The impact of life changing events on Dutch households' asset allocation

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ABSTRACT

In this master thesis I investigate the influence of life changing events on Dutch households' asset allocation. To examine this I look at three life events: divorce, marriage and widowing. I look at the influence of these life events on the probability of owning luxury assets. I use data from the DNB household survey to evaluate the statistical significance running logistic and logit regressions. No significant relationships are established.

Keywords: household finance, DNB household survey, luxury assets, asset allocation

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1. INTRODUCTION

Between 2011 and 2017 the relative number of marriages in the Netherlands slightly decreased, in 2017 almost 40 percent of the Dutch population was married. While the average marriage age increased over these years. Resulting in 64,402 marriages in 2017 (CBS, 2018). Amongst people in their twenties and thirties marriage became less popular, while registered partnerships are gaining in popularity. The two are very similar in the Netherlands, the only difference being that there is no official "I-do" and that there are different rules for children for partners with the same gender (Echtscheiding Wijzer, 2016). Simultaneously, the chances of divorce are bigger than ever, with 40 percent of the marriages resulting in divorce (Teeuwissen, 2017). Not only does this result in social consequences, there are also major economic consequences.

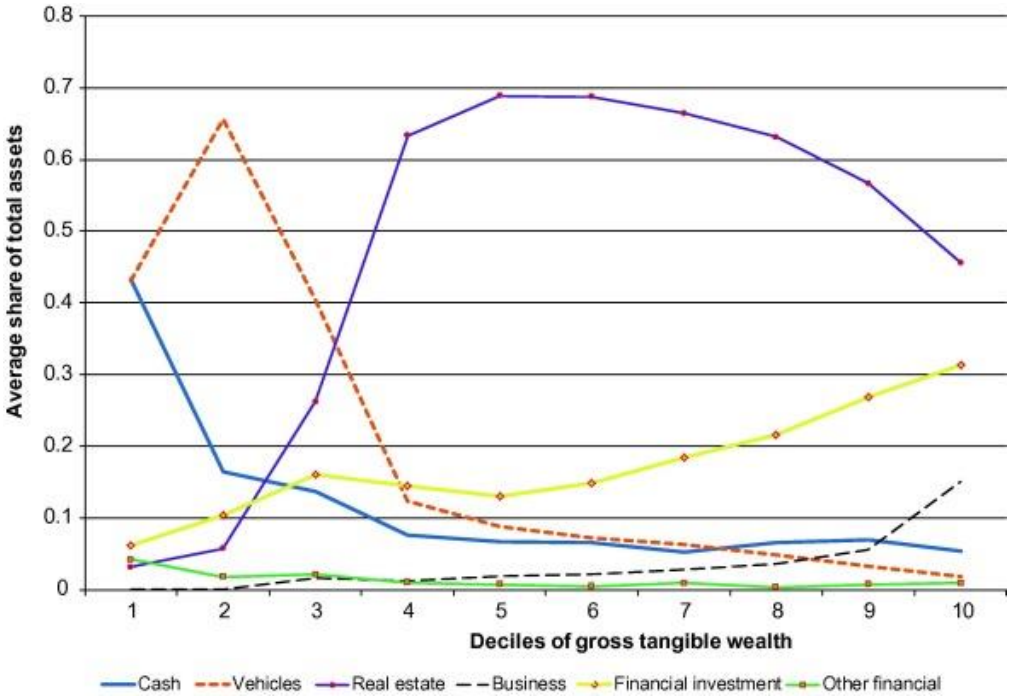
There are clear economic benefits associated with marriage. According to Braverman (2018), who writes Consumer Reports on finance topics, getting married results in, amongst others, lower car insurance premiums due to discounts for more cars. Besides that, living together can be very economically beneficial. On average, the rent of multiple dwellings will be higher. Furthermore, there are considerable cost you can split together. For example energy and water, maintenance, some taxes and the cost of household appliances. And lastly, you can save money by buying value packs at the grocery store.

In many developed countries pension systems have been privatized and entry barriers in loan markets have been lowered. Besides that the policy of credit expansion has been introduced. Therefore, households are more engaged in financial decisions compared to previous years. Moreover, financial innovations keep increasing the possible financing and investment choices (Guiso & Sodini, 2013). In consequence the relevance of household financial decisions has recently increased. It was only in 2006 that John Campbell was the first one to introduce the name 'Household Finance' for the field of financial economics that studies how households use financial instruments and markets to achieve their objectives (Guiso & Sodini, 2013).

A household's portfolio composition determines how well a household can adapt to an event with financial consequences. Figure 1, created by Guiso and Sodini (2013), shows how average U.S. household portfolios are constructed. The households in the poorest percentile cannot afford to own living space and therefore have barely any housing wealth, the largest share of their total assets consists of cash or vehicles. Whereas, for the "middle class" by far the largest part of their total assets consists of real estate and vehicles take in only maximum ten percent of their total assets. For the households in the highest decile the shares of business and financial investment have increased, at the expense of the relative share of housing.

Figure 1.

This figure shows the allocation of tangible wealth of households in the United States in 2007, by deciles of gross tangible wealth.



As gross tangible wealth influences the asset allocation, it would be very interesting to look at the rebalancing effects after different life events. The results of this thesis might be very relevant for financial advisors since there is still little knowledge of how households rebalance their portfolios around and during major life changing events. And it may be desirable to hedge

unfavorable wealth impacts by providing better financial education or insurance products. Along with increasing general financial preparedness (West & Worthington, 2016).

In this thesis I will focus only on relatively unexpected events therefore the relevant previous literature is limited, except for Australian households. I will use household-level longitudinal data from the DNB Household Survey to gain insights into the rebalancing responses of households experiencing one of the following major life changing events: widowing, divorce, and marriage. This results in the following research question: What is the impact of the life changing events widowing, divorce, and marriage on Dutch portfolio rebalancing?

This paper is organized as follows. In the next section I provide an overview of the history of household finance and the related existing literature. Thereafter, I form the hypotheses I test to answer the research question. In the following section I will describe the data I use and the methodology I used to examine whether the relationships I study are statistically significant. This is followed by the result section. Lastly, I will draw conclusions and present limitations and suggestions for further research.

2. LITERATURE REVIEW

In this chapter I will discuss previous studies regarding this subject. First, I summarize the history of household portfolio allocation. Then I describe some recent research about portfolio choice and lastly the household bankruptcy decision, which can also be seen as household portfolio rebalancing. Ultimately, I conclude with relevant literature regarding the three life events I investigate.

2.1 History

Harry Markowitz was the very first to develop a model in which investments with different patterns of returns were combined to construct an optimal portfolio for a given level of risk. And in 1952 his paper "Portfolio selection" was published in the Journal of Finance. This paper has been the foundation for the modern portfolio theory ("Asset Allocation and Diversification", 2018). Six years later Tobin introduced the separation theorem. He showed that everyone would hold the same portfolio of risky assets and, depending on personal risk preference, these risky assets are a different proportion of the total portfolio for every agent.

The capital assets pricing model (CAPM) of Sharpe and Lintner builds on Markowitz's model. This model expects that all agents will hold the same portfolio, but in varying proportions depending on risk exposure; that this portfolio is the portfolio of all tradable securities; and that the prices of assets will be linearly related to their correlations with the market portfolio. However, all these predictions have been rejected by empirical studies. One shortcoming of the CAPM model is that it looks only one period ahead. Therefore, Samuelson and Merton extended the portfolio allocation problem into multiple periods (Carthy, 2004).

