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Trust, happiness, and households' financial decisions

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Abstract

A recent line of research highlights trust as an important element guiding the decision of households to invest into risky financial assets and insurance products. This paper contributes to this literature by identifying happiness as another key driver of the same decision. Using detailed survey data from a sample of Dutch households, we show that the impact of happiness on households' financial decisions works in the opposite direction and is more economically important compared to trust. Specifically, happiness leads to a lower probability of investing into risky financial assets and having insurance, while trust has the usual positive effect found in the literature. Furthermore, the negative effect of happiness on the ownership of risky financial assets is about 6% higher compared to the positive equivalent of trust. Similarly, the negative effect of happiness on the ownership of insurance is 3% higher than the positive effect of trust.

1. Introduction

How do human beliefs and moods shape the financial decisions of individuals? Are the effects of different types of beliefs and moods reinforcing or opposing the decision to participate in the financial markets? The answers to these questions are fundamental in describing the preferences of individuals and in providing implications of how to model personal finance and insurance decisions. In this article we attempt to dig deeper into the trust-based explanation of individuals' financial decisions and explore the mediating role of positive mood and happiness in particular. To this end, we empirically assess the separate impact and the interplay of trust and happiness on households' decisions regarding their holdings of risky financial assets and private insurance. As a result, we seek to contribute to the existing literature that considers the role of trust, but pays less attention to the role of happiness in these outcomes.

Household finance has emerged as a field on its own in financial and behavioral economics over the last decade. Guiso and Sodini (2012) provide an extensive overview of the recent theoretical advances in the field, as well as evidence of how households use financial markets to achieve their objectives. Guizo, Sapienza, and Zingales (2008), among others, show that the lack of trust lowers the expected return from an investment, as prospective investors expect a higher probability of being cheated. As a consequence, individuals characterized by lower levels of trust have a lower probability of holding risky assets. At the same time the authors find that less trusting people insure themselves less; a finding which is consistent with the view that insurance is just another (risky) financial contract with uncertain future repayments. Therefore, trust matters for insurance demand since the insured has to trust that the insurance company will pay the indemnity promptly at some time in the future.

We augment this framework to show that happiness also matters for financial and insurance decisions. Experimental research highlights the role of positive mood in decision making under risk (Isen and Patrick, 1983; Ifcher and Zarghamee, 2011; Drichoutis and Nayga,

2013). As such it seems reasonable to assume that happiness can affect people's risk attitudes and perceptions and, in turn, their financial choices.

However, on the theoretical front there is disagreement about how mood states affect risk propensity. In psychology, two models of decision making provide different explanations and predictions for the role of mood states on risk-taking. Specifically, the Mood Maintenance Hypothesis (MMH) posits that positive mood leads to risk averse behavior (Isen and Patrick, 1983), whereas the Affect Infusion Model (AIM) proposes an opposite effect (Forgas, 1995). By extension, and within our framework, we hypothesize that people tend to make financial choices (investment in risky financial assets and insurance purchases) that are mood congruent, in the sense that happier individuals exhibit a different risk attitude and prefer different types of financial assets than less happy ones. However, similar to the two psychology models, the precise direction of the effect of happiness on the risk-taking behavior and financial decisions of individuals can theoretically be either positive or negative.

Based on these theoretical predictions, the effect of happiness on the financial and insurance decisions of households becomes an empirical question. Thus, we carry out an empirical analysis that uses the diligent and unique survey data from the LISS panel, which is an annual survey on Dutch individuals. This data set offers the richest, to our knowledge, informational set of economic, behavioral, and cultural characteristics of individuals, thus allowing solving a number of empirical identification problems.

It is important to note that happiness, as measured in the LISS dataset (general happiness, current life satisfaction and general life satisfaction), takes a long term perspective form, and thus it probably qualifies as a mood state rather than as an emotion.[1] However,

[1] In economics literature, the concepts of mood and emotions are often used interchangeably, while in psychology there is a clear distinction between the two: emotions are intense feelings that are directed at someone or something and have a propensity to last for a brief period of time; moods are feelings that tend to be less intense than emotions (and often lack a contextual stimulus) but last longer. Emotions and moods can be comprised in the generic concept of affect (Hume, 2012).

moods and emotions can mutually influence each other. According to Hume (2012), emotions can turn into moods when there is a loss of focus on the contextual stimuli (people, objects or events) that started the feelings. In the opposite direction, moods can elicit more emotional responses to contextual stimuli. In addition, Lazarus (1991) posits that happiness may be an umbrella concept that encompasses a series of related emotional states and common synonyms for happiness include joy, amused, satisfied, gratified, euphoric, and triumphant. Lazarus (1991, p. 269) concludes that "distinguishing happiness as an acute emotion from happiness as a mood is difficult". In this paper, since we aim to empirically assess the role of happiness on financial and insurance decisions, and given the difficulties of disentangling emotions from moods (Ekman and Davidson, 1994), we treat happiness as an affective state encompassing both emotions and moods.

We confront the difficult problem of endogeneity of trust and happiness by lagging the respective variables (to account for the reverse causality issue) and by using an instrumental variable (IV) model (to account for the omitted variables bias). The latter is an empirically challenging task given that valid instruments should influence financial behavior only through their impact on subjective well-being and trust. To this end, we use family relations and the genetic diversity in the country of origin of the interviewees to instrument the variables of interest. Research shows that family ties are a major factor in the development of lasting happiness (e.g., Amato 1994; Furnham and Cheng 2000a, 2000b) and very much linked to trust (Guiso, Sapienza, and Zingales, 2004). In addition, the genetic diversity in the country of origin of the respondents may be considered as a close proxy for the interviewee's attitude toward trust.

Moreover, and quite distinctively from previous studies, we control in the first stage of the IV model for a number of other emotional states, besides trust and happiness. In this respect, we build on the implications of the psychoevolutionary theory of emotion (Plutchik,

1980), which suggests the existence of eight primary bipolar emotions: joy vs. sadness, trust vs. disgust, fear vs. anger and surprise vs. anticipation. By including the latter two bipolar emotions in our two-stage IV model, we essentially allow our instrumental variables to have an effect on the financial and insurance decisions of households only through the instrumented variables characterizing trust and happiness and not through other emotional states. In a sense, we make progress on this difficult identification problem by bringing together the economics and the theoretical psychology literatures.

We show that trust and happiness have distinct and significant effects on financial and insurance behavior. Specifically, we find that higher trust rates foster investments in risky financial assets (e.g., stocks) and insurance purchases, a result in line with the existing literature. However, we also find that increased happiness reduces investment in risky financial assets and insurance. These effects are also economically important. Based on our preferred specifications, a one unit increase in our trust variable (scaled from zero to ten) increases the probability of buying risky assets by 7.4 percentage points (pp) and private insurance by 7.6 pp. In contrast, happiness is associated with a 13.2 pp (10.1 pp) drop in the probability of owning risky financial assets (insurance products). These results are robust to controlling for differences in household demographics and socio-economic characteristics, as well as to alternative measures of subjective well-being.

We also provide evidence for significant heterogeneity in financial decisions of equally trusting individuals stemming from their different levels of self-reported happiness. Specifically, we find that the positive effect of trust fades away for individuals as the level of happiness increases. Importantly, it takes only a moderately high level of happiness for the impact of trust to be completely offset. Thus, our results indicate that self-reported well-being seems to be quite significant in explaining financial and insurance behavior and represents an essential component in the link between trust and financial decisions. These empirical findings

reflect the divergence in theoretical arguments on the special nexus between happiness and risk aversion.

The rest of the article is organized as follows. Section 2 outlines the related literature on the economics of trust and happiness. Section 3 provides details on the data at hand and discusses the econometric specification and identification issues. Section 4 presents the empirical findings. Section 5 offers concluding remarks.

