Determinants of Personal Risk Financing Strategies[1]

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Abstract

Adverse income shocks may have an eminent effect on short-term and long-term financial stability of individuals and households. Optimal response to risk exposure is driven by effectively chosen risk management strategies through combination of insurance, savings and other tools. However, individuals and households do not always make optimal decisions in these situations. The paper investigates the determinants of individuals' decisions on the implementation of risk financing strategies. We test demographic, economic, and personal characteristics (including risk attitude and financial literacy) with the aim to identify relevant factors associated with different personal risk management behaviour. We use data from the survey in the Slovak Republic. We analyse the use of the two risk financing strategies, risk transfer and self-insurance, in coping with life and health risks of individuals. Our results show that level of financial literacy and risk attitude are important elements in personal risk management decisions, which policymakers should also reflect on in an effort to ensure the financial stability of individuals and households.

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Introduction

Adverse income shocks can significantly affect the financial stability of households in both the short- and long-term. Such shocks can stem from idiosyncratic risks like premature death, disability, or longevity. The risk of income shocks has recently been amplified due to systemic crises like the 2008 – 2009 financial crisis, the Covid-19 pandemic, the energy crisis, and high inflation, further exacerbating household income risks (Shiller, 2007). As governments worldwide have urged individuals and households to undertake responsibility for their well-being, a sound response to risk exposure becomes an essential component in preserving financial stability and depends on effectively chosen risk management strategies

Two strategies for responding to risk have been widely studied in the literature. The first involves risk transfer, primarily through private insurance, whilst the second is self-insurance based on the theory of precautionary savings. Both strategies serve as risk financing instruments, allowing individuals or families to put aside money in the present to cover potential future losses.[2] Each of these strategies carries its own set of advantages and disadvantages and should be combined to create an effective response to risk exposure (Gollier, 1994). However, households and individuals often fail to make effective decisions with regards to mitigating income shock risk. Research conducted in various countries show a high prevalence of under-saving along with inadequate insurance coverage among households and individuals (see, for example, Schanz, 2019; Babiarz and Robb, 2014).

In Slovakia, personal risk management through risk financing strategies is limited. Household savings in Slovak Republic were in long-term below 10% of the gross disposable income (Eurostat, 2023). According to Cupák et al. (2020), households held a median of 2,800 EUR in liquid financial assets in 2017. In comparison, households in Eurozone countries held a median value of 10,300 EUR during the same period (ECB, 2020). Furthermore, 10% of households in Slovakia lack liquid financial assets, with just over 50% possessing enough financial assets to cover their expenses in the following six months (Cupák et al., 2020). This issue has persisted over the long-term. According to a 2014 survey conducted by Partners Group, 36% of respondents were unable to save any money, while only 26% saved more than 10% (the recommended minimum threshold for savings) of their income each month (Nadácia Partners, 2014). A 2021 wave of the representative Household Finance and Consumption Survey (HFCS), revealing that despite an 8% increase from 2017 to 2021, only 40% of households are able to save, highlighting the persistently low percentage (Cupák et al., 2023).

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[2] Other risk financing strategies include risk transfer through contracts (usually legal) or risk financing through capital markets. These instruments are outside the scope of our research. For more information on risk financing techniques, see, for example, Rejda and McNamara (2017).

When considering private insurance as a tool for risk financing, the situation in Slovakia is less than optimal. Data provided by Insurance Europe indicates that the share of written premiums to gross domestic product (known as insurance penetration) was only 2.4% in Slovakia in 2020. In contrast, the average insurance penetration rate in other EU countries during the same period was 6.4%. On average, a typical person in Slovakia spends 397EUR per year on private insurance, which represents 2.6% of their gross disposable income. The average insurance density in EU countries is 3 551 EUR, equivalent to 15.42% of the gross disposable income of households (Insurance Europe, 2023; Eurostat, 2023). Nonetheless, the situation seems to be improving gradually, although it is apparent that Slovak residents are not well equipped for facing unforeseen income shocks.

Our study focuses on investigate the determinants of individuals' decisions on the implementation of risk financing strategies. We use data from the survey in the Slovak Republic. Our main focus is on the two most prevalent risk financing methods (risk transfer and self-insurance) to cope with personal life and health risk – private insurance-based risk transfer and self-insurance via precautionary savings. We test demographic, economic, and personal characteristics (including risk attitude and financial literacy) with the aim to identify relevant factors associated with different personal risk management behaviour. Our findings highlight the significance of financial literacy and risk attitude in managing individuals' personal risks. Individuals with a higher level of financial literacy have a significantly lower probability of preferring a unilateral risk management approach. Instead, they often prefer a combination of risk management strategies that could make them less vulnerable to adverse income shocks. A partial analysis of preferences for specified risk management strategies supports these findings.

Our study contributes to the literature in several ways. Previous research has been limited to studying the demand for individual financial instruments (regardless of ownership of other financial products) or to looking at management strategies implemented in specific risk exposure scenarios.[3] Our intention is more general. We focus on preference of particular risk financing strategy as well as on their combination of risk financing strategies for mitigating wide range of life and health risk. This paper focuses on managing idiosyncratic life and health risks, which can be significant drivers of unexpected income shortages or expenditure shocks. Individuals and households are more likely to be exposed to this type of risk. Secondly, there remains limited understanding of how individuals and households manage financial risk from adverse income shocks in prior literature (Asdrubali et al., 2020). We test demographic, economic, and personal characteristics related

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[3] See for example, Lugilde, Bande and Riveiro (2019), Atreya, Ferreira and Michel-Kerjan (2015), Nshakira-Rukundo, Kamau and Baumüller (2021).

with this behaviour. Understanding individuals' decisions patterns is crucial in supporting effective, complex, and long-term risk management decisions (Shiller, 2007). These findings may assist policymakers in targeting policies on personal and household risk management and enhancing awareness of effective risk management practices.

The rest of the paper is structured as follows. The first section provides a review of literature on personal and household risk management behaviour. We analyse previous studies on the decisions on risk management strategies and their determinants. The subsequent section of the paper explains the dataset and the methodology. Next, we outline the findings of our analysis. The final section of the paper will present our conclusions, recommendations for future research and constraints of this study.

1. Previous Research on Personal and Household Risk Management

Research on personal and household risk management has been extensively covered in academic literature. The pioneering work of Ehrlich and Becker (1972) and subsequent studies (such as Dionne and Eeckhoudt, 1985; Shogren, 1990; Gollier, 1994; Courbage, 2001; Buera and Shin, 2011, etc.) theoretical model preferences for various risk management strategies, including self-insurance and private insurance, alongside the identification of relationships among various risk management strategies. The role of prices and income is supported in these models.

On the contrary, there is a scarcity of empirical studies on strategies employed by individuals and households to manage risks. In particular, research on household's strategies to coping with income shocks (besides saving and borrowing) is scattered (Blundell, Pistaferri and Preston, 2008). Previous research in this area can be classified into two mains streams. The first stream of research centres on households' risk sharing behaviour (see, for example, Hayashi, Altonji and Kotlikoff, 1996; Asdrubali et al., 2020). These studies explore risk sharing both within and across households,[4] as well as the correlation between risk management and consumption habits. This stream of literature supports the key role of partial insurance in risk sharing (Cochrane, 1991; Nelson, 1994) as well as the role of self-insurance and risk sharing within households (Hayashi, Altonji and Kotlikoff, 1996; Asdrubali et al., 2020). Asdrubali et al. (2020) reveal that Italian households frequently use savings as self-insurance rather than other methods (portfolio diversification and private transfers) of within-household risk-sharing. Chinese households emergency precautionary saving ranks amongst one of the primary motivators for saving behaviour (Xiao and Fan, 2002; Yao et al., 2011).

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[4] See Fafchamps (2011) for more information about research on risk sharing between household.

Rampini and Viswanathan's (2017) model concludes that household risk management exhibits a precautionary nature that intensifies with greater uncertainty. Within a risky framework, individuals and households encounter a maximization problem in efficiently handling risk exposures. To effectively manage risks, one must choose a combination of risk management tools contemporaneously. Menegatti and Rebessi (2011) discovered that households employ various risk management methods for different purposes. Full coverage insurance policies are purchased to safeguard against different risks and prevention is utilized to lower insurance premiums. In contrast, savings are primarily utilized to even out consumption over time.

Seminal research has established that the relation between insurance and precautionary saving is both complementary and substitutive in nature (Ehrlich and Becker, 1972). This notion is referred to as Hicksian substitution. This has been supported by subsequent empirical and experimental research (Moffet, 1975; Rose and Mehr, 1980). Further empirical and experimental research support these predictions. Bajtelsmit, Coats and Thistle (2015) have modelled and experimentally tested the decision-making process between purchasing insurance and taking precautionary measures. They have found that the probability of purchasing insurance is higher when there is greater ambiguity regarding the probability of loss. The level of uncertainty is associated with both the demand for insurance and precautionary saving behaviour (see Baiardi, Magnani and Menegatti, 2020).

The second stream of literature concentrates on the factors related to specific risk management decisions. Overall preference for individual strategy is studied mainly in the area of risk exposures of farmers and rural population in developing countries. For example, Shah et al. (2017) studied flood risk management in Pakistan and determined that precautionary savings and property characteristics play a significant role in flood risk management. Cole et al. (2013) investigate a rain insurance product in rural India and demonstrate the role played by price and non-price barriers in risk management decisions. Ozdemir and Yilmaz (2011) identify the significant role played by risk components, risk characteristics and socio-economic variables in risk management. These determinants differ across various risk management behaviours.

Arun and Bendig (2010) test key nonfinancial barriers to insurance uptake, such as lack of trust, liquidity, credit constraints, financial illiteracy and limited salience. These factors have a significant impact on the number of insurance policies purchased by households. Due to these barriers, many households are limited to purchasing only one policy, or none at all, despite the need for multiple policies to adequately insure their income. Financial service provision exacerbates these frictions.

The determinants of preference for different risk management tools have not been extensively researched. Income and wealth are vital factors for effective risk management (refer to Deaton, 1991). According to Rampini and Viswanathan's (2017) theoretical model, household income risk management is incomplete and positively correlated with households' net worth. In the context of insurance, Park and Lemaire (2012) test the determinants of non-life insurance penetration. They discovered that in poorer countries, GDP is the primary factor influencing insurance consumption, whereas cultural distinctions bear no relation to insurance. In contrast, within developed countries, the correlation between GDP and insurance consumption vanishes, and cultural influence becomes a significant predictor of insurance consumption. Di Falco (2014) analysed the use of climate change adaptation as a proxy for risk management decisions and identified age, gender, and level of education as important determinants of risk management behaviour. For low-income and moderate-income households, Gutter et al. (2012) found that individuals with lower levels of education were less inclined to combine various saving strategies. Gollier (1994) argues that a preference for transfer strategy reflects risk-averse behaviour, while a preference for self-insurance represents prudent behaviour.

Prior research has identified income, financial literacy, and risk aversion as crucial factors in personal risk management behaviour (Friedman, 2018; Eisenhauer and Halek, 1999; Hong, Sung and Kim, 2002; Babiarz and Robb, 2014; Brounen et al., 2016; Outreville, 2014). Furthermore, Mitchell and Lusardi (2015), Allgood and Walstad (2016), Fan and Zhang (2021) as well as Delgadillo and Lee (2021) and Mountain et al. (2021) have expanded on this relationship to include the dimension of financial literacy. Delgadillo and Lee (2021) found evidence supporting the beneficial impact of financial education on both financial literacy and financial behaviour. Similarly, Fan and Zhang (2021) reported positive outcomes from financial literacy and education on emergency savings behaviour. In line with these conclusions, Babiarz and Robb (2014) provided support for the importance of financial literacy in emergency savings. Mitchell and Lusardi (2015) and Allgood and Walstad (2016) supports the role of higher level of financial literacy on demand for insurance. These findings indicate that households with greater financial knowledge exhibit higher levels of confidence in their financial abilities and are more inclined to establish emergency funds.

2. Data and Methodology

In this paper, we use data from an extensive study on personal financial decisions conducted by the Department of Insurance at the University of Economics in Bratislava.[5] The survey includes various questions regarding demand for insurance,

saving behavior and specific demographic, economic and personal characteristics of respondents. The targeted population was an economically productive population (i.e. individuals between 18 – 61 years old) situated in the Slovak Republic. Invitations to participate in the survey were distributed via email and in paper format.[6] Respondents were selected randomly from the Department of Insurance database, and only completed surveys were used for analysis. The final dataset comprises 870 respondents.[7]

Budget constraints are a significant factor in explaining the lack of income risk management (e.g. Rampini and Viswanathan, 2017). Under limited funds individuals and households have to choose between saving and insurance. Our primary focus is on individual voluntary decisions; therefore, we have restricted our sample to respondents whose income surpasses the poverty line.[8] Within this population, we cannot distinguish between affordability and availability. The subsequent analysis employs a dataset comprising 743 observations.

Our study focused on two risk financing strategies – risk transfer through private insurance and self-insurance through saving. The self-insurance is identified through the response to a question about saving pattern[9] and data about insurance decisions are retrieved from the survey question regarding private insurance policy ownership.[10]

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[5] Data were collected between February and March 2014. This period is suitable for our research on personal risk management because in retrospective view this period is characteristic with economic stability. The effects of the financial and economic crisis had been minimized and any further significant crises were not linked to this timeframe in the Slovak Republic. This is important assumption as recent crisis could have affected the behaviour of individuals. For example, individuals have a greater propensity to purchase insurance shortly after experiencing loss (Cole et al., 2013; Rampini and Viswanathan, 2017). However, these dynamic falls are outside the scope of our study.

[6] The overall survey response rate was approximately 10%. We are aware of potential selection bias in our sample. This could affect the proportion of the sample that combine the risk financing – more subjects aware of personal risk management respond to the survey. Because of this assumption, we focus on the analysis of subsamples of individuals who do not use any risk financing strategies or use only unilateral strategy (risk transfer or self-insurance) in comparison to combination of risk financing strategies.

[7] In the age cohort 18 – 61, our sample follows the gender and age distribution of the population of the Slovak Republic in references period (2014).

[8] According to EU-SILC data, adjusted monthly poverty line income per individual was 330 EUR in referenced period (2014).

[9] Participants were surveyed with the question (translated from Slovak) "*Do you save any portion of your aforementioned income?*" The responses were as follows: "*I do not save*", "*I save regularly (e.g. monthly)*", "*I save irregularly (when it is possible)*". It was not specified which financial instruments used for savings by the participants, thus the liquidity of the accumulated capital is unclear. The results indicated that some respondents do not save, while others save either regularly (e.g. on a monthly basis) or irregularly, at their discretion. From a risk management standpoint, such accumulated capital could be potentially utilized to counteract unforeseen income shocks. This assumption is supported by previous research. For example, Despard et al. (2020) have identified that owning a savings account increases the likelihood of having an emergency fund in the UK.

Firstly, we focus on general approach to personal risk financing strategy. We use a Probit regression models for testing the factors related to the behaviour when the individuals combine risk financing strategies or they use only one unilateral strategy (either self-insurance or insurance). In first two models, the dependent variable *Combination of risk financing strategies* is binary variable that takes the value of 1 if the participant combines risk financing strategies, and 0 otherwise. The combination of risk financing strategies is commonly considered as an effective method for managing risks and allows for coverage of adverse costs. In third and fourth models, the dependent variable *Unilateral risk financing strategies* is binary variable that takes the value of 1 if the participant use only one risk financing strategy, and 0 otherwise. Unilateral risk financing strategy is a less diversified approach to personal risk management and individuals and households are more susceptible to negative income shocks. This may lead to lowered their living standards and increased their financial distress.

Next, we examine the determinants of the particular risk financing strategy. We employ Multinomial (polytomous) logistic regression with the combination of financing strategies as the reference base category. In following models, the dependent variable *Risk financing strategy* captures the individuals' approach to risk financing. *Risk financing strategy* is a categorical variable that value equals 0 if individual has none of the studied risk financing strategy, 1 if individual has only private insurance, 2 if individuals has only self-insurance and 3 if individual combines the saving and insurance. In reported model, combination of financing strategies is a reference base category.

Based on the literature review, our explanatory variables, include demographic determinants (gender, age, education, economically dependent children and marital status), economic determinants (income, employment status, whether one is a breadwinner) and personal characteristics (risk attitude[11] and financial literacy[12]). The list of explanatory variables and descriptive statistics is presented in Table 1.

In general, the majority of our respondents are male, married or cohabiting partners/couples, have a university education, are employees or entrepreneurs and declare themselves as breadwinners. An important feature of the dataset is that 45.9% of respondents have a net income above the national average in the reference period. In terms of personal characteristics, more respondents are risk-averse

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[10] Possible policies related to private life and health insurance may include several types of cover, including life insurance, pension insurance or accident insurance. Respondents could identify multiple life and health insurance policies. We only focus on private insurance policies.

[11] Following Dohmen et al. (2011), we apply a modification of general risk question. Respondents were asked to subjectively rated themselves into three categories: *1. Risk adverse (you are cautious, try to avoid risk, prefer a certain situation to an uncertain one, or a lower but guaranteed return to a higher uncertain return), 2. Risk neutral and 3. Risk loving (you participate in lotteries, seek risky situations, are willing to take risks, gamble).*

than risk-seeking, which is in line with previous observations in the literature (e.g. Halek and Eisenhauer, 2001), and only 10.8% of respondents reported having a low level of financial literacy.

T a b l e 1

List of Explanatory Variables and Descriptive Statistics

	Variable	Definition	Mean	Standard deviation
Demographic factors	Female	Binary variable equals one for female and zero for male.	0.499	0.500
	Older than 40 years of age	Binary variable equals one for those who are older than 40 years of age and zero for those who are younger than 40 years of age.	0.509	0.500
	Married/couples who live together	Binary variable equals one for those who are married or couples who live together and zero for those who are single/divorced or widowed.	0.553	0.498
	University education	Binary variable equals one for those who have the university education and zero otherwise.	0.533	0.498
	Financially dependent children	Binary variable equals one for those who have at least one financially dependent child and zero otherwise.	0.478	0.500
Economic factors	Income above average[a]	Binary variable equals one for those who have gross income above national average income and zero otherwise.	0.459	0.499
	Employee/ entrepreneur	Binary variable equals one for those who are employed (employee/entrepreneur) and zero otherwise.	0.900	0.300
	Breadwinner	Binary variable equals one for those who declare themselves as a breadwinner and zero otherwise.	0.606	0.489
Personal traits	Risk averse attitude	Binary variable equals one for those who declare themselves as risk averse and zero otherwise.	0.416	0.493
	Risk loving attitude	Binary variable equals one for those who declare themselves as risk averse and zero otherwise.	0.067	0.251
	High level of financial literacy	Binary variable equals one for those who declare themselves as high level of financial literacy and zero otherwise.	0.201	0.401
	Low level of financial literacy	Binary variable equals one for those who declare themselves as having a low level of financial literacy and zero otherwise.	0.108	0.310

Note: [a] Gross income of the respondents is compared to national average gross income in a referenced period.

Source: Author's own calculations.

3. Results on Determinants of Personal Risk Management

Individuals and households could use different risk management strategies to mitigate potential income shocks and losses. Previous literature concludes, these strategies should not be used isolated, but their combination is suitable for effective

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[12] We measure perceived financial literacy, i.e. self-reported level of financial literacy. Allgood and Walstad (2016) conclude that financial decision is affected by actual and perceived financial literacy as well. Recent findings suggest that perceived subjective literacy might be a more effective predictor of financial behaviour than objective literacy (Xiao et al., 2011). Our respondents have to classify themselves into one of three categories: *1. High financially literate (you understand not only common financial products but also areas such as investing and are often asked for advice by family and friends), 2. Average financially literate (you do not get lost in routine financial matters relating to your own finances) and 3. Poorly financially literate (you don't understand finance and financial products, you need advice from others).*

risk management. In our sample, 78.10% of individuals own at least one private life and health insurance policy and 83.31% of respondents report that they save money. The majority of agents (69.58%) use a combination of risk management strategies to mitigate income shocks. These individuals own some form of private life and health insurance policy along with precautionary savings. On the other hand, 30.42% of our respondents do not diversify their personal risk management strategies and apply a unilateral risk management strategy. This third of respondents represents a vulnerable population that is susceptible to income shocks from life and health losses. Specifically, 8.61% prefer only private insurance, 13.73% prefer only savings and 8.08% use neither insurance nor savings as a risk management strategy to mitigate personal life and health risks. Due to the low level of risk management diversification, the ability to smooth consumption after an income shock is rather limited for these agents.

A more general view of the overall risk management approach is shown in Table 2. The results show that the preference for a combined management strategy is linked to demographic, economic and personal characteristics of individuals. In general, those who are older than 40 years of age, have a university education, are married/couples living together with financially dependent children, have above-average income, are employed/entrepreneur and have higher level financial literacy have higher probability to prefer combination of risk financing strategies *ceteris paribus*. Having financially dependent children, being a risk taker and having a low level of financial literacy reduce the likelihood of more effective risk management. The decreasing effect of having financially dependent children on using combination of risk financing strategies could be explained by single parents and their higher costs related to rising a child. On the other single parent families represent a vulnerable population in case of adverse situation relate to life and health of breadwinner and more effective approach to risk financing would be needed. In this subpopulation, only 50.77% of respondents declare they use combination of risk financing strategies in comparison to 71.39% within the subpopulation of parents that are married or living in a couple.

Those who describe themselves as risk-loving are more likely to prefer a unilateral risk management strategy. We assume that these respondents manage their risks through different types of assets (with higher returns and also higher risks). Our data do not allow us to prove this assumption.

A detailed look at the preferences for a unilateral risk financing instrument, as well as the use of none of the risk financing strategies studied, is presented in Table 3. This table reports the results of multinomial (polytomous) logistic regression, where the reference (base) category represents a combination of risk financing strategies.

T a b l e 2

Parameter Estimates on Combination of Financing Strategies and Unilateral Risk Financing Strategies

	Combination of risk financing strategies		Unilateral risk financing strategies	
Female	0.105 (0.100)	0.171 (0.107)	0.054 (0.105)	0.055 (0.110)
Older than 40 years of age	0.228* (0.113)	0.223+ (0.119)	−0.265* (0.117)	−0.252* (0.122)
Married/couples who live together	0.033 (0.149)	0.092 (0.153)	0.024 (0.155)	−0.001 (0.157)
University education	0.418*** (0.102)	0.194+ (0.112)	−0.272* (0.106)	−0.139 (0.115)
Financially dependent children	−0.409* (0.183)	−0.458* (0.184)	0.167 (0.193)	0.158 (0.199)
Married/couples who live together * Financially dependent children	0.732** (0.231)	0.635** (0.233)	−0.407+ (0.242)	−0.325 (0.246)
Risk averse attitude		−0.095 (0.109)		−0.033 (0.114)
Risk loving attitude		−0.376* (0.190)		0.526** (0.198)
High level of financial literacy		0.567*** (0.148)		−0.734*** (0.163)
Low level of financial literacy		−0.297+ (0.160)		0.005 (0.168)
Income above average		0.376*** (0.112)		−0.158 (0.117)
Employee/Entrepreneur		0.526** (0.173)		−0.280 (0.178)
Breadwinner		−0.126 (0.110)		0.135 (0.114)
Constant	0.033 (0.110)	−0.399* (0.189)	−0.456*** (0.114)	−0.224 (0.189)
Observations	743	743	743	743
Pseudo R–squared	0.052	0.110	0.024	0.068

Note: Model 1, combination of risk financing strategies represents both preference of risk transfer and capital accumulation. Model 2, unilateral risk financing strategy represents usage of only one of above-mentioned method. Situation when any of the two studied risk financing strategy are applied are not included. Robust standard errors in parentheses, $+ p < 0.10$, $* p < 0.05$, $** p < 0.01$, $*** p < 0.001$.

Source: Author's own calculations.

In all models, risk attitude and financial literacy are important determinants of an effective risk management approach. We consider these two determinants to be key among those that can influence policymakers and providers of financial products. Preference of risk financing strategies should reflect the risk attitude of individuals as well as their loss aversion. Rieger et al. (2015) proved that risk preferences are a key element of economic behavior as they determine a broad range of economic decisions, including insurance purchases, asset allocation, and strategic decisions by firms. Our results prove its important role also in personal risk management. As part of the sale of financial products, clients fill out questionnaires to

determine their risk appetite. Based on their evaluation, they are subsequently provided with a suitable strategy that considers risk appetite. However, for individuals who identify themselves as risk loving, there is a significant assumption that they will not choose the optimal risk strategy, which is proven by our results. This finding should be implemented in the process of intermediation of financial products in order to communicate directly to this group of clients' what consequences their decision may have for their financial well-being.

T a b l e 3

Estimates of Parameters of Preference for Suboptimal Risk Financing Strategy

	No risk financing strategy		Only risk transfer		Only self-insurance	
Female	–0.761* (0.313)	–1.042** (0.332)	0.086 (0.271)	0.003 (0.273)	–0.048 (0.222)	–0.099 (0.237)
Older than 40 years of age	–0.108 (0.344)	–0.195 (0.378)	–0.027 (0.312)	0.059 (0.316)	–0.778** (0.252)	–0.782** (0.267)
Married/couples who live together	–0.256 (0.436)	–0.520 (0.510)	–0.167 (0.452)	–0.198 (0.449)	0.127 (0.299)	0.047 (0.308)
University education	–1.044*** (0.308)	–0.582 (0.356)	–0.608* (0.264)	–0.192 (0.282)	–0.570* (0.228)	–0.354 (0.252)
Financially dependent children	0.988* (0.430)	1.153** (0.440)	0.120 (0.586)	0.201 (0.584)	0.707+ (0.374)	0.750+ (0.390)
Married/couples who live together * Financially dependent children	–1.750** (0.615)	–1.459* (0.676)	0.014 (0.701)	0.063 (0.692)	–1.716*** (0.501)	–1.614** (0.513)
Risk averse attitude		0.624* (0.304)		–0.110 (0.299)		0.151 (0.248)
Risk loving attitude		–0.219 (0.679)		0.910* (0.454)		0.898* (0.400)
High level of financial literacy		–0.096 (0.443)		–0.846* (0.413)		–1.793*** (0.465)
Low level of financial literacy		1.166** (0.387)		0.453 (0.400)		0.043 (0.372)
Income above average		–1.368*** (0.415)		–1.112*** (0.324)		0.015 (0.250)
Employee/Entrepreneur		–1.189** (0.424)		–0.119 (0.512)		–1.098** (0.351)
Breadwinner		0.149 (0.319)		0.213 (0.288)		0.275 (0.256)
Constant	–1.068*** (0.278)	–0.228 (0.473)	–1.767*** (0.289)	–1.572** (0.483)	–0.773** (0.235)	0.023 (0.384)
Observations	743	743	743	743	743	743

Note: Robust standard errors in parentheses, + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Table report results on Multinomial (polytomous) logistic regression where combination of financing strategies is a reference base category.

Source: Author's own calculations.

In all our models, financial literacy is another consistently important factor. Level of financial literacy plays an important role in choosing the optimal strategy. The results prove that individuals with low financial literacy are the vulnerable group when choosing a unilateral or no strategy. It just confirms the need for

addressable policies for addressable and systemic solutions for increasing financial literacy. Individuals with a low level of financial literacy, and especially in the case of such complicated decisions as the choice of risk management strategy, can fail fatally, putting enormous pressure on social systems and state aid. Education and investments in education can thus lead to a better awareness of risk management.

With regard to the demographic and economic determinants, women are less likely to use none of the risk financing tools studied compared to the preference for combined risk financing tools. These results are in line with previous findings on women's risk attitudes, as previous research concludes that women are significantly less willing to take risks in general (see e.g. Dohmen et al., 2011).

The likelihood of this behaviour, compared to the preference for combination of risk financing instruments, is reduced in the population of married or cohabiting respondents. Dohmen et al. (2011) concluded that married people are less willing to take risks. This is also reflected in our results, as these individuals are significantly less likely to prefer no risk financing strategy and only capital accumulation strategy compared to a combination of risk financing strategies. However, this strategy is more likely to be used when respondents have financially dependent children. This finding could be a result of budget constraints associated with higher expenses related to children. In subpopulation of single parents, this strategy is more often to use (20.00%) in comparison to parent whose marital status is married or living in a couple (6.93%). The latest results show that single-parent families with children, families with more than 3 children and pensioners are among the groups most at risk of poverty (EU-SILC, 2023). Families with financially dependent children are a vulnerable population in the event of income shocks (including idiosyncratic shocks) and inadequate personal risk management in this population could have a more severe impact on children in particular. In this case, policymakers can implement effective family policies that increase the disposable income of families with dependent children.

As literature suggested also our results proved that income is important factor in personal risk management. Higher income increases the probability that individuals prefer a combination of risk financing strategies and decreases the probability that individuals prefer only risk transfer or do not use any of tested risk financing tools. Income is not a significant determinant of the preference for self-insurance. This means that, compared to the preference for a combination of risk financing tools, the preference for preference of self-insurance is not driven by higher income.

Higher age lowers the preference for self-insurance. Compared to a combination of risk financing instruments, individuals are less likely to prefer only self-insurance if they are older than 40. Previous literature shows that risk appetite

decreases significantly with age (Dohmen et al., 2011), which could also lead to a preference for a more effective personal risk management – combination of risk financing tools.

Conclusions

Effective household risk management represents an instrument for improving human welfare. Individuals and households may apply different risk management strategies to mitigate potential losses. These strategies should be combined to maximize the effect of effective risk management. Poor risk diversification through application of unilateral strategy or no strategy could lead to lower living standards and financial distress of individuals or households.

The paper focuses on estimating demographic, economic and personal determinants of preference for risk financing strategies at personal level. We use survey data from the Slovak republic. We analyse approach to personal risk management and specifically we test the decisions on risk financing strategy in coping with life and health risks. We particularly focus on two most common risk financing strategies – risk transfer through insurance or self-insurance through savings.

Our results show that as part of optimal risk management, it is necessary to focus on targeted policies to help the most vulnerable groups. On the one hand, there are family policies aimed at increasing the disposable income of families with children. Another tool for improving risk management strategies available to policymakers is increasing the level of financial literacy. For financial institutions, focusing on people who are risk loving appears to be the solution. Due to their decisions that reflect their risk behavior, they may make decisions that may not be optimal from the point of view of risk management strategies. It is the mediators who could raise awareness of optimal strategies in this matter. These findings may also be applicable in other countries of the European Union, which have a similar rate of household savings as the Slovak Republic, for example Portugal, Poland and Croatia. Moreover, in all mentioned countries, the rate of financial literacy is even lower than in the case of Slovak Republic (Eurobarometer, 2023).

The limitations of our work are related to the survey data without monetary incentives and a possible selection bias in our results. Regarding the absence of monetary incentives, we follow many previous studies that prove that hypothetical choices could be a good proxy for incentivised behaviour (see Wakker, 2010). As the main goal of our study is not to describe the representative behaviour of the population in the Slovak Republic, but rather to analyse the factors influencing differences in behaviour, we believe that selection bias does not significantly change these results. We keep for further work to poove our results. The third

limitation of our analysis is that we focus only on the extensive margin, i.e. whether households use combined risk financing strategies or only unilateral strategies. An analysis of the intensive margin, whether the amount of insurance or self-insurance is at a satisfactory level, could provide an interesting result. However, our data do not allow us to examine the amounts and therefore the intensive margin is outside the scope of the paper. We reserve this analysis for further research.

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