All the models mentioned above assume that markets are complete. Whereas in reality households face risks that cannot be traded away, for example mortality risks.

2.2 Portfolio choice

Recent literature has described several different factors that potentially influence portfolio choice. Investment in housing for example, has an influence on, amongst others, the level of stockholdings (Cocco, 2004). Especially for younger and poorer investors there is a trade-off between investing in housing and equity market participation, since stockholdings are detrimental to house price risk. This effect is larger for investors with lower, and thus limited, financial wealth.

Another important factor to take into account when looking at portfolio choice is labour income and the risk linked to it. Cocco, Gomes and Maenhout (2005) created a quantitative model to establish optimal consumption and portfolio choice over the life cycle. This model shows that even though labour income is risky, if the labour income does not depend on equity outcomes, it is more often perceived as a substitute for risk-free assets than for equities. And for this reason higher labour can increase the stock market participation.

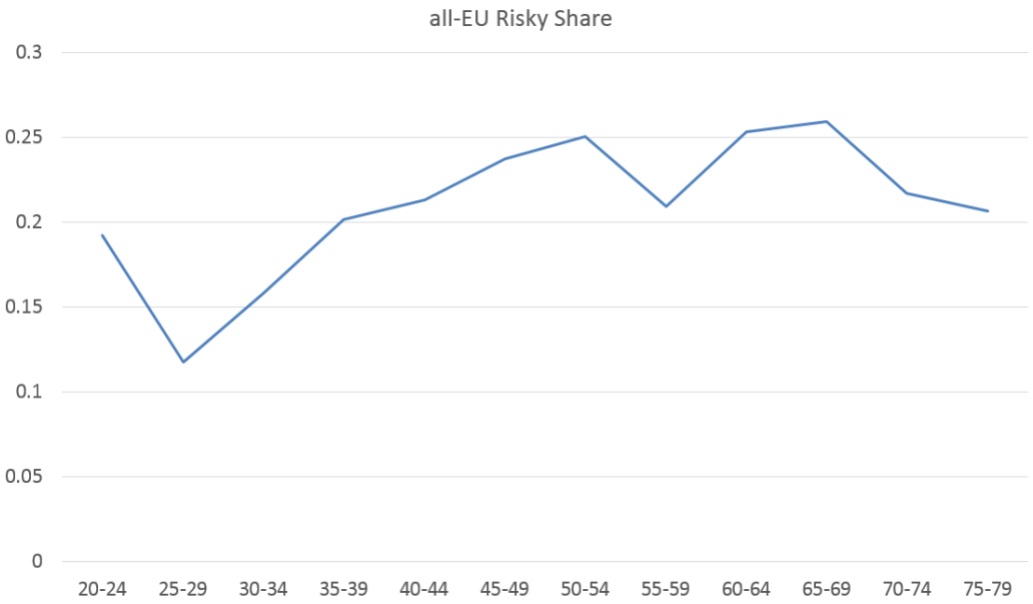
When looking at the effect on risky asset holdings, a further separation between the permanent and the transitory component of labour income risks can be made. Transitory income risk are shocks with no lasting effect. Angerer and Lam (2009) researched this and concluded that transitory income risk has little, and no significant, effect on the portfolio allocation. Whereas an increase in permanent income risk causes an effect which is six times greater, showing a significant increase in the share of risk-free assets in the portfolio.

2.3 Portfolio rebalancing

There is an increasingly amount of research done which makes use of longitudinal panel data to seek to understand household portfolio rebalancing responses when going through some kind of financial shock. Including the impact of a change in income caused by a rather foreseen event, such as retirement. For example, Davis and Kim (2017) found that a while after retirement households on average start to decrease risky asset holdings, as shown in figure 2.

Figure 2.

This figure from the research of Davis and Kim (2017) shows the fraction of all household financial assets held in 'risky' vehicles, by age group. The input comes from the Eurosystem Household Finance and Consumption Survey, which covers 15 different Eurozone countries.



More research has been done that looks at the relationship between age and risky financial assets. For example Fagereng, Gottlieb and Guiso (2017) show similar results when researching Norwegian households. Their findings follow from the same logic as the research mentioned above from Cocco, Goes and Maenhout (2005). Because the capitalized value of labour income drops with age, households compensate for this by reducing holdings in risky financial assets, like equities. The advantage of the data from Fagereng, Gottlieb and Guiso (2017) is that tax avoidance is not likely to be an issue. They use a database from the Norwegian Tax Registry and since Norwegian households pay a wealth tax, they have to report all their asset holdings to the tax authority.

Other research looks at events that may be comparatively unforeseen, like ill health or job loss. For example, Rosen and Wu (2004) whom look at the relationship between health status and portfolio choice. They found that health has a strong influence on portfolio allocation, however

further research is needed to establish through what route this effect works. Households in poor health hold the largest proportion of their wealth in safe assets. And even taken the total wealth level into account, they are less likely to hold risky financial assets.

Most of the research mentioned above is very specific and does not include a broader asset portfolio viewpoint, for example by only examining the impact on equities or risky assets. Therefore, West and Worthington (2016) aim to provide a broader asset portfolio viewpoint in their research on Australian households and they look at a broad range of relatively unexpected events. They use longitudinal data from the Household, Income and Labour Dynamics in Australia (HILDA) survey to examine the impact of serious illness or injury, death of a spouse, fired or made redundant, and separation from spouse on household financial decision making and portfolio rebalancing. Death of a spouse has the largest positive impact on an asset class, namely bank accounts, probably due to insurance pay out. This goes hand in hand with a reduction in the superannuation share. As expected, a divorce results in a significant decrease of home ownership due to the distribution of shared assets. Other findings are that households experiencing employment loss or serious illness or injury tend to decrease the share of equities, both in the long and the short term. This eventually has an unfavourable impact on wealth accumulation as a consequence of reduced portfolio returns.

2.4 The household bankruptcy decision

In het United States when households are severely in debt they often consider filing for personal bankruptcy. Medical bills are the biggest cause of this (Amadeo, 2018). When filing for personal bankruptcy Americans can choose between two different procedures: ‘Chapter 7’ and ‘Chapter 13’. When you file for ‘Chapter 7’ all unsecured debts are discharged for the rest of your life. In return, you have to hand over all your assets above a certain exemption level. The difference between the two is your net financial benefit. However, a household also needs to pay lawyers’ fees and court filing fees. And another thing to take into account are higher future borrowing cost. If you earn a regular income, another option is to file for ‘Chapter 13’. Then you don’t have

to give up any assets, but you do have to introduce a plan to repay a portion of your debt from future income and the judge needs to accept this. Creditors then don't have the right to block repayment plans. Usually these plans are three to five years. In the Netherlands, if you file for bankruptcy, your debts will never be discharged (De Rijdende Rechter, 2018).

This household bankruptcy decision can also be seen as a form of household portfolio rebalancing and is an interesting topic for researchers. When an unforeseen adverse events occurs that reduces a household's ability to repay debts, households file for bankruptcy. However, according to the research of Sullivan, Warren and Westbrook (1989) debtors don't take financial benefits into account when making this decision. Fay, Hurst and White (2002) on the other hand, do find a significant influence of financial benefits on the probability of filing for bankruptcy. They used new data from the Panel Study of Income Dynamics, looking at families in the United States. One of the hypotheses they test is whether households are more likely to file for bankruptcy when the following unexpected adverse events, which reduce their ability to repay debt, occur: health problems, unemployment and being divorced in the previous year. However, little support was found, only for the divorce variable a close to significant relationship was established.

2.5 Life events

Widowhood has been established as a significant and strong predictor of selling the principal residence in the United States. The widower reporting difficulty in managing money strengthens this effect. Besides that, the death of a spouse also sharply decreases the probability of owning a car. At the same time widowhood increases the proportion of liquid assets and time deposits (Coile and Milligan, 2009).

Widowhood also reduces the optimal share of stocks for both men and women. But the effects are especially pronounced for women, three factors contribute to this. First of all, their permanent income decreases relatively more than that of men when becoming widowed.

Secondly, life insurance is bought by couples to eliminate the risk of losing the husband's earnings, this results generally in woman increasing wealth when becoming widowed. Lastly, woman are statistically expected to have a larger risk of outliving their wealth. This was found by Love (2010) when examining the effect of marital status on asset allocation decisions. His analysis also indicated that divorce leads to sharp portfolio adjustments in opposite directions for men and women. Men are moving to a riskier allocation, increasing their shares in stock on average by 15 percentage points, while women move to a safer one.

Unexpected cost that go hand in hand with a divorce, such as legal and housing costs, might be financed by selling return generating assets, decreasing the financial market participation. In addition, the distractions caused by a divorce might lead to declining trading profits. Using difference-in-difference regression models, Grant, Kalev, Subrahmanyam and Westerholm (2017) conclude that divorced Finnish investors indeed underperform a control group, generating 16% lower annual returns. And one year after the divorce, the divorced investors hold smaller portfolios than the control group, they sold significantly more shares than they bought.

Marriage, on the other hand, might increase the financial market participation. Recent research established that gender plays a role in this as well. Married women are found to perceive marriage as a safe asset and therefore invest on average more in risky assets than single women. Whereas for the man, there is no difference between married and single man, when looking at a sample from the Bank of Italy Survey of Household Income and Wealth (Bertocchi and others, 2011). Research looking at a Danish sample confirms that woman indeed increase their exposure to risky assets after marriage. However, this research does state that men even decrease their exposure to risky assets after marriage (Christiansen and others, 2015).

Marriage is also expected to have a positive effect on homeownership. Since married participants have more potential wage earners, social pressure might exist that marriage before homeownership is the norm and cohabiting couples might have more difficulties to obtain a mortgage than married couples. Grinstein-Weiss, Charles, Guo, Manturuk and Key (2011)

compare married an unmarried low-income renters in the United States to examine whether marriage indeed has a positive effect on homeownership. They find that married participants are more likely to become home owners, the odds of home ownership are 272.8 percent higher for married low-income renters. And their research confirms the hypothesis that married couples shift from renting to home ownership at higher rates, and at faster rates.

And lastly, marriage might have a wealth advantage. On average, when looking at individuals over age 50 and their spouses, continuously married people are found to have higher wealth compared to divorced or never-married people and duration in marriage matters. More years of marriage is associated with higher wealth due to more years of economies of scale (Zissimopoulos, Karney and Rauer, 2014).

3. HYPOTHESIS DEVELOPMENT

The research question I will investigate in my thesis is:

What is the impact of the life changing events widowing, divorce, and marriage on Dutch portfolio rebalancing?

I created three hypotheses to test with the aim to answer the research question. Luxury assets are defined as cars, boats and second houses.

Hurd and Rohwedder (2010) use survey data to study how American households responded to the financial crisis and great recession. This crisis, being the most severe recession since the Great Depression of the 1930s, was a very big shock to the financial system. Resulting in unemployment and strong decreases in housing and stock market prices. The main response of most of the respondents was to reduce their spending. Especially spending on food away from home, which is a luxury good and can easily be replaced by eating at home. I expect that when households experience a shock like divorce or widowing, this likely triggers a similar crisis reaction. Also resulting in decreased spending on luxury assets.

Based on the previous literature from Coile and Milligan (2009) who found that widow shocks decrease ownership of vehicles, businesses, and real estate, I expect that:

- *H1: Households that have experienced widowing face a decreased probability of owning luxury assets*

Investors who experience divorce need to fund unexpected liabilities, such as legal costs and housing. Furthermore, divorce is one of the major causes for mortgage default (National Mortgage Guarantee, 2013), therefore I expect housing to decrease after a divorce. Accordingly, I foresee the following:

- *H2: Households that have experienced a divorce face a decreased probability of owning luxury assets*

Cox and Zwinkels (2017) studied mortgage insurance adoption in the Netherlands and found that marriage negatively influences the choice for insurance. A possible explanation is that married couples share income risks together and are thus more diversified. Continuing this line of thinking, I expect married households to own more risky assets, like boats, because their asset portfolio becomes more diversified when getting married. Another research from Zissimopoulos, Karney and Rauer (2014) found that on average, continuously married individuals have higher wealth than other individuals. Therefore, I anticipate that marriage increases wealth and diversification, which results in owning more luxury assets.

I constructed the following hypotheses to test this:

- *H3: Households that have experienced a marriage face an increased probability of owning luxury assets*

4. DATA & METHODLOGY

This section is divided into four paragraphs. The first section discusses the data used. The second and third sections describe all the variables, including controls. I will end this section with the methodology part, in which I illustrate the different regressions I run.

4.1 Sample

I use data from the DNB Household Survey (DHS), which is a longitudinal database of economic and psychological aspects of financial behavior of Dutch households run at CentERdata, Tilburg University and sponsored by De Nederlandse Bank. The data is yearly collected from around 2000 households, which are randomly drawn from the private postal address file issue (Vis, 2012). An advantage of this method is that there is no self-selection. The CentERdata states that the households form a representative cross-section of the Dutch population and the composition of the panel is monitored permanently to ensure a continued accurate reflection of the Dutch population (CentER Panel, 2018).

I investigate the time period 2011 up to and including 2017. I omitted earlier years, due to differences between the questionnaires.

I combine the following data modules that are part of the DHS data, per year: household information, work & pension data, accommodation data, aggregated income data and aggregated wealth data. Before merging I removed all the irrelevant variables. The files can be linked using ID, which is a unique personal index, as key variable. Lastly, I combine these datasets vertically, combing the different years. And I look only at the head of a household, the one responsible for all the finances, other observations are dropped. This results in a sample of 13,914 observations. Manually, I checked the variables age and howlongago for outliers. As a result I dropped 11 observations where the variable JRBS, which states in which year a life event happened, was similar to the year of birth. Afterwards I dropped values that are missing at random, for the variables totalincome and assets, this results in a final total sample of 8,156 observations.

4.2 Variables

Table 1 provides an overview of the definitions of all the variables that are included in the regression models. Calculations of these variables can be found in Appendix A.

Table 1.

This table gives an overview of the variables that are used in the regressions.

