


Private Wealth and Happiness

A research synthesis using an online findings-archive



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EHERO Working Paper 2018/03



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Abstract

There is a lot of research on the relationship between income and happiness, but little research into the relationship between wealth and happiness. Knowledge about the effects of wealth on happiness is required for informed decision making in matters of saving and consumption. In order to answer the questions of how and to what extent wealth relates to happiness, we take stock of the available research findings on this issue, covering 119 research findings observed in 72 studies. We use a new method of research synthesis, in which research findings are described in a comparable format and entered in an online ‘findings archive’, the World Database of Happiness, to which links are made from this text. This technique allows a condensed presentation of research findings, while providing readers access to full details. We found mostly positive relationships between assets and happiness, and negative relationships between debt and happiness. The size of the relationships is small, variations in wealth explain typically less than 1% of the variation in individual happiness. The correlations are slightly reduced when controlled for income and socio-demographic factors. The few longitudinal studies suggest a causal effect of wealth on happiness. We found little differences across methods used and populations studied. Together, the available research findings imply that building wealth will typically add to your happiness, though not by very much.

Keywords: life satisfaction, consumption, saving, assets, debt, wealth, research synthesis

¹ Parts of this text drawn on earlier papers by Veenhoven and co-authors on research synthesis using the World Database of Happiness

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1 INTRODUCTION

Most people want to be happy and look for opportunities to achieve a more satisfying life. This pursuit seems to be universal (Veenhoven 2000), but is particularly pronounced in contemporary modern society. Our heightened interest in happiness has several reasons, one of which is our greater awareness that a satisfying life is possible today and that our happiness is not just a matter of fate, but also something over which we have considerable control. A related reason is that we now live in societies in which we have a lot of choice, for example, we choose where we live and whether we have children or not and prospects for our happiness figure largely in such decisions. This is creating a growing demand for information about happiness and its determinants (Veenhoven 2008).

Empirical research on happiness started in the 1970s as a side topic in gerontology, psychology and sociology and took off after the year 2000 (Veenhoven 2018f). With some delay, happiness has become popular among economists, who focus on the relationships between happiness and income (e.g. Clark und Oswald 1996; Easterlin 1995; Frank 2005; Wunder 2009) and on happiness and unemployment (e.g. Di Tella et al. 2001; Winkelmann und Winkelmann 1998). The relationships between happiness and several socio-demographic characteristics, such as age, gender and marital status, have also been thoroughly analysed (Dolan et al. 2008). While there have been studies on the relationship between happiness and wealth of nations (Hagerty and Veenhoven 2003, Schyns 2002), the relationship between happiness and the wealth of individual persons has only recently been studied. In this chapter we review this latter strand of research.

1.1 Demand for information on effects of wealth on long-term happiness

In western countries, people typically earn more money than required for their basic needs. Consequently, we face the question of how we should spend this surplus money to get the most possible happiness out of it and must deal with the following issues.

The first issue is to spend or to save. Spending is likely to add to one's happiness in the short term but may reduce happiness in the long term. This dilemma is illustrated in Lafontaine's fable of 'The ant and the cricket', in which the cricket enjoyed the summer singing carelessly, while the ant worked all the time. The cricket ended up unhappy in the winter, while the ant was happy enjoying the fruit of his earlier labour. This issue begs the question of how much saving will be optimal for happiness in the long term. We cannot see into the future, but we can orient on past experience. In this context it is worth knowing how happy people are who have saved more or less, and in particular, how saving has affected the happiness of people like us, that is, people with similar personal characteristics and living in similar situations. Bits of such information are available from hearsay and from examples in the media, but we would fare better with data based on scientific research.

What is the best way to accumulate wealth? Should one deposit money in a bank account, buy a life-insurance, put it into stocks and shares or invest in durables such as a house or car? Again, there are pros and cons; e.g. buying a house will provide consumptive reward, but at the cost of financial flexibility. Again, it is worth knowing how such choices have worked for the happiness of other people, people like us in particular. Once more we

fare better using established scientific fact when making our decisions rather than basing them on claims made in advertisements for life-insurances or in fiction, such as the case of, rich but unhappy, Scrooge in Dickens' Christmas Carol.

1.2 Research questions

We sought answers to the following questions:

- 1) Does wealth add to people's happiness?
- 2) If wealth adds to happiness, how much happiness does it add? Is the effect of wealth substantial or marginal?
- 3) Is more wealth always better? What is the amount of wealth required to support happiness in the long term?
- 4) What kinds of assets result in the most happiness? Financial assets such as savings or real assets such as a house?
- 5) Do the effects of wealth on happiness differ across places and people?
- 6) Do the effects of wealth differ across components of happiness? Does wealth make us feel better or just more contented?

These questions imply a focus on *what* wealth does to happiness, not *why*. The answering of these questions requires description of the relationship, not an explanation.

1.3 Approach: research-synthesis

We sought to answer the above questions by taking stock of the available research findings on this subject. To do this, we drew on a new strand of research on 'happiness', 'happiness economics' in particular, and applied a new method of research synthesis, which takes advantage of the availability of an online 'findings archive', to which links can be made from texts in electronic formats, such as this chapter. We call it 'link-facilitated research synthesis'. Details of the technique will be discussed in Section 3.1.

2 CONCEPTS AND MEASURES

Below we will first define our concept of happiness and on that basis select measures that fit this concept. Next, we will consider the concept of wealth and delineate different kinds of wealth and their measurement.

2.1 Happiness

The word 'happiness' is used with several meanings in the literature. In philosophy, it is typically used to denote 'a good life', covering both objective aspects of life and subjective enjoyment of life. In this chapter, we focus on happiness as subjective enjoyment of life and consider it in relationship with an objective condition, one's material wealth.

Definition of happiness

In this chapter, we focus on ‘happiness’ in the sense of the ‘subjective enjoyment of one’s life as a whole’, which is also called ‘life satisfaction’. This definition of happiness is delineated in detail in Veenhoven (1984: chapter 2) The differences with related notions of subjective well-being are analysed in Veenhoven (2000).

Components of happiness

Our overall evaluation of life draws on two sources of information: (1) how well we feel most of the time and (2) to what extent we perceive we are getting from life what we want from it. Veenhoven (1984:25-27) refers to these sub-assessments as ‘components’ of happiness, called respectively ‘hedonic level of affect’ and ‘contentment’.

The affective component is also known as ‘affect balance’, which is the degree to which positive affective (PA) experiences outweigh negative affective (NA) experiences (Bradburn 1969). Positive experiences typically signal that we are doing well and encourage functioning in several ways (e.g. Fredrickson 2004), they also protect health (e.g. Veenhoven 2008).

The affective component tends to dominate in the overall evaluation of life (Kainulainen et al. 2018).

