STOCKHOLM SCHOOL OF ECONOMICS

Abnormal Returns in the Luxury Goods Industry

What drives the abnormal returns in the luxury goods industry

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Abstract

The study aims to analyse a portfolio comprising of 19 stocks of companies in the luxury goods industry, the biggest market players classified as part of luxury industry by Bloomberg. The thesis analyses the portfolio from two vantage points, i.e. abnormal returns along with the explanations of them as well as its characteristics in comparison to the market. A long-short strategy is applied, where between April 2002 and December 2013 the investor holds a long position in the luxury portfolio and a short one in the market. The strategy has a positive average return, which can be explained by two models arrived at by a series of OLS regressions. Model I contains confidence of Chinese consumers, trading volume and book-to-market ratio. Model II contains confidence of Japanese consumers, year-on-year change in GDP of Russia, dividend yield and book-to-market. Additionally, the study shows that stocks from the luxury industry pay out less of their earnings to equity holders, and have a higher book-to-market value than the market, while there is no apparent difference in the earnings yield. Psychological factors such as investor sentiment may also have an effect on the stock returns.

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1. Introduction

Despite the recent economic downturn, the luxury goods industry seems to receive more positive attention than any other. Financial newspapers report substantial growth in sales, earnings and market share for companies like LVMH, Kering and Richemont. Analysts explain this phenomenon with the expanding middle class in the emerging markets and high brand value. Nonetheless, how significant are other factors underlying the success? And in what way does the luxury industry differ from the market as a whole?

In many respects, the luxury goods industry differs from other industries. The definition of luxury according to Chevalier and Mazzalovo (2012) is that it is selective and exclusive and that it brings an additional creative and emotional value to the consumer. The definition can be perceived as somewhat elusive and this makes the industry different. There is academic literature on the luxury goods industry from a marketing and management perspective, yet much less from the financial one. Therefore, this thesis enters an unexplored field. Moreover, one could dispute over the definition of luxury. In order to prevent any discussions, the research uses the definition of Chevalier and Mazzalovo (2012). The luxury industry is then further limited by Bloomberg to the following sectors: apparel and footwear, eyewear, jewellery and watches, leather goods, perfume and cosmetics, tableware and writing instruments, on the top of wine and spirits. Sectors like automobiles and high-end lodging, casinos and technology are thereby excluded.

There are two objectives of this study. Objective A is to investigate what factors drive the returns on a strategy involving a long position in luxury consumer goods stocks and a short in the market. Objective B is to learn in what way the company-specific characteristics of the luxury stocks differ from the ones of the market.

A long-short strategy is used to examine the abnormal returns of the luxury goods industry, for which the *luxury portfolio* is a proxy. In April 2002 the investor opens a long position in the *luxury portfolio* and a short one in the synthetic market *CSMI*. For the purpose of investigating objective A, two market value-weighted portfolios are constructed. The first one, the *luxury portfolio*, comprises of global 19 companies in the luxury consumer goods industry. All of the companies in the portfolio are classified by Bloomberg as part of the luxury industry and went public before August 2002. The second portfolio, the synthetic market *CSMI*, tracks the development of the markets where these companies are listed. Consequently, the realised return on the *CSMI* is a weighted sum of returns on the considered country-specific markets. For instance, the weight of the Italian market in the synthetic market *CSMI* is a sum

of weights of all Italian firms present in the *luxury portfolio*. Both the *luxury portfolio* and the synthetic market *CSMI* are rebalanced quarterly. The study examines price returns. In addition, transaction costs and taxes are assumed not to exist.

By simply looking at the cumulative returns of the long-short strategy, which are 42.49% using quarterly data, it is clear that the strategy of longing the *luxury portfolio* and shorting the market is a profitable one. For this reason, it is interesting to conduct further research. Therefore, the returns are regressed by ordinary least square method on two sets of key drivers of the luxury industry: macroeconomic and microeconomic variables. These regressions are run in two stages. At Stage I, univariate regressions are run, i.e. the returns on the strategy is regressed on all independent variables individually. At Stage II, the variables that showed significance at the minimum of 10% in Stage I are used in the multivariate regressions. Proceeding, multicollinearity is checked for with the Variance Inflation Factor test and accounted for by excluding variables from the multifactor models.

Results from univariate and multivariate regression show that the returns on the long-short strategy indeed can be explained with both macroeconomic and microeconomic factors. Six macroeconomic and three microeconomic variables display significance at minimum of 10% at Stage I. These variables qualify to the Stage II and by running multivariate regressions, two final models are arrived at. Model I includes variables *Chinese consumer confidence, book-to-market ratio* and *trading volume* and explain 6.69% of the variation in abnormal returns. Model II includes *book-to-market ratio, trading volume, Russia year-on-year GDP growth, Japanese consumer confidence* and explains 10.8% of the variation in the abnormal returns. The models are checked for multicollinearity. They could not be fused because of the high correlation between the macroeconomic factors. Interestingly, the same microeconomic variables are included in both models, which highlights their importance. It can be observed that there is a trade-off between the significance level and explanation of the variance in the abnormal returns when looking at the models.

In the regressions, no distinction between high and low sentiment was made. Hence it is interesting to look at the sentiment separately. Further, the luxury industry is a business where sentiment towards individual brands or countries should have a lot of explanatory power. Additionally, in order to examine whether there are any patterns between abnormal returns on the *luxury portfolio* and consumer confidence, *sentiment dummies* for high and low sentiment are created. The *sentiment dummies* are thus tested with a two-sample Wilcoxon rank-sum Mann-Whitney test to observe if high and low sentiments have any effect on the returns. For

China, it is indeed the case that higher returns on the strategy do realise when the sentiment is high.

For the purpose of investigating objective B, i.e. examination of the difference between the key ratios of the luxury portfolio and the market, a series of t-tests for the difference in their means for *dividend yield, book-to-market, dividend pay-out ratio* and *earnings yield* are performed. Since the t-tests assume equal variances, prior to running them, variance ratio tests are conducted in order to decide whether such an assumption is correct. Due to data issues, the *MSCI World* index is used as a proxy for the market, rather than the synthetic market *CSMI.* The results show that there is with certainty a difference between the *luxury portfolio* and the market. The *luxury portfolio* has a higher *book-to-market ratio*, while *dividend yield* and *dividend pay-out ratio* are lower than of the market's. T-tests show that there is no difference between earnings yield (reverse P/E) for the portfolios. While previous research, by e.g. Fama and French (1998), find that higher ratios like *dividend yield* should result in higher returns, the results for this study are the opposite. The market has both higher *dividend yield* and *dividend pay-out ratio* than the portfolio, but the returns of the *luxury portfolio* exceed that of the market. As earlier pointed out, the data sample for this study is limited and therefore the results may differ from the previous academic research where data samples are considerably larger and time-spans are longer.

On average the strategy yields positive returns and as initially forecasted, these returns are able to be explained with both macroeconomic and microeconomic variables. Nevertheless, the macroeconomic variables tested in the study have less explanatory power than predicted by industry reports. It is worth noting that due to data issues, not all variables discussed by analysts could be used in this study. The number of ultra-high net worth individuals (UHNWI)[3] and high net worth individuals (HNWI)[4], and data on socio-demographics and possibly Asian tourism to Europe are two examples. Unfortunately, such data is at the time of writing either insufficient or unavailable, and hence not included in the study.

High returns on the long-short strategy could also be explained by the portfolio theory and psychological biases. The homogenous nature of the portfolio contributes to higher risk and thus higher returns. An example is a too optimistic reaction to positive news about the Chinese consumption of luxury goods. Another observed belief is that the industry is recession-proof

[3] UHNWI definition: having an investable income exceeding 30 million dollars.
[4] HNWI definition: having an investable income exceeding one million dollars.

and could not be affected by economic cycles simply because the affluent will always consume luxury.

2. Previous literature

There are two aspects of this thesis. It is a study about stock returns, but it also takes a specific stance on the luxury goods industry. The examined literature can therefore be divided into two parts: reports on the luxury consumer goods industry and academic research on stock returns in general.

There is much academic literature on the luxury goods industry from a marketing and management perspective but much less so from the financial one. In fact, it seems like the luxury goods industry is a rather unexplored area within finance. The movement in the market has caught attention amongst consultancies and market research firms. Various industry reports treat the different areas within the luxury market and its growth phenomena, ranging from jewellery sales to yachts and real estate. Some of these reports have been the main source of information, and especially those from management consultancy Bain & Co, who in collaboration with Italian luxury peer group organization Altagamma produces reports about the global luxury market.[5] S&P Dow Jones has also produced a market report, *Measuring the Business of Luxury Living* following the introduction of their *S&P Global Luxury Index* in 2011. From Bloomberg, collections of news reports regarding the luxury market have been obtained. For information about the development of the world's wealthy individuals, *World Wealth Reports* from management consultancy Capgemini and *World Ultra Wealth Report* on ultrahigh net worth individuals from research firm Wealth-X were used.

All of the above reports point to macroeconomic trends and factors as key drivers for the growth of the luxury goods market; thus the choice of regression variables on the macroeconomic level in this thesis, such as disposable income, GDP growth, tourism and consumer sentiment. The choice of which specific countries to examine is also derived from these reports. Therefore, countries focused on in this thesis are China, Japan, Russia and USA. Chevalier and Mazzalovo (2012) have provided a general overview of the luxury industry. From this, microeconomic variables *interest coverage ratio* and *intangible assets-to-enterprise value ratio* have been derived since they should capture features special for the industry.

In contrast, the academic research about stock returns and its predictors are in abundance. As Fama and French (1998) state, the hypothesis that dividend yields forecast returns is well rooted among practitioners and academics. There is extensive literature and research regarding dividends and earnings ratios as stock return predictors. Using US quarterly data between years 1947 and 1994, Lamont (1998) shows that the aggregate dividend pay-out ratio forecasts excess

[5] The most recent one being the 2013 Luxury Goods Worldwide Market Study

returns while high earnings forecast low returns, and that these measures provide strong explanatory power at the short horizon. Considering the sample of quarterly returns and the relatively short horizon of 11 years (2002 to 2013), dividend and earnings ratios should provide strong explanatory power to the excess returns of the strategy. Apart from examining the dividend yields, Kothari and Shanken (1997) also find reliable evidence that the book-to-market ratio predicts expected returns for both equally- and value-weighted returns. Campbell and Shiller (1998) too have researched dividends as predictors of stock returns. The *high-volume return premium* is found by Gervais et al (2001), who show that the relative trading volume of a stock contains important information about subsequent stock returns. Pastor and Stambaugh (2003) also assign forecasting value to trading volume.

Another, less conventional, measure is a company's credit position. For this reason, the study also examines whether it has any explanatory power of the stock returns. Dichev and Piotroski (2001) study if bond rating upgrades affects long-run stock returns, but find no reliable abnormal returns following upgrades. However, since normal market conditions do not always apply in the luxury goods industry, as money-losing brands sometimes are allowed to operate by their parent companies, it is nevertheless interesting to investigate whether this industry specific characteristic concern investors. The great majority of the companies included in the *luxury portfolio* have no credit rating by agencies like Moody's or Standard & Poor's which is why *interest coverage ratio* is used as a proxy for credit position.

Although all of the above mentioned research points to these measures' ability to explain and predict stock returns, the papers have looked at returns during very long time-spans, the shortest being 47 years (Lamont 1998). Given the short time horizon of the sample, combined with the mere 19 companies included in the *luxury portfolio*, there is a possibility of the results not being in line with previous research.

It is often argued that macroeconomic variables could explain asset pricing. Examples of these variables are industrial production, personal income, GDP per capita, inflation and money growth. Nevertheless, since reports discuss different factors affecting the luxury consumer goods industry, these factors have been mainly used.

Chen et al (1986) conclude that macroeconomic variables affect assets returns. The variables they look at are the spread between long- and short-term interest rate, inflation, industrial production growth, and the spread between high and low-grade bonds. Flanery and Protopapadakis (2002) argue that macroeconomic variables and stock returns are correlated. However, it is hard to determine direction of the causality. It seems like it poles apart for different markets. In this study it is assumed that macroeconomic factors explain returns.

3. Methodology

There are two main goals of the study. Objective A is to investigate what factors drive the excess returns on a portfolio consisting of luxury consumer goods stocks. Objective B is to understand in what way the company-specific characteristics of the luxury stocks such as dividend yield differ from the ones of the market.

For the purpose of investigating objective A, two market value-weighted portfolios are constructed:

1. *The luxury portfolio*, which is a luxury index proxy, tracking the development of stocks of the luxury consumer goods companies;
2. *The Country Specific Market Index (CSMI)*, which is a market proxy, tracking the development of the markets where the stocks included in the *luxury portfolio* are listed. This will be referred to as the synthetic market *CSMI*.

Following, the long-short strategy is applied in order to design a portfolio indicating the excess returns of the luxury portfolio: long the *luxury portfolio* and short the synthetic market *CSMI*. The total cumulative return on the strategy mirrors the cumulative abnormal returns of the *luxury portfolio*. The potential key drivers of the returns are divided into two groups: macroeconomic variables (hereinafter referred to as "macro factors/variables"), such as GDP growth, and microeconomic variables (hereinafter referred to as "micro factors/variables"), such as dividend yield. Therefore, in order to see what factors actually drive the returns, a series of univariate and multivariate regressions with the macro and micro factors as independent variables are run. Furthermore, since it is possible that the luxury market is driven by irrationality; prevailing sentiment on the market is taken out and looked at as a separate variant. Wilcoxon's Mann-Whitney test is hence applied in order to examine if there is any apparent difference in returns on the long-short strategy for periods with high and low sentiments.

For the purpose of investigating Objective B, a series of t-test is applied. This is done to examine whether there is any difference between the company-specific characteristics of the *luxury portfolio* and the market as a whole. Any apparent differences show indeed, that the luxury stocks do not behave like the rest of the market. This could be an additional justification of the high returns on the long-short strategy.

3.1. Objective A

3.1.1. Construction of the *luxury portfolio*

The portfolio is designed to mirror the luxury industry in the best manner and will be referred to as the *luxury portfolio*. It includes companies that fulfil two conditions:

1. Going public before August 2002.
2. Being a constituent of the Bloomberg Luxury Industry Classification.[6]

The rationale behind the time period, which starts five years before the subprime crisis (2007), is to capture the returns during a normal period that is not affected by any financial turmoil. The rationale behind the Bloomberg luxury industry classification choice is to make the portfolio more representative of what traditionally is perceived as luxury. The definition of luxury varies. The constructed portfolio reflects both the Bloomberg, and Chevalier and Mazzalovo definition of luxury, which is narrower. Thereby the portfolio excludes companies involved in automobiles, lodging and casinos. The luxury market is divided by Bloomberg into seven categories: apparel and footwear, eyewear, jewellery and watches, leather goods, perfume and cosmetics, tableware and writing instruments, on the top of wine and spirits. All constituents are the biggest market players in each category and include multi-branded groups like LVMH, Kering and PVH and single-branded companies like Tiffany and Hugo Boss. An extensive list of the constituents, sector in which they operate and respective market coverage is available in Table IX and Figure 2 in the Appendix. Even though there are only 19 companies that satisfy both conditions, together they cover more than 80% of the total industry sales as of 2012.

Considering the choice criteria, a market-weighted *luxury portfolio* is created. Return on the *luxury portfolio* is calculated as a sum of weighted log price returns on each constituent denoted by$R_{j,t}$. The return on the portfolio is given by:

$$R_{BB,t} = \sum_{j=1}^{19} w_{j,t-1} \times R_{j,t}$$

$w_{j,t-1}$ is the weight of company *j* at time *t*. This is the market value of company *j* in US dollars, as a fraction of the total market value of the entire portfolio in US dollars. Note that opening weights are closing values and from the previous period.

$R_{j,t}$ is quarterly return of company *j* between time *t* and time *t-1*.

[6] Bloomberg terminal ticker: BI LUXG

The weight for company *j*, at time *t*, is a fraction of the total market value of the portfolio in US dollars. A company's market value in US dollars, adjusted for the number of free floating shares, is divided by the total market value of the portfolio in US dollars, which also are adjusted for the number of free floating shares. Since both returns and weights are quarterly, the portfolio is rebalanced for new weights at the end of each quarter (see Table X in the Appendix for the mean weights for the entire period). In order to capture the pure returns, taxes and transaction costs are assumed to be zero.

3.1.2. Construction of the synthetic market (*CSMI*)

The portfolio is designed to mirror the market in the best manner. The global constituents of the *luxury portfolio* are listed in seven country-specific markets: France, Germany, Hong Kong, Italy, Switzerland, the UK and the USA.

The return on the *CSMI* is calculated as a sum of weighted logarithmic price returns on each country specific index,$R_{c,t}$, where weights are matching the ones in the *luxury portfolio.* The weight for each constituents of the *luxury portfolio* is multiplied by the return on the market, where the company is listed. The country-specific equity indices cover the corresponding markets in the most extensive way, i.e. has the highest total market value and/or number of constituents. The chosen market proxies are the following: *SBF120* for France, *Frankfurt Xtra* for Germany, *Hang Seng* for Hong Kong, *Milan Commit Global* for Italy, *SMI* for Switzerland, *FTSE100* for the UK and the *S&P* 500 for USA (see Table XI in the Appendix for a more extensive description). The return on the portfolio is therefore given by:

$$R_{CMSI,t} = \sum_{j=1}^{19} \sum_{c=1}^{7} \mathrm{w_{c,j,t-1}} \times \mathrm{R_{c,j,t}}$$

$w_{c,j,t-1}$ is the weight of company *j* which is listed in country *c* at time *t*. This is the market value of company *j* in US dollars, as a fraction of the total market value of the entire portfolio in US dollars. Note that opening weights are closing values and from the previous period.