Variable	Definition
Boatdum	A dummy variable equal to one if owner of a boat
Cardum	A dummy variable equal to one if owner of a car
Housedum	A dummy variable equal to one if owner of real estate, not being used for own accommodation
Luxassetsdum	A dummy variable equal to one if owner of at least a boat, car or a house not being used for own accommodation
MBO	A dummy variable equal to one if highest level of education attended is senior vocational training
HBO.WO	A dummy variable equal to one if highest level of education attended is vocational colleges or university education
Income1234	Dummies of total net income for household, divided into four quartiles
Lifeevent	A dummy variable equal to one if the respondent has been divorced, widowed or married less than one year ago
Divorced	A dummy variable equal to one if the respondent has been divorced less than one year ago
Widowed	A dummy variable equal to one if the respondent has been widowed less than one year ago
Married	A dummy variable equal to one if the respondent has been married less than one year ago
Year dummies	A dummy variable equal to one if year of filling in survey is that year
Homeowner	A dummy variable equal to one if owner of a home
Selfemployed	A dummy variable equal to one if self-employed or working in own business
Employed	A dummy variable equal to one if employed on a contractual basis
Retired	A dummy variable equal to one if retired
Age dummies	A dummy variable equal to one if age in that age category
Assets1234	Dummies for total amount of assets, divided into four asset quartiles

4.3 Control variables

I include several control variables to better predict the relationship between the dependent and explanatory variables.

Age

Ageing can lead to replacing home ownership and vehicles with more liquid assets, like equities (Coile and Milligan, 2009). Because of the importance of age on the likelihood of a life event occurring, I will control for age in all regressions. I created four dummies for age categories, based on quartiles of 25% each.

Education level

Irandoust (2017) examined whether the way individuals make risky financial choices is related to demographic characteristics. He concludes, based on the estimation of a proportional odds model, that the probability of being highly risk seeking is affected by, amongst others, education. I created two education level dummies, one for higher education (HBO and University) and one for middle education (MBO). Everything else serves as reference category.

Total net income and assets

People in Japan tend to invest proportionally more in real estate and less in equity as their incomes increase (Iwaisako, Mitchell and Piggott, 2004). Therefore, I expect that households with a lower total net income are less likely to own luxury assets. Note that for the calculation of the net income, a negative profit (loss) and negative alimony (paid alimony) are added to the gross income (a negative number is added), this may result in negative net income numbers. One of the questions in the Income and Wealth survey is an open question asking for the total net income from the household. If the respondent fills this in as unknown, he or she indicates the values by choosing from eleven total net income categories, I took the median of every category. I expect that already owning a lot of assets, increases the probability of buying luxury assets, like a boat. Therefore I include total assets as well. To deal with the skewness of these two variables,

which is interpreted from the histograms included in Appendix B. I divided both variables into four dummies, each representing a quartile. In table 2 the correlations between LNassets and the life events are shown. The correlation between being divorced one year ago and LNassets is negative. Whereas, the correlation between being widowed or married and LNassets is positive.

Others

If a household already owns a home, I expect they are more likely to buy a second house, therefore I created a homeownership dummy as control variable. Another thing I control for is the type of occupation. To control for this I created the following dummies: employed, self-employed and retired. I also included the number of household members. And the last control variable I include are year dummies to control for any year effect. Thus, seven year dummies are included in the model. I also intended to control for how long ago a life event happened, however I decided not to include this variable in the regression due to a 0.63 correlation with age. Other correlations between scale variables can be found in table 2.

Table 2.

Correlations between scale variables and between life events and LNassets

	Totalincome	Age	Assets	Howlongago	Aantalhh	LNassets
Totalincome	1.00					
Age	-0.04	1.00				
Assets	0.08	0.09	1.00			
Howlongago	0.02	0.64	0.09	1.00		
Aantalhh	0.06	-0.50	-0.01	-0.13	1.00	
Married						0.10
Divorced						-0.05
Widowed						0.03

4.4 Regression models

To test the relationship between experiencing a life changing event and the probability of owning luxury assets I will run logistic and logit regressions. These regression models are useful when the dependent variable is binary, which means the values are either 0 or 1. The odds is defined as a ratio of probability of being in category 1 to the probability of not being in category 1. I assume multicollinearity is not a problem. I checked for collinearity between all the scale variables, an overview of the correlations can be found in table 2. The correlation between totalincome and assets is the highest of the included variables, as this is only 0.08, there are no correlations found causing any concern.

The predictor variables in the regressions I run are getting divorced, getting widowed and getting married. And the regression equations then look as follows:

Model 1: divorced

$$LN\left(\frac{Pr_{luxassetsdum=1}}{Pr_{luxassetsdum=0}}\right) = \beta_0 + \beta_1 Divorced + \beta_2 Age19.46 + \beta_3 Age47.60 + \beta_4 Age61.69 + \beta_5 Homeowner + \beta_6 Selfemployed + \beta_7 Retired + \beta_8 Primary + \beta_9 MBO + \beta_{10} Income1 + \beta_{11} Income2 + \beta_{12} Income3 + \beta_{13} Assets1 + \beta_{14} Assets2 + \beta_{15} Assets3 + \beta_{16} Lifeevent + \beta_{17} Yeardum_i + \varepsilon$$

In Model 2 and Model 3 the regression equation remains the same. The only difference being that in Model 2, the coefficient after β_1, divorced, is replaced by married and in Model 3 by widowed.

Model 4: controls only

$$LN\left(\frac{Pr_{luxassetsdum=1}}{Pr_{luxassetsdum=0}}\right) = \beta_0 + \beta_1 Age19.46 + \beta_2 Age47.60 + \beta_3 Age61.69 + \beta_4 Homeowner + \beta_5 Selfemployed + \beta_6 Retired + \beta_7 Primary + \beta_8 MBO + \beta_9 Income1 + \beta_{10} Income2 + \beta_{11} Income3 + \beta_{12} Assets1 + \beta_{13} Assets2 + \beta_{14} Assets3 + \beta_{15} Lifeevent + \beta_{16} Yeardum_i + \varepsilon$$

Model 5: all variables

$$LN\left(\frac{Pr_{luxassetsdum=1}}{Pr_{luxassetsdum=0}}\right) = \beta_0 + \beta_1 Divorced + \beta_2 Married + \beta_3 Widowed + \beta_4 Age19.46 + \beta_5 Age47.60 + \beta_6 Age61.69 + \beta_7 Homeowner + \beta_8 Selfemployed + \beta_9 Retired + \beta_{10} Primary + \beta_{11} MBO + \beta_{12} Income1 + \beta_{13} Income2 + \beta_{14} Income3 + \beta_{15} Assets1 + \beta_{16} Assets2 + \beta_{17} Assets3 + \beta_{18} Yeardum_i + \varepsilon$$

I will also run model five with owning a boat, a car and a second house as dependent variables, instead of luxury assets.

As reference category for the variable year I chose 2017. So that the other categories are estimated relative to the last year in the sample. For the variable age I left the highest age category out of the regressions, as a reference category. And lastly, for education level I think it is most interesting to compare with the HBOWO category.

5. EMPRICAL RESULTS & ANALYSIS

5.1 Summary statistics

In table 3 you can find the descriptive statistics of the sample, which gives a first impression of the data. In total there are 61 households married one year ago, 24 households divorced one year ago and 50 widowed one year ago, out of the total sample. I included a T-test for the scale variables and a chi square test for the categorical variables, to compare the households without luxury assets to the households with luxury assets. For the following independent variables there is a statistically significant difference between the households without luxury assets and the households with luxury assets: totalincome, age, assets, aantalhh, divorce, lifeevent, education level, homeownership and the type of occupation.

The total number of observations is 8,156. More than 50% of this sample has been married at some point in time, 643 respondents are divorced and 616 widowers are included in the sample. However, only very few households experienced a life event only one year ago. 0.75% of the total sample is married one year ago, 0.29% of the total sample divorced one year ago and 0.61% became widower one year ago. The mean age of the sample is 57 years. And most of the respondents have a high education level, namely HBO or WO. The percentage respondents in this sample with higher education (HBO.WO) is 45%, which is relatively high compared to the average in the Netherlands, which was 28% in 2012 and has been increasing since then (CBS, 2013). Only very few people are self-employed, but more than one third of the sample is retired. From the respondents who did not know their exact income and therefore had to choose in which category the income of the household falls, most of them chose the category between 26.000 and 38.000 euro.

Table 3.

*This table shows the descriptive statistics of the sample. Households with and without luxury assets are compared, using t and chi2 tests. Data are from the DNB Household Survey and the following years are included: 2011 – 2017. ***, ** and * indicate the significance levels at respectively 1, 5 and 10 percent. The variables are described in Appendix A.*

		Total sample (N = 8,156)		Households without luxury assets (N = 1,834)		Households with luxury assets (N = 6,332)		Statistical Test	
Variable	Obs	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	t	two-tailed p-value
Totalincome	8156	32022.64	26163.70	27133.04	30753.19	33441.11	24493.84	-9.14	0.00***
Age	8156	57.54	15.37	53.43	16.45	58.73	14.83	-13.14	0.00***
Assets	8156	77237.88	190703.30	43061.96	152542.40	87152.25	199335.70	-8.76	0.00***
Aantalhh	8156	2.14	1.14	1.88	1.08	2.22	1.14	-11.35	0.00***
		N	%	N	%	N	%	Chi2	p-value
Married	8156	61	0.75%	18	1.0%	43	0.7%	1.74	0.19
Divorced	8156	24	0.29%	11	0.6%	13	0.2%	7.53	0.01***
Widowed	8156	50	0.61%	12	0.7%	38	0.6%	0.07	0.80
Lifeevent	8156	124	1.5%	40	2.2%	84	1.3%	6.90	0.01***
Age19_46	8156	2203	27.0%	675	36.8%	1528	24.1%	115.12	0.00***
Age47_60	8156	1961	24.0%	472	25.7%	1489	23.5%	3.71	0.05**
Age61_69	8156	2055	25.2%	370	20.2%	1685	26.6%	31.66	0.00***
Age70_93	8156	1937	23.7%	317	17.3%	1620	25.6%	54.60	0.00***
Primary	8156	172	2.1%	42	2.3%	130	2.1%	0.38	0.54
MBO	8156	1573	19.3%	342	18.6%	1231	19.4%	0.62	0.43
HBOWO	8156	3668	45.0%	787	42.9%	2881	45.5%	4.06	0.04**
Homeowner	8156	5675	69.6%	925	50.4%	4750	75.0%	409.70	0.00***
Selfemployed	8156	32	0.4%	13	0.7%	19	0.3%	6.06	0.01***
Employed	8156	3717	45.6%	868	47.3%	2849	45.0%	2.93	0.09*
Retired	8156	2928	35.9%	449	24.5%	2479	39.2%	134.04	0.00***
Income1	8156	2039	25.0%	703	38.3%	1336	21.1%	224.27	0.00***
Income2	8156	4840	59.3%	1304	71.1%	3536	55.8%	135.59	0.00***
Income3	8156	1675	20.5%	267	14.6%	1408	22.2%	51.82	0.00***
Income4	8156	1480	18.1%	215	11.7%	1265	20.0%	65.72	0.00***
Assets1	8156	2047	25.1%	909	49.6%	1138	18.0%	753.36	0.00***
Assets2	8156	2034	24.9%	389	21.2%	1645	26.0%	17.57	0.00***
Assets3	8156	2036	25.0%	290	15.8%	1746	27.6%	105.77	0.00***
Assets4	8156	2039	25.0%	246	13.4%	1793	28.3%	169.41	0.00***

In table 4 the observations per year are described. In the later years, slightly more observations are included. But overall, there are no outliers.

Table 4.

Observations per year

Year	N	%
2011	1,045	12.8
2012	1,108	13.6
2013	1,032	12.7
2014	1,059	13.0
2015	1,376	16.9
2016	1,230	15.1
2017	1,306	16.0
Total	8,156	100.0

5.2 Boat, car and second house

Table 5 compares households with and without a boat, households with and without a car and households with and without a second house. To create a further distinction within the luxury assets.

Table 5.

*This table shows more descriptive statistics. Households with and without a boat, with and without a second house and with and without a car are compared, using a chi2 test. Data are from the DNB Household Survey and the following years are included: 2011 – 2017. ***, ** and * indicate the significance levels at respectively 1, 5 and 10 percent.*

			Married				Divorced				Widowed			
		Total	N	%	Chi2	p-value	N	%	Chi2	p-value	N	%	Chi2	p-value
Boat	Yes	190	0	0.0%	1.47	0.23	0	0.0%	0.57	0.45	0	0.0%	1.20	0.27
	No	7966	61	0.8%			24	0.3%			50	0.6%		
Second house	Yes	340	4	1.2%	0.88	0.35	0	0.0%	1.05	0.31	2	0.6%	0.00	0.95
	No	7816	57	0.7%			24	0.3%			48	0.6%		
Car	Yes	6251	42	0.7%	2.08	0.15	13	0.2%	6.79	0.01***	13	0.2%	0.20	0.66
	No	1905	19	1.0%			11	0.6%			37	1.9%		

None of the households who experienced a life event one year ago owns a boat. And no statistically significant difference between the two groups, households with and households without a boat, can be established for all three life event variables.

The majority of the sample owns a car, 6,251 out of the 8,156 households own a car. 42 out of the 61 married households own a car, 13 out of the 24 divorced households own a car and 13 out of the 50 widowed households own a car. The chi2 test does establish a significant difference, at a 1% level, between the group owning a car and not owning a car for the variable divorced.

Only 340 households own a second house, this is 4% of the total sample. None out of the 24 divorced households own a second house and only 2 out of the 50 widowed households own a second house. However no significant difference, between the household with and without second house, can be established.

5.3 Regressions

In table 6 the results of three logistic and logit regressions are shown, with the following independent variables: divorced (model 1), married (model 2) and widowed (model 3). Controls for age, homeownership, type of employment, level of education, income level, level of assets, the numbers of household members and a life event happening are included. Besides that year dummies are included as well.

Table 6.

