Reversing the Question. Does Happiness Affect Individual Economic Behavior?
Evidence from Survey Data from Netherlands
INCOMPLETE AND PRELIMINARY DRAFT

Cahit Guven [*]

University of Houston

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Abstract

Using data from DNB Household Survey from Netherlands, this paper studies the impact of individual self-reported happiness on individual economic decisions. Unexpected increases in daily sunshine and unexpected wins in soccer increase happiness but individual happiness is not very persistent over time. Instrumenting individual happiness with sunshine, lagged happiness or soccer results, the paper finds that happy people do smoke less and use less alcohol. Interestingly, happy people save more and spend less. Moreover, they also plan to save more and spend less in the future. Marginal propensity to consume is lower for the happy people. Happiness also affects forward looking behavior. Happy people have a shorter horizon while considering expenditures and savings. In line with the experimental findings, happy people are more risk averse and they prefer safer investment tools. They do not use internet banking as much and have much more control over their investments.

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[*]Department of Economics, University of Houston, TX, 77204 e-mail: cguven@mail.uh.edu, tel:713 7433818.

1 Introduction

"Success is not the key to happiness. Happiness is the key to success. If you love what you are doing, you will be successful." Albert Schweitzer (1875-1965) 1952 Nobel Peace Prize

Economists have mainly studied the effects of behavior on subjective well-being, as represented by variables such as unemployment, inflation, and income. The reverse effect has so far received scant attention. (Kahneman and Krueger, JEP 2006). Psychological experiments have shown that happier people tend to behave differently from less happy people. In this paper, I study the impact of self-reported happiness, which is also referred to as "subjective well-being", on the impact of economic choices such as saving, consumption, portfolio composition, migration and fertility. Nonetheless, the economics profession has been wary of attempts to use measures of happiness in spite of the ubiquitous use of "utility" functions. I follow the convention of reserving the term "utility" for its use in describing individuals choices between economic variables. However, self-reported well-being is related to "utility" in the sense that well-being helps predict individuals economic choices; see the survey by Bruno S. Frey and Alois Stutzer (2002). The paper employs data from the Dutch National Bank (DNB) Household Survey which is a panel of about 2000 households and 4500 individuals from 1993 to 2006. The Survey provides self-reported measures of well-being, such as responses to questions about how happy and satisfied individual respondents are with their lives and very detailed information about individual consumption, income, wealth and behavior.

The paper shows that sunshine, soccer events, relative income and perceptions about relative income matter for individual well-being. The paper verifies that unexpected increases in sunshine, and soccer events increases individual happiness. However, relative income and perceptions about relative income decrease happiness. Moreover, I also show that relative wealth and perceptions about relative wealth are significant determinants of happiness.

I then attack the unexplored issue of whether subjective well-being helps to determine individual choices . If individuals are happier ,do they behave differently? Unexpected increases in daily sunshine and unexpected wins in soccer increase happiness but individual happiness is not very persistent over time. Instrumenting individual happiness with sunshine, lagged happiness

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or soccer results, the paper finds that happy people do smoke less and use less alcohol. Interestingly, happy people save more and spend less. Moreover, they also plan to save more and spend less in the future. Marginal propensity to consume is lower for the happy people. Happiness also affects forward looking behavior. Happy people have a shorter horizon while considering expenditures and savings. In line with the experimental findings, happy people are more risk averse and they prefer safer investment tools. They do not use internet banking as much and have much more control over their investments.

In Section 2, I give an overview of the economic literature on well-being and the impact of well-being on behavior. Section 3, CXXX

2 Literature Review

2.1 Determinants of Happiness

Research on the concept and measurement of happiness has made great progress in psychology since 1950s. While there is virtually no direct connection between psychology and theoretical economics, empirically oriented economists have become aware that fundamental idea cherished in the new welfare economics, it is impossible to measure utility, is mistaken. The high level of rigor typical for experimental psychology have helped to make the new idea of measurable utility palatable to at least some economists. But it took considerable time before an economist actually used happiness data thus reverted to cardinal and interpersonally comparable measure of utility (Easterlin, 1974).

Relative Income. Many economists in the past have noted that individuals compare themselves to others with respect to income, consumption, status or utility. In other words, **relative income** may matter more than actual income. One of the earliest researchers to voice this opinion was Thorstein Veblen (1899). He coined the term conspicuous consumption to describe the state of wanting to impress other people. The relative income hypothesis has been formulated and econometrically tested by James Duesenberry (1949), who posits an asymmetric structure of externalities. People look upward when making comparisons. The wealthier people impose a negative external effect on poorer people but not vice versa. As a result, savings rates depends on the percentile position in the income distribution and not solely on the income level, as in

traditional savings function. A major line of research has been begun by Bernard van Praag and Arie Kapteyn (1973). They construct an econometrically estimated welfare function with a "preference shift" parameter that captures the tendency of material wants to increase as income increases. They find that increases in income shift aspirations upward but that individual satisfaction nevertheless increases. The preference shift destroys about 60 to 80 percent of the welfare effect of an increase in income; that is, somewhat less than a third remains.

Social comparison theories say that people evaluate features of themselves or their lives by comparing themselves with others. This was used to explain some otherwise puzzling aspects of satisfaction research. However, attempts to confirm social comparison theory in real-life settings have not always confirmed it. Examples of such studies are Diener and Fujita (1997) and Diener, Diener and Diener (1995). Wright (1985) found that there was an effect of self-rated health on satisfaction, but this was not affected by the comparison of others.

Gilbert and Trower (1990) argue that people choose their own targets for comparison. Different inferences can be made from comparisons. The choice of a comparison target is a flexible process and is not determined solely by the proximity of accessibility of relevant others" (Wood et al., 1997). There may be two exceptions to this. One is academic academic achievement (Diener and Fujita, 1997). The second is industrial wages. In fact people often make these comparisons; Ross et al. (1986) found that 89 percent of the people made comparisons with members of their immediate circle for satisfaction at home, 82 percent for satisfaction at work , but only 61 percent did this for satisfaction with life as a whole. Wills (1981) assembled a lot of diverse findings which shows people can both increase or decrease their well-being by comparison depending on their reference point. Strack et al. (1990, 1985), Lyubomirsky and Ross (1997) confirm these diverse findings.

Exogenous Variables. Petridou, Papadopoulos, Frangakis, Skalkidou, and Trichopoulos (2002) indicate that suicide follows a seasonal pattern with a dominant peak during the month of maximum daylight. The purpose of this study was to evaluate the hypothesis that sunshine exposure may trigger suicidal behavior. They find a remarkably consistent pattern of seasonality with peak incidence around June in the northern hemisphere and December in the southern hemisphere. Moreover, there is a positive association between the seasonal amplitude of suicide (measured by relative risk) and total sunshine in the corresponding country. These findings

indicate that sunshine may have a triggering effect on suicide rate.

Van Houwelingen and Beersma (2001) document that annual patterns in suicide rates peak near the summer solstice. They find that day length or total hours of sunshine has an impact on suicide rates. If the environmental factors are involved, we expect changes in the daily pattern of suicide rates to occur over the year. They have detailed information about the exact time of suicides in The Netherlands which is only available for train suicides. Therefore, they use information which are verified concerning age, sex, time and place of occurrence of train suicides over 15 years in The Netherlands. They have 2830 observations obtained from The Netherlands Railways archives. Daily patterns in train suicides show systematic variations of two kinds. First, independently of time of year, suicide rates at night drop to about 10 percent of their daytime values. Second, there are two daily peaks in the patterns which shift their timing over the year, with one peak occurring shortly after sunset, and the other one consistently occurring 9-10 h earlier. Both peaks shift with the 5.5-h shift in sunset time. There are pronounced and systematic daily variations in train suicide rates in The Netherlands. One of these is related to clock time, the others are related to the light-dark cycle. The consistency of the patterns suggests a strong environmental influence on train suicidal behavior.

Rehdanza, and Maddison (2005) analyses a panel of 67 countries attempting to explain differences in self-reported levels of happiness by reference to amongst other things temperature and precipitation. Various indices are used for each of these variables including means, extremes and number of months with a particular climate like the number of hot and cold months. Using a panel-corrected least squares approach the paper demonstrates that, even when controlling for a range of other factors, climate variables have a particularly powerful effect on self reported levels of happiness. Furthermore there is a correspondence between the findings that emerge from this analysis and earlier studies with respect to what constitutes a preferred climate. The relationship between climate and self reported happiness is of particular interest because of the much discussed threat of anthropogenically induced climate change. Differential patterns of warming along with a changed distribution of rainfall promises to alter dramatically the distribution of happiness between nations with some countries moving towards a preferred climate and others moving further away. They find that higher mean temperatures in the coldest month increase happiness, whereas higher mean temperatures in the hottest month decrease happiness. Precipi-

tation does not significantly affect happiness. In particular high latitude countries might benefit from temperature changes. Countries already characterized by very high summer temperatures would most likely suffer losses from climate change.