$R_{c,j,t}$ is quarterly return on the country-specific indices of the market *c* where company *j* is listed, at time *t*

The logic behind the construction of the *CSMI* is to allow the investor to have a long position in company *j* and a short position in the corresponding market. Consequently, the investor holds the same weights in the luxury stocks and in the corresponding country-specific market proxies. For instance, if the weight of Luxottica in the *luxury portfolio* at time *t* is $w_{I:LUX,t-1}$, then the return on the Italian market corresponding to the weight of Luxottica is given by:

$$R_{I:LUX,Italy,t} = w_{I:LUX,t-1} \times R_{Milano\ Commit\ Global,t}$$

In addition, in the *luxury portfolio* one more company is listed on Italian market i.e. Tod's. Its weight at time *t* is given by $w_{I:TOD,t-1}$. Since there are only two Italian companies in the portfolio, the *total* weight of the Italian market in the synthetic market *CSMI*, at time *t*, is given by the sum of weights of Luxottica and Tod's:

$$w_{I,t-1} = \frac{\sum_{I=1}^{2} MVFF_{I,t-1}}{\sum_{j=1}^{19} MVFF_{j,t-1}} = \frac{MVFF_{I:LUX,t-1} + MVFF_{I:TOD,t-1}}{MVFF_{BB}}$$

Thus, the return for this particular example, i.e. the return on the Italian market, is calculated as follows:

$$R_{I,t} = \sum_{j=1}^{2} w_{I,j,t-1} \times R_{Milano\ Commit\ Global,t}$$

$R_{I,t}$ is the aggregated quarterly return on the Italian market, at time *t*.

$w_{I,t-1}$ is the weight of the Italian market, I, at time *t*; the market value of company *j* in US dollars as a fraction of the total market value of the entire portfolio in US dollars.

$R_{Milano\ Commit\ Global,t}$ is the quarterly return on the Italian market proxy, at time *t*.

3.1.3. Return from the long-short investment strategy

The return from the long-short strategy is simply the difference between returns from *luxury portfolio* and the synthetic market *CSMI*. The return on this strategy reflects the abnormal returns of the *luxury portfolio* against the market and is given by:

$$R_t = AR_t = R_{BB,t} - R_{CSMI,t}$$

The abnormal returns R_t are winsorized to 0.5% in order to remove the effect of extreme outliers, leaving the returns from the strategy relatively unaffected. Due to possible problems with the data, the returns are winsorized.

3.1.4. Macro and Micro variables

In order to explain the abnormal returns, the factors are divided into macro and micro factors. Macro factors aim to explain returns with the macroeconomic trends and conditions that have prevailed during the time-span. Several industry reports point out these factors as pivotal for the growth of the luxury goods industry. Micro factors aim to explain the returns with firm-specific variables consistent with established valuation methods.

3.1.4.1. Macro variables

The macro variables are the following: *disposable income year-on-year percentage change* for China, Russia and USA, the *year-on-year GDP percentage change* for China, Japan, Russia and USA, *number of tourists from China and Japan visiting the USA, consumer confidence index* for China, Japan and Russia, and *exchange rates* which is the amount of Euro, Swiss Franc, Hong Kong dollar, Japanese yen, Chinese Yuan and British pound for one unit of American dollar. Additionally, for the purpose of investigating if abnormal returns are correlated with sentiment, *sentiment dummies* for China, Japan and Russia are created. They are constructed so that it takes the value of 1 for high sentiment period and the value of 0 for a low sentiment period. (See section 8.2.1.2 in section B in the Appendix for more in-depth descriptions.) Due to lack of data on tourism to Europe, only tourism to the US is used. Since the American market for luxury goods is one of the largest, the variable is reasonable.

3.1.4.2. Micro variables

Micro variables are factors on the microeconomic level that affect stock returns. They comprise of company key ratios along with other measures specific for the luxury consumer goods companies. The variables are the following: *dividend yield, dividend pay-out ratio, earnings yield*, *book-to-market ratio, trading volume*, *interest coverage ratio* and *intangible assets-to-enterprise value ratio*. Each variable on the aggregate level is calculated as a sum of weighted key ratios. The variables are constructed in this way, in order to make them comparable with the *luxury portfolio,* whose returns they are to explain. Therefore, the weights used to comply the variables are the same as the ones used in the *luxury portfolio.* See the example below for the computation of *dividend yield*:

$$dividend\ yield_{luxury\ portfolio,t} = \sum_{j=1}^{19} w_{j,t-1} \times dividend\ yield_{j,t}$$

$dividend\ yield_{luxury\ portfolio,t}$ is dividend yield for the luxury portfolio at time t

$w_{j,t-1}$ is the weight of company *j* at time *t*. It is the market value of company *j* in US dollars, as a fraction of the total market value of the entire portfolio in US dollars. Note that opening weights are closing values and from the previous period.

dividend $\text{yield}_{j,t}$ is the dividend yield for company j between time *t-1* and *t*

Since the long-short strategy is based on value-weighted portfolios, the independent variable that explains returns, e.g. *dividend yield* for the portfolio, should also be weighted in the same manner. The *luxury portfolio* aims to reflect the luxury market by constituents' market capitalization. For this reason, all explanatory micro variables are assigned a corresponding weight in order to reflect their relative contribution. Thus, not weighting the key ratios is found to be incorrect because this would assign the individual ratios a too strong or too weak explanatory power of the abnormal returns.

3.1.4.2.1. Industry specifics: the Intangible assets-to-EV Ratio and the Interest Coverage Ratio

Dividend yield, dividend pay-out ratio and earnings yield are established valuation ratios that are widely used in literature and practise. There is, however, no extensive literature using intangible assets or brand value as a predictor for stock returns. The intention of using the *intangible assets-to-enterprise value ratio* is that it captures the brand value that widely characterizes the firms in the industry. According to Chevalier and Mazzalovo (2012) a significant number of luxury companies or brands are money-losing. In any other industry, these businesses would quickly either dissolved or merged following normal market dynamics. However in the luxury goods industry, brands that have been losing money for up to a decade are part of groups and allowed to continue their operations. This is a seemingly puzzling phenomenon. Although the brand may be unprofitable, its brand awareness among consumers may be tremendously high, and when the brand does become successful, its profits can be so high that they compensate for the many years of losses. Since the constituents in the *luxury portfolio* are global, it is likely that different methods have been used for valuing the brand value. The specifics of these techniques are however left unexplored and it is merely stated that they could be applied. Assuming that the method for valuing intangible assets is the same for all companies, their values are taken as they are reported on the balance sheets. Following the

specific market conditions for the luxury goods industry, it would be interesting to look at the credit position of the companies as it is assumed they leverage up to cover up losses. A proxy for the credit position is the *interest coverage ratio.* Thereby the aim is to investigate whether these industry specifics concern investors.

3.1.5. Regressions

The abnormal returns are regressed on independent variables by Ordinary Least Square regressions (OLS). The regressions are divided into two stages, Stage I and Stage II. Both are controlled for company fixed effects and when needed, heteroscedasticity.

Since, the companies in the luxury portfolio differ between each other in various aspects such as size, number of brands, sectors of operation, etc., the regressions are controlled for company fixed effects. There are two techniques applied: regressing abnormal return on independent variables with company dummies, and by absorbing company effects. When regressing with company dummies, it is possible to additionally observe the effect of an independent variable on the individual company, whereas when absorbing company effects, the results are shown on the aggregate level only. Disregarding this difference, both techniques give the same results.

Moreover, in order to decide whether a regression should be robust, the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity, available through Stata, is performed. This is done in order to make sure that the t-values and the coefficients of the regressions are not biased. The null hypothesis of the test is that residuals are homoscedastic. In the case where the null hypothesis is rejected at the 5% significance level, the regression is robust. First a regression is run, then tested for heteroscedasticity and in case the test shows positive results, the regression is re-run controlling for robustness.

Prior to running the regressions in the Stage I, adjustments to macro and micro variables are made. Adjusted macro variables are GDP growth and tourism. Because of market inefficiency, it takes time for the market to react on new information. In this study, it is assumed that the reaction time is one period, i.e. one quarter. For this reason, the *year-on-year GDP percentage change* is lagged. *Tourism* data is already lagged 4-6 months and c*onsumer confidence* indicates the future. Therefore, the variables do not need additional time adjustments. *Tourism* is logged. For the same implication of market inefficiency, all micro variables, but volume, are also lagged with one period to make use of their possible predictability of stock returns, following the methods used by Fama and French (1998) as well as Lamont (1998).

As mentioned before, the regressions are divided into two stages. In Stage I univariate regressions are run for each variable. As previously stated, two kinds of regressions are run for each variable in order to control for company fixed effects, i.e. with company dummies and by absorption. All variables significant at the minimum of 10% level are qualified to Stage II. Variables that are not significant are removed.

In Stage II, multivariate regressions are run. The significant independent variables are controlled for multicollinearity by the variance inflation factors test (VIF) available through Stata. The decision rule is that variables with *VIF* smaller than 10 have an acceptable level of collinearity and can be kept for further use in a multivariate model.

3.1.6. A comment on the sentiment dummy

The luxury market could to a large extent be driven by irrationality of consumers and investors. Therefore, prevailing sentiment in China, Japan and Russia is looked at as a separate factor. If the consumers are positive about the future of the economy they live in, their financial position along with future purchasing power, it is likely that a lot of positive news about these economies will reach the investors. It is worth noting, that the news highlights the importance of Japan, China and other emerging markets in the sales growth of the luxury consumer goods companies. Consequently, as the investors see that people become more confident about the future of their economy and purchasing power, they also become more positive about future company sales and thus the stock price. In this manner, the consumer sentiment and investor sentiment are intertwined. For the purpose of regressions, the actual level of consumer confidence is used. However, in order to investigate whether the consumer confidence level has any effect on abnormal returns, each country is assigned a sentiment dummy, where 0 indicates a low and 1 indicates a high. The purpose is to investigate whether the abnormal returns differ in high and low sentiment periods. This is done by a two-sample Wilcoxon rank-sum Mann-Whitney test.

3.2. Objective B

In order to understand what way the company-specific characteristics of the luxury stocks such as *dividend yield* differ from the ones of the markets, a series of two sample t-tests for independent samples (unpaired) are run. It is interesting, because since the luxury industry seems to be unique, the differences could help explain the high returns. The *luxury portfolio* is here compared with the global market indicated by *MSCI World*. *MSCI World* is chosen as the market benchmark, because unfortunately the data was not available for the synthetic market *CSMI.* The variables tested are the following: *dividend yield*, *dividend pay-out ratio*, *earnings yield* and *book-to-market.* For each variable a value for *luxury portfolio* is tested against the value for *MSCI World.*

When running a t-test, there are two possible options regarding equivalence of sample variances. They are either they are equal or not. Therefore, prior to running two sample t-tests, variance ratio test is run on each variable-pair in order to examine whether the variances are to be equal or not in the t-test.

Moreover, t-test assumes normal distribution. For this reason, the study also assumes that the means of the samples follow normal distribution. According to the Central Limit Theorem, all samples follow normal distribution when the number of observations is high enough, i.e. minimum of 30. Since, the number exceeds 30, it is reasonable to assume a normal distribution of the sample.

4. Data

Data for the variables have been obtained from Bloomberg and Thompson Reuter's Datastream. Variables: *year-on-year GDP percentage change* for Russia, Japan, China and USA, *number of tourists from China and Japan visiting the USA, consumer confidence* for Russia, Japan and China, *disposable income year-on-year percentage change* for USA, China and Russia are downloaded from secondary data provider Bloomberg. Data for constructing variables: *dividend yield, dividend pay-out ratio, earnings yield, book-to-market ratio, trading volume, interest coverage ratio* and *intangible assets-to-enterprise value ratio* are downloaded from Datastream. Further, data for constructing the synthetic market *CSMI* (i.e. price level for SBF120, FTSE100, SMI, Hang Seng, S&P 500, Frankfurt Xtra and Milano Commit Global), *exchange rates* and *market values adjusted for number of free floating shares* for all 19 constituents in the *luxury portfolio* are also obtained from Datastream. For the purpose of t-tests, *P/E, price-to-book, dividend yield* and *dividend pay-out ratio* for *MSCI World* are downloaded from Bloomberg.

Data is quarterly for all variables; and the time-span is between Q2 2002 and Q4 2013. Note that some variables are not available for the entire time-span, e.g. *tourism* is available from Q4 2002 and *consumer sentiment* for Japan from Q2 2004.

For the purpose of calculating the *CSMI* and the *luxury portfolio*, and consequently the cumulative return on the long-short strategy, daily data has been used for the following variables: *exchange rates*, *market values adjusted for number of free floating shares* for all 19 constituents in the luxury portfolio, and price index for SBF120, FTSE100, SMI, Hang Seng, S&P 500, Frankfurt Xtra and Milano Commit Global.

The data set compiled is a strongly balanced panel data, consisting of a total of 855 individual observations for micro variables. Unfortunately, at the company level, data was incomplete due to missing values, e.g. intangible assets. For the macro variables, there are on average 45 observations. Since the data is repeated over 19 companies that makes up 855 recurring observations. For a more detailed description of the data, see Table XII in the Appendix.

5. Results

5.1. Objective A

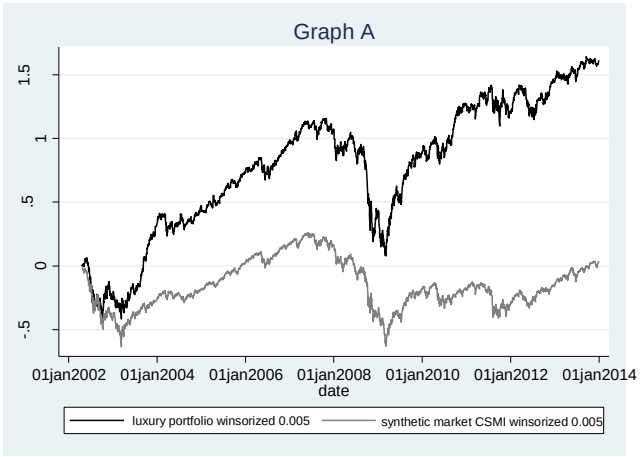
5.1.1. Descriptive statistics

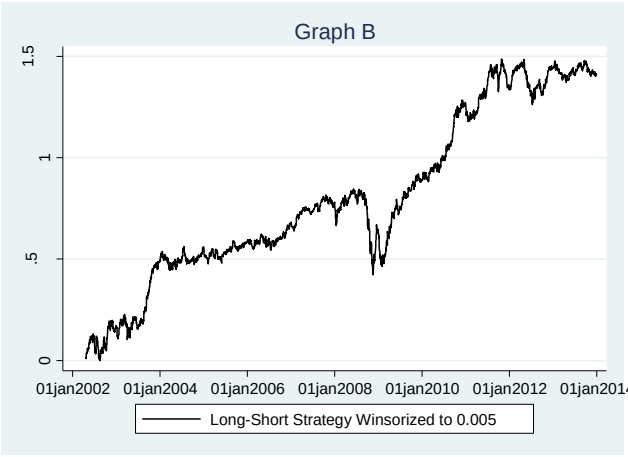
5.1.1.1. The Long-Short Strategy: Long the luxury portfolio and short the market

The graphs below illustrate daily cumulative returns on the *luxury portfolio* and the synthetic market *CSMI*. The returns on the *luxury portfolio* are winsorized to 0.5%. In Figure 1a, Graph A displays cumulative returns on the *luxury portfolio* and the synthetic market *CSMI*. Graph B shows the cumulative abnorml returns from the long-short strategy. It is assumed that the investor opens a long position in the *luxury portfolio* in April 2002, and shorts the synthetic market *CSMI*. The investor closes their positions in December 2013. The visual illustration clearly shows that the strategy yields a positive return. For graphs of unwinsorized results, see Appendix Figure 1B.

FIGURE 1A.

GRAPH A SHOWS THE DEVELOPMENT OF THE SYNTHETIC MARKET *CSMI* AND THE *LUXURY PORTFOLIO* FROM APRIL 2002 TO DECEMBER 2013, WHERE DAILY ABNORMAL RETURNS ON *LUXURY PORTFOLIO* ARE WINSORIZED BY 0.5%. GRAPH B SHOWS CUMULATIVE ABNORMAL RETURN FOR THE LONG-SHORT STRATEGY. IT IS ASSUMED THAT IN APRIL 2002, THE INVESTOR OPENS LONG POSITION IN THE L*UXURY PORTFOLIO* AND SHORTS THE SYNTHETIC MARKET *CSMI*. THE STRATEGY IS HELD TILL DECEMBER 2013. DAILY ABNORMAL RETURNS ON THE *LUXURY PORTFOLIO* ARE WINSORIZED BY 0.5%. THIS IS IN ORDER TO SMOOTH OUT CUMULATIVE ABNORMAL RETURNS AND TAKE AWAY POTENTIAL OUTLIERS.





Daily returns are used only for the graphing purposes. In the study, quarterly data is examined due to availability and noise issues. All macro variables, such as the *GDP growth*, are reported on a quarterly frequency. In order to make it possible to run multivariate regressions, all independent variables need to have the same frequency. Quarterly frequency allows for the most extensive analysis. Moreover, high frequency data, such as daily data, are subject to noise which leads to biases and disturbances in the results.

Assuming that the investor implements the long-short strategy in Q3 2002 and keeps the position till the end of 2013, the cumulative return on the strategy is 42.49%. By merely looking at the descriptive statistics (see Table I), it is evident that the strategy yields a positive return. The mean return of the strategy is positive, and equals to 0.94% per quarter with a standard deviation of 0.100.

