The effect of unanticipated experience on financial behaviour

The demand for insurance in 11 countries

Stefania Innocenti · Gordon L. Clark · Sarah McGill · Juncal Cuñado

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Abstract Globalisation, financialisation and changes in labour markets have made certain segments of society vulnerable to shortfalls in earned income. At the same time, individuals have difficulties in evaluating the risks to which they are exposed. Drawing on insights from psychology and economics, we explore whether negative health experiences affect the decision to adopt self-protective measures to mitigate future risks by purchasing an income protection insurance. To this end, we draw on a survey of approximately 10,000 working individuals in 11 countries. Our findings show that the odds of buying an insurance policy for someone who has experienced a negative health event are 89% higher than the odds for those who have not had such a negative experience.

Keywords Learning · experience · survey · insurance · vulnerability

1 Introduction

Increasing numbers of working people worldwide are vulnerable to changing labour markets and, at the limit, globalisation. In their study of household financial fragility, Lusardi et al.

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Stefania Innocenti
Smith School of Enterprise and the Environment, Oxford University
E-mail: stefania.innocenti@smithschool.ox.ac.uk

Gordon L. Clark
Smith School of Enterprise and the Environment, Oxford University and Department of Banking and Finance, Monash University

Sarah McGill
Smith School of Enterprise and the Environment, Oxford University

Juncal Cuñado
Department of Economics, University of Navarra
(2011) sought to determine whether Americans could obtain US$2000 within 30 days. It was found that about 25% of Americans surveyed reported that they could not do so while another 20% would have done so by “selling or pawning possessions or taking payday loans” (Lusardi et al., 2011, p.2). Their results, like those from the UK (Legal & General Group, 2014), suggest that the well-being of a significant segment of the working population is directly related to how they cope with or insure against events that could undercut their capacity to earn a living over the short-term and the long-term. As a consequence, when looking at financial decisions both individual and household decision-making – as well as the robustness and integrity of welfare institutions – must be considered.

However, financial planning can be an arduous task for individuals. Although traditional economic analysis assumes that individuals are able to evaluate the costs and benefits of their financial options, subject to their income constraints, there exists a number of well-known reasons why people may not make the choice that yields the highest utility. One reason relates to the growing complexity and array of financial products and services available to consumers. Not coincidentally, this has accompanied the retreat of the welfare state and the resulting shifting of responsibility for long-term financial well-being onto individuals and households. Additionally, several decades’ worth of work in the behavioural finance and economics literature have documented numerous cognitive and behavioural biases: humans tend to consistently deviate from farsighted, rational behaviour when taking financial decisions (see Barberis (2013) for a review). More specifically, financial planning can be impaired by individual difficulties in correctly appraising the risks associated with different events, even when a complete description of the probabilities is provided (Kahneman and Tversky, 1979).

This is generally used to explain the lack of interest in protective insurance policies. If individuals consider the magnitude and/or the probability of the potential loss as negligible, insurance policies look unattractive (Kunreuther et al., 2013). Another explanation comes from experimental studies on “decisions from experience”. In laboratory settings, Barron and Erev (2003); Hertwig et al. (2004); Hertwig and Erev (2009) show that when decision makers do not have any prior knowledge about the probabilities associated with the events but rather must gain experience which they can then rely on to make future economic choices, individuals underweight rare events and behave as these were not going to happen to them. For example, Barron and Erev (2003) studied repeated decisions from experience with immediate feedback. They showed that most participants prefer a counterproductive risky option which leads to a loss of 32 units in 10% of the cases and 0 in all other instances (expected loss of 3.2) over the better and safer option which yields a sure loss of 3 units.

However, extreme experience has been shown to affect people’s perceptions of risks and thus their decision-making processes. Elaborate, confidently held memories of the past can shape people’s decisions. These autobiographical memories are called flashbulb memories (Brown and Kulik, 1977): considered putatively indelible, they are likely to be recalled even in the distant future (Rubin and Kozin, 1984). Given their ‘livid, salient, and concrete’ nature (Nisbett et al., 2004, p. 111), flashbulb memories are likely to prompt emotional reactions and shape individual imagery of the future.

In this paper, we consider the effect of negative health experiences on the decision to adopt self-protective measures to mitigate the risks of future negative events, specifically income losses due to prolonged illness or disability. Income protection insurance is designed to do just that: it pays out a benefit equivalent to a substantial proportion of the policyholder’s earned income (typically up to 70%) in the event of a serious illness or disability that prevents them from working for a significant period of time. To the best of our knowledge, there has been virtually no academic literature, be it in economics or in behavioural science, on income pro-
tection insurance. The main aim of this paper is to fill this gap. We therefore test whether those individuals who have, in the past, experienced negative health events are more likely to purchase insurance. We refer to this as the ‘vivid effect’ of experience. Specifically, we want to estimate whether and to what extent prior experience, together with other socio-demographic variables, affects individual propensities to hold income protection insurance.

Our paper contributes to the literature on the topic in the following ways. First, while long-term savings and investing decisions have been studied extensively, less studied have been the purchase by individuals of financial products. Indeed, Kunreuther et al. (2013) argue that not only do individuals find this type of decision-making challenging, the lack of in-depth research, whether fieldwork-based or survey-based, also makes for limited understanding of the nature and scope of individual decision-making in real (as opposed to laboratory) conditions. Second, because of the increasing vulnerability of certain groups of working people to unanticipated changes in working conditions and earned incomes, understanding how and to what extent they anticipate these problems has important implications for analysing the trajectory of inequality across countries. As such, our focus on the demand for income protection insurance allows for better understanding of these important issues.

Moreover, our study relies on empirical data which comes from an original, large (11,584 complete responses), multi-country survey of the demand for income protection insurance. The survey was designed and implemented in early 2016 and was based upon representative sample surveys of individuals (25-60 years of age) in 11 countries, including Germany, Italy, Spain, Switzerland, and the UK (Europe); Brazil, Mexico, and the USA (the Americas); and Australia, Hong Kong, and Malaysia (Asia-Pacific). The survey questions individuals on a number of topics – including their knowledge and awareness of insurance-related topics, past experience of income losses, personal health and well-being, financial risk tolerance, financial literacy, and attitudes to public and private institutions that provide social protection, as well as socio-demographic and employment characteristics – in order to understand better the drivers of demand for income protection insurance.

Our results confirm that “experience is a great teacher” (Marx et al., 2007, p.49). People who have experienced negative health events, or know somebody who has, are significantly more likely to purchase an insurance policy. This effect is economically very important: the odds of buying an insurance policy for someone who has experienced a negative health event are 89% higher than the odds for those who have not had such a negative experience. Our results are robust to controlling for risk perceptions, current health levels and optimism. We also find that experience is not just a proxy for risk tolerance and that educational attainment does not affect the impact of experience. We find instead that experience exerts a stronger effect on those individuals who have lower financial skill levels. These effects remain robust once possible country differences are accounted for.

2 Experience and Risk

Unanticipated interruptions in earned income are likely to disrupt households financial resilience. The occurrence and resonance of these events is related to individual increased vulnerability to illnesses and diseases, as well as persistent differences in labor market practices and institutions across countries in a globalised economy (Christopherson, 2002). Additionally, the financial burdens that these events are likely to impose are magnified by any shortfall in self-protective measures that individuals have in place as well as by any measure that they might undertake to cope with these negative instances. In the following sub-sections we elaborate on these issues and then outline the research questions that this paper wishes to address.
2.1 Vulnerability and risks

As mentioned above, our study is specifically concerned with the study of insurance products that protect against the risk of income loss due to the occurrence of specific illnesses such as cancer, heart attack, stroke, mental conditions.

Recent research in medical epidemiology (Roth et al., 2017) has made available time series data on the yearly incidence rates of a wide variety of diseases in multiple countries. Incidence measures the number of new (or newly diagnosed) cases of a given medical condition within a year out of 100,000 individuals. Incidence rates are relatively low if evaluated on a yearly basis. Nonetheless, the probability of falling sick increases significantly if a longer time span is evaluated. Individuals are increasingly at risk of suffering from ill health during their working lives. These instances are a major global policy concern. In 2011 the United Nations set out an ambitious plan to dramatically reduce the effect of cardiovascular and other diseases in all regions of the world (WHO, 2011). One the sub-targets of the Sustainable Development Goal number 3 is to reduce by a third premature mortality rates of working individuals due to noncommunicable diseases such as heart diseases, stroke, and cancer.

Additionally, the fragmentation of the labour market has increased substantially over the last decades. The prevalence of different types of ‘non-traditional’ employment, the rise and fall of entire industries, and the growth in the sharing economy have all brought greater uncertainty to the global labour market. This uncertainty together with the risk of contracting a serious disease and being unable to work puts individuals under huge pressure and high risk of losing income for possibly prolonged periods of time. This is also exacerbated by the fact that more than 70% of workers worldwide have no statutory access to unemployment insurance or any type of unemployment assistance (ILO, 2012).

These risks are likely to increase the vulnerability of certain segments of society to immediate shortfalls in earned income. Insurance protection policies could help vulnerable consumers. Nonetheless, income protection insurance uptake is still low. At the global level, only 6.2% per cent of the total labour force is covered by voluntary social insurance (ILO, 2014).

2.2 Experience: a behavioural perspective

Experience is critical to the assessment of risks and taking decisions (Nisbett and Ross, 1980). The literature on “decisions from experience” studies situations in which agents learn about the outcomes and their associated probabilities through experimentation. These studies show that experience can be a great teacher (Marx et al., 2007), but also show that there are exceptions to this rule. A clear exception is presented by Erev et al. (2017). Participants were asked to choose between a risky prospect that leads to a large loss (20 Shekels about $5) in 5% of the cases, and 0 in the other cases and a sure loss of 1 Shekel. Participants first chose based on description, and then played the game after experiencing the outcomes in previous trials. When having no experience, individuals chose the risky option in 48% of the cases, whereas as a result of experience this proportion rose to 65%. However, Erev et al. (2010) show that experience is effective in reducing reckless behaviour when the decision maker is initially optimistic, and experience involves a large loss. In these settings, experience is indeed a great teacher. When an event which is a priori considered as rare manifests itself, leading to a large loss, it is likely to be overweighted (Barron and Erev, 2003; Hertwig et al., 2004; Hertwig and Erev, 2009; Yechiam et al., 2006). In fact, once a negative event materialises, its perceived risk becomes relatively high (Yechiam et al., 2006) and individuals are likely to think that it might reoccur again.
The psychology literature on experience has, in multiple instances, highlighted that the occurrence of a negative event is likely to have a significant impact on one’s life. Past experience affects individual’s mental imagery which in turn affects cognitive evaluations and anticipatory emotions, that is, future visceral and affective reactions to risk and uncertainty (Loewenstein et al., 2001; Slovic et al., 2002; Marx et al., 2007). Individuals tend to relate current situations to their memories of the past. These ‘flashbulb memories’ (Brown and Kulik, 1977) are considered putatively indelible and likely to be recalled in the distant future (Rubin and Kozin, 1984). They have a greater influence on judgement than does abstract information (Loewenstein et al., 2001). This suggests that vivid instances carry higher evidential value for individuals than do ‘pallid’ statistics (Hamill et al., 1980).

These findings have been adopted in the economics literature to explain common patterns concerning the adoption of self-protective and precautionary measures in a wide variety of areas. Kunreuther (1996), relying on in-person interviews with homeowners in flood-, hurricane-, and earthquake-prone areas, found that having knowledge or having experienced substantial damages to one’s property increases insurance uptake against these risks. Along the same lines, Michel-Kerjan (2010) found that after seven major hurricanes hit the Gulf Coast in 2004 and 2005, flood insurance uptake increased significantly. Gallagher (2014) looked at flood insurance and has shown that in the aftermath of these natural disasters, people are driven by more impulsive reactions. Yechiam et al. (2006) documented that experience is crucial in the decision to purchase or use safety devices which could prevent a work accident or theft and thus the risk of financial losses. Maguire (1980) studied households who had experienced a burglary and found that insurance uptake increased by 43% among those who did not have an insurance policy against theft in the first place. Additionally, 50% of respondents purchased new locks or alarms. When it comes to health, Weinstein (1982) studied the role of specific illnesses and found that people who suffered from ill health in the past worry more about their health, revising upward their beliefs concerning the prevalence of that illness and its seriousness. Burling et al. (1984) looked at myocardial infarction and smoking behaviour. They found that roughly a third to a half of smokers who suffered a myocardial infarction quit or reduce smoking in the aftermath of the event.

These trends can according to Weinstein (1989) be explained by different, but not mutually exclusive, mechanisms. First, personal experience provides information about the consequences of the lack of preventive measures. Additionally, experience provides information about the diffusion of the hazard itself. Experience is also a source of information about the intensity of the hazard as well as about one’s own personal vulnerability (Kunreuther, 1996).

Although there seems to be a stronger relationship between attitude change and experience when personal involvement is high (Petty et al., 1981), the adoption of self-protective behaviour is not limited to personal experience. In fact, according to Marx et al. (2007), people tend to relate their current situation either to their own experience or to that of others. Individuals build their behavioural repertoire relying on their own past observations as well as on the experience of others (Aragones et al., 2005). Robertson et al. (1972) show that knowing that a close friend or a relative was seriously injured in a car accident promotes a greater use of seatbelt among individuals.

3 Hypothesis and data description

The literature presented above suggests that first- or second-hand memories of traumatic or otherwise emotionally distressing events can spur individuals to take measures to prevent similar negative experiences in the future. Being directly or indirectly exposed to these events makes
people more likely to retain and recall the severity of these circumstances and consider them as common. Previous literature has shown the existence of a clear positive relation between experience and flood or theft insurance uptake. Nonetheless, to the best of our knowledge, no study has assessed the specific role of first-hand or second-hand experience on the decisions to purchase insurance against income losses due to disabilities and serious diseases. This study therefore wishes to fill this gap and answer the following research question: does first- or second-hand experience of illness- or disability-related income losses make people more likely to recognise the costs and consequences of a failure to hold income protection insurance? And, can experience be a predictor of income protection insurance uptake?

We hypothesise that:

\[ \text{H1 ('vivid effect hypothesis'): There exists a positive relationship between adverse health experiences and income protection insurance uptake. Individuals who have personally suffered income losses resulting from unexpected illnesses or disabilities, or know somebody who has, are more inclined to purchase products to insure themselves against future events of the same kind.} \]

Additionally, we expect that:

\[ \text{H1a ('severity effect hypothesis'): There exists a positive relationship between the severity of negative experiences and insurance uptake. Severe negative health events are likely to exert a stronger effect on uptake than smaller health vicissitudes.} \]

To test these conjecture we use survey responses derived from a large, original, multi-country study on the demand for income protection insurance\(^1\). As indicated above, the survey covered 11 different countries and was designed to better understand the demand for income protection insurance, focusing upon what distinguishes those who hold this type of insurance from those who do not. Additionally, our dataset allows us to account for the existence of country-specific institutional factors that determine the propensity of respondents to hold income protection insurance. The survey was comprised of 57 questions (some of them piped) on a wide variety of issues.\(^2\)

For the current analysis, we focus our attention on specific questions in the survey. First, we rely on question 6 to measure demand of income protection. This question explicitly asked respondents whether, beyond obligatory government benefits, they had insurance which would protect their income against serious illnesses (e.g. cancer, heart disease) and/or disability (e.g. impairment in mobility, hearing or sight).\(^3\) This represents our dependent binary variable.

To test the effects of negative health events on respondents’ propensity to hold income protection insurance, we use two additional questions in our survey. Question 11 is designed to uncover information about personal experience: it asked respondents whether, in their working life, they had ever personally experienced a loss of income due to eight possible physical conditions, two mental health issues, or two issues related to caring for others.

Given that the literature has highlighted the importance of social relations (Robertson et al., 1972; Brown and Kulik, 1977), we also want to test whether knowing someone who in the

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\(^1\) In this paper we use a frequentist approach. Our objective is to establish the frequency with which uptake occurs conditional on having had a past experience, and not to estimate subjective degrees of beliefs. However, we acknowledge the possible usefulness of Bayesian statistics in this context.

\(^2\) The full questionnaire is available from the authors upon request, a description of the survey design is provided in Appendix A.

\(^3\) For the exact formulation of Q6 as well as all other questions used in this paper please refer to the appendix B.
past experienced income loss due to a serious illness or disability affects insurance purchase decisions. We thus revert to question 24 to gather this information. Question 24 asks whether the respondents personally know someone who was unable to work because of health reasons. On the basis of individual responses to these two questions we generate a variable which takes value 1 if the agent has had first or second hand negative experience and 0 otherwise. This variable represents our main explanatory variable. Indeed, in some instances we will consider the different types of experience and resort directly to the answers provided to the questions above. We will include dummy variables which identify past physical impairments, mental health-related issues, or knowledge of individuals with such past experiences.

We also seek to ascertain that experience is not just a proxy for perceived exposure to risk. Garofalo (1977) finds that victims of crimes or robberies think that their chances of being robbed or attacked in the future have gone up. Similarly Tyler (1980) finds that crime victims perceive themselves as highly likely to be targets again. Therefore, in line with Smith (1968), to disentangle perceived risk from experience per se we include a measure for self-assessed risk of losing income due to ill health. Specifically, we asked participants to assess their perceived personal risk of experiencing a loss of income due to serious illness or disability, given their lifestyle, health, and work environment. We also include a measure of self-assessed health levels. Weinstein (1982, 1987) finds that individuals who have experienced an illness in the past reduce their tendency to claim that their risk of falling sick is below average. Therefore, we include in our in our regressions an indicator measure which is equal to 1 if the respondent believed, in 2016, to be healthier than average.

Additionally, we asked individuals to provide an assessment of their future wealth and health. Using the answers to these questions, we create an indicator variable which is 1 if the agent has claimed that either her future health and income are likely to be higher than her current ones. This indicator captures the essence of optimism as intended by Puri and Robinson (2007), who look at the effects of longevity prospects and perceived market prospects on investment decisions. Including this regressor in our model is important as it could be argued that optimistic individuals have inflated expectations about their future which might reduce the effect of experience and thus insurance uptake.

Table 1 reports the summary statistics and the correlations between the most important regressors.

Appendix A provides details about the survey questions used in this paper.

4 Results

The core of our analysis relies on the estimation of the following logit model with country fixed effects:

\[ Pr(Ins_i = 1) = F(\beta_0 + \beta_1 Exp_i + \beta_2 Risk_i + \beta_3 Health_i + \beta_4 Optimism_i + X_i) \]  

where \( Ins_i \), our dependent variable, is equal to 1 if the individual holds income protection insurance. The variable \( Exp_i \) instead identifies whether the individual has previously experienced loss of income for a range of physical or mental health-related reasons, and whether the agent personally knows someone who has experienced loss of income for similar reasons. \( Risk_i \) captures individual perception of the risk of falling sick whereas \( Health_i \) is a dummy variable which is equal to one if the individual believes to be currently healthier than average. Additionally, as mentioned above we measure optimism more in general. \( Optimism_i \) takes value one if the individual holds positive beliefs about her future health and wealth. \( X_i \) identifies a vector of controls.
Specifically, we include a number of variables including individual income level and a
dummy for being an employee as well as other socio-demographic characteristics such as gen-
der, household size, and the presence of children below the age of 18 in the family. We also
control for age and years of schooling. These variables are included as they might per se affect
individual perceptions of the need for an insurance policy or simply act as barriers to insurance
purchasing decisions. Country dummies are included in all our regressions to remove the im-
 pact on demand for insurance of fixed country characteristics which are potentially correlated
with our main regressors.4

4 In general, all correlation coefficients are very low and there are no strong linear dependencies among the
explanatory variables. Additionally, as a post estimation for multicollinearity, we relied on the “variance inflation
factor” (VIF) and tolerance for individual predictors. As a rule of thumb, a variable whose VIF values are greater
than 10 and whose tolerance is greater than 0.1 requires further investigation. According to our analysis, all
our VIFs are below 10 and the tolerance values are lower than 0.1. Thus, there seems to be no perfectly linear
relationship among the predictors.
4.1 The ‘vivid effect’ hypothesis

In order to test our ‘vivid effect’ hypothesis, we start by analysing the impact of experience on the demand for an income protection policy. We report our results in table 2.

The first column reports the estimates of our basic logit specification where we include only experience. Having had a negative health experience in the past, or knowing somebody who has, increases the log odds of purchasing an insurance policy by 0.68. In the second column we consider both experience and risk perceptions. Both coefficients are highly significant and the inclusion of individual risk perceptions does not reduce the importance of experience. Having had a negative health experience in the past, or knowing somebody who has, increases the log odds of purchasing an insurance policy by 0.64. This is a remarkable effect as it means that the keeping all other factors fixed, the probability of buying an insurance policy for somebody who experienced a loss of income in the past due to health reasons is 0.40, around 60% higher than the probability for those who did not have this negative experience, who have a probability of uptake of 0.25.

In the third column we include an additional indicator variable which is equal to 1 if individuals believe themselves be healthier than average and 0 otherwise. Interestingly, individuals who claim to be healthier are significantly more likely to purchase insurance than those who feel less healthy. This might be interpreted as a sign of awareness and therefore greater caution. The inclusion of this indicator leaves the coefficient of experience basically unchanged. In column 4 of table 2 we insert a dummy to control for optimistic expectations. This indicator is equal to 1 for all those individuals who believe that their health or wealth is going to improve in the future. We find that more optimistic individuals are significantly more likely to purchase insurance. However, more importantly from our point of view, controlling for optimism does not affect the coefficient of experience, which remains stable and highly significant. Finally, in column 5 of table 2 we show that the effect of experience does not fade away with wealth. We restrict the sample only to those individuals whose current income is above the country median and we find that the effect of experience is similar in magnitude to that for the large sample. This simply shows that experience matters even for wealthy people who decide to buy insurance to protect themselves against income losses even if their current wealth makes them, in principle, less economically vulnerable to unexpected negative health events.
Table 2  Effect of experience on decisions to purchase insurance

<table>
<thead>
<tr>
<th></th>
<th>Demand for insurance</th>
<th>All sample</th>
<th>Above median income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Experience</td>
<td>0.682***</td>
<td>0.645***</td>
<td>0.641***</td>
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<tr>
<td></td>
<td>(0.086)</td>
<td>(0.084)</td>
<td>(0.085)</td>
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<tr>
<td>Personal risk</td>
<td>0.069***</td>
<td>0.075***</td>
<td>0.077***</td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.014)</td>
<td>(0.014)</td>
</tr>
<tr>
<td>Better than avg. health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.067)</td>
<td>(0.066)</td>
<td>(0.066)</td>
</tr>
<tr>
<td>Optimism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.048)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0.205***</td>
<td>0.205***</td>
<td>0.199***</td>
</tr>
<tr>
<td></td>
<td>(0.071)</td>
<td>(0.071)</td>
<td>(0.070)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.018***</td>
<td>-0.018***</td>
<td>-0.018***</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.004)</td>
<td>(0.004)</td>
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<tr>
<td># people rely on income</td>
<td>0.043</td>
<td>0.039</td>
<td>0.040</td>
</tr>
<tr>
<td></td>
<td>(0.032)</td>
<td>(0.031)</td>
<td>(0.031)</td>
</tr>
<tr>
<td>children ¡18</td>
<td>0.275***</td>
<td>0.271***</td>
<td>0.272***</td>
</tr>
<tr>
<td></td>
<td>(0.077)</td>
<td>(0.076)</td>
<td>(0.075)</td>
</tr>
<tr>
<td># years of schooling</td>
<td>0.006</td>
<td>0.007</td>
<td>0.008</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.009)</td>
<td>(0.008)</td>
</tr>
<tr>
<td>Current income</td>
<td>0.161***</td>
<td>0.163***</td>
<td>0.159***</td>
</tr>
<tr>
<td></td>
<td>(0.019)</td>
<td>(0.019)</td>
<td>(0.019)</td>
</tr>
<tr>
<td>Employee</td>
<td>0.307***</td>
<td>0.316***</td>
<td>0.324***</td>
</tr>
<tr>
<td></td>
<td>(0.096)</td>
<td>(0.096)</td>
<td>(0.099)</td>
</tr>
<tr>
<td></td>
<td>(0.288)</td>
<td>(0.263)</td>
<td>(0.258)</td>
</tr>
<tr>
<td>Country dummies</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N</td>
<td>9712</td>
<td>9712</td>
<td>9712</td>
</tr>
<tr>
<td>bic</td>
<td>11067</td>
<td>11050</td>
<td>11032</td>
</tr>
<tr>
<td>Pseudo $R^2$</td>
<td>0.14</td>
<td>0.14</td>
<td>0.15</td>
</tr>
</tbody>
</table>

* p<0.10, ** p<0.05, *** p<0.01

As mentioned above, our measure of experience is equal to 1 if respondents declared that they have personally suffered from ill health due to either physical or mental reasons or if they know someone who did. Nonetheless, it is worth evaluating whether our results hold for all types of experience, be they physical, emotional, or second-hand experience. We provide a break down by experience type in table 3.
Table 3 Types of experience and decisions to purchase insurance

<table>
<thead>
<tr>
<th></th>
<th>Demand for insurance</th>
<th>All sample</th>
<th>Above median income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Physical experience</td>
<td>0.832*** (0.102)</td>
<td>0.612*** (0.128)</td>
<td>0.596*** (0.143)</td>
</tr>
<tr>
<td>Emotional experience</td>
<td>0.559*** (0.078)</td>
<td>0.373*** (0.078)</td>
<td>0.350*** (0.112)</td>
</tr>
<tr>
<td>Others’ experience</td>
<td>0.510*** (0.068)</td>
<td>0.426*** (0.056)</td>
<td>0.424*** (0.076)</td>
</tr>
<tr>
<td>Personal risk</td>
<td>0.081*** (0.013)</td>
<td>0.083*** (0.014)</td>
<td>0.082*** (0.015)</td>
</tr>
<tr>
<td>Better than avg. health</td>
<td>0.255*** (0.066)</td>
<td>0.279*** (0.064)</td>
<td>0.267*** (0.068)</td>
</tr>
<tr>
<td>Optimism</td>
<td>0.204*** (0.045)</td>
<td>0.193*** (0.047)</td>
<td>0.201*** (0.048)</td>
</tr>
<tr>
<td>Male</td>
<td>0.156** (0.066)</td>
<td>0.178*** (0.067)</td>
<td>0.192*** (0.071)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.015*** (0.004)</td>
<td>-0.013*** (0.004)</td>
<td>-0.016*** (0.004)</td>
</tr>
<tr>
<td>Current income</td>
<td>0.277*** (0.071)</td>
<td>0.274*** (0.076)</td>
<td>0.276*** (0.075)</td>
</tr>
<tr>
<td># people rely on income</td>
<td>0.050* (0.030)</td>
<td>0.054* (0.030)</td>
<td>0.039 (0.031)</td>
</tr>
<tr>
<td># years of schooling</td>
<td>0.009 (0.008)</td>
<td>0.007 (0.008)</td>
<td>0.007 (0.008)</td>
</tr>
<tr>
<td>Employee</td>
<td>0.153*** (0.019)</td>
<td>0.158*** (0.019)</td>
<td>0.155*** (0.019)</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.243*** (0.300)</td>
<td>-2.454*** (0.284)</td>
<td>-2.317*** (0.276)</td>
</tr>
</tbody>
</table>

In column 1 of Table 3 we look at negative events due to physical problems (e.g. cancer, heart attack, stroke, back pain etc.) and we find that these types of experience exert a strong effect on people’s propensity to purchase insurance. Holding all other individual characteristics constant, the odds for people who have experienced these events are about 2.31 times the odds for those who did not. In column 2 instead we focus on experience related to mental health. We can see that the odds for those who have had mental issues such as depression or anxiety...
disorders are 1.74 times higher than the odds for those who did not suffer from these problems. In column 3 of table 3 we include a dummy for those who personally know someone who has experienced serious illness or disability and show that even this second-hand experience significantly increases uptake. This confirms Robertson et al.’s (1972) findings, according to which the experience of others is considered in one’s own decision to adopt preventive behaviour. In column 4, we consider the three types of experience simultaneously. This is meant to detect possible substitution or complementarity effects. Our results show that negative events due to physical problems exert the strongest effects on the decisions to purchase insurance. However, mental health issues as well as second-hand experience remain significant predictors of uptake, excluding any substitution effect. As shown in column 5 of table 3, this is true also for those individuals whose income is higher than the country median. The effect of the three types of experience remains significant and of comparable magnitude also for the wealthiest individuals in our sample.

In summary, both tables 2 and 3 suggest that past health experience is a strong determinant of income protection insurance uptake, providing strong support for our ‘vivid effect’ hypothesis. Interestingly, our results are stable also for those individuals who have an income higher than the country median. This confirms that the effect of experience is not necessarily cognitively mediated but rather pertains to the emotional sphere (Loewenstein et al., 2001). Additionally, tables 2 and 3 show that older individuals are less likely to purchase an insurance policy, whereas those who have a higher number of dependents or underage children are significantly more likely to adopt insurance. Male individuals are statistically more likely to subscribe an income protection policy. The same applies for employees compared to self-employed or unemployed individuals.

To ensure the validity of our results we also conducted two types of robustness checks. We first include in our regressions an indicator variable meant to capture the magnitude of the loss caused by illness. This is meant to provide a measure of the value of the loss as per Smith’s (1968) model. The dummy we used took value 1 if individuals were unable to work and thus lost income for more than 6 months. Including this indicator leaves our results unaltered.

4.2 The ‘severity effect’ hypothesis

In order to assess the validity of our ‘severity effect’ hypothesis we consider the effect that serious and less serious physical illnesses separately play on uptake. Specifically, in column 1 of table 4 we consider only those individuals who suffered from a stroke, cancer, or heart attack. These can be considered severe negative events. Conversely, in column 2 of table 4 we focus on less important events and consider only those individuals who lost income due to back pain, broke bone, joint problem, vision problem or any other physical condition. Columns 3 and 4 respectively present the effects that large and small vicissitudes exert on uptake together with emotional and second-hand experience.

---

5 We do not include this variable in all specification because of a dependency with the self-assessed risk of losing income variable and thus multicollinearity issues.
Table 4: Large and smaller physical events and decisions to purchase insurance

<table>
<thead>
<tr>
<th></th>
<th>Demand for insurance</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Large phy. events</td>
<td>Small phy. events</td>
<td>Large phy. +emo. +others’</td>
<td>Small phy. +emo. +others’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td></td>
</tr>
<tr>
<td>Large physical exp.</td>
<td>0.832***</td>
<td>0.612***</td>
<td>0.218***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.102)</td>
<td>(0.128)</td>
<td>(0.081)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small physical exp.</td>
<td>0.446***</td>
<td>0.218***</td>
<td>0.392***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.075)</td>
<td>(0.078)</td>
<td>(0.072)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional experience</td>
<td>0.373***</td>
<td>0.426***</td>
<td>0.429***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.078)</td>
<td>(0.056)</td>
<td>(0.059)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others’ experience</td>
<td>0.426***</td>
<td>0.429***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.056)</td>
<td>(0.059)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal risk</td>
<td>0.081***</td>
<td>0.059***</td>
<td>0.064***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.013)</td>
<td>(0.013)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Better than avg. health</td>
<td>0.255***</td>
<td>0.285***</td>
<td>0.248***</td>
<td>0.268***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.066)</td>
<td>(0.067)</td>
<td>(0.061)</td>
<td>(0.062)</td>
<td></td>
</tr>
<tr>
<td>optimism</td>
<td>0.204***</td>
<td>0.164***</td>
<td>0.167***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.045)</td>
<td>(0.048)</td>
<td>(0.048)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal risk</td>
<td>0.156**</td>
<td>0.171**</td>
<td>0.176***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.066)</td>
<td>(0.069)</td>
<td>(0.067)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.015***</td>
<td>-0.013***</td>
<td>-0.014***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.004)</td>
<td>(0.004)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children &lt;18</td>
<td>0.277***</td>
<td>0.264***</td>
<td>0.260***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.071)</td>
<td>(0.070)</td>
<td>(0.072)</td>
<td></td>
<td></td>
</tr>
<tr>
<td># people rely on income</td>
<td>0.050*</td>
<td>0.035</td>
<td>0.038</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.030)</td>
<td>(0.029)</td>
<td>(0.030)</td>
<td></td>
<td></td>
</tr>
<tr>
<td># years of schooling</td>
<td>0.009</td>
<td>0.009</td>
<td>0.009</td>
<td>0.008</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.008)</td>
<td>(0.008)</td>
<td>(0.008)</td>
<td></td>
</tr>
<tr>
<td>Current income</td>
<td>0.153***</td>
<td>0.157***</td>
<td>0.158***</td>
<td>0.160***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.019)</td>
<td>(0.018)</td>
<td>(0.019)</td>
<td>(0.018)</td>
<td></td>
</tr>
<tr>
<td>Employee</td>
<td>0.295***</td>
<td>0.319***</td>
<td>0.329***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.105)</td>
<td>(0.099)</td>
<td>(0.097)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-2.243***</td>
<td>-2.529***</td>
<td>-2.591***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.300)</td>
<td>(0.291)</td>
<td>(0.283)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>9712</td>
<td>9712</td>
<td>9712</td>
<td>9712</td>
<td></td>
</tr>
<tr>
<td>bic</td>
<td>11049</td>
<td>10987</td>
<td>10918</td>
<td>10961</td>
<td></td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>0.15</td>
<td>0.14</td>
<td>0.16</td>
<td>0.15</td>
<td></td>
</tr>
</tbody>
</table>

* p<0.10, ** p<0.05, *** p<0.01

Table 4 clearly shows, once again, that the effect of experience is stable and significant. Moreover, the estimates presented in Table 4 clearly support our ‘severity effect’ hypothesis. Having experienced severe negative health episodes due to neoplasms or cardiovascular diseases is likely to prompt a stronger effect than less severe physical conditions. The effect that back pain, broken bones, joint or vision problems or any other physical condition exert on income protection uptake is half the effect of more serious events. More precisely, having had
suffered from a cancer or cardiovascular problem in the past, increases the log odds of purchasing an insurance policy by 0.84, 23 percentage points more than in the case in which one had suffered from less severe instances. The magnitude of the discrepancy between the two effects remain stable even when including emotional or second-hand experience into the model.

5 Additional robustness checks

In order to ensure the robustness of our results, we present in this section a set of alternative model specifications. Our goal is to check that a re-formulation of the main model still generates consistent results and our estimates differ very little from the results presented in table 2 and 3. In the following subsections we test whether risk aversion, educational attainment and financial literacy represent alternative mechanisms which potentially explain uptake and reduce the explanatory power of experience. Additionally, to further our understanding concerning possible countries differences, we revert to nested models.

5.1 Experience and risk aversion

One possible criticism of the analysis we conducted above is that experience might simply be a measure of attitudes towards risk. It could be argued that people who experience negative health events lower their risk tolerance, and therefore that experience is just a measure of risk aversion which consequentially affects insurance uptake. Previous research has shown that this might be the case. Repetto (1974) finds that victims of a burglary become more risk averse. They are more inclined to increase their use of special locks and less likely to leave anything very valuable in their house. Waterstone (1978) finds that having personally experienced a damming flood made people more prepared for this event and thus intrinsically less risk tolerant. Although part of this effect should be captured by the coefficient of personal risk which identifies self-perceptions about the probabilities of losing income due to ill health, we explore this conjecture further. As a first step, we retrieve three different measures of risk aversion from our survey and calculate the correlation coefficients between these measures and the various types of experience.

The first measure of risk aversion we use consists of answers to one of the survey questions which asked participants whether, when making investments, they are willing to take substantial, above average, average, low, or no risk at all. Additionally, we asked our participants for how long their savings would last if they were unable to work. We believe this represents a second alternative way to measure risk aversion, as risk-averse individuals might save more than risk tolerant ones. Last, we asked individuals whether over the past year they spent more than, as much as, or less than their income. We believe that those who spend less than their income can be considered cautious and, in a sense, risk-averse.

We present the correlations between these measures and experience in table 5.

Table 5 shows that individuals who spend less than their income have higher savings, those who take no risk when investing spend less than their income and those who have more savings are more inclined to take risks when investing. Additionally, it can be seen that individuals who have experienced a negative health event, or know somebody who has, spend more, save less and are significantly more likely to take risks when taking investment decisions. This does not confirm the results obtained by previous research.

Given the categorical nature of our variables we also used the Kendall’s correlations and the possibly more informative Somers’ D regression coefficients. The associations maintain the same signs and values.
The effect of unanticipated experience on financial behaviour

Table 5 Correlations Experience and risk aversion

<table>
<thead>
<tr>
<th>Experience</th>
<th>Savings (from low to high)</th>
<th>Spending (from more to less than income)</th>
<th>Risk aversion (from low to high)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience</td>
<td>1.00</td>
<td>(1.00)</td>
<td>(1.00)</td>
</tr>
<tr>
<td>(p-value)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Savings</td>
<td>-0.07</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>(p-value)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td></td>
</tr>
<tr>
<td>Spending</td>
<td>-0.15</td>
<td>0.29</td>
<td>1.00</td>
</tr>
<tr>
<td>(p-value)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(1.00)</td>
</tr>
<tr>
<td>Risk aversion</td>
<td>-0.14</td>
<td>-0.06</td>
<td>0.10</td>
</tr>
<tr>
<td>(p-value)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
</tbody>
</table>

However, in order to properly evaluate whether risk-averse individuals are more likely than less risk-averse ones to purchase income protection insurance, we run our logit regressions splitting the sample between people with high risk aversion and people with low risk aversion on the basis of the measures described above. We report the results of our estimates in table 6. Specifically, we first calculated the median level of financial risks people are willing to take in each country and split the entire sample into two groups, i.e. those who take risks above the country median and those who instead prefer to take less risk than the median when making investments. These results are presented in columns 1 and 2 of table 6. We also calculated the median savings in each country and divided the sample between those individuals who are more risk averse and have more than the median savings (see column 3) and those who have less (see column 4). Additionally, in columns 5 and 6, we split the sample between those whose spending is below the country median pattern of spending and those whose spending is higher than the country median.

The results presented in table 6 allow us to conclude that experience significantly increases the likelihood of purchasing insurance, no matter the level of individual risk aversion. The effect that experience exerts on the decisions to purchase insurance seems independent from individual risk-tolerance. Nonetheless, looking at columns 1, 3, and 5, it can also be seen that the coefficient of experience is larger for risk averse individuals. Individuals whose risk tolerance is lower are also more inclined to purchase insurance. Another important finding which table 6 is able to uncover is that experience is a key determinant of insurance uptake regardless of personal patterns of spending and saving. This is an important finding. In fact, it could a priori be argued that experience might not be relevant at all, if the agent cannot buy insurance due to her poor financial situation. People might discard entirely previous experience, if they have low abilities to save and thus low disposable income. The results presented in table 6 instead show that, independently from peoples’ savings and spending patterns, the effect of experience remains stable and strongly significant.

5.2 Educational attainment, financial literacy and experience

There exists another important concern that we wish to address and this relates to the role of education and financial literacy. In all regressions above we controlled for individuals’ educational attainments. In any case, education turns out to have little predictive power on decisions to purchase insurance. This result could be consistent with the idea that experience is just absorbing some of the effect that education exhibits on the decision to purchase insurance. Additionally,
it could be argued that financial abilities might actually affect the role that experience plays on insurance uptake decisions. In fact, by now a consensus has been reached in the literature: high levels of financial literacy help people in making sound financial decisions. Lusardi and Mitchell (2014, p. 6) define financial literacy as “people’s ability to process economic information to make informed decisions about financial planning, wealth accumulation, debt, and pensions”. They associate financial literacy with knowledge of financial concepts and products including credit, how interest rate charges work, mortgage repayments, and weekly and monthly household budgeting (Lusardi and Mitchell, 2014; Lusardi and Mitchell, 2007). More generally, financial literacy has become associated with people’s ability to gather, understand

Table 6 Risk aversion and decision to purchase insurance

<table>
<thead>
<tr>
<th></th>
<th>Demand for insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High risk aversion</td>
</tr>
<tr>
<td>Experience</td>
<td>(1)</td>
</tr>
<tr>
<td>0.600***</td>
<td>0.585***</td>
</tr>
<tr>
<td>(0.086)</td>
<td>(0.120)</td>
</tr>
<tr>
<td>Personal risk</td>
<td>(0.077***</td>
</tr>
<tr>
<td>(0.026)</td>
<td>(0.021)</td>
</tr>
<tr>
<td>Better than avg. health</td>
<td>0.228**</td>
</tr>
<tr>
<td>(0.094)</td>
<td>(0.092)</td>
</tr>
<tr>
<td>Optimism</td>
<td>0.203***</td>
</tr>
<tr>
<td>(0.068)</td>
<td>(0.062)</td>
</tr>
<tr>
<td>Male</td>
<td>0.167*</td>
</tr>
<tr>
<td>(0.096)</td>
<td>(0.143)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.019***</td>
</tr>
<tr>
<td>(0.005)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>children &lt;18</td>
<td>0.212**</td>
</tr>
<tr>
<td>(0.086)</td>
<td>(0.139)</td>
</tr>
<tr>
<td># people rely on income</td>
<td>0.027</td>
</tr>
<tr>
<td>(0.036)</td>
<td>(0.049)</td>
</tr>
<tr>
<td># years of schooling</td>
<td>-0.002</td>
</tr>
<tr>
<td>(0.009)</td>
<td>(0.013)</td>
</tr>
<tr>
<td>Current income</td>
<td>0.144***</td>
</tr>
<tr>
<td>(0.031)</td>
<td>(0.023)</td>
</tr>
<tr>
<td>Employee</td>
<td>0.443***</td>
</tr>
<tr>
<td>(0.092)</td>
<td>(0.169)</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.525***</td>
</tr>
<tr>
<td>(0.257)</td>
<td>(0.416)</td>
</tr>
<tr>
<td>Country dummies</td>
<td>Yes</td>
</tr>
<tr>
<td>N</td>
<td>3861</td>
</tr>
<tr>
<td>bic</td>
<td>4676</td>
</tr>
<tr>
<td>Pseudo $R^2$</td>
<td>0.14</td>
</tr>
</tbody>
</table>

Note: * p<0.10, ** p<0.05, *** p<0.01
and process relevant and necessary information which allows to estimate the likely financial consequences of their actions. From these premises it could be argued that more financially skilled or knowledgeable individuals react differently from less skilled ones when evaluating the intrinsic information that experience can provide and ultimately deciding to purchase an insurance policy.

In order to test these conjectures and ascertain whether the effect of experience remains unaffected, we proceed with several steps. We first split our sample into individuals with high and low education, i.e. those with higher than or equal to the median number of years of schooling and those with lower than the country median. We report the related estimates in columns 1 and 2 of table 7. Additionally, we divided the sample into those individuals who scored higher than or as high as the country median in the financial literacy test in our survey and those instead whose financial acumen appears to be lower than the median. The related estimates are reported in columns 3 and 4 of table 7. Last, in column 5 we run our full model but include an interaction term between financial literacy and experience. In fact, although the estimates reported in columns 3 and 4 already provide an idea on whether experience exerts different effects depending on people’s financial abilities, by including an interaction term we can further our understanding of whether experience is likely to affect individuals to a different extent depending on their financial knowledge.

Table 7 clearly shows that experience is a significant predictor of insurance purchasing decisions for all groups considered. Interestingly, uptake is higher for less educated or less financially skilled individuals. Specifically, the odds of purchasing insurance for individuals with lower than the median skills are 20 percentage points higher than for those individuals whose financial abilities are high. This effect is also confirmed when looking at the interaction term presented in column 5. In this case we can see that for those with a negative past experience, a 1-unit increase in financial literacy score does not yields any significant change in the log odds of purchasing insurance. The significant interaction instead suggests that the effect of experience depends on the level of financial literacy. This implies that the odds that financially unskilled people who suffered from ill health in the past decide to purchase insurance are 2.27 times the odds of those who did not have this experience. But for every unit increase in the financial literacy test score, the effect of experience decreases by \((exp(-0.101) - 1) \times 100\) 9.6%. Therefore, the probability that a financially unskilled individual with a negative past experience purchases insurance is nearly 50%, keeping all other factors constant. The probability of uptake for highly skilled individuals with negative past health instead is 0.36.7

5.3 The effect of experience across countries

Country fixed effects are included in all our regressions to remove the impact on demand for insurance of fixed country characteristics which are potentially correlated with experience. A one-way ANOVA was conducted in the first instance to determine if the propensity to hold income protection insurance differed by country of residence. According to our results, there are a statistically significant differences between countries as determined by one-way ANOVA

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7 As an additional robustness check, we ran the regressions model for all those individuals who answered the three single financial literacy questions correctly. This was meant to scrutinise whether the effect of experience changes depending on whether people were able to identify the correct answer to the compound interest question, the inflation question, or the portfolio diversification question. We find that the effect of experience remains unchanged. Independently of their knowledge about the three distinct issues, individuals who experienced a negative unexpected health event are more likely than those who did not suffer from these instances to adopt a self-protective behaviour.
Table 7 Education, financial literacy and the decision to purchase insurance

<table>
<thead>
<tr>
<th></th>
<th>High Educ.</th>
<th>Low Educ.</th>
<th>Above or as med. fin. lit</th>
<th>Below med. fin. lit</th>
<th>Interaction term</th>
</tr>
</thead>
<tbody>
<tr>
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<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Experience</td>
<td>0.621***</td>
<td>0.631***</td>
<td>0.523***</td>
<td>0.807***</td>
<td>0.817***</td>
</tr>
<tr>
<td></td>
<td>(0.120)</td>
<td>(0.086)</td>
<td>(0.089)</td>
<td>(0.107)</td>
<td>(0.139)</td>
</tr>
<tr>
<td>Fin. lit.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.047</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.051)</td>
</tr>
<tr>
<td>Exp. × Fin. lit.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.101**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.050)</td>
</tr>
<tr>
<td>Personal risk</td>
<td>0.084***</td>
<td>0.066***</td>
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<td>0.104***</td>
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* p<0.10, ** p<0.05, *** p<0.01

(F(10,10570) = 140.85, p = 0.000). Additionally, a chi-squared test on the experience data finds significant differences among countries ($\chi^2(10) = 237.27$ Pr = 0.000). Experience is highest (75%) among respondents in Brazil, whereas the UK is lowest.

Given these results, we followed the indicator-variable approach in the regressions above. This approach is very well suited to our analysis given that we only have only 11 clusters (i.e. countries). Nonetheless, to test the robustness of our results we also run multilevel models with either random intercepts only or both random intercepts and slopes. A likelihood-ratio test favours a random-slope and random-intercept model ($\chi^2(1) = 6.50$, $Prob > \chi^2 = 0.0108$). The model confirms that the effect of experience is strong and significant ($\beta = 0.684$, $p = 0.000$).
To see the effects that experience exerts in each country, we can predict the random slopes and intercepts. If we then add to these the fixed effect given by the coefficient of experience $\beta_{(exp)}$ we can obtain the total effect of experience in each country. These details are provided in table 8.

Table 8  Effect of experience on insurance uptake by country

<table>
<thead>
<tr>
<th>Country</th>
<th>Fixed effect</th>
<th>Random effect (slope+intercept)</th>
<th>Total effect of experience on insurance uptake</th>
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Table 8 clearly shows that effect of experience on insurance uptake differs by country. We see that experience has a positive effect on the log odds of uptake in almost all countries, but its effects are much stronger for respondents in Hong Kong, Malaysia and US than in Italy or the UK.

These differences can be possibly related to at least two, not mutually exclusive, factors. First, when deciding to purchase an insurance policy, people might weight experience differently depending on the country’s welfare system. Over the last 25 years, social scientists have debated about the importance of nation-state regimes in the welfare provision process concluding that countries matter. Different welfare states give rise to heterogeneous institutions, policy instruments and practices (Esping-Andersen, 1990, 1999; Rodrik, 2008; Badarinza et al., 2016) including those related to income protection and benefit provision in case of income loss. As a consequence, depending on the country they live in, individuals have different expectations on whether the state will shoulder their income loss. UK respondents may believe that the National Health Service will carry the burden associated with any health-related interruption to earned income. Thus, negative health vicissitudes have a weaker effect on uptake. Conversely, US citizens might believe that the onus of income losses due to negative health events is on them. As a reaction, negative health events significantly increase insurance uptake. Second, the magnitude of the effects of experience might be related to the countries’ financial literacy level. The correlation coefficients presented in table 9 provide support to this explanation. As shown, the countries in which the effects of experience is stronger, namely Malaysia, Hong Kong and USA also display the highest correlation coefficients between experience and financial literacy. For these countries there exists a significant, negative and strong relation between financial acumen and negative health events. This means that, in our sample, financially unskilled individuals suffered proportionally more from past ill health. Conversely, in the UK, Germany and Italy, where experience exerts weaker effects on insurance uptake, the correlation coefficients between experience and financial acumen are low and not significant.

As an additional robustness check we merged our dataset with the 2015 epidemiology data retrieved for all our countries from the ghdx.healthdata.org website. The data provides inci-
Table 9 Country level correlations between experience, education and financial literacy

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dence rates for non-communicable diseases for men and women at all ages. Note that this data is not available for Hong Kong, for which we used the Chinese incidence rates. As a consequence, we were able to attribute to each of our respondents a measure of the risk of contracting cancer or suffering from cardiovascular diseases or an anxiety disorder depending on his or her age. This was done to control for country-specific patterns of risk. According to our results, incidence rates do not significantly predict insurance uptake. Additionally, and more importantly, the inclusion of this control in our regressions does not change the effect that experience exerts on uptake. Previous literature has stressed that finding a positive correlation between precaution and experience might simply indicate greater exposure to risks in some countries than in others, rather than the effect of individual experience (Weinstein, 1989). This test was carried out to refute this argument.

6 Synthesis of results

In this paper, we investigated whether and to what extend first- and second- hand experience of losses in earned income due to serious (physical or mental) illness or disability affects individual propensities to purchase income protection insurance policies. We found strong support for our ‘vivid effect’ hypothesis: Having personally suffered health adversities severe enough to prevent individuals from working for an extended period, or knowing somebody who has, significantly increases the probability of purchasing insurance compared to the baseline. This
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result is solid across model specifications. The role of experience is independent of other confounding factors such as income, risk aversion, education, and financial knowledge. Additionally, we discovered that experience effects are stronger in some countries compared to others, but in most instances positive.

Our results show that in the context of income protection insurance uptake, experience is “not just another variable that is inserted into a decision equation” (Weinstein, 1989, p.47). Rather, available experience is likely to fuel self-protective actions possibly because it elicits affective reactions (Weber, 2006). The vividness of experience and the strength of anticipatory emotions (Loewenstein et al., 2001) represent some of the key motivations behind uptake.

Additionally, according to Weinstein (1989), one of the main limitations of previous investigations on the role of previous experience in decision-making relates to the lack of a control group. Weinstein (1989) claims that studying only those who were exposed to previous negative experiences might intrinsically provide a bias in the estimated role that adversities play in the decision-making process. We believe that the richness of our dataset allowed us to avoid this methodological flaw. Out of the 3,797 respondents who reported having income protection insurance, only 2,767 had some form of previous experience, the remaining 1,030 did not face any health adversity in the past. By the same token, among the 6,784 who said they do not have insurance, 3,990 had an negative health experience in the past whereas 2,794 did not. We thus believe that our study provides strong, unbiased evidence of the positive correlation linking income protection insurance uptake and experience.

7 Implications and conclusions

In this paper, it has been shown that personal experience of ill health can lead people to see hazards as more frequent and to view themselves as potentially more vulnerable absent such experience. If the ‘harm’ experienced is serious, the evidence suggests that people tend to seek ways of reducing their exposure to future adverse events through the purchase of insurance. In addition, adverse experience can lead people to be more self-conscious about the risks associated with falling ill taking into account different levels of severity. However people assess their prospects, our results provide strong evidence as regards the significance of experience in prompting behaviour that anticipates the future. Our results also demonstrate that the combination of salience and vividness often leads to leads changes in expectations and behaviour as regards personal financial well-being.

Remarkably, these results hold the cross the entire database including the 11 countries which make up the respondent base of our survey. There are, however, subtle differences between respondents according to their countries of residence. When reporting our results, we have noted these differences where appropriate. Nonetheless, we show that experience represents a key determinant of individual financial decision-making with respect to the purchase insurance across the entire database. We expected to see these types of differences given that the countries represented in our database have, historically, quite different institutional forms especially as regards social welfare. Even so, experience matters in all countries. In this respect, we may well have identified a fundamental behavioural trait given that our results do not suffer from the possible biases which arise when testing for behaviour across cultures using university test subjects (Henrich et al., 2010).

Our findings on experience have a number of implications as regards individual behaviour and labor market dynamics. While caution after-the-fact is entirely reasonable at the household level, it could stifle risk-taking in the aggregate thereby reducing labor market flexibility at the local, national and international levels. More specifically, if certain segments of the working
population over-estimate the likelihood of a repeat event, our results suggest that those lower income workers who could benefit from taking a risk on employment and earned income opportunities may reinforce their long-term labor market vulnerability by not taking up those opportunities. Our results also suggest that those already well-positioned in labor markets tend to be better informed about the likelihood of another adverse event and tend to discount the likelihood of its re-occurrence. Therefore, they may well take advantage of opportunities in labor markets. These types of responses to adverse unexpected events can have short-term and long-term welfare consequences.

Importantly, we found that respondents with higher levels of financial literacy tend to give lower weight to unexpected adverse events. The effect of financial literacy is modest, and statistically significant only when interacted with experience. Further, high levels of financial literacy are statistically correlated with higher levels of earned income. But the significance of this effect suggests that an informed perspective on impact and likelihood could, at the margin, prompt people to be less cautious than average and adapt in ways that may benefit them in the longer-term. What higher income and better educated individuals do is hardly a recipe for others less advantaged. But these findings suggest that public policies that discount the impact of adverse events for those most vulnerable in society could reap benefits for those affected and society at large in terms of enhancing optimism (as opposed to pessimism) about the future.

It also appears that survey respondents located in the lower tiers of their local labor markets are adversely affected by unanticipated health-related events. Evidence gleaned from our survey suggests that these respondents would pay more for this type of insurance than perhaps justified by the implied value-for-money. Not only do these respondents tend to increase their uptake despite their budget constraints, they also tend to have difficulties assessing the likely cost of such insurance. Our results suggest that government and/or employer programs that provide cost-effective insurance could benefit many lower paid workers (whatever their country of residence).

It is striking that experience is so powerful in prompting self-protective behaviour. As noted above the impact of experience depends upon being unexpected and being vivid in effect. Other research has also shown that warnings are more effective when they rely on individual experience and emotionally-charged anecdotes rather than sterile statistics (Hendrickx et al., 1989). As such, this is one way of accounting for our results that show that unexpected experience trumps financial knowledge. As for the design of communication policies designed to inform individuals regarding the costs and consequences of these types of events on short-term and long-term prospects, the challenge is to explain the salience of some risk that is hitherto unexperienced. Absent experience, our results suggest that the possible adverse consequences of an event must be portrayed in ways that are vivid – are grounded in the particularities of people’s lives including their long-term commitments.
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References


Appendices

A Survey details

To ensure global reach and robust, timely data collection, we enlisted a private survey research firm to administer the survey. The method used for the survey research is called CAWI (Computer Assisted Web Interviewing). CAWI engages respondents through a network of panel providers, thus allowing both global reach and access to local knowledge and expertise in panel management. All the panels with which the research firm engages are actively managed, proprietary to the providers, and maintained time (at least a decade). The providers’ panel management practices were compliant with market research industry standards (ESOMAR), and data protection and privacy laws.

Panel members are individuals who participate freely in online surveys after enrolling voluntarily as a panel member. Recruitment takes place either through open enrolment, where individuals sign up to participate, or through invitations targeted at people who share demographic characteristics of interest to the panel providers. Recruitment is conducted via online marketing channels and direct email. Enrolment in the panel then takes place via a double opt-in registration process: prospective panellists first complete a registration form, including a consent form, and then confirm their registration by clicking on a customised link sent to them via an automatically generated email. To take part in a specific survey, panel members receive invitations via email, which include basic participation instructions and information about the approximate length of the survey. These invitations are designed to be ‘non-leading’: panellists receive no advance information about the topic or contents of the survey, only an estimated time of completion.

Members of a panel receive rewards for participating in surveys according to a structured incentive scheme. The size of the reward offered as an incentive is determined by the length and complexity of the survey; in many cases it is also determined by the socio-demographic profile of panellists needed for a specific survey. For instance, highly qualified professionals would generally receive greater inducements for completing a survey related to their profession than for completing a survey on consumer purchasing decisions. The incentives provided for participating in any project are identical for all respondents. Only panellists who complete a survey successfully receive incentives. These are tailored to local laws and preferences but generally include a ‘points’ programme, gift cards, vouchers, charitable contributions, and prize draws.

To ensure that the target audience for a study is selected from the available panel members, a screener section is normally included at the beginning of a survey. To ensure an otherwise representative sample within this target audience, a quota system based on nationally representative demographic variables such as age, gender, region, and income level is used in sample selection. It is worth noting that whereas panels in developed countries are not significantly skewed on these variables, in some other countries they are skewed towards urban areas where internet access is higher.
B Specific questions used for analysis

B.1 Dependent variable

Q6. Do you personally have insurance (beyond obligatory government benefits), which would protect your income against any of the following types of risk? [ANSWER OPTIONS: Yes; No; Don’t know]

☐ Serious illness (e.g., cancer, heart disease) and / or disability (e.g., impairment in mobility, hearing or sight)

☐ Premature death

B.2 Main regressors

B.2.1 Experience

Q11. In your working life have you personally ever experienced loss of income due to any of the following? Please select ‘Yes’ for each of the following that caused you to experience loss of income. If you have never experienced loss of income please select ‘No’ for all of the following. [ANSWER OPTIONS: Yes; No]

☐ Back pain

☐ Joint problem

☐ Broken bone

☐ Stroke

☐ Cancer

☐ Heart attack

☐ Vision (eyesight) problems

☐ Other physical condition

☐ Stress

☐ Emotional health

☐ Caring for a family member

☐ Maternity leave

Q24. Do you personally know someone who has been unable to work due to a serious illness or disability?

☐ Yes

☐ No
**B.2.2 Optimism**

**Q22.** Given your age, would you say you are healthier, about as healthy, or less healthy than the average?

- □ Healthier than the average
- □ About as healthy as the average
- □ Less healthy than the average

**Q23.** Looking forward five years, how healthy do you expect to be?

- □ About as healthy as I am now
- □ Healthier than I am now
- □ Less healthy than I am now

**Q40.** Do you have a good idea of what your income is likely to be in the next 12 months?

- □ Yes, I expect my income to grow in the next 12 months
- □ Yes, I expect my income will remain at the same level in the next 12 months
- □ Yes, I expect my income will decline in the next 12 months
- □ No, I don’t know how my income level will develop in the next 12 months

**B.2.3 Perceived exposure to risk**

**Q19C.** Please consider your own current lifestyle, health and work environment. What do you think is your own personal risk of experiencing a loss of income due to serious illness or disability?

- □ 10% or less
- □ 11 - 20%
- □ 21 - 30%
- □ 31 - 40%
- □ 41 - 50%
- □ 51 - 75%
- □ More than 75%
B.3 Controls

**Q1.** What is your gender?

- [ ] Male
- [ ] Female

**Q2.** What is your age (in years)?

**Q3.** Which of the following statements best describe your current situation? If you currently have multiple jobs, please answer with reference to the job that contributed the most to your income over the past 12 months.

- [ ] I am employed on a full-time basis
- [ ] I am employed on a part-time basis
- [ ] I am self-employed
- [ ] I am not currently employed

**Q5C.** What is your households gross monthly income? Please include all sources of income within the household, such as wages / salaries, retirement pay / pensions, and allowances. [ANSWER OPTIONS: localized per country]

**Q48.** How many years of schooling (excluding pre-school) have you completed in your life, including post-secondary education and training?

**Q50A.** Who else lives in your household (besides yourself)?

- [ ] Your spouse/partner
- [ ] Child(ren) aged 18 or more
- [ ] Child(ren) aged 12 to 17
- [ ] Child(ren) aged 6 to 11
- [ ] Child(ren) aged less than 6
- [ ] Your parent(s)
- [ ] Other

**Q51.** How many people rely on your income?

- [ ] 1
- [ ] 2
- [ ] 3
- [ ] 4
- [ ] 5
- [ ] 6
- [ ] More than 6