Dohmen, Falk, Huffman, and Sunde (2006) investigates the role of commonly held perceptions and expectations for determining macroeconomic outcomes. They use the FIFA World Cup 2006 as a natural experiment. They provide direct evidence that seemingly irrelevant events (the outcomes of soccer matches) can systematically affect individual perceptions about economic prospects, both on a personal and economy-wide level.

Economists have been also studying about **individual characteristics** and happiness. In a recent article, Rainer Winkelmann (1998) investigates interdependencies at the family level. Secondly, he demonstrates how to model and test for such interdependencies using the framework of an ordered probit model with multiple random effects. There clearly are important interdependencies in reported well-being among members of the same family, some of which may have biological origins. These need to be reckoned with if one wants to understand the determinants of subjective well-being.

Many people believe that people of higher **age** are unhappier than young people. This idea may have been strengthened by the "youth cult" projected by the media which suggests that many desirable qualities of life lie with youth. In some regards, the elderly are indeed objectively worse off. They tend to be in poorer health and have lower income, and fewer of them are still married. Somewhat surprisingly, many studies have found that older people are subjectively more happy than are young people, but this effect tends to be very small. Four reasons maybe adduced to explain the observed positive relationship between age and happiness: The old have lower expectations and aspirations. The gap between goals and achievement is lower. Older individuals have had time to adjust to their conditions. Moreover, they learn how to reduce negative life events and to regulate negative affects . The positive relationship between age and happiness has, however, been challenged and contradictory findings have been reported (Horley and Lavery, 1995). Economists have identified a U-shaped relationship between age and happiness (Oswald 1997, Blanchflower and Oswald, 2000). For several reasons it is difficult to capture the influence of age on well-being. The term happiness may change its meaning with age. The age effect may interfere with a cohort effect. Even causation is not as clear as it seems

to be at first sight. Happy people live a little longer than unhappy people, which contribute to a positive correlation between age and happiness. Because of these problems, much care should be taken when claiming that old age leads to unhappiness, or that the old are happier than the young.

Race. That blacks are less happy than whites is the finding of all psychological and sociological studies on that topic for the United States. But it also hold for other countries such as South Africa, where the happiest people were whites, followed by Indians, coloreds and blacks (Moller, 1989). The reasons are many black's lower incomes, less education, and less skilled jobs. If one control these factors, the difference in happiness between races become small. A major reason for the lower subjective well-being of the blacks maybe lower self-esteem, which in turn is likely to be caused by their lower status in society. Economists have found that American blacks are less happy than whites (Blanchflower and Oswald, 2000)

When people are asked to evaluate the importance of various areas of their lives, good **health** obtains the highest ratings. Happiness and health are highly correlated, but this only holds for self-reported health ratings. This is partly, due to self-reported happiness and self-reported health both being influenced by personality. For example, neurotic persons recalled more symptoms of bad health and, as was indicated before, they indicated a lower level of happiness than non-neurotics (Larsen, 1992). The observed effect of objective health on happiness by physicians is much smaller. People seem to be remarkably effective in coping. Thus, they compare themselves to people in worse health, which induces a more positive image of their own health conditions.

To have an enduring, intimate relationship is one of the major goals of the most persons. To have friends, companions, and relatives and to be part of a group, be it co-workers or fellow church members, contribute to happiness. The importance of "belonging" is reflected by the experimental findings that even trivial definitions of groups lead to group identification and affect the dividing up of money (Tajfel, 1981). Marriage raises happiness, as has been found in a large number of studies for different countries and periods. Married women are happier than unmarried women and married men are happier than unmarried men. Married men and women report similar levels of subjective well-being; that is, marriage does not benefit one gender more than other. These results go well with the observation that marriage brings

marked advantages in terms of mortality, morbidity, and mental health (Lee, Seccombe and Shehan, 1991). Couples also positively affect each other's well-being. The positive relationship between marriage and happiness persists, even when the influence of variables such as income, age, and education is controlled for. Does marriage cause happiness or does happiness promote marriage? A selection effect cannot be ruled out. It seems reasonable to say that dissatisfied and introverted people find it more difficult to find a partner. It is more fun to be with extroverted, trusting, and compassionate people. Happy and confident people are more likely to marry and to stay married (Veenhoven, 1989). But careful research has led to the conclusion that this selection effect is not strong and the positive association of marriage and happiness is mainly due to the beneficial effects of marriage (Mastekaasa, 1995). There are two reasons why marriage contributes to happiness: Marriage provides additional source of self-esteem. It is advantageous for one's personal identity to have several legs to stand on. Married people have a better chance to benefit from an enduring and supportive intimate relationship, they suffer less from loneliness. Economic research on happiness has also found that marriage and happiness are very positively correlated, holding other influences constant. Surprisingly, second, third and fourth marriages turn out to be less happy than first marriages (Blanchflower and Oswald, 2000).

The level of **education** bears little relationship to happiness. Education may indirectly contribute to happiness by allowing a better adaptation to changing environments. But it also tends to raise aspiration levels. It has, for instance been found that highly educated are more distressed than the less educated when they are hit by unemployment (Clark and Oswald, 1994).

2.2   Impact of Happiness on Behavior

Economists have mainly studied the effects of behavior on subjective well-being, as represented by variables such as unemployment, inflation, and income. The reverse effect has so far received scant attention. (Kahneman and Krueger, JEP 2006). Psychological experiments have shown that happier people tend to behave differently from less happy people.

Happy people, for instance, are more often smiling during social interactions; are more prepared to initiate social contacts with friends; are more inclined to respond to requests for help; are less often absent from work; and are less likely to get involved in work disputes(Frank 1997). There can be little doubt that the affective and cognitive aspects of happiness systematically

influence people's motivation and goals, behavior. On the one hand, the cognitive aspects of subjective well-being can influence behavior, as they activate relevant affects signals, to some extent, one's progress toward goals and the buildup of intrinsic motivation. Intrinsic motivation is the standard term used in psychological literature for the inner force that because of an internalized norm (Deci 1975).

The self-perpetuating relation between positive affects and intrinsic motivation and its consequences on behavior shall be described here via the example of the working sphere.A working environment that provides employees with the possibility of utilizing their skills, with supportive supervision and opportunities for personal contacts, enables employees to fulfill self-set goals and to satisfy certain needs, such as self-determination. Thus the environment offers optimal preconditions for the experience of positive affect. Moreover, the positive affects from perceived control and self-determination build up or strengthen intrinsic work motivation. As a result, employees can be expected to be more engaged in their work tasks. The crucial condition for this positive causal effect of happiness on productivity lies in work features that allow the satisfaction of the innate needs.

Happy people are more likely to save and spend different proportions of their income, to distribute them differently over time, and to acquire different combinations of particular goods and services than do less happy people. It can be hypothesized that happier people have a different attitude to taking risks than less happy people. They may also prefer different markets and types of financial investments Happier people may well be more prepared to exhibit an environmental morale. Happier people have a different attitude to taking risks than less happy people. They may also prefer different markets and types of financial investments (Schoemaker,1993). Moore and Chater (2006) examined how variations in everyday affective states influenced risk taking behavior in the laboratory using simple gambling tasks. They observed a significant and positive relationship between affect and risky behavior in the laboratory.

One explanation for risk-taking behavior is the anticipated positive consequences outweigh possible negative outcomes. Fromme, Katz, and Rivet (1997) develop a new questionnaire to assess outcome expectancies for the potential consequences of involvement in a variety of risky activities. The new questionnaire measures respondents' beliefs about the consequences of 30 risky activities, as well as their expected and actual involvement in those activities. They find

that beliefs about potential benefits were found to be more reliably associated with risk-taking than were beliefs about potential negative consequences.

Jaeger, Bonin, Dohmen, Falk, Huffman and Sunde provides direct evidence that individuals' migration propensities depend on their attitudes towards risk. They use newly available data from the German Socio-Economic Panel to measure directly the relationship between migration propensities and attitudes towards risk. They find that individuals who are more willing to take risks are more likely to migrate between labor markets in Germany. The effect is substantial relative to the unconditional migration propensity and compared to the conventional determinants of migration. They also find that being more willing to take risks is more important for the extensive than for the intensive margin of migration.

Schooley and Worden (1996) investigates if households' reported willingness to take financial risk is a good predictor of riskiness of their portfolios, measured as risky assets to wealth using data from the 1989 Survey of Consumer Finances . They find that portfolio allocations are reliable indicators of attitudes toward risk, demonstrating an understanding of their relative level of risk taking. Furthermore, investment in risky assets is significantly related to socioeconomic factors, attitude toward risk taking, desire to leave an estate, and expectations about the adequacy of Social Security and pension income.

Dohmen, Falk, Huffman, Sunde, Schupp and Wagner (2005) find that willingness to take risks is negatively related to age and being female, and positively related to height and parental education using a question that asks about willingness to take risks on an 11-point scale in GSOEP. Using collection of risky behaviors from different contexts, including traffic offenses, portfolio choice, smoking, occupational choice, participation in sports, and migration and computing coefficient of relative risk aversion from the lottery question, they find that the general risk question predicts all behaviors whereas the standard lottery measure does not.

Valois, Zullig, Huebner and Drane (2001) investigates the relationship between life satisfaction and violent behavior among 5032 adolescents. They find that carrying a weapon; carrying a gun; carrying a weapon at school; physical fighting; physical fighting at school; physical fighting that required physician treatment; drinking and driving; riding with a drinking driver; having property stolen/damaged at school; feeling unsafe while at, going to or returning from school; and being injured/ threatened with a weapon were associated with low levels of life satisfaction.

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In addition to this, Valois1, Zullig, Huebner, Kammermann and Drane (2002) finds that age of first intercourse, two or more lifetime sexual intercourse partners, alcohol/drug use before last intercourse, no use of contraception at last intercourse, being forced to have sex, forcing someone to have sex, and having beaten up a date in the last 12 months and having been beaten up by a date (in last 12 months) were associated with low levels of life satisfaction.

3 Data

The paper employs data from DNB Household Survey (formerly known as the CentER Savings Survey) is a panel survey that started in 1993. Data are collected every year with a panel of more than 2000 households. The data contain information about employment, pensions, accommodation, mortgages, income, assets, debts, health, economic and psychological concepts, personal characteristics, and much more. The DNB Household Survey (DHS) data are unique in the sense that they allow studies of both psychological and economic aspects of financial behavior

Climate data includes long-term daily resolution climatic time series from meteorological stations throughout Europe and the Mediterranean provided by contributing parties from over 40 countries. Most series cover at least the period 1946now. These series include; temperature, precipitation, humidity, sunshine, cloudiness, sea level pressure and snow depth.

Soccer data is available over 100,000 fulltime and halftime football results from 12 seasons and 22 divisions. Full time and half time football results, and historical betting odds data from up to 9 major online bookmakers are available for 22 European divisions in 11 countries.

4 Empirical Framework

Ordered Logit: For the case with 5 outcomes the ordered logit model builds upon the idea of the cumulative logit which depends on the probability that the happiness of the ith individual will be in one the five categories. We have five categories for the latent variable $Happy_{it}^*$ and the observed level of happiness is denoted as $Happy_{it}$:

$$Category\ (1):\ Happy_{it} = 1 \qquad if \qquad Happy^*_{it} \quad < -\lambda_1 \tag{1}$$

$$Category\ (2):\ Happy_{it} = 2 \qquad if \quad -\lambda_1 < Happy^*_{it} \quad < -\lambda_2 \tag{2}$$

$$Category\ (3):\ Happy_{it} = 3 \qquad if \quad -\lambda_2 < Happy^*_{it} \quad < -\lambda_3 \tag{3}$$

$$Category\ (4):\ Happy_{it} = 4 \qquad if \quad -\lambda_3 < Happy^*_{it} \quad < -\lambda_4 \tag{4}$$

$$Category\ (5):\ Happy_{it} = 5 \qquad if \qquad Happy^*_{it} \quad > -\lambda_5\ , \tag{5}$$

$$\tag{6}$$

where λ_1 and λ_2 are the cut-off levels. Then, it follows that we can write the cumulative probability function of the latent variable as the sum of the probabilities of different categories. We can write the probabilities of different categories as follows:

$$Category\ (1):\ Pr(Happy_{it} = 1)\ =\ \frac{1}{1 + \exp(\phi X_{it} + \lambda_1)} \tag{7}$$

$$\tag{8}$$

$$Category\ (2):\ Pr(Happy_{it} = 2)\ =\ \frac{1}{1 + \exp(\phi X_{it} + \lambda_2)} - \frac{1}{1 + \exp(\phi X_{it} + \lambda_1)} \tag{9}$$

$$\tag{10}$$

$$Category\ (3):\ Pr(Happy_{it} = 3)\ =\ \frac{1}{1 + \exp(\phi X_{it} + \lambda_3)} - \frac{1}{1 + \exp(\phi X_{it} + \lambda_2)} \tag{11}$$

$$\tag{12}$$

$$Category\ (4):\ Pr(Happy_{it} = 4)\ =\ \frac{1}{1 + \exp(\phi X_{it} + \lambda_4)} - \frac{1}{1 + \exp(\phi X_{it} + \lambda_3)} \tag{13}$$

$$\tag{14}$$

$$Category\ (5):\ Pr(Happy_{it} = 5)\ =\ \frac{\exp(\phi X_{it} + \lambda_5)}{1 + \exp(\phi X_{it} + \lambda_5)} \tag{15}$$

$$\tag{16}$$

We can then turn the cumulative probability into the cumulative logit and we can write the cumulative logit as a function of independent variables.

Transition Probability: We show simple transition probabilities for self-reported happiness. The transition probability from state i (say, "very happy") to state j is calculated as the number of individuals who in year $t-1$ report happiness state i *and* in year t reports happiness state j, divided by the total number of individuals who report happiness state i in year $t-1$. We compute the transition probability as follows:

$$p_{ij} = \sum_{it} N_{ij} / \sum_{it} N_i \ , \tag{17}$$

where p_{ij} is the transition probability from state i to state j. N_{ij} is the individual N who report state i in year $t-1$ *and* report state j in year t. N_i is the individual who report state i in year $t-1$.

Instrumental Variables and GMM :

In the context of a linear regression model, if the residual's distribution cannot be considered independent of the regressors's distribution, instrumental variables are needed.

$$y = X\beta + u, \quad E(uu') = \Omega \tag{18}$$

The matrix of regressors X is $n \times K$, where n is the number of observations. The error term u is distributed with mean zero and covariance matrix Ω is $n \times n$. Say, happiness is endogenous in the regressions and the rest of the regressors assumed to be exogenous.So, $E(X_i u_i) \neq 0$. The set of variables is Z. We partition the set of instruments into $[Z_1 \ Z_2]$ where Z_1 is the set of excluded instruments and Z_2 is the set of included/exogenous regressors. That is :

$$Regressors \ \ X = [X_1 \ X_2] = [Happiness \ Z_2] = [Endogenous \ Exogenous] \tag{19}$$

$$Instruments \ \ Z = [Z_1 \ Z_2] = [Excluded \ Included] \tag{20}$$

If there is only one excluded instrument, then the equation is "exactly identified", if more than one than the equation is "overidentified". The instrumental variable (IV) or two-stage least

squares (2SLS) estimator of β is then:

$$\hat{\beta}_{IV} = (X'Z(Z'Z)^{-1}Z'X)^{-1}(X'Z(Z'Z)^{-1}Z'y) \tag{21}$$

If the covariance matrix Ω is homoskedastic, IV estimate is both efficient and consistent. However, if the covariance matrix is heterokedastic, then IV estimate is still consistent but the standard erors are inconsistent leading to invalid inference. Then the usual way today is the use of GMM in the presence of heterokesdasticity. In this case, if the equation is exactly identified than GMM estimator becomes IV estimator. If the equation is overidentified, then the GMM estimator is:

$$\hat{\beta}_{GMM} = (X'ZWZ'X)^{-1}(X'ZWZ'y) \tag{22}$$

where W is the optimal weighting matrix which minimizes the asymptotic variance of the estimator.

5 Empirical Results

Table 1 cross-tabulates individual happiness by individual characteristics. First of all, we see that people in Netherlands are on average happy. There are a few people in the lowest two categories. Once you consider labor force: students and first time job looking people report very low happiness, however employed, retired and people in the voluntary work report high level happiness (cite). Living with a partner and married people are happier. But, single, divorced and widowed report very low happiness. Health is a very strong predictor for happiness. People reporting better health status also report higher values of happiness.

Table 2 shows the summary statistics of happiness by individual behavior. Observe that happier people more likely to leave bequest. People reporting high level of happiness are less likely to be smokers and alcohol users. Happier people also save relatively more and they are not in debt as much indicating that they also consume less. It is also observed that happier people have a better self-control since there do not spend more than they have.

Table 3 shows us that happier people also plan to save more in the future and they also think that people should save.

Table 4 shows the relationship between time horizon and happiness. It is obvious that happy people consider a shorter time horizon for saving and consumption decisions.

These findings show that happier people have much more control over themselves and are better at decision making. We also see the same pattern with happiness and risk taking behavior. It may suggest that happier people have better cognitive ability leading to better decision making. (cite).

Figure 1 is the time series of yearly national average happiness in Netherlands. It shows that there is break in 2000. Happiness increases until 1995, then decreases until 2000 but increases then after. One explanation for this change in 2000 can be the European Monetary Integration which occurred in the last months of 1999.

Figure 2 shows the pattern of average happiness at the province level in Netherlands. Again, we see the same pattern; happiness decreases until 2000 but increases thereafter. This suggests that the change in 2000 happened in all of the provinces as well.

Table 8 presents the estimation results for the impact of happiness on smoking behavior. OLS result suggest that happiness decreases the probability of smoking. Since happiness is very

much correlated with other independent variables and unobserved variables, I use instruments to solve the endogenity problem. First, happiness is instrumented with its lagged value and again find that happiness decreases smoking. Next, daily sunshine variation is used but the coefficient is insignificant. But keep in mind that, daily variations in sunshine can only explain high frequency changes in happiness and behavior.

Table 9 finds that happiness decreases the amount of smoking. OLS result suggest that happiness decreases amount of tobacco used. Instrumenting happiness with lagged happiness or sunshine, again we find that happiness is significantly decreasing smoking frequency.

Table 10 investigates the impact of happiness on drinking behavior. The results show that happiness decreases alcohol usage. Once instrument happiness with its lagged value, the result is the same.

Table 11 explored the fact that happiness decreases spending. OLS result shows that happiness decreases the probability to spend. Instrumental variable regressions confirm the finding that happiness decreases spending.

Table 12 investigates the relationship between happiness and marginal propensity to consume. OLS regression implies that happiness decreases the marginal propensity to consume. Instrumental variable regressions with lagged happiness and sunshine both show that happiness significantly decreases marginal propensity to consume and leads to more savings.

Table 13 reports the results for the impact of happiness on amount of money saved. Both OLS and instrumental variable regressions show that happiness increases amount of money saved. Dependent variable is a categorical variable however it is possible the estimate the regressions with continuous dependent variable computed by mid-point method.

Table 14 investigates the relationship between happiness and time horizon people consider while making saving and consumption decisions. The instrumental variable regression with sunshine shows that happiness decreases time horizon for consumption. This is in fact in line with the other findings with control over investments, marginal propensity to consume and spending more than your income. If individuals have shorter looking behavior, they only make consumption according to their current income, not their future income. This may be one of the explanations of less consumption of happier people.

Table 15 shows the relationship between happiness and internet banking usage. OLS and IV

with lagged happiness results show that happiness increases internet banking usage however IV with sunshine results shows the negative impact. The interpretation depends on the perception of internet banking. Is it more profitable (decreasing time costs) or is it risky?

Table 16 reports the results of OLS and IV regressions. In all three regressions, the coefficient on the happiness variable is positive indicating that happiness increases individuals' control over their investments. This is in fact very related to risk taking behavior. If an individual has more risky investments, he/she will have less control over the investments. I will have the same regressions for both the amount and share of risky assets individuals hold.

Table 17 relates happiness with future plan about consumption. In the regressions above, the results show that happiness decreases amount of money saved. If we take happiness variable as an average of that year, this is understandable. However, it is also the case that happiness is very stochastic. One also should look the impact of happiness on near future behavior. The dependent variable in this regressions is individuals' plan to save or not in the future. Again, we see that happiness increases the possibility of saving in the future.

Table 18 investigates the relationship between determinants of saving and happiness. The results from OLS regressions and IV regression with lagged happiness suggest that happiness increases savings by causing people to think that to save money makes sense. This difference can be due to interests of happier people more towards general issues such as world peace, general economic situation of the country. Besides, it may also suggest that happier people have better cognitive ability in decision making.

Table 19 estimates the regressions for the impact of happiness on risky investment decisions. OLS result and IV regression estimates show that happier people tend to be much more risk averse during their investment decisions. The dependent variable is an average of three variables about taking risks for investments. The results again confirms the findings above that happiness increases risk averseness. This may be due to the fact that happier people do not want to change their current situation. It may also lead to more saving, less consumption, less internet banking usage.

6   Conclusion

To come.

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7 Data Appendix

7.1 DNB Household Survey

The DNB Household Survey (formerly known as the CentER Savings Survey) is a panel survey that started in 1993. Data are collected every year with a panel of more than 2000 households. The data contain information about employment, pensions, accommodation, mortgages, income, assets, debts, health, economic and psychological concepts, personal characteristics, and much more. The DNB Household Survey (DHS) data are unique in the sense that they allow studies of both psychological and economic aspects of financial behavior

The DNB Household Survey consists of seven questionnaire. The topics that are covered by each of the questionnaires are: 1. general information on the household which includes region and provinces. 2. household and work 3. accommodation and mortgages 4. health and income 5. assets and liabilities 6. economic and psychological concepts. All questionnaires were presented to the CentERpanel, of which 2000 households have participated. Within each household, all persons aged 16 or over were interviewed.

The Internet panel of CentERdata The data are collected from households participating in the Internet panel of CentERdata. The members of those households fill in a questionnaire on the Internet every week. This means that the questionnaires are answered without the interference of an interviewer, the respondents can answer the questionnaires at a time that is convenient for them, and all the documents (annual statements, bank account statements) required for answering the questions are within easy reach. Although the CentERpanel is an Internet-based panel, there is no need to have a personal computer with an Internet connection. Those households who do not have access to Internet, are provided with a so-called settop box with which a connection can be established via a telephone line and a television set. If the household does not have a television, CentERdata provides one. All households can call a help desk or ask for technical advice (at their home). *The CentERpanel is representative of the Dutch population.*

7.2 European Climate Assessment Dataset

The European Climate Assessment Dataset project (ECAD) started in 2003. The objective of ECAD is to analyze the temperature and precipitation climate of WMO region VI, with special focus on trends in climatic extremes observed at meteorological stations. For this purpose, a daily dataset of 20th-century surface air temperature and precipitation series has been compiled and tested for homogeneity. To enable European climate assessments on a regular basis, a sustainable system for data gathering, archiving, quality control, analysis and dissemination is realized. Data gathering refers to long-term daily resolution climatic time series from meteorological stations throughout Europe and the Mediterranean provided by contributing parties (mostly NMSs) from over 40 countries. Most series cover at least the period 1946now.

1. Daily mean cloud cover (CC) Whenever synoptical cloud cover data is available at 00, 06, 12 and 18 UT, mean daily cloud cover is calculated as CC / 4. This value in percent is converted to octas by ROUND((cloud cover in percents/100)*8).

2. Sunshine duration (SS) Whenever synoptical sunshine duration is available (in minutes) at 00, 06, 12 and 18 UT, daily sunshine duration is calculated as SS / 4.

7.3 Soccer Data

Data is taken from the website "http://www.football-data.co.uk/data.php." Football-Data exists to provide the football punter with computer-ready football results, match statistics and betting odds data for use with spreadsheet applications, to help with the development and analysis of football betting systems. Data is available over 100,000 fulltime and halftime football results from 12 seasons and 22 divisions. Full time and half time football results, and historical betting odds data from up to 9 major online bookmakers are available for 22 European divisions in 11 countries. Betting odds for weekend games are collected Friday afternoons, and on Tuesday afternoons for midweeek games. Additional match statistics, including shots on goal, corners, fouls, offsides, bookings, red cards and referees.

7.4 Spatial Indicators for European Regions

A total of 54 indicators at the NUTS 2 level are available for Europe. These indicators mainly are about; 1. Geographic Position 2. Economic Strength 3. Social Integration 4. Spatial Inte-

gration 5. Land use 6. Natural and Cultural Assets.

VARIABLES USED IN THE PAPER

7.5 Independent Variables

Happiness : Happiness is the answer to the questions in DNB Household Survey "All in all, to what extent do you consider yourself a happy person? Very happy, happy, neither happy nor unhappy, unhappy, very unhappy?" Happiness is a categorical variable where 1, 2, 3, 4, 5 in order refers to the answers very unhappy, unhappy, neither happy nor unhappy, happy, very happy.

Region and Province : There are 5 regions and 12 provinces used in the paper. The missing observations are replaced with their previous or later counterparts for the same individual if he/she did not migrate in that year. The regions are as follows: 1. three largest cities 2. other West 3. North 4. East 5. South . The provinces are as follows: 1. Groningen 2. Friesland 3. Drenthe 4. Overijssel 5. Flevoland 6. Gelderland 7. Utrecht 8. Noord-Holland 9. Zuid-Holland 10. Zeeland 11. Noord-Brabant 12. Limburg.

Position: The position of the individual in the household which has 7 categories as follows: 1. head of the household 2. spouse 3. permanent partner (not married) 4. parent (in law) 5. child living at home 6. housemate 7. family member or boarder

Household member: The number of household members living in the house.

Age: For some years, the birth date is missing but since it is a panel it is replaced with the answers of the same individual before or after.