High standard deviation of the *luxury portfolio* is also associated with a high potential upside and a low downside. The extreme values are taken as outliers and therefore, the data is winsorized to 0.5%. The standard deviation for unwinsorized abnormal returns is 0.100, while for winsorized is 0.067. The minimum return on the strategy is as low as -41.27%. This is an outlier and after winsorizing the minimum value is still negative and equals to -11.04%. Moreover, the maximum abnormal return is as high as 24.94% for unwinsorized returns. When the abnormal returns are winsorized, the maximum quarterly return is still satisfactory and equals to 13.33%.

The standard deviation for the *luxury portfolio* is higher than the standard deviation of the synthetic market *CSMI*, 0.158 and 0.097 respectively. This implies that the *luxury portfolio* is riskier than the market, something that could be caused by the homogenous nature of the constituents. Higher volatility of the portfolio leads to a higher risk premium investors require for holding it.

Table I
Descriptive Statistics for the Long-Short Strategy

TABLE I SHOWS DESCRIPTIVE STATISTICS OVER THE LONG-SHORT STRATEGY. OVER THE TIME-SPAN OF Q4 2002 TO Q4 2013, 45 OBSERVATIONS ARE RECORDED. ASSUMING THAT THE INVESTOR IMPLEMENTS THE LONG-SHORT STRATEGY IN Q3 2002 AND HOLDS THE PORTFOLIO TILL THE END OF 2013, THE CUMULATIVE RETURN ON THE STRATEGY IS 42.49%. THE MEAN RETURN OF THE STRATEGY IS POSITIVE, 0.94% PER QUARTER WITH STANDARD DEVIATION OF 0.10. THE MINIMUM RETURN ON THE STRATEGY IS AS LOW AS -41.27%. THIS IS AN OUTLIER AND AFTER WINSORIZING THE ABNORMAL RETURNS TO 0.5%, THE MINIMUM VALUES EQUALS TO ONLY - 11.04%. THE MAXIMUM ABNORMAL RETURN IS AS HIGH AS 24.94% FOR UNWINSORIZED RETURNS. WHEN THE ABNORMAL RETURNS ARE WINSORIZED TO 0.5%, THE MAXIMUM QUARTERLY RETURN IS 13.33%. STANDARD DEVIATION FOR UNWINSORIZED ABNORMAL RETURNS IS 0.100, WHILE FOR WINSORIZED IS 0.067.THE STANDARD DEVIATION FOR THE LUXURY PORTFOLIO IS HIGHER THAN THE STANDARD DEVIATION OF THE SYNTHETIC MARKET CSMI, 0.158 AND 0.097 RESPECTIVELY.

Descriptive Statistics for Long-Short Strategy

variable	N	mean	median	min	max	sd
Luxury portfolio	45	.0153	.0477	-.4179	.2932	.1577
CSMI	45	.0059	.0419	-.2803	.1408	.0974
AR	45	.0094	.0084	-.4127	.2494	.1001
AR005	45	.0144	.0084	-.1104	.1333	.0669
CAR	45	.1024	.0672	-.2412	.4755	.2131
CAR005	45	.2744	.1927	-.0941	.6996	.2384

5.1.1.2. Descriptive statistics for the macro variables

Table II and XV (in the Appendix) show descriptive statistics for the macro variables. Chinese consumers are on average positive about the future of the economy and their financial situation. The sentiment dummy shows 817 positive observations out of 855 observations. On the contrary, Russian and Japanese consumer confidences are negative. The sentiment dummy for Russia shows 798 negative out of 855 observations. For Japan, all observations are negative. On average, the level of Chinese consumer expectations are positive with a mean of 107.70, where 100 is neutral and everything above is positive. On average, the level of Russian consumer expectations are negative with a mean of -9.40, where 0 is neutral and everything below is negative. On average, the level of Japanese consumer expectation is negative with a mean of 41.63, where 50 is neutral and everything below is negative.

China has the highest mean year-on-year GDP growth of 9.49%. At the same time, China has the lowest standard deviation and the percentage change in GDP is positive throughout the period. China is the only country to show this. When looking at the year-on-year change in disposable income per capita for China a positive trend is noted. The mean is 15.21%,

and the change of the disposable income per capita is positive for the whole period. This could be a direct implication of the recent boom in the Chinese economy, which creates favourable conditions for the luxury industry. The positive change in disposable income shows indeed that the country becomes richer. As earlier mentioned in the study, the number of ultrahigh and high net worth individuals is growing. However, it is not reasonable to say that the wealth of high net worth individuals is able to drive up the average per capita disposable income in an entire country. The industry reports highlight the importance of the growing middle class in emerging countries, its growth could be associated with a higher income per capita.

Another emerging country studied is Russia. The change in disposable income per capita, is on average 18.87%, and the change is positive during the entire period. The average change in GDP is 4.47% per quarter. However, unlike China the change takes both negative and positive values.

For the developed countries, year-on-year GDP growth and per capita disposable income growth are not as high as for the emerging economies. In the case of Japanese year-on-year GDP growth, the average is negative.

For the exchange rates, the result for JPY/USD rate is interesting where the standard deviation is as high as 14.333 with a minimum rate of 76.65 and maximum rate of 122.63. Another rate worth noting is RMB/USD with a standard deviation of 0.800. During the time-span the currency was pegged and unpegged back and forth to the US dollar and a basket of currencies.

The number of Japanese and Chinese tourists visiting the USA differs. On average there are more Japanese tourists visiting the country. However, the standard deviation of Chinese tourists is higher and amounts to 0.566. The trend for Chinese tourists is upward-sloping, and that could explain the high standard deviation. Because of the upward-going trend, the number of tourists in 2002 is much lower than in 2013. It is likely that this development is connected to GDP growth and per capita income growth in China.

Table II

Descriptive Statistics For The Macroeconomic Variables

THE NUMBER OF JAPANESE AND CHINESE TOURISTS VISITING THE USA DIFFERS. ON AVERAGE THERE ARE MORE JAPANESE TOURISTS VISITING THE COUNTRY. HOWEVER THE STANDARD DEVIATION OF CHINESE TOURISTS IS HIGHER AND AMOUNTS TO 0.566. FOR THE EXCHANGE RATES, THE RESULT FOR JPY/USD RATE IS INTERESTING WHERE THE STANDARD DEVIATION IS AS HIGH AS 14.333 WITH A MINIMUM RATE OF 76.65 AND MAXIMUM RATE OF 122.63. ON AVERAGE, THE LEVEL OF CHINESE CONSUMER EXPECTATIONS ARE POSITIVE WITH A MEAN OF 107.70, WHERE 100 IS NEUTRAL AND EVERYTHING ABOVE IS POSITIVE. ON AVERAGE, THE LEVEL OF RUSSIAN CONSUMER EXPECTATIONS ARE NEGATIVE WITH A MEAN OF -9.40, WHERE 0 IS NEUTRAL AND EVERYTHING BELOW IS NEGATIVE. ON AVERAGE, THE LEVEL OF JAPANESE CONSUMER EXPECTATIONS ARE NEGATIVE WITH A MEAN OF 41.63, WHERE 50 IS NEUTRAL AND EVERYTHING BELOW IS NEGATIVE. CHINA HAS THE HIGHEST MEAN YEAR-ON-YEAR GDP GROWTH OF 9.49%. AT THE SAME TIME, CHINA HAS THE LOWEST STANDARD DEVIATION AND THE PERCENTAGE CHANGE IN GDP IS POSITIVE THROUGHOUT THE PERIOD. CHINA IS THE ONLY COUNTRY TO SHOW THIS. THE MEAN IS 15.21%, AND THE CHANGE OF THE DISPOSABLE INCOME PER CAPITA IS POSITIVE FOR THE WHOLE PERIOD. THE CHANGE IN RUSSIAN DISPOSABLE INCOME PER CAPITA IS ON AVERAGE 18.87%, AND THE CHANGE IS POSITIVE FOR THE ENTIRE PERIOD. THE AVERAGE CHANGE IN GDP IS 4.47% PER QUARTER. HOWEVER, UNLIKE CHINA THE CHANGE TAKES BOTH NEGATIVE AND POSITIVE VALUES. FOR THE DEVELOPED COUNTRIES, YEAR-ON-YEAR GDP GROWTH AND PER CAPITA DISPOSABLE INCOME GROWTH ARE NOT AS HIGH AS FOR THE EMERGING ECONOMIES. IN THE CASE OF JAPANESE YEAR-ON-YEAR GDP GROWTH, THE AVERAGE IS NEGATIVE.

Descriptive Statistics Over The Macro Variables

	N	mean	median	sd	min	max
log (Japanese Tourists to USA)	43	13.6589	13.6804	.1488	13.1780	13.8945
log (Chinese Tourists to USA)	43	11.9039	11.8487	.5658	10.6262	13.2049
EUR/USD	45	.7722	.7585	.0737	.6347	1.0156
CHF/USD	45	1.1229	1.1322	.1603	.8486	1.4815
HKD/USD	45	7.7745	7.7688	.0200	7.7380	7.8161
JPY/USD	45	101.6494	103.6800	14.3334	76.6500	122.6250
RMB/USD	45	7.2985	7.0116	.7995	6.1220	8.2774
GBP/USD	45	.5910	.6068	.0567	.4895	.6956
USA GDP yoy change	45	.0185	.0200	.0193	-.0410	.0440
Japan GDP yoy change	45	-.0035	.0010	.0250	-.0920	.0390
Russia GDP yoy change	45	.0447	.0600	.0469	-.1120	.0920
China GDP yoy change	45	.0949	.0960	.0148	.0620	.1240
USA Disposable Income per capita yoy change	45	.0110	.0111	.0141	-.0214	.0350
China Disposable Income per capita yoy change	45	.1521	.1341	.0541	.0711	.3109
Russia Disposable Income per capita yoy change	45	.1887	.2060	.0815	.0650	.3450
China Consumer Expectation	45	107.7044	108.4	4.2392	99	114.7000
China Sentiment Dummy	45	.9556	1	.2062	0	1
Russia Consumer Expectation	45	-9.3977	-8.0000	7.3333	-35.0000	1.0000
Russia Sentiment Dummy	45	.0667	0	.2496	0	1
Japan Consumer Expectation	39	41.6333	41.6000	5.5576	28.2000	49.3000
Japan Sentiment Dummy	39	0	0	0	0	0

5.1.1.3. Descriptive statistics for the micro variables

Table IIIa shows descriptive statistics for *earnings yield, book-to-market ratio*, log of *trading volume, interest coverage ratio, intangible asset-to-enterprise value ratio, dividend yield, dividend pay-out ratio*. All variables are on the aggregate level, e.g. the displayed *earnings yield* is the weighted sum of all constituents' earnings yield.

Earnings yield, dividend yield and *dividend pay-out ratio* have low standard deviations implying that the levels are not subject to big fluctuations. The mean *earnings yield* is 0.063 with the standard deviation of 0.014. The portfolio does not pay a lot of dividends, i.e. the average dividend yield is 1.62%, with minimum of 1.01% and maximum of 2.55%. Low dividend yield could attract tax-averse investors, who do not want to pay a lot of taxes on dividends. While the dividend yields are quite small, the mean dividend pay-out ratio on the aggregated portfolio level amounts to 32.26% with a standard deviation of 0.061. An explanation for simultaneous presence of low dividend yield levels and high dividend pay-out ratios could be high stock prices of the constituents.

Book-to-market takes the mean value of 0.81. The values of the variable vary between 0.20 and 1.52. This spread could be explained by the number of brands a company owns. The companies have different number of brands with varying brand value. Note that Luk Fook has no reported intangible assets between Q1 2002 and Q1 2005. Thus the company has no observations for the *intangible assets-to-enterprise value ratio*. *Trading volume* of the portfolio varies over the time period. The mean is 1092 million per quarter. Interesting to note is that trading volume peaks between 2007 and 2009, which is the period during which the recent financial crisis occurred. Descriptive statistics and analysis for each company individually can be found in the Appendix, see Table IIIb.

Table IIIa
Descriptive Statistics For Micro Variables

THE MEAN *EARNINGS YIELD* IS 0.063 WITH A STANDARD DEVIATION OF 0.014. THE PORTFOLIO DOES NOT PAY HIGH DIVIDENDS, AS THE AVERAGE *DIVIDEND YIELD* IS 1.62% WITH MINIMUM 1.01% AND MAXIMUM 2.55%. LOW *DIVIDEND YIELDS* ARE ATTRACTIVE TO INVESTORS TAX-AVERSE INVESTORS. ON THE OTHER HAND, THE MEAN *DIVIDEND PAY-OUT RATIO* ON THE AGGREGATED PORTFOLIO LEVEL IS 32.26% WITH A STANDARD DEVIATION OF 0.061. AN EXPLANATION FOR THE LOW DIVIDEND YIELDS AND HIGH DIVIDEND PAY-OUT RATIOS COULD BE HIGH STOCK PRICES OF THE CONSTITUENTS. MEAN VALUE OF *BOOK-TO-MARKET* IS 0.81. THE RANGE IS BETWEEN 0.20 AND 1.52. THIS SPREAD COULD BE EXPLAINED BY THE DISPERSION OF THE NUMBER OF BRANDS A COMPANY OWNS. *TRADING VOLUME* OF THE PORTFOLIO VARIES OVER THE TIME PERIOD. SINCE *TRADING VOLUME* IS LOGGED, THE MEAN VALUES THE VARIABLES TAKES IS 52.02, CORRESPONDING TO AN AVERAGE QUARTERLY *TRADING VOLUME* OF CIRCA ONE BILLION. INTERESTINGLY, THE *TRADING VOLUME* PEAKS BETWEEN 2007 AND 2009, THE PERIOD DURING WHICH THE RECENT FINANCIAL CRISIS OCCURRED.

Descriptive statistics for micro variables

	N	mean	median	sd	min	max
Earnings yield	45	0.0631	0.0575	0.0143	0.0429	0.1082
Book-to-Market	45	0.8116	0.8009	0.2696	0.1973	1.5179
Trading volume	45	1091.8480	986.0590	301.5080	723.8360	2022.3780
Interest Coverage Ratio	45	116.6246	101.4750	53.5560	50.4710	231.3682
Intangible Asset-to Enterprise Value ratio	45	15.9660	16.1670	1.3751	10.9542	17.3891
Dividend yield	45	0.0162	0.0157	0.0038	0.0101	0.0255
Dividend Pay-out Ratio	45	0.3226	0.3270	0.0607	0.1999	0.4303

5.2. Regression Results

5.2.1. Results from Stage 1 Regressions

5.2.1.1. Macro variables

5.2.1.1.1. Log of total number of tourists coming to USA from Japan and China

The number of the tourists is taken from ITA Office of Travel and Tourism Industries and is already lagged four to six months. Therefore, further time adjustments are not needed. As the number of Japanese tourists increase with one percent, the return on the strategy increases as well. This means that the number of Japanese tourists visiting the US has a positive impact on the sales of the companies included in the *luxury portfolio*. The coefficient on its own explains 0.2% of the variation.

Chinese tourism to the US appears to have a positive effect on sales of the luxury companies and hence higher returns on the strategy. Tourist from mainland China travel abroad to save on taxes and to avoid companies' pricing strategies. According to *The Economist*, import tariffs and consumption taxes, and higher pricing strategies, can increase prices in China up to 50%. Chinese tourists buy a lot not for themselves, but rather for the purpose of *gift giving.* This is a deeply rooted tradition in the society and the luxury goods have become the most desirable *gifts.* However, tourism to the US does not give any significant results. One explanation for the insignificance of the results could be that the Chinese tourists travel to other destinations like Hong Kong and Europe in order to shop.

It is worth observing, that the US is still the biggest market for luxury consumption and hence the tourism for the purpose of *shopping* is a well-known and widely practised concept. However, tourism to another essential destination, i.e. the cradle of luxury, Europe, could not be investigated due to lack of data. Various sources report that Asian tourism and spending in Europe is substantial and important for the luxury industry.

5.2.1.1.2. Disposable Income year on year percentage change for China, Russia and USA

Because of the market inefficiency, year-on-year changes are lagged one period. China is the only country that gives a significant result. The coefficient is significant at 0.1% level, though in the opposite direction than predicted, i.e. it is negative. This means that as the standard of living in the country becomes higher, the abnormal returns decrease slightly. This is not consistent with the reports of Bain & Co. According to them, growing income levels and thus emerging middle class should positively drive sales and thus returns. An explanation for this

phenomenon is that the fraction of population with lower income level become richer yet still cannot afford buying luxury goods. Consequently, the income gap closes, but it has no positive effect on abnormal returns.

5.2.1.1.3. Consumer Confidence Index for China, Japan and Russia

Sentiment is represented by consumer confidence. Since the respondents express opinions about the future of the economy, the variables are not lagged. All coefficients are positive, meaning that a higher sentiment level results in higher returns on the strategy. An optimistic view on the future of the economy and the financial situation of the household is a positive signal for investors. This could mean future growth of sales of the luxury companies, thus an expected stock price increase. As the nation believes that its purchasing power increases, it becomes more prone to add to the usual basket of goods something unusual, e.g. a luxury wallet and hence increase the aggregate consumption of luxury goods. Japan shows the only significant result at the 0.1% significance level. This country on its own explains as much as 3.5% of the variation in returns on the long-short strategy. Given that the Japanese have a quite negative outlook on their economy during the examined period, and given the actual state of the economy, this is an interesting result. Japan is a very affluent country and the standard of living there is high. Therefore, even if the outlook on the future of the domestic economy is negative, the Japanese can still afford luxury goods and hence consumption is not affected into a large extent. The results for China and Russia are positive, though insignificant.

With the aims of investigating further the implications of consumer expectations on the stock returns, a two-sample Wilcoxon rank-sum Mann-Whitney test is performed to check if there is any difference in abnormal return for high sentiment (1) and low sentiment (0). It is interesting since the test differentiates between *high* and *low* sentiments, whereas the sentiment *variables* used in regressions do not state explicitly if the sentiment is high or low. For example, the sentiment in Japan could be 44, 45, 46 and so on, but all of these values are still under 50 and show negative sentiment. Wilcoxon rank-sum Mann-Whitney test checks if there is any difference in abnormal returns for the high and low sentiment. (See Table XIV in the Appendix.)

