Title:
***In sickness but not in wealth*:**
Field evidence on patients' risk preferences in the financial and health domain

Accepted for publication in *Medical Decision Making*, December 2015

Running Title:
Risk preferences in the finance and health domain

Authors and institutions:
Matteo M Galizzi, PhD[a,b*]; Marisa Miraldo, PhD[b,c], Charitini Stavropoulou, PhD[d]

a. London School of Economics, LSE Behavioral Research Lab, LSE Health and Social Care, and Department of Social Policy, G09 Cowdray House, Houghton Street, WC2A 2AE London, UK, m.m.galizzi@lse.ac.uk
b. Paris School of Economics, École d'Économie de Paris, Hospinnomics; Hôtel-Dieu, 1, Parvis de Notre-Dame, Bâtiment B1, 5° étage, 75004 Paris.
c. Imperial College Business School, Management Group, South Kensington Campus, Exhibition Road, SW7 2AZ London, UK, m.miraldo@imperial.ac.uk
d. City University London, School of Health Sciences, Northampton Square, EC1V 0HB London, UK, c.stavropoulou@city.ac.uk

* Corresponding author.

Acknowledgments, meetings, and presentations:
We gratefully acknowledge research assistance by Aikaterini Anestaki, Omiros Stavropoulos and Theodoros Thomaidis for field data collection, and the kind collaboration of the Governing Board and the staff of the Laiko Hospital, Athens, Greece. The authors have no conflicts of interest. The work has been presented at the iHEA Congress in Toronto; the European Workshop in Health Economics in Brescia; the APES Conference in Lisbon; the ECHE Conference in Zurich; the HESG Workshop in London; and the Behavioral Science Group at LSE. We thank David Bradford, Helmut Cremer, Paul Dolan, Albert Ma, Raffaele Miniaci, Giuseppe Pignataro, Rhema Vaithianathan, Tommaso Valletti, and all participants for discussion. An earlier version of the material has been presented in the Discussion Papers Series at Imperial College Business School. We are very grateful to Associate Editor Robert Hamm, and to two anonymous referees for their insightful comments and suggestions that have greatly helped improving the article.

Statement:
Financial support for this study was provided entirely by a Pump-priming grant from the Faculty of Business, Economics and Law at the University of Surrey. We gratefully acknowledge this funding from the University of Surrey. The funding agreement ensured the authors' independence in designing the study, interpreting the data, writing, and publishing the report.

Words count:
5,011 words, excluding abstract and references.

***In sickness but not in wealth*:**

Field evidence on patients' risk preferences in the financial and health domain

Abstract: We present results from a hypothetical framed field experiment assessing whether risk preferences significantly differ across the health and financial domains when they are elicited through the same multiple price list paired-lottery method. We consider a sample of 300 patients attending outpatient clinics in a university hospital in Athens, during the Greek financial crisis. Risk preferences in finance are elicited using paired-lottery questions with hypothetical payments. The questions are adapted to the health domain by framing the lotteries as risky treatments in hypothetical healthcare scenarios. Using Maximum Likelihood methods, we estimate the degree of risk aversion, allowing for the estimates to be dependent on domain and individual characteristics. The subjects in our sample, who were exposed to both health and financial distress, tend to be less risk averse in the financial than in the health domain.

Key words: Behavioral experiments in health; Field experiments; Risk aversion.

Introduction

We report the results from a hypothetical *framed field experiment* in the sense of Harrison and List (1) (that is, an experiment with non-student subjects making decisions in a field context) with 300 patients attending outpatient clinics in a Greek hospital during the current economic crisis. We elicit their risk preferences within both financial and health domains using the multiple price list (MPL) paired-lottery method of Holt and Laury (2) with hypothetical payments, and we test the hypothesis that risk preferences differ across domains.

This research is motivated by the need to test different methods of measuring risk preferences in health. Despite previous attempts (3,4), there is currently no 'gold standard' metric for risk preferences in health. In addition, the evidence on how risk preferences correlate across the health and financial domains is scant. Very few risk preference measures have been tested in healthcare settings with real patients.

Testing different measures of risk preferences in health and across domains is of key interest for research and policy purposes for three main reasons. First, it may allow a better understanding of how patients make healthcare decisions and adhere to them. Second, it may contribute to the validity of cost-effectiveness analysis and decision-making models where risk preferences are considered. Third, direct evidence on the tradeoff of risks across wealth and health sheds light on the willingness to enroll in voluntary health insurance.

In this study we explore the possibility of measuring risk preferences in finance and health using the MPL method. Together with the Binswanger (5,6) and the Gneezy and Potters (7) methods, the Holt and Laury (2) MPL method is one of the most widely used incentive-

compatible methods to measure risk preferences over monetary outcomes. In this method subjects are asked to choose the option they prefer in a series of pairs of lotteries involving different risk-outcome tradeoffs. We use the Holt and Laury (2) MPL test with hypothetical, rather than incentive-compatible, rewards, and calculate risk preferences in finance and health within subjects.

We do so by considering subjects attending outpatient clinics in a hospital in Greece during the current economic recession. Such subjects find themselves within a 'naturally occurring' state of both financial and health distress. This context improves the likelihood of respondents perceiving the risky trade-offs as realistic and vivid even in the absence of actual incentive-compatible consequences for their responses. To the best of our knowledge, ours is the first study to elicit the risk preferences of a relatively large pool of subjects (n = 300) in both the financial and the health domain using the same MPL paired-lottery measure.

Our main finding is that risk preferences differ across the health and the financial domains even when they are elicited through the same MPL measure: our sample of Greek patients manifested higher risk aversion in health.

Background: measuring risk preferences in health and across domains.

The issue of whether preferences are stable is a central question among economists, psychologists, and 'applied behavioral scientists' (in the sense of Kahneman (8)). Preference stability tends to be assessed at two levels: over time, and across different domains in life at a given point in time.[1] Our research relates to the latter. There are six main approaches to

[1] Economists often distinguish between *unconditional* and *conditional stability* of risk preferences (9). *Unconditional* stability postulates that risk aversion literally remains constant over time. According to

measure risk preferences in health. The first approach uses *insurance market choices* (INS) to infer underlying risk preferences (16–18). Few recent articles have looked at choices across different insurance contracts to assess risk preferences across different life domains (19,20).

A second approach uses 'risky' health behavior such as smoking, heavy drinking, or not using seat belts as indirect proxies for risk preferences. In this *behavior-proxy* (BP) strategy, which has been widely used (21–23), risk preferences are indirectly inferred from observed behavior rather than being directly measured. A third approach assumes that risk taking is inherently domain-specific, and should therefore be measured by *domain-specific questionnaires* (DS) such as the Domain-Specific Risk-Taking scale (DOSPERT), the Risk Propensity Questionnaire, and the Risk Propensity Scale (24–26). Although DS measures may be constructed to address health behaviors (27,28), a disadvantage of this approach is that risk preferences are not directly measured but are inferred from self-reported engagement in 'risky' behaviors. The fourth approach, a simplified variant of the third, is based on self-assessed willingness to take risk generally and in specific domains using Likert scales (29). This *scale-based self-assessed* (SB-SA) approach is simple and scores can be quantitatively compared across domains. However, the theoretical foundations of this '*direct scaling*' approach are unclear (3), and the evidence on how the SB-SA scores correlate with other risk preference measures and across different domains is mixed (29–31). Two common features of approaches two, three and four are that i) they are not incentive-compatible, in the sense that the measures are merely hypothetical and they bear no real

conditional stability, however, what remains constant over time is the function that links the risk aversion with the observable states of nature. Conditional stability, a weaker concept of stability of preferences, is actually common among economists, who also refer to it as 'state-dependent preferences' (10,11). There are very few studies looking at the stability of preferences over time for representative samples of the population (e.g., Andersen, Harrison, Lau, and Rutström (9) and Harrison and Lau (12) in Denmark). Other studies have typically looked at shorter time horizons (13), relatively small numbers of repeated observations (14) and/or very specific, not representative, pools of subjects (15).

consequences to subjects, and ii) they involve purely self-reported scale measures rather than explicit tradeoffs.

The fifth approach encompasses a family of methods that measure risk preferences in health with tasks involving explicit trade-offs, rather than self-reported scales.[2] Within this *trade-off approach* a common method is the *certainty equivalent* (CE) method (3)(4,32). Of direct interest here, Prosser and Wittenberg (4) elicit CE in both health and money lotteries for multiple sclerosis patients and members of the general public. The proxy for risk preferences is the value of the CE, defined as the smallest amount of dollars or relapse-free days the respondent would be willing to accept instead of the lottery presented. Both groups of respondents were significantly risk averse for small and large monetary outcomes, but risk neutral with respect to health outcomes. Similar results were obtained by Warshawsky-Livne et al. (33). CE questions have also been included in surveys such as the US Health and Retirement Survey, with mixed evidence on their links with other risk preference measures and with risky health behaviors (34,35). Other methods within this trade-off approach are the *probability equivalent* (PE) method, which is also at the heart of the *standard gamble* (SG) method commonly used to measure utilities of health states, and the *gamble tradeoff* (GTO) method (3,36).

The final approach to measure risk preferences in health uses *incentive-compatible* (IC) tests involving real rewards to respondents. Similarly to what found in other areas, experimental economists have documented a 'hypothetical response bias' in the elicitation of risk preferences, with hypothetical methods showing significantly less risk aversion than

[2] A comprehensive methodological discussion of these various *trade-off* approaches to measure risk preferences can be found in Wakker and Deneffe (3). Here we only briefly review the key tradeoff approaches applied to risk preferences in health. Notice that all the trade-off methods mentioned here can be incentive-compatible when applied in measuring risk preferences for monetary outcomes.

methods with real rewards (2,37–40). Since measuring risk preferences in health with real health consequences is challenging, most studies employing IC methods offer monetary rewards, rather than health rewards, and compare elicited risk preferences to health behaviors, again with mixed results (30,41–43).

The three most common IC measurement procedures for risk preferences for monetary outcomes are the ones proposed by Binswanger (5,6), Gneezy and Potters (7), and Holt and Laury (2) (HL) (44). The *HL method* uses a *multiple price list* (MPL) design which presents a series of questions, each reproducing a choice between two lotteries (2,45). The HL MPL method fully accounts for an individual being risk averse, risk neutral, or risk seeking, whereas the other two IC methods cannot empirically distinguish between risk neutrality and risk seeking. A second major advantage is that the HL method allows the researcher to structurally estimate the underlying risk preferences. In particular, the behavioral econometrics approach by Harrison and Rutström (46) and Andersen, Harrison, Lau, and Rutström (47,48) uses Maximum Likelihood (ML) to estimate the risk aversion parameters assuming a range of Expected Utility Theory (EUT) and non-EUT models (see Online Appendix C).

In Table 1, we summarize the key studies that compare risk preferences across different domains. We briefly report their design; the methods; whether the rewards were hypothetical or real; the compared domains; their samples and settings; and their main findings, in particular whether they found consistent risk preferences across different domains. Not only is there a broad range of methods used in the literature, but also the evidence of risk preference stability across domains is mixed. Most studies have used hypothetical rewards, and few used either IC tests or actual insurance choices. Among the hypothetical tests, the CE method is most common, while the HL MPL method prevails among the IC methods.

With the exception of Wakker and Deneffe (3) and Harrison, List and Towe (49), most studies use a within-subjects design, with a broad heterogeneity of domains across which risk preferences are compared. Results are difficult to compare due to the high heterogeneity of samples, methods, and study designs. However, there is general evidence that there are differences across domains and that these also emerge when real consequences are at stake, for the studies using either the MPL or the INS approaches.

[Insert Table 1 here]

The approach undertaken in the present work aims to bridge the gap between the fifth and the sixth approaches. As with the sixth approach, we use the MPL method and structurally estimate the risk preferences across the domains. On the other hand, similarly to the fifth approach we consider only hypothetical rather than real rewards. This was mainly due to the ethical and logistical constraints from operating in our outpatient clinic settings as well as the intention to minimize confounders across the two domains. Our study is methodologically close to the approach by Riddel (50) who compares risk preferences across the financial and the environmental domains using the HL MPL method with hypothetical rewards.

Methods

Setting

The study took place in the outpatient clinics in the Laiko General Hospital in Athens, Greece, where one of the authors (CS) had previous research contacts. Laiko is a University Hospital, located in the centre of Athens; one of the country's largest general public hospitals, it covers the broader region of Attica. The study was approved by the Research Ethics Committee of Laiko Hospital on the 6th of August 2010 (protocol number ES 462).

The fieldwork started in September 2010 and was run in four rounds over a period of fourteen months.

Although not expected when the study was designed, the period of the fourteen months of data collection was of intense economic and political distress for Greece. A series of severe austerity measures were taken earlier that year (April 2010) when the country's deficit reached 12% of the GDP. In May 2010 the IMF and the EU agreed on the first bailout loan to Greece. In June 2011, the Greek parliament voted a new austerity bill, which included severe spending cuts and tax increases, while in October 2011 a second 'bailout' loan was agreed. The austerity measures were followed by a series of strikes, violent riots and political instability.[3]

Thus, the economic crisis gradually deteriorated during the months of data collection. For instance, the unemployment rate was 13.4% in September 2010 and increased gradually to 20.2% in October 2011 (51). Although a number of reforms were introduced in healthcare, free access to outpatient clinics was not affected during the months of data collection.[4]

Design

In the present study we opted for not using IC payment mechanisms for four main reasons. First, the idea of implementing IC outcomes related to risky choices in outpatient clinics encountered resistance from the hospital's Ethics Committee. So, in order to secure ethical approval to the project, tests had to be hypothetical. Second, implementing real payments for the chosen lotteries within the financial domain, while making the outcomes within the

[3] For a self-contained timeline of the Greek economic crisis during the period of data collection, also see http://www.theguardian.com/business/2012/mar/09/greek-debt-crisis-timeline

[4] For a more specific discussion of the policy measures in the healthcare area during the economic crisis see Petmesidou et al. (52).

health domain only hypothetical, clearly implies the introduction of a confounding factor that would hinder the attribution of the observed differences in choices to the different domains (50). Third, from a methodological perspective, we aimed at road testing the extension of the HL MPL method in measuring risk preferences in domains other than money, and to contribute to bridging the gap between IC tests for risk preferences with money (the HL MPL approach) and hypothetical trade-off methods typically used to measure risk preferences in health (the above CE, PE, and GTO approaches). Finally, opting for hypothetical payments makes our results closely comparable with the previous findings by Wakker and Deneffe (3), Prosser and Wittenberg (4) and Dohmen et al. (29), who also looked at risk preferences in money and health by comparing hypothetical responses to GTO, CE, or SB-SA tests, respectively.

Sampling

So that the respondents would perceive the risky tradeoffs as realistic and vivid even in the absence of IC consequences for their responses, we approached a pool of subjects who found themselves within a 'naturally occurring' state of both financial and health distress, and presented them tests within a field context and with naturalistic stakes.

Our sample consists of real patients attending outpatient clinics in a hospital in Greece during the current economic recession. We assume these subjects are naturally exposed at the same time to both finance- and health-related risk. The two sources of field risks are different in nature, at least according to the distinction between *foreground* and *background* risk discussed by Harrison, List, and Towe (49). Given the field setting where subjects were recruited, the health risk associated with visiting a hospital clinic can be considered a *foreground* risk, while the financial crisis is a *background* risk.

Furthermore, recruiting our sample in a clinical setting renders it more likely that subjects are apprehensive about the state of their health compared to the one of their finances. Thus in this sample subjects likely are more risk averse in health than in money, which would not hold in other contexts.

We targeted a sample size of n=300 patients. We recruited patients from *all* outpatient clinics where patients were reasonably affected by health conditions characterized by only moderate pain or discomfort, anxiety or distress, according to the EQ-5D classification (53,54). When recruiting, we approached all patients while they were waiting to see their doctors in the outpatient clinics of the hospital, between 9 am and 1 pm. Research assistants simply mentioned that the questionnaire was a study conducted by a university. Interviews were conducted roughly equally across all working days of the week, and all morning hours. We reached the final target of n=300 patients by approaching 386 patients in total, corresponding to a response rate of 78 per cent. In order to reach the target sample, four different rounds of data collection were needed, in September 2010 (round 1, lasting 5 weeks, n=91), January 2011 (round 2, lasting 4 weeks, n=34), April 2011 (round 3, lasting 5 weeks, n=56) and October 2011 (round 4, lasting 4 weeks, n=119).

Questionnaire

Patients who agreed to participate were given a questionnaire which took approximately 20 minutes to complete. Patients were given both verbal and written instructions. The research assistant sat next to them, clarifying issues regarding the experimental tests and making sure that respondents clearly understood the questions.

The first part of the questionnaire assessed socio-demographic variables (e.g., age, sex, education, income brackets), individual life style and health habits (e.g., self-assessed health,

health behaviors), and psychological traits (e.g., overconfidence). In the second part of the experiment we elicited individual risk preferences.

The questionnaire was developed in English and was linguistically validated in Greek following the guidelines on cross-cultural adaptation (55,56). It was first tested among 32 patients from the same population (see Online Appendix B). The responses from this pilot were not included in the final analysis.

Framework

We assume that risk preferences are elicited within the Expected Utility Theory (EUT) framework for a constant relative risk aversion (CRRA) individual (2,9,45,57): the utility function of a subject in the financial domain, in terms of monetary payoffs *W*, is thus

$$U(W) = \frac{W^{1-r_w}}{1-r_w} \quad (1)$$

where r_w is the coefficient of constant relative risk aversion in finance. Subjects' risk aversion can be grouped in three main types:

1. If $r_w = 0$, risk neutral
2. If $r_w > 0$, >risk averse
3. If $r_w < 0$, risk seeking

In a similar way, the utility of a subject within the health domain is defined in terms of days in full health *H*, and assumed to be $U(H) = \frac{H^{1-r_H}}{1-r_H}$ where r_H is the coefficient of constant relative risk aversion in health.[5]

Eliciting risk preferences

We used the same MPL method (3) (2,45–48) to elicit risk preferences in both finance and health. Each subject was asked two sets of questions, first in finance (questions Q1.11 in the Online Appendix A), then in health (questions Q1.13 in the Online Appendix A). The pilot study, in fact, suggested that the lotteries were easier to understand if presented in finance first. Presenting the financial lotteries before the health ones makes the test directly comparable with the analogous design by Prosser and Wittenberg (4). Such a design feature of our study, however, does not allow us to explicitly account for possible order effects of responses across different domains (see the Online Appendix B). The questionnaire also included inter-temporal questions, which are not analyzed here.

In each set of risk preference questions patients were asked to choose between two risky options (lotteries), *A* and *B* (Tables 2 and 3). In the 9 pairs of risky options in either set we varied both the probabilities p_{kj} and the payoffs associated with each outcome *k=1,2* of the two lotteries, either in monetary (W_{kj}) or in days in full health (H_{kj}) terms, with *j=A,B*. The probabilities varied from 0 to 100%, while the payoffs varied from €10 to €385 in the financial domain. Subjects could not manifest indifference between the two lotteries.

[5] As an extension, we have also considered risk preferences within the Rank Dependent Utility (RDU) model by Quiggin (58). RDU is a generalization of EUT that allows subjects to transform the objective probabilities presented in lotteries and to use these weighted probabilities as decision weights in the evaluation of the lotteries. In particular, we have considered the 'power' probability weighting function w(p) proposed by Quiggin (58) which is defined over a unique 'curvature' parameter y: $w(p)=p^y$. When $y\neq1$ the RDU model deviates from the EUT model: concavity and convexity of w(p) are said to reflect 'optimism' and 'pessimism', respectively, in how a subject perceives objective probabilities. The Rank Dependent Expected Utility (RDEU) from a two-prizes lottery in health, for instance, can be written as $RDEU=[w(p(H_1))*U(H_1)]+[(1-w(p(H_1)))*U(H_1)]$, where $w(p)=p^y$. In footnote 14 we briefly report the results obtained under RDU.

[Insert Tables 2 and 3 here]

To elicit risk preferences in health, we framed the financial paired-lottery method in terms of health rewards, while keeping unaltered the structure and all other features of the MPL elicitation test in order to allow for comparability across domains. Therefore, the lotteries were presented as pairs of different healthcare treatments characterized by some risk. The healthcare context was chosen to ensure a vivid and realistic representation of the hypothetical alternatives by patients attending outpatient clinics, and is fully in line with the choice between two *surgical procedures* by Wakker and Deneffe (3) and two *drugs* by Prosser and Wittenberg (4). Participants were told that each treatment in the pair of options was expected to provide some amount of health benefits with some probability, and a lower amount of health benefits with the complementary probability. Analogously to the financial domain, one treatment (A) was presented as characterized by a smaller difference between health benefits than the risky treatment (lottery B), and the series of pairs of treatments only differ with respect to the probabilities of occurrence for the higher health benefits. Concerning the exact nature of health benefits, the natural candidate for the equivalent of an extra unit of money in the health domain was an extra unit of *time in full health.*[6]

Importantly, by considering patients in hospital clinics, who were by definition not yet 'satiated' in their level of time in full health, we ensured that a lottery in health providing an extra unit of time in full health was perceived as associated with a strictly positive benefit by all subjects. To emphasize this, we also made it clear that, once the effects of the health

[6] This is consistent with the conceptual framework of cost-utility analysis (CUA) where health benefits are typically evaluated relative to the benchmark of a unit of *time in full health*, whose benefit in terms of utility is usually standardized to one. In the monetary domain, this closely corresponds to standardizing to one the utility of a unit of income/money. The choice of time in full health as the natural equivalent metric of money in the health domain is also in line with Wakker and Deneffe (3) and Prosser and Wittenberg (4).

treatments would end, subjects would go back to the health status they were initially experiencing. This is analogous to the stimuli used by Prosser and Wittenberg (4).

Comparing the finance and health domains

The implicit conversion rate between domains was of one euro per day in full health. The choice of the conversion rate was based on the evidence from the pilot experiment run with a sample of patients from the same hospital having similar characteristics to the respondents in our experiment. The assumption of the one-to-one conversion rate is key for the analysis (under both the EUT and the RDU models) as it impacts the cross-domain comparisons: a detailed discussion of the justification, methodological issues, and limitations associated with our conversion rate between domains can be found in Online Appendix B.

Estimating risk preferences

To estimate risk preferences we used Maximum Likelihood (ML) methods and followed the econometric approach of Andersen, Harrison, Lau, and Rutström (45,47,48) and Harrison and Rutström (46), where the full details of the empirical strategy can be found.[7] A self-contained discussion of the approach can be found in Online Appendix C. We pooled all the observations and included a categorical variable ('*H*') to control for whether the responses refer to the money (*H=0*) or the health domain (*H=1*).[8] As we collected 9 responses for each domain from 300 subjects, the resulting dataset comprised 5400 observations overall. We corrected for heteroskedasticity and autocorrelation of observations within the same subject, by treating the residuals from the same individual as potentially correlated, and computing cluster-robust standard errors. In the model, the 'r' parameter is a function of the domain ('*H*'), of the rounds of data collection, and of other observable individual characteristics.

[7] An alternative approach has recently been proposed by Andersen, Harrison, Hole, Lau, and Rutström (59).
[8] We thank an anonymous reviewer for suggesting this approach.

Besides the estimated CRRA coefficient 'r', the ML estimations report a 'noise' ('mu') parameter which reflects the individual 'errors' in identifying the preferred lottery (as mentioned, indifference was excluded by design).

Variables and descriptive statistics

Table 4 presents the definition and main descriptive statistics of the variables included in the analysis. We use socio-demographic variables to control for respondents' age (*age*), gender (*female*), marital status (*married*), levels of education (*educ*), self-assessed health (*sah*), and for whether or not they have children (*children*). We use two economic variables: one showing the monthly income bracket the respondent belongs to (*income*), and another indicating how constrained respondents feel by their current financial situation (*finconstr*).[9] As we pool all subjects, the variables *round2, round3,* and *round4* control for the round when the questionnaire was collected, with the reference being round 1: 91 patients were interviewed in round 1 of data collection, 34 patients in round 2, 56 in round 3, and, finally, 119 in round 4. The categorical variable *H* represents the domain in which the responses to questions on risk preferences are elicited. The main question is whether the domain variable *H* is statistically significant.

[Insert Table 4 here]

Results

We first present the coefficient of risk aversion structurally estimated using all the data pooled across both domains (*Model 1*, Table 5). The estimated CRRA coefficient is

[9] The correlation between *income* and *finconstr* is negative and highly significant (p=0.000) for the whole sample (-0.2026) as well as for each round of data collection (-0.2234, -0.3488, -0.3574, and -0.2905 in rounds 1, 2, 3, and 4, respectively).

r=0.0643 (95% Confidence Interval, CI: -0.0273 to 0.1560), not significantly different from risk neutrality. The fact that subjects exhibit overall risk neutral preferences is broadly consistent with the view that the use of hypothetical elicitation methods can favour the observation of risk neutral over risk averse responses (2,37–40,60).

[Insert Table 5 here]

When looking at the differences across domains, we find that our sample exhibits significant risk averse responses in the health domain: while the overall estimated coefficient of risk aversion is not statistically different from zero (p=0.169), the estimated coefficient for the health domain variable is 0.133 (95% CI: 0.0212 to 0.2455) and statistically significantly different from zero (p=0.020), corresponding to a moderate degree of risk aversion (*Model 2*, Table 5).[10]

When we pool all data across both domains and control for the rounds of data collection (n=91 in round 1; n=34 in round 2; n=56 in round 3; n=119 in round 4), we find evidence of progressively more risk seeking responses in *Models 3-5*, (Table 5) but not in *Model 7*, which also controls for *finconstr* (see below): responses are significantly more risk seeking in rounds 2, 3, and 4 compared to the first round of data collection. Risk preferences in the health domain remain statistically significantly more risk averse than in the finance domain

[10] As mentioned in footnote 5, we have also estimated subjects' risk preferences under the RDU model using the 'power' probability weighting function proposed by Quiggin (58). The RDU estimations qualify the findings obtained for the EUT and allow us to 'structurally decompose' the part of the risk premium due to aversion to outcome variability (the 'r' parameter) and the part due to probability weighting (the 'y' coefficient) (12). First, the estimates of the 'y' coefficient (y=1.6338, with robust standard errors of 0.1249, p=0.000) suggest that for subjects in our sample, the RDU model seems to be favored in comparison to EUT (under which y should not be significantly different from 1). Second, under RDU subjects appear generally characterized by a more concave curvature of the utility function than under EUT (r=0.3695, with standard errors of 0.0868, p=0.000). Third, and in line with the risk preferences patterns described above for EUT, the estimates of the health domain effect on the 'r' coefficient indicate that patients in our sample are characterized by significantly more concave utility functions in health than in finance (H=0.1983, with standard errors of 0.0912, p=0.030). Finally, the estimates of the health domain effect on the 'y' coefficient of the 'power' function show that the probability weighting function is not statistically different across the two domains (0.1637, with standard errors of 0.1417, p=0.248).