Health status: Excellent, good, fair, not so god, and poor are the categories for health. Poor is the omitted category in the regressions.

Marital Status : The categories for marital status variable are : 1. married or registered partnership (including separated), having community of property 2. married or registered partnership (including separated), with a marriage settlement 3. divorced from spouse 4. living together with partner (not married) 5. widowed 6. never married

Work Status: Primary occupation of the respondent which is a categorical variable where 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

Sex: Male and Female are the categories. Male is the omitted category in the regressions.

Education: The paper uses two measures of education; highest level of education attended(regardless of certificate or diploma) and highest level of education completed. Both measures are categorical variables taking values from 1 to 9 which in order refers to:

1. (continued) special education 2. kindergarten/primary education 3. VMBO (pre-vocational education) 4. HAVO, VWO (pre-university education) 5. senior vocational training or training through apprentice system 6. vocational colleges 7. university education 8. no education (yet) 9 other sort of education/training

Children: I use the number of children as a dependent variable. Besides, number of children living with and without the household are used as different regressors in the paper.

Own Income: Net and gross total individual income, and total household income deflated by CPI are used.

Financial Knowledge: Categorical Variable taking 4 values as the answer to the question "How knowledgeable do you consider yourself with respect to financial matters? 1. not knowledgeable 2 more or less knowledgeable 3. knowledgeable 4. very knowledgeable"

Financial Advice: Categorical Variable taking 9 values as the answer to the question "What is your most important source of advice when you have to make important financial decisions for the household? 1. parents, friends or acquaintances 2. information from the newspapers 3. financial magazines, guides, books 4. brochures from my bank or mortgage adviser 5. advertisements on TV, in the papers, or in other media 6. professional financial advisers 7. financial computer programs 8. financial information on the Internet 9. other

7.6 Dependent Variables:

working hours: Number of hours the individual would like to work per week.

portfolio composition : Several measures of portfolio composition are used; first one is having a risky asset( )or not and second one is the amount of risky assets. Third one is the

share of risky assets in total wealth.

smoking: Two measure of smoking is available; if an individual is a smoker or not and number of cigarettes an individual smokes a day.

alcohol: Number of alcoholic drinks an individual has on average in a day.

saving behavior : 1. Answer to the question "Do you think it makes sense to save money, considering the current general economic situation?" which is a categorical variable taking four values 2. Did your household put any money aside in the past 12 months and how much? 4. Is your household planning to put aside some money in the next 12 months and how much?

Risk taking behavior: A scale from 1 to 7 showing to what extent an individual agrees with the following statements, where 1 indicates totally disagree and 7 indicates totally agree.

1. I think it is more important to have safe investments and guaranteed returns, than to take a risk to have a chance to get the highest possible returns 2. I would never consider investments in shares because I find this too risky 3. if I think an investment will be profitable, I am prepared to borrow money to make this investment 4. I want to be certain that my investments are safe 5. I get more and more convinced that I should take greater financial risks to improve my financial position 6. I am prepared to take the risk to lose money, when there is also a chance to gain money

Risky Investment: Categorical variable which is the answer to the question "What would you say was the risk factor that you have taken with investments over the past few years?"

1. I have taken no risk at all 2. I have taken small risks every now and then 3. I have taken some risks 4. I have sometimes taken great risks 5. I have often taken great risks

Marginal Propensity to Consume 1. A categorical variable taking 7 values which is the answer to the question; "Some people spend all their income immediately. Others save some money in order to have something to fall back on. Please indicate what you do with money that is left over after having paid for food, rent, and other necessities – on a scale from 1 to 7, where 1 means I like to spend all my money immediately and 7 means I want to save as much as possible."

2. A bivariate variable which shows if an individual wants to spend more than available or not.

Fertility : This variable is a categorical variable taking value 1 if the household has a child

9 months after or before the interview, 0 otherwise.

Time Period : This is a categorical variable taking 5 values as the answer to the question "People use different time-horizons when they decide about what part of the income to spend, and what part to save. Which of the time-horizons mentioned below is in your household MOST important with regard to planning expenditures and savings? 1. the next couple of months 2. the next year 3. the next couple of years 4. the next 5 to 10 years 5. more than 10 years from now".

7.7   Instruments for Happiness

Sunshine: There are three measures of sunshine used in the paper. First, the duration of sunshine in a day over 0.1 hours. Second, percentage of the maximum duration of sunshine in a day. The third one, the cloud cover in octants where 9 means sky is invisible. .

Soccer Games: The soccer results are used as points where win is 3 points, draw is 1 and lose is 0 points per game. Besides, the odds for every game is also used in the paper.

Natural Disasters: An index at the province level which shows the riskiness of the province in terms of natural disasters. The following formula was applied for the calculation of the index: earthquake - 1 to 4; volcanos - 1; giant wave - 0.5; snow avalanche: 0.5; slope instability 0.5 arriving at final values oscillating between 1 and 6.5. The classes are: 1 Low risk, 2 Medium risk, 3 Risk, 4 Substantial risk, 5 High risk, 6 Very high risk, 6.5 Extremely high risk. Both the frequency and the severity of the disasters are taken into account while calculating the index.

Table 1: **Descriptive Statistics: Individual Characteristics and Happiness**

happiness:	very unhappy	unhappy	neither nor unhappy	happy	very happy	total
labor force status:						
employed on contract	0.00	0.00	10.00	61.67	28.33	60
own business	0.22	0.89	12.54	66.97	19.38	15,668
free profession,self-employed	0.17	0.34	12.82	64.96	21.71	585
looking for work after lost job	0.00	1.12	12.64	63.76	22.47	356
looking for first-time work	1.08	2.37	27.16	56.25	13.15	464
student	0.88	4.39	21.93	64.91	7.89	114
own household	0.24	0.71	14.80	70.21	14.03	1,682
retired	0.12	0.86	13.43	66.78	18.81	5,012
disabled	0.05	0.35	13.86	67.55	18.19	4,321
unpaid work	0.29	2.80	25.14	59.99	11.78	1,392
volunteer	0.00	0.72	16.63	62.17	20.48	415
other	0.14	0.95	19.51	59.75	19.65	733
total	62	292	4,391	20,558	5,711	
marital status:						
married (community of property)	0.11	0.53	10.87	67.72	20.77	16,990
married (marriage settlement)	0.04	0.63	9.52	64.26	25.55	2,384
divorced	0.40	2.82	33.95	57.66	5.16	1,240
living with partner(not married)	0.13	0.69	11.05	65.94	22.19	2,325
widowed.	0.34	2.41	30.62	60.55	6.08	872
never married	0.54	1.98	22.15	66.31	9.02	4,645
total	55	269	4,048	18,894	5,190	
health :						
poor	7.24	10.53	34.21	40.13	7.89	152
not so good	0.47	5.58	36.42	47.57	9.96	843
fair	0.17	2.23	27.93	60.42	9.25	4,207
good	0.14	0.48	11.91	71.45	16.02	15,886
excellent	0.07	0.24	5.91	60.42	33.35	5,415
total	48	247	3,746	17,626	4,836	

Notes: This table shows the summary statistics of happiness categories (very happy, happy, neither happy nor unhappy, unhappy, very unhappy) by work status, marital status and health status. The numbers are the row frequencies shown as ratios.

Table 2: **Descriptive Statistics: Individual Behavior and Happiness**

	no	yes	total
bequest:			
very unhappy	70.00	30.00	40
unhappy	60.71	39.29	196
neither happy nor unhappy	65.99	34.01	3,190
happy 4	63.78	36.22	14,916
very happy	64.14	35.86	4,278
total	14,510	8,110	
smoke:			
very unhappy	13.33	86.67	15
unhappy	39.51	60.49	81
neither happy nor unhappy	54.03	45.97	1,068
happy	62.19	37.81	3,819
very happy	62.61	37.39	995
total	3,609	2,369	5,978
alcohol:			
very unhappy	81.25	1.75	48
unhappy	83.81	16.19	247
neither happy nor unhappy	91.19	8.81	3,746
happy	93.04	6.96	17,626
very happy	93.28	6.72	4,836
total	24,573	1,930	26,503
save last 12 months:			
very unhappy	44.90	55.10	49
unhappy	36.40	63.60	250
neither happy nor unhappy	38.93	61.07	3,809
happy	26.25	73.75	17,758
very happy	21.82	78.18	5,082
total	7,367	19,581	26,948
credit card debt:			
very unhappy	95.83	4.17	24
unhappy	94.66	5.34	131
neither happy nor unhappy	95.49	4.51	2,327
happy	96.50	3.50	10,869
very happy	96.18	3.82	2,986
total	15,730	607	16,337
spend more than available:			
very unhappy	69.44	30.56	36
unhappy	86.25	13.75	160
neither happy nor unhappy	84.11	15.89	2,089
happy	90.61	9.39	9,604
very happy	91.96	8.04	2,601
total	13,014	1,476	14,490

Notes: This table shows the summary statistics of individual behavior (leaving a bequest, smoking, drinking alcohol, saving and spending) by happiness categories (very happy, happy, neither happy nor unhappy, unhappy, very unhappy). The numbers are the row frequencies shown as ratios.

Table 3: **Descriptive Statistics: Individual Behavior and Happiness**

	yes certainly	yes perhaps	probably not	certainly not	total
plan to save in 12 months:					
very unhappy	32.65	32.65	14.29	20.41	49
unhappy	46.72	23.77	20.90	8.61	244
neither happy nor unhappy	42.09	31.18	20.45	6.28	3,756
happy	56.34	27.46	12.42	3.77	17,619
very happy	64.02	22.20	10.07	3.72	5,055
total	14,874	7,205	3,524	1,120	26,723
savings make sense:					
very unhappy	45.65	32.61	8.70	13.04	46
unhappy	47.46	29.24	15.68	7.63	236
neither happy nor unhappy	45.54	36.52	14.21	3.73	3,590
happy	55.46	32.37	9.60	2.57	17,134
very happy	62.52	26.73	7.88	2.88	4,901
total	14,334	8,251	2,582	740	25,907

Notes: This table shows the summary statistics of individual behavior (saving and spending) by happiness categories (very happy, happy, neither happy nor unhappy, unhappy, very unhappy). The numbers are the row frequencies shown as ratios.

Table 4: **Descriptive Statistics: Individual Behavior and Happiness**

	next couple months	next year	next couple of years	next 5 next 10 years	more than 10 years	Total
time plan :						
very unhappy	37.25	21.57	17.65	9.80	13.73	51
unhappy	44.09	18.11	21.26	8.27	8.27	254
neither happy nor unhappy	45.16	20.72	21.48	8.03	4.60	3,822
happy	39.07	21.95	25.19	9.39	4.40	17,889
very happy	40.22	21.14	23.35	10.39	4.91	5,110
total	10,901	5,856	6,583	2,544	1,242	27,126

Notes: This table shows the summary statistics of time period (which is most important planning for savings and expenditure) by happiness categories (very happy, happy, neither happy nor unhappy, unhappy, very unhappy). The numbers are the row frequencies shown as ratios.
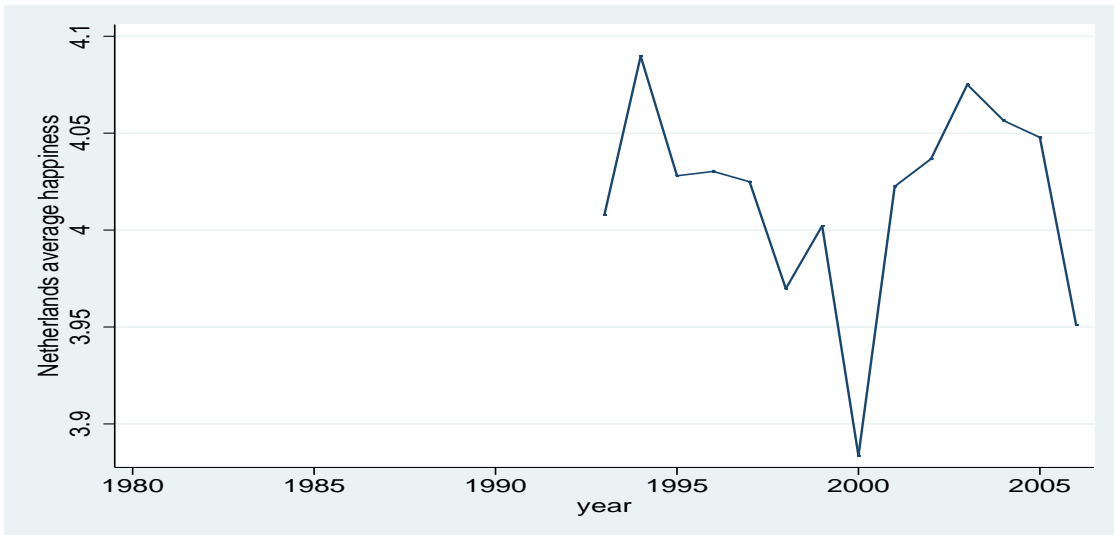
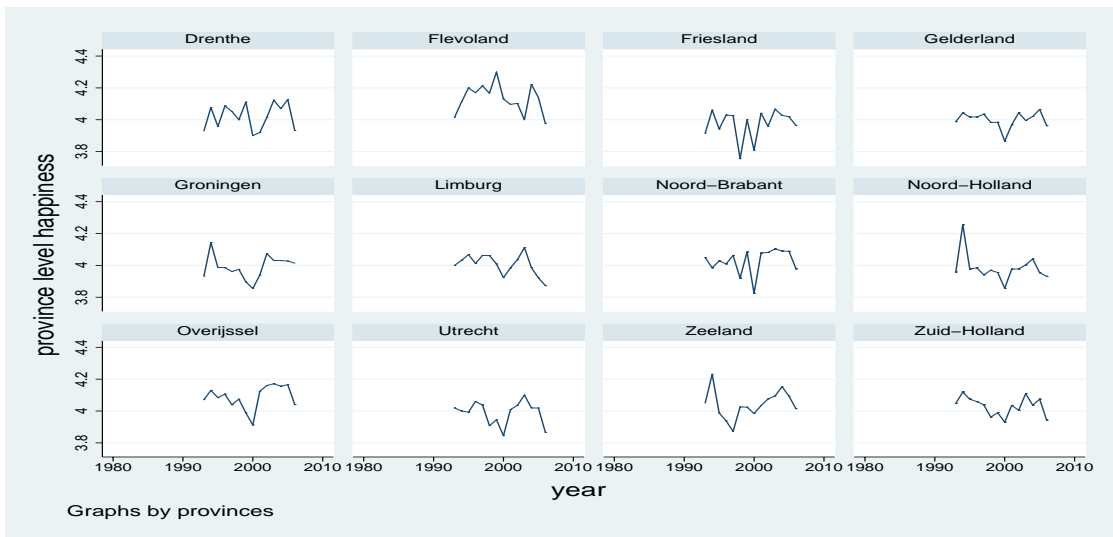Figure 1: Average Happiness in Netherlands

Figure 2: Province level Happiness in Netherlands

Table 5: **Individual Determinants of Happiness**

Dependent Variable: Self-Reported Happiness

		Coef.	tstat.
labor force status :	employed on contract	−0.33	0.9
	own business	−0.19	0.5
	free profession,self-employed	−0.35	0.9
	looking for work after lost job	−0.82	2.1
	looking for first-time work	−1.03	2.1
	student	−0.16	0.4
	own household	−0.45	1.2
	disabled	−0.43	1.1
	unpaid work	−0.91	2.1
health status:	volunteer	−0.36	1.1
	health(not so good)	0.96	4.5
	health(fair)	1.39	6.9
	health(good)	2.37	11.8
	health(excellent)	3.30	16.2
marital status:	married(marriage settlement)	0.15	2.9
	divorced	−1.05	10.8
	living with partner(not married)	−0.15	2.4
	widowed	−0.95	8.8
	never married	−1.04	12.0
	household members	0.33	4.6
	children	−0.40	5.4
	logincome	0.21	6.8
	male	−0.25	7.1
	age	−0.01	4.5
	R-squared	0.09	
	No. of obs.	20644	

Notes: The ordered logit regression of self-reported happiness on individual characteristics. Province fixed effects and year fixed effects are included in the regression. Dummy for 1993 and are excluded. Dummies for the provinces Flevoland and Overijssel are significantly positive but the rest are insignificant. All the year dummies are positive and significant except the year dummy for 2000 which is negative and the biggest year dummy in absolute value.

Table 6: **Regional Determinants of Happiness**

Dependent Variable: Self-Reported Happiness

	coef.	t-stat.
railroad accessibility	0.28	2.9
ecosystemic diversity:		
low	0.12	3.1
medium	0.05	1.5
cultural significance:		
low	0.16	2.7
medium	0.06	1.3
death rate	−1.83	3.4
nights spent for holidays	0.02	2.6
arrivals from holidays	0.09	2.5
shocks:		
unemployment	−0.04	3.4
output	0.61	4.2
total household income	0.03	3.6
total compensation	0.03	3.7

Notes: The ordered logit regression of self-reported happiness on controls and regional variable of interest. Every row shows the results from a different regression. Happiness is a categorical variable taking values from 1-5. Ecosystem and cultural significance are "very low", "low", "medium", "high" and "very high" categories. "Very low" is the omitted category. Death rate is ratio of the total number of deaths in the region to population. Nights spent is the total number of nights spent in hotel, camps, etc by the residents of the region. Arrivals from holidays is the total number of arrivals in to the region by residents. Shocks are the deviation of the regional variables from their mean. Controls for every regression are: labor force status, marital and health status, log income, number of children, number of household members, age, province fixed effects and year fixed effects.

Table 7: **Sunshine and Happiness**

Dependent Variable: Self-Reported Happiness

	coef.	t-stat.
duration of daily sunshine:		
last 10 day moving average	0.001	2.2
deviation from the mean	0.004	5.1
maximum duration daily of sunshine:		
last 10 day moving average	0.004	3.4
deviation from the mean	0.006	5.1
daily cloud cover:		
last 10 day moving average	−0.048	3.4
deviation from the mean	−0.061	3.8

Notes: The ordered logit regression of self-reported happiness on controls and measures of sunshine. Every row shows the results from a different regression. Happiness is a categorical variable taking values from 1-5. Measures of sunshine are province level daily sunshine variables taken from weather stations. First rows are the weighted moving average of the last 10 days sunshine measure. Second rows are the deviation of the first row from the average of the first row in the last 60 years. Controls for every regression are: labor force status, marital and health status, log income, number of children, number of household members, age, province fixed effects and year fixed effects.

Table 8: **Happiness and Smoking Cigarettes**

Dependent Variable: Number of Cigarettes

| | OLS | IV | IV |
instrument	no	lagged happiness	sunshine
happy	−0.05**	−0.12**	−1.63
health	−0.04***	−0.06***	0.35
married(marriage settlement)	0.06*	0.12**	0.05
divorced	0.07	0.10	−0.40
living with partner(not married)	0.00	−0.06	−0.12
widowed	−0.00	0.05	−0.55
never married	−0.05	−0.01	−0.61
male	0.06***		0.03
female		−0.05*	
R-squared	0.02	0.04	.
N. of obs.	4886	2318	4024

Notes: Dependent Variable is a binary variable taking 0 if respondent smokes less than 20 cigarettes a day and 1 otherwise. Probit and Logit regressions give the same results with OLS. Health and Happiness are categorical variables taking values 1-5 but treated as continuous variables here. Additional controls: number of kids, work status, number of household members, education, income, and age are not reported since they are insignificant in all specifications. Regressions also include year and province fixed effects. For marital status, married (community of property) is excluded. ***, **, * denotes 1%, 5%, and 10% significance, respectively.

Table 9: **Happiness and Smoking Behavior**

Dependent Variable:Smoking Frequency

instrument	OLS no	IV lagged happiness	IV sunshine
happy	−0.02**	−0.05**	−0.61*
health	−0.03***	−0.03**	0.11
married(marriage settlement)	0.01	−0.01	0.04
divorced	0.12***	0.10**	−0.05
living with partner(not married)	0.06***	0.05*	0.04
widowed	−0.02	−0.02	−0.21*
never married	0.02	0.03	-0.14
education	−0.01**	−0.01*	−0.01**
income	−0.00***	−0.00***	−0.00**
age	−0.01***	−0.01***	−0.01***
male	0.04***	0.03**	0.00
R-squared	0.03	0.03	.
N. of obs.	21475	10943	17426

Notes: Dependent Variable is a categorical variable taking values 0, 1, and 2 ,in order refers to "no","yes, I smoke every day", and "yes, I smoke every now and then", which is the answer to the question "Do you smoke at all?" Ordered Probit and Ordered Logit regressions give the same results with OLS. Additional controls: work status, number of kids and number of household members are not reported since they are insignificant in all specifications. Health and Happiness are categorical variables taking values 1-5 but treated as continuous variables here. Regressions also include year and province fixed effects. For marital status, married (community of property) is excluded.***, **, * denotes 1%, 5%, and 10% significance, respectively.

Table 10: **Happiness and Drinking Behavior**

Dependent Variable:Alcohol

instrument	OLS no	IV lagged happiness	IV sunshine
happy	−0.01***	−0.03***	−0.14
married(marriage settlement)	0.02**	0.02*	0.03**
divorced	0.04**	0.04*	−0.00
living with partner(not married)	0.01	0.00	0.01
widowed	−0.00	−0.00	−0.03
never married	0.01	0.01	-0.02
income	0.00***	0.00***	0.00***
male	0.08***	0.07***	0.07***
R-squared	0.03	0.02	.
N. of obs.	21475	10943	17426

Notes: Dependent Variable is a bivariate variable, refers to "no","yes", which is the answer to the question "On average, do you have more than 4 alcoholic drinks a day?" Probit and Logit regressions give the same results with OLS. Health and Happiness are categorical variables taking values 1-5 but treated as continuous variables here. Additional controls: number of kids, work status, number of household members, education, health, and age are not reported since they are insignificant in all specifications. Regressions also include year and province fixed effects. For marital status, married (community of property) is excluded.***, **, * denotes 1%, 5%, and 10% significance, respectively.

Table 11: **Happiness and Spending**

Dependent Variable:spending more

instrument	Probit no	IVProbit lagged happiness	IVProbit sunshine
happy	−0.15***	−0.21**	−1.56***
health	−0.09***	−0.02	0.31***
married(marriage settlement)	0.03	0.07	−0.01
divorced	0.11	0.15	−0.37**
living with partner(not married)	−0.05	−0.17	−0.10
widowed	−0.16	0.04	−0.46***
never married	−0.24*	−0.36*	−0.53***
number of household members	−0.19*	−0.11	0.01
number of children	0.31**	0.20	0.04
education	0.03***	0.09***	0.02
income	−0.00***	−0.00***	−0.00
age	−0.01***	−0.01***	−0.01*
female	−0.28***	−0.28***	−0.05
N. of obs.	9367	4764	7490

Notes: Dependent Variable is a bivariate variable, refers to "no","yes", which is the answer to the question "Would you, at present, like to spend more money than you have available (e.g. through income)? In other words, would you like to have more money to spend now, but which you would have to pay back later?" Health and Happiness are categorical variables taking values 1-5 but treated as continuous variables here. Regressions also include year and province fixed effects. For marital status, married (community of property) is excluded.***, **, * denotes 1%, 5%, and 10% significance, respectively.

Table 12: **Happiness and Marginal Propensity to Consume**

Dependent Variable:Marginal Propensity to Consume

instrument	OLS no	IV lagged happiness	IV sunshine
happy	0.07***	0.11**	2.95*
health	0.03*	0.03	−0.63*
married(marriage settlement)	0.05	0.08	−0.07
divorced	−0.01	0.03	0.93*
living with partner(not married)	−0.03	−0.08	0.11
widowed	−0.14*	−0.13	0.66
never married	−0.09*	−0.09	0.72*
number of household members	−0.03	−0.05	−0.27*
number of children	0.05	0.05	0.34*
education	−0.01*	−0.02***	−0.00
age	0.01***	0.01***	0.01***
male	0.04*	0.06**	0.20*
R-squared	0.02	0.02	.
N. of obs.	21005	10682	17027

Notes: Dependent Variable is a categorical variable from 1-7, which is the answer to the question "Some people spend all their income immediately. Others save some money in order to have something to fall back on. Please indicate what you do with money that is left over after having paid for food, rent, and other necessities on a scale from 1 to 7, where 1 means "I like to spend all my money immediately" and 7 means "I want to save as much as possible". Ordered Probit and Ordered Logit regressions give the same results with OLS. Health and Happiness are categorical variables taking values 1-5 but treated as continuous variables here. Additional controls: work status, and income are not reported since they are insignificant in all specifications. Regressions also include year and province fixed effects. For marital status, married (community of property) is excluded.***, **, * denotes 1%, 5%, and 10% significance, respectively.

Table 13: **Happiness and Amount of Money Saved**

Dependent Variable:Amount saved last 12 months

instrument	OLS no	IV lagged happiness	IV sunshine
happy	0.04***	0.09**	−0.14
health	0.06***	0.03	0.10
married(marriage settlement)	0.14***	0.14***	0.14***
divorced	0.00	−0.01	−0.09
living with partner(not married)	0.06*	0.11**	0.07
widowed	0.18***	0.17*	0.06
never married	−0.00	−0.03	−0.06
number of household members	0.14***	0.08	0.14**
number of children in the house	−0.23***	−0.18***	−0.23***
education	0.03***	0.03***	0.03***
income	0.00***	0.00***	0.00***
age	−0.00***	−0.00***	−0.00***
male	0.10***	0.11***	0.08**
R-squared	0.21	0.20	0.20
N. of obs.	14919	7450	12083

Notes: Dependent Variable is a categorical variable from 1-7, which is the answer to the question "About how much money has your household put aside IN THE PAST 12 MONTHS? 1. less than 1,500 2. between 1,500 and 5,000 3. between 5,000 and 12,500 4. between 12,500 and 20,000 5. between 20,000 and 37,500 6. between 37,500 and 75,000 7. 75,000 or more". Ordered Probit and Ordered Logit regressions give the same results with OLS. Health and Happiness are categorical variables taking values 1-5 but treated as continuous variables here. Regressions also include year and province fixed effects. For marital status, married (community of property) is excluded.***, **, * denotes 1%, 5%, and 10% significance, respectively.

