LUND UNIVERSITY

SCHOOL OF ECONOMICS AND MANAGEMENT

The role of background risk for stock market participation: Evidence from European panel data

Felix Lundström | Bachelor Thesis | Department of Economics | January 2026

Supervisor: Talina Sondershaus

Abstract

This thesis examines whether more generous unemployment insurance is associated with greater household portfolio risk-taking in Europe by reducing background income risk. Using a largely balanced panel of European countries, the analysis measures household risk-taking as the share of household financial assets held in equity and investment fund shares. Unemployment insurance generosity is proxied by the net replacement rate for a standardized household. Country- and year-fixed effects panel regressions are estimated, controlling for GDP per capita, unemployment, inflation, and income inequality, and extended with interactions for Nordic countries and the Covid-19 period. Quantitatively, the preferred specification implies that a 10-percentage-point increase in the net replacement rate is associated with an increase of roughly 0.02 percentage points in the household risky-asset share, a modest but economically meaningful effect. The results show a positive and statistically significant association between unemployment insurance generosity and the aggregate risky-asset share, consistent with the hypothesis that stronger income insurance encourages financial risk-taking. By contrast, there is no statistically significant evidence that this relationship differs between Nordic and non-Nordic countries or between pre-pandemic and pandemic years. The findings suggest that institutional income insurance can shape household portfolio allocation at the macro level and complement micro-level evidence on background risk and stock market participation.

Contents

1. Introduction

Europe's capital markets remain deeply fragmented, and this fragmentation has become one of the most persistent structural weaknesses of the European economy (Capital Markets Union Explained, 2024). Despite having an economic area of comparable size to the United States, the European Union functions financially more like a patchwork of national systems than a unified market for capital (Eurofi, 2025). Regulations, insolvency regimes, tax systems, pension frameworks, and market infrastructure continue to differ substantially between member countries. As a result, investors face frictions when investing across borders, while companies face higher administrative and legal costs when attempting to raise funds outside their home country. A start-up in Spain may find it costly to seek investment from Dutch investors, while a high-growth Swedish firm might struggle to raise capital in France due to unfamiliar rules.

A direct consequence is the growing trend of European "unicorns" and high-potential tech firms choosing to IPO in the United States rather than in Stockholm, Paris, or Frankfurt (Gati et al., 2024; European Commission, 2024). The depth, liquidity, and efficiency of U.S. markets like the New York Stock Exchange and NASDAQ offer larger investor bases, higher valuations, and more aggressive growth capital. When Europe's most innovative companies list abroad, the benefits of their growth: Capital gains, tax revenue, job creation, and strategic influence, increasingly benefit American investors rather than European ones. This dynamic reduces Europe's fiscal base and creates labor market risk as capital gains taxes are realized abroad and high-growth firms may shift operations closer to their investor base (Reuters, 2026; Financial Times, 2024).

1.1 The EU’s Capital Markets Union

Recognizing these risks, the European Union launched the Capital Markets Union (CMU) initiative in 2015 (European Council, 2024). CMU's core ambition is to integrate Europe's capital markets into a single, efficient framework where capital can move freely across borders. It seeks to harmonize insolvency rules, align supervisory practices, deepen cross-border investment, and strengthen European institutional investors. The underlying logic is straightforward: deeper, more unified markets will increase liquidity, reduce fragmentation, and create larger funding pools for European businesses.

However, even a successful CMU faces a fundamental challenge: European household investment behavior. European households save significantly more in bank deposits and low-yield

instruments than Americans, who allocate much larger shares of wealth to the stock market (European Commission, 2024). This behavioral gap weakens the entire financial ecosystem: lower retail participation means less liquidity, fewer domestic investors for growth firms, and smaller public markets overall. Thin markets discourage listings, which pushes more firms toward U.S. exchanges, further eroding Europe's investor base (ibid).

1.2 Household portfolio risk-taking and background risk

A truly integrated capital market cannot function without active household investors. Household equity participation broadens the investor base, reduces the cost of capital, and helps domestic firms scale without relying solely on foreign capital (Financial Times, 2024). Yet standard portfolio theory suggests households will avoid risky assets when facing background income risk: Non-tradable uncertainty like unemployment that cannot be diversified away (Pratt, 1964). Background risk raises the effective risk premium required to hold equities, making safe assets relatively more attractive.

Unemployment insurance generosity offers a direct policy lever affecting this risk. The net replacement rate (NRR) measures how much of pre-unemployment disposable income is maintained through public transfers. More generous NRR implies lower background income risk, which should make households more willing to allocate financial wealth toward equities and investment funds. This mechanism links social insurance design to financial market development, an underexplored connection with implications for both household welfare and Europe's growth challenges.

1.3 Research question and contribution

This thesis examines whether cross-country differences and within-country changes in unemployment insurance generosity are associated with variation in household portfolio risk-taking across Europe. Specifically, it tests whether higher NRR correlates with larger shares of household financial assets held in equities and investment fund shares, using Eurostat financial balance sheet data. The analysis employs country- and year-fixed effects panel regressions, controlling for GDP per capita, unemployment, inflation, and income inequality, and tests heterogeneity for Nordic countries and the Covid-19 period.

By focusing on institutional variation in unemployment insurance, this study complements the microeconomic literature on background risk, which typically uses household surveys within single countries and does not account for cross-country social insurance differences (Betermier

et al., 2011; Cardak & Wilkins, 2009). A macro perspective is valuable because aggregate portfolio shares reflect both the participation decision (the extensive margin) and the amount invested among participating households (the intensive margin) across the entire wealth distribution.

2. Theoretical framework

2.1 Risk aversion, background risk, and portfolio choice

In standard economic theory, the utility function is assumed to be increasing and concave in wealth. The positive slope reflects a preference for more wealth, while concavity implies diminishing marginal utility and risk aversion. As a result, households require compensation to hold risky assets and optimally balance risk-free and risky investments. A key contribution to this literature is Pratt's (1964) distinction between "risk aversion in the small" and "risk aversion in the large", which provides a rigorous foundation for analyzing how individuals respond to both marginal and substantial risks. Risk aversion in the small refers to attitudes toward marginal, infinitesimal risks, whereas risk aversion in the large concerns preferences over finite, non-marginal risks. This framework is relevant when studying the effect of background risk, such as income uncertainty, on stock-market participation.

2.2 Expected utility and the risk premium

Let utility be defined over total wealth. An individual with wealth x faces a random risk z, where z is a random variable with a given probability distribution. The risk premium is defined as the amount $\pi(x, z)$ such that the individual is indifferent between receiving the risky outcome and receiving its expected value minus the risk premium. Formally, the risk premium is defined by the condition that expected utility from the risky prospect equals utility from the certainty equivalent (Pratt, 1964, p.124):

$$u\big(x + E[z] - \pi(x, z)\big) = E[u(x + z)]$$

For a risk-averse individual with a concave utility function, the risk premium is non-negative. The risk premium therefore provides a monetary measure of aversion to risk and can be interpreted as the maximum amount an individual is willing to pay to eliminate it.

2.3 Risk aversion in the small: The Pratt measure

Pratt (1964) introduces the idea of local risk aversion, often called "risk aversion in the small," by looking at how individuals respond to very small, actuarially fair risks. When risks are sufficiently small, expected utility can be approximated around current wealth, which makes it possible to express the risk premium using a simple local approximation of the utility function. Under standard assumptions, Pratt shows that for small risks the risk premium increases with the variance of the risk (Pratt, 1964, pp.125–26):

$$\pi(x,z) \approx \frac{1}{2} r(x) VAR(z)$$

Where the function

$$r(x) = -\frac{u''(x)}{u'(x)}$$

is the Arrow–Pratt coefficient of absolute risk aversion. This measure captures the individual's local aversion to risk at a given wealth level.

2.4 Risk aversion in the large and global comparisons

Although the Arrow–Pratt coefficient is based on local approximations, Pratt shows that it also has implications for behavior under larger risks. In particular, he demonstrates that if one individual has a higher Arrow–Pratt measure of risk aversion than another at all wealth levels, that individual will be more risk-averse for all types of risks, not just very small ones. This means that consistently higher local risk aversion translates into greater overall risk aversion, reflected in higher risk premia, lower certainty equivalents, and a stronger preference for insurance across different risk situations (Pratt, 1964, pp. 128–29).

This equivalence is crucial for applied work. It implies that comparing Arrow–Pratt coefficients across individuals or wealth levels is sufficient to rank their attitudes towards large, economically relevant risks, such as stock-market investments or income shocks.

2.5 Decreasing absolute risk aversion

A central concept in Pratt's analysis is decreasing risk aversion, defined in terms of the Arrow–Pratt coefficient $r(x) = -u''(x)/u'(x)$. When $r(x)$is a decreasing function of wealth, the individual exhibits what is later termed decreasing absolute risk aversion (DARA). Intuitively, this means that as wealth increases, the individual becomes more willing to bear a given amount of absolute risk.

Pratt shows that this local condition is equivalent to a global behavioral property: for any given risk, wealthier individuals are willing to pay a smaller risk premium than poorer individuals (1964, pp. 130–31). In other words, the compensation required to accept a fixed risky prospect declines with wealth.

Decreasing absolute risk aversion implies that the risk premium $\pi(x, z)$ is decreasing in wealth for all risks z. As wealth rises, the same absolute uncertainty represents a smaller share of total resources, making the individual more willing to bear risk.

2.6 Proportional risk and relative risk aversion

In many economic contexts, risks scale with wealth rather than remaining fixed in absolute terms. To address this, Pratt introduces the concept of proportional risk aversion, defined as (Pratt, 1964, p.134):

$$r^*(x) = xr(x)$$

Pratt shows that when relative risk aversion is constant, individuals' preferences over proportional risks do not depend on their level of wealth. This assumption, commonly referred to as constant relative risk aversion (CRRA), implies that optimal holdings of risky assets scale proportionally with wealth. It is important to note, however, that this result relies on a stable risk environment. Even if two individuals share the same level of wealth and the same underlying

risk preferences, the background risks they face may differ due to institutional and labor-market conditions such as different unemployment insurance generosity. Such variation in background risk changes the overall risk environment in which portfolio decisions are made and can therefore affect households' willingness to hold risky assets, without contradicting the standard CRRA framework.

2.7 Background risk and portfolio choice

Background risk, understood as non-tradable income uncertainty such as unemployment risk, is an important factor when studying stock-market participation. Although households can choose to invest very small amounts once they enter the market, the decision of whether to participate at all is a discrete one and therefore relates to how individuals respond to larger, non-marginal risks. Empirical evidence shows that a substantial share of households does not hold any risky financial assets (Campbell, 2006). This pattern is often explained by the presence of fixed participation costs, associated with lower levels of wealth, such as lower financial literacy or limited access to information. As a result, changes in stock-market participation can have important implications for aggregate portfolio composition. When background income risk increases, the effective risk associated with holding risky assets rises, making participation less attractive and reducing stock-market participation.

2.8 Risk vulnerability, background risk, and portfolio choice

In the context of this thesis, background risk is captured by unemployment risk, the magnitude of which is shaped by the generosity of unemployment insurance as measured by the net replacement rate. This source of risk can interact with other forms of non-tradable income uncertainty, such as earnings volatility while employed or the expected duration of unemployment, thereby increasing the effective downside risk faced by households. Gollier & Pratt formalized this mechanism through the concept of risk vulnerability, whereby the introduction of an independent, zero-mean background risk increases the risk premium required to accept a given financial gamble, even when preferences themselves are unchanged (1996, pp.1109-10). As a result, households behave as if they were more risk-averse toward risky financial assets, which can reduce their willingness to participate in the stock market.

3. Previous research

While a large body of research has examined how households adjust their portfolios in response to labor income risk using micro-level household data, much less attention has been paid to how institutional settings shape stock market participation at the macro level. Existing studies largely neglect cross-country differences in social insurance systems that directly affect background income risk. This thesis contributes to the literature by shifting the focus to macro-level panel data, examining how institutional features, specifically unemployment insurance generosity measured by the net replacement rate, affect stock market participation through the background risk channel.

At the micro level Betermier et al. (2011) study whether households hedge labor income risk by adjusting their financial portfolios when wage risk changes. Using Swedish panel data (LINDA) for 1999–2002, they focus on households switching industries, which generates exogenous changes in wage volatility. By exploiting within-household variation, the authors control for time-invariant heterogeneity such as risk preferences. They find strong evidence of hedging: households moving to more volatile industries significantly reduce their risky asset shares, while moves to safer industries increase them. In contrast, cross-sectional analyses yield weaker results, suggesting that hedging behavior is best identified using panel data and changes rather than levels.

Complementary household-level evidence is provided by Cardak and Wilkins (2009). They analyze portfolio choice by modeling the share of risky financial assets while accounting for demographics, risk preferences, credit constraints, and multiple sources of background risk. Using Australian data, they use the institutional setting of mandatory retirement savings to distinguish between direct and indirect risky asset exposure. The results show that labor income risk significantly reduces risky asset holdings, supporting background risk theory, while health risk also discourages risk-taking among employed households.

Moving beyond household-level portfolio decisions, Bayer et al. (2019) examine how increases in household income risk affect the macroeconomy through changes in saving behavior and portfolio choices. Using a model with liquid and illiquid assets, they show that when income uncertainty rises, households save more for precautionary reasons and shift their portfolios toward liquid assets that are easier to use for consumption smoothing. This rebalancing reduces investment in illiquid assets and lowers GDP. Calibrated to U.S. data, the model predicts that higher income risk leads to noticeable declines in investment and output, particularly during

periods when monetary policy is constrained. Overall, the paper shows that household portfolio adjustments are an important channel through which income risk can inccrease economic downturns.

4. Aim and hypotheses

Building on Pratt's framework for risk aversion and the literature on background income risk, this thesis examines whether more generous unemployment insurance, measured by the net replacement rate (NRR), is associated with greater household portfolio risk-taking at the aggregate level. Specifically, it tests whether higher NRR, by reducing background labor-income risk, correlates with a larger share of household financial assets allocated to risky assets (equities and investment fund shares).

The analysis also explores potential heterogeneity in this relationship across institutional contexts and time periods as robustness checks. First, it examines whether the association is stronger during the Covid-19 pandemic (2020–2021), a period of heightened labor-market uncertainty. Second, it tests whether the relationship differs between Nordic countries (with extensive welfare systems) and other European countries

H1: Higher net replacement rates of unemployment are associated with a higher share of household savings allocated to risky assets.

H2: During the Covid-19 pandemic, a period of elevated background risks, the positive association between NRR and risky-asset shares should be stronger, as risk vulnerability amplifies the effect of income insurance on financial risk-taking.

H3: In Nordic countries, where households face lower baseline background risk due to comprehensive welfare systems, the association between unemployment insurance generosity (NRR) and stock market participation (SMP) is expected to be weaker than in other European countries, as implied by risk vulnerability.

5. Data and construction of variables

This section describes how each variable used in the empirical analysis is constructed and documents the underlying data sources and measurement choices. The dataset consists of a fairly

balanced country-year panel of 28 European countries covering the period 2015–2024. Descriptive statistics for all variables are reported in Table 1. Table A1 in the Appendix lists all countries included in the sample and indicates data availability by year. Table A2 reports the correlation matrix for all variables used in the analysis. An overview of all data sources is provided in Table 2.

5.1 Dependent variable

5.1.1 Stock market participation

Household stock market participation is measured as the aggregate (country–year) level share of household financial assets invested in risky assets. This variable is constructed using Eurostat's Financial balance sheets annual data under the ESA 2010 framework.

Two indicators are extracted for the household sector. Total household financial assets are taken from the consolidated financial balance sheets and measured in million euros. Risky assets are defined as equity and investment fund shares, also measured in million euros. The use of consolidated balance sheet data implies that intra-household financial positions are netted out, ensuring that aggregate asset holdings are not double counted.

Stock market participation (SMP_share_{it}) is calculated as the ratio of equity and investment fund holdings to total household financial assets for country i at time t. This construction captures the intensive margin of portfolio choice at the aggregate level, reflecting how household wealth is allocated across asset classes rather than whether households participate in financial markets at all. The variable is observed at an annual frequency and has a mean of 0.344, as shown in Table 1.

$$\text{SMP\_share}_{it} = \frac{\text{Equity and investment fund shares}_{it}}{\text{Total financial assets}_{it}}$$

5.2 Independent variables

5.2.1 Unemployment insurance generosity

Unemployment insurance generosity is measured using the Net Replacement Rate (NRR) provided by the European Commission's Directorate-General for Economic and Financial Affairs (DG ECFIN).

The Net Replacement Rate measures the proportion of previous net earnings replaced by public transfers during unemployment. According to the source definition, the indicator includes unemployment benefits, housing benefits, and social assistance. It is calculated for a standardized household consisting of a one-earner couple with two children earning 100 percent of the average wage, and it is measured after two months of unemployment. The indicator is reported at an annual frequency.

By capturing the extent to which disposable income is insured against unemployment, a higher net replacement rate is associated with lower background income risk faced by households. Over the sample period, the highest average NRR is observed in Luxembourg, at 96.6, while the lowest is observed in Romania, at 38.7.

5.2.2 GDP per capita

Economic development is controlled for using GDP per capita in purchasing power standards (PPS) from Eurostat. GDP per capita in PPS is expressed relative to the European Union average, which is set equal to 100. The PPS adjustment eliminates differences in price levels across countries, allowing for meaningful cross-country comparisons of real economic performance. The indicator is reported at an annual frequency.

Including GDP per capita controls for cross-country differences in economic development that may independently influence household wealth levels and financial market participation.

5.2.3 Inflation

Inflation is measured using the Harmonized Index of Consumer Prices (HICP) from Eurostat. The inflation variable corresponds to the annual average rate of change in the HICP, which measures price changes for a basket of consumer goods and services. The HICP is harmonized

across countries using a common classification of consumption categories (COICOP) and is reported at an annual frequency. The all-items HICP index is used.

Inflation is included as a control variable because changes in inflation can affect households' real returns and savings behavior, potentially influencing aggregate stock market participation.

5.2.4 Unemployment rate

Labor market conditions are controlled for using the total unemployment rate from Eurostat. The unemployment rate is defined according to the ILO standard and refers to individuals aged 15 to 74. Unemployed persons are those without work during the reference period who are available for work and actively seeking employment. The unemployment rate is expressed as a percentage of the labor force and is reported at an annual frequency.

Unemployment is included as a control variable to account for labor market conditions that may independently influence household risk exposure and portfolio choices, separate from unemployment insurance generosity.

5.2.5 Income inequality

Income inequality is measured using the Gini coefficient of equivalized disposable income from Eurostat. The Gini coefficient summarizes how unequally income is distributed across the population by comparing the share of total income received by different parts of the income distribution. The indicator covers the total population, is reported on a scale from 0 to 100, and is available annually. The data is harmonized across countries using a common Eurostat methodology.

The Gini coefficient is included to control for cross-country differences in income inequality that may affect the aggregate level of stock market participation, primarily through the extensive margin. In more unequal societies, a larger share of households may lie below the wealth or income threshold required for market entry and therefore choose not to participate at all, lowering observed participation rates (see Section 2.7).

5.2.6 COVID-19 dummy

To examine whether the effect of unemployment insurance generosity varies with the level of background risk, a COVID-19 dummy variable is constructed. The dummy takes the value one in the years 2020 and 2021, corresponding to the main pandemic period, and zero otherwise. The COVID-19 dummy is included both as a main effect and interacted with the net replacement rate. The interaction term captures whether the marginal association between unemployment insurance generosity and stock market participation differs during the pandemic period. The COVID-19 dummy itself is not interpreted as an independent effect.

Within the risk-vulnerability framework of Gollier and Pratt (1996), increases in background risk raise the effective risk premium associated with financial risk-taking. A central implication of this framework is that when background risk is high, marginal changes in background risk matter more for financial risk-taking decisions. Periods of heightened macroeconomic uncertainty can therefore be understood as states of elevated background risk in which households should be more sensitive to income insurance. Interacting the net replacement rate with the COVID-19 dummy allows for an empirical test of whether the marginal association of unemployment insurance generosity on household portfolio choice is amplified during periods of elevated background risk.

5.2.7 Nordic dummy

To examine whether the baseline results are driven by countries with a distinct institutional and financial context, a Nordic country dummy is constructed. The dummy variable takes the value one for Sweden, Denmark, Finland, and Norway, and zero otherwise. These countries are commonly grouped together in the literature due to their similar welfare-state models, labor market institutions, and comparatively high levels of household participation in financial markets. In the context of this thesis, Nordic welfare institutions are particularly relevant because generous and predictable unemployment insurance systems reduce households' exposure to income volatility and downside risk. Since the framework developed by Gollier and Pratt (1996) implies that the effect of background risk on financial risk-taking depends on the surrounding risk environment, institutional differences across welfare regimes may generate heterogeneous portfolio responses to changes in unemployment insurance generosity. Nordic countries are characterized by comparatively lower baseline background income risk due to extensive welfare-state institutions. The inclusion of an interaction term between the net replacement rate and a

Nordic dummy therefore allows for an empirical test of whether the marginal association of unemployment insurance generosity is weaker in economies with lower underlying background risk.

Table 1. Descriptive statistics of variables

Variable	*Obs*	*Mean*	*Std. Dev.*	*Min.*	*Max*
SMP_share	280	0.344	0.107	0.143	0.723
NRR	278	70.408	11.687	38.7	96.6
GDPpercapita	280	104	43.729	49	279
Inflation	280	2.932	3.617	-1.5	19.4
Unemployment	280	6.983	3.641	2	25
Gini	280	29.462	3.974	20.9	40.8
Covid	280			0	1
Nordic	280			0	1

Table 2. Variables and their origin

Variable	*Definition*	*Source*
SMP_share	Share of household financial assets invested in equity and investment fund shares	Eurostat, Financial Balance Sheets (nasa_10_f_bs)
NRR	Net replacement rate including unemployment, housing benefits, and social assistance	DG ECFIN (tab_nrr)
Inflation	Annual average rate of change in the Harmonized Index of Consumer Prices (HICP)	Eurostat (prc_hicp_aind)
Unemployment	Total unemployment rate (% of labor force, ages 15–74)	Eurostat (tps00203)
GDPpercapita	GDP per capita in purchasing power standards (EU = 100)	Eurostat (tec00114)
Gini	Gini coefficient of equivalized disposable income	Eurostat (tessi190)
Covid	Dummy variable equal to 1 for years 2020–2021	Author's construction
Nordic	Dummy variable for Nordic countries	Author's classification

6. Methodology

6.1 Baseline pooled ols specifications

The empirical analysis begins with pooled ordinary least squares (OLS) regressions to provide a descriptive benchmark for the relationship between unemployment insurance generosity and household portfolio choice. These specifications exploit both cross-country and time-series variation in the data and serve as an initial assessment of whether the relationship predicted by background risk theory is present in the data.

The baseline pooled OLS specification relates the share of household financial assets invested in risky assets to unemployment insurance generosity, measured by the net replacement rate:

$$\text{SMP}_{it} = \beta_1 \text{NRR}_{it} + \varepsilon_{it} \tag{1}$$

where SMP_{it} denotes the share of household financial assets invested in risky assets in country i and year t, and NRR_{it} is the net replacement rate of unemployment benefits. This specification captures the unconditional association between unemployment insurance generosity and household portfolio allocation.

To account for observable macroeconomic factors that may jointly influence unemployment insurance generosity and household portfolio choice, an extended pooled OLS specification includes a vector of control variables:

$$\text{SMP}_{it} = \beta_1 \text{NRR}_{it} + \gamma \text{X}_{it} + \varepsilon_{it} \tag{2}$$

where X_{it} includes inflation, the unemployment rate, and GDP per capita. These controls capture differences in macroeconomic conditions, labour market performance, and economic development that may independently affect households' willingness or ability to hold risky financial assets.

6.2 Fixed-effects specifications and preferred baseline

To address unobserved, time-invariant heterogeneity across countries that may jointly influence

unemployment insurance generosity and household portfolio choice, the analysis next employs fixed-effects estimators. A key concern in cross-country analyses is that countries differ systematically along dimensions such as welfare-state design, financial market development, regulatory frameworks, and investment culture. These characteristics are likely to be correlated both with the generosity of unemployment insurance systems and with households' propensity to hold risky financial assets. If not accounted for, such heterogeneity may bias estimates obtained from pooled regressions.

Country fixed effects provide a way to control for these persistent differences by allowing each country to have its own intercept. By doing so, the fixed-effects estimator removes all time-invariant country-specific factors from the estimation, ensuring that identification relies solely on within-country variation over time. In the context of this thesis, this is particularly important because institutional features such as financial literacy, trust in financial markets, historical participation patterns, and long-standing welfare arrangements are unlikely to change substantially over the sample period but may otherwise confound the relationship of interest.

The first fixed-effects specification relates household portfolio allocation to unemployment insurance generosity while controlling only for country fixed effects:

$$\mathrm{SMP}_{it} = \beta_1 \mathrm{NRR}_{it} + \alpha_i + \varepsilon_{it} \tag{3}$$

where SMP_{it} denotes the share of household financial assets invested in risky assets in country i and year t, NRR_{it} is the net replacement rate of unemployment benefits, and α_i represents country fixed effects. This specification captures whether changes in unemployment insurance generosity within a given country are associated with changes in aggregate household portfolio risk-taking, while controlling for all time-invariant country characteristics.

While equation (3) improves upon pooled OLS by addressing unobserved cross-country heterogeneity, it does not account for time-varying macroeconomic conditions that may simultaneously affect unemployