming both the DJ and the S&P luxury index, as well as MSCI World that grew 3.4, 3.1 and 1.8 fold, respectively. The Alpha-Luxury Fund posted a five-year average of 40.9% and especially high returns in 2009, 2010 and 2013 representing the upswings in the luxury business.

Nevertheless, ALF showed high volatility ranging from 41.2% in 2009 to 15.5% in 2013. Eventually, the standard deviation of the alpha-portfolio decreased to the level of the volatility of DJLUX, especially in the last two years.
Correspondingly, the **idiosyncratic** risk of ALF more than halved by the end of 2013. Still it remained slightly higher than the figures of the DJ luxury index, namely 27.9%-10.8% compared to 19.5%-10.2%. The proportion of the unique to the total risk of the alpha-portfolio was consistently around 45.1%, which is a little higher than 35.1% and 26.7% the average values of DJLUX and S&PLUX, respectively. However, in the last two years the narrower benchmark index also posted ratios around 43%.

ALF showed only a slightly higher five-year average **beta** than DJLUX, 1.25 compared to 1.24. However, in the last two years the alpha-portfolio had lower betas than the one from the DJ family. Casino stocks may correlate with the market to a lower extent.

<table>
<thead>
<tr>
<th></th>
<th>Alpha Luxury</th>
<th>DJLUX</th>
<th>S&amp;PLUX</th>
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<tr>
<td>Return</td>
<td>66.73%</td>
<td>41.2%</td>
<td>46.0%</td>
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<tr>
<td>Total σ</td>
<td>46.8%</td>
<td>34.9%</td>
<td>31.2%</td>
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<tr>
<td>% of σ(e)</td>
<td>46.8%</td>
<td>34.9%</td>
<td>31.2%</td>
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<tr>
<td>Beta</td>
<td>1.30</td>
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<td>1.25</td>
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<tr>
<td>2009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return</td>
<td>62.39%</td>
<td>28.4%</td>
<td>45.0%</td>
</tr>
<tr>
<td>Total σ</td>
<td>38.5%</td>
<td>24.6%</td>
<td>29.2%</td>
</tr>
<tr>
<td>% of σ(e)</td>
<td>38.5%</td>
<td>24.6%</td>
<td>29.2%</td>
</tr>
<tr>
<td>Beta</td>
<td>1.26</td>
<td>1.23</td>
<td>1.25</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>40.4%</td>
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<td>Total σ</td>
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<tr>
<td>Beta</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Return</td>
<td>29.27%</td>
<td>22.2%</td>
<td>45.1%</td>
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<tr>
<td>Total σ</td>
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<tr>
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<td>2012</td>
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<td>36.89%</td>
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**Figure 35**: Basic risk and return measures of ALF and the luxury benchmark indices 2008-2013

**Performance measures**

ALF posted the highest **Sharpe ratios** averaging at 1.57 due to its much higher returns and less higher volatility. It was the best performer every year but in the turbulent 2011. Accordingly, the M-Square measures of the Alpha Luxury Fund were high and positive with a five-year average of 11.9%, outperforming the two benchmark luxury indices.

So investors may find attractive the top-alpha segment of the luxury stock universe even as their total risky portfolio. Nevertheless, they should be aware of the high volatility level of ALF.

**Figure 36**: M-Square and T-Square measures of ALF and the luxury benchmark indices 2008-2013
The **Treynor ratios** of the alpha-portfolio were well above the measures of the three benchmarks every year but in 2011. The five-year average ratio of ALF was 0.31, which is about 1.5 times the figures of DJLUX and S&PLUX, 0.19 and 0.21, respectively.

In terms of T-Square measure, the Alpha Luxury Fund performed twice better than the benchmark luxury indices. Namely, it posted a five-year-average of 20.3% compared to 10.2% and 8.3%, the average of the S&P and DJ luxury indices. ALF was a stellar performer last year with 23.8%.

Considering its composition criteria, it is not surprising that the top-alpha portfolio had high **Jensen alphas** averaging at 27.5% during the examined five years. It consistently outperformed all three benchmarks in the majority of the cases, especially in 2009, 2010 and 2013.

These imply that the casino-luxury apparel category represents an attractive asset class to be included in a broader actively managed portfolio. The high returns more than compensate for the relatively high systematic risk.

ALF beat both the DJ and S&P luxury indices with an average appraisal ratio of 9.74% compared to 5.18% and 7.55%, respectively. Last year the alpha-portfolio posted a particularly high measure, 15.97%, which was three times the figure of S&PLUX.

Consequently, when selecting only one sub-portfolio for an active fund, investors may prefer ALF over DJLUX and S&PLUX based on its higher appraisal ratios.

**Conclusion**

This short section about the Alpha-Luxury Fund illustrates that it is possible to create a luxury portfolio that has similar risk measures as the existing luxury benchmark indices but reports much higher returns. Namely, **ALF dominated DJLUX and S&PLUX** regarding all performance measures in all three examined investment situations.

Of course, it is easy to select the best performing stocks ex-post. Still, investors could gain insights into the luxury sector familiarizing themselves with the **best players**, such as casinos, accessible hard luxury stocks or American premium apparel companies. Additionally, the performance of ALF may give inspiration to **investigate further** into the most successful niches of the luxury stock universe.
5. Conclusion

Luxury stocks were **booming in 2010** when the industry enjoyed revival after two years of standstill. Also the bold expectations towards the Chinese market curved up the prices of luxury stocks. However, as the financial markets calmed down, investing in luxury became less attractive. Last year also showed signs of an upswing though not for the overall luxury sector but for some segments of the industry. This implies that nowadays investors interested in the luxury industry may choose luxury securities more carefully. Instead of relying solely on relative market capitalization, the **geographical, product category and prestige-level focus** of a company may be considered as additional **selection criteria**.

As stated at the end of the introduction, my initial **hypothesis** was that the top-performing luxury stocks would be the ones with a focus on Asia, the apparel-leather goods sub-industry and the highest prestige segment. As it turned out from the geographical sub-portfolio analysis, besides the Asia-Pacific firms, also **American** companies delivered strong results. Additionally, the **luxury assets, travel and casino** sub-sector was the winner of the product category segmentation. Finally, the **premium-accessible** segment was the best performer in the prestige-sub-index analysis.

**Geographical analysis: luxury is global**

Despite of the boom of the Asian luxury consumption, **American** stocks emerged as winners from the geographical segment analysis. Europe posted medium results. However, it is important to note that the main segmenting criterion was the location of the primary stock exchange where the shares of the company are traded. So the performance of the geographical sub-indices may reflect more the conditions of the **regional financial markets** than the situation of the local luxury market. In fact, many companies listed in Europe and America have a large Asian exposure. For example, more than half of the sales of LVMH come from Japan and Greater China. So the good performance of American luxury stocks may be mainly due to the positive **spillover** effect of the rebound of the US stock market in the past years.

This implies that the capital market for luxury has become truly **global** as the sales of luxury goods are increasingly intertwined across continents.
Sub-sector analysis: niche segments take the lead

The outstanding performance of the accessories segment indicated in the business analysis could not be translated into superior capital market performance in most cases. Namely, there are few companies marketing exclusively leather goods. They usually launch an apparel line becoming a lifestyle brand. Tod’s and Ferragamo are one of the few exceptions with primary focus on leather accessories, both performing well in the stock market.

Besides pure high-end leather goods companies, another strong niche was (mostly American) premium apparel represented by Under Armour, L Brands, PVH and Ted Baker. Further good performers from the accessible category but from different sub-industry were hard luxury firms, such as Signet Jewelry, Chow Sang Sang and Swatch.

Last but not least, the composition of the Alpha Luxury Fund triggers attention to the triumph of casino stocks. As an illustrative example, Galaxy Entertainment was not even listed in 2008 and it has become the 10th biggest luxury stock by the end of last year.

So even if the Luxury Assets, Travel and Casino Index was the best performer in the product category segmentation, investors could benefit by additionally considering niche segments from the seemingly poor performing Apparel and Leather Goods Luxury Index.

Prestige-level analysis: polarization bolsters accessible luxury

Similar to the case of accessories, the triumph of absolute luxury may not be automatically converted to better stock market results. Besides casino stock champions, well-established luxury groups make up the majority of the high-prestige portfolio. These conglomerates are mature companies with less growth opportunities. Moreover, due to their long capital market presence they are well-followed by analysts, which leaves less room for abnormal stock returns.

From the mid-prestige level sub-index, some apparel stocks performed well, such as Michael Kors, Hugo Boss, despite the trend of polarization. Nonetheless, the Diffusion Luxury Index consistently underperformed the Premium-Accessible Luxury Index regarding all performance measures.

Supposedly, both down-trading and polarization surged lower-prestige brands. In contrast to the absolute prestige level, accessible luxury often makes up a whole brand portfolio. So the favorable business trends could have been translated into the success of premium apparel, as well as accessible jewelry and watch stocks.
Altogether, the lower-prestige segment is the most promising. Despite of the positive business reputation of the high-end category, investors should be careful with the components of the Traditional and High-end Luxury Index, except for casino stocks.

**Concluding notes on the luxury stock universe**

- The luxury sector is increasingly **concentrated** in the capital markets. Namely, the distribution of the market capitalization of the stock components was positively skewed for all of the examined luxury indices signaling the presence of dominating large-cap stocks.

- Luxury stocks are mostly volatile, **high-beta** investments except for the less cyclical categories of premium apparel and beverages. However, the returns on luxury securities are not always high enough to justify their high inherent risk.

- Similar to the luxury business also the capital flow of luxury investments is more and more geographically intertwined highlighting that luxury is a truly **global** industry.

- The stock market performance of the luxury sector cannot always directly **reflect the business** results of actual industry segments as companies tend to have a diverse product portfolio and the overall swings of the capital markets are also influential.

- Though it had its so far best year in 2010, the luxury sector still offers promising investment opportunities in **superior performing niches** such as casinos, premium apparel or accessible hard luxury. So investors can cherry pick from luxury stocks to realize various investment ideas.

I hope this overview provides a helpful starting point for investors interested in the luxury sector. The review of the historical performance of the sector highlights that though 2010 was the best year of the luxury stock universe, there are still promising niche investment opportunities to seize nowadays. Investors may pay attention to pure high-end leather accessories companies, casino stocks, premium apparel and accessible jewelry firms. Yet, it is advisable to engage in further analysis before making and actual investment decision.
Appendices

Strategic insight into the next years of the luxury business

The Porterian generic strategy in this sector is differentiation which is relevant in every aspect of the brand identity, such as heritage, social context, stylistic, retail and communication identity.

The strong brands may be supported by operational excellence that may be achieved by focusing on the following three management principles according to Bain-Altagamma. Firstly, emphasis must be put on the superior customer experience relating to differentiated sales channels, innovative marketing communication and opinion leaders’ word of mouth. Secondly, flawless retail management is key in terms of product logistics and personalized physical and digital service channels. Thirdly, people focus is essential considering managers, artisans, store employees and customers, as well.94

Historical overview of the luxury industry 2008-201395

2008: First signs of halt

In 2008, due to the outbreak of the financial crisis mostly mid-low end luxury consumption suffered, in the mature markets focusing on entry items of aspirational brands, for example. Meanwhile absolute luxury, such as high-end apparel and hard luxury, proved to be more resilient. Emerging markets and on-line luxury shopping still posted significant growth.

In particular, Europe slowed down as the strong euro hampered luxury shopping tourism. Also Japan experienced luxury recession because of both negative economic cycle and changing customer attitude. On the other hand, the Asia-Pacific region expanded fast driven by emerging Chinese consumers and the strong leather goods segment.

In terms of product category, apparel came to a halt after a long period of growth. Leather goods performed well with entry-level products in Japan and coveted precious bags and shoes in Europe and the USA. Hard luxury remained relatively strong with absolute jewelry and highest end timepieces as key segments. Finally, fragrances and cosmetics still showed a moderate growth.

Altogether, in 2008 the first signals of a slow-down after a “golden” period and flight-to-quality attitude showed up.

2009: Crisis

The economic downturn made the personal luxury market to contract in 2008-2009, for the first time in the history of the Altaggedma-reports. 2009 is considered to be one of the weakest years for luxury consumption. The level of disposable income and confidence of consumers suffered, in fact, young generations were much less keen on must-have-to-fit-in luxury items and “luxury shame” became a trend. Even emerging markets were hit by the credit shortage.

In Europe and America luxury sales shranked for the first time. For example, the hard luxury segment decreased almost by its fourth in America. The Japanese market also contracted, only cosmetics were

94 Bain-Altagamma, 2013
95 Bain-Altagamma, 2008-2013
growing. As a clear sign of the end of the luxury golden age in Japan smaller luxury players even exited the market. Contrastingly, Asia-Pacific posted a double digit growth fueled by China’s expansion. In the apparel category, evergreen products, second and third lines increased their share of wallet since customers became more value-for-money conscious. Accordingly, accessible brands suffered the most as customers started to substitute them by fast fashion items. Leather goods were the only segment with positive growth based on its boom in Asia and Middle-East. Besides entry-level products, high-end goods also gained share because of their long-lasting value. Though hard luxury goods were also considered to be an investment, luxury shame made customers delay ostentatious purchases. As a mostly accessible category, fragrances and cosmetics suffered as aspirational consumers were down-trading to the masstige brands.

2010: Revival
2010 was a year of economic recovery, rebound in consumer confidence, as well as channel and wardrobe restocking. Value-for-money remained a key driver as full price sell-through did not increase above 2007 levels.

Europe showed moderate growth based on the tourist in-flow encouraged by the weakening euro. America posted double-digit growth as women's leather goods were booming. Undoubtedly, China was the champion of the industry during the crisis and also in 2010.

Apparel experienced a positive rebound, especially due to casual menswear and high-end womenswear. Leather goods were stellar performers, again, fueled by high-end women’s shoes purchases and the bag-boom in the US. As for hard luxury, accessible jewelry was sparkling and Asia supported growth for timepieces. Fragrances and cosmetics were less resilient than expected showing low growth rates.

By 2010, the winners of the crisis emerged: category leader brands of strong heritage and large luxury groups gained market share. One may say that strong competition at the brand level lead to increasing concentration at the group level. Consumers became more sophisticated, the market conditions enabled them to cherry-pick across brands, prestige levels and distribution channels.

2011: New growth path
By 2011 mature markets experienced two years of strong organic growth after the turbulence. In Europe, the recovery was based on tourism, in fashion capital cities sales to Chinese tourists supposedly represented an astonishing 50%. In America women’s apparel and leather goods performed well and full recovery of jewelry and watches took place. In China organic growth became relevant for the first time as luxury started to expand also to tier 2 and 3 cities.

In the apparel product category menswear experienced polarization in 2010, so accessible and high-end brands gained market share from the mid-segment, while the high-end segment of womenswear also perform strong but the fast-fashion trend made the lower segment struggle. Leather goods maintained remarkable growth rates and hard luxury’s revival was another key contributor to growth in 2011. Fragrances and cosmetics also enjoyed restocking.

Overall, a new era of growth seemed to emerge as every fifth personal goods luxury company posted growth rates above 20%.

2012: Accessorization
In 2012 tourist spending accounted for 40 % of global luxury sales. Accordingly, Europe was still driven by tourism. The USA performed well, growth in South-America was driven by Brazil. However, the Chinese market showed the first signs of deceleration. Customers reduced domestic gift giving though increased their overseas luxury spending, also shifting to more sophisticated absolute quality products.
2012 was a year of accessorization, luxury was shifting away from apparel. Still, childrenswear and menswear grew significantly, actually two-fifth of luxury purchases was made by men. Leather goods became the largest segment of the market with the high-end prestige segment as the top performer. Furthermore, watch sales were booming and jewelry also enjoyed growth primarily in developing areas though witnessed signs of channel destocking. Perfumes and cosmetics showed moderate growth due price increases and expansion in emerging markets. Luxury cars sales were fueled by the absolute segment and developing countries. Especially sparkling wines and premium spirits showed strong momentum. Luxury lodging and furniture were also in healthy condition, particularly the high-end prestige category performed well.

2012: US is back

In 2013 the US was back. Slowing tourism hindered European growth, especially traditional luxury wholesale. Americas outperformed Asia as the source of growth for the first time fueled by the organic growth in tier 2 areas in the USA and the strong momentum of South America. The performance of the Asian region was varying with the slowly recovering Japanese, the brilliantly performing South-East Asian and the further slowing Chinese market.

In the apparel and leather goods the absolute segment and high-end products continued to lead over lower prestige categories. In fact, leather accessories showed sharp uptrading and further growth in the shoe segment. Polarization took place in the hard luxury category with accessible timepieces showing the strongest dynamism. The high-prestige fragrances were also leading in the category, while cosmetics slowed down despite the growth in emerging markets. Luxury cars reported solid growth, especially in the BRIC countries. Spirits traded up whereas fine wines traded down. Finally, Luxury hospitality posted healthy growth but design furniture lost momentum.

Over the examined period retail was the growth driver versus the wholesale distribution channel reaching 31% share. The organic growth of the retail segment topped in 2011 then decelerated gradually parallel to perimeter expansion. Online has become a more relevant channel each year mostly in America but increasingly in Europe and also in the Asia-Pacific region. The value of the on-line segment grew form 1 in 2003 to 9.8 billion EUR in 2013 with an increasing share of off-price sales to 32%.

In short, after the first signals of the turbulence in 2008, the luxury industry was hit hard by the downturn in 2009. However, young consumers and the phenomenon of luxury shame pushed the boom of online shopping and the Chinese market started its triumph. The industry more than recovered in 2010 then tourism and polarization fostered growth in 2011. Thereafter accesorization became a trend and America took over the role of the growth engine from China.

Bain-Altagamma predicts the luxury industry to grow 5-fold from 1995 to 2025 reaching the size of 400 billion EUR. Overall luxury, also including luxury automobile, wine and liquor, home furnishings, lodging and travelling is estimated to be 800 billion EUR in 2013.

Trends for the future

The Asian growth is expected remain still determining based on Greater China and mostly South-East Asia. Mainland China grew from 4.5 in 2007 5.9 in 2008 to 15.3 billion EUR in 2013. Greater China\textsuperscript{96} gradually became the second largest luxury market after the USA with increasingly sophisticated customers.

\textsuperscript{96} China, Hong Kong, Macau, Taiwan
Absolute and niche segments are predicted to lead the way in the future. Accessories are the largest part of this category made up of mostly European brands. Leather goods and hard luxury, the top performers of the last year, are suspected to remain the champions of the luxury sector. Polarization is a trend expected to continue so besides top prestige products, accessible luxury, presumably apparel, is anticipated to expand benefiting from the mix-and-match customer attitude. The industry concentrating as big brands and large luxury groups are taking the lead. It seems that individual entrepreneurship is not sustainable in the industry since two-third of luxury sales is captured by luxury groups and the same is the proportion of public equity financing versus entrepreneur or family ownership. The long term success of the luxury industry is considered to be its consistently growing customer base. Personal wealth, the number of HNWIs and tourism are increasing globally. The power women, luxury-conscious men, and aspirational middle-class segments are emerging.

Porter 5 Forces Analysis for the Luxury Industry

Industry Structure and Profitability

I will argue that the profit potential of the luxury sector is high even if it shows some signs of a maturing industry, such as consolidation. A key reason for high profits may be the fact that luxury is a precious and unique product without close substitutes. Furthermore, the global luxury market is still growing and the customers are becoming increasingly sophisticated, so there are opportunities for the companies to differentiate in a highly profitable way. However, strong players of rich heritage, significant financial power and diversified industry relations are competing fiercely for the loyalty of top-tier customers.

High Rivalry among Existing Firms

Starting with the factors of actual and potential competition, one may state that the rivalry among existing firms is high. There is oligopolistic competition in the luxury industry, specifically big multidivisional and multi-brand conglomerates dominate the market, such as LVMH, Kering (formerly PPR) and Richemont.
But there are numerous small family businesses and talented designers who first focus on a niche market, then establish a strong brand aiming to expand their customer base finally.

Despite of the crisis, the luxury industry is growing fast at 8% annually. Especially the Accessories (leather goods) and Hard luxury segment, as well as the emerging markets, such as China, Korea and South-East Asia are booming.\(^7\)

The degree of differentiation is by definition high in the luxury sector, strong brands with prestigious heritage are competing for customer loyalty. Wealthy customers could easily switch between the maisons and designers, however the majority are emotionally attached to their favorite brands. The strong brands along with heritage and advertising power represent significant scale economies.

As scarcity is closely related to the concept of luxury, one may assume by definition that there is excess capacity in the market. Moreover, the artisanal know-how and the carefully managed heritage are specific assets of the luxury firms, which may serve as barriers to exit.

**Low Threat of New Entrants**

I already mentioned above that the effect of scale economies is notable. Besides brands, heritage and advertising power, strong financial background could be also a powerful tool of the incumbent companies. Especially bigger, well-diversified or multidivisional firms may have stable financing which they can leverage for growth opportunities, such as acquiring smaller players, launching a new brand or entering a new market.

As for barriers to entry, making a way to the luxury industry requires a huge initial investment. For instance, it is costly to build the crucial brand image and establish the prestigious distribution channels (online is rarely enough here). The new entrants should be financially stable enough to wait for the break-even point, which can be highly affected by the sometimes whimsical consumer taste.

Furthermore, the existing distribution and communication channels are highly controlled by the incumbents as personal relations usually matter in the industry. In fact, there is a trend of vertical integration and licensing in the industry. As an illustration for both issues, the Armani Group bought its suppliers and licensed the manufacturing rights of Armani glasses to Luxottica.

**Moderate Threat of Substitute Products**

It is a controversial issue whether there is a substitute for luxury products at all. Namely, they deliver a unique and complex solution for the customer, which is a mixture of high quality, rich heritage and exclusive status. Customers might evaluate the potential substitutes based on their subjective preferences on relative price and performance.

There exists an enormous market for counterfeits, which might deliver the illusion of the same heritage and social status but they are of much poorer quality. The copycat products are usually of reasonable quality and attract the customer with a far lower price than the original product. An example of a copycat-original pair is the fast fashion brand Zara and the high-end Prada.

On the other hand, accessible luxury products, such as a Chanel rouge, are genuine but they are not exclusive because of their lower price. Sometimes they are not considered to be luxury as probably the loss of exclusiveness would be unacceptable to many core customers.

\(^7\) Bain-Altagamma: Worldwide Luxury Markets Monitor, 2012 Spring
Low Power of Buyers

Continuing with the factors of the bargaining power in input and output markets, one may say that the power of the company is mostly a function of its prestige. Stronger brands generate higher demand and consequently higher bargaining power in both input and output markets.

Luxury wholesalers are less concentrated as luxury itself represents a niche in the different product categories. However, luxury firms may depend on top-tier customers (High Net Worth Individuals) or opinion leaders. Relationships matter as I pointed out above.

On the other hand, a strong brand can create high customer loyalty. In extreme cases, customers might be snobby or act as fashion victims. I already mentioned above how emotional attachment or personal relationships may heighten switching costs.

Moderate Power of Suppliers

Even the firms with the most prestigious brands regard highly-skilled craftsmen as a crucial resource. At the end of the day, someone must physically create the tangible elements that justify the higher price. Those craftsmen and artisans are scarce and specialized suppliers therefore they have a higher bargaining power than the buyers of luxury goods.

If one considers another type of supplier, the designer himself, the importance of the suppliers is highlighted again. There were times when Gucci could not have been exist without Tom Ford, or Dior without John Galliano. Media relations, such as friendship with Vogue-editors, are also essential.

But all kinds of suppliers are keen on working for a top brand. The luxury firms may decide based on trust and former cooperating experience.
Table of Figures

Figure 1: Geographical, product category and prestige-level segments of the luxury stock universe in 2013 ..........6
Figure 2: Asset allocation and capital allocation decision.................................................................9
Figure 3: The capital market line and the security market line........................................................14
Figure 4: The CML and the M-Square measure ...............................................................................18
Figure 5: The SML and the T-Square measure .................................................................................18
Figure 6: The index values of the benchmarks with a simulated base date of December 31” 2008 ........23
Figure 7: Worldwide Personal Luxury Goods Market by Area 2008-2013 ......................................28
Figure 8: Worldwide Personal Luxury Goods Market by Area 2008-2013 ......................................29
Figure 9: Global luxury listings in 2013 ...........................................................................................34
Figure 10: Business pyramid with luxury stocks .............................................................................35
Figure 11: Geographical segments of the three benchmark indices in 2013 .........................39
Figure 12: Index values of the three benchmark indices 2008-2013 ........................................40
Figure 13: Basic risk and return measures of the benchmark indices 2008-2013 ....................40
Figure 14: Geographical, sub-industry and prestige segments of the Luxury Universe Index in 2008 and 2013 ....43
Figure 15: Index values of LUI and the three benchmark indices 2008-2013 ............................44
Figure 16: Basic risk and return measures of LUI and the luxury benchmark indices 2008-2013 ....45
Figure 17: M-Square and T-Square measures of LUI and the luxury benchmark indices 2008-2013 ....46
Figure 18: Appraisal ratios of LUI and the luxury benchmark indices 2008-2013 ..................47
Figure 19: Sub-industry and prestige segments of the geographical sub-indices in 2008 and 2013 ......48
Figure 20: Index values of the geographical luxury indices and the market benchmark 2008-2013 ....49
Figure 21: Basic risk and return measures of LUI and the luxury benchmark indices 2008-2013 ....50
Figure 22: M-Square and T-Square measures of the geographical luxury indices and the luxury benchmarks 2008-2013 ....50
Figure 23: Appraisal ratios the geographical luxury indices and the luxury benchmarks 2008-2013 .........................51
Figure 24: Index values of the sub-sector luxury indices and the market benchmark 2008-2013 ..........54
Figure 25: Basic risk and return measures of the sub-sector luxury indices 2008-2013 ............54
Figure 26: M-Square and T-Square measures of the sub-sector luxury indices and the luxury benchmarks 2008-2013 ....55
Figure 27: Appraisal ratios the sub-sector luxury indices and the luxury benchmarks 2008-2013 ....56
Figure 28: Index values of the prestige luxury indices and the market benchmark 2008-2013 ..........59
Figure 29: Basic risk and return measures of the prestige segment indices 2008-2013 .............59
Figure 30: M-Square and T-Square measures of the prestige segment luxury indices and the luxury benchmarks 2008-2013 .....................60
Figure 31: Appraisal ratios the sub-sector luxury indices and the luxury benchmarks 2008-2013 ..........61
Figure 32: Geographical, sub-industry and prestige segments of the Alpha Luxury Fundin 2013 ..........62
Figure 33: The top-alpha luxury stocks as components of the Alpha Luxury Fund 2008-2013 ..........63
Figure 34: Index values of LUI, ALF and the three benchmark indices 2008-2013 .......................63
Figure 35: Basic risk and return measures of ALF and the luxury benchmark indices 2008-2013 ....63
Figure 36: M-Square and T-Square measures of ALF and the luxury benchmark indices 2008-2013 ....64
Figure 37: Appraisal ratios of ALF and the luxury benchmark indices 2008-2013 .......................65
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