2. Related literature on trust, happiness and consumer choices

Economists have stressed the importance of cultural values and norms in the financial decision-making process of individuals for quite some time. This literature follows the Weberian school of thought and places the spotlight on the impact of cultural characteristics on personal attitudes and preferences. These, in turn, influence the financial decisions of individuals and, hence, aggregate financial-market outcomes. A number of socio-cultural factors have been identified as important determinants of households' financial decisions, including social interaction (Hong, Kubik, and Stein, 2004; Brown et al., 2008), religion affiliation and activity (Renneboog and Spaenjers, 2012), trust (Guiso, Sapienza, and Zingales, 2004 and 2008; Georgarakos and Pasini, 2011), and mood states or affect (Guven, 2012). The purpose of this section is not to provide a comprehensive review of this literature, but rather to highlight the main channels linking trust and happiness to the financial and insurance decision-making process of individuals.

The trust-based explanation of household finances provides useful insights on the observed discrepancies in financial investments across households. Guiso, Sapienza, and Zingales (2004) show that Italian households residing in social capital intensive areas (i.e., areas with higher trust rates) invest a smaller proportion of their wealth in cash and a bigger proportion in stocks. Similarly, Guiso, Sapienza, and Zingales (2008), using Dutch survey data

and customer survey data from a large Italian bank, find that trust has a positive and significant effect on stock-market participation, as well as on the share of their income invested in stocks. Their findings are also economically significant. Trusting others raises the probability of buying stocks by 50% (relative to the sample's mean probability) and increases the share of income invested in stocks by 3.4% points (15.5% of the sample mean). Georgarakos and Pasini (2011) add to this research by linking trust and sociability to the significant regional differences in stockholding in ten major European countries, and conclude that both factors should be taken into account when studying households' stock-market participation decisions.

While the role of trust in stock market participation has been well documented, the link between trust and insurance has been largely overlooked, partly because of the implicit assumption that misbehavior in insurance markets receives full legal protection. The first paper documenting an empirical link between trust and insurance is Guiso, Sapienza, and Zingales (2008) who find that trusting individuals are more likely to hold an insurance policy. Guiso (2012) re-examines this link in a sample of Italian entrepreneurs running small businesses. His findings indicate that trust towards insurance companies is relevant for insurance decisions while trust towards people in general does not exert a significant direct effect on the choice of being insured or not.

The importance of trust for insurance demand is also verified by the experimental research of De Meza, Irlenbusch, and Reyniers (2010) and Cole et al. (2013). Interestingly, although these two studies use subjects from two widely different regions of the world (the UK and rural areas in two Indian states, respectively) they reach qualitatively analogous conclusions. Specifically, De Meza, Irlenbusch, and Reyniers (2010) find that insurance demand depends on the extent to which the potential buyer trusts people in general as well as on the extraversion of the seller. Similarly, Cole et al. (2013) report that Indian peasants'

demand for a new insurance product increases by 36 percent if this product is recommended by a trustworthy person in the local community.

According to Sapienza, Toldra-Simats, and Zingales (2013), trust is a subjective *belief* in others' trustworthiness, i.e., the probability of being cheated by the counterpart in a financial transaction. However, trust is a multidisciplinary concept and there is a rich literature on trust in other fields, most notably in philosophy, sociology, and psychology. In psychology, in particular, trust is considered to be one of the primary human *emotions* (Plutchik, 1980) and a number of studies indicate that emotions exert a powerful influence over cognition and decision making (Lewis and Barrett, 2009).

In this paper, we adopt an integrative approach and treat trust as an *emotional belief*, which appeals to the instinctive part of the individuals' decision process. An emotional belief is one where emotion constitutes and strengthens a belief (Mercer, 2010). Frijda, Manstead, and Bem (2000, p. 5) claim that emotions "can awaken, intrude into, and shape beliefs, by creating them, by amplifying or altering them, and by making them resistant to change". Dunn and Schweitzer (2005) find that emotional states (even unrelated to the trustee or the situation) have a significant effect on trust in experimental settings.[2] Within this context, a number of non-experimental studies find that social capital and trust are strongly correlated with happiness (Bjornskov, 2003; Helliwell, 2006; Kuroki, 2011; Guven, 2011), but the direction of causality remains unclear. For example, Guven (2011) presents a causal effect of happiness on social capital, whereas Kuroki (2011) finds that trust has positive and significant causal effect on subjective well-being.

Outside the interplay with trust, there is a flourishing literature on the economics of happiness. Recent work on subjective well-being suggests that happiness affects consumption

[2] The authors consider the following six emotional states: happiness, sadness, anger, gratitude, price and guilt. Their experiments indicate that happy participants are more trusting than sad participants.

and savings behavior (Mogilner, Aaker, and Kamvar, 2012). Cryder, Lerner, Gross, and Dahl (2008) report that sad people tend to spend more, whereas Guven (2012) finds that happier people save more, spend less and are less likely to be in debt.

In addition, mood states seem to play a pivotal role in risk-taking and time preferences and, hence, on financial decisions. Loewenstein (2000, p. 426) argues that emotions experienced at the time of making a decision "often propel behavior in directions that are different from that dictated by a weighing of the long-term costs and benefits of disparate actions". Since financial investment decisions involve the weighing of long-term benefits (future net cash flows) and costs (the riskiness of the future cash flows), it seems reasonable to assume that happiness influences the individuals' financial investment decisions. By the same token, happiness may influence the demand for insurance because insurance is a special type of financial transaction where a current payment (the premium) is exchanged for a promise of a future, contingent payment (Guiso, 2012). Thus, differences in happiness, reflected in differences in risk perceptions, should predict not only the amount of insurance demand among insurance holders, but also the decision to buy an insurance policy in the first place.[3]

Laboratory research suggests a complex interaction between affect and risk behavior. Isen and Patrick (1983) report a greater risk aversion with an increase in positive affect. Ifcher and Zarghamee (2011) find that a mild positive affect significantly decreases discount rates, whereas Drichoutis and Nayga (2013) indicate that positive mood states reduce time preferences and increase risk aversion at the same time. However, these findings are far from

[3] In the classical model of the demand for insurance elaborated by Mossin (1968), risk averse individuals should fully insure if insurance is offered at fair terms. If insurance is unfair, the amount purchased will depend on one's degree of risk aversion: the more risk averse will demand more insurance coverage. However, when deciding to purchase insurance, individuals bear in mind that the insurance contract itself might be exposed to the risk of default. Experimental research (Wakker, Thaler, and Tversky, 1997; Zimmer, Schade, and Gründl, 2009) shows that people dislike insurance contracts that might default when indemnity payments are needed. Within this framework, the more risk averse will demand less insurance at least as long as insurance contracts "are not safe".

unanimous. A number of experimental studies indicate that individuals who exhibit a positive mood when making a risky choice tend to be willing to undertake more risks (see, inter alia, Chou, Lee, and Ho, 2007; Fehr-Duda, Epper, Bruhin, and Schubert, 2011).

In psychology, two models of decision making which relate mood states with risk-taking yield opposite predictions. The first one is the Affect Infusion Model (AIM), which suggests that positive mood fosters risk-prone behavior, while negative mood reduces the tendency to take risks (Forgas, 1995). The higher risk tolerance of elate people may be explained by optimistic beliefs about a favorable gamble outcome (Johnson and Tversky, 1983). On the opposite side, the Mood Maintenance Hypothesis (MMH) posits that people in good moods tend to behave more cautiously in risky situations, especially when potential losses are real and salient, as they try to protect their current elated emotional state (Isen and Patrick, 1983).

On the basis of these theoretical considerations, there are good reasons for thinking that positive moods (e.g., happiness) and beliefs (e.g., trust) are closely intertwined and, thus, they should be taken both into account when studying households' financial and insurance decisions. In this framework, identification resides in assessing the effect of these two self-declared perceptions on households' finances and insurance, while controlling for all other primary emotional states that might influence their decisions. Clarifying how these two factors may jointly influence financial decisions has important theoretical and practical implications. From a theoretical perspective, evidence on the joint influence of trust and happiness on individuals' financial behavior helps to identify potential boundary conditions on the trust-based explanation of household finances. From a practical perspective, understanding the mediating role of positive mood on financial behavior will help improve the efficiency of particular policies designed to promote households' participation in financial and insurance markets.