(*Models 4-5*, Table 5). As shown by the lack of statistical significance of the interaction terms (except for a significant effect of round 3, n=56), the cross-domain difference in risk preferences does not vary according to the degree of exogenous financial risk, while the effects of the rounds of data collection are still significant (*Model 5*, Table 5).[11]

Controlling for a range of socio-demographic variables shows no statistically significant association of the overall estimated risk aversion with observable characteristics except for the variable *finconstr* that is statistically significantly associated with more risk seeking responses (*Model 6*, Table 5).[12]. The introduction of interaction terms between the rounds and the financial constraint status shows that the subjects who, in round 4, felt more uncomfortable with their financial situations reported more risk-seeking responses (*Model 7*, Table 5).[13]

Discussion

The result that respondents in our pool were relatively more risk averse in health than financial matters is in line with Wakker and Deneffe (3), who found more risk aversion in

[11] The same pattern of risk preferences at different rounds of data collection emerges when looking at the raw responses of subjects in terms of 'switching points' between lottery A to lottery B in the two sets of questions. In the MPL tests, in fact, the later the respondents switch to lottery B, the more risk averse they are. Notice that, in contrast with what is often documented in lab experiments, in our sample virtually no subject switched more than once across lotteries in each block of questions. This was mainly due to the fact that, in our experiment, research assistants sat next to the patients, and were trained to provide clear instructions and guidance to respondents. The raw responses of subjects interviewed in later rounds of data collection exhibited less risk aversion in both the finance and the health domains. In finance, the average switching point was 5.7011, 5.1176, 4.6786, and 4.3675 in rounds 1, 2, 3 and 4, respectively. In health, the average switching point was 6.4934, 4.9687, 4.5647, and 4.2454 in rounds 1, 2, 3 and 4, respectively. The correlation between the switching points across domains is positive and significant (p=0.000) for the whole sample (0.5136) as well as for each round of data collection (0.2905, 0.2287, 0.6529, and 0.7562 in rounds 1, 2, 3, and 4, respectively). Moreover, subjects self-reported higher degree of financial distress in later rounds of data collection: the average value of *finconstr* was 2.1428 in round 1, 2.3333 in round 2, 2.4347 in round 3, and 2.8271 in round 4.

[12] We have also estimated many alternative models and found, for instance, that in our sample the estimated EUT CRRA coefficient of risk aversion is not statistically significantly associated to a range of health behaviors such as smoking (p=0.182), drinking (p=0.159), physical exercise (p=0.983), having chronic conditions (0.149), and of psychological attitudes such as 'illusion of control' (p=0.285) or 'better-than-average' overconfidence (p=0.426).

[13] When interpreting these results, it is worthwhile to recall that the *finconstr* variable captures self-reported feelings of being constrained by the financial situation.

health in their between-subjects study. Our findings are also qualitatively in line with those of Blais and Weber (24) using the DOSPERT test, and with the Dohmen et al. (29) finding that SOEP respondents reported higher willingness to take risk in finance than in health.

Our findings are the opposite of what found by Prosser and Wittenberg (4): patients in their sample were risk neutral in health, while significantly risk averse in finance. Besides obvious differences in the subject pools, as well as in the methods used to measure risk preferences, the different patterns in cross-domain risk attitudes could be due to the fact that our respondents were simultaneously exposed to both financial and health distress.

Both raw responses and estimated risk aversion parameters show that respondents were more likely to seek risk if they were interviewed at later rounds of the study, when the recession worsened. This is generally in line with observations of the spread of risky behaviors among the Greeks during the economic recession (61,62).

Our findings are the opposite of what is documented as *counter-cyclical* risk aversion (i.e., people taking more risks when the economy is growing): Cohn, Engelmann, Fehr, and Marechal (63) found that Swiss financial professionals primed to a fictive chart of a booming stock market took higher risk in an incentive-compatible assessment of risk preferences than subjects primed to a busting market. Guiso, Sapienza, and Zingales (64) found similar results in hypothetical risk preference questions to customers of an Italian bank before and after the 2008 crisis.

Conclusions

Our goal was to elicit risk preferences in the financial and health domains using the same MPL paired-lottery method. We considered a sample of Greek patients in the middle of an economic recession and we found evidence that risk preferences may differ between the health and the financial domains even when they are measured using the same MPL method. When exposed to both financial and health distress, our sample of Greek patients tends to be more risk averse in health than in finance.

From a methodological perspective, conducting the same MPL test with subjects in *naturally occurring* field situations of both financial and health distress can contribute to bring closer together two streams of methods which have proceeded along distinct paths: on the one hand, incentive-compatible (IC) experimental measures for risk preferences with real monetary stakes, and on the other, hypothetical tests in the health domain. Despite its key importance for both research and policy purposes, there is still no current 'gold standard' to measure risk preferences in health, nor to compare them across different domains (4,26,27,65). Our review section is an attempt to bring closer together the different approaches and methods in this area.

The study has several limitations. In Online Appendix B, we extensively discuss some of the limitations of our design which include: sample selection due to recruiting patients in out-patient clinics; key assumptions on the EUT, the CRRA, the specific levels of the stakes, and the implicit conversion rate between one euro and one day in full health; possible order effects of asking subjects risk preferences questions in finance first; and unknown interactions between the *foreground* and *background* risks as perceived by the subjects.

Furthermore, due to the constraints related to approaching patients in hospital clinics, we asked respondents to make hypothetical choices. There is evidence that responses to

hypothetical questions exhibit less risk aversion compared to IC methods (2,37–40,60,66–68). A different experimental design (e.g. Blackburn, Harrison, and Rutström (66)) would permit assessment of the extent of the above hypothetical bias, and recalibration of responses for this. More generally, the design and implementation of IC measures of risk preferences in the health domain is a challenging but promising area, and we envisage further research in more controlled experimental settings. An interesting question is related to whether the 'disciplinary power' of IC tests is sufficiently strong to align responses on risk preferences across the two domains.

Notwithstanding these limitations our findings have significant implications. Our results imply caution in using measures for risk aversion elicited in financial contexts to infer risk preferences in health domains. More studies on the validity of existing methodologies in assessing risk preferences across domains should be welcome. Another research area that warrants further investigation is whether within-subject risk preferences are stable across different health-related contexts, such as preventive care or medical treatments, for instance.

The implications of our findings are not only of academic interest. The development of different metrics to measure risk preferences in health and to compare them with their monetary analogues can prove useful to enrich the validity of the cost-effectiveness analyses and decision-making models in which they are incorporated (69). More generally, accessing evidence on how risks are traded off across wealth and health helps in assessing the likelihood that people enroll in voluntary health insurance schemes, and in estimating the willingness to pay for them. This is a key concern as private insurance schemes will become increasingly important to increase the benefits of publicly-funded universal healthcare coverage. Our results also provide useful insights for the design of policy interventions that affect decisions and behaviors spanning simultaneously across the financial and health

domain, such as the design of financial incentive schemes to tackle health risky behaviors (70–73).

Finally, a deeper understanding of risk preferences in health allows a better exploration of how patients make healthcare decisions, such as adhering to medical decisions and seeking a second medical opinion (74,75). In such decisions a key role is typically played by the doctors whose risk preferences may be similar to, or different from, the patients', in a similar way to what previously documented in other contexts (76). The exploration of this distinct question is left for further work (77).

References

1. Harrison GW, List JA. Field experiments. J Econ Lit. 2004;1009–55.

2. Holt CA, Laury SK. Risk aversion and incentive effects. Am Econ Rev. 2002;92(5):1644–55.

3. Wakker P, Deneffe D. Eliciting von Neumann-Morgenstern utilities when probabilities are distorted or unknown. Manag Sci. 1996;42(8):1131–50.

4. Prosser LA, Wittenberg E. Do risk attitudes differ across domains and respondent types? Med Decis Making. 2007;27(3):281–7.

5. Binswanger HP. Attitudes toward risk: Experimental measurement in rural India. Am J Agric Econ. 1980;62(3):395–407.

6. Binswanger HP. Attitudes toward risk: Theoretical implications of an experiment in rural India. Econ J. 1981;867–90.

7. Gneezy U, Potters J. An experiment on risk taking and evaluation periods. Q J Econ. 1997;631–45.

8. Kahneman D. Foreword. In Schafir E (ed): The behavioral foundations of public policy. Princeton University Press; 2013.

9. Andersen S, Harrison GW, Lau MI, Elisabet Rutström E. Lost in state space: Are preferences stable? Int Econ Rev. 2008;49(3):1091–112.

10. Viscusi WK, Evans WN. Utility functions that depend on health status: estimates and economic implications. Am Econ Rev. 1990;353–74.

11. Evans WN, Viscusi WK. Estimation of state-dependent utility functions using survey data. Rev Econ Stat. 1991;94–104.

12. Harrison GW, Lau MI. Risk attitudes, sample selection and attrition in a longitudinal field experiment. 2014 [cited 2015 Apr 7]; Available from: http://cear.dev.gsu.edu/files/2014/02/WP_2014_04_Risk-Attitudes-Sample-Selection-and-Attrition-in-a-Longitudinal-Field-Experiment.pdf

13. Harrison GW, Johnson E, McInnes MM, Rutström EE. Temporal stability of estimates of risk aversion. Appl Financ Econ Lett. 2005;1(1):31–5.

14. Zeisberger S, Vrecko D, Langer T. Measuring the time stability of prospect theory preferences. Theory Decis. 2012;72(3):359–86.

15. Meier S, Sprenger C. Present-biased preferences and credit card borrowing. Am Econ J Appl Econ. 2010;193–210.

16. Cohen A, Einav L. Estimating Risk Preferences from Deductible Choice. Am Econ Rev. 2007;97(3):745–88.

17. Sydnor J. (Over) insuring modest risks. Am Econ J Appl Econ. 2010;2(4):177–99.

18. Barseghyan L, Molinari F, O'Donoghue T, Teitelbaum JC. The nature of risk preferences: Evidence from insurance choices. Am Econ Rev. 2013;103(6):2499–529.

19. Barseghyan L, Prince J, Teitelbaum JC. Are risk preferences stable across contexts? Evidence from insurance data. Am Econ Rev. 2011;101(2):591–631.

20. Einav L, Finkelstein A, Pascu I, Cullen M. How General Are Risk Preferences? Choices under Uncertainty in Different Domains. Am Econ Rev. 2012;102(6):2606–38.

21. Viscusi WK, Hersch J. Cigarette smokers as job risk takers. Rev Econ Stat. 2001;83(2):269–80.

22. Hakes JK, Viscusi WK. Automobile seatbelt usage and the value of statistical life. South Econ J. 2007;659–76.

23. Viscusi W, Hakes JK. Risk beliefs and smoking behavior. Econ Inq. 2008;46(1):45–59.

24. Blais A-R, Weber EU. A domain-specific risk-taking (DOSPERT) scale for adult populations. Judgm Decis Mak. 2006;1(1).

25. Nicholson N, Soane E, Fenton-O'Creevy M, Willman P. Personality and domain-specific risk taking. J Risk Res. 2005;8(2):157–76.

26. Butler S, Rosman A, Seleski S, Garcia M, Lee S, Barnes J, et al. A medical risk attitude subscale for DOSPERT. 2012; Available from: https://indigo.uic.edu/handle/10027/8767

27. Harrison JD, Young JM, Butow P, Salkeld G, Solomon MJ. Is it worth the risk? A systematic review of instruments that measure risk propensity for use in the health setting. Soc Sci Med. 2005;60(6):1385–96.

28. Hanoch Y, Johnson JG, Wilke A. Domain specificity in experimental measures and participant recruitment an application to risk-taking behavior. Psychol Sci. 2006;17(4):300–4.

29. Dohmen T, Falk A, Huffman D, Sunde U, Schupp J, Wagner GG. Individual risk attitudes: Measurement, determinants, and behavioral consequences. J Eur Econ Assoc. 2011;9(3):522–50.

30. Szrek H, Chao L-W, Ramlagan S, Peltzer K. Predicting (un) healthy behavior: A comparison of risk-taking propensity measures. Judgm Decis Mak. 2012;7(6):716.

31. Wolbert E, Riedl A. Measuring Time and Risk Preferences: Realiability, Stability, Domain Specificity. CESifo Work Pap Ser. 2013;

32. Attema AE, Brouwer WB, l'Haridon O. Prospect theory in the health domain: A quantitative assessment. J Health Econ. 2013;32(6):1057–65.

33. Warshawsky-Livne L, A'wad F, Shkolnik-Inbar J, Pliskin JS. A note on the relationship between health-risk attitude and monetary-risk attitude. Health Risk Soc. 2012 Jun 1;14(4):377–83.

34. Dave D, Saffer H. Alcohol demand and risk preference. J Econ Psychol. 2008;29(6):810–31.

35. Anderson LR, Mellor JM. Are risk preferences stable? Comparing an experimental measure with a validated survey-based measure. J Risk Uncertain. 2009;39(2):137–60.

36. Bleichrodt H, Pinto JL. A parameter-free elicitation of the probability weighting function in medical decision analysis. Manag Sci. 2000;46(11):1485–96.

37. Holt CA, Laury SK. Risk aversion and incentive effects: New data without order effects. Am Econ Rev. 2005;902–4.

38. Harrison GW. Experimental evidence on alternative environmental valuation methods. Environ Resour Econ. 2006;34(1):125–62.

39. Harrison GW. Hypothetical bias over uncertain outcomes. In List J (ed): Using Experimental Methods in Environmental and Resource Economics. Northampton MA: Elgar; 2006.

40. Harrison GW, Rutström EE. Experimental evidence on the existence of hypothetical bias in value elicitation methods. Handb Exp Econ Results. 2008;1:752–67.

41. Anderson LR, Mellor JM. Predicting health behaviors with an experimental measure of risk preference. J Health Econ. 2008 Sep;27(5):1260–74.

42. Harrison GW, Lau MI, Rutström EE. Individual discount rates and smoking: Evidence from a field experiment in Denmark. J Health Econ. 2010;29(5):708–17.

43. Galizzi MM, Miraldo M. Are you what you eat? Experimental evidence on risk preferences and health habits. Imperial College Business School Discussion Series. 2012. Available from: http://wwwf.imperial.ac.uk/

44. Charness G, Gneezy U, Kuhn MA. Experimental methods: Extra-laboratory experiments-extending the reach of experimental economics. J Econ Behav Organ. 2013;91:93–100.

45. Andersen S, Harrison GW, Lau MI, Rutström EE. Elicitation using multiple price list formats. Exp Econ. 2006;9(4):383–405.

46. Harrison GW, Rutstrom EE. Risk aversion in the laboratory. In Isaac RM and Norton DA (eds): Risk Aversion in Experiments. Bingley UK: Emerald, Research in Experimental Economics; 2008.

47. Andersen S, Harrison GW, Lau MI, Rutström EE. Eliciting Risk and Time Preferences. Econometrica. 2008;76(3):583–618.

48. Andersen S, Harrison GW, Lau MI, Rutström EE. Behavioral econometrics for psychologists. J Econ Psychol. 2010;31(4):553–76.

49. Harrison GW, List JA, Towe C. Naturally occurring preferences and exogenous laboratory experiments: A case study of risk aversion. Econometrica. 2007;75(2):433–58.

50. Riddel M. Comparing risk preferences over financial and environmental lotteries. J Risk Uncertain. 2012;45(2):135–57.

51. Hellenic Statistical Authority. Statistical Themes: Employment-Unemployment. 2015. Available from: http://www.statistics.gr/portal/page/portal/ESYE/PAGE-themes?p_param=A0101

52. Petmesidou M, Pavolini E, Guillén AM. South European Healthcare Systems under Harsh Austerity: A Progress–Regression Mix? South Eur Soc Polit. 2014;19(3):331–52.

53. EuroQol Group. EuroQol--a new facility for the measurement of health-related quality of life. Health Policy. 1990;16(3):199–208.

54. Dolan P. Modeling valuations for EuroQol health states. Med Care. 1997;35(11):1095–108.

55. Acquardo C, Conway K, Giroudet C, Mear I. Linguistic validation manual for patient-reported outcomes (PRO) instruments. Lyon: Mari Research Institute; 2004.

56. Guillemin F, Bombardier C, Beaton D. Cross-cultural adaptation of health-related quality of life measures: literature review and proposed guidelines. J Clin Epidemiol. 1993;46(12):1417–32.

57. Andersen S, Harrison GW, Lau MI, Rutström EE. Behavioral econometrics for psychologists. J Econ Psychol. 2010;31(4):553–76.

58. Quiggin J. A theory of anticipated utility. J Econ Behav Organ. 1982;3(4):323–43.

59. Andersen S, Harrison GW, Hole AR, Lau M, Rutström EE. Non-linear mixed logit. Theory Decis. 2012;73(1):77–96.

60. Battalio RC, Kagel JH, Jiranyakul K. Testing between alternative models of choice under uncertainty: Some initial results. J Risk Uncertain. 1990;3(1):25–50.

61. Kentikelenis A, Karanikolos M, Papanicolas I, Basu S, McKee M, Stuckler D. Health effects of financial crisis: omens of a Greek tragedy. The Lancet. 2011;378(9801):1457–8.

62. Paraskevis D, Nikolopoulos G, Fotiou A, Tsiara C, Paraskeva D, Sypsa V, et al. Economic recession and emergence of an HIV-1 outbreak among drug injectors in Athens metropolitan area: a longitudinal study. PLoS One. 2013;8(11):e78941.

63. Cohn A, Engelmann J, Fehr E, Maréchal MA. Evidence for countercyclical risk aversion: an experiment with financial professionals. Am Econ Rev. 2015;105(2):860–85.

64. Guiso L, Sapienza P, Zingales L. Time varying risk aversion. National Bureau of Economic Research; 2013. Available from: http://www.nber.org/papers/w19284

65. Young A, Karpinski M, Treleaven D, Waterman A, Parikh CR, Thiessen-Philbrook H, et al. Differences in tolerance for health risk to the living donor among potential donors, recipients, and transplant professionals. Kidney Int. 2008;73(10):1159–66.

66. Blackburn M, Harrison GW, Rutström EE. Statistical bias functions and informative hypothetical surveys. Am J Agric Econ. 1994;76(5):1084–8.

67. Cummings RG, Elliott S, Harrison GW, Murphy J. Are hypothetical referenda incentive compatible? J Polit Econ. 1997;105(3):609–21.

68. Cummings RG, Harrison GW, Rutström EE. Homegrown values and hypothetical surveys: is the dichotomous choice approach incentive-compatible? Am Econ Rev. 1995;260–6.

69. Robinson A, Loomes G, Jones-Lee M. Visual analog scales, standard gambles, and relative risk aversion. Med Decis Making. 2001;21(1):17–27.

70. Volpp KG, John LK, Troxel AB, Norton L, Fassbender J, Loewenstein G. Financial incentive–based approaches for weight loss: a randomized trial. Jama. 2008;300(22):2631–7.

71. Volpp KG, Asch DA, Galvin R, Loewenstein G. Redesigning employee health incentives—lessons from behavioral economics. N Engl J Med. 2011;365(5):388–90.

72. Dolan P, Galizzi MM. Because I'm worth it: a lab-field experiment on the spillover effects of incentives in health. 2014. Available from: http://eprints.lse.ac.uk/60356/

73. Dolan P, Galizzi MM, Navarro-Martinez D. Paying people to eat or not to eat? Carryover effects of monetary incentives on eating behaviour. Soc Sci Med. 2015;In press.

74. Beyer AR, Fasolo B, de Graeff PA, Hillege HL. Risk attitudes and personality traits predict perceptions of benefits and risks for medicinal products: A field study of European edical assessors. Value Health. 2015;18(1):91–9.

75. Beyer AR, Banna e Costa C, de Graeff PA, Hillege HL, Fasolo B, Eichler HG. Values among multiple sclerosis patients: application of a decision-analytic tool to the elicitation of preferences for treatment outcomes. Med Decis Making. 2015;forthcoming.

76. Chakravarty S, Harrison GW, Haruvy EE, Rutström EE. Are you risk averse over other people's money? South Econ J. 2011;77(4):901–13.

77. Galizzi MM, Miraldo M, Stavropoulou C. Doctor-patient differences in risk preferences, and their links to decision-making: a field experiment. Imperial College Business School Discussion Series 2013 Available from: http://wwwf.imperial.ac.uk/business-school/

Table 1: Summary of key studies directly testing risk preferences across different domains.

Study	**Design**	**Rewards**	**Method**	**Domains (in order, if within-subjects design)**	**Sample and Setting**	**Same Risk Preferences Across Domains?**
Wakker & Deneffe (1996)	Between-subjects	Hypothetical	GTO; CE; PE	Health (Operations, Life Years); Money	Health: 15 PhD students in economics at University of Copenhagen; 15 undergraduate students in psychology at University of Leiden; 24 medical students at University of Leiden. Money: 14 researchers in finance at University of Mannheim; 28 undergraduate students at University of Limburg in Maastricht.	No. All three methods point to significantly more risk aversion in the health domain. Curvature of probability weighting function is more pronounced in health than monetary domain: more 'probabilistic risk aversion' in health domain.
Blais & Weber (2006)	Within-subjects	Hypothetical	DS (DOSPERT)	Ethics; Finance; Health/Safety; Social life; Recreation	172 English-speaking and 187 French-speaking respondents from general public in Canada.	No. Significantly more risk aversion in the health/safety domain. 87% of the total variation in risk taking occurs at the domain level.
Harrison et al. (2007)	Between-subjects	Real	MPL (HL)	Money; Graded Coins; Ungraded Coins	113 numismatists attending a coin show in Orlando.	Yes, for money and graded coins: no significant differences in risk aversion across these two domains. No, for ungraded coins: significantly more risk aversion for ungraded coins than for money or graded coins.

Prosser & Wittenberg (2007)	Within-subjects	Hypothetical	CE	Money; Health (Drugs, Relapse-free Days)	56 adult patients with multiple sclerosis attending outpatient clinics at two hospitals in Boston; 57 adult members of general public in San Diego.	No. Risk neutrality in the health domain; significantly more risk aversion in the monetary domain.
Barseghyan et al. (2011)	Within-subjects	Real	INS	Car insurance; home insurance	1,298 households, US.	No. Reject the null hypothesis that risk preferences are completely general across different domains. Only 23% of the sample exhibits insurance choices that overlap in their implied risk aversion intervals. Households are more risk averse in their home insurance than in their car insurance choices.
Dohmen et al. (2011)	Within-subjects	Hypothetical	SB-SA	General; Career Choice; Leisure and Recreation; Driving; Health; Financial Decisions	400 subjects of a representative sample of Germany.	Somewhat: about 60% of the variation in the risk measures across domains can be explained by one principal component, while the remaining 40% of the variation is due to differences in risk preferences across domains.

Einav et al. (2012)	Within-subjects	Real	INS	Asset allocations of 401(k) contributions; insurance for: short-term disability; long-term disability; healthcare expenditure; drug expenditure; dental expenditure	12,752 Alcoa employees, US.	Somewhat: reject the null hypothesis that there is no domain-general component of risk preferences, but substantial domain specificity of risk preferences. When estimations account for domain-specific parameters only 5.3% of the sample exhibits insurance choices that overlap in their implied risk aversion intervals.
Riddel (2012)	Within-subjects	Hypothetical	MPL (HL)	Money; Environment (Clean Up of Oil Spills, Square Miles Cleaned)	40 members of Porsche Club of America, Las Vegas; 85 climbers, Red Rock Canyon, near Las Vegas; 77 undergraduate and graduate students at University of Nevada, Las Vegas.	No. Curvature of the probability weighting function is more pronounced in environmental than financial domain: more 'probabilistic risk aversion' in the environmental domain.
Warshawsky-Livne et al. (2012)	Within-subjects	Hypothetical	CE	Health (Treatments, Life Years); Money	593 students at Ben-Gurion University, Israel.	Somewhat: some differences across domains, but risk preferences are broadly consistent across the health and the financial domains.
Wolbert & Riedl (2013)	Within-subjects	Hypothetical; real	SB-SA; MPL (HL)	Money; Leisure and Recreation; Driving; Health	144 students of Maastricht Business School.	No. Risk preferences elicited with IC MPL HL task are uncorrelated with SB-SA risk preferences in health, leisure and recreation, and driving.

Ioannou & Sadeh (2014)	Within-subjects (counter-balanced order)	Real	MPL (Binswanger)	Money; Environment (Bee-Friendly Plants)	81 students of the University of Southampton	No. Significantly more risk aversion in the environmental than in the monetary domain.

Note. INS: Insurance method; *SB-SA*: Scale-Based Self-Assessed method; *DS*: Domain Specific questionnaire method; *DOSPERT*: DOSPERT questionnaire method; *CE*: Certain Equivalent method; *PE*: Probability Equivalent method; *GTO*: Gamble Trade-Off method; *MPL*: Multiple Price List method; *HL*: Holt & Laury method.

Table 2: Payoff matrix in the HL MPL experimental test in the financial domain

Pair	*Lottery A*				*Lottery B*				EV^A	EV^B	EV^A-EV^B	*CRRA range if subject switches from lottery A to lottery B at that pair*
	P_1	$€_1$	P_2	$€_2$	P_1	$€_1$	P_2	$€_2$	€	€	€	
1	10%	**200**	90%	**160**	10%	**385**	90%	**10**	164	47.5	116.55	-∞; -1.71
2	20%	**200**	80%	**160**	20%	**385**	80%	**10**	168	85.0	83.0	-1.71; -0.95
3	30%	**200**	70%	**160**	30%	**385**	70%	**10**	172	122.5	49.5	-0.95; -0.49
4	40%	**200**	60%	**160**	40%	**385**	60%	**10**	176	160.0	16.0	-0.49; -0.15
5	50%	**200**	50%	**160**	50%	**385**	50%	**10**	180	197.5	-17.5	-0.15; 0.14
6	60%	**200**	40%	**160**	60%	**385**	40%	**10**	184	235.0	-51.0	0.14; 0.41
7	70%	**200**	30%	**160**	70%	**385**	30%	**10**	188	272.5	-84.5	0.41; 0.68
8	80%	**200**	20%	**160**	80%	**385**	20%	**10**	192	310.0	-118.0	0.68; 0.97
9	90%	**200**	10%	**160**	90%	**385**	10%	**10**	196	347.5	-151.5	0.97; 1.37

Notes.

HL: Holt & Laury method; MPL: Multiple Price List method; EV: Expected Value; CRRA: Constant Relative Risk Aversion.

The columns with the expected values for the lotteries and the implied CRRA ranges were not shown to the subjects in the field experiment. The implied CRRA ranges presume that, for every gamble before the switching pair, lottery A is preferred, and, for every gamble after the switching pair, lottery B is preferred.

The specific instructions for this item are reported in Question Q.1.11 in Online Appendix A.

Table 3: The set of choices between binary lotteries given to the patients in the health domain.

ID	*Treatment A*				*Treatment B*				*Your Choice*	
	P	*Days in full health*	*P*	*Days in full health*	*P*	*Days in full health*	*P*	*Days in full health*	*A*	*B*
1	10%	**200**	90%	**160**	10%	**385**	90%	**10**	A	B
2	20%	**200**	80%	**160**	20%	**385**	80%	**10**	A	B
3	30%	**200**	70%	**160**	30%	**385**	70%	**10**	A	B
4	40%	**200**	60%	**160**	40%	**385**	60%	**10**	A	B
5	50%	**200**	50%	**160**	50%	**385**	50%	**10**	A	B
6	60%	**200**	40%	**160**	60%	**385**	40%	**10**	A	B
7	70%	**200**	30%	**160**	70%	**385**	30%	**10**	A	B
8	80%	**200**	20%	**160**	80%	**385**	20%	**10**	A	B
9	90%	**200**	10%	**160**	90%	**385**	10%	**10**	A	B

Note.
The specific instructions for this item are reported in Question Q.1.13 in Online Appendix A.

Table 4: Description of variables

Variable	Variable description	Mean	Std. Dev.	Min	Max
Age	Age in years	39.62	12.91	18	74
Female	Female (0=no, 1=yes)	0.49	0.50	0	1
Educ	Level of education	5.59	1.63	1	8
Income	Income level (1= less than €600 …5=more than €2,000)	2.58	1.06	1	5
Finconstr	Feeling constrained by financial state (1=living comfortably…4=find it very difficult)	2.46	0.75	1	4
Married	Married (0=no, 1=yes)	0.34	0.47	0	1
Children	Having children (0=no, 1=yes)	0.34	0.47	0	1
SAH	Self-assessed health (1= very good…5=very bad)	2.40	1.16	1	5
Round2, Round3, Round4	Variables for rounds 2, 3, and 4 of data collection			0	1
H	Variable for responses in health domain			0	1
	Extra variables used in robustness estimations (results briefly reported in note 16)				
(Chronic)	Chronic condition (0=no, 1=yes)	0.17	0.38	0	1
(Smoker)	Smoking daily or occassionally (0=no, 1=yes)	0.37	0.48	0	1
(Alcohol)	More than one alcohol unit per week (0=no, 1=yes)	0.65	0.48	0	1
(Exercise)	Number of hours of vigorous exercise per week	2.76	4.38	0	50
(BTA)	Better than average index	59.44	33.43	-72	100
(IoC)	Illusion of control index	61.29	12.80	18.75	100

Table 5: Structural estimates of CRRA parameters

R	model 1	model 2	model 3	model 4	model 5	model 6	model 7
H		0.1333**		0.1461**	0.284**		
		(0.0572)		(0.0621)	(0.117)		
Round2			-0.38***	-0.38***	-0.268**		-0.6308*
			(0.106)	(0.106)	(0.132)		(0.3638)
Round3			-0.57***	-0.58***	-0.425***		-0.0252
			(0.131)	(0.132)	(0.158)		(0.3856)
Round4			-0.59***	-0.60***	-0.499***		0.1895
			(0.115)	(0.115)	(0.143)		(0.3542)
H*R2					-0.227		
					(0.188)		
H*R3					-0.294**		
					(0.149)		
H*R4					-0.203		
					(0.151)		
Age						0.0033	
						(0.0055)	
Female						-0.0416	
						(0.0990)	
Educ						-0.0337	
						(0.0362)	
Married						0.1689	
						(0.1365)	
Children						-0.1461	
						(0.1522)	
SAH						-0.0140	
						(0.0599)	
Income						-0.0846	
						(0.0514)	
Finconstr						-0.163**	0.1193
						(0.0684)	(0.0919)
FinC*R2							0.1372
							(0.1511)
FinC*R3							-0.2583
							(0.1609)
FinC*R4							-0.2896**
							(0.1419)
Constant	0.0643	-0.0029	0.433***	0.361***	0.293***	0.776**	0.138
	(0.0467)	(0.0570)	(0.0808)	(0.0867)	(0.101)	(0.366)	(0.217)
Noise (μ)							
	0.295***	0.294***	0.283***	0.283***	0.283***	0.263***	0.255***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Obs.	5400	5400	5400	5400	5400	4122	4176

Notes.
Standard errors in parentheses: * p<.10, ** p<.05, *** p<.01.

H: health domain responses.
SAH: self-assessed health.
Finconstr: self-reported feeling of being constrained by financial situation.
*H*R2, H*R3, H*R4*: interaction terms between *H* and rounds 2, 3, and 4 respectively.
*FinC*R2, FinC*R3, FinC*R4*: interaction terms between *Finconstr* and rounds 2, 3, and 4 respectively.

Online Appendix A – Questionnaires both in English and Greek

Dear Madam/Sir

We would like to invite you to participate in a study asking your personal views on health and life in general. The survey consists of two parts. The first part takes place while waiting to see your doctor and takes **15 minutes** to complete. The second part will be completed after you see your doctor and takes **5 minutes** to answer.

The study is conducted strictly for academic purposes and neither the Hospital nor the doctor have any involvement in it. All answers will remain **completely anonymous and confidential.**

We appreciate your time and effort.

Kind regards,
The Research Team

Q1.01 How is your health in general? Would you say it is… (please circle the appropriate box)

Very Good	Good	Fair	Bad	Very bad	(NA)

Q1.02 Are you hampered in your daily activities in any way by any longstanding illness, or disability, infirmity or mental health problem? If yes, is that a lot or to some extent? (please circle the appropriate box)

Yes, a lot	Yes, to some extent	No	(NA)

Q1.03 Do you smoke or did you ever smoke? (please circle the appropriate box)

Smoke daily	Smoke occasionally	Do not smoke, used to smoke daily	Do not smoke, used to smoke occasionally	Never smoked	(NA)

Q1.04 If you smoke, how many cigarettes do you smoke on average a day?
(please indicate number of cigarettes in the box) ☐

Q1.05 How many units of alcohol do you drink a week? (a unit of alcohol corresponds to a small glass of wine, a medium glass of beer or a shot of spirits). ☐

Q1.06 How many hours a week do you usually spend in moderate physical activities? Consider as a physical activity any moderate physical activity lasting for at least 40 consecutive minutes (such as walking, cleaning, gardening).

Q1.07 How many hours a week do you usually spend in vigorous physical activities? Consider as a physical activity any vigorous physical activity lasting for at least 40 consecutive minutes (such as cycling, jogging, gym, step aerobics, swimming, football etc). ☐

Q1.08 Please indicate whether each of the following statements applies or not to your behaviour: (please tick the appropriate column)

	Totally agree	Agree	It depends	Do not agree	Completely disagree
a. I never make up a decision I will regret in the future					
b. I can never identify which choice is better for me					
c. Life is like a lottery. Being happy is just a matter of chance					
d. My forecasts are always correct					

Q1.09 Provide a percentage to answer each of the following questions:

	Percentage (%)
a. What percentage of people of your age have a better job than you, because they have better skills than you	
b. What percentage of your neighbours will better succeed in life when compared to you because of their better qualities with respect to yours	
c. What percentage of people of your age will have higher cash payments than yours for their better performance in their jobs?	

Q1.10 How I see myself (tick the appropriate column):

	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
a. I am a daring person who generally takes risks.					
b. I take initiative, pursuing opportunities even when they involve some risk.					
c. I am a cautious person who generally avoids risks.					

d. I always play it safe even if it means occasionally losing out on a good opportunity.

Q1.11. Please, for each of the following rows, each containing a pair of alternative hypothetical lotteries, choose the lottery that you prefer between option A and option B. Lottery A will give you either 200 € or 160 € with some probabilities which change gradually in each row. Lottery B will give you either 385 € or 10 € again with some probabilities that change gradually in each row.

For instance, in row 1, lottery A gives you 200 € with probability 10% and 160 € with probability 90%, while lottery B gives you 385 € with probability 10% and 10 € with probability 90%. Please, make your choice for each row/pair, by putting a circle around either A or B in the last columns. Remember there are no right or wrong answers. It's your personal choices we are interested in.

ID	*Lottery A*				*Lottery B*				*Your Choice*	
	P	*€*	*P*	*€*	*p*	*€*	*P*	*€*	*A*	*B*
1	10%	**200**	90%	**160**	10%	**385**	90%	**10**	A	B
2	20%	**200**	80%	**160**	20%	**385**	80%	**10**	A	B
3	30%	**200**	70%	**160**	30%	**385**	70%	**10**	A	B
4	40%	**200**	60%	**160**	40%	**385**	60%	**10**	A	B
5	50%	**200**	50%	**160**	50%	**385**	50%	**10**	A	B
6	60%	**200**	40%	**160**	60%	**385**	40%	**10**	A	B
7	70%	**200**	30%	**160**	70%	**385**	30%	**10**	A	B
8	80%	**200**	20%	**160**	80%	**385**	20%	**10**	A	B
9	90%	**200**	10%	**160**	90%	**385**	10%	**10**	A	B

Q1.12 Please, for each of the following rows, each containing a pair of alternative hypothetical options, choose the one that you prefer between option A and option B. Both options give you certain monetary payments. Payments in option A will be given at a later date, and payments in option B are given today. Please, make your choice for each row/pair, by putting a circle around either A or B in the last columns. Remember there are no right or wrong answers. It's your personal choices we are interested in.

ID	Option A	Option B	Your choice	
1	Receive **360** € in 1 week	Receive **60** € today	A	B
2	Receive **360** € in 1 week	Receive **120** € today	A	B
3	Receive **360** € in 1 week	Receive **180** € today	A	B
4	Receive **360** € in 1 week	Receive **240** € today	A	B
5	Receive **360** € in 1 week	Receive **300** € today	A	B
6	Receive **360** € in 1 month	Receive **60** € today	A	B
7	Receive **360** € in 1 month	Receive **120** € today	A	B
8	Receive **360** € in 1 month	Receive **180** € today	A	B
9	Receive **360** € in 1 month	Receive **240** € today	A	B
10	Receive **360** € in 1 month	Receive **300** € today	A	B
11	Receive **360** € in 3 months	Receive **60** € today	A	B
12	Receive **360** € in 3 months	Receive **120** € today	A	B
13	Receive **360** € in 3 months	Receive **180** € today	A	B
14	Receive **360** € in 3 months	Receive **240** € today	A	B
15	Receive **360** € in 3 months	Receive **300** € today	A	B
16	Receive **900** € in 1 week	Receive **150** € today	A	B
17	Receive **900** € in 1 week	Receive **300** € today	A	B
18	Receive **900** € in 1 week	Receive **450** € today	A	B
19	Receive **900** € in 1 week	Receive **600** € today	A	B
20	Receive **900** € in 1 week	Receive **750** € today	A	B
21	Receive **900** € in 1 month	Receive **150** € today	A	B
22	Receive **900** € in 1 month	Receive **300** € today	A	B
23	Receive **900** € in 1 month	Receive **450** € today	A	B
24	Receive **900** € in 1 month	Receive **600** € today	A	B
25	Receive **900** € in 1 month	Receive **750** € today	A	B

26	Receive **900** € in 3 months	Receive **150** € today	A	B
27	Receive **900** € in 3 months	Receive **300** € today	A	B
28	Receive **900** € in 3 months	Receive **450** € today	A	B
29	Receive **900** € in 3 months	Receive **600** € today	A	B
30	Receive **900** € in 3 months	Receive **750** € today	A	B

Q1.13. Please think of the following hypothetical scenarios. Suppose you need to choose between two medical treatments, A and B. Each treatment has two possible outcomes in terms of how long the effect will last. You know the probabilities with which this will happen. Irrespective of which treatment you choose, for as long as their effect lasts you are in full health. **When the effect of the treatment is gone, you go back to your initial state of health, i.e. the state you where before you started the treatment that is the same regardless of the treatment you chose, and no further treatment will be allowed.**

For instance, in row 1, treatment A will give you 200 days of full health with probability 10% or 160 days in full health with probability 90%. Treatment B gives you 385 days of full health with probability 10% or 10 days in full health with probability 90%.

Please, make your choice for each row/pair, by putting a circle around either A or B in the last columns. Remember there are no right or wrong answers. It's your personal choices we are interested in.

	Treatment A				*Treatment B*				*Your Choice*	
	P	*Days in full health*	*P*	*Days in full health*	*P*	*Days in full health*	*P*	*Days in full health*		
1	10%	**200** days	90%	**160 days**	10%	**385 days**	90%	**10 days**	A	B
2	20%	**200** days	80%	**160 days**	20%	**385 days**	80%	**10 days**	A	B
3	30%	**200** days	70%	**160 days**	30%	**385 days**	70%	**10 days**	A	B
4	40%	**200** days	60%	**160 days**	40%	**385 days**	60%	**10 days**	A	B
5	50%	**200** days	50%	**160 days**	50%	**385 days**	50%	**10 days**	A	B
6	60%	**200** days	40%	**160 days**	60%	**385 days**	40%	**10 days**	A	B
7	70%	**200** days	30%	**160 days**	70%	**385 days**	30%	**10 days**	A	B
8	80%	**200** days	20%	**160 days**	80%	**385 days**	20%	**10 days**	A	B
9	90%	**200** days	10%	**160 days**	90%	**385 days**	10%	**10 days**	A	B

Q1.14 Think of the following hypothetical scenarios. Suppose you currently suffer from a specific medical condition that has an impact on your health. You can choose between two medical treatments, A and B. Treatment A is available at a later date whilst treatment B is available today. When you start the treatment regardless of the starting date, its effects will last for the days stated in each option. For example, in the first choice, treatment A will give you full health for 360 days starting in one week's time, and treatment B will give you 60 days of full health starting from today. **At the end of the treatment you go back to your initial state, i.e. the state you were before you started the treatment, and no further treatment will be allowed.**

There are no other differences between the two treatments. Please, for each of the following rows, choose the option that you prefer between treatment A and treatment B. Please, make your choice for each row/pair, by putting a circle around either A or B in the last columns. Remember there are no right or wrong answers. It's your personal choices we are interested in.