Measures of happiness

Since happiness is defined as something that is on our mind, it can be measured using questioning. Various ways of questioning have been used, direct questions and indirect questions, open questions, and closed questions and one-time retrospective questions and repeated questions on happiness in the moment. Some illustrative questions are:

- *Question on overall happiness:*
Taking all together, how happy would you say you are these days?
- *Questions on hedonic level of affect:*
Would you say that you are usually cheerful or dejected?
How is your mood today? (Repeated over several days)
- *Question on contentment:*
 - 1) How important are each of these goals for you?
 - 2) How successful have you been in the pursuit of these goals?

A review of strengths and weaknesses of measures of happiness and their applicability in different context is available in Veenhoven 2017.

2.2 Wealth

In this paper we focus on ‘wealth’ in the sense of material possessions; we do not consider non-material resources denoted using this term, such as ‘mental wealth’ or ‘moral indebtedness’. Given our research questions, we limit to *individual* wealth and do not consider assets of groups or nations.

Definition of wealth as 'stocks'

Briefly, wealth is the value of all the material resources an individual possesses. To be more precise, wealth can be defined as the sum of the total monetary value of an individual's assets and the total value of an individual's outstanding balance of liabilities (debts).

Aspects of wealth

Total assets, in turn, are composed of the value of an individual's financial assets such as bank deposits, mutual funds, current accounts, savings account, stocks and shares, pensions or whole life insurances and real assets such as value of properties. i.e. household's main residence, other real estate property, self-employed businesses, vehicles and valuables, such as jewelry. All these different components have different degrees of liquidity, real assets are highly illiquid.

The total outstanding balance of an individual's liabilities consists of a mortgage (secured) debt on a main residence if they have one, or mortgages on any other properties they own and non-mortgage (unsecured) debts such as a credit line, credit card debt or other non-mortgage loans. The distinction between the different types of debts is important, as it is well known that different types of assets or debt in a households' portfolios can have differential effects on life satisfaction (UK office for national statistics 2015). Suter (2014) distinguishes different kinds of debts, such as by type of creditor (private creditors, official creditors, and multilateral financial institutions or the maturity composition such as short-term, medium-term or long-term obligations), which differences have not been included in studies on the relation between debts and happiness as yet. These distinctions are presented on [Figure 1](#).

Measures of wealth

Generally, there are two ways to measure wealth; using data from registrations or using self-reports as assessed in surveys. Since we conceptualise wealth 'objectively' as to total of an individual's assets and debts, we not consider the subjective evaluations individuals hold on their wealth, such as how well off they are compared to other people or how worried they about their debts.

Registration data. In the first method, wealth data is mostly taken from administrative tax records and used to analyze the wealth structure of specific populations, regions or countries. However, comparison of wealth between different countries is difficult as the tax systems differ often considerably. While there is no administrative data on wealth, estimates of an individual's wealth can be made by utilizing the information provided on taxable income. In this case, the taxable income can be capitalized using a common rate of return on asset types. Advantages of administrative data are that the actual values of different wealth components reported in a very detailed level. Furthermore, large and representative samples are available for analyses, although these data are not gathered for research purposes. Hence, a disadvantage is the lack of individual information such as information on the socio-economic status or subjective data (Browning and Leth-Petersen 2003: F283).

Self-reports. The survey-based way to measure wealth is the most commonly used method. Here, an individual's wealth is assessed from responses to questions, typically multiple questions on different assets. In contrast to survey data on income, the availability

of such data on wealth is scarce. While almost everyone can specify their income reasonably well, the situation is different for wealth.

There are many difficulties to be overcome recording individual wealth using surveys. One source of problems is in the sampling, which may not cover poor and rich equally well. A second problem is in response to questions on wealth, which some respondents refuse to answer because they are not able to determine their own wealth or do not wish to answer for reasons of privacy. Since it is particularly important for longitudinal studies to keep the attrition rate to a minimum, information on assets is often not collected every year and when it is collected, people are asked to specify their wealth between a certain range rather than be more specific. It is also known that poor or very wealthy people in particular are more likely to refuse to respond, which will lead to ‘middle class bias’.

Typically, one person, the head of the household, is asked to give information on their individual or household wealth. While the participants in some surveys, such as the German Socio-economic Panel (GSOEP), are only asked about the main components of their assets, other surveys, such as the German Panel on Household Finances (PHF), go into greater detail with specific questions about each asset and debt component (cf., Wagner et al. 2007; Kalckreuth et al. 2012). Typically, net wealth is then calculated based on respondents' replies to the questions on the different wealth components. There are also surveys that use a one-shot question about an individual's or household's wealth to determine the net value of their wealth; however, the fewer questions on the different components of assets and debts asked in a survey, the greater the probability that net wealth of an individual or a household will be underestimated, leading to ‘aggregation bias’.

For a review of advantages and disadvantages of the different measures of wealth see Frick et al. (2012).

2.3 Possible relationships between wealth and happiness

Wealth can affect happiness and reversely happiness can influence the accumulation of wealth.

Wealth → Happiness

Wealth can add to long-term happiness in different ways. An obvious causal mechanism is that wealth bolsters one's social esteem, and as a result also one's self-esteem. Yet this will work only for visible wealth and in conditions where wealth is much valued. A more common effect seems to be that wealth provides a sense of security, probably more so among risk averse people. To reduce the volatility of their economic performance, individuals can 1) smooth their income by making conservative production and/or employment choices to avoid income shock. They can 2) smooth their consumption through saving or investing money or having insurances or pension contracts (Morduch 1995). Assets are used particularly to smooth consumption over a life cycle that clearly stabilizes an individual's economic situation. Assets provide security against income shock and serve as security for debt. Finally, yet importantly, assets generate income via investment, which in their turn add to happiness. However, wealth can also affect happiness negatively, possible causal effects being the envy of other people and stress resulting from protection of one's property.

Likewise, indebtedness can affect happiness in different directions and through different causal mechanisms. Tay et al. (2017) have developed a conceptual framework where possible mechanisms of debt on happiness are considered. One, assuming that satisfaction with disposable income or other financial resources is part of an individual's subjective enjoyment of their life as a whole, debt may be negatively related to happiness, as debt affects happiness through the financial domain or other life domains, i.e. a 'bottom-up spillover' perspective. Two, total debt lowers an individual's financial resources, which, in turn, means lower consumption opportunities for the individual and therefore lower levels of happiness, i.e. a 'resource' perspective. When the different debt components are considered separately, the relationship between happiness and debt can be expected as both negative and positive, for example, mortgage debt does not necessarily lower an individual's happiness level since one achieves a certain goal through this debt (Tay et al. 2017). Non-mortgage or other unsecured debt have found to be negatively associated with happiness (Brown et al. 2005). One reason for a negative effect could be that the added 'pleasure' of the goods paid for by, for example, credit card is less lasting or is even smaller than the 'pain' of being in debt. It is also conceivable that debts, which increase one's income or accumulate wealth in the long run, for example obtaining business loan, is positively related to an individual's happiness.