3. Data and empirical identification

3.1. Sample, empirical model and dependent variables

To empirically identify the nexus between happiness, trust, and the financial decisions of households, we use household survey data from the Longitudinal Internet Studies for the Social sciences (LISS) panel. The LISS panel is the core element of the project entitled Measurement and Experimentation in the Social Sciences undertaken by the CentER Data Research Institute in Tilburg University in the Netherlands. It consists of 5,000 households comprising 8,000 individuals. The panel runs since 2008 on an annual basis (or on a biannual basis for some of our variables) and comprises of a true probability sample of households drawn from the population register by Statistics Netherlands. Thus, LISS is a representative panel of individuals obtained using formal statistical methods and has the backup of one of the most competent statistical agencies in the world. Most importantly, this database is the only one with available information for both the financials of the households (financial assets and insurance products), as well as for trust, emotions, and other core variables required to pursue our research.

We choose to base our empirical analysis on the cross-section of individuals for the year 2012. The main reason for this choice is that variation mainly stems from the cross-section of the respondents, as we only have three years of available data for the financial-decision variables (2008, 2010, and 2012). During the course of these years, changes in the response of individuals are minimal and, thus, it would be unorthodox to exploit the time variation of the panel. Further, 2008, and at a lesser extent 2010, are crisis years and results can be driven by this element. Finally, the 2012 sample is more complete in the variables needed to achieve econometric identification. However, we do use the panel structure of the data to avoid the reverse causality problem.

Given the above, our initial sample consists of a maximum of 8,000 observations. Nevertheless, the number of observations used in the regressions is lower due to missing information for specific questions. We provide an explicit description of the variables and their codes in Table 1 and report summary statistics in Table 2.

The general form of the empirical model to be estimated is:

$$ID_i = a + \beta X_i + \gamma_1 T_i + \gamma_2 H_i + v_i \quad (1)$$

where *ID* refers to the financial and insurance decisions of individual *i*, *T* and *H* are measures of trust and happiness, respectively, and *X* is a vector of control variables. The term *v* is the stochastic disturbance, which for identification purposes needs to be uncorrelated with *T* and *H*.

[Insert Tables 1 & 2]

We construct two dependent variables based on questions regarding individuals' decisions. Specifically, we use two dummy variables that take the value of one when individuals possess (i) *risky investments* such as bonds, stocks, and options, and (ii) *insurance* such as life and endowment insurance. The average participation rates in risky financial assets and insurance markets are 14% and 13%, respectively (see Table 2). Alternatively, we could employ the monetary value of these investments. We do not find this optimal for two reasons. The first relates to our theoretical priors, which posit that trust and happiness should mainly affect participation and not the level of investments. The second reason is more pragmatic and relates to the important loss of information in terms of observations (individuals rarely reveal or they can more easily lie about the monetary level of their financial investments) and the associated introduction of measurement errors when using such variables.

3.2. Main explanatory variables and their identification

The main explanatory variables are *trust* and *happiness*. We construct them on the basis of relevant questions in the LISS database. For trust, the relevant question (see Table 1) is essentially the same with the one from the World Values Survey (WVS) employed in the previous literature of trust or by Guiso, Sapienza, and Zingales (2009). For happiness, we use three alternatives. The first is a question about the general happiness of the individual; the second is a question about life satisfaction in the current period, and the third a question about the general life satisfaction. Thus, both the first and the third questions take a relatively long-term perspective on happiness, while the second one is more temporary in nature.[4]Identifying the causal effect of trust on the financial decisions of individuals is an empirical challenge because of the endogeneity of trust. This endogeneity can arise for all possible reasons: reverse causality, omitted variables, and measurement error (Fehr, 2009). The same concerns apply to any happiness measure (Guven, 2009). Given that we have information for the same individuals over a number of years, we solve the reverse causality problem by lagging the trust and happiness variables by one year. Thus, we assume that the trust and happiness in 2011 shape the financial and insurance decisions of households in 2012.

The omitted variables bias and the measurement error can also be important identification problems, rendering estimation with ordinary least squares biased and inconsistent. An obvious solution to these issues is to find instrumental variables for trust and happiness that satisfy the exclusion restriction (i.e., they have an effect on the financial decisions of individuals only via trust and happiness) to be used in an instrumental variables

[4] Although life satisfaction and happiness are used interchangeably in this paper, life satisfaction captures *evaluated* well-being whereas happiness captures *experienced* well-being. However, these measures are highly correlated. The correlation between happiness and current life satisfaction (both measured on a 1-10 scale) is 0.84.

(IV) model. However, finding proper instruments for trust and happiness is a notoriously difficult task (Fehr, 2009).[5]

In this paper, we follow a somewhat complementary approach based on the relevant discussion on beliefs and emotions from the mainstream psychology literature (Plutchik, 1980; Ekman, 2003; Izard, 2007). This literature suggests that joy (a common synonym for happiness) is one of the seven to ten basic emotions. According to Plutchik's (1980) wheel of emotions, there exist eight bipolar primary emotions: joy vs. sadness[6]; anger vs. fear; trust vs. disgust; and surprise vs. anticipation. The other major contributions in this field are somewhat skeptical about the inclusion of trust as an emotion and favor its categorization as a belief. However, in an econometric model this is of less importance: *our premise here is that if we control for all basic emotions in the first stage of the IV model, then our instrumental variables will exert an effect on financial and insurance decisions only through trust and happiness, as the rest of the basic emotions are controlled for*. This approach will more effectively solve the omitted variables problem.[7]

Given the above, we proceed with the use of two main instrumental variables, which we call *family relations* and *origin biodiversity* (for a thorough description, see Table 1). We use the first variable as an instrument for happiness based on the popular observation that the relation between family relationships and happiness is positive (Diener and Seligman, 2002). Having controlled for the other basic emotions, *family relations* should have an effect on the

[5] In examining the impact of trust in bilateral trade, Guiso, Sapienza, and Zingales (2009) suggest the use of "commonality of religion" and "somatic difference" as instruments for trust. However, in our setup, both instruments are likely to be inappropriate because they both may exert an impact on other beliefs and mood states (besides trust and happiness) and through them an independent effect on financial and insurance decisions. The same shortcoming holds for the use of other instruments, such as the hours of sunshine in Dutch regions suggested by Guven (2012).

[6] According to Lazarus (1991, p. 265), joy is a common synonym for happiness although "compared with happiness, the word joy seems to refer to a more acutely intense reaction to a more specific event".

[7] The notion of basic emotions neither implies that these cause independent human behaviors nor it rules out the existence of other emotions. We only argue that if emotion A (e.g., joy) is more basic than emotion B (e.g., relief in the emotions literature), then B is a subset of A. Then, in an econometric sense, controlling for A implies that we also control for B.

financial decisions only through happiness. The second variable, constructed from the database of Ashraf and Galor (2013), is used as an instrument for trust. *Origin biodiversity* utilizes the premise that cultural biology plays an important role in shaping the personality of the respondents and, thus, their level of trust. Following the work of Putnam (2007), we expect a negative relationship between *origin biodiversity* and trust.[8] In robustness checks we also experiment with another instrumental variable for trust (*religious parents*), which captures the religiosity of respondents' parents. The argument favoring this instrument is very similar to the one given by Guiso, Sapienza, and Zingales (2009) who use commonality of religion as a measure of similarity in culture.

3.3. Control variables

The first set of control variables relates to the rest of the primary emotional states (besides trust and joy) proposed by Plutchik (1980). Thus, we include variables that capture two of the remaining four bipolar emotions, namely *upset* (as a proxy of anger) and *anticipation*.[9] These variables complete Plutchik's wheel of emotions because, from a statistical viewpoint, we do not need to model their bipolar opposites. We also ascertain that our measures of trust and happiness do not reflect optimism, which the psychology literature also cites as an important emotion. Puri and Robinson (2007) argue that more optimistic investors tend to invest more heavily in stocks. Experimental evidence also suggests that optimism matters for insurance decisions (Coehlo and Meza, 2012). To this end, we include an ordinal variable (*optimistic*)

[8] A potential criticism for these instruments is that *family relations* or *origin biodiversity* can have an effect on financial and insurance decisions through the income or wealth of individuals. We shut down these channels using relevant control variables.

[9] Unfortunately, data on anger are not available in the LISS database. However, upset is a valid descriptor of anger (Richins, 1997) albeit less intense than anger (Ortega, Elipe, Mora-Merchán, and Calmaestra, 2009).

which is an index of agreement (from 1 to 5) to the statement "I am always optimistic about my future".

The second group of controls accounts for a broad range of demographic characteristics starting with *age* (both linear and linear squared) to capture the common inverted U-shaped relationship between age and investments suggested by the life-cycle hypothesis. We also control for *gender* (a dummy variable for women) and whether the respondent is the family's head (*family head*).

Further individual background characteristics, such as *income* and occupational status (*work*), are included in the vector *X*. Income is measured by two variables: one is a binary indicator recording zero versus non-zero income and the other is the natural logarithm of the actual recorded net household income (both linear and linear squared). This separation allows us to distinguish between the effect of having zero income and the actual income effect. We also consider the liquid wealth of individuals as measured by the natural logarithm of the balance of their banking accounts (*wealth*).[10] We use this variable only in sensitivity tests because we lose an important number of observations. The labor status of individuals is taken into account by distinguishing between those working and unemployed.

Cultural characteristics and socio-political preferences of the respondents are also taken into consideration. Specifically, we allow for an independent role of respondent's religiosity (*religious*) as the literature indicates that individual religiosity is associated with one's investment choices (Diaz, 2000; Renneboog and Spaenjers, 2012; León and Pfeifer, 2013). We also include a variable reflecting the respondent's personal value in terms of income distribution (*inequality preferences*). Value-expressive elements have been recognized as a major driver of political preferences (Kinder and Kiewiet, 1979; Markus, 1988) which, in turn,

[10] Alternatively, we also use the liquid wealth plus the value of financial holdings. The results on the variables of our main interest are essentially unchanged.

affect financial behavior (Grinblatt and Keloharju, 2001; Kaustia and Torstila, 2011; Hong and Kostovetsky, 2012; Bonaparte and Kuman, 2013).

4. Empirical results

We model the probability of owning risky assets or insurance using a two-stage instrumental variables (IV) probit model. Table 3 presents the marginal effects and robust standard errors (clustered by individual). In Column I, we use *risky investments* as the dependent variable, while controlling for happiness without taking into account the influence of trust and *vice versa* in Column II. In Columns III and IV we run the same regressions, but using *insurance* as the dependent variable instead.

[Insert Table 3]

Before commenting on the estimated results, we need to examine the validity of the IV probit approach. The two variables besides trust and happiness that capture basic emotions and the two instrumental variables (*upset*, *anticipation*, *family relations*, *origin biodiversity*) are highly significant in the first-stage regressions. Happiness increases with family relations, thus suggesting that solid family structures promote subjective well-being. Similarly, as expected, origin biodiversity is negatively associated with trust. This indicates that individuals from countries with higher genetic diversity are less likely to trust others, a result in line with evidence by Putnam (2007) on the inverse relation between diversity and trust. Finally, both upset and anticipation are highly significant in explaining happiness and trust, thus validating the basic emotions approach in our empirical setting. Specifically, more calm individuals exhibit higher levels of happiness and trust, whereas the opposite holds for individuals experiencing unpleasant anticipation. We conclude that the presence of a weak instrument is not an issue, while including all basic emotions in the first stage enhances the efficacy of the exclusion restrictions for our instrumental variables.

The estimated marginal effects in Columns I and II suggest an independent and economically important role for trust and general happiness in the probability of owning risky financial assets. Specifically, more trusting households are 8 pp more likely to invest in risky assets. Our estimate for trust is very similar to the one reported by Guiso, Sapienza, and Zingales (2008) for Dutch households but significantly different from that provided by Georgarakos and Pasini (2011) for a panel of ten European countries. Specifically, Guiso, Sapienza, and Zingales (2008) find that people who trust others have 8.5 pp higher probability of investing in risky assets (shares, mutual funds, corporate bonds, put and call options). Georgarakos and Pasini (2011) report a much weaker effect of trust for the country panel (higher trust is associated with a 2.1 pp increase in the probability of stock market participation) and, more importantly, an insignificant trust effect in countries with medium stock market participation rates such as the Netherlands. [11]

Our results also indicate the importance of generalized happiness in financial decisions. Happier individuals are 6 pp less likely to invest in risky assets. This finding implies that happier people have different discount rates and exhibit different risk attitudes than less happy people, as proposed by Isen and Patrick (1983) and Ifcher and Zarghamee (2011). The fact that a positive mood (i.e., self-reported happiness) increases risk aversion is consistent with the Mood Maintenance Hypothesis, which asserts that people in good moods do not want to risk losing their euphoric state.

One might argue that our evidence contradicts the findings reported by Guven (2012), which suggest that happier Dutch households prefer to save more and spend less. However, we should note that the dependent variable in Guven's analysis is whether or not a person has

[11] Guiso, Sapienza, and Zingales (2008) and Georgarakos and Pasini (2011) elicit information about trust by posing the following question: "Generally speaking, would you say that most people can be trusted or that you have to be very careful in dealing with people?" Individuals could answer in one of three ways: (1) most people can be trusted; (2) one has to be very careful with other people; (3) I don't know. They, then, define trust as a dummy variable equal to one if individuals choose option (1). In our analysis, trust is a categorical variable taking values from 0 (you can't be too careful) to 10 (most people can be trusted).

saved money in the last two weeks, whereas in our case the dependent variable refers to risky financial investments. Taken together, these findings imply that happy people exhibit low time preference (i.e., prefer to save than consume) and more risk aversion at the same time (i.e., they do not invest in risky financial assets), thus supporting the argument offered in Drichoutis and Nayga (2013) that positive mood states increase both patience and risk aversion.

The financial decision to invest in risky assets is also correlated with most of the demographic and background risk factors included in our analysis. Females are less willing to take financial risks. This reflects the more cautious investment behavior of women. In line with the life-cycle hypothesis, the effect of age is bell-shaped in most of the specifications of Table 3, and the willingness to face financial risks is higher when the respondent takes care of financial matters in the household.

As expected, there are also statistically significant income effects, with rich households being more likely to own risky assets but at a decreasing rate.[12] With respect to employment status, employed individuals are more willing to take risks in financial matters. Individual religiosity also matters for financial decisions. The results in Column I of Table 3 show that more religious individuals display a lower probability of owning risky financial assets. Since individual religiosity might affect investment behavior through other channels, such as trust, it is not surprising that the estimated effect of religiosity in the trust specification (Column II) is statistically insignificant.

Similarly, optimism is significantly correlated with the likelihood of risky investments in the happiness specification only. The positive coefficient is consistent with Puri and Robinson (2007) and shows that optimistic investors tend to invest more heavily in risky financial assets. In addition, to the extent that this variable accounts for inflated expectations

[12] The positive income dummy variable drops out in columns I and II due to collinearity (there are no individuals in our sample with zero income holding risky investments).

of returns, this finding indicates that our estimated effects of happiness and trust do not reflect optimism.

Political values (as measured by inequality preferences) seem to exert a highly significant impact on financial decisions. The negative coefficient in both Columns I and II suggests that individuals with right-wing ideologies are more likely to invest in risky assets. This is consistent with Kaustia and Torstila (2011) who find that right-wing Finnish voters are more prone to invest in stocks.

Finally, the estimated coefficients of the emotional states of upset and anticipation in Column I are statistically significant, and indicate that individuals with less temper and positive anticipation display a higher likelihood to undertake financial risks. With respect to upset, our results contradict previous studies (Gambetti and Giusberti, 2012) which find that trait anger is positively associated with the tendency to invest money in stocks. However, more importantly from our point of view, these findings verify that primary emotions do play an important role in shaping financial investment choices and decisions and are good controls for basic emotions in the first stage of the two-stage probit model.

Columns III and IV outline the results with insurance as dependent variable. We control for the same variables as in Columns I and II and obtain similar results. The most notable exception is the negatively signed and statistically significant coefficient of optimism in Column IV. This finding is consistent with the experimental evidence by Coehlo and Meza (2012) which indicates that lower optimism is associated with higher demand for insurance.[13]

Marginal effects for the variables of interest suggest that happiness does not exert a significant impact on private insurance purchase decisions (Column III). Column IV, however, shows that individuals who trust others have 8% higher probability to have insurance.

[13] In the insurance equations, the positive income dummy variable does not drop out (as there are a few individuals with zero income holding a single-premium insurance policy) but its estimated coefficient is statistically insignificant.

Interestingly, this effect is identical to the one reported in Column II and implies that investors view insurance as another financial exchange where the time of settlement of the exchange (the premium) and that of the delivery of the good (contingent payment) are distinct. Furthermore, this finding indicates that trust is not a proxy for risk tolerance. If that were the case, we would expect risky individuals to be more likely to hold risky financial assets but less likely to buy insurance. Guiso, Sapienza, and Zingales (2008) also provide evidence suggesting that trust fosters insurance purchases albeit their trust effect is smaller (0.05) and imprecisely estimated. Guiso (2012) sheds further light on this issue and finds that only the specific measure of trust towards insurance companies matters for insurance decisions (with a trust effect approximately equal to 0.03), while trust towards people in general has no significant independent effect.

In Table 4 we introduce trust and happiness in the same model, which makes these specifications more complete and, thus, our preferred ones. The dependent variable is *risky investments* in Column I and *insurance* in Column II. The results verify our previous findings in an even stronger manner. More trusting individuals are 7.4 pp more likely to invest in risky financial assets and 7.6 pp more likely to have private insurance. In contrast, happiness is associated with a 13.2 pp (10.1 pp) drop in the probability of owning risky financial assets (insurance products). These effects are economically significant given the corresponding unconditional participation rates in our sample.

[Insert Table 4]

More importantly, our findings suggest that happiness not only assumes statistically significant coefficients, but it also has predictive powers higher than those of trust. This is in accordance with the burgeoning literature on the effects of psychological factors, such as self-esteem, motivation, positive attitude, and emotional stability on individual economic performance. For example, Goldsmith, Veum, and Darity (1997), Nyhus and Pons (2005), and

Fernandes, Lynch, and Netemeyer (2013) show the importance of these variables in the estimation of wage equations and conclude that psychological capital exerts a larger effect on workers' earnings than standard human capital variables (such as education, experience and training). Our findings also reinforce the consumer psychology literature on the nexus between happiness and spending. For example, Isen and Patrick (1983) and Mittal and Ross (1998) suggest that positive moods, such as happiness, lead people to choose less risky options, a result in line with lower participation in the market for risky financial assets.

In Table 5 we present the results from the alternative measures of well-being. In Columns I and II we use *current life satisfaction*. In Columns III and IV we repeat the same analyses but using *general life satisfaction* instead. The results strengthen the validity of our main findings. Trust contributes significantly to ownership of risky financial assets and insurance with the estimated marginal effects being 8 pp (Column I) and 7.2 pp (Column II), respectively. Trust retains its sign when we replace *current life satisfaction* with *general life satisfaction*, but becomes statistically insignificant in Column III.

[Insert Table 5]

In contrast, the effect of life satisfaction is negative and highly significant in all columns, suggesting the more satisfied people are with their lives, the less they are likely to invest in risky financial assets or insurance products. The estimated coefficients on *current life satisfaction* are similar in magnitude with the ones reported in Table 4 for happiness. These coefficients are directly comparable, as they both relate to questions with answer options ranging on a ten-point scale. Therefore, we argue that the respondents of the LISS survey understand these two questions about subjective well-being in the same terms and tend to answer according to the same standards. Furthermore, and even though the answer options for the general satisfaction question range on a seven-point scale, *general life satisfaction* has a

negative and statistically significant effect on the choice to invest in risky financial assets and insurance, and the impact is sizeable.

The regression coefficients reported in Tables 3 to 5 consistently show that trust and subjective well-being exert an independent and economically important role in financial investment decisions. Next, we examine the results from the inclusion of an interaction term between trust and happiness in the baseline specification of Table 4, while controlling for any observed individual characteristics. In this case, identification resides in assessing the heterogeneity in financial decisions of equally trusting individuals stemming from the different levels of their self-reported happiness. To present the results for the main effects at the mean of the respective variables we mean-center trust and happiness and use the multiplicative term of the transformed variables.

We report the results in Table 6, only for the main variables of interest to avoid repetition for the effects of the control variables. Two important findings emerge from this exercise. First, the estimated coefficients of trust and happiness remain largely unaffected both in statistical terms and in absolute value. Thus, the positive (negative) effect of trust (happiness) on the ownership of risky assets and insurance continues to hold. Second, the coefficient of the newly added double interaction term is negatively signed and statistically significant in both specifications. This suggests that equally trusting individuals with distinct levels of happiness exhibit different financial investment behavior as measured by the probability to invest in risky financial assets and private insurance.

[Insert Table 6]

To calculate the happiness threshold, above which the marginal (negative) effect of happiness outweighs the marginal (positive) effect of trust, we take the partial derivative with respect to trust and set it equal to zero. Based on the estimates of Column I, the corresponding threshold is equal to 5.83 (=0.070/0.012). This shows that even moderate levels of happiness

outweigh the positive impact of trust on risky asset ownership, thus highlighting the relevance and predictive strength of psychological factors related to individual well-being in households' financial decisions.

In Table 7 we report the results from three additional sensitivity tests (again for expositional brevity we do not report the results on the control variables, which are available on request). First, we use as instruments *religious parents* and *origin biodiversity*. The results indicate an even stronger marginal effect of happiness on risky investments and insurance: a one point increase in happiness is associated with an approximately 15% and 11% decrease in the probability to invest in risky assets and insurance, respectively. The impact of trust is also somewhat higher and for both variables the standard errors are somewhat larger compared to the equivalent ones in Table 4. Given the larger standard errors from this exercise, we view the specifications of Table 4 as the preferred ones.

[Insert Table 7]

An important additional concern for the identification process is that our instrumental variables have a direct effect on the decision to participate in the financial markets through their impact on wealth. For example, Ashraf and Galor (2013) suggest that their aggregate measure of country-specific genetic diversity has an effect on economic growth. This idea could be extended to imply that the genetic diversity of individuals has an effect on their income and wealth and through these to the decision to participate in the stock market. Indeed, we have shut down the income channel by controlling for *income*, but we have not so far used our control variable for *wealth*. We do so in Columns III and IV of Table 7 for a sample with a smaller number of observations due to the limited availability of information for wealth. Evidently, wealth is a statistically significant determinant of *risky investments* and *insuranc*e, but our main coefficient estimates on happiness and trust are very similar to those of the equivalent specifications of Table 4.

We also conduct further sensitivity tests on our main results by including *insurance* and *real estate* in the *risky investments* equation (Column V) and by including *risky investments* and *real estate* in the *insurance* equation (Column VI). *Real estate* is a dummy variable taking the value of one if the individual possesses real estate (including land) other than his/her first, second or holiday home. This exercise allows for the assessment of trust and happiness on the probability of holding risky financial assets (or insurance products), while controlling for other types of investment in the households' portfolios. We report the results from these tests in the last two columns of Table 7. Individuals who have insurance and real estate for investment purposes have a significantly higher probability to also own risky assets, but these effects do not bias our estimates on trust and happiness, which remain quantitatively similar to those of Table 4. The same findings are obtained when we include the risky investments and real estate variables in the *insurance* equation.

Finally, we carry out a number of other sensitivity analyses, including using other control variables from the rich LISS Panel,[14] employing a two-stage least squares regression with robust standard errors instead of the probit IV method, and using other variables to characterize happiness of individuals.[15] Further we test for a specification that includes income as an endogenous variable, with the parents' level of education as our instrument. Our main findings are robust to these exercises and the results are available on request.

5. Conclusions

This paper adds the element of happiness into the nexus between trust and households' financial and insurance decisions. The empirical research is based on IV probit models that use

[14] We literally experiment with more than 100 control variables. When there is no multicollinearity between these new controls and trust and happiness, the empirical results remain equivalent to those of Tables 3 to 5.