Table 14: **Happiness and Time Horizons**

Dependent Variable:time period to plan expenditures

instrument	OLS no	IV lagged happiness	IV sunshine
happy	−0.01	−0.02	−1.96*
health	0.01	0.03	0.46*
married(marriage settlement)	0.02	0.08	0.09
divorced	−0.17**	−0.15	−0.74**
living with partner(not married)	−0.06	−0.07	−0.13*
widowed	−0.37***	−0.38***	−0.84***
never married	−0.09	−0.08	−0.60*
number of household members	−0.01	0.01	0.24*
number of children	0.01	−0.03	−0.27*
education	0.02***	0.03***	0.01
income	0.00***	0.00***	0.00***
age	0.00	−0.00	0.00
male	0.03	0.01	−0.11
R-squared	0.01	0.01	.
N. of obs.	17313	8968	14094

Notes: Dependent Variable is a categorical variable from 1-5, which is the answer to the question "People use different time-horizons when they decide about what part of the income to spend, and what part to save. Which of the time-horizons mentioned below is in your household MOST important with regard to planning expenditures and savings? 1. the next couple of months 2. the next year 3. the next couple of years 4. the next 5 to 10 years 5. more than 10 years from now". Ordered Probit and Ordered Logit regressions give the same results with OLS. Health and Happiness are categorical variables taking values 1-5 but treated as continuous variables here. Regressions also include year and province fixed effects. For marital status, married (community of property) is excluded.***, **, * denotes 1%, 5%, and 10% significance, respectively.

Table 15: **Happiness and Internet Banking Usage**

Dependent Variable:Frequency of Internet Banking Usage

instrument	OLS no	IV lagged happiness	IV sunshine
happy	0.07*	0.16*	−2.21*
health	0.00	−0.02	0.60*
married(marriage settlement)	0.18*	0.20*	0.24*
divorced	0.13	0.29	−0.61
living with partner(not married)	0.23**	0.34***	0.39**
widowed	0.07	0.24	−0.75
never married	0.01	0.09	−0.70*
education	−0.02*	−0.00	−0.03
income	0.00***	0.00***	0.00***
age	−0.02***	−0.02***	−0.01***
male	0.29***	0.31***	
female			−0.10
R-squared	0.06	0.08	.
N. of obs.	4773	3344	3974

Notes: Dependent Variable is a categorical variable from 1-5, which is the answer to the question "Nowadays, a number of banks offer the possibility to arrange banking affairs through Internet., without the mediation of a person. Do you use such a facility? 1. no 2. yes, very rarely 3. yes, every now and then 4. yes, often 5. yes, very often". Ordered Probit and Ordered Logit regressions give the same results with OLS. Health and Happiness are categorical variables taking values 1-5 but treated as continuous variables here. Number of household members and number of children are insignificant in all specifications.Regressions also include year and province fixed effects. For marital status, married (community of property) is excluded.***, **, * denotes 1%, 5%, and 10% significance, respectively.

Table 16: **Happiness and Safe Investment and Returns**

Dependent Variable:Control Over Investments

instrument	OLS no	IV lagged happiness	IV sunshine
happy	0.18***	0.26***	2.43*
health	0.12***	0.10***	−0.38
married(marriage settlement)	0.13**	0.12	0.01
divorced	−0.30***	−0.30**	0.52
living with partner(not married)	−0.03	−0.08	0.03
widowed	−0.10	−0.00	0.54
never married	−0.15*	−0.04	0.48
education	0.03***	0.02**	0.02
age	0.02***	0.02***	0.02***
male	0.19***	0.21***	0.34***
R-squared	0.05	0.05	.
N. of obs.	14421	8868	10776

Notes: Dependent Variable is a categorical variable from 1-7, which is the answer to the question "Please indicate to what extent you agree or disagree with the following statement. I have good control of my investments and their returns. Please answer on a scale from 1 to 7, where 1 means "I totally disagree" and 7 means "I totally agree"". Ordered Probit and Ordered Logit regressions give the same results with OLS. Health and Happiness are categorical variables taking values 1-5 but treated as continuous variables here. Education, number of household members and number of children are insignificant in all specifications. Regressions also include year and province fixed effects. For marital status, married (community of property) is excluded.***, **, * denotes 1%, 5%, and 10% significance, respectively.

Table 17: **Happiness and Planning to Save**

Dependent Variable:Plan to Save in 12 months

instrument	OLS no	IV lagged happiness	IV sunshine
happy	−0.11***	−0.21***	0.71
health	−0.07***	−0.06***	−0.25
married(marriage settlement)	0.08***	0.06	0.05
divorced	0.24***	0.16**	0.43*
living with partner(not married)	0.11***	0.16***	0.17***
widowed	0.10*	−0.02	0.33
never married	0.13***	0.01	0.34
number of children	0.02	0.08*	0.16
education	−0.01***	−0.01***	−0.01**
income	−0.00***	−0.00***	−0.00***
age	0.01***	0.02***	0.01***
male	0.02*	0.02	0.07
R-squared	0.09	0.09	.
N. of obs.	21328	10832	15948

Notes: Dependent Variable is a categorical variable from 1-4, which is the answer to the question "Is your household planning to put money aside IN THE NEXT 12 MONTHS? 1. yes, certainly. 2. yes, perhaps 3. probably not 4. certainly not". Ordered Probit and Ordered Logit regressions give the same results with OLS. Health and Happiness are categorical variables taking values 1-5 but treated as continuous variables here. Regressions also include year and province fixed effects. For marital status, married (community of property) is excluded.***, **, * denotes 1%, 5%, and 10% significance, respectively.

Table 18: **Happiness and Decision to Save**

Dependent Variable:Decision about Savings

instrument	OLS no	IV lagged happiness	IV sunshine
happy	−0.09***	−0.16***	1.48
health	−0.03***	−0.02	−0.39*
married(marriage settlement)	−0.01	−0.04	−0.10
divorced	0.08*	0.03	0.51
living with partner(not married)	0.08***	0.17***	0.17**
widowed	0.16***	0.11*	0.55*
never married	0.05	−0.00	0.46
income	−0.00*	−0.00**	−0.00*
age	0.01***	0.01***	0.01***
male		0.07***	0.18**
female	−0.08***		
R-squared	0.02	0.03	.
N. of obs.	20732	10560	15480

Notes: Dependent Variable is a categorical variable from 1-4, which is the answer to the question "Do you think it makes sense to save money, considering the current general economic situation? 1. yes, certainly. 2. yes, perhaps 3. probably not 4. certainly not". Ordered Probit and Ordered Logit regressions give the same results with OLS. Education, number of household members and number of children are insignificant in all specifications. Health and Happiness are categorical variables taking values 1-5 but treated as continuous variables here. Regressions also include year and province fixed effects. For marital status, married (community of property) is excluded.***, **, * denotes 1%, 5%, and 10% significance, respectively.

Table 19: **Happiness and Risky Investment**

Dependent Variable:Risky Investment

instrument	OLS no	IV lagged happiness	IV sunshine
happy	−0.13***	−0.19***	−2.35
health	0.05***	0.06**	0.57
married(marriage settlement)	0.20***	0.11*	0.22**
divorced	−0.02	−0.14	−0.72
living with partner(not married)	−0.01	0.07	−0.10
widowed	−0.21**	−0.28**	−0.94*
never married	−0.06	−0.08	−0.69
education	0.02***	0.03***	0.02**
income	0.00***	0.00	0.00*
age	−0.01***	−0.01***	−0.01***
male	0.55***	0.53***	
female			−0.42***
R-squared	0.08	0.07	.
N. of obs.	18678.00	9595.00	15116.00

Notes: Dependent Variable is the average of 3 categorical variables from 1-7, which are the answers to the questions "Please indicate to what extent you agree or disagree with the following statements. Please answer on a scale from 1 to 7, where 1 means "I totally disagree" and 7 means "I totally agree 1.if I think an investment will be profitable, I am prepared to borrow money to make this investment 2. I get more and more convinced that I should take greater financial risks to improve my financial position 3. I am prepared to take the risk to lose money, when there is also a chance to gain money". Ordered Probit and Ordered Logit regressions give the same results with OLS. Health and Happiness are categorical variables taking values 1-5 but treated as continuous variables here. Regressions also include year and province fixed effects. For marital status, married (community of property) is excluded.***, **, * denotes 1%, 5%, and 10% significance, respectively.