Wealth ← Happiness

Reversed causality is also likely to exist, where happiness influences the accumulation of wealth. One plausible mechanism is that happiness typically 'broadens' one's behavioral scope and as such fosters the 'building' of resources (Fredrickson 2004), in this case material wealth. Happiness also fosters the building of social networks, and as such happy people may more often get assets transferred by parents or through inheritances. Reversed effects may also exist, such as happiness instigating careless consumptions like that of the cricket in the above-mentioned Lafontaine fable.

All this illustrates that it is difficult to predict how accumulation of wealth will work out on one's happiness on the basis of *theoretical* deduction. For that reason, we follow an *inductive* approach in this chapter, looking at the observed balance of effects of wealth on happiness.

3 METHODS

For this review, we draw on an existing collection of research findings on the relation between wealth and happiness, available in the World Database of Happiness (cf. Section 1.3). Below we describe this source in more detail and explain how we used it.

3.1 Use of a findings-archive: The World Database of Happiness

To date (May 2018), happiness has figured in some 6000 empirical studies and it is expected that this year about 700 additional research reports on happiness will be published. This flow of research findings on happiness has grown too big to oversee, even for specialists. For this reason, a *findings archive* has been established, in which quantitative outcomes are presented in a uniform format and sorted by subject. This 'World Database of Happiness' is

freely available on the internet (Veenhoven 2018). Its structure is shown on [Figure 2](#). A recent description of this novel technique for the accumulation of research findings can be found with Veenhoven (2018f). For this chapter, we used this source for the following purposes.

Gathering studies

Over the years, many findings have been entered in the World Database of Happiness, among which findings on happiness and wealth, sometimes as side results of studies that aimed at other things. May 2018, we completed the collection to that date on the basis of an additional literature search. This chapter is based on scientific publications that report findings on the relationships between happiness and wealth as defined in [Section 2.1](#). We also considered studies that report findings on particular changes in wealth, such lottery winnings.

Selection of findings

The WDH limits to the studies that assess *happiness as defined* in [Section 2.1](#) and use a *valid measure* of that concept. This selection process is described in detail in [Chapter 3](#) of the introductory text to the Collection of Happiness Measures (Veenhoven 2018e). Selection on a specific *concept of happiness* implies that we have not included studies on the relation between happiness and other kinds of subjective wellbeing, such as the otherwise interesting papers of Dean et al. (2007) and Dew 2008 on ‘marital satisfaction’ and the Dwyer et al. (2011) study about the effect of wealth on ‘self-esteem’. Selection on *measurement of happiness* implied that we did not include a longitudinal study on financial windfalls in which happiness was measured using a health questionnaire (Gardner & Oswald 2001). Rigorous selection on a clear concept, in our case happiness well defined, is required for fruitful research synthesis.

Together, we found 72 studies, which are mentioned in the list of references and marked with a link to a description in the World Database of Happiness. As far as we know, we have gathered all the qualifying studies available up to May 2018.

Standardized describing the findings

In the World Database of Happiness, findings observed in selected studies are described individually, on electronic *finding pages*, using a standard format, a well-defined technical terminology and standardized English. This way of uniform notation is described in detail in [chapter 3](#) of the Introductory Text to the Collection of Correlational Findings of the World Database of Happiness (Veenhoven 2018c). An example of a finding page on happiness and wealth is given on [Figure 3](#). This standardization is required to enable accurate comparisons of research findings and prevent confusion due to different presentations in the original research reports.

Storing the findings

The finding pages are entered in the electronic *archive* and made available on the internet, where they can be easily found in searches, such as on subject, population, research technique and bibliographics. As such, the findings are better assessable than in the original research reports and a basis is laid for continuous accumulation of knowledge, as qualified

new findings can be added at will following the standard format. Complete and accessible storage of all details, using standard notation, is required for controllable reviews.

The findings on happiness and wealth are stored in the subject section ‘Happiness and Possessions’ (Veenhoven 2018b) of the Collection of Correlational Findings.

Presenting the findings

This technique of using a findings archive gives us a new way of displaying research results in a review paper. Quantitative research findings can be simply summarized using a sign or a number, with a link which will lead to an on-line findings page in the World Database of Happiness with full detail of the particular finding. This enables us to present a large number of findings in a few tabular overviews. This novel way of reporting is explained in more detail below in Section 3.2.

Figure 3 about here

3.2 Presentation of findings in this chapter

We applied a new presentation technique, which takes advantage of two technical innovations: 1) The availability of the above described online *findings archive*, which holds standardized descriptions of quantitative research findings, presented on separate *finding pages*, each with a unique internet address. 2) The change in academic publishing from text printed on paper to text on screens, into which *links* to online information can be inserted. We call this ‘link-facilitated research-synthesis’.

Notation of the findings:

We present the findings by subject in tables, in which observed statistical relationships are indicated using signs, which link to ‘finding pages’ in the World Database of Happiness. Using control+click the reader will get to the page containing the full detail about a particular research finding.

We report all statistical relations observed, irrespective of the size using *+ and - signs*. Positive relationships are indicated with a **+**, negative relationships with a **-**. A significance test is reported using a bold sign: **+** or **-**. If different results are reported for different specifications, we will use a string of symbols. For example, **+/+/-** indicates that subsequent controls have reduced an initial positive correlation to a negative correlation. In [Table 4](#) we consider the shape or the observed relationship and distinguish between linear relationship (indicated */*) and curvilinear pattern (indicated *∩*).

We also consider the observed *effect sizes* and here we met the problem that different statistics for degree of association have been used in the different studies, many of which are not comparable; e.g. Odds Ratio’s and Ordered Probit Coefficients. For that reason, we limited our overview of observed effect sizes to correlation-coefficients standardized on a range from -1 to +1; for bi-variate correlations mostly the Pearson Correlation coefficient (*r*) and for result of multi-variate analysis the standardized regression coefficient (Beta). These effect sizes are presented in stem-leaf diagrams.

Classification of the findings

We sorted the findings into separate tables for aspects of wealth, within which we distinguished across methods used.

Organization of tables. We started with a presentation of all 119 findings. See [Table 1](#) where we distinguish between findings on total wealth, total assets, the components of wealth and total debt and its components. The 9 findings that indicate the shape of the relationship between happiness and wealth are shown in [Table 4](#). For a more refined picture, we assigned all findings to their respective categories such as, for example, savings or stocks within financial assets (see [Table 5](#)), and mortgage or business debt within secured debt (see [Table 6](#)). Furthermore, we split all findings on the relationship between assets and debt by nations (see [Table 7](#) and [Table 8](#), respectively).

Organization in tables. In the tables, we sort findings by the research method used, differentiating between research design and statistical analysis.

Research design: We distinguished three methods: (1) cross-sectional studies, in which the same-time correlation between levels of wealth and happiness is assessed, (2) longitudinal studies, in which the relationship between change in consumption and change in happiness is assessed, and (3) experimental studies, in which the effect of induced change in consumption on change in happiness is assessed. Longitudinal and experimental studies provide more information about causality, while experimental studies provide most information about the direction of causality. The latter studies are the most informative for answering research question 2, yet they are the least numerous. All we found is one study on the effect of lottery winning on happiness, which can be seen as a ‘natural experiment’. Several studies report findings using more than one method, thus the same finding pages will appear in different columns of the tables of this review’.

Statistical analysis. In all these approaches, there is a risk of spurious correlation; i.e. the relationship between wealth and happiness is explained by a third factor not considered, for example marriage. One could imagine that marriage influences both the accumulation of wealth and happiness, while there is no connection between wealth and happiness. This problem is most pressing in cross-sectional studies but can also exist in longitudinal and experimental studies. To weed out such false relationships, most studies compute partial correlations, using different methods of multivariate analysis. This approach involves the risk of over-control, in which true variance is removed, for example when control for marital status wipes out the correlation between house-ownership and happiness, while having a house actually adds to happiness through better marriage chances. In the tables, we note (a) bi-variate correlations and (b) partial correlations. For the partial correlations, we further distinguish between three methods: Ordinary Least Squares (OLS), Ordered Probit Logit (OPL), and Instrumental Variable analysis (IV).

Advantages and disadvantages of this link-facilitated review technique

Link-facilitated research synthesis has several advantages over traditional reviews that are limited to the possibilities of the printed page. Checking with the available data is easier, as the links provided in this text lead the reader directly to standardized descriptions of research findings, all of which contain a traditional reference to the original research report. Referencing is also more complete; traditional reviews must often cite selectively, since they cannot mention all the available data in the limited space available in a printed journal

article. Our new method allows all research reports to be considered and thus avoids the danger of ‘cherry picking’; it also allows a more complete description of pertinent findings. While traditional reviews typically condense the available information into a few columns, contained in a summary table, our new method provides easy access to much more detailed information in on-line ‘finding pages’.

A disadvantage is that much detail is not directly visible in the signs by which the quantitative relationships are summarized, in particular not the effect size and control variables used. Further disadvantages are that links work only in electronic texts and this technique requires a specialized infrastructure to have been created, a findings-archive, the establishment of which will only be worthwhile when a lot of research has to be covered and a long-term perspective needs to be taken on the type of research being archived.

4 RESULTS

How did the summarized research findings help us to answer the questions we raised in Section 1.2? Each question and the relevant findings are discussed below.

4.1 Does wealth add to happiness?

We divided this question into three parts: 1) Are wealthy people happier and are indebted people unhappier? 2) If so, is this a spurious correlation? 3) If not, does wealth effect happiness, or is the correlation a result of reverse causality, happy people gather more wealth? Using the findings presented in Table 1, these questions can be answered as follows.

Wealthy people are happier

In the column *bi-variate* correlations of Table 1, we see positive correlations of happiness with net wealth. Clearly, the people who are better off tend to be happier than the people who are worse off. A similar picture emerges when looking at the partial correlations: when controlling for other important determinants of happiness the coefficient for total net wealth remains positive and statistically significant in most cases. Two findings for a sample containing the “unhappy” only suggest a negative relationship between net wealth and happiness. Another finding suggests a negative relationship when an instrumental variable approach was used with income as the instrumented⁵, which we will discuss below.

When we have a look at financial assets, a positive relationship between happiness and financial assets is revealed, with two exceptions. One, financial assets are negatively related to happiness for rural-urban migrants in China, although the regression coefficient is not statistically significant. Two, the regression coefficient for people who own stocks or bonds, which is only one component of financial assets, is negative for West Germans by using an instrumental variable regression. The studies using longitudinal data, however, reveal a clear positive and statistically significant relationship (see Table 5).

The bi-variate correlation between happiness and real assets is also positive with two exceptions and mostly statistically significant.

⁵ Knight et al. (2009) (https://worlddatabaseofhappiness.eur.nl/hap_cor/desc_cor.php?ssid=27960)

Indebted people are less happy

The bi-variate correlations between total debt and happiness shown in [Table 1](#) suggest that the sum of an individual's or a household's total debt is negatively related to happiness. The one non-significant positive correlation results from control for perceptions of relative income⁶, which may have removed part of the worries that go with indebtedness. Two findings based on changes in total debt (longitudinal data), however, show a clear negative relationship between total debt and happiness.

Not a spurious correlation

The greater happiness of wealthy people could be due to other factors than their wealth, such as a better health or education. Positive correlations can be misleading if homeowners, for example, are more often married and their greater happiness is derived from their marital status. The possibility of spurious relationships can be excluded by conducting multivariate regression analyses. This did not change the direction of the correlations and only slightly reduced the number of significant correlations.

At first sight, there is an exception in the few statistically insignificant, negative OLS coefficients for real assets in some cases ([Table 1](#)). These mainly concern home-ownership by elderly people or other real assets such as cars. A possible explanation for the observed negative correlation between happiness and being a homeowner could be over-control. One study controls for satisfaction with several domains of life, health, housing, living area and leisure time, which is likely to wipe away much of the variance of satisfaction with life-as-a-whole. Likewise, control for health will distort our view on the relationship between wealth and happiness^{7, 8}.

Causal effect likely

A non-spurious same-time correlation could still result from reversed causality, happiness facilitating the accumulation wealth (cf. [Section 2.3](#)). Several techniques have been used to identify a causal effect of wealth on happiness.

Instrumental variable analysis (IV) was applied on cross-sectional data in three studies and show mixed results: two insignificant positive correlations and two negative correlations, of which one is statistically significant. This latter coefficient results from an analysis in which attitudinal variables such as importance of family, friends or religion are controlled, which is likely to have wiped out much of the effect of total wealth on happiness⁹.

The 15 findings based on longitudinal data that consider changes in happiness following changes in wealth show that growing wealth tends to go with rising happiness. however, happiness can have been raised for other reasons and raised wealth in its trail.

⁶ Knight & Gunatilaka (2014a)

https://worlddatabaseofhappiness.eur.nl/hap_cor/desc_cor.php?ssid=28026

⁷ Mollenkopf & Kaspar (2005):

https://worlddatabaseofhappiness.eur.nl/hap_cor/desc_cor.php?ssid=12433

⁸ Though we doubt these data, we still report them, since the aim of this study is to present all the available data.

⁹ Knight et al. 2009: https://worlddatabaseofhappiness.eur.nl/hap_cor/desc_cor.php?ssid=27960

For a definite proof of the causal effect of wealth on happiness we need experimental data. Since laboratory experiments are not really possible on this topic, we must make do with natural experiments and assess whether substantial financial windfalls, such as inheritances and lottery wins, raise long-term happiness. This was the subject of the above-mentioned study by Gardner & Oswald (2001), which regrettably did not use an acceptable measure of happiness. To our knowledge the effect of inheritances on happiness has yet to be assessed. The bi-variate findings on lottery winners are not conclusive, since some studies find slightly greater happiness among lottery players, irrespective of winning (Veenhoven 2018g).

Table 1 about here

4.2 How much does wealth add to happiness?

As noted in Section 3.2, we selected findings expressed in a comparable effect size from -1 to +1 and present these in stem-leaf diagrams. The effect sizes are typically small and account for less than 1% of the variance in happiness.

The 48 bi-variate correlations for total wealth, financial and real assets obtained in cross-sectional studies vary between -0.03 and +0.36 with an average of +0.11 and a standard deviation of 0.08 (see Table 2). The 17 partial correlations are about half this size varying between -0.23 and +.018 with an average of +0.04 and a standard deviation of 0.09. The effect sizes of the 9 findings obtained from studies that use longitudinal data are in a similar range. The average effect size of the two bi-variate correlations is +0.23 and the seven Beta's range between +0.06 and +0.25 with an average of +0.15 and a standard deviation of 0.09.

The observed relations between total debt, secured and unsecured debt and happiness are shown in Table 3. The three bi-variate correlations between total debt and unsecured debt and happiness range from -0.25 to -0.13 (Mean=-0.21; SD=0.07) and indicate a clear negative relationship. When we look at the partial correlation of cross sectional data, two out of four findings confirm this negative correlation, as the standardized regression coefficients of total debt and unsecured debt remain negative. Interestingly, two partial correlations show a positive relationship between happiness and debt, even though not statistically significant. These positive coefficients rely on a certain type of debt namely the secured debt or mortgage debt. Findings based on longitudinal data, and therefore change in debt, confirm this positive relationship between happiness and secured debt.

The explained variance in happiness is less than 1%, which is low in an absolute sense and, in comparison with non-material resources, such as health, which explain about 5% of the variance in happiness (e.g. VanBeuningen & Moons 2013) and marriage, which explains about 4% (e.g. Schulz et al; 1985).

Table 2 and Table 3 about here

4.3 Is more always better? What amount of wealth is required for a satisfying life in the long term?

Only nine studies have inspected the shape of the relationship between wealth and happiness and eight of these found a pattern of diminishing marginal utility, with a stronger correlation for happiness and wealth in the lower half of the wealth distribution. None of these studies found no effect at all among the wealthiest, more wealth still gives more happiness among the rich. So, there is not a typical satiation level for wealth.

Table 4 about here

4.4 What kind of assets result in the most happiness? What kind of debts reduce happiness most?

Once we know that wealth tends to add to happiness, though not very much, the next question is whether some kinds of wealth add more to happiness than others. One can choose to invest in financial assets and real assets and in both cases between variants of these. In the reverse case of going into debt there is a choice between secured and unsecured debt. How have such choices worked out on happiness?

Financial assets or real assets?

Above in [Table 1](#) we have seen that financial and real assets both add to happiness. In [table 2](#) we have seen the available effect sizes, only one of which pertains to financial assets. These data are too few and heterogenous to allow a meaningful comparison.

Kinds of financial assets and debts:

When one opts for financial assets, the next step is to choose a particular kind of holding. In the reverse case of going into debt there are also options to choose. How did such choices affect an individual's happiness?

Happier with safe savings. One can save in different ways: open a savings account at a bank, buy bonds or buy insurances. All these types of financial assets tend to go with greater happiness, whereas mixed effects are observed for the riskier kinds of savings, such as placing assets in stocks.¹⁰

Happier with secured debts, but unhappier with unsecured debts. The relationship between happiness and secured debt is positive with the exception of four findings ([Table 1](#)). In the case of the bi-variate correlation, this is not surprising as the bi-variate correlation neglects other important determinants of happiness. Hence, it is not possible to distinguish between the negative effects of being indebted and the positive effect, for example, of being a house-owner, and having mortgage. In this case, the joy of owning and living in a house is higher than the pain of being indebted. Even if controlled for other important determinants of happiness, the partial correlation is also positive in most cases. A possible reason for this could be that, for example, the monthly debt service for house-owners is lower than the rent they would have to pay if they wanted to rent a comparable house. Moreover, such debts, as

¹⁰ We exclude operating assets as they are both types of assets financial and real.

the name suggests, are secured, which in turn means that, even though someone has an unexpected job loss and resulting inability to service, the monthly debt payment can still sell the house and can get out of that debt.

All three findings on happiness and unsecured debt shown in [Table 1](#) suggest a clear negative relationship. Interestingly, microfinance loans as a specific type of unsecured debt are positively correlated to happiness, while other types of unsecured debt such as student loans are negatively correlated (see [Table 6](#)).

Kinds of real assets

When investing in *real assets*, there are many options, such as buying furniture, pieces of art, and jewellery. Findings on the relationship between having such assets and happiness are available only for two such options; 1) buying a house and 2) buying a car. These findings are reported in [Table 5](#) and [Table 6](#).

Homeowners happier. To date, the relation between happiness and home ownership has been addressed in 55 empirical studies, the results of which are summarized in [Table 5](#). Split-ups of the same findings are presented in [Table 6](#). What do these findings tell us regarding our research question?

Among the cross-sectional findings summarized in [Table 5](#) all the bi-variate associations are positive. This pattern appears in comparisons of owners versus non-owners and of owners and renters, and suggest that home-ownership adds to happiness. Next to full house ownership, there are several kinds of partial ownership, such as time-limited ownership (redemption), joint ownership with others, usufruct and the right to use a house free of charge. The correlation with happiness of these ownership modalities has been addressed in two cross-sectional studies, the results of which are summarized in [Table 5](#) too. These findings suggest again that home-ownership of what-ever type tends to go with greater happiness.

[Table 5](#) also shows the partial correlations where most of these are positive, which in turn suggests, too, that home ownership fosters happiness. In five cases, the partial correlation is negative. A closer look at these divergent findings reveals that in some studies additionally satisfaction with life domains has been controlled for¹¹, which leads to endogeneity problems as discussed above. In two cases different specifications of the model changed the picture: besides the typical socio-economic controls in one study the socio-economic status is controlled for¹² and a study among women¹³ family situation and average income in the neighbourhood were additionally controlled for. These controls could be too severe and wash out the true effects of home-ownership on happiness. In particular, the control for income, as part of the effect of income on happiness is in what income allows one to buy, among these expenses is a house. Five longitudinal findings are available on this topic and all five show that a change to home-ownership is typically accompanied by a rise in happiness. Yet these studies do not show, however, what came first: the buying of a house or the rise in happiness.

Cars do not necessarily add to happiness. The bi-variate correlation between happiness and ownership of a car is in most cases positive with two exceptions. Females in the UK, for

¹¹ Shu & Zhu (2009) in China, Mollenkopf et al (2004) in 6 nations,

¹² Rossi & Weber (1996)

¹³ Bucchianari (2011)

example, tend to be unhappier when they have access to a car whenever they want, even though this correlation is not statistically significant. Another study investigated the relationship between happiness and price of the car one owns. The bi-variate correlation and the partial correlation between happiness and a car in the lowest price category is found negative for the US. Other studies have also revealed a negative partial relationship between happiness and owning a car (see [Table 5](#), column OLS).