[15] These involve the following questions scaled from one to seven: a) In general, how do you feel? b) In most ways my life is close to my ideal; c) The conditions of my life are excellent; d) So far I have gotten the important things I want in life.

implications from the psychology and economic literatures to find optimal instruments for the treatment of the endogeneity of the happiness and trust variables.

In accordance with the previous literature, the results provide strong support for the positive independent effect of subjective trust on risky financial investments and insurance purchases. However, the results also indicate that happier individuals are less likely to invest in these assets. This novel finding is in line with the Mood Maintenance Hypothesis, which asserts that individuals in a good mood are reluctant to gamble because they do not want to undermine their happy feeling. Thus, these individuals are relatively more risk averse. Notably, the economic significance of the negative effect of happiness on the probability of investing in risky financial products and insurance outshines the respective positive effect of trust. Further, we show that for even moderately levels of happiness, the positive effect of trust on the probability of holding risky-assets becomes negligible. Thus, our analysis identifies potential boundaries on the trust-based explanation of household finances.

The above findings have important policy and social implications. They suggest that if a policy goal is to promote wider ownership of risky assets, and thus increase financialization, then the focus should not only be placed on cultivating investors' perception of trustworthiness, but also on mitigating investors' stress associated with such investments. This, in turn, suggests that any policy that improves the emotional ability of investors to deal with risky investments and their levels of risk aversion is likely to increase their probability of investing in risky assets and insurance. Consequently, the importance of proper financial counseling in fighting investment stress should not be underestimated.

References

Amato, P.R., 1994. Father–child relations, mother–child relations, and offspring psychological well-being in early adulthood. Journal of Marriage & the Family 56, 1031-1043.

Ashraf, Q., Galor, O., 2013. The 'out of Africa' hypothesis, human genetic diversity, and comparative economic development. American Economic Review 103, 1-46.

Bjornskov, C., 2003. The happy few: Cross-country evidence on social capital and life satisfaction. Kyklos 56, 3-16.

Bonaparte, Y., Kumar, A., 2013. Political activism, information costs, and stock market participation. Journal of Financial Economics 107, 760-786.

Brown, J., Ivkovic, Z., Smith, P., Weisbenner, S., 2008. Neighbors matter: Causal community effects and stock market participation. Journal of Finance 63, 1509-1531.

Chou, K.L., Lee, T.M.C., Ho., A.H.Y., 2007. Does mood state change risk taking tendency in older adults? Psychology and Aging 22, 310-318.

Coelho, M., de Meza, D., 2012. Do bad risks know it? Experimental evidence on optimism and adverse selection. Economics Letters, 114, 168-171.

Cole, S., Giné, X., Tobacman, J., Townsend, R., Topalova, P., Vickery, J., 2013. Barriers to household risk management: evidence from India. American Economic Journal: Applied Economics 5, 104-135.

Cryder, C.E., Lerner, J.S., Gross, J.J., Dahl, R.E., 2008. Misery is not miserly: Sad and self-focused individuals spend more. Psychological Science 19, 525-530.

De Meza, D., Irlenbusch, B., Reyniers, D.J., 2010. Disclosure, trust and persuasion in insurance markets. IZA Discussion Paper No. 5060.

Diaz, J., 2000. Religion and gambling in sin-city: A statistical analysis of the relationship between religion and gambling patterns in Las Vegas residents. Social Science Journal 97, 453-458.

Diener, E, Seligman, M.E.P., 2002. Very happy people. Psychological Science 13, 81-84.

Drichoutis, A.C., Nayga Jr., R.M., 2013. Eliciting risk and time preferences under induced mood states. Journal of Socio-Economics 45, 18-27.

Dunn, J.R., Schweitzer, M.E., 2005. Feeling and believing: The influence of emotion on trust. Journal of Applied Psychology 88, 736-748.

Ekman, P., Davidson, R.J., 1994. The nature of emotion: Fundamental questions. New York: Oxford University Press.

Ekman, P., 2003. Emotions Revealed. Times Books, New York.

Fehr, E., 2009. On the economics and biology of trust. Journal of the European Economic Association 7, 235-266.

Fehr-Duda, H., Epper, T., Bruhin, A., Schubert, R., 2011. Risk and rationality: The effects of mood and decision rules on probability weighting. Journal of Economic Behavior & Organization 78, 14-24.

Fernandes, D., Lynch, J.G., Netemeyer, R.G., 2013. Financial literacy, financial education, and downstream financial behaviors. Management Science, forthcoming.

Forgas, J.P., 1995. Mood and judgment: The affect infusion model (AIM). Psychological Bulletin 117, 39-66.

Frijda, N.H., Manstead, A.S.R., Bem, S., 2000. The influence of emotions on beliefs. In N.H. Frijda, A.S.R. Manstead, S. Bem (Eds.), Emotions and Beliefs: How Feelings Influence Thoughts. Cambridge University Press, Cambridge.

Furnham, A., Cheng, H., 2000a. Lay theories of happiness. Journal of Happiness Studies 1, 227-246.

Furnham, A., Cheng, H., 2000b. Perceived parental behavior, self-esteem and happiness. Society of Psychiatric Epidemiology 35, 463-470.

Gambetti, E., Giusberti, F., 2012. The effect of anger and anxiety traits on investment decisions. Journal of Economic Psychology 33, 1059-1069.

Georgarakos, D., Pasini, G., 2011. Trust, sociability, and stock market participation. Review of Finance 15, 693-725.

Goldsmith, A.H., Veum, J.R., Darity Jr., W., 1997. The impact of psychological and human capital on wages. Economic Inquiry 35, 815-829.

Grinblatt, M., Keloharju, M., 2001. How distance, language, and culture influence stockholdings and trades. Journal of Finance 56, 1053-1073.

Guiso, L., 2012. Trust and Insurance Markets. Economic Notes 41, 1-26.

Guiso, L., Sapienza, P., Zingales, L., 2004. The role of social capital in financial development, American Economic Review 94, 526-556.

Guiso, L., Sapienza, P., Zingales, L., 2008. Trusting the stock market. Journal of Finance 63, 2557-2600.

Guiso, L., Sapienza, P., Zingales, L., 2009. Cultural biases in economic exchange? Quarterly Journal of Economics 124, 1095-1131.

Guiso, L., Sodini, P., 2012. Household finance. An emerging field. EIEF Working Paper 04/12.

Guven, C., 2009. Weather and Financial Risk-Taking: Is Happiness the Channel? SOEP Papers No. 218.

Guven, C., 2011. Are happier people better citizens? Kyklos 64, 178-192.

Guven, C., 2012. Reversing the question: Does happiness affect consumption and savings behavior? Journal of Economic Psychology 33, 701-717.

Helliwell, J.F., 2006. Well-being and social capital: Does suicide pose a puzzle? Social Indicator Research 81, 455-496.

Hong, H., Kostovetsky, L., 2012. Red and blue investing: Values and finance. Journal of Financial Economics 103, 1-19.

Hong, H., Kubik, J.D., Stein, J.C., 2004. Social interaction and stock-market participation. Journal of Finance 59, 137-163.

Hume, D., 2012. Emotions and Moods. In: Robbins, S.P., Judge, T.A. (eds.) Organizational Behavior, pp. 258–297.

Ifcher, J., Zarghamee, H., 2011. Happiness and time preference: The effect of positive affect in a random-assignment experiment. American Economic Review 101, 3109-3129.

Isen, A.M., Patrick, R., 1983. The effect of positive feelings on risk-taking: When the chips are down. Organizational Behavior and Human Decision Processes 31, 194-202.

Izard, C.E., 2007. Basic emotions, natural kinds, emotion schemas, and a new paradigm. Perspective on Psychological Science 2, 260-280.

Johnson, E.J., Tversky, A., 1983. Affect, generalization, and the perception of risk. Journal of Personality and Social Psychology 45, 20-31.

Kaustia, M., Torstila, S., 2011. Stock market aversion? Political preferences and stock market participation. Journal of Financial Economics 100, 98-112.