The null hypothesis assumes that there is no difference. For both China and Russia, the null hypothesis is rejected at the 1% significance level. The test further shows that when Chinese consumers have positive views on the future economy, the abnormal return are indeed high. The results are reversed for Russia. The results are driven up by the negative sentiment, which seems somewhat illogical. This could be explained by the number of positive and negative sentiment observations for both economies. Chinese consumers are much more

positive than the Russian. For China, 817 out of 855 observations indicate positive sentiment. For Russia, there are only 57 positive sentiment observations. The number of observations can therefore explain the skewness of the results. Unfortunately, the test could not be made for Japan. The reason is that Japanese consumers seem to be quite pessimistic and all observations show negative sentiment for the sample.

5.2.1.1.4. GDP year-on-year percentage change for China, Japan, Russia and USA

Since the efficient market hypothesis is assumed not to hold, the *year-on-year GDP change* is lagged by one period. The coefficients for China, Japan and USA are positive, meaning that as the GDP increases the returns on the long-short strategy rise. However, only the results for Japan are significant at the 10% significance level. These results are satisfying as a positive GDP growth is highly likely to increase the disposable income of households. The implications of increased disposable income are discussed in section 5.2.1.1.2. On the contrary, the results for Russia are not as satisfying. The coefficient is negative, which means that as *year-on-year GDP change* increases by one percent, the abnormal returns of the portfolio decrease slightly. This result is contradictory to what was expected. A possible explanation is that the influence of Russian consumers is not as significant as initially thought. Note that consumption is only one of the components of GDP. Other constituents are investments, government spending and net exports. Therefore, an increase in GDP does not necessarily have to suggest an increase in consumer consumption. For example, a higher level of investments undertaken by the government could be an explanation. This could be the case for Russia.

5.2.1.1.5. Exchange rates

The variable is the amount of Euros, Swiss Francs, Hong Kong dollars, Japanese yen, Chinese Yuan and British pounds for one American dollar. Controlled for company fixed effects, the results become insignificant for all currencies expect for Hong Kong dollar (HKD/USD). For HKD/USD the coefficient is negative, meaning that as the Hong Kong dollar depreciates relative to the US dollar by one unit, the abnormal returns of the luxury portfolio decrease by 0.13 units. The hypothesis is that as the dollar depreciates relatively to other currencies, it becomes cheaper to purchase goods priced in American dollars which drives up sales that result in increased future earnings and stock returns of the *luxury portfolio*. However, the *exchange rates* do have a global influence on the equity market. Consequently, not only the *luxury portfolio* is affected, but also the *CSMI*, as both are US dollar denominated. Therefore, the return on the long-short strategy might not be impacted by the exchange rate fluctuation in such

a large extent as predicted. In the portfolio, only one company, Luk Fook, is traded in Hong Kong dollars. However, the weight of the company in the portfolio is too small to drive the results.

Table IV
Regression Results for Individual Macroeconomic Variables

TABLE IV SHOWS RESULTS OF 12 REGRESSIONS MADE ON MACRO-VARIABLES: LOG(JAPANESE TOURISM TO USA), LOG(CHINESE TOURISM TO USA); US, CHINESE AND RUSSIAN NOMINAL DISPOSABLE INCOME YEAR-ON-YEAR PERCENTAGE CHANGE IS LAGGED ONE PERIOD. CHINESE, RUSSIAN AND JAPANESE CONSUMER EXPECTATIONS ABOUT THE ECONOMY; US, RUSSIAN, JAPANESE AND CHINESE GDP YEAR-ON-YEAR PERCENTAGE GROWTH LAGGED ARE ONE PERIOD. OVERALL, THE COEFFICIENTS ARE VERY CLOSE TO ZERO AND THE SIGNIFICANCE LEVEL IS NOT HIGH. THERE ARE ONLY FOUR SIGNIFICANT RESULTS. JAPANESE TOURISM IS SIGNIFICANT AT 5% SIGNIFICANCE LEVEL AND THE COEFFICIENT IS POSITIVE. THE PERCENTAGE YEAR-ON-YEAR CHANGE IN CHINESE NOMINAL DISPOSABLE INCOME IS SIGNIFICANT AT THE 0.1% LEVEL. THE COEFFICIENT IS POSITIVE AND AMOUNTS TO 0.0503. THE CONFIDENCE OF JAPANESE CONSUMERS IS POSITIVE AND SIGNIFICANT AT THE 0.1% SIGNIFICANCE LEVEL.RUSSIA GDP YEAR-ON-YEAR PERCENTAGE CHANGE IS SIGNIFICANT AT 5% SIGNIFICANCE LEVEL.

Abnormal Returns Winsorized to 0.5% regressed on individual variables

	Coefficient	Constant	Adj. R-sq	N
log (Japanese Tourist)	0.0101*	-0.137*	0.002	817
	(2.56)	*(-2.54)*		
log (Mainland China)	0.00109	-0.0120	-0.005	817
	(0.99)	*(-0.90)*		
US Disposable Income Lagged	-0.0306	0.00167*	0.006	836
	(-0.77)	*(2.52)*		
Chinese Disposable Income Lagged	-0.0503***	0.00899***	0.037	836
	(-5.17)	*(5.62)*		
Russian Disposable Income Lagged	-0.00269	0.00184	0.005	836
	(-0.36)	*(1.30)*		
Chinese Consumer Confidence	0.000251	-0.0261	0.001	855
	(1.80)	(-1.72)		
Japanese Consumer Confidence	0.000529***	-0.0211***	0.035	741
	(4.97)	*(-4.61)*		
Russian Consumer Confidence	0.000113	0.00205*	-0.000	855
	(1.28)	*(2.29)*		
US GDP yoy % change Lagged	0.0342	0.000694	0.007	836
	(1.03)	*(0.84)*		
Japan GDP yoy% change Lagged	0.0302	0.00144**	0.007	836
	(1.35)	*(2.67)*		
Russian GDP yoy % change Lagged	-0.0269*	0.00254***	0.012	836
	(-2.55)	*(3.70)*		
Chinese GDP yoy% change Lagged	0.0135	0.0000369	0.005	836
	(0.39)	*(0.01)*		
EUR/USD	-0.00578	0.00545	-0.00223	855
	(-0.53)	*(0.66)*		
GBP/USD	-0.00135	0.00178	-0.00291	855
	(-0.14)	*(0.32)*		

RMB/USD	-0.00291	0.00164	-0.00292	855
	(-0.12)	*0.31)*		
JPY/USD	-0.0000181	0.00283	-0.00267	855
	(-0.46)	*(0.72)*		
CHF/USD	-0.00309	0.00446	-0.00198	855
	(-0.75)	*(1.00)*		
HKD/USD	-0.131***	1.021***	0.0240	855
	(-4.68)	*(-4.69)*		
t-statistics in parentheses				
* p<0.05	** p<0.01	*** p<0.001		

5.2.1.2. Microeconomic variables

5.2.1.2.1. Dividend yield

The log *dividend yield* is lagged with one period. Table V shows that the result on the aggregate portfolio level is significant at the 5% level, and explains 3.10% of the variance in abnormal returns. The coefficient is positive meaning that a higher *dividend yield* implies a higher abnormal return for the portfolio. The results were expected and are consistent with previous research and established theory (Fama and French 1998).

Further, it is interesting to observe what effect *dividend yie*ld has on each constituent of the *luxury portfolio* individually. Therefore company fixed effect regression with company dummies is run. Results are significant at the 10% level for ten of the nineteen companies (see Table XIII in the Appendix). For the ten companies, the coefficient is positive, which once again is consistent with previous research.

5.2.1.2.2. Dividend pay-out ratio

The univariate regression with the *dividend pay-out ratio* as the independent variable shows significant results at the 10% level. Dividend pay-out ratio explains 2.30% of the variance in abnormal returns on the portfolio level and the coefficient is positive.

Further investigation for each firm, by running a fixed effect regression with company dummies, finds that only seven firms show significant results at the 10% level. Four of these are significant at the 5 % level (see Table XIII in the Appendix for results of each companies). For those companies that show significant results, the coefficients are positive.

5.2.1.2.3. Earnings yield

At the aggregate portfolio level, the lagged *earnings yield* is significant at the 10% level and explains 2% of the variance in abnormal returns. The coefficient is positive. Looking at each firm, eight firms are significant at the 10% level and have positive coefficients. According to established theory, investors should seek stocks with low price-to-earnings ratios, i.e. value stocks, because of the prospect of yielding higher returns. *Earnings yield* is the inverse of the price-to-earnings ratio. Implicitly, the higher the *earnings yield*, the higher the expected returns.

5.2.1.2.4. Book-to-market

The lagged *book-to-market ratio* is significant at the 1% level and explains 4.90% of the variance in abnormal returns. The coefficient is positive. On the company level, eleven companies are significant at the 5% level or less, and two are significant at the 10% level. According to established theory, investors should seek stocks with high book-to-market ratios, i.e. value stocks, as a high ratio could mean that the stock is undervalued, which in turn would yield a higher return. This ratio is especially interesting for this industry due to the importance of brand value.

5.2.1.2.5. Trading volume

Trading volume is significant the 0.1% level and has a negative coefficient. It explains 1.3% of the variation of abnormal returns. This makes sense as a liquidity increase leads to a smaller liquidity premium. More liquid stocks eliminate a large bid-ask spread.

5.2.1.2.6. Interest coverage ratio and intangible assets-to-enterprise value ratio

Interest coverage ratio is not significant on the aggregate level. It may be the case that a company's credit position is of less importance for an equity investor. *Intangible assets-to-enterprise value ratio* is not significant on the aggregate level. It is possible that the ratios, however intuitive, do not have any explanatory power for this portfolio.

Table V
Regression Results for Individual Microeconomic Variables

DIVIDEND YIELD ON THE PORTFOLIO LEVEL IS SIGNIFICANT AT THE 5% LEVEL, AND EXPLAINS 3.10% OF THE VARIANCE IN ABNORMAL RETURNS. THE COEFFICIENT IS POSITIVE MEANING THAT A HIGHER DIVIDEND YIELD IMPLIES A HIGHER ABNORMAL RETURN FOR THE PORTFOLIO. DIVIDEND PAY-OUT RATIO ON THE PORTFOLIO LEVEL IS SIGNIFICANT AT THE 10% LEVEL. DIVIDENZD PAY-OUT RATIO EXPLAINS 2.30% OF THE VARIANCE IN ABNORMAL RETURNS ON THE PORTFOLIO LEVEL AND THE COEFFICIENT IS POSITIVE. EARNINGS YIELD ON THE PORTFOLIO LEVEL IS SIGNIFICANT AT THE 10% LEVEL AND EXPLAINS 2.00% OF THE VARIANCE IN ABNORMAL RETURNS. BOOK-TO-MARKET ON THE PORTFOLIO LEVEL IS SIGNIFICANT AT THE 1% AND EXPLAINS 4.90% OF THE VARIANCE IN ABNORMAL RETURNS. THE COEFFICIENT IS POSITIVE. TRADING VOLUME ON THE PORTFOLIO LEVEL IS SIGNIFICANT ON THE 0.1% SIGNIFICANCE LEVEL AND HAS A NEGATIVE COEFFICIENT. IT EXPLAINS 1.3% OF THE VARIATION OF ABNORMAL RETURNS.

Abnormal Returns Winsorized to 0.5% regressed on individual micro variables

	Coefficient	Constant	Adj. R-sq	N
Dividend yield (lagged)	0.0263*	0.00674**	0.031	836
	(2.42)	*(3.11)*		
Dividend Pay-out Ratio (lagged)	0.0510	0.00438**	0.023	818
	(1.75)	*(2.60)*		
Earning yield (lagged)	0.0233	0.00508*	0.020	836
	(1.84)	*(2.54)*		
Book to Market (lagged)	0.0199**	0.00960***	0.049	824
	(2.97)	*(3.59)*		
log volume	-0.00377***	0.0113***	0.013	855
	(-3.69)	*(3.97)*		
Times Interest Earned (lagged)	0.0000431	0.00106	0.006	834
	(0.57)	*(1.42)*		
Intangible Assets to Enterprise Value	0.00369	0.00179	0.002	787
	(0.27)	*(1.04)*		

t-statistics in parentheses

* p<0.05 ** p<0.01 *** p<0.001

5.2.1.3. Results from Stage II regressions

After running the univariate regressions for each independent variable, those who have a significance level of 10% or less are picked out for running multivariate regressions. In the multivariate regressions, the macro and micro factors are directly combined.

The selection criteria for further regressions are the following: the variables must be significant and not display multicollinearity. Those variables that do not fulfil both criteria are

removed from the variables list. Finally, two models are arrived at. Despite the small number of variables in each model, no further factors could be added, because of the high correlation between the independent variables. Once an extra variable is added in the model, a collinearity issue arises.

5.2.1.3.1. Model I: Chinese consumer confidence, book-to-market ratio and trading volume

In this model *Chinese consumer confidence, book-to-market ratio* and *trading volume* are variables that explain the abnormal returns. The model is significant at the 5% level. The three variables explain a total of 6.69% of the variation. The coefficients for the *Chinese consumer confidence* and *book-to-market ratio* are positive. On the contrary, coefficient for the *trading volume* is negative. As previously explained, in the Stage I section, the signs of all of the above coefficients make sense. Please refer to Table VI for regression results and Table VII for multicollinearity test.

5.2.1.3.2. Model II: Book-to-market ratio, trading volume, Russia year-on-year GDP change, Japanese consumer confidence

In this model *book-to-market ratio, trading volume, Russia year-on-year GDP change, Japanese consumer confidence* are variables that explain the abnormal returns. The model is significant at the 10% level and explains 10.8% of the variation in the abnormal returns. The coefficients for the *book-to-market ratio* and *Japanese consumer confidence* are positive. The coefficients for the *trading volume* and *Russian year-on-year GDP change* are negative. As previously explained, in the Stage I section, the signs of all of the above coefficients make sense. Please refer to Table VI for regression results and Table VII for multicollinearity test.

5.2.1.3.3. A Comparison of Model I and Model II

The models could not be fused, because of the high correlation between the macro factors of *Chinese consumer confidence*, *Japanese consumer confidence* and *Russian year-on-year GDP change*. Interestingly, the same micro variables are included in both models, which highlights their importance for the returns on the strategy. A trade-off between significance level and explanation of the variance in the abnormal returns can be observed. Model I is significant at

the 5% level but explains only 6.69%. Model II explains 10.8% of the variance but is less significant at the 10% level.

Table VI
Regression Results For The Final Regression Models

TABLE VI SHOWS THE REGRESSION COEFFICIENTS FOR THE TWO FINAL MODELS. MODEL I EXPLAINS 6.69% OF THE VARIATION AND IS SIGNIFICANT AT 5% LEVEL. ACCORDING TO THE MODEL THE ABNORMAL RETURNS CAN BE EXPLAINED WITH CHINA CONSUMER CONFIDENCE, BOOK TO MARKET, LOG VOLUME. MODEL II EXPLAINS 10.8% OF THE VARIATION AND IS SIGNIFICANT AT 10% LEVEL. ACCORDING TO THE MODEL THE ABNORMAL RETURNS CAN BE EXPLAINED WITH BOOK TO MARKET LAGGED, LOG VOLUME, JAPAN CONSUMER CONFIDENCE, RUSSIA GDP YEAR-ON-YEAR GROWTH.

Final Regression Models		
	Model I	Model II
China Consumer Expectation	0.000406**	
	(3.11)	
Book to Market Lagged	0.0188**	0.0221**
	(2.80)	*(3.09)*
Log Volume	-0.00276***	-0.00174
	(-3.62)	*(-1.87)*
Japan Consumer Expectation		0.000622***
		(5.90)
Russia GDP yoy growth		-0.0310*
		(-2.47)
constant	-0.0270*	-0.00960
	(-1.99)	*(-1.78)*
N	824	729
Adj. R-sq.	0.0669	0.108
t statistics in parentheses		
* p<0.05. ** p<0.01. *** p<0.001		

Table VII
Variance Inflation Factor for Models I & II

TABLE VII SHOWS THE VARIANCE INFLATION FACTOR VALUES FOR PREVIOUSLY SPECIFIED MODEL I AND MODEL II. THE DECISION RULES IS THAT WHEN VIF IS HIGHER THAN 10, THERE IS COLLINEARITY IN THE MODEL. AS SHOWN IN THE TABLE BELOW, THERE IS NO COLLINEARITY IN WITHER MODEL I OR II.

Variance Inflation Factor		
	Model I	Model II
China Consumer Expectation	2.69	
Book to Market Lagged	1.98	1.98
Log Volume	3.38	3.27
Japan Consumer Expectation		3.70
Russia GDP yoy% change		1.91

5.3. Objective B

5.3.1. Descriptive statistics

Table VIII shows the descriptive statistics for micro variables for the *luxury portfolio* and *MSCI World*. For *MSCI World*, the data for *dividend yield, book-to-market,* and *earnings yield* is available from Q1 2005, yielding 36 observations. In brief, the *luxury portfolio* has a lower *dividend pay-out ratio* and *dividend yield* than the MSCI World. The *book-to-market* is higher for the *luxury portfolio* and the *earnings yields* are similar.

Dividend pay-out ratio for the *luxury portfolio* is 32.11% and 47.05% for *MSCI World*. At the same time, the standard deviation for *MSCI World* is bigger than the one for the *luxury portfolio*, 0.22 and 0.06 respectively. The companies of the luxury consumer goods are not fond of paying out their profits to the equity holders. As Chevalier and Mazzalovo (2012) discuss, the luxury companies do have a lot of unprofitable brands that bring negative profits. Maybe the luxury companies do have to focus on keeping their well-known brands and investing in them and choose not to pay dividends. The minimum *dividend pay-out ratio* for *MSCI World* is 33.05%, which is bigger than the minimum *dividend pay-out ratio* for the *luxury portfolio* (24.73%). The maximum *dividend pay-out ratio* for the *luxury portfolio* is 43.03%, while 128% for *MSCI World*. In conclusion, the market pays more dividends than the *luxury portfolio*.

The most striking result is that the *book-to-market ratio* is much higher for the *luxury portfolio* than for *MSCI World*, 0.76 and 0.02 respectively. This could be explained by brand value in the companies from the *luxury portfolio*. For the portfolio, standard deviation is as high as 0.26 and the ratio takes values between 0.20 and 1.52, whereas the *book-to-market* for *MSCI World* ranges between 0.01 and 0.03. This high standard deviation for the *luxury portfolio* could possibly be explained by the fact that some companies hold one brand while others as many as about 60. For example Ted Baker has one brand and LVMH has 60.

In the same manner, the mean *dividend yield* for the global market is higher than for the *luxury portfolio*. Finally, *earnings yields* for both benchmarks are similar, yet it varies more for the *luxury portfolio*.

Table VIII

Descriptive Statistics for Aggregated Microeconomic Variables and The MSCI World

TABLE VIII SHOWS THE DESCRIPTIVE STATISTICS FOR MICRO VARIABLES FOR THE LUXURY PORTFOLIO AND *MSCI WORLD*. FOR *MSCI WORLD*, THE DATA FOR *DIVIDEND YIELD, BOOK TO MARKET*, AND *EARNINGS YIELD* IS AVAILABLE FROM Q1 2005, YIELDING 36 OBSERVATIONS. *DIVIDEND PAY-OUT RATIO* AND *DIVIDEND YIELD* ARE HIGHER FOR *MSCI WORLD*, BUT *EARNINGS YIELD* IS HIGHER FOR THE *LUXURY PORTFOLIO*. THE *BOOK-TO-MARKET RATIO* IS SUBSTANTIALLY HIGHER FOR THE *LUXURY PORTFOLIO* THAN FOR *MSCI WORLD*, 0.76 AND 0.02 RESPECTIVELY. THE STANDARD DEVIATION OF THE SAME RATIO IS 0.26 AND THE RATIO TAKES VALUES BETWEEN 0.20 AND 1.52, WHEREAS THE *BOOK-TO-MARKET* FOR MSCI RANGES BETWEEN 0.01 AND 0.03. *DIVIDEND PAY-OUT RATIO* FOR THE *LUXURY PORTFOLIO* IS 32.11%, WHILE 47.04% FOR *MSCI WORLD*. THE STANDARD DEVIATION FOR *MSCI WORLD* IS BIGGER THAN THE ONE FOR THE *LUXURY PORTFOLIO*, 0.22 AND 0.6 RESPECTIVELY. THE MINIMUM DIVIDEND *PAY-OUT RATIO* FOR THE *MSCI WORLD* IS 33.05%, WHICH IS BIGGER THAN FOR THE *LUXURY PORTFOLIO* AMOUNTING 24.73%. THE MAXIMUM *DIVIDEND PAY-OUT RATIO* FOR THE *LUXURY PORTFOLIO* IS 43.03%, WHILE 128% FOR *MSCI WORLD*. IN CONCLUSION, THE MARKET PAYS MORE DIVIDENDS THAN THE *LUXURY PORTFOLIO*.

Table VIII Descriptive Statistics for aggregated Micro variables and MSCI

	N	mean	median	sd	min	max
Dividend Pay-out Ratio Luxury Portfolio	36	.3211111	.3240769	.0559777	.2473143	.4303182
Dividend Pay-out Ratio MSCI	36	.4704553	.41105	.2153214	.3305	1.2819
Dividend Yield Luxury Index	36	.0158712	.0152962	.0040094	.0100838	.0255068
Dividend Yield MSCI	36	.0259194	.02555	.0051193	.0197	.0425
Book To Market Luxury Portfolio	36	.7639477	.7313708	.2617238	.197272	1.517919
Book To Market MSCI	36	.0202556	.01865	.0037011	.0143	.0262
Earnings Yield Luxury Portfolio	36	.0638796	.0575692	.0149018	.0429144	.1082204
Earnings Yield MSCI	36	.0620596	.0619004	.0092749	.0292654	.0835422

5.3.2. Results

5.3.2.1. Variance ratio test

The test in conducted in order to find out whether the variances are supposed to be assumed as equal or not in the t-tests. The null hypothesis in the variance ratio test is that the ratio between the variances equals one, i.e. they are the same. The results show that the variances are different for all variables with the exception of *dividend yield*, where the null hypothesis cannot be rejected with 95% confidence level. Therefore, when performing t-tests, the variances are not assumed to be equal for all variable pairs except for *dividend yield* (see Table XV below).

5.3.2.2. T-tests

The results for independent sample t-tests for the means of *dividend yield*, *book-to-market*, *dividend pay-out ratio* and *earnings yield* of l*uxury portfolio* and *MSCI World*, show that the indices have indeed different characteristics. The null hypothesis is that the means of previously listed variables are the same. T-test rejects the null hypothesis with the default confidence level of 95% for *dividend yield*, *book-to-market* and *dividend pay-out ratio*, as shown in Table XVI below. The *luxury portfolio* has indeed a higher *book-to-market ratio* and a pays out less to the equity holders. Interestingly, according to Fama and French (1998), higher *dividend yields* should result in higher returns. However, the opposite is found in this study. As the *MSCI World* has a very similar cumulative return as the *synthetic market CSMI*, a conclusion about the abnormal returns from the strategy can be drawn. It follows that since the *MSCI World* has a higher *dividend yield* and *dividend pay-out ratio*, the abnormal returns cannot be explained by these factors according to the theory.

A possible explanatory factor could be the *book-to-market ratio*. The stocks from the *luxury portfolio* have much higher *book-to-market ratio* than the market. This means that they are value stocks and should yield higher returns.

This study does not aim to explain thoroughly the different characteristics of the portfolios but merely aims to state that they exist. The companies from the *luxury portfolio* are indeed different from the rest of the market.

TABLE XV
Variance Ratio Tests

THE TABLES SHOW THE VARIANCE RATIO TESTS TO INVESTIGATE IF THE VARIANCES CAN BE ASSUMED TO EQUAL WHEN PERFORMING THE T-TEST. THE NULL HYPOTHESIS IS THAT THE VARIANCES FOR THE SAMPLES ARE EQUAL. THE HYPOTHESIS IS REJECTED FOR BOOK TO MARKET. TRADING VOLUME. DIVIDEND PAY-OUT RATIO AND EARNINGS YIELD. THE HYPOTHESIS FAILS TO BE REJECTED FOR DIVIDEND YIELD. THEREFORE. WHEN PERFORMING T-TEST FOR DIVIDEND YIELD. THE VARIANCES WILL BE ASSUMED TO BE CONSTANT.

Test A

	Obs.	Mean	Std. Dev.
Dividend yield	38	0.0159	0.004
Dividend yield MSCI	36	0.0256	0.0051
combined	74	0.0208	0.0068

f=0.6134	df = 37. 35	
HA: ratio < 1	Ha: ratio != 1	Ha: ratio > 1
Pr(F < f) = 0.0729	2*Pr(F < f) = 0.1457	Pr(F > f) = 0.9271

Test B

	Obs.	Mean	Std. Dev.
Book-to-market	38	0.7639	0.2617
Book-to-market MSCI	36	0.0203	0.0037
combined	74	0.4022	0.4181

f=5000	df =37.35	
HA: ratio < 1	Ha: ratio != 1	Ha: ratio > 1
Pr(F < f) = 1.0000	2*Pr(F < f) = 0.0000	Pr(F > f) = 0.0000

Test C

	Obs.	Mean	Std. Dev.
Earnings yield	38	0.0639	0.0149
Earnings yield MSCI	36	0.0621	0.0093
combined	74	0.0630	0.0124

f=2.5814	df = 37. 35	
HA: ratio < 1	Ha: ratio != 1	Ha: ratio > 1
Pr(F < f) = 0.9971	2*Pr(F < f) = 0.0058	Pr(F > f) = 0.0029

Test D

	Obs.	Mean	Std. Dev.
Dividend pay-out ratio	38	0.3211	0.056
Dividend pay-out ratio MSCI	38	0.4705	0.2153
combined	76	0.3958	0.0124

f=0.0676	df =37.37	
HA: ratio < 1	Ha: ratio != 1	Ha: ratio > 1
Pr(F < f) = 0.0000	2*Pr(F < f) = 0.0000	Pr(F > f) = 1.0000

Table XVI

T-tests

T-TEST INVESTIGATE WHETHER OR NOT THERE IS ANY DIFFERENCE BETWEEN *LUXURY PORTFOLIO* AND THE *CSMI*. T-TEST A SHOWS THE RESULTS FROM UNPAIRED T-TEST ON DIVIDEND YIELD OF *LUXURY PORTFOLIO* AND THE *CSMI*. THE DIVIDENDS YIELDS ARE DIFFERENT FOR THE INDICES. IN FACT MEAN DIVIDEND YIELD FOR THE *LUXURY PORTFOLIO* IS LOWER THAN THE DIVIDEND YIELD FOR THE *CSMI*. T-TEST B SHOWS THE RESULTS FROM UNPAIRED T-TEST ON BOOK-TO-MARKET OF *LUXURY PORTFOLIO* AND THE *CSMI*. THE RATIOS ARE DIFFERENT FOR THE INDICES. IN FACT MEAN B/M FOR THE *LUXURY PORTFOLIO* IS HIGHER THAN FOR THE *CSMI*. T-TEST C SHOWS THE RESULTS FROM UNPAIRED T-TEST ON EARNINGS YIELD OR REVERSE P/E RATIOS FOR *LUXURY PORTFOLIO* AND THE *CSMI*. THE TEST FAILS TO REJECT NULL HYPOTHESES THAT EITHER MEANS DIFFER FOR THE INDICES. T-TEST D SHOWS THE RESULTS FROM UNPAIRED T-TEST ON DIVIDEND PAY-OUT RATIO OF *LUXURY PORTFOLIO* AND THE *CSMI*. THE DIVIDEND PAY-OUT RATIOS ARE DIFFERENT FOR THE INDICES. IN FACT MEAN DIVIDEND PAY-OUT RATIO FOR THE *LUXURY PORTFOLIO* IS LOWER THAN FOR THE *CSMI*.

Test A

	Obs.	Mean	Std. Dev.
Dividend yield	38	0.0159	0.0040
Dividend yield MSCI	36	0.0259	0.0051
combined	74	0.0208	0.0068
diff		-0.0100	

t = -9.4276	df = 72	
Ha: diff < 0	Ha: diff != 0	Ha: diff > 0
Pr(T < t) = 0.0729	Pr(|T|> |t|) = 0.0000	Pr(T > t) = 1.0000

Test B

	Obs.	Mean	Std. Dev.
Book-to-market	38	0.7639	0.2617
Book-to-market MSCI	36	0.0203	0.0037
combined	74	0.4022	0.4181
diff		0.7437	

t = 19.5144	df = 37.0156		
Ha: diff < 0	Ha: diff != 0	Ha: ratio > 1	Ha: diff > 0
Pr(T < t) = 1.0000	Pr(|T|> |t|) = 0.0000	Pr(T > t) = =1.0000	Pr(T > t) = =0.0000

Test C

	Obs.	Mean	Std. Dev.
Earnings yield	38	0.0639	0.0149
Earnings yield MSCI	36	0.0621	0.0093
combined	74	0.0630	0.0124
diff		0.0018	

t = 0.6343	df = 62.4134	
Ha: diff < 0	Ha: diff != 0	Ha: diff > 0
Pr(T < t) = 0.7359	Pr(|T|> |t|) = 0.5282	Pr(T > t) = 0.2641

Test D

	Obs.	Mean	Std. Dev.
Dividend pay-out ratio	38	0.3211	0.0560
Dividend pay-out ratio MSCI	38	0.4705	0.2153
combined	76	0.3958	0.1734
diff		-0.1493	

t = -4.1380	df = 41.9786		
Ha: diff < 0	Ha: diff != 0	Ha: diff > 0	
Pr(T < t) = 0.0001	Pr(|T|> |t|) = 0.0002	Pr(T > t) = =0.9999	

6. Analysis and implications

6.1. The luxury proxy

The proxy for the luxury industry was chosen to be the *luxury portfolio*. The proxy was created for the purpose of the study and since some simplifications had to be made, one could question its feasibility. As previously mentioned, the *luxury portfolio* is based on Bloomberg's classification of the luxury industry (BI LUXG). The BI LUXG Index was introduced in 2011, and since the investment strategy tested in this study involves investment in 2002, the index has to be either back-tested or used as basis for creation of a new one. At the same time, the variety of available indices or ETFs covering this industry is low. In practice, the only alternative to BI LUXG Index is the S&P Global Luxury Index. However, this benchmark was not introduced until recently either. What is more, the S&P Global Luxury Index expands the definition of the luxury industry made by Bloomberg. To already Bloomberg-defined seven sectors it adds further sectors like casinos, hotel and travel as well as automobiles. Second, S&P Global Luxury Index includes companies like Nike and Adidas whose luxury profile is questionable. All things considered up, the best choice for the luxury market proxy was a new portfolio based on the Bloomberg industry classification while employing the methodology used by S&P Indices, i.e. the *luxury portfolio*.

6.2. Macro variables

As stated in the previous literature, consulting companies as well as other research providers claim that the sales growth of luxury companies are attributed to primarily Japan, China and other emerging countries. This study finds evidence that the consumer confidence about future economic and financial situation indeed plays a significant role. The adjusted R-squared value for Model I and Model II are 6.69% and 10.8% respectively. It is interesting to see whether other factors may increase these values. Some of these factors could be the number of high net worth individuals and socio-demographics.

According to reports by Wealth-X, Bain & Co and Capgemini, the driving force in the luxury industry is the number of high net worth and ultrahigh net worth individuals. For the short time-span used in this study, the number of observations would be too small to perform any reliable tests, as only annual data could be collected from the World Bank and the Wealth-X reports. However, the number of HNWIs has grown extensively over the last decade. Nowadays, it is not only affluent American and Japanese that consume luxury goods, but newly

rich groups in Russia and Asia are also boosting luxury sales. Therefore, the number of HNWIs and UHNWIs worldwide is likely to be an important factor for the luxury industry growth. When looking at the very rich it could also be appropriate to look at data of the less fortunate and the gap between them. Factors that measure income inequality, e.g. the *Gini Index*[7] could also be of concern. As the *Gini Index* decreases, the income gap decreases likewise and hence a new middle class emerges. This middle class could become new customers for the luxury companies. Again, only annual data, and thus a too small sample, could be collected in order to make any reliable tests on this factor.

The socio-demographic distributions as well as consumer characteristics are also interesting factors to look at. According to previously mentioned reports, consumers are divided into segments by their preferences. For instance, Bain & Co stated that 25% of sales come from Chinese people in their 30s and 40s. Implicitly, as the population gets more affluent and younger, future earnings of the company should be expected to grow. As a result of this reasoning, the data on population growth in China was obtained. The data however contains only annual observations and could not be used for the purpose of this research. Analysis of population along with HNWI could be conducted in the future, when the data becomes more complete.

6.3. Micro variables

As earlier pointed out, the data sample for this study is limited and therefore the results may differ from the previous academic research where data samples are considerably larger and time-spans are longer. However, even with the data sample used in this study, the results show that variables *dividend yield*, *dividend pay-out ratio*, *earnings yield*, *book-to-market* and *trading volume* indeed are able to explain the excess return for the luxury portfolio. The outcomes for the *interest coverage ratio* and *intangible assets-to-EV* ratio are less clear cut. In the aggregate, *interest coverage ratio* does not show significant result, but looking at the company level, it becomes significant for LVMH, whose mean weights in the portfolio is 26.29%. A similar pattern can be observed for the *intangible assets-to-enterprise value ratio* where the results are insignificant at the aggregate level but significant for LVMH. LVMH has the largest mean

[7] "Gini index measures the extent to which the distribution of income or consumption expenditure among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality." – World Bank

weight in the portfolio during the entire time-span, and (possibly being a consequence of this) is the largest group in the portfolio with more than 60 brands[8]. Being the largest company on the market, it is probable that it becomes more scrutinized by investors, making capital structure and value of intangible assets factors to take into account. The smaller players may not be subject to the same inspection. Moreover, LVMH finances its operations through debt through bonds issuance[9], which makes it its credit position interesting even for equity investors. What is interesting is that credit does not seem to be as of as large important for other big players like Richemont and Kering.

One note regarding the dividends paid out by the companies is that four companies have zero dividends at least once during the period. Interestingly enough, they are all American companies, which could indicate that these brands, which may be perceived differently from their European counterparts, reinvest all their earnings with aims to take market share by e.g. increasing brand equity.

As the descriptive statistics for the portfolio in Table IIIb show, the majority of the companies do have a positive abnormal return. The ceteris paribus interpretation of these results could be that investors do not pay attention to what effect other specific factors i.e. *interest coverage ratio* and *intangible assets-to-enterprise value ratio*, have on a particular industry. It could be that the dividend based yields, earnings, book-to-market ratio and liquidity are such good measures that they are able to capture any specific characteristics of an industry. According to Lamont (1998) the level of earnings is a good measure of current business conditions. All factors that affect business should thus already be included in this measure. Moreover, investors might already be aware of the risk and specificities of a particular industry and this is already incorporated into the stock price. In addition, the proxies used could be incorrect and do not capture the relevant factor. For further research, it is suggested to go in depth into what effect factors on the microeconomic level have on the specific firms included in the *luxury portfolio*. As this study has not controlled for firm specific factors such as number of brands held and family ownership, it could also be relevant to examine to what extent this affects the firm performance.

The results show, that the stocks from the luxury industry have indeed different characteristics than the ones of the market. The comparison of key ratios between the *luxury portfolio* and the *MSCI World* show, that they are indeed different. This highlights the fact, that

[8] As of May 2014
[9] http://www.lvmh.com/investor-relations/documentation/debt-financing 2014-05-04

the luxury industry is unique. This also provides the basis for further research, possibly in the field of financial accounting, where ratios such as *book-to-market* are scrutinised.

6.4. Other topics

In this section potential pitfalls of the model as well as further analysis of the results are touched upon. The possible issues in this study are the following: inclusion bias, time and weighting issues. Furthermore, other issues discussed are investor sentiment, transaction cost, under-diversification and the exchange rate effect on the portfolio.

At first, some companies included in the *luxury portfolio* are also included in the synthetic market *CSMI*, which they are compared with. In total, there are 14 companies that simultaneously appear in the *luxury portfolio* and the synthetic market *CSMI*. This accounts for some bias. However, since the bias is relatively small, ca. 1.05%, the companies are not excluded from the country-market-index (see Table XI in the Appendix).

At second, since the public side of the luxury industry is rather new, the time issues affect both the sources and the data. Unfortunately, there has not been a lot of research in this field and the existing one concerns mostly marketing and managerial issues. For this reason, this thesis may be the pioneer financial study in the industry of luxury. Since the companies in the *luxury portfolio* only recently became listed on stock exchanges, public information is naturally scarce. This did not allow for more extensive research on all factors that could affect the future sales and consequently the stock price. As mentioned earlier, due to time-span limitations annual data could not be used because of too small numbers of observations.

Finally, since the weighting is based on market value, larger companies have more effect on the portfolio and could possibly drive the results. For instance, four companies in the portfolio have zero dividends at least once during the period. The consequence for this is that the results will be biased towards those companies who do not pay dividends, especially in the case where they account for a large fraction of the portfolio. Therefore, a bigger weight in the portfolio will have more influence on the total results. In fact, there is a risk that these companies on their own could drive the results. For instance LVMH constitutes to on average to 26.29%, while Ted Baker makes up only 0.06% of the portfolio. However, other well-known indices, such as S&P indices are weighted by market value calculated on the number of free floating shares and this could certainly be the case for them as well. Moreover, the luxury portfolio is designed to reflect the structure of the luxury industry, i.e. a few big companies and a lot of smaller as well as family owned. This additionally justifies the weighting.

Another possible explanation of the positive returns on long-short strategy could be psychological biases and market inefficiency. There has been a lot of positive news coming in through various reports and forecasts and all mention the growing middle class in China and Chinese tourism. Even though it has been shown that these factors are not that significant from a statistical point of view, they create a lot of positive sentiment amongst investors. As the positive news reach the investors, they change the perception about the market and invest in luxury companies, driving the stock price up. Similarly, there has been a belief on the market that the luxury stocks are *recession proof*. In fact, they plummeted during the crisis of 2007-2009 much lower than the market. Interestingly, the trading volume for the stock of the luxury portfolio peaks during the recent financial crisis. This finding could provide basis for the further research. In conclusion, there are *strong feelings* towards the luxury industry. For instance, decisions of investors could be driven by proximity, making them hold position in companies that are close to them, i.e. a French investor investing in Kering. Another possibility is that investors simply perceive something as superior. As an example, as Louis Vuitton is a widely known brand, an investor could be led to make irrational decisions of holding a position in LVMH simply because it appears to be superior to other brands. Following this reasoning, the whole of the luxury retail industry could appear to be more attractive to the investors compared to other industries due to a belief that "the rich will always buy".

High returns on the long-short strategy could also be explained by the portfolio theory. The luxury portfolio is simply under-diversified compared to *CSMI* or *MSCI World*. The homogenous nature of the portfolio contributes to higher risk on and hence higher returns. The fact that the *luxury portfolio* is more risky than the synthetic market could be justified by the larger standard deviation of the returns, 0.158 and 0.097 respectively. Once more, higher volatility of the portfolio could lead to a risk premium investors require for holding the portfolio.

The study assumes that there are no taxes or transaction costs. Since the portfolio is rebalanced once every quarter, the transaction costs could disturb the results making the strategy less attractive. In addition, the results could also be a bit altered if the total return, rather than price return was looked at. In price returns, all dividends are ignored, meaning that the return is merely the pure return on the stock price. Since the companies from the luxury portfolio do not pay high dividends compared to the market, the results could be different if the study would be re-conducted with total returns and transaction costs. This could be a suggestion for further research.

Finally, the portfolio is global, meaning that the stock prices of the constituents of the luxury portfolio are quoted in five different currencies (Euro, US dollar, Hong Kong dollar and

Swiss Franc and British Pound). This raises a question regarding what fraction of the high returns can be explained by the *winning* strategy and what by the exchange rate fluctuations during the examined period.

7. Conclusion

The objective of this study is to:

A. Investigate what factors drive the returns on a portfolio holding a long position in luxury consumer goods stocks and a short position in the market.
B. Investigate in what way the company-specific characteristics of the luxury stocks differ from the ones of the market.

On average the strategy yields positive returns. The results show that returns can be explained with both macro and micro variables. Running a univariate regression with macro variables, *Japanese tourism to the USA*, *Chinese disposable income*, *China consumer confidence*, *Japanese consumer confidence* and *Russia GDP year-on-year change* are significant at minimum 10% level. Micro variables that are significant at minimum 10% level are *dividend yield, book-to-market ratio* and *trading volume*. Having run multivariate regressions with the above factors, two models are arrived at. Model I explains 6.69% of the variation and includes: *China consumer confidence*, *book-to-market* and *trading volume*. Model II explains 10.8% and includes *Japanese consumer confidence*, *Russia GDP year-on-year change*, *book-to-market* and *trading volume*. The macro variables have less explanatory power than predicted by industry reports. Other factors that could explain the abnormal returns are the number of UHNWIs and HNWIs, and data on socio-demographics and possibly Asian tourism to Europe. Such data is at the time of writing either insufficient or unavailable, and thus not included in the study.

Moreover, the results show that the luxury stocks are different from the market. A series of t-tests indicate that *book-to-market ratio* for the *luxury portfolio* is higher than the market. On average the market pays more dividend than the *luxury portfolio* and there is no apparent difference in *earnings yield*. The findings in this paper are to some extent consistent with previous research of e.g. Fama and French (1998) and Lamont (1998). The stocks included in the *luxury portfolio* have characteristics of value stocks, i.e. high *book-to-market ratio*. This could explain the abnormal returns. According to the theory, high dividend yields predict high expected returns. However, in this case the market has higher *dividend yields* and *dividend pay-out ratio*, although the returns are lower.

High returns on the long-short strategy could also be explained by the portfolio theory. The homogenous nature of the portfolio contributes to higher risk and hence higher returns. Psychological biases such as investor sentiment could also explain the returns, for example a too optimistic reaction to positive news about the luxury industry. Other irrational behaviours

could also drive returns, for instance a belief that the industry is not affected by economic cycles or is even recession proof simply because the affluent will always consume luxury goods.

8. Appendix

8.1. Section A

8.1.1. Construction of the *luxury portfolio*

In the section the formation of the luxury portfolio is described as follows: return on the portfolio, weights and return on individual constituents.

8.1.1.1. Construction of return on the luxury portfolio

Return on BB-Index is calculated as a sum of weighted logarithmic price returns on each constituent denoted by $R_{j,t}$.

$$R_{BB,t} = \sum_{j=1}^{19} w_{j,t-1} \times R_{j,t}$$

$$R_{BB,t} = \sum_{j=1}^{19} w_{j,t-1} \times R_{j,t} =$$

$$= w_{F:CDI,t-1} \times R_{F:CDI,t} + w_{U:COH,t-1} \times R_{U:COH,t} + w_{@FOSL,t-1} \times R_{@FOSL,t} + w_{F:RMS,t-1} \times R_{F:RMS,t} + w_{D:BOSS,t-1} \times R_{D:BOSS,t} + w_{F:KER,t-1} \times R_{F:KER,t} + w_{I:LUX,t-1} \times R_{I:LUX,t} + w_{F:LVMH,t-1} \times R_{F:LVMH,t} + w_{U:MOV,t-1} \times R_{U:MOV,t} + w_{F:LAU,t-1} \times R_{F:LAU,t} + w_{U:PVH,t-1} \times R_{U:PVH,t} + w_{U:RL,t-1} \times R_{U:RL,t} + w_{F:RCO,t-1} \times R_{F:RCO,t} + w_{S:CFR,t-1} \times R_{S:CFR,t} + w_{I:TOD,t-1} \times R_{I:TOD,t} + w_{S:UHR,t-1} \times R_{S:UHR,t} + w_{U:TIF,t-1} \times R_{U:TIF,t} + w_{TED,t-1} \times R_{TED,t} + w_{K:LUK,t-1} \times R_{K:LUK,t}$$

8.1.1.2. Construction of return on individual constituents $R_{j,t}$

For every constituent logarithmic return on market value free float adjusted (MVFF) between time *t* and *t-1* is calculated.

$$R_{j,t} = \ln\left(\frac{MVFF_{j,t}}{MVFF_{j,t-1}}\right)$$

$R_{F:CDI,t}$ - return on Christian Dior between time *t-1* and *t.*
$w_{F:CDI,t-1}$- weight of Christian Dior in the portfolio between *t-1* and *t.*

These trace price returns, i.e. dividends are excluded. For each company, at time *t*, MVFF adjusted is calculated as follows:

$$MVFF = No.shares\ outstanding \times fraction\ of\ free\ floating\ share \times share\ price_{local\ currency}$$

8.1.1.3. Construction of weights $w_{j,t}$

Following portfolio creating techniques used by S&P Indices, the constituents are value weighted according to MVFF, where the strategic holdings are excluded from the number of shares. Following Data Stream's definition, strategic holdings is identified as not investing for Investment management purposes, but for strategic reasons (i.e. Corporations, individuals, treasuries (from June 10th 2012), and governments). Once a holder is identified as strategic, they are considered strategic for every company in which they own shares, regardless of percentage of shares held.

In order to calculate weights for respective companies, their MVFF should be in the same currency. Since luxury portfolio comprises of global companies, their respective MVFFs have to be converted to USD. $MVFF_{USD}$ for company *j* listed in country *c* at time *t*, is calculated as the multiplication of number of free floating shares and USD-denoted share price. See the formula below:

$$MVFF_{\mathrm{USD,c,j,t}} = No.shares\ outstanding_{j,t} \times fraction\ of\ free\ floating\ share_{j,t} \times share\ price_{local\ currency,j,t} \div FXrate_{\left(\frac{(local\ currency)}{USD}\right),c,t}$$

This makes the currency in the portfolio uniform, yet the value of the portfolio becomes more sensitive to the FX-fluctuations. The constituents are then weighted according to the company's $MVFF_{USD}$ as a fraction of the total $MVFF_{USD}$ of the portfolio. The weight for company *j* is calculated as $MVFF_{USD}$ of that company as a fraction of the sum of dollar denominated MVFFs for all constituents in the portfolio. See the formula below:

$$\mathrm{w_{j,t}} = \frac{MVFF_{\mathrm{USD,j,t}}}{\sum_{j=1}^{19} MVFF_{USD,j,t}}$$

8.1.2. Construction of the synthetic market *CSMI*

8.1.2.1. Construction of return on individual markets $R_{c,t}$

Return on synthetic market *CSMI* is calculated as a sum of weighted logarithmic price returns on each market denoted by $R_{c,t}$. For each market, a proxy is chosen, that is supposed to reflect the return on the country-specific market (see Table XI).

$$R_{CSMI} = \sum_{c=1}^{7} w_{c,t-1} \times R_{c,t} = R_{I,t} + R_{G,t} + R_{F,t} + R_{US,t} + R_{UK,t} + R_{HK,t} + R_{S,t} =$$

$$= \sum_{j=1}^{2} w_{Italy,j,t-1} \times R_{Milano\ Comit\ Global,t} + \sum_{j=1}^{1} w_{Germany,j,t-1} \times R_{Frankfurt\ Xtra,t}$$

$$+ \sum_{j=1}^{1} w_{Englang,j,t-1} \times R_{FTSE100,t} + \sum_{j=1}^{6} w_{France,j,t-1} \times R_{SBF120,t} + \sum_{j=1}^{5} w_{USA,j,t-1} \times R_{S\&P500,t}$$

$$+ \sum_{j=1}^{1} w_{Hong\ Kong,j,t-1} \times R_{Hang\ Seng,t} + \sum_{j=1}^{2} w_{Switzerland,j,t-1} \times R_{SMI,t}$$

$where\ R_{c,t} = \ln\left(\frac{R_{c,t}}{R_{c,t-1}}\right)$ and

$R_{CSMI,t}$- return on CSMI

$w_{c,t-1}$-weight of a certain country at the end of time *t-1*

$R_{c,t}$- return on a certain country at time *t*

$R_{I,t}$- return on Italian market, benchmarked by Milan Commit Global at time *t*

$R_{G,t}$- return on German market, benchmarked by Frankfurt Xtra at time *t*

$R_{F,t}$- return on French market, benchmarked by SBF 120 at time *t*

$R_{US,t}$- return on American market, benchmarked by S&P 500 at time *t*

$R_{UK,t}$- return on English market, benchmarked by FTSE 100 at time *t*

$R_{HK,t}$- return on Hong Kong market, benchmarked by Hang Seng at time *t*

$R_{S,t}$- return on Swiss market, benchmarked by SMI at time *t*

$w_{c,j,t-1}$- weight of company *j* in the country *c* for time *t-1*

$w_{Italy,j,t-1}$- weight of company *j* in that is listed in Italian market, at time *t-1*

$w_{Germany,j,t-1}$- weight of company *j* in that is listed in Italian market, at time *t-1*

$w_{England,j,t-1}$- weight of company *j* in that is listed in Italian market, at time *t-1*

$w_{France,j,t-1}$- weight of company *j* in that is listed in Italian market, at time *t-1*

$w_{USA,j,t-1}$- weight of company *j* in that is listed in Italian market, at time *t-1*

$w_{Hong\ Kong,j,t-1}$- weight of company *j* in that is listed in Italian market, at time *t-1*

$w_{Switzerland,j,t-1}$- weight of company *j* in that is listed in Italian market, at time *t-1*

8.1.2.2. Construction of weights $w_{j,t}$

Following portfolio creating techniques used by S&P Indices, the constituents are value weighted according to MVFF, where the strategic holdings are excluded from the number of shares. Following Data Stream's definition, strategic holdings is identified as not investing for Investment management purposes, but for strategic reasons (i.e. Corporations, individuals, treasuries (from June 10th 2012), and governments). Once a holder is identified as strategic, they are considered strategic for every company in which they own shares, regardless of percentage of shares held.

In order to calculate weights for respective companies, their MVFF should be in the same currency. Since luxury portfolio comprises of global companies, their respective MVFFs have to be converted to USD. $MVFF_{USD}$ for company *j* listed in country *c* at time *t*, is calculated as the multiplication of number of free floating shares and USD-denoted share price. See the formula below:

$$MVFF_{\mathrm{USD,c,j,t}} = No.shares\ outstanding_{j,t} \times fraction\ of\ free\ floating\ share_{j,t} \times share\ price_{local\ currency,j,t} \div FXrate_{\left(\frac{(local\ currency)}{USD}\right)c,t}$$

This makes the currency in the portfolio uniform, yet the value of the portfolio becomes more sensitive to the FX-fluctuations. The constituents are then weighted according to the company's $MVFF_{USD}$ as a fraction of the total $MVFF_{USD}$ of the portfolio. The weight for company *j* is calculated as $MVFF_{USD}$ of that company as a fraction of the sum of dollar denominated MVFFs for all constituents in the portfolio. See the formula below:

$$\mathrm{w_{j,t}} = \frac{MVFF_{\mathrm{USD,j,t}}}{\sum_{j=1}^{19} MVFF_{USD,j,t}}$$

8.2. Section B

8.2.1. Comments on the variables

8.2.1.2. Sentiment

8.2.1.2.1. China

This is made on 700 individuals in 20 cities. The index measures the consumers' degree of satisfaction about the current economic situation and expectation on the future economic trend. The index gets values from 0 to 200, where 0 is extremely negative and 200 is extremely positive. Creating the sentiment dummy, values above the neutral level of 100 indicate positive sentiment (1) and values equal to 100 and lower indicate negative sentiment (0).

8.2.1.2.2. Russia

Consumer confidence tracks sentiment among households or consumers. The index is an arithmetical average of 5 indices: the change in the respondent's personal financial situation over the last 12 months and next 12 months, the change in the country's economic situation over the last year and in the next 12 months, and the current climate for durable goods purchase. Thus the index could be used as a proxy for the sentiment on the market. The results are based on surveys conducted among a random sample of 5000 households and vary from -100 (all respondents negative) to +100 (all respondents are positive). Creating the sentiment dummy, values above the neutral level of 0 indicate positive sentiment (1) and values equal to 0 and lower indicate negative sentiment (0).

8.2.1.2.3. Japan

Consumer Confidence survey data is conducted among a random sample of 4,700 households. The questionnaire covers four subjects: consumer perceptions of overall livelihood, income growth, employment and willingness to buy durable goods. For each subject an index based on the respondents' evaluation of what they consider the prospects to be over the next six months is created. The Consumer Confidence Index is the simple average of the four consumer perception indexes. A score above 50 indicates optimism, below 50 shows lack of confidence and 50 indicates neutrality. Creating the sentiment dummy, values above the neutral level of 50 indicate positive sentiment (1) and values equal to 50 and lower indicate negative sentiment (0).