[Table 5](#) and [Table 6](#) about here

4.5 Do the effects of wealth on happiness differ across places and people?

We now turn to possible contingencies in the relation between happiness and wealth, including both assets and debt. The available data allows a view on differences across nations and some personal characteristics of groups of people.

Similar across nations

In most nations, a positive relationship has been observed between wealth and happiness. One finding suggests a negative relationship in Australia once satisfaction with wealth is controlled for, but here again, we believe that over-control has wiped out the ‘true’ relationship by considering satisfaction with wealth as an additional explanatory variable for happiness. The same holds for a study among the general public in China, Germany and the UK where a negative correlation between assets and happiness has been found. The coefficient for being a home-owner becomes negative once satisfaction for several life domains is controlled for. One study considers rural-urban migrants in China, where financial assets in most specifications are negatively related to happiness, however this finding is not explained by the authors. Interestingly, the number of cars, or the value of the cars a household owns, is in most cases negatively related to happiness, irrespective of the country where this issue has been explored.

Debt is mostly negatively related to happiness apart from Argentina (microfinance loan) and Italy (mortgage). Interestingly, the relationship between happiness and debt are often positive in China.

[Table 7](#) and [Table 8](#) about here

Similar across social categories, except age

The (few) available splits made by kinds of people are presented in [Table 9](#). These findings show no consistent difference in effects of wealth on happiness between males and females, nor for rural and urban populations. Splits by age show stronger effects of wealth on the happiness of old people.

[Table 9](#) about here

4.6 Do the effects of wealth differ across components of happiness? Does it make us feel better or just more contented?

We distinguish the different measures of happiness described in Section 2.1 in Table 10. When we look at the bi-variate correlations in the first column it seems that overall happiness is more affected by wealth than affective happiness or a mixed measure of happiness, which fits the finding by Kainulainen et al. (2018) that finances relate more to the cognitive component of happiness than to its affective component. When we look at the partial correlation, we cannot find big differences between the effects of wealth on overall or affective happiness, however, the few data we have do not allow us to draw definite conclusions.

Table 10 about here

5 DISCUSSION

The aim of this review was to see how wealth affects happiness, to provide people with a basis for making informed choices with respect to the surplus income. Are we any wiser now?

5.1 What we know now

The available findings show that wealthy people are typically happier than non-wealthy people and that at least part of this difference is due to a causal effect of wealth on happiness. The size of the effect tends to be small, on average differences in wealth explain less than 1% of the variation in happiness. Some of the findings support the hypothesis of diminishing marginal utility of wealth.

The findings also show that being in debt typically reduces happiness, having unsecured debts in particular. Debt made for investment in a business (micro-credit) or a house (mortgage) work out positively on happiness.

5.2 Usefulness of this knowledge

The observed small positive effect of wealth on happiness has two seemingly contradictory implications for individual decision makers. One, you should not focus too much on getting rich, and two, one should not forego wealth either. The 1% variance in happiness may seem small compared to other determinants of happiness but it still represents a considerable share of the determinants over which we have some control, which has been estimated between 30 and 50%. While the findings on debts tell us that it is better not to consume now and pay later.

5.3 What we do not know yet

Though we know that wealth adds a bit to happiness, we do not know yet whether saving adds more to happiness than spending. The cricket may still be happier than the ant. We also

do not know what the best way to build wealth is, to invest in financial assets or to buy real assets. When we opt for investing in real assets, we know that investing in a house will probably add more to our happiness than buying a car, but we do not know how other investment will work out on our happiness, such as buying art or jewellery.

Our knowledge of what works best for whom is quite limited as yet, although the available data do not show much difference in bivariate relations across nations and social categories, there may be more differences when it comes to causal effect and when more contextual variables are considered. If one wants to know how a financial choice has worked out in the past on the happiness of similar people, these people should not only be similar with respect to nation of residence and their socio-demographics such as sex and age, but also comparable with respect to personality and values. So far available, the data can only inform us about single similarities, such as sex *or* age, while meaningful comparison requires that data is available on the happiness of people with whom we share multiple similarities.

5.4 Lines for further research

To get a better view on causality we need follow-up studies and among these should be studies that assess the effects of externally induced changes in wealth, such as inheritances or random financial mishap. To get a view on the long-term consequences of financial choices, these longitudinal studies should cover many years, preferably life-times. To enable comparison between the effects of saving and spending on happiness, these studies should cover both aspects of wealth. In order to allow a view on how financial choices have worked out on the happiness of similar people. Future studies should be sufficiently large to allow splits by different types of people.

Much of these requirements can be met adding questions on wealth and consumption to running panel studies such as the Australian HILDA, the British Understanding Society Survey and the German Socio-Economic Panel (GSOEP), all of which already include some measures of wealth, one or the other. Even better would be the start of a more focused large-scale panel study on the long-term effects of private financial choices. The cost will be a fraction of what the financial industry spends today on advertising.

As things are, some of the required information will become available within the growing stream of empirical happiness research, particularly in the new field of happiness economics. Periodical synthesis of this data will be helpful, in particular when building on the foundations laid down in this chapter.

5.5 Sponsors of this research

This research is of interest to citizens who have surplus money and seek solid information about ways to use that money, with an eye on probable effects on their future happiness. As individuals, these citizens cannot do this type of research, so their information needs must be met by organizations. Which organizations might support this research? We see four ‘parties’ that could be involved. 1) The scientific sector, which produced most of the above presented research findings. This party has an interest in pursuing this research topic, but is typically short of money. 2) The financial advice sector, which includes consumer unions

and associations of professional financial advisors. These parties are in a good position to diffuse gathered information, but are less able to pay for the gathering of it. 3) Providers of financial services to consumers, such as banks and life-insurance companies. These parties have the required funds, but are not always interested in revealing the real effects of products on the happiness of their customers. 4) The political sector, where interest in happiness is rising and helping citizens to make informed choices is an acceptable way to raise levels of happiness. Politicians can allocate funds to do the required research and can join forces with the other institutional stakeholders.

6 CONCLUSIONS

The available research finding on the relationship between wealth and happiness provide some clues for making informed choices on how to use one's surplus money. Wealth adds to happiness, in particular among the elderly. The effect is small however, and subject to declining marginal utility. Safe investments in savings or in a house of one's own tend to yield the most happiness. The available data do not inform us about the best ratio of saving and spending and only allow us a first glance at what financial choices might work out best for what kind of people.