Kinder, D.R., Kiewiet, D.R., 1979. Economic discontent and political behavior: The role of personal grievances and collective economic judgments in congressional voting. American Journal of Political Science 23, 495-527.

Kuroki, M., 2011. Does social trust increase individual happiness in Japan? The Japanese Economic Review 62, 444-459.

Lazarus, R.S., 1991. Emotion and adaptation. Oxford University Press.

León, A.K., Pfeifer, C., 2013. Religious activity, risk taking preferences, and financial behaviour: Empirical evidence from German survey data. University of Lüneburg Working Paper Series in Economics No. 269.

Lewis, M., Barrett, L.F., 2009. Handbook of Affective Sciences. Oxford University Press, Oxford.

Loewenstein, G., 2000. Emotions in Economic Theory and Economic Behavior. American Economic Review 90, 426-432.

Markus, G., 1988. The impact of personal and national economic conditions on the presidential vote: A pooled cross-sectional analysis. American Journal of Political Science 32, 137-154.

Mercer, J., 2010. Emotional beliefs. International Organization 64, 1-31.

Mittal, V., Ross Jr., W.T., 1998. The impact of positive and negative affect and issue framing on issue interpretation and risk taking. Organizational Behavior and Human Decision Processes 76, 298-324.

Mogilner, C., Aaker, J., Kamvar, S.D., 2012. How happiness affects choice. Journal of Consumer Research 39, 429-443.

Mossin, J., 1968. Aspects of Rational Insurance Purchases. Journal of Political Economy 91, 304-311.

Nyhus, E.K., Pons, E., 2005. The effects of personality on earnings. Journal of Economic Psychology 26, 363-384.

Ortega, R., Elipe, P., Mora-Merchán, J. A., Calmaestra, J., Vega, E., 2009. The emotional impact on victims of traditional bullying and cyberbullying: A study of Spanish adolescents. Journal of Psychology 217, 197-204.

Plutchik, R., 1980. Emotion: A Psychoevolutionary Synthesis. Harper & Row, New York.

Puri, M., Robinson, D., 2007. Optimism and economic choice. Journal of Financial Economics 86, 71-99.

Putnam, R., 2007. E Pluribus Unum: Diversity and community in the twenty-first century. Scandinavian Political Studies 30, 137-174.

Renneboog, L., Spaenjers, C., 2012. Religion, economic attitudes, and household finance. Oxford Economic Papers 64, 103-124.

Richins, M.L., 1997. Measuring emotions in the consumption experience. Journal of Consumer Research 24, 127-146.

Sapienza, P., Toldra-Simats, A., Zingales, L., 2013. Understanding trust. Economic Journal 123, 1313-1332.

Wakker, P.P., Thaler, R.H., Tversky, A., 1997. Probabilistic insurance. Journal of Risk and Uncertainty 15, 7–28.

Zimmer, A., Schade, C., Gründl, H., 2009. Is default risk acceptable when purchasing insurance? Experimental evidence for different probability representations, reasons for default, and framings. Journal of Economic Psychology 30, 11–23.

Table 1
Variable definitions and sources

Notation	Measure
A. Dependent variables	
Risky investments	Dummy variable equal to one if the individual possesses any investments (e.g., growth funds, share funds, bonds, debentures, stocks, options, warrants, etc.) and zero otherwise.
Insurance	Dummy variable equal to one if the individual has a single-premium insurance policy, life annuity insurance, or endowment insurance (not linked to a mortgage), and zero otherwise.
B. Main explanatory variables	
Trust	Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people? Takes values from 0 (can't be too careful) to 10 (can be trusted).
Happiness	On the whole, how happy would you say you are? Takes values form 0 (totally unhappy) to 10 (totally happy).
Current life satisfaction	How satisfied are you with the life you lead at the moment? Takes values from 0 (totally unsatisfied) to 10 (totally satisfied).
General life satisfaction	In general how satisfied are you with your life? Takes values from 0 (totally unsatisfied) to 7 (totally satisfied).
C. Control Variables	
Upset	Do not get upset too easily. Takes values from 1 (very inaccurate) to 5 (very accurate).
Anticipation	Rarely count for good things happening to me. Takes values from 1 (strongly disagree) to 5 (strongly agree).
Religious	Believe in God. Takes values from 1 (do not believe) to 6 (believe without any doubt).
Optimistic	Always optimistic about future. Takes values from one (strongly disagree) to five (strongly agree).
Inequality preferences	Differences in income should decrease. Takes values from one (strongly disagree) to five (strongly agree).
Work	Dummy variable equal to one if respondent has paid work and zero otherwise.
Gender	Dummy variable equal to one if respondent is female and zero if respondent is male.
Age	The age of the respondent.
Family head	Dummy variable equal to one if respondent is the family's head and zero otherwise.
Income	The natural logarithm of household's income when the dollar value of income is positive.
Positive income	Dummy variable equal to 1 if income is positive and zero if income is zero.
Wealth	The natural logarithm of the household's wealth (savings in bank accounts).
Real estate	Dummy variable equal to one if the individual possesses real estate (including land), not used as one's own home, second home or holiday home, and zero otherwise.
D. Instrumental variables	
Family relations	How would you generally describe the relationship with your family? Takes values from one (very poor) to five (very good).
Origin biodiversity	The genetic diversity in the country of origin of the respondent, with values of genetic diversity obtained from Ashraf and Galor (2013).
Religious parents	Dummy variable equal to one if the respondent's parents when he/she was 15 years old considered themselves member of a certain religion or church community and zero otherwise.

Table 2
Summary statistics

Variable	Obs.	Mean	Std. dev.	Min.	Max.
Risky investments	5,588	0.14	0.35	0	1
Real estate	5,582	0.06	0.25	0	1
Insurance	5,582	0.13	0.34	0	1
Happiness	5,855	7.53	1.26	0	10
Trust	5,838	6.04	2.13	0	10
Religious	6,149	3.27	1.83	1	6
Optimistic	5,928	3.49	0.82	1	5
Inequality preferences	5,580	3.86	0.96	1	5
Work	6,013	0.57	0.50	0	1
Gender	6,108	1.54	0.50	1	2
Age	5,588	49.44	17.50	16	92
Family head	5,587	0.57	0.49	0	1
Income (log)	4,938	16.87	6.53	0	23.03
Wealth (log)	2,442	9.08	1.97	0.69	15.91
Upset	5,928	3.46	0.89	1	5
Anticipation	5,928	2.56	0.90	1	5
Family relations	6,111	4.03	0.76	1	5
Origin biodiversity	6,214	0.73	0.008	0.58	0.77
Religious parents	6,058	0.36	0.48	0	1

Notes: The table reports the number of observations and summary statistics for the main variables of the empirical analysis. All variables are defined in Table 1.