8.2.1. Construction of the microeconomic variables

8.2.1.1. Intangible assets-to-enterprise value ratio

The Intangible assets-to-enterprise value ratio is defined the ratio between intangible assets and enterprise value and is logged for the purpose of regressions, see below:

$$Intev = \ln \frac{\text{Intangible Assets}}{\text{Enterprise Value}}$$

8.2.1.2. Interest coverage ratio

The Interest Coverage Ratio is directly downloaded from Datastream. Therefore no further calculation has been made. The Datastream definition for the Fixed Charge Coverage Ratio[10] is as follows:

$$TIE = \frac{\text{Earnings before Interest and Taxes}}{\text{Interest Expense on Debt} + \text{ Preferred Dividends (Cash)}} \times (1 - \frac{tax\ rate}{100})$$

If the Tax rate is negative or not available or if preferred dividends are 0:

$$TIE = \frac{\text{Earnings before Interest and Taxes}}{\text{Interest Expense on Debt} + \text{ Preferred Dividends (Cash)}}$$

8.2.1.3. Earnings measure

The earnings yield is defined as the ratio between the current rate of earning per share and the official closing price of the stock. It is logged for the purpose of regressions, see below:

$$ln(\frac{EPS}{Price})$$

8.2.1.4. Dividend measures

The Dividend Yield is defined as the ratio between dividend per share (gross dividends, inclusive of local tax credits where applicable) and the official closing price of the stock. For the purpose of regression, the ratio is logged, see below:

$$ln(\frac{DPS}{Price})$$

The dividend pay-out ratio is defined as the ratio between dividend per share and the current rate of earning per share. For the purpose of regressions, the ratio is logged, see below:

$$ln(\frac{DPS}{EPS})$$

[10] Datastream ticker: WC08251

8.2.1.5. Book-to-market ratio

We use the Datastream definition of the market-to-.book ratio where they suggest using Market Value[11] defined as the market value of all listed securities, i.e. including A, B and C shares, divided by Common Equity[12]. For our purposes, the book-to-market ratio (B/M) is defined as ln(Common Equity/Market Value) and is the log B/M ratio. Common Equity is transformed into number of millions.

8.2.1.6. Liquidity

Volume is logged and not weighted. Trading volume data from Datastream is expressed in thousands and is thus recalculated into number of millions, in order to make it consistent with the rest of the dataset.

[11] ticker: MVC, displayed in millions
[12] ticker WC03501

8.3. Section C

8.3.1. Tables and regression results

Table IIIb
Descriptive Statistics of Constituents In The Luxury Portfolio

TABLE IIIB SHOWS DESCRIPTIVE STATISTICS FOR SOME OF THE MICRO VARIABLES USED IN THE REGRESSIONS. WEIGHTED ABNORMAL RETURNS AND THE WEIGHTS EACH COMPANY HAS IN THE PORTFOLIO. FOUR COMPANIES HAVE ZERO DIVIDENDS FOR AT LEAST ONE. BOSS DISPLAYS THE HIGHEST DIVIDEND YIELD. 12.5%. THE HIGHEST DIVIDEND PAY-OUT RATIO IS 375% AND BELONGS TO AMERICAN COMPANY PVH. FRENCH COMPANIES HERMÈS AND KERING HAVE THE LOWEST AND HIGHEST MEAN EARNINGS YIELD RESPECTIVELY. AMERICAN COMPANY MOVADO HAS THE HIGHEST BOOK-TO-MARKET RATIO OF 1.98. FOR 11 COMPANIES. THE MEAN AR IS POSITIVE. FOR THREE COMPANIES IT IS NEGATIVE. FOR FIVE COMPANIES THE MEAN AR IS ZERO. FOR THE PORTFOLIO THE MEAN AR IS POSITIVE.

Company	Statistics	Dividend yield	DPR	Earnings yield	Book-to-Market	Weighted AR	Weights
BOSS	N	45	45	45	45	45	45
	mean	0.0448	0.6744	0.0650	0.2169	0.0000	0.0652
	sd	0.0225	0.1166	0.0265	0.1311	0.0028	0.0344
	min	0.0191	0.4192	0.0382	0.0725	-0.0162	0.0137
	max	0.1251	1.1417	0.1494	0.6732	0.0045	0.1450
CDI	N	45	45	45	45	45	45
	mean	0.0211	0.4118	0.0557	0.4567	-0.0016	0.0533
	sd	0.0059	0.1886	0.0204	0.1618	0.0292	0.0175
	min	0.0127	0.2857	0.0200	0.0000	-0.1619	0.0343
	max	0.0400	1.2188	0.1225	0.8564	0.0728	0.1567
CFR	N	45	45	45	45	45	45
	mean	0.0124	0.2310	0.0601	0.4239	0.0031	0.1947
	sd	0.0047	0.1168	0.0253	0.1790	0.0512	0.0409
	min	0.0063	0.1003	0.0255	0	-0.2207	0.1160
	max	0.0265	0.6923	0.1287	0.8336	0.1147	0.2696
COH	N	45	45	45	45	45	45
	mean	0.0063	0.1094	0.0488	0.1285	0.0034	0.0905
	sd	0.0086	0.1439	0.0222	0.0530	0.0206	0.0316
	min	0.0000	0.0000	0.0233	0.0000	-0.0525	0.0210
	max	0.0248	0.3740	0.1282	0.3108	0.0679	0.1384
FOSL	N	45	45	45	45	45	45
	mean	0	0	0.0542	0.3551	0.0004	0.0156
	sd	0	0	0.0190	0.1494	0.0059	0.0066
	min	0	0	0.0306	0.1433	-0.0198	0.0066
	max	0	0	0.1269	0.9088	0.0129	0.0342

KER	N	45	45	45	45	45	45
	mean	0.0332	0.5548	0.1846	0.8130	-0.0010	0.0935
	sd	0.0113	0.3185	0.0943	0.2452	0.0306	0.0280
	min	0.0219	0.1763	0.0776	0.4897	-0.1314	0.0650
	max	0.0740	1.4087	0.4347	1.6879	0.0906	0.1994
LAU	N	45	45	45	45	45	45
	mean	0.0163	0.3022	0.0552	0.5814	0.0000	0.0019
	sd	0.0059	0.0683	0.0189	0.2185	0.0005	0.0007
	min	0.0078	0.2094	0.0221	0.0000	-0.0017	0.0007
	max	0.0369	0.5123	0.1280	1.0259	0.0007	0.0036
LUK	N	45	45	45	45	45	45
	mean	0.0506	0.4386	0.1187	0.8273	0.0000	0.0022
	sd	0.0235	0.0937	0.0610	0.4667	0.0012	0.0023
	min	0.0180	0.3036	0.0453	0.0000	-0.0051	0.0004
	max	0.1061	0.6667	0.3218	1.8615	0.0027	0.0084
LUX	N	45	45	45	45	45	45
	mean	0.0179	0.3980	0.0452	0.2916	0.0003	0.0387
	sd	0.0072	0.0963	0.0129	0.0756	0.0110	0.0082
	min	0.0099	0.2073	0.0299	0.1896	-0.0534	0.0271
	max	0.0414	0.6282	0.0822	0.5104	0.0336	0.0707
LVMH	N	45	43	45	45	45	45
	mean	0.0193	0.4293	0.0451	0.3524	0.0079	0.2629
	sd	0.0048	0.1039	0.0186	0.0857	0.0327	0.0386
	min	0.0125	0.3186	0.0000	0.2195	-0.0966	0.2067
	max	0.0335	0.7018	0.0919	0.5895	0.0676	0.3719
MOV	N	45	34	45	45	45	45
	mean	0.0087	0.1513	0.0557	0.8801	0.0000	0.0023
	sd	0.0064	0.0409	0.0450	0.3560	0.0007	0.0009
	min	0.0000	0.0769	0.0000	0.4154	-0.0028	0.0009
	max	0.0341	0.2202	0.2209	1.9796	0.0015	0.0040
PVH	N	45	43	45	45	45	45
	mean	0.0046	0.2015	0.0497	0.5666	0.0011	0.0169
	sd	0.0031	0.5656	0.0308	0.1626	0.0036	0.0097
	min	0.0012	0.0256	0.0000	0.2866	-0.0117	0.0029
	max	0.0130	3.7500	0.1505	1.0028	0.0077	0.0400
RCO	N	45	40	45	45	45	45
	mean	0.0303	0.7447	0.0427	0.5502	0.0003	0.0112
	sd	0.0093	0.3062	0.0280	0.2783	0.0017	0.0021

	min	0.0169	0.3863	0.0000	0.0000	-0.0053	0.0086
	max	0.0654	1.8182	0.1141	1.0810	0.0047	0.0160
RL	N	45	45	45	45	45	45
	mean	0.0049	0.0951	0.0547	0.3881	0.0017	0.0301
	sd	0.0027	0.0583	0.0143	0.1656	0.0053	0.0108
	min	0.0000	0.0000	0.0375	0.0000	-0.0125	0.0100
	max	0.0114	0.2257	0.1060	0.7287	0.0157	0.0470
RMS	N	45	45	45	45	45	45
	mean	0.0120	0.4084	0.0307	0.1717	-0.0029	0.0652
	sd	0.0060	0.2485	0.0073	0.0514	0.0206	0.0344
	min	0.0063	0.2551	0.0197	0.0872	-0.0928	0.0137
	max	0.0331	1.2324	0.0509	0.2723	0.0371	0.1450
TED	N	45	45	45	45	45	45
	mean	0.0292	0.4597	0.0634	0.2629	0.0000	0.0006
	sd	0.0087	0.0448	0.0172	0.0835	0.0002	0.0002
	min	0.0139	0.3906	0.0295	0.1368	-0.0012	0.0001
	max	0.0500	0.6033	0.1112	0.4674	0.0003	0.0013
TIF	N	45	45	45	45	45	45
	mean	0.0141	0.2845	0.0507	0.3440	0.0013	0.0411
	sd	0.0069	0.1296	0.0159	0.0910	0.0082	0.0083
	min	0.0044	0.1171	0.0259	0.2201	-0.0159	0.0229
	max	0.0311	0.6400	0.1089	0.6952	0.0259	0.0568
TOD	N	45	45	45	45	45	45
	mean	0.0271	0.5860	0.0449	0.3829	0.0001	0.0079
	sd	0.0195	0.3465	0.0154	0.1174	0.0016	0.0012
	min	0.0074	0.2548	0.0243	0.1870	-0.0065	0.0053
	max	0.0875	1.5449	0.0843	0.7138	0.0021	0.0106
UHR	N	45	45	45	45	45	45
	mean	0.0125	0.2107	0.0596	0.4308	0.0011	0.0671
	sd	0.0052	0.0515	0.0173	0.1082	0.0140	0.0181
	min	0.0065	0.1211	0.0370	0.2400	-0.0594	0.0273
	max	0.0299	0.3118	0.1233	0.7524	0.0352	0.0934
Total	N	855	835	855	855	855	855
	mean	0.0192	0.3527	0.0624	0.4434	0.0008	0.0558
	sd	0.0170	0.2854	0.0470	0.2865	0.0188	0.0702
	min	0	0	0	0	-0.2207	0.0001
	max	0.1251	3.7500	0.4347	1.9796	0.1147	0.3719

Table IX
Description of the Luxury Portfolio constituents as of 2013

THE *LUXURY PORTFOLIO* CONSISTS OF 19 GLOBAL LUXURY COMPANY STOCKS. THE COMPANIES ARE LISTED IN SEVEN COUNTRIES: FRANCE, GERMANY, HONG KONG, ITALY, SWITZERLAND, UK AND USA, AND HAVE OPERATIONS IN THE APPAREL, SHOES, WATCHES, JEWELLERY, LEATHER GOODS, ACCESSORIES, EYEWEAR, FRAGRANCE, BEAUTY OR SPIRITS SECTORS. THE COMPANIES ARE DIVERSIFIED BY THE NUMBER OF SECTORS THEY OPERATE IN (FROM 1 TO 10), AND NUMBER OF BRANDS THEY OWN (FROM 1 TO 60). LUK FOOK IS THE ONLY COMPANY IN THE PORTFOLIO THAT IS ALSO A DISTRIBUTOR.

Company	Country of stock listing	Sector(s)	Number of brands
Christian Dior	France	Apparel, Shoes, Watches, Jewellery, Leather goods	1
Coach Inc	USA	Apparel, Shoes, Watches, Jewellery, Leather goods, Accessories, Eyewear, Fragrance,	1
Fossil Inc	USA	Apparel, Shoes, Watches, Jewellery, Leather goods, Accessories, Eyewear	5
Hermès	France	Apparel, Shoes, Watches, Jewellery, Leather goods, Accessories, Fragrance	7
Hugo Boss	Germany	Apparel, Watches, Jewellery, Leather goods, Accessories, Fragrance	1
Kering	France	Apparel, Shoes, Watches, Jewellery, Leather goods, Accessories, Eyewear, Fragrance	16
Luxottica	Italy	Eyewear	12
LVMH	USA	Apparel, Shoes, Watches, Jewellery, Leather goods, Accessories, Eyewear, Fragrance, Beauty, Spirits	60
Movado	USA	Watches	4
Laurent-Perrier	France	Spirits	4
PVH Corp.	USA	Apparel, Watches, Jewellery, Accessories, Eyewear, Fragrance, Beauty	9
Ralph Lauren	USA	Apparel, Watches, Jewellery, Accessories, Eyewear,	2
Remy Cointreau	France	Spirits	9
Richemont SA	Switzerland	Apparel, Shoes, Watches, Jewellery, Leather goods, Accessories, Eyewear, Fragrance	19
Tod's	Italy	Apparel, Shoes, Leather goods, Accessories, Eyewear	4
Swatch	Switzerland	Watches, Jewellery	1
Tiffany & Co	USA	Watches , Jewellery, Leather goods, Accessories, Eyewear, Fragrance	17
Ted Baker	USA	Apparel, Shoes, Jewellery, Leather goods, Accessories, Eyewear, Fragrance	1
Luk Fook	Hang Seng	Jewellery	1

Table X
Company weights in descending order

The table shows the mean weight over the entire holding period for each constituent in the *luxury portfolio* in descending order. The table also displays the ticker for each constituent.

Company	Ticker	Mean weight
Louis Vuitton Moët Hennessy	LVMH	26.29%
Compagnie Financière Richemont S.A.	CFR	19.47%
Kering	KER	9.35%
Coach Inc	COH	9.05%
Swatch SA	UHR	6.71%
Hugo Boss AG	BOSS	6.52%
Hermès International S.A.	RMS	6.52%
Christian Dior	CDI	5.33%
Tiffany & Co.	TIF	4.11%
Luxottica Group S.p.A.	LUX	3.87%
Ralph Lauren	RL	3.01%
PVH Corp.	PVH	1.69%
Fossil Inc.	FOSL	1.56%
Rémy Cointreau S.A.	RCO	1.12%
Tod's S.p.A.	TOD	0.79%
Movado Group Inc.	MOV	0.23%
Luk Fook Holdings International Ltd.	LUK	0.22%
Laurent-Perrier Group	LAU	0.19%
Ted Baker PLC	TED	0.06%

Table XI

Description of the Synthetic Market CSMI (Country Specific Market Index)

IN ORDER TO CREATE THE SYNTHETIC MARKET *CSMI*, FOR EVERY COUNTRY AN EQUITY INDEX IS CHOSEN SO THAT THE INDEX COVERS THE MARKET MOST EXTENSIVELY IN TERMS OF MARKET VALUE AND NUMBER OF CONSTITUENTS. BECAUSE SOME OF CONSTITUENTS OF *LUXURY PORTFOLIO* ARE ALSO INCLUDED IN THE COUNTY SPECIFIC INDICES, SOME BIAS IS CAUSED. IN TOTAL, THE *CSMI* CONSISTS OF 1328 CONSTITUENTS, OUT OF WHICH 14 ARE PRESENT IN BOTH THE *CSMI* AND *LUXURY PORTFOLIO*. THIS ACCOUNTS FOR 1.05% AND IS DENOTED AS *INCLUSION BIAS*.

Market	Chosen Index	Number of constituents	Luxury portfolio constituents included
France	SBF 120	120	4
Germany	Frankfurt Xtra	325	1
Great Britain	FTSE100	101	0
Hong Kong	Hang Seng	50	0
Italy	Milano Commit Global	212	2
Switzerland	SMI	20	2
United States	S&P 500	500	5
	Total	1328	14

$$\text{Inclusion bias} = \frac{\text{No.of constituents that are included in both CSMI and BB}-\text{Indicies}}{\text{No.of constituents in CSMI}} = \frac{14}{1328} \approx 1.05\%$$

Table XII
Description of All Independent Variables

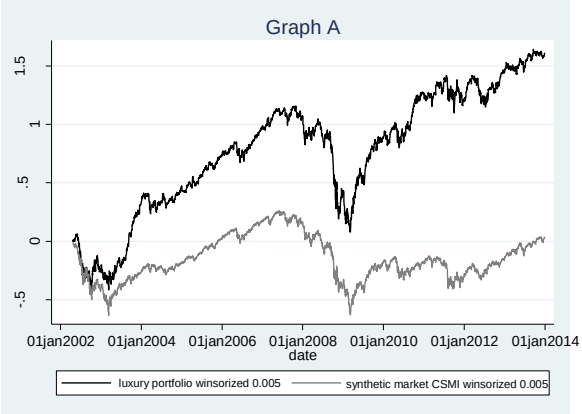
THE TABLE CONTAINS THE SOURCE FOR ALL OF THE VARIABLES USED IN THE STUDY. THE DATA WAS OBTAINED FROM TWO MAIN SOURCES: DATASTREAM AND BLOOMBERG. THE DATA WAS COLLECTED ON QUARTERLY AND DAILY FREQUENCIES. ON AVERAGE, THERE ARE 45 OBSERVATIONS FOR QUARTERLY DATA PER COMPANY AND OVER 3000 OBSERVATIONS FOR DAILY VARIABLES.

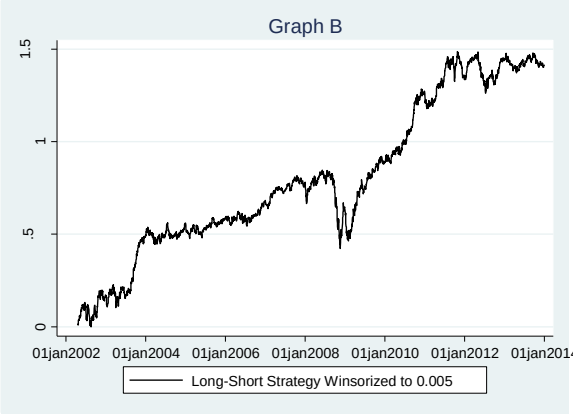
Variable	Description	Frequency	Timespan	No. of obs.	Source
Market Value Free Float	Market Value free float adjusted for 19 companies.	Daily	April 19, 2002-31 Dec 2013	3053	Datastream
Market Value Free Float	Market Value free float adjusted for 19 companies.	Quarterly	Q3 2002-Q4 2013	48	Datastream
Price Index	Price Index of seven indices: SBF120, FTSE100, SMI, Hang Seng, S&P 500, Milan Commit Global, Frankfurt Xtra	Daily	Jan 1, 2002-31 Dec 2013	3131	Datastream
Price Index	Price Index of seven indices: SBF120, FTSE100, SMI, Hang Seng, S&P 500, Milan Commit Global, Frankfurt Xtra	Quarterly	Q2 2002-Q4 2013	48	Datastream
Macroeconomic variables					
GDP year-on year % growth for various China, Japan, Russia and USA.	In local currency.	Quarterly	Q2 2002-Q4 2013	48	Bloomberg
Exchange rates	Exchange rates to US dollar: EUR/USD, CHF/USD, HKD/USD, JPY/USD, SUD/USD, GBP/USD	Daily	Jan 1, 2002-31 Dec 2013	3131	Datastream
Exchange rates	Exchange rates to US dollar: EUR/USD, CHF/USD, HKD/USD, JPY/USD, SUD/USD, GBP/USD	Quarterly	Q1 2002-Q4 2013	48	Datastream
Tourism to USA Japan	The total number of tourists visiting the US. The variable is already lagged 4-6 months.	Quarterly	Q4 2002-Q2 2013	43	ITA Office of Travel and Tourism Industries, via Bloomberg
Tourism to USA China	The total number of tourists visiting the US. The variable is already lagged 4-6 months.	Quarterly	Q4 2002-Q2 2013	43	ITA Office of Travel and Tourism Industries, via Bloomberg
Consumer Sentiment Russia	See appendix part B, *Sentiment*	Quarterly	Q4 2002-Q4 2013	45	Federal Service of State Statistics, via Bloomberg

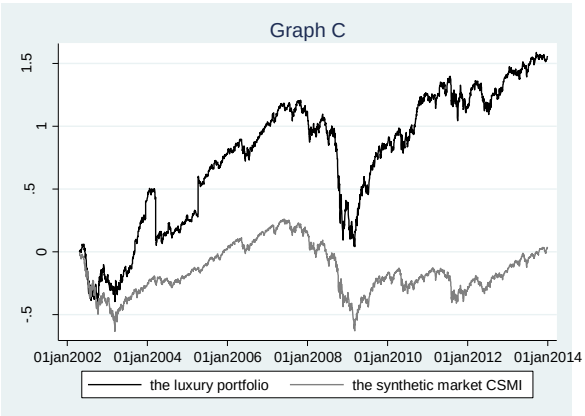
Consumer Sentiment Japan	See appendix part B, *Sentiment*	Quarterly	Q2 2004-Q4 2013	39	Economic and Social Research Institute Japan, via Bloomberg
Consumer Sentiment China	See appendix part B, *Sentiment*	Quarterly	Q4 2002-Q4 2013	45	National Bureau of Statistics of China, via Bloomberg
Disposable Income yoy% change US	In local currency.	Quarterly	Q4 2002-Q4 2013	45	Bloomberg
Disposable Income yoy% change China	In local currency.	Quarterly	Q4 2002-Q4 2013	45	Bloomberg
Disposable Income yoy% Russia	In local currency.	Quarterly	Q4 2002-Q4 2013	45	Federal Service of State Statistics, via Bloomberg
Microeconomic variables					
Earnings per share		Quarterly	Q3 2002-Q4 2013	45	Datastream
Intangible assets-to-enterprise value ratio		Quarterly	Q3 2002-Q4 2013	45	Datastream
Interest coverage ratio		Quarterly	Q3 2002-Q4 2013	45	Datastream
Dividend yield		Quarterly	Q3 2002-Q4 2013	45	Datastream
Earnings yield		Quarterly	Q3 2002-Q4 2013	45	Datastream
Book-to-market ratio		Quarterly	Q3 2002-Q4 2013	45	Datastream
Trading Volume		Quarterly	Q3 2002-Q4 2013	45	Datastream
Dividend pay-out ratio		Quarterly	Q3 2002-Q4 2013	45	Datastream
MSCI World					
Price-to-earnings ratio	1/ (P/E) calculation made for comparing purposes.	Quarterly	Q1 2005-Q4 2013	36	Bloomberg
Dividend yield		Quarterly	Q1 2005-Q4 2013	36	Bloomberg
Dividend pay-out ratio		Quarterly	Q3 2004-Q4 2013	38	Bloomberg
Price-to-book ratio	1/ (P/B) calculation made for comparing purposes	Quarterly	Q1 2005-Q4 2013	36	Bloomberg

FIGURE 1B.

GRAPH A SHOWS THE DEVELOPMENT OF THE SYNTHETIC MARKET *CSMI* AND THE *LUXURY PORTFOLIO* FROM APRIL 2002 TO DECEMBER 2013. WHERE DAILY ABNORMAL RETURNS ON *LUXURY PORTFOLIO* ARE WINSORIZED BY 0.5%. GRAPH B SHOWS CUMULATIVE ABNORMAL RETURN FOR THE LONG-SHORT STRATEGY. IT IS ASSUMED THAT IN APRIL 2002. THE INVESTOR OPENS LONG POSITION IN THE *LUXURY PORTFOLIO* AND SHORTS THE SYNTHETIC MARKET CSMI. THE STRATEGY IS HELD TILL DECEMBER 2013. DAILY ABNORMAL RETURNS ON THE *LUXURY* PORTFOLIO ARE WINSORIZED BY 0.5%. THIS IS IN ORDER TO SMOOTH OUT CUMULATIVE ABNORMAL RETURNS AND TAKE AWAY POTENTIAL OUTLIERS. GRAPH C SHOWS THE DEVELOPMENT OF THE SYNTHETIC MARKET *CSMI* AND THE UNWINSORIZED *LUXURY PORTFOLIO* FROM APRIL 2002 TO DECEMBER 2013. GRAPH D SHOWS UNWINSORIZED CUMULATIVE ABNORMAL RETURNS FROM THE LONG-SHORT STRATEGY. IT IS ASSUMED THAT IN APRIL 2002. THE INVESTOR OPENS LONG POSITION IN *LUXURY PORTFOLIO* AND SHORTS THE SYNTHETIC MARKET *CSMI*. THE POSITION IS HELD TILL DECEMBER 2013. NOTE THAT THE CAR CALCULATED ON DAILY RETURNS IS HIGHER THAN THE CAR CALCULATED USING QUARTERLY RETURN. THIS IS COULD BE EXPLAINED BY THE WILD FLUCTUATIONS OF DAILY EXCHANGE RATES. QUARTERLY EXCHANGE RATES ARE MUCH MORE STABLE.







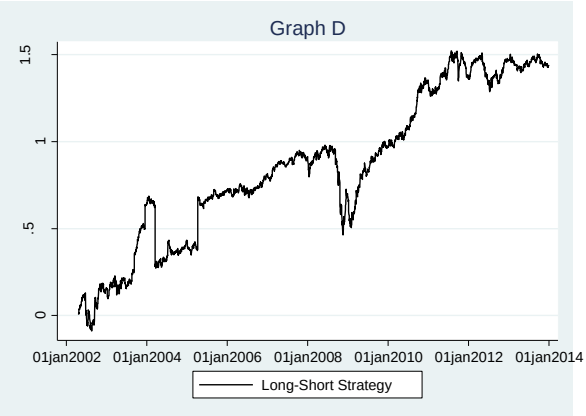


Table XIII
Company Fixed Effect Regression Results For Dividend Yield and Dividend Pay-Out Ratio

DIVIDEND YIELDS ARE SIGNIFICANT AT THE 10% LEVEL FOR TEN FIRMS, FOR WHICH COEFFICIENTS ARE POSITIVE. THE ADJUSTED R-SQUARED IS 3.1%. SEVEN FIRMS SHOW SIGNIFICANT RESULTS FOR DIVIDEND PAY-OUT RATIO AT THE 10% LEVEL, FOUR OF THESE ARE SIGNIFICANT AT THE 5 % LEVEL. THE ADJUSTED R-SQUARED IS 2.3 %.

Company ticker	Dividend yield	Dividend pay-out ratio	Company ticker	Dividend yield	Dividend pay-out ratio
Portfolio level	0.0263*	0.051	MOV	-0.0001	0.0002
	(2.42)	*(1.75)*		*(-0.20)*	*(0.34)*
CDI	0.0063*	0.0036	PVH	0.0033**	0.0035*
	(2.19)	*(1.19)*		*(2.81)*	*(2.25)*
CFR	0.0264**	0.0196	RCO	0.001	0.0006
	(2.61)	*(1.93)*		*(1.75)*	*(1.19)*
COH	0.0075*	0.0061	RL	0.0054**	0.0052*
	(2.00)	*(1.69)*		*(3.02)*	*(2.37)*
FOSL	-0.0001	0.0001	RMS	0.0045	0.0004
	(-0.13)	*(0.13)*		*(1.11)*	*(0.11)*
KER	0.0096*	0.0051	TED	*-0.0003*	-0.0001
	(2.27)	*(1.61)*		*(-0.77)*	*(-0.25)*
LAU	-0.0002	0	TIF	0.0058**	0.0041*
	(-0.44)	*(-0.04)*		*(2.60)*	*(2.02)*
LUK	-0.0001	0	TOD	0.0007	0.0004
	(-0.32)	(0.04)		*(1.37)*	*(0.89)*
LUX	0.0045*	*0.0026*	UHR	0.009	0.0068
	(2.07)	*(1.34)*		*(2.36)*	*(1.80)*
LVMH	0.0375**	0.0212**			
	(3.05)	*(2.81)*			
constant	0.0004	0.0001	Adj. R-sq	0.031	0.023
	(0.88)	*(0.31)*			
N	836	818			
t-value in parentheses	* p<0.05	** p<0.01	*** p<0.001		

FIGURE 2.

EVEN THOUGH THE PORTFOLIO CONTAINS ONLY 19 COMPANIES, THEY ARE THE BIGGEST PLAYERSIN THE MARKET. THE PIE CHARTS SHOW THE PERCENTAGE COVERAGE OF THE MARKET BY SALES AS OF 2012. ON AVERAGE, OVER 80% OF SALES IN THE INDUSTRY WERE ATTRIBUTED TO THE COMPANIES THAT CONSTITUTE THE PORTFOLIO. LEATHER GOODS COMPANIES FROM THE LUXURY PORTFOLIO ACCOUNTED FOR 84% OF TOTAL SALES IN 2012. IN THE JEWELLERY AND WATCH MARKET THE LUXURY PORTFOLIO ACCOUNTED FOR 70% OF TOTAL SALES IN 2012. IN THE APPAREL AND FOOTWEAR SEGMENT THE LUXURY PORTFOLIO ACCOUNTED FOR 91% OF TOTAL SALES. IN THE EYEWEAR MARKET THE LUXURY PORTFOLIO ACCOUNTED OF 86% OF TOTAL SALES IN 2012. IN PERFUMES MARKET THE LUXURY PORTFOLIO ACCOUNTED OF 72% OF TOTAL SALES IN 2012. IN TABLEWARE AND WRITING INSTRUMENTS MARKET THE LUXURY PORTFOLIO ACCOUNTED OF 100% OF TOTAL SALES IN 2012. FINALLY, LUXURY PORTFOLIO ACCOUNTED FOR 65% IN THE WINE AND SPIRITS MARKET

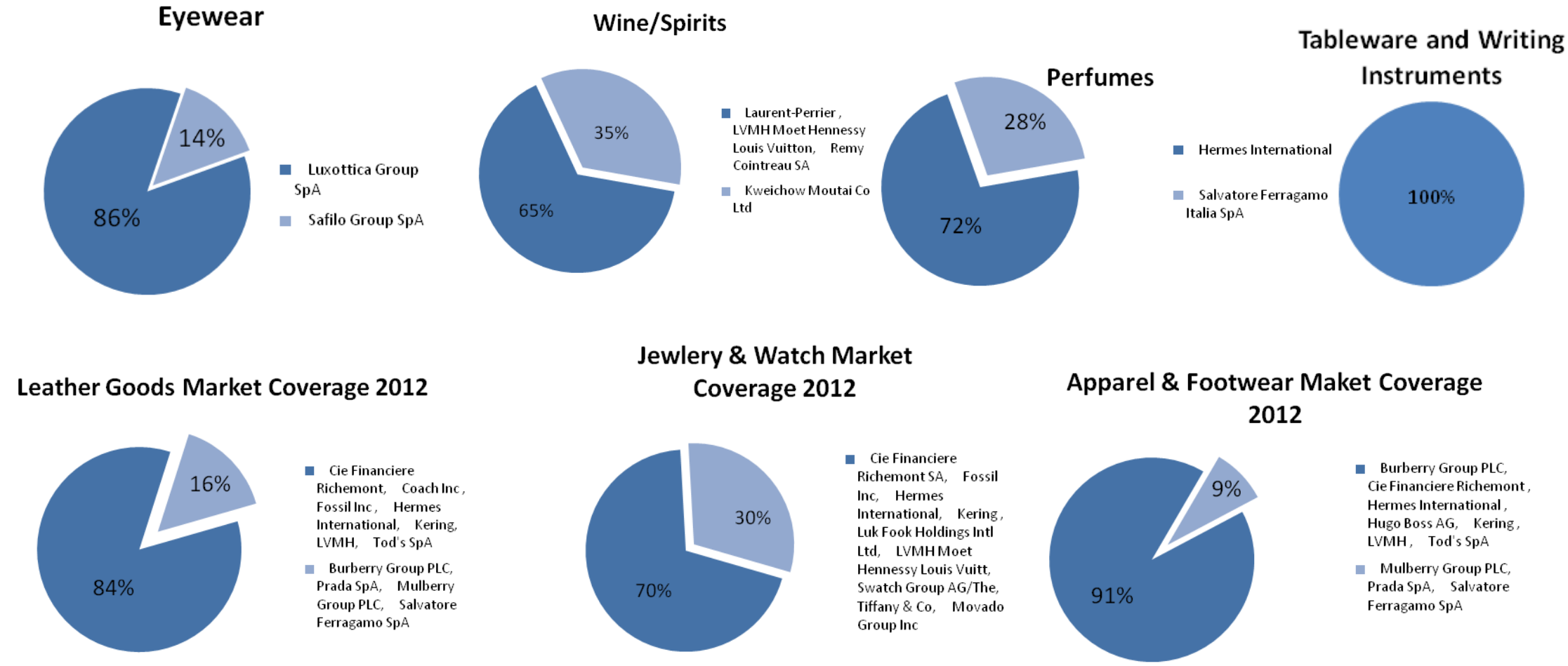


Table XIV
Two-sample Wilcoxon rank-sum Mann-Whitney test

In Table XIV. Test A shows the results of Two-sample Wilcoxon rank-sum test on China Sentiment dummy and abnormal returns. The test is performed to see if the abnormal returns vary with prevailing consumer sentiment on Chinese market. The results show. that there is indeed a difference in abnormal returns for high and low sentiment. where high sentiment is denoted with 1 and low with 0. Furthermore. the abnormal returns are higher for periods with high sentiment. The results are significant on 1% significance level. Test B shows the results of Two-sample Wilcoxon rank-sum test on Russian Sentiment dummy and abnormal returns. The test is performed to see if the abnormal returns vary with prevailing consumer sentiment on Russian market. The results show. that there is indeed a difference in abnormal returns for high and low sentiment. where high sentiment is denoted with 1 and low with 0. Furthermore. the abnormal returns are lower for periods with high sentiment than those for high sentiment periods. Unfortunately. the results could be driven by the fact that almost reverse number of positive and negative sentiment observations were recorded for Russia and China. For Russia there are 798 negative and only 57 positive consumer sentiment observations; For China there are only 38 negative and as many as 817 positive observations recorded. The test could not be performed for Japan as the sentiment dummy shows is uniform throughout the whole sample and equals zero.

Test A

China consumer confidence	Observations	Rank sum	Expected
0	38	7984	16264
1	817	357956	349676
Combined	855	365940	365940
Adjusted variance	2214613.82		
z = -5.564			
Prob > |z| = 0.0000			

Test B

Russia consumer confidence	Observations	Rank sum	Expected
0	798	347477	341544
1	57	18463	24396
Combined	855	365940	365940
Adjusted variance	3244666.75		
z = 3.294			
Prob > |z| = 0.0010			

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