*This table shows the results of multivariate regressions. Which test the influence of marriage, divorce and widowing on the probability of owning luxury assets. In this table three regressions are performed, all with a dummy as dependent variable, which is equal to 1 if a household owns luxury assets. Data are from the DNB Household Survey and the following years are included: 2011 – 2017. Variable definitions can be found in table 1. ***, ** and * indicate the significance levels at respectively 1, 5 and 10 percent.*

	Model 1 (N = 8,156)			**Model 2 (N = 8,156)**			**Model 3 (N = 8,156)**		
	Coefficient / Standard error	p-value	Odds ratio	Coefficient / Standard error	p-value	Odds ratio	Coefficient / Standard error	p-value	Odds ratio
Constant	1.32	0.00***	3.75	1.32	0.00***	3.74	1.32	0.00	3.75
	0.17		0.64	0.17		0.64	0.17		0.64
Divorced	0.05	0.93	1.05						
	0.50		0.52						
Married				0.11	0.79	1.11			
				0.41		0.45			
Widowed							-0.16	0.72	0.85
							0.43		0.37
Age19_46	-0.78	0.00***	0.46	-0.78	0.00***	0.46	-0.78	0.00***	0.46
	0.12		0.06	0.12		0.06	0.12		0.06
Age47_60	-0.50	0.00***	0.60	-0.50	0.00***	0.61	-0.50	0.00***	0.61
	0.12		0.07	0.12		0.07	0.12		0.07
Age61_69	-0.11	0.24	0.89	-0.11	0.24	0.89	-0.11	0.24	0.89
	0.09		0.08	0.09		0.08	0.09		0.08
Homeowner	0.46	0.00***	1.59	0.46	0.00***	1.59	0.46	0.00***	1.59
	0.06		0.10	0.06		0.10	0.06		0.10
Selfemployed	-1.39	0.00***	0.25	-1.39	0.00***	0.25	-1.39	0.00***	0.25
	0.39		0.10	0.39		0.10	0.39		0.10
Retired	0.16	0.1*	1.18	0.17	0.1*	1.18	0.17	0.1*	1.18
	0.10		0.12	0.10		0.12	0.10		0.12
Pimary	0.02	0.91	1.02	0.02	0.91	1.02	0.02	0.91	1.02
	0.20		0.20	0.20		0.20	0.20		0.20
MBO	0.41	0.00***	1.51	0.41	0.00***	1.51	0.41	0.00***	1.51
	0.08		0.12	0.08		0.12	0.08		0.12
Income1	-0.28	0.00***	0.76	-0.28	0.00***	0.76	-0.28	0.00***	0.76
	0.07		0.05	0.07		0.05	0.07		0.05
Income2	-0.13	0.14	0.88	-0.12	0.15	0.88	-0.13	0.15	0.88
	0.09		0.08	0.09		0.08	0.09		0.08
Income3	0.04	0.69	1.04	0.04	0.68	1.04	0.04	0.69	1.04
	0.10		0.11	0.10		0.11	0.10		0.11
Assets1	-1.35	0.00***	0.26	-1.35	0.00***	0.26	-1.34	0.00***	0.26
	0.09		0.02	0.09		0.02	0.09		0.02
Assets2	-0.31	0.00***	0.73	-0.31	0.00***	0.73	-0.31	0.00***	0.73
	0.09		0.07	0.09		0.07	0.09		0.07
Assets3	-0.08	0.41	0.92	-0.08	0.42	0.93	-0.08	0.41	0.92
	0.10		0.09	0.10		0.09	0.10		0.09
Aantalhh	0.28	0.00***	1.33	0.28	0.00***	1.33	0.28	0.00***	1.33
	0.03		0.04	0.03		0.04	0.03		0.04
Lifeevent	-0.19	0.41	0.83	-0.23	0.41	0.80	-0.13	0.61	0.88
	0.23		0.19	0.28		0.22	0.25		0.22
Yeardummies	Yes			Yes			Yes		
Model Assessment:									
Log likelihood	-3779.0			-3779.0			-3778.9		
LR chi2	1136.2 (23)	0.00***		1136.3 (23)	0.00***		1136.4 (23)	0.00***	
Pseudo R2	0.1			0.1			0.1		

From table 6 I conclude that, against expectations and the results from the chi2 tests, none of the three life events has a significant influence on the probability of owning luxury assets. Therefore, none of the hypotheses that are stated in section three of this research can be confirmed. And I cannot draw any conclusions about these hypotheses.

Younger age categories have a significant influence on the probability of owning luxury assets. The level of education has an influence as well, an MBO education level is significant at a one percent level. And being self-employed, owning a home and the numbers of household members also influence the probability of owning luxury assets very significantly. Two very important control variables, net income of the household and total assets, have a very significant influence on the probability of owning luxury assets. If a household is in the lowest quartile of either net income or assets, as expected, this decreases the probability of owning luxury assets. Lastly, whether the year effects are significant differs per year.

Being divorced one year ago, against expectations, seems to have a small positive influence on the probability of owning luxury assets. However, as mentioned above, this relationship is not significant. The odds of having luxury assets are 1.05 times the odds for a household not being divorced one year ago having luxury goods. This means that the odds for a household not being divorced one year ago having luxury assets is 0.95 (1/1.05) times the odds for a household being divorced one year ago. This indicates an implied probability of 95%.

Marriage is also likely to have a positive influence on the probability of owning luxury assets. Do note that this relationship is not significant. The odds of having luxury assets are 1.11 times the odds for a household not being married one year ago having luxury goods. Which means the odds for a household not being married one year ago having luxury assets is 0.90 (1/1.11) times the odds for a household being married one year ago. This indicates an implied probability of 90%.

The odds of having luxury assets are 0.85 times the odds for a household not being widowed one year ago having luxury goods. Which means the odds for a household not being widowed one year ago having luxury assets is 1.17 (1/0.85) times the odds for a household being widowed one year ago. Thus, being widowed tends to decrease the odds of having luxury assets. However, this decrease is not significant.

Regressions with control variables only (model 4) and all life events included (model 5), to control for each other, can be found in table 7. Creating a model with all three life events included does change the outcome described above. Again, none of the life events has a significant influence on the probability of owning luxury assets. However, when divorced, married and widowed are all included in one regression, they all seem to have a negative influence on the probability of owning luxury assets. A possible explanation could be that it might take some time for a household to adjust its asset allocation to the life event happening and therefore the changes in the probability of owning luxury assets, due to life events occurring, are not significant. For example, when you put your second house on the market, especially during an economic downturn, it might take a while before the house is sold. Also, becoming widowed can be such an unexpected shock that in the first year the widower might not think rationally.

Table 7.

*This table shows the results of multivariate regressions. In this table two regressions are performed, both with a dummy as dependent variable, which is equal to 1 if a household owns luxury assets. Data are from the DNB Household Survey and the following years are included: 2011 – 2017. Variable definitions can be found in table 1. ***, ** and * indicate the significance levels at respectively 1, 5 and 10 percent.*

	Model 4 (N = 8,156)			**Model 5 (N = 8,156)**		
	Coefficient / Standard error	p-value	Odds ratio	Coefficient / Standard error	p-value	Odds ratio
Constant	1.32	0.00***	3.75	1.32	0.00***	3.75
	0.17		0.64	0.17		0.64
Divorced				-0.14	0.75	0.87
				0.44		0.38
Married				-0.12	0.69	0.89
				0.30		0.27
Widowed				-0.28	0.42	0.75
				0.35		0.27
Age19_46	-0.78	0.00***	0.46	-0.78	0.00***	0.46
	0.12		0.06	0.12		0.06
Age47_60	-0.50	0.00***	0.61	-0.50	0.00***	0.60
	0.12		0.07	0.12		0.07
Age61_69	-0.11	0.24	0.90	-0.11	0.24	0.89
	0.09		0.08	0.09		0.08
Homeowner	0.46	0.00***	1.59	0.46	0.00***	1.59
	0.06		0.10	0.06		0.10
Selfemployed	-1.39	0.00***	0.25	-1.39	0.00***	0.25
	0.39		0.10	0.39		0.10
Retired	0.17	0.01*	1.18	0.17	0.01*	1.18
	0.10		0.12	0.10		0.12
Pimary	0.02	0.91	1.02	0.02	0.91	1.02
	0.20		0.20	0.20		0.20
MBO	0.41	0.00***	1.51	0.41	0.00***	1.51
	0.08		0.12	0.08		0.12
Income1	-0.28	0.00***	0.76	-0.28	0.00***	0.76
	0.07		0.05	0.07		0.05
Income2	-0.13	0.15	0.88	-0.12	0.15	0.88
	0.09		0.08	0.09		0.08
Income3	0.04	0.69	1.04	0.04	0.68	1.04
	0.10		0.11	0.10		0.11
Assets1	-1.34	0.00***	0.26	-1.35	0.00***	0.26
	0.09		0.02	0.09		0.02
Assets2	-0.31	0.001	0.73	-0.31	0.00***	0.73
	0.09		0.07	0.09		0.07
Assets3	-0.08	0.42	0.93	-0.08	0.42	0.93
	0.10		0.09	0.10		0.09
Aantalhh	0.28	0.00***	1.33	0.28	0.00***	1.33
	0.03		0.04	0.03		0.04
Lifeevent	-0.18	0.383	0.84			
	0.20		0.17			
Yeardummies	Yes			Yes		
Model Assessment:						
Log likelihood	-3779.0			-3778.9		
LR chi2	1136.2 (22)	0.00***		1136.4 (24)	0.00***	
Pseudo R2	0.1			0.1		

Table 8 shows the regressions in which luxury assets are split further into car and house. The regression model with boat as dependent variable is not included. Because the life event variables were omitted in this model. I checked and this is not due to too much correlation between the independent variables. Therefore I think this variable contains too little observations where the boatdum is equal to 1 to draw any conclusions about this. There are namely 190 boat owners, out of the total sample of 8,156, this is only 2% of the entire sample. From the descriptive statistics in table 4 can also be concluded that there is no variation between life events and boat ownership. All three life events have a negative influence on the probability of owning a car, however none of these relationships is significant. Marriage does have a significant positive influence on the probability of owning a second house. The odds of having a second house are 3.52 times the odds for a household not being married one year ago having a second house . Which means the odds for a household not being married one year ago having a second house is 0.28 (1/3.52) times the odds for a household being married one year ago. This indicates an implied probability of 28%. Widowed, on the other hand, has a negative influence on the probability of owning a second house, do note that this relationship is not significant.

Against expectations, the regressions with luxury assets as dependent variable do not show any significant relationships. Whereas, when running the regressions with a dummy for second house instead of luxury assets as dependent variable, a significant relationship is established. I expect this might be because so many households hold a car, namely 77% of the sample, that in most cases the dummy variable for luxury assets is equal to '1'. Whereas, only 4% of the sample owns a second house. Therefore I think largest part of the Dutch population perceives a regular car more as a necessary than a luxury good. After a divorce, it is for example possible that a household downgrades its car to a cheaper version, however the dummy variable for luxury assets then still remains '1'. Besides that it is harder to downgrade a second house and I expect in the Netherlands there are only very few people who can financially afford to own a second house all by themselves, therefore marriage increases the likelihood of owning a second house.

Table 8.

*This table shows the results of multivariate regressions. Which test the influence of marriage, divorce and widowing on the probability of owning a boat, car and second house. In this table two regressions are performed, all with a dummy as dependent variable, which is equal to 1 if a household owns a car or second house. Data are from the DNB Household Survey and the following years are included: 2011 – 2017. Variable definitions can be found in table 1. ***, ** and * indicate the significance levels at respectively 1, 5 and 10 percent.*

	Cardum (N = 8,156)			**Housedum** (N = 8,156)		
	Coefficient	p-value	Odds ratio	Coefficient	p-value	Odds ratio
Constant	1.16	0.00***	3.19	-1.90	0.00***	0.15
	0.17		0.53	0.33		0.05
Divorced	-0.11	0.80	0.90	0.00		1.00
	0.44		0.39	(omitted)		(omitted)
Married	-0.15	0.62	0.86	1.26	0.05**	3.52
	0.29		0.25	0.65		2.30
Widowed	-0.35	0.31	0.71	-0.44	0.56	0.64
	0.34		0.24	0.76		0.49
Age19_46	-0.84	0.00***	0.43	0.66	0.01***	1.94
	0.12		0.05	0.27		0.52
Age47_60	-0.56	0.00***	0.57	0.28	0.26	1.32
	0.12		0.07	0.25		0.32
Age61_69	-0.14	0.14	0.87	0.21	0.21	1.24
	0.09		0.08	0.17		0.21
Homeowner	0.48	0.00***	1.61	0.02	0.92	1.02
	0.06		0.10	0.17		0.17
Selfemployed	-1.56	0.00***	0.21	-0.16	0.84	0.86
	0.38		0.08	0.78		0.66
Retired	0.16	0.01*	1.18	0.07	0.70	1.08
	0.10		0.12	0.19		0.21
Pimary	0.04	0.84	1.04	0.00		1.00
	0.20		0.20	(omitted)		(omitted)
MBO	0.33	0.00***	1.40	0.21	0.21	1.24
	0.08		0.10	0.17		0.21
Income1	-0.28	0.00***	0.76	0.21	0.20	1.24
	0.07		0.05	0.17		0.21
Income2	-0.13	0.12	0.88	0.29	0.07	1.33
	0.08		0.07	0.16		0.21
Income3	0.06	0.52	1.06	-0.31	0.08	0.73
	0.10		0.10	0.18		0.13
Assets1	-1.13	0.00***	0.32	0.00		1.00
	0.09		0.03	(omitted)		(omitted)
Assets2	-0.12	0.18	0.89	-5.53	0.00***	0.00
	0.09		0.08	0.71		0.00
Assets3	0.07	0.42	1.08	-3.53	0.00***	0.03
	0.09		0.10	0.29		0.01
Aantalhh	0.28	0.00***	1.33	-0.03	0.59	0.97
	0.03		0.04	0.06		0.06
Lifeevent						
Yeardummies	Yes			Yes		
Model Assessment:						
Log likelihood	-3885.1			-961.5		
LR chi2	1096.3 (24)	0.00***		688.3 (21)	0.00***	
Pseudo R2	0.1			0.3		

6. CONCLUSION

In this study I examine whether life changing events impact the Dutch household's asset allocation decision. The regression results reveal that none of the life events I look at have a significant impact on the probability of owning luxury assets. Therefore I cannot draw any conclusions about the hypotheses. But I did find a significant relationship between the life event marriage and the probability of owning a second house. Therefore I can conclude that life changing events do impact the Dutch household's asset allocation decision. And further research on this topic is recommended.

These findings will be relevant for financial advisors, as it may be possible to hedge wealth adverse impacts. Through, for example, insurance products. It contributes to the current literature as well. Since there hasn't been done any research on the influence of life events on Dutch households. Most of the related research has been done in Australia and the United States. Also the focus in existing research is mostly on relatively foreseen life events, for instance retirement.

It should be noted that in my sample there are only very few households who have experienced a life event one year ago, at the moment they filled in the survey. Hence, for further research I would suggest to take a larger sample. This can be carried out by looking at more countries or at a bigger country, for example the United Sates. Another option would be to look at a longer period after the life event happening, for example households who have been married maximum three years ago, instead of only one year. Because the adjustment of the asset portfolio might be sluggish. Therefore, it would be interesting to see if the Dutch households need longer than one year to rebalance their asset portfolio after a life event happening. Also a limitation of this research, which is hard to overcome, is that one divorce is not the other divorce, for example one is income driven. The data from the DNB household survey do not give any insights into the reasoning behind a life event. The last limitation of this research is that I exclude a broader asset portfolio viewpoint, by only looking at luxury assets. It would be interesting to look at more asset classes.

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APPENDIX A: Variables

Overview of the variables that are used in dataset

Variable	Definition
Positie	The respondent's position in the household equal to:
	1 if head of the household
	2 if spouse
	3 if permanent partner (not married)
	4 if parent (in law)
	5 if child living at home
	6 if housemate
	7 family member or boarder
Burgst	Marital status equal to:
	1 if married, having community of property
	2 if married, with a marriage settlement
	3 if divorced
	4 if living together
	5 if widowed
	6 if never married
Oplmet	Highest level of education completed
	1 (Continued) special education
	2 Kindergarten/primary education
	3 Pre-vocational education
	4 Pre-university education
	5 Senior vocational training or training through apprentice system
	6 Vocational colleges
	7 University education
	8 Did not have education (yet)
	9 Other sort of education/training
Nohhold	Household index
Nomem	Index of the member of the household
ID	Unique personal index calculated as follows:

	nohhold x 100 + nomem
House	The amount of real estate, not being used for own accommodation minus the mortgages on these pieces of real estate
Year	Year the survey was taken
Gebjaar	Year of birth
wo1	Tenant, subtenant, or owner of current accommodation
	1 Tenant
	2 Subtenant
	3 Owner
	4 Otherwise, e.g. rent free
Bezighei	Primary occupation
	1 Employed on a contractual basis
	2 Works in own business
	3 Free profession, freelance, self-employed
	4 Looking for work after having lost job
	5 Looking for first-time work
	6 Student
	7 Works in own household
	8 Retired [pre-retired, AOW, VUT]
	9 (Partly) disabled
	10 Unpaid work, keeping benefit payments
	11 Works as a volunteer
	12 Other occupation
	13 Too young, has no occupation yet
Jrbs	In which year you get married / divorced / become widowed / start living together
B1b	Total amount of checking accounts
B3b	Total amount of savings or deposit accounts
B4b	Total amount of deposit books
B6b	Total amount of savings certificates
B7b	Total amount of single-premium annuity insurance policies

B8b	Total amount of savings or endowment insurance policies
B11b	Total amount of growth funds
B12b	Total amount of mutual funds and/or mutual fund accounts
B13b	Total amount of bonds and/or mortgage bonds
B14b	Total amount of stocks and shares
B19vzb	Total amount of life insurance mortgage real estate
B20b	Total amount of cars
B21b	Total amount of motorbikes
B22b	Total amount of boats
B23b	Total amount of caravans/trailers
B25b	Total amount of savings not mentioned before
B28b	Total amount of stocks from substantial holding
B29b	Total amount of business equity (professions)
B30b	Total amount of business equity self-employed
In49a	Total amount net income household in 2016 (if year is 2017), -9 = don't know
In50	Indication total net income household
	1 Less than 8.000 euro => 4000
	2 Between 8.000 euro and 9.500 euro => 8750
	3 Between 9.500 euro and 11.000 euro => 10250
	4 Between 11.000 euro and 13.000 euro => 12000
	5 Between 13.000 euro and 16.000 euro => 14500
	6 Between 16.000 euro and 20.000 euro => 18000
	7 Between 20.000 euro and 26.000 euro => 23000
	8 Between 26.000 euro and 38.000 euro => 32000
	9 Between 38.000 euro and 50.000 euro => 44000
	10 Between 50.000 euro and 75.000 euro => 62500
	11 More than 75.000 euro => 87500
Aantalhh	Number of household members
Howlongago	Year – jrbs

Overview of variables that are used in the regressions

Variable	Definition
Boatdum	= 1 if b22b > 0
Cardum	= 1 if b20b > 0
Housedum	= 1 if house > 0
Luxassetsdum	= 1 if boatdum, cardum or housedum = 1
MBO	= 1 if oplmet = 5
HBO.WO	= 1 if oplmet = 6/7
Netincome	= gross income – income tax + alimony for children + government scholarship + study loan + parental support for studies + support from family + inheritance + rent allowance + allowance to adjust to new rent – profits – alimony from spouse + interest/dividends/other income + real estate income/letting of rooms
Totalincome	= in49a if in49a > 0 = in50 if in49a = -9 = netincome if in49a is missing
Lifeevent	= 1 if divorced/widowed/married = 1
Divorced	= 1 if howlongago = 1 and burgst = 3
Widowed	= 1 if howlongago = 1 and burgst = 5
Married	= 1 if howlongago = 1 and burgst = 1 or 2
Year dummies	= 1 if year of filling in survey is that year
Homeowner	= 1 if wo1 = 3
Selfemployed	= 1 if bezighei = 2
Employed	= 1 if bezighei = 1
Retired	= 1 if bezighei = 8
Age dummies	= 1 if age is in that quartile
Assets	b1b + b3b + b4b + b6b + b7b + b8b + b11b + b12b + b13b + b14b + house + b19vzb + b20b + b21b + b22b + b23b + b25b + b28b + b29b + b30b
(Howlongago2)	= (year – jrbs) + 1 = 1 if no life event
Income1	= 1 if totalincome < = 9

Income2	= 1 if totalincome > 9 & < = 21800
Income3	= 1 if totalincome > 21800 & < = 36624
Income4	= 1 if totalincome > 36624
Assets1	= 1 if assets < = 10704
Assets2	= 1 if assets > 10704 & < = 27989
Assets3	= 1 if assets > 27989 & < = 73400
Assets4	= 1 if assets > 73400

APPENDIX B: Scatterplots and histograms

Figure 1.

Scatterplot that shows luxury assets over the years

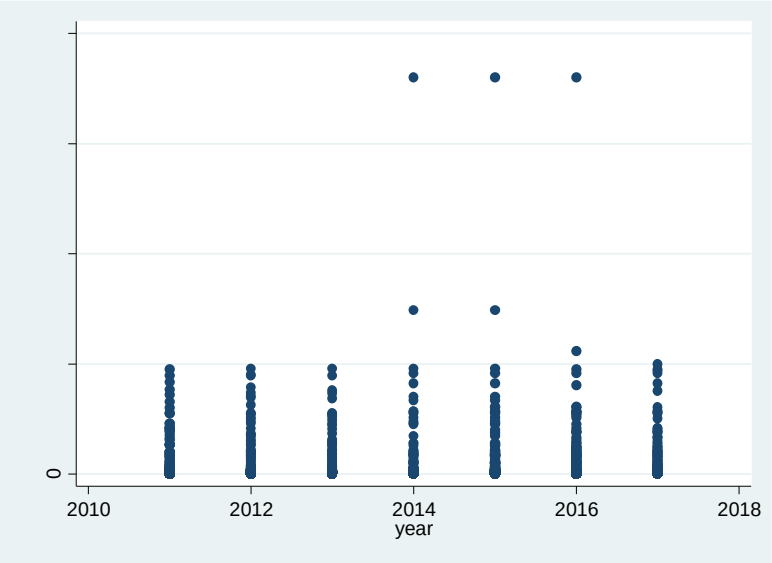

Figure 2.

Histograms net income and total assets