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Table 1: 119 Research findings on happiness and wealth: all findings

| | Same-time correlation (cross-sectional) | | | | Over-time correlation (longitudinal) | | | |
|------------------|---|-----------------|---------|-------|--------------------------------------|----------------|-----|----|
| | <i>bi-variate</i> | <i>partial</i> | | | <i>bi-variate</i> | <i>partial</i> | | |
| | | OLS | OPL | IV | | OLS | OPL | IV |
| TOTAL WEALTH | +++++ | ++++ | +/- + | - | ++ | ++- | | |
| | + | +++ +/- | | | | | | |
| TOTAL ASSETS | + | ++++ | | + | | | | |
| Financial assets | +++ -/+ + | ++++ | +++ | +/- + | ++ | +++ | | |
| | +++ | - | | | | | | |
| Real assets | +++++ | ++++ | ++ +/+ | | +++++ | + | | |
| | +++++ | ++++ | +/+ + + | | | | | |
| | +++++ | +/+ +/+ +/+ | +/- | | | | | |
| | + +/+ +/+ | ++++ | | | | | | |
| | +/+ + + + | +/- +/- +/- +/- | | | | | | |
| | +++++ | -- -/- - | | | | | | |
| | +++ +/- | ++ +/- +/- | | | | | | |
| | +/- | | | | | | | |
| TOTAL DEBT | ----- | -- +/- | | - +/- | - | - | | |
| Secured debt | | ++ - + | + - | | + | +++++ | + | |
| | | | | | | -- - | | |
| Unsecured debt | - | | | | | - | - | |

Methods mentioned in the header of this table are explained in Appendix A. **Signs** used in the cells are explained in Appendix B

Table 2: Stem/Leaf diagram: observed relations between total wealth, total (financial and real) assets and happiness

| | <i>Same time correlation (Cross-sectional)</i> | | <i>Over time correlation (Longitudinal)</i> | |
|------|--|---------------------------|---|---------------------------|
| | <i>Bi-variate r</i> | <i>Multi-variate beta</i> | <i>Bi-variate r</i> | <i>Multi-variate beta</i> |
| +0,6 | | | | |
| +0,5 | | | | |
| +0,4 | | | | |
| +0,3 | 3 6 | | | |
| +0,2 | 3 8 | | 6 | 3 3 5 |
| +0,1 | 3 4 4 9 6 0 0 1 2 2 2 2 2 4 4 5 5 5 7 8 | 2 1 8 | 9 | 2 |
| +0,0 | 0 2 2 4 4 5 5 5 6 6 7 7 7 7 7 7 7 7 8 8 9 9 | 0 5 6 8 8 9 5 3 7 | | 6 7 8 |
| -0,0 | 3 3 | 1 | | |
| -0,1 | | 9 4 7 | | |
| -0,2 | | 3 | | |

Numbers link to online detail about this finding. Use control+click

Beta's control individual characteristics and perceived health

Colours of the numbers indicate: **Total wealth**, **Total assets**, **Financial assets**, **Real assets**

Bold: statistically significant

Italics: special public other than the general public (male/female or rural/urban)

Table 3: Stem/Leaf diagram: observed relations between total debt, secured and unsecured debt and happiness

| | <i>Same time correlation</i> | | <i>Overtime correlation (Longitudinal)</i> | |
|------|------------------------------|---------------------------|--|----------------------------|
| | <i>Bi-variate, r</i> | <i>Multi-variate beta</i> | <i>Bi-variate r</i> | <i>Multi-variate, beta</i> |
| +0,6 | | | | |
| +0,5 | | | | |
| +0,4 | | | | |
| +0,3 | | | | |
| +0,2 | | | | |
| +0,1 | | | | |
| +0,0 | | 2 5 | | <i>0 0 1 1 1 1</i> |
| -0,0 | | 2 5 | | <i>5 0 0 6</i> |
| -0,1 | 3 | | | |
| -0,2 | 4 5 | | | |

Numbers link to online detail about this finding. Use control+click

Beta's control individual characteristics and perceived health

Colours of the numbers indicate: **Total debt**, **secured debt**, **unsecured debt**

Bold: statistically significant

Italics: special public other than the general public (male/female or rural/urban)

Table 4: 9 Research findings on happiness and wealth: Shape of the relationship

| | Same-time correlation (cross-sectional) | | | | | Over-time correlation (longitudinal) | | |
|------------------|---|----------------|-----|----|-------------------|--------------------------------------|-----|----|
| | <i>bi-variate</i> | <i>partial</i> | | | <i>bi-variate</i> | <i>partial</i> | | |
| | | OLS | OPL | IV | | OLS | OPL | IV |
| TOTAL WEALTH | ∩ ∩ ∩ ∩ ∩ ↘ | | | | | | | |
| TOTAL ASSETS | | | | | | | | |
| Financial assets | ∩ | | | | | | | |
| Real assets | ∩ | | | | | | | |
| TOTAL DEBT | ∩ | | | | | | | |
| Secured debt | | | | | | | | |
| Unsecured debt | | | | | | | | |

∩ = linear, positive; ∩ = **curvi-linear, declining utility**

Methods mentioned in the header of this table are explained in Appendix A. **Signs** used in the cells are explained in Appendix B

Table 5: 101 Research findings on happiness and wealth: split by components

| | Same-time correlation (cross-sectional) | | | | Over-time correlation (longitudinal) | | |
|-------------------------|---|---------------------------|--------|-----|--------------------------------------|----------------|-----|
| | <i>bi-variate</i> | <i>partial</i> | | | <i>bi-variate</i> | <i>partial</i> | |
| | | OLS | OPL | IV | | OLS | OPL |
| FINANCIAL ASSETS | | | | | | | |
| Savings | + | ++ | +++ | +/- | ++ | | |
| Stocks, bonds | | + | | +/- | | | |
| Pension, life insurance | | + | | +/- | | | |
| Other financial assets | ++++ | ++ | | | + | | |
| REAL ASSETS | | | | | | | |
| Housing | ++++++ | ++++++ | ++++++ | +/+ | ++++ | | |
| | +++++/+ | +/+ +/+ +/+ + + | +/+ + | | | | |
| | +/+ + + + | + + + +/- +/- | | | | | |
| | | +/- - - | | | | | |
| Cars | + + -/+ + + + | + + +/- +/- +/- -/- + +/- | | | + | | |
| | -/+ | | | | | | |
| Other real assets | + | | | | | | |

Methods mentioned in the header of this table are explained in Appendix A. **Signs** used in the cells are explained in Appendix B

Table 6: 23 Research findings on happiness and debt components

| | Same-time correlation (cross-sectional) | | | Over-time correlation (longitudinal) | | |
|-----------------------|---|----------------|----|--------------------------------------|----------------|-----|
| | <i>bi-variate</i> | <i>partial</i> | | <i>bi-variate</i> | <i>partial</i> | |
| | OLS | OPL | IV | OLS | OPL | IV |
| SECURED DEBT | | | | | | |
| Mortgage | + - + | - | + | + + + + + + - | + | |
| Business | + | | + | | | |
| UNSECURED DEBT | | | | | | |
| Student loan | - | - | | | | |
| Microfinance loan | | + | + | | | |
| OTHERS (unspecified) | - - - - - | +/- | | | | +/- |

Methods mentioned in the header of this table are explained in Appendix A. **Signs** used in the cells are explained in Appendix B

Table 7: 124 Research findings on happiness and assets: Split by nations

| | Same-time correlation (cross-sectional) | | | | Over-time correlation (longitudinal) | | |
|-------------|---|---|---------------------------------|-----|--------------------------------------|-----|----|
| | <i>bi-variate</i> | <i>partial</i> | | | <i>partial</i> | | |
| | | OLS | OPL | IV | OLS | OPL | IV |
| Europe | + | + +/+ | | | | | |
| Australia | + + + + + + + | + + +/- | +/+ +/+ | | + + | | |
| China | | + + - + + ++ + +/- | +/- | - + | | | |
| Germany | + +/+ | + + + + + - + | + + + + | +/- | + + + + + | + | |
| Hungary | + | + | | | | | |
| Italy | + | | + + | | | | |
| Netherlands | + + + + | + - + | + | | | | |
| UK | + + + + -/+ | + + | | | + | | |
| US | + + + + + -/+ | + + ^{a)} + + + +/- + +/- +/- +/- +/- | + ^{a)} - ^{a)} | | + + | | |
| Others | + + + + + + + + +/- +/+ + + + + + + + | + + + + + +/- -/- +/- | + + + | | + | + | |

Methods mentioned in the header of this table are explained in Appendix A. **Signs** used in the cells are explained in Appendix B

Table 8: 19 Research findings on happiness and debt: Split by nations

| | Same-time correlation (cross-sectional) | | | | Over-time correlation (longitudinal) | | | | IV |
|-----------|---|----------------|-----|---------|--------------------------------------|----------------|-----|----|----|
| | <i>bi-variate</i> | <i>partial</i> | | | <i>bi-variate</i> | <i>partial</i> | | | |
| | | OLS | OPL | IV | | OLS | OPL | IV | |
| Europe | | | | | | | | | |
| Australia | - - - - | | | | - | | | | |
| China | | + +/- - | | +/- +/- | + + + + + + | | | | |
| Germany | | | | | | | | | |
| Hungary | | | | | | | | | |
| Italy | | + | | | | | | | |
| UK | | | | | | | | | |
| US | - | - | | | | | | | |
| Other | - | + | | | | | | | |

Methods mentioned in the header of this table are explained in Appendix A. **Signs** used in the cells are explained in Appendix B

Table 9: 34 Research findings on happiness and wealth: split by kinds of people

| | Same-time correlation (cross-sectional) | | | | Over-time correlation (longitudinal) | | | |
|---------------------|---|----------------|-------|-----------|--------------------------------------|----------------|-----|----|
| | <i>bi-variate</i> | <i>partial</i> | | | <i>bi-variate</i> | <i>partial</i> | | |
| | | OLS | OPL | IV | | OLS | OPL | IV |
| TOTAL WEALTH | | | | | | | | |
| Female/Male | | +F=M | | | | | | |
| Rural/Urban | | +R | +/-R | -R | | | | |
| Young/Mid/Old | | +O +M +O +O -O | +O +O | | +O | +O | | |
| ASSETS | | | | | | | | |
| Female/Male | +F M>F | +/-F | | | | | | |
| Rural/Urban | | +U +R +R -O | +/-U | +U | | | | |
| Young/Mid/Old | +M | +O +/+O -O - | +O +Y | | | | | |
| Migrants | | + - | | | | | | |
| DEBT | | | | | | | | |
| Female/Male | | | | | +M +F | | | |
| Rural/Urban | | +U +/-R -U | | +/-U +/-R | +U -R +U +U | | | |
| Young/Old | | | -Y | | | | | |

Methods mentioned in the header of this table are explained in Appendix A. **Signs** used in the cells are explained in Appendix B

Table 10: 12 Research findings on happiness and wealth: Split by measure of happiness

| | Same-time correlation (cross-sectional) | | | | | Over-time correlation (longitudinal) | | |
|------------------|---|----------------|-----|----|-------------------|--------------------------------------|-------------|----|
| | <i>bi-variate</i> | <i>partial</i> | | | <i>bi-variate</i> | <i>partial</i> | | |
| | | OLS | OPL | IV | | OLS (FE/RE) | OPL (FE/RE) | IV |
| TOTAL WEALTH | O>M | O>M | | | | | | |
| TOTAL ASSETS | | | | | | | | |
| Financial assets | | | | | | | | |
| Real assets | O>A | O>A | O>A | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| TOTAL DEBT | O>M | O>M | - | | | | | |
| Secured debt | | | | | | | | |
| Unsecured debt | | | | | | | | |

O = Overall happiness, A = Affect, C = Contentment, M = mixed measure.

Figure 1: Wealth and its components

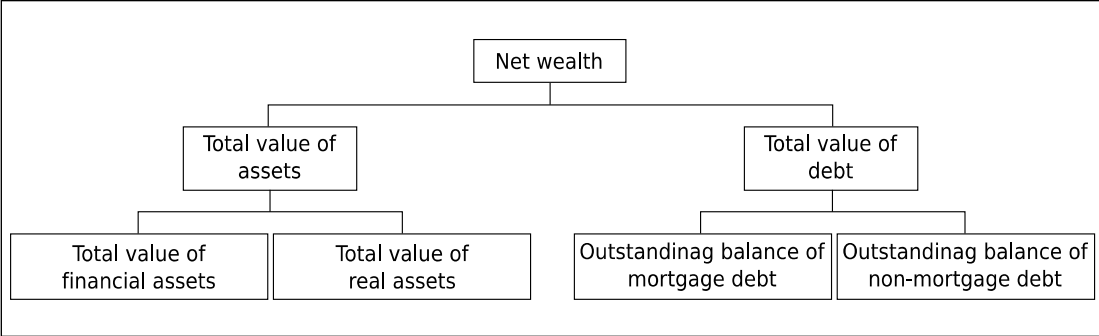


Figure 2: Start page of the World Database of Happiness, showing the structure of this findings archive

Figure 3: Example of a finding page in the World Database of Happiness

APPENDIX

Appendix A

Terms for research techniques used in the header of the tables

Research design

- Cross-sectional: same time correlation
- Longitudinal; over-time correlation

Statistical analysis

- Bi-variate: correlation between two variables (wealth and happiness)
 - Partial: result of a multi-variate analysis in which the effect of possible spurious variables is filtered away
 - OLS: Ordinary Least Square Analysis
 - OPL: Ordered Probit Logit
 - IV: Instrumental Variable Analysis
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Appendix B:

Meaning of signs used in cells of the tables

| | |
|-----|---|
| + | = positive correlation, significant |
| + = | positive correlation, not significant |
| 0 | = direction of correlation not reported and not significant |
| - | = negative correlation, significant |
| - = | negative correlation, not significant |
| -/+ | = positive and negative correlations obtained with different sets of control variables |
| / | = linear positive relationship |
| ∩ | = N shaped relationship |
| ∩ | = curvilinear shape, pattern of diminishing utility |
| C>A | = correlation with Cognitive component of happiness stronger than with Affective component |
| O>A | = correlation with Overall happiness stronger than with Affective component |
| O>M | = correlation with Overall happiness stronger than with Mixed measure of happiness |

All these signs involve a link to a finding page with full detail in the [World Database of Happiness](#). Use control+click to view the page.