ID	**Treatment A**	**Treatment B**	Your choice	
1	**360** days in full health starting in 1 week	**60** days in full health starting today	A	B
2	**360** days in full health starting in 1 week	**120** days in full health starting today	A	B
3	**360** days in full health starting in 1 week	**180** days in full health starting today	A	B
4	**360** days in full health starting in 1 week	**240** days in full health starting today	A	B
5	**360** days in full health starting in 1 week	**300** days in full health starting today	A	B
6	**360** days in full health starting in 1 month	**60** days in full health starting today	A	B
7	**360** days in full health starting in 1 month	**120** days in full health starting today	A	B
8	**360** days in full health starting in 1 month	**180** days in full health starting today	A	B
9	**360** days in full health starting in 1 month	**240** days in full health starting today	A	B
10	**360** days in full health starting in 1 month	**300** days in full health starting today	A	B
11	**360** days in full health starting in 3 months	**60** days in full health starting today	A	B
12	**360** days in full health starting in 3 months	**120** days in full health starting today	A	B
13	**360** days in full health starting in 3 months	**180** days in full health starting today	A	B
14	**360** days in full health starting in 3 months	**240** days in full health starting today	A	B
15	**360** days in full health starting in 3 months	**300** days in full health starting today	A	B
16	**900** days in full health starting in 1 week	**150** days in full health starting today	A	B

17	**900** days in full health starting in 1 week	**300** days in full health starting today	A	B
18	**900** days in full health starting in 1 week	**450** days in full health starting today	A	B
19	**900** days in full health starting in 1 week	**600** days in full health starting today	A	B
20	**900** days in full health starting in 1 week	**750** days in full health starting today	A	B
21	**900** days in full health starting in 1 month	**150** days in full health starting today	A	B
22	**900** days in full health starting in 1 month	**300** days in full health starting today	A	B
23	**900** days in full health starting in 1 month	**450** days in full starting health today	A	B
24	**900** days in full health starting in 1 month	**600** days in full health starting today	A	B
25	**900** days in full health starting in 1 month	**750** days in full health starting today	A	B
26	**900** days in full health starting in 3 months	**150** days in full health starting today	A	B
27	**900** days in full health starting in 3 months	**300** days in full health starting today	A	B
28	**900** days in full health starting in 3 months	**450** days in full health starting today	A	B
29	**900** days in full health starting in 3 months	**600** days in full health starting today	A	B
30	**900** days in full health starting in 3 months	**750** days in full health starting today	A	B

For statistical purposes we would like to ask you the following...

Q1.15 What is your date of birth?

Day		Month		Year	

Q1.16 What is you sex? (please circle as appropriate)

Male	Female

Q1.17 What is the highest level of education you have completed? (please circle)

a. Never been to school
b. Primary School
c. Junior High School
d. High School
e. Technical School
f. Technical College
g. University
h. Post-Graduate studies
i. (DA)

Q1.18 What is your marital status? (please circle as appropriate)

Single	Married	Divorced	Widow	(NA)

Q1.19 Do you have children? (please circle as appropriate)

Yes	No	(NA)

Q1.20 Are you currently living alone? (please circle as appropriate)

Yes	No	(NA)

Q1.21 Which of the following descriptions comes closest to how you feel about your household's income nowadays?

Living comfortably on present income	
Coping on present income	
Find it difficult on present income	
Finding it very difficult on present income	
(NA)	

Q1.22 Thinking of your monthly personal income, is this:

Less than 600 Euros	601- 1000 Euros	1001-1500 Euros	1501-2000 Euros	2000-3000 Euros	More than 3000

Αξιότιμη/ε Κυρία/Κύριε

Θα θέλαμε να σας προσκαλέσουμε να λάβετε μέρος σε μια έρευνα που μελετά τις προσωπικές απόψεις σας σχετικά με την υγεία και τον τρόπο ζωή σας γενικότερα. Η έρευνα αποτελείται από δύο μέρη. Το πρώτο μέρος πραγματοποιείται ενώ περιμένετε να δείτε το γιατρό σας και διαρκεί **15 λεπτά**. Το δεύτερο μέρος θα ολοκληρωθεί αφού δείτε το γιατρό σας και διαρκεί **5 λεπτά.**

Η έρευνα πραγματοποιείται αυστηρά για ακαδημαϊκούς λόγους και τόσο το νοσοκομείο όσο και ο γιατρός σας δεν έχει οποιαδήποτε συμμετοχή σε αυτή. Όλες οι απαντήσεις θα παραμείνουν **απολύτως ανώνυμες και εμπιστευτικές.**

Σας ευχαριστούμε για το χρόνο σας.

Με φιλικούς χαιρετισμούς,
Η Ερευνητική Ομάδα

EP. 1.01 Πώς είναι η υγεία σας γενικά; Θα λέγατε ότι είναι… (παρακαλώ κυκλώστε ανάλογα)

Πολύ καλή	Καλή	Ικανοποιητική	Άσχημη	Πολύ Άσχημη	(ΔΑ)

EP. 1.02 Στις καθημερινές σας δραστηριότητες συναντάτε εμπόδια εξαιτίας κάποιας μακρόχρονης ασθένειας ή αδυναμίας, αναπηρίας ή κάποιου προβλήματος ψυχικής υγείας; Εάν ναι, πολύ ή σε κάποιο βαθμό; (παρακαλώ κυκλώστε ανάλογα)

Ναι, πολύ	Ναι, σε κάποιο βαθμό	Όχι

EP. 1.03 Καπνίζετε ή καπνίζατε ποτέ; (παρακαλώ κυκλώστε ανάλογα)

Καπνίζω καθημερινά	Καπνίζω περιστασιακά	Δεν καπνίζω, αλλά κάπνιζα καθημερινά	Δεν καπνίζω, αλλά κάπνιζα περιστασιακά	Ποτέ δεν κάπνιζα

EP. 1.04 Εάν καπνίζετε, πόσα τσιγάρα καπνίζετε κατά μέσον όρο την ημέρα; (παρακαλώ σημειώστε τον αριθμό τσιγάρων)

EP. 1.05 Πόσες μονάδες αλκοόλ πίνετε την εβδομάδα; (μια μονάδα αλκοόλ αντιστοιχεί με ένα μικρό ποτήρι του κρασιού, ένα μεσαίο ποτήρι της μπύρας ή ένα ποτό όπως ουίσκυ, βότκα κτλ.).

EP. 1.06 Πόσες ώρες εβδομαδιαίως ξοδεύετε συνήθως σε μέτριες σωματικές δραστηριότητες; Ως σωματική δραστηριότητα θεωρούμε οποιαδήποτε μέτρια σωματική δραστηριότητα που διαρκεί για τουλάχιστον 40 συνεχόμενα λεπτά (όπως το περπάτημα, το καθάρισμα, την κηπουρική).

ΕΡ. 1.07 Πόσες ώρες εβδομαδιαίως ξοδεύετε συνήθως σε έντονες σωματικές δραστηριότητες; Ως σωματική δραστηριότητα θεωρούμε οποιαδήποτε έντονη σωματική δραστηριότητα που διαρκεί για τουλάχιστον 40 συνεχόμενα λεπτά (όπως το ποδήλατο, το γρήγορο περπάτημα, το γυμναστήριο, την αεροβική γυμναστική, την κολύμβηση, το ποδόσφαιρο κ.λπ.).

ΕΡ. 1.08 Παρακαλώ υποδείξτε εάν κάθε μια από τις ακόλουθες δηλώσεις ισχύει ή όχι όσον αφορά τη συμπεριφορά σας: (βάλτε Χ στην αντίστοιχη στήλη)

	Συμφωνώ απόλυτα	**Συμφωνώ**	Εξαρτάται	Διαφωνώ	Διαφωνώ απόλυτα
α. Δεν λαμβάνω ποτέ απόφαση για την οποία θα μετανοιώσω στο μέλλον					
β. Δεν μπορώ ποτέ να προσδιορίσω ποια επιλογή είναι καλύτερη για μένα					
γ. Η ζωή είναι σαν το λαχείο. Το να είσαι ευτυχής, είναι απλώς ζήτημα τύχης					
δ. Οι προβλέψεις μου είναι πάντα σωστές					

ΕΡ. 1.09 Δώστε ένα ποσοστό σε κάθε μια από τις ακόλουθες ερωτήσεις:

	Ποσοστό (%)
α. Ποιο ποσοστό ανθρώπων της ηλικίας σας έχει καλύτερη εργασία από σας, εξαιτίας καλύτερων εφοδίων;	
β. Ποιο ποσοστό των γειτόνων σας θα πετύχει καλύτερα στη ζωή όταν συγκριθεί μαζί σας λόγω καλύτερων ικανοτήτων τους;	
γ. Ποιο ποσοστό των ανθρώπων της ηλικίας σας έχει υψηλότερες αποδοχές για καλύτερη απόδοση στη δουλειά τους;	

ΕΡ. 1.10 Πώς βλέπω τον εαυτό μου: (βάλτε Χ στην αντίστοιχη στήλη)

	Συμφωνώ απόλυτα	**Συμφωνώ**	Δεν είμαι βέβαιος	Διαφωνώ	Διαφωνώ απόλυτα
α. Είμαι τολμηρό άτομο που διατρέχει γενικά κινδύνους.					

β.	Παίρνω πρωτοβουλία, αναζητώντας ευκαιρίες ακόμα και όταν ενέχουν κάποιο κίνδυνο.
γ.	Είμαι προσεκτικό άτομο που αποφεύγει γενικά τους κινδύνους.
δ.	Κάνω πράγματα πάντα με ασφάλεια ακόμα κι αν σημαίνει περιστασιακά ότι μπορεί να χάσω μια καλή ευκαιρία.

ΕΡ. 1.11. Παρακαλώ, για κάθε μια από τις ακόλουθες σειρές, κάθε μια από τις οποίες περιέχει ένα ζευγάρι υποθετικών εναλλακτικών λαχνών, επιλέξτε τον λαχνό που προτιμάτε μεταξύ του Α και του Β. Ο λαχνός Α σας δίνει είτε 200 € ή 160 € με κάποιες πιθανότητες που αλλάζουν σταδιακά σε κάθε σειρά. Ο λαχνός Β σας δίνει είτε 385 € είτε 10 € με κάποιες πιθανότητες που επίσης αλλάζουν σταδιακά σε κάθε σειρά. Για παράδειγμα, στη σειρά 1, ο λαχνός Α σας δίνει 200 € με πιθανότητα 10% και 160 € με πιθανότητα 90%, ενώ ο λαχνός Β σας δίνει 385 € με πιθανότητα 10% και 10 € με πιθανότητα 90%. Παρακαλώ, επιλέξτε για κάθε σειρά το λαχνό που προτιμάτε, κυκλώνοντας είτε το Α είτε το Β στην τελευταία στήλη. Θυμηθείτε ότι δεν υπάρχουν σωστές ή λανθασμένες απαντήσεις. Είναι οι προσωπικές επιλογές σας που μας ενδιαφέρουν.

α/α	*Λαχνός Α*				*Λαχνός Β*				*Η Επιλογή σας*	
	Π	*€*	*Π*	*€*	*Π*	*€*	*Π*	*€*	*Α*	*Β*
1	10%	**200**	90%	**160**	10%	**385**	90%	**10**	Α	Β
2	20%	**200**	80%	**160**	20%	**385**	80%	**10**	Α	Β
3	30%	**200**	70%	**160**	30%	**385**	70%	**10**	Α	Β
4	40%	**200**	60%	**160**	40%	**385**	60%	**10**	Α	Β
5	50%	**200**	50%	**160**	50%	**385**	50%	**10**	Α	Β
6	60%	**200**	40%	**160**	60%	**385**	40%	**10**	Α	Β
7	70%	**200**	30%	**160**	70%	**385**	30%	**10**	Α	Β
8	80%	**200**	20%	**160**	80%	**385**	20%	**10**	Α	Β
9	90%	**200**	10%	**160**	90%	**385**	10%	**10**	Α	Β

ΕΡ. 1.12 Παρακαλώ, για κάθε μια από τις ακόλουθες σειρές, κάθε μια από τις οποίες περιέχει ένα ζευγάρι υποθετικών εναλλακτικών επιλογών, επιλέξτε αυτή που προτιμάτε μεταξύ της επιλογής Α και της επιλογής Β. Και οι δύο επιλογές σας δίνουν ορισμένες χρηματικές πληρωμές. Οι πληρωμές στην επιλογή Α θα γίνουν στο μέλλον (όπως υποδεικνύεται σε κάθε σειρά) ενώ οι πληρωμές στην επιλογή Β γίνονται σήμερα. Παρακαλώ, για κάθε σειρά επιλέξτε ποια από τις επιλογές Α ή Β προτιμάτε, κυκλώνοντας είτε το Α είτε το Β στην τελευταία στήλη. Θυμηθείτε ότι δεν υπάρχουν σωστές ή λανθασμένες απαντήσεις. Είναι οι προσωπικές επιλογές σας που μας ενδιαφέρουν.

α/α	**Επιλογή Α**	**Επιλογή Β**	**Η Επιλογή**	
1	Θα λάβετε **360** € σε 1 βδομάδα	Λαμβάνετε **60** € σήμερα	Α	Β
2	Θα λάβετε **360** € σε 1 βδομάδα	Λαμβάνετε **120** € σήμερα	Α	Β
3	Θα λάβετε **360** € σε 1 βδομάδα	Λαμβάνετε **180** € σήμερα	Α	Β
4	Θα λάβετε **360** € σε 1 βδομάδα	Λαμβάνετε **240** € σήμερα	Α	Β
5	Θα λάβετε **360** € σε 1 βδομάδα	Λαμβάνετε **300** € σήμερα	Α	Β
6	Θα λάβετε **360** € σε 1 μήνα	Λαμβάνετε **60** € σήμερα	Α	Β
7	Θα λάβετε **360** € σε 1 μήνα	Λαμβάνετε **120** € σήμερα	Α	Β
8	Θα λάβετε **360** € σε 1 μήνα	Λαμβάνετε **180** € σήμερα	Α	Β
9	Θα λάβετε **360** € σε 1 μήνα	Λαμβάνετε **240** € σήμερα	Α	Β
10	Θα λάβετε **360** € σε 1 μήνα	Λαμβάνετε **300** € σήμερα	Α	Β
11	Θα λάβετε **360** € σε 3 μήνες	Λαμβάνετε **60** € σήμερα	Α	Β
12	Θα λάβετε **360** € σε 3 μήνες	Λαμβάνετε **120** € σήμερα	Α	Β
13	Θα λάβετε **360** € σε 3 μήνες	Λαμβάνετε **180** € σήμερα	Α	Β
14	Θα λάβετε **360** € σε 3 μήνες	Λαμβάνετε **240** € σήμερα	Α	Β
15	Θα λάβετε **360** € σε 3 μήνες	Λαμβάνετε **300** € σήμερα	Α	Β
16	Θα λάβετε **900** € σε 1 βδομάδα	Λαμβάνετε **150** € σήμερα	Α	Β
17	Θα λάβετε **900** € σε 1 βδομάδα	Λαμβάνετε **300** € σήμερα	Α	Β
18	Θα λάβετε **900** € σε 1 βδομάδα	Λαμβάνετε **450** € σήμερα	Α	Β
19	Θα λάβετε **900** € σε 1 βδομάδα	Λαμβάνετε **600** € σήμερα	Α	Β
20	Θα λάβετε **900** € σε 1 βδομάδα	Λαμβάνετε **750** € σήμερα	Α	Β
21	Θα λάβετε **900** € σε 1 μήνα	Λαμβάνετε **150** € σήμερα	Α	Β
22	Θα λάβετε **900** € σε 1 μήνα	Λαμβάνετε **300** € σήμερα	Α	Β
23	Θα λάβετε **900** € σε 1 μήνα	Λαμβάνετε **450** € σήμερα	Α	Β
24	Θα λάβετε **900** € σε 1 μήνα	Λαμβάνετε **600** € σήμερα	Α	Β
25	Θα λάβετε **900** € σε 1 μήνα	Λαμβάνετε **750** € σήμερα	Α	Β
26	Θα λάβετε **900** € σε 3 μήνες	Λαμβάνετε **150** € σήμερα	Α	Β
27	Θα λάβετε **900** € σε 3 μήνες	Λαμβάνετε **300** € σήμερα	Α	Β
28	Θα λάβετε **900** € σε 3 μήνες	Λαμβάνετε **450** € σήμερα	Α	Β
29	Θα λάβετε **900** € σε 3 μήνες	Λαμβάνετε **600** € σήμερα	Α	Β

30	Θα λάβετε **900** € σε 3 μήνες	Λαμβάνετε **750** € σήμερα	A	B

ΕΡ. 1.13. Παρακαλώ σκεφτείτε τα ακόλουθα υποθετικά σενάρια. Υποθέστε ότι πρέπει να επιλέξετε μεταξύ δύο θεραπειών, Α και Β, σχετικά με ένα πρόβλημα υγείας που σας απασχολεί. Η επίδραση της θεραπείας Α διαρκεί είτε 200 μέρες είτε 160 μέρες κάποιες πιθανότητες που αλλάζουν σταδιακά σε κάθε σειρά. Η επίδραση της θεραπείας Β διαρκεί είτε 385 μέρες είτε 10 μέρες με κάποιες πιθανότητες που επίσης αλλάζουν σταδιακά σε κάθε σειρά. Εσείς ξέρετε τις πιθανότητες με τις οποίες αυτό θα συμβεί. Ανεξάρτητα από το ποια θεραπεία επιλέξετε, για όσο χρονικό διάστημα διαρκεί η επίδρασή τους θα είστε σε πλήρη υγεία. **Αφότου περάσει η επίδραση, επιστρέφετε στην αρχική κατάσταση υγείας σας και στις δύο περιπτώσεις και δεν μπορείτε να λάβετε άλλη αγωγή.**

Για παράδειγμα, στη σειρά 1, η θεραπεία Α θα σας δώσει 200 μέρες πλήρους υγείας με πιθανότητα 10% ή 160 μέρες πλήρους υγείας με πιθανότητα 90%. Η θεραπεία Β σας δίνει 385 μέρες πλήρους υγείας με πιθανότητα 10% ή 10 μέρες σε πλήρη υγεία με πιθανότητα 90%.

Παρακαλώ, κάντε την επιλογή σας για κάθε σειρά, κυκλώνοντας είτε από το Α είτε το Β στην τελευταία στήλη. Θυμηθείτε ότι δεν υπάρχουν σωστές ή λανθασμένες απαντήσεις. Είναι οι προσωπικές επιλογές σας που μας ενδιαφέρουν.

	Θεραπεία Α				***Θεραπεία Β***				***Επιλογή***	
	Π	*Μήνες σε πλήρη υγεία*	*Π*	*Μήνες σε πλήρη υγεία*	*Π*	*Μήνες σε πλήρη υγεία*	*Π*	*Μήνες σε πλήρη υγεία*	*Α*	*Β*
1	10%	**200 μέρες**	90%	**160 μέρες**	10%	**385 μέρες**	90%	**10 μέρες**	Α	Β
2	20%	**200 μέρες**	80%	**160 μέρες**	20%	**385 μέρες**	80%	**10 μέρες**	Α	Β
3	30%	**200 μέρες**	70%	**160 μέρες**	30%	**385 μέρες**	70%	**10 μέρες**	Α	Β
4	40%	**200 μέρες**	60%	**160 μέρες**	40%	**385 μέρες**	60%	**10 μέρες**	Α	Β
5	50%	**200 μέρες**	50%	**160 μέρες**	50%	**385 μέρες**	50%	**10 μέρες**	Α	Β
6	60%	**200 μέρες**	40%	**160 μέρες**	60%	**385 μέρες**	40%	**10 μέρες**	Α	Β
7	70%	**200 μέρες**	30%	**160 μέρες**	70%	**385 μέρες**	30%	**10 μέρες**	Α	Β
8	80%	**200 μέρες**	20%	**160 μέρες**	80%	**385 μέρες**	20%	**10 μέρες**	Α	Β
9	90%	**200 μέρες**	10%	**160 μέρες**	90%	**385 μέρες**	10%	**10 μέρες**	Α	Β

ΕΡ. 1.14 Εξετάστε τα ακόλουθα υποθετικά σενάρια. Υποθέστε ότι έχετε ένα πρόβλημα υγείας που σας απασχολεί. Μπορείτε να επιλέξετε μεταξύ δύο θεραπειών, Α και Β. Η θεραπεία Α είναι διαθέσιμη σε κάποια στιγμή στο μέλλον ενώ η Β είναι διαθέσιμη σήμερα. Όταν αρχίσετε τη θεραπεία, ανεξάρτητα από το πότε αυτή θα ξεκινήσει, η επίδραση θα διαρκεί για όσο διάστημα αναφέρεται σε κάθε επιλογή. Για παράδειγμα, στην πρώτη επιλογή, η θεραπεία Α θα σας φέρει σε πλήρη υγεία για 360 μέρες ξεκινώντας σε μια εβδομάδα, ενώ η Β θα σας φέρει σε 60 μέρες σε πλήρη υγεία ξεκινώντας από σήμερα. **Στο τέλος της θεραπείας επιστρέφετε στην αρχική σας κατάσταση, δηλαδή την κατάστασή σας προτού αρχίσετε την θεραπεία, και δεν μπορείτε να λάβετε άλλη αγωγή.**

Δεν υπάρχει καμία άλλη διαφορά μεταξύ των δύο θεραπειών. Παρακαλώ, για κάθε μια από τις ακόλουθες σειρές, επιλέξτε αυτή που προτιμάτε μεταξύ της θεραπείας Α και της θεραπείας Β. Παρακαλώ, κάντε την επιλογή σας για κάθε σειρά, κυκλώνοντας είτε το Α είτε το Β στην τελευταία στήλη. Θυμηθείτε ότι δεν υπάρχουν σωστές ή λανθασμένες απαντήσεις. Είναι οι προσωπικές επιλογές σας που μας ενδιαφέρουν.

α/α	**Θεραπεία Α**	**Θεραπεία Β**	Επι-λογή	
1	**360** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 βδομάδα	**60** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	Α	Β
2	**360** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 βδομάδα	**120** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	Α	Β
3	**360** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 βδομάδα	**180** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	Α	Β
4	**360** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 βδομάδα	**240** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	Α	Β
5	**360** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 βδομάδα	**300** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	Α	Β
6	**360** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 μήνα	**60** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	Α	Β
7	**360** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε1 μήνα	**120** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	Α	Β
8	**360** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 μήνα	**180** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	Α	Β
9	**360** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 μήνα	**240** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	Α	Β
10	**360** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 μήνα	**300** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	Α	Β
11	**360** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 3 μήνες	**60** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	Α	Β
12	**360** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 3 μήνες	**120** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	Α	Β
13	**360** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 3 μήνες	**180** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	Α	Β
14	**360** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 3 μήνες	**240** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	Α	Β
15	**360** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 3 μήνες	**300** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	Α	Β
16	**900** μέρες σε πλήρη υγεία ξεκινώντας	**150** μέρες σε πλήρη υγεία	Α	Β

	τη θεραπεία σε 1 βδομάδα	ξεκινώντας τη θεραπεία σήμερα		
17	**900** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 βδομάδα	**300** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	A	B
18	**900** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 βδομάδα	**450** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	A	B
19	**900** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 βδομάδα	**600** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	A	B
20	**900** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 βδομάδα	**750** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	A	B
21	**900** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 μήνα	**150** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	A	B
22	**900** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 μήνα	**300** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	A	B
23	**900** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 μήνα	**450** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	A	B
24	**900** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 μήνα	**600** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	A	B
25	**900** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 1 μήνα	**750** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	A	B
26	**900** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 3 μήνες	**150** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	A	B
27	**900** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 3 μήνες	**300** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	A	B
28	**900** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 3 μήνες	**450** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	A	B
29	**900** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 3 μήνες	**600** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	A	B
30	**900** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σε 3 μήνες	**750** μέρες σε πλήρη υγεία ξεκινώντας τη θεραπεία σήμερα	A	B

Για στατιστικούς λόγους θα θέλαμε να σας ρωτήσουμε …

ΕΡ. 1.15 Ποια είναι η ημερομηνία γέννησής σας;

Ημέρα		Μήνας		Έτος	

ΕΡ. 1.16 Ποιο είναι το φύλο σας; (παρακαλώ κυκλώστε ανάλογα)

Άντρας	Γυναίκα

ΕΡ. 1.17 Ποιο είναι το ανώτατο επίπεδο εκπαίδευσης που έχετε ολοκληρώσει; (παρακαλώ κυκλώστε)

α. Ποτέ μου δεν πήγα σχολείο
β. Δημοτικό Σχολείο
γ. 3τάξιου Γυμνάσιο
δ. Λύκειο ή 6τάξιο Γυμνάσιο
ε. ΙΕΚ/Τεχνική Σχολή
στ. ΤΕΙ
ζ. ΑΕΙ
η. Μεταπτυχιακές σπουδές

ΕΡ. 1.18 Ποια είναι η οικογενειακή σας κατάσταση; (παρακαλώ κυκλώστε)

Άγαμος	Παντρεμένος	Διαζευγμένος	Χήρος/α

ΕΡ. 1.19 Έχετε παιδιά; (παρακαλώ κυκλώστε ανάλογα)

Ναι	Όχι

ΕΡ. 1.20 Μένετε μόνοι αυτήν την περίοδο; (παρακαλώ κυκλώστε ανάλογα)

Ναι	Όχι

ΕΡ. 1.21 Ποιες από τις ακόλουθες περιγραφές σας αποδίδουν καλύτερα για το πώς αισθάνεστε για το οικιακό εισόδημά σας σήμερα; (σημειώστε με Χ)

Ζω άνετα με το παρόν εισόδημα	
Τα καταφέρνω με το παρόν εισόδημα	
Τα βγάζω πέρα δύσκολα με το παρόν εισόδημα	
Το βγάζω πέρα πολύ δύσκολα με το παρόν εισόδημα	
(ΔΑ)	

ΕΡ. 1.22 Το μηνιαίο ατομικό εισόδημά σας, είναι: (παρακαλώ κυκλώστε)

Λιγότερο από 600 Ευρώ	600-1000 Ευρώ	1001-1500 Ευρώ	1501-2000 Ευρώ	2001-3000 Ευρώ	Περισσότερα από 3000 Ευρώ

ΣΑΣ ΕΥΧΑΡΙΣΤΟΥΜΕ ΠΟΛΥ

Online Appendix B - Comparing the finance and health domains

The conversion rate between one unit of money and of time in full health was a key consideration in our methodological discussion. Our main objective was to choose lengths of time in full health that were conspicuous and realistic for some hypothetical healthcare treatments. A natural and intuitive choice was to use days in full health as unitary interval in the health domain. The implicit conversion rate between the financial and the health domain of one euro per day in full health was based on several considerations.

In a nutshell, the implicit rate of conversion was based on the evidence from a pilot experiment run with a sample of patients from the same hospital having similar characteristics to the respondents in our experiment. As discussed, prior to finalizing the design of the main fieldwork, we conducted a pilot experiment involving 32 subjects attending a sub-set of outpatient clinics at the Laiko Hospital. In addition to checking the comprehension and general validity of the questionnaire, the aim of the pilot was also to gather information about the description of their current health states by the respondents, using the Euroqol EQ-5D classification, and to obtain estimate of the approximate 'rate of substitution' between money and days in full health by patients.

In the pilot, subjects were first asked to self-assess their own health on the usual 1-5 Likert scale and to describe their current health states using the EQ-5D system, rating 5 distinct health-related dimensions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression) using 3-values scales (no, moderate, or severe problems). The EQ-5D has been extensively used in health economics as it allows one to summarise each health state using a 5-digit index, e.g., 11121 for a person who does not have any problem (level 1) except a moderate pain or discomfort in the fourth dimension (level 2). It also allows

attaching quality-of-life ‘tariffs’ to each of the 243 possible scenarios as estimated from preferences over health states from representative samples of the general population (1).

Half of the subjects in the pilot experiment were then given a questionnaire containing the experimental questions to elicit risk preferences in the finance domain first, followed by the questionnaire, and the tests for risk preferences in the health domain, while the order was reversed for the other half of the respondents. Further, subjects provided their ‘willingness-to-pay’ for one day in full health using methods similar to Gyrd-Hansen (2) and Pinto-Prades, Loomes and Brey (3).

The results from the pilot experiment proved useful to gather insights to finalise the design of the main experiment. First, the domain order manipulation allowed us to gather informal insights on the general comprehension of the paired-lottery tests. When interacting with the research assistants, participants seemed to better understand the structure of the choice between healthcare treatments when they had previously answered analogous MPL tests with money. The final choice of presenting to all subjects the risky lotteries in finance before the ones in health was informed by this feedback from the pilot, as well as by the analogous design by Prosser and Wittenberg (4) who also present the monetary questions first. This design feature, however, does not allow us to explicitly account for possible order effects of responses across different domains: to do so, one should randomly allocate subjects to counterbalanced orders of the two lottery domains, an opportunity that was beyond our capability.

Second, as expected for patients in outpatient clinics, most subjects described themselves as affected by health conditions characterized by only moderate pain or discomfort, anxiety or distress, in health states corresponding to the ‘very mild’ ones (e.g., 21111, 12111, 11211,

11121, 11112) or the 'relatively mild' ones (e.g., 12211, 12121, 11122, 22121, 22112, 21222, 11311).

The quality-of-life tariffs estimated from the Time Trade-Off (TTO) method associated to these health states varied between 0.556 (state 11311) and 0.883 (state 11211), with 1 being, by definition, the value attached to full health and 0 to death. We computed an average quality-of-life tariff for patients in our pilot as the average of the tariffs in each EQ-5D state weighted by the relative number of respondents (out of the 32 interviewed) who describe themselves as affected by that state, which returned a value of 0.751.

In addition, the answers to the procedure designed by Pinto-Prades, Loomes and Brey (3) to elicit the WTP for 4 months in full health indicated that virtually all subjects' maximum WTPs were included in the range between €25 and €50 a month, corresponding to a maximum expense of about €300-600 a year. The average WTP for the medicine B in the pilot sample was €42.4 a month, corresponding to an expenditure of €509 a year, roughly the amount of the basic monthly wage in Greece. As this maximum amount was traded by subjects in our pilot in exchange for 4 hypothetical months in full health, the monetary value attached to one day in full health was about €4.24. This figure is in line with the evidence from Spain by Pinto-Prades, Loomes and Brey (3) who experimentally elicited and estimated the mean WTP to avoid 3 days in a health status characterized by a moderate pain or discomfort (state 11121 in EQ-5D) in €12.5.[14]

[14] However, both figures are less directly comparable with alternative estimates for other countries using different methods: the estimated monetary value for one quality-adjusted-life-year (QALY) typically span within a range between DKK88,000 (about €12,000) in Denmark (eliciting WTP for a QALY (2)) and US$24,777 (about €18,000) in the US (using the human capital estimate method (5)). These alternative estimates implicitly attach to one day in full health a monetary value ranging from about €33 to about €50.

The monetary value of about €4.24 attached to one day in full health, thus, served as reference figure to estimate the additional amount of money that gives a marginal utility to subjects in our sample equal to the marginal utility of receiving one additional day in full health, in order to keep the 'marginal rate of substitution' between the lotteries in the finance and health domain as close as possible to 1. In fact, the marginal utility attached by patients to the idea of receiving a hypothetical extra day in full health is the marginal benefit of moving from their actual health state to a state of full health for one day. If the utility per day is measured in terms of quality of life, consistent with the CUA approach and the construction of the quality-adjusted-life-year (QALY) measure, the marginal utility of an additional day in full health is the difference between the quality-of-life tariff in full health and the one for the current health state, that is 1-0.751=0.249. Therefore, the monetary value associated to such a marginal utility can be estimated to be 0.249*(€4.24) = €1.06, suggesting that an additional euro added to the individual 'mental account' in the finance domain had approximately the same marginal utility of a hypothetical additional day in full health in the health domain. This finding was the main argument supporting our design choice to use a number of euros for the monetary lotteries directly corresponding to the number of days in full health in the health lotteries.

While this one-to-one equivalence assumption has the further attraction of being a natural and intuitive option, it should be openly acknowledged that the correspondence of the outcomes across the two domains is a key assumption that clearly impacts the cross-domain comparisons. In particular, underlying our design choice under both the EUT and the RDU model is the assumption that subjects use a CRRA utility function. If, however, subjects use a non-constant RRA utility function, and, for instance, exhibit an increasing or decreasing RRA, then our assumed equivalence across domains introduces a major confounder in the analysis, and represents a critical limitation of the design.

Another clear limitation of our analysis is related to the sample selection. Together with the conceptual distinction between *background* and *foreground* risk in the money and health domains, the potential sample selection issue should be kept in mind when interpreting the cross-domain differences in risk preferences. The sample selection could indeed favour the observation that subjects in our sample show higher risk aversion in the health than in the financial domain. The different nature of *background* and *foreground* risk can instead work both ways (6). On the one hand, the addition of *background* risk from experiencing the economic crisis can make subjects more risk averse with respect to any independent risk in money and health, a phenomenon known as *risk vulnerability* (7). On the other hand, if subjects are already exposed to sufficiently high *background* risk, they might pay little attention to any additional, small, increase of risk, especially in money, consistently with the idea of *diminishing sensitivity* to risk (8). In principle, one could attempt to correct for such issues by comparing risk preference responses across domains between our sample of patients in outpatient clinics and another sample which is representative of the general population in Greece; or by comparing those two groups with a third sample of subjects recruited in a 'reverse' setting - e.g. an employment benefit centre - where they are likely to feel apprehensive in the financial domain. More research is needed to systematically assess the robustness of similarities and differences of risk preferences across domains using a range of different conversion values and subject pools.

While such possibilities were beyond the scope of our study, in our econometric analysis we controlled for individual heterogeneity in the relative cross-domain wellbeing, by including individual responses to questions assessing the self-reported baseline levels of the health status, as well as of the income and financial conditions.

Online Appendix C - Econometric approach

To empirically estimate risk preferences we follow the Maximum Likelihood (ML) econometric approach by Andersen, Harrison, Lau, and Rutström (9–11) and Harrison and Rutström (12). In particular, we adapt the Stata template code in Harrison and Rutström (13). In a nutshell, the ML approach estimates the latent risk preference parameters by calculating the likelihood of picking one specific lottery in each question, given its induced probabilities and outcomes. More in detail, using a CRRA utility function $U(O) = \frac{O^{1-r}}{1-r}$ and the probabilities $p(O_j)$ for each outcome O_j induced by the experiment (depending on the domain of the choice, either a monetary outcome W_j or a health outcome H_j), the expected utility (EU) for lottery *i* is given by (1):

$$EU_i = \sum_{j=1,2}[p(O_j) * U(O_j)] \qquad (1)$$

Based on a candidate value of r a latent preference index ΔEU can be constructed. We use the simple stochastic specification by and Holt and Laury (2002), allowing some behavioral Fechner errors in the sense of Hey and Orme (14), and also accounting for 'contextual errors' in the sense of Wilcox (15): for each lottery pair, the EU for each lottery is calculated for candidate estimates of r and ω, and the ratio (2)

$$\Delta EU = [(EU_A - EU_B)/\nu]/\mu \qquad (2)$$

is calculated, where EU_A refers to Option A and EU_B to Option B; ν is a normalizing 'contextual' term defined as the maximum utility over all prizes in that lottery pair, minus the minimum utility over all prizes in that lottery pair, varying, in principle, from lottery pair to lottery pair, and ensuring that the normalized difference in expected utility remains in the

unit interval; and, finally, μ is a structural 'noise parameter' used to allow some errors from the perspective of the deterministic EUT model. In particular, as $\mu \longrightarrow 0$ this specification collapses to the deterministic choice EUT model, where the individual choice is strictly determined by the expected utilities of the two lotteries, but as μ gets larger the choice becomes random. When $\mu = 1$ the above specification reduces to one where the probability of picking one lottery is given by the ratio of the expected utility of one lottery to the sum of the expected utilities of both lotteries (adjusted by the 'contextual' term).

The latent index ΔEU is in the form of a cumulative probability distribution function defined over differences in the expected utilities of the two lotteries, the 'contextual' term ν, and the 'noise' parameter μ. The latent index function, based on latent preferences, is then linked to observed choices using a logistic cumulative probability distribution function $\Lambda(\Delta EU)$. This 'logit'-type function takes any argument and transforms it into a number between 0 and 1, so that prob(choose lottery A) = $\Lambda(\Delta EU)$.

Thus the likelihood of the risk preferences responses depends on the estimates of r and μ, and on the observed choices. Since, in our experimental tasks, subjects could not manifest indifference between the two options, the conditional log-likelihood function is (3):

$$lnL^{RP}(r,\mu;y,\omega) = \sum_i [(\ln \Lambda(\Delta EU)\,|y_i = 1) + (\ln(1 - \Lambda(\Delta EU))\,|y_i = -1)] \qquad (3)$$

Where $y_i = 1$ denotes lottery B and $y_i = -1$ denotes lottery A in a risk preferences task *i*.

As mentioned, in our estimates we pool all observations together and include a categorical variable ('*H*') to control for whether the responses refer to the financial (*H=0*) or the health

domains (*H=1*). Thus, we extend the log-likelihood function above so that the 'r' parameter of risk aversion is a function of the domain ('*H*'), of the round of data collection, and of other observable individual characteristics, including income, health, gender and age: that is, in the log-likelihood function (4), $r = r_o + c * H + D * T + E * X$ where r_0 is a fixed parameter; H is the health domain variable; c is the effect associated to the health domain variable; T is a vector of time variables for the rounds of data collection; D is a vector of effects associated with each round of data collection; X is a vector of individual characteristics; and E is a vector of effects associated with each characteristic in the variable vector X. In this empirical model, therefore, the individual characteristics variables are allowed to affect only overall risk preferences, and not each risk domain separately.

The log-likelihood function is then maximized using the Newton-Raphson optimization technique (for a detailed treatment on ML estimation using Stata, see (16)). We correct for heteroskedasticity and autocorrelation of observations within the same subject, by treating the residuals from the same subject as potentially correlated, and computing cluster-robust standard errors of estimates.

As mentioned, besides the estimates obtained under the EUT assumption, we also re-estimate the empirical model considering CRRA risk preferences within the Rank Dependent Utility (RDU) model by Quiggin (8). RDU is a generalization of EUT that allows subjects to transform the objective probabilities presented in lotteries and to use these weighted probabilities as decision weights in the evaluation of the lotteries. In particular, we consider the 'power' probability weighting function w(p) proposed by Quiggin (8) which is defined over a unique 'curvature' parameter y: $w(p)=p^y$. When $y\neq1$ the RDU model deviates from the EUT model: concavity and convexity of w(p) are said to reflect 'optimism' and

‘pessimism’, respectively, in how a subject perceives objective probabilities. The estimation steps described above can be readily modified by replacing the EUT with the RDU model.

Extra references for online Appendix

1. Kind P, Dolan P. The effect of past and present illness experience on the valuations of health states. Med Care. 1995;AS255–63.

2. Gyrd-Hansen D. Willingness to pay for a QALY. Health Econ. 2003;12(12):1049–60.

3. Pinto-Prades JL, Loomes G, Brey R. Trying to estimate a monetary value for the QALY. J Health Econ. 2009;28(3):553–62.

4. Prosser LA, Wittenberg E. Do risk attitudes differ across domains and respondent types? Med Decis Making. 2007;27(3):281–7.

5. Hirth RA, Chernew ME, Miller E, Fendrick AM, Weissert WG. Willingness to pay for a quality-adjusted life year in search of a standard. Med Decis Making. 2000;20(3):332–42.

6. Harrison GW, List JA, Towe C. Naturally occurring preferences and exogenous laboratory experiments: A case study of risk aversion. Econometrica. 2007;75(2):433–58.

7. Gollier C, Pratt JW. Risk vulnerability and the tempering effect of background risk. Econom J Econom Soc. 1996;1109–23.

8. Quiggin J. Background risk in generalized expected utility theory. Econ Theory. 2003;22(3):607–11.

9. Andersen S, Harrison GW, Lau MI, Rutström EE. Elicitation using multiple price list formats. Exp Econ. 2006;9(4):383–405.

10. Andersen S, Harrison GW, Lau MI, Elisabet Rutström E. Lost in state space: Are preferences stable? Int Econ Rev. 2008;49(3):1091–112.

11. Andersen S, Harrison GW, Lau MI, Rutström EE. Behavioral econometrics for psychologists. J Econ Psychol. 2010;31(4):553–76.

12. Harrison GW, Rutström EE. Experimental evidence on the existence of hypothetical bias in value elicitation methods. Handb Exp Econ Results. 2008;1:752–67.

13. Harrison GW. Maximum likelihood estimation of utility functions using Stata. Univ Cent Fla Work Pap. 2008;06–12.

14. Hey J, Orme C. Investigating Generalizations of Expected Utility Theory Using Experimental Data. Econometrica. 1994;62(6):1291–326.

15. Wilcox N. 'Stochastically more risk averse:' A contextual theory of stochastic discrete choice under risk. J Econom. 2011;162(1):89–104.

16. Gould W, Pitblado J, Sribney W. Maximum likelihood estimation with Stata. Stata Press; 2006 [cited 2015 Mar 30].

17. Quiggin J. A theory of anticipated utility. J Econ Behav Organ. 1982;3(4):323–43.