Table 3
Happiness, trust, and the probability of investment decisions I

The table reports marginal effects and associated *t*-statistic of the IV probit regressions on the two dependent variables, namely risky investments (regressions I and II) and insurance (regressions III and IV). Variable definitions are provided in Table 1. Happiness is instrumented with family relations and trust with origin biodiversity. The first-stage results are reported in the lower part of the table (results are the same for the models including trust and happiness, respectively). The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent variable:	**I Risky investments**	**II Risky investments**	**III Insurance**	**IV Insurance**
Happiness	-0.060*		-0.025	
	(-1.801)		(-0.602)	
Trust		0.080*		0.080*
		(1.846)		(1.850)
Religious	-0.008**	-0.006	-0.010***	-0.007
	(-2.369)	(-1.389)	(-3.118)	(-1.588)
Optimistic	0.033*	-0.014	-0.005	-0.030**
	(1.735)	(-0.931)	(-0.292)	(-2.121)
Inequality preferences	-0.036***	-0.034***	-0.021***	-0.020***
	(-5.787)	(-4.694)	(-3.552)	(-3.009)
Work	0.059***	0.047**	0.037**	0.028
	(3.686)	(2.535)	(2.305)	(1.402)
Gender	-0.067***	-0.075***	-0.044***	-0.050***
	(-5.379)	(-5.908)	(-3.663)	(-4.114)
Age	0.007**	0.010***	0.044***	0.045***
	(2.053)	(3.142)	(9.854)	(8.925)
Age-squared	-0.0000	-0.0001**	-0.0004***	-0.0004***
	(-0.983)	(-2.234)	(-9.471)	(-9.271)
Family head	0.061***	0.073***	0.026*	0.031**
	(3.952)	(5.166)	(1.858)	(2.422)
Income	0.113***	0.078**	0.047**	0.017
	(4.028)	(2.025)	(2.038)	(0.569)
Income-squared	-0.004***	-0.002***	-0.002**	-0.001
	(-4.134)	(-2.008)	(-2.169)	(-0.603)
Positive income	(dropped)	(dropped)	0.245	0.231
	-	-	(1.230)	(1.111)
Upset	0.018**	-0.004	0.008	-0.007
	(1.969)	(-0.326)	(1.061)	(-0.592)
Anticipation	-0.037***	0.009	-0.013	0.024
	(-4.908)	(0.332)	(-1.492)	(0.970)
Observations	3,737	3,738	3,737	3,738
Wald-test	261.2	348.4	243.8	415.1
p-value	0.000	0.000	0.000	0.000
First-stage results				
	Upset	Anticipation	Family relations	Origin biodiversity
Happiness	0.120***	-0.160***	0.220***	
	(4.91)	(-6.68)	(7.60)	
Trust	0.210***	-0.456***		-0.261***
	(4.49)	(-11.12)		(-3.17)

Table 4

Happiness, trust, and the probability of investment decisions II

The table reports marginal effects and associated *t*-statistic of the IV probit regressions on the two dependent variables, namely risky investments (regression I) and insurance (regression II). Variable definitions are provided in Table 1. Happiness and trust are instrumented with family relations and origin biodiversity. The first-stage results are reported in the lower part of the table (results are the same for all models). The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10% level, respectively.

	I	**II**
Dependent variable:	**Risky investments**	**Insurance**
Happiness	-0.132***	-0.101**
	(-2.940)	(-2.090)
Trust	0.074*	0.076**
	(1.840)	(1.981)
Religious	-0.007	-0.004
	(-0.510)	(-0.826)
Optimistic	0.051***	0.027
	(2.792)	(1.117)
Inequality preferences	-0.035***	-0.023***
	(-4.829)	(-3.277)
Work	0.055***	0.031*
	(2.901)	(1.826)
Gender	-0.060***	-0.051***
	(-3.588)	(-3.130)
Age	0.007**	0.041***
	(2.054)	(3.924)
Age-squared	-0.0001**	-0.0004***
	(-2.043)	(-4.155)
Family head	0.041	0.016
	(1.594)	(0.803)
Income	0.095***	0.035
	(2.968)	(1.588)
Income-squared	-0.003***	-0.001
	(-2.916)	(-1.510)
Positive income	(dropped)	0.237
	-	(1.120)
Upset	0.012	0.004
	(1.190)	(0.455)
Anticipation	-0.014	0.005
	(-0.592)	(0.271)
Observations	3,707	3,707
Wald-test	570.2	519.6
p-value	0.000	0.000

First-stage results

Upset	Anticipation	Family relations	Origin biodiversity
Happiness			
0.120***	-0.155***	0.226***	0.002
(4.80)	(-6.51)	(7.82)	(0.26)
Trust			
0.195***	-0.470***	0.250***	-0.272***
(10.97)	(-5.16)	(3.20)	(-5.29)

Table 5

Life satisfaction, trust, and the probability of investment decisions

The table reports marginal effects and associated *t*-statistic of the IV probit regressions on the two dependent variables, namely risky investments (regressions I and III) and insurance (regressions II and IV). Variable definitions are provided in Table 1. In regressions I and II life satisfaction is measured by current life satisfaction, while in regressions III and IV it is measured by general life satisfaction. Satisfaction and trust are instrumented with family relations and origin biodiversity. The first-stage results are reported in the lower part of the table (results are the same for models I-II and III-IV, respectively). All regressions include the same control variables as in Table 3. The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent variable:	**I Risky investments**	**II Insurance**	**III Risky investments**	**IV Insurance**
Life satisfaction	-0.117***	-0.097**	-0.152***	-0.138**
	(-2.720)	(-2.165)	(-2.717)	(-2.245)
Trust	0.080*	0.072*	0.050	0.060*
	(1.933)	(1.950)	(1.320)	(1.838)
Observations	3,714	3,714	3,738	3,738
Wald-test	483.0	477.5	517.5.	570.3
p-value	0.000	0.000	0.000	0.000

First-stage results

		Upset	Anticipation	Family relations	Origin biodiversity
Regressions I-II	Happiness	0.121***	-0.190***	0.227***	-0.008
		(4.93)	(-7.70)	(7.32)	(-0.65)
	Trust	0.192***	-0.471***	0.272***	-0.260***
		(4.21)	(-10.56)	(5.60)	(-3.02)
Regressions III-IV	Happiness	0.120***	-0.215***	0.167***	-0.003
		(5.70)	(-10.40)	(6.03)	(-0.36)
	Trust	0.181***	-0.480***	0.255***	-0.268***
		(4.03)	(-11.00)	(5.24)	(-3.25)

Table 6
Interaction effects between happiness and trust

The table reports marginal effects and associated *t*-statistic of the IV probit regressions on the two dependent variables, namely risky investments (regression I) and insurance (regression II). Variable definitions are provided in Table 1. Happiness and trust are instrumented with family relations and origin biodiversity. The first stage results (reported in the lower part of the table) are the same for all specifications. Both regressions include the same control variables as in Table 3. The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10% level, respectively.

	I	**II**
Dependent variable:	**Risky investments**	**Insurance**
Happiness	-0.135***	-0.108**
	(-2.990)	(-2.123)
Trust	0.070*	0.073*
	(1.847)	(1.920)
Happiness*Trust	-0.012***	-0.012***
	(-2.942)	(-2.898)
Observations	3,707	3,707
Wald-test	587.0	586.5
p-value	0.000	0.000

First-stage results

Upset	Anticipation	Origin biodiversity	Religious parents
Happiness			
0.121***	0.155***	0.225***	0.001
(4.85)	(-6.42)	(7.75)	(0.52)
Trust			
0.193***	-0.470***	-0.255***	-0.013***
(4.30)	(-10.70)	(-5.24)	(-2.91)

Table 7

Happiness, trust, and the probability of investment decisions: Additional sensitivity analysis

The table reports marginal effects and associated *t*-statistic of the IV probit regressions on the two dependent variables, namely risky investments (regressions I, III and V) and insurance (regressions II, IV and VI). Variable definitions are provided in Table 1. In columns I and II, happiness and trust are instrumented with origin biodiversity and religious parents. In the rest of the regressions, are instrumented with family relations and origin biodiversity. All regressions include the same control variables as in Table 3. Regressions III and IV additionally include wealth as a control variable. Also, regression V includes insurance and real estate as control variables and regression VI includes risky investments and real estate. The ***, **, and * marks denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Alternative instruments		**Control for wealth**		**Control for other investments**	
	I	**II**	**III**	**IV**	**V**	**VI**
Dependent variable:	**Risky investments**	**Insurance**	**Risky investments**	**Insurance**	**Risky investments**	**Insurance**
Happiness	-0.150***	-0.106**	-0.138***	-0.103**	-0.140***	-0.100**
	(-3.009)	(-2.085)	(-2.959)	(-2.035)	(-2.901)	(-1.985)
Trust	0.097**	0.069*	0.083**	0.078**	0.088**	0.065*
	(2.102)	(1.804)	(2.016)	(1.969)	(1.967)	(1.746)
Wealth			0.123***	0.104***		
			(4.210)	(3.099)		
Risky investments						0.681***
						(10.272)
Insurance					0.691***	
					(10.470)	
Real estate					0.594***	0.364***
					(6.341)	(3.798)
Observations	3,707	3,707	2,325	2,325	3,707	3,707
Wald-test	582.6	591.5	510.4	572.7	607.4	600.3
p-value	0.000	0.000	0.000	0.000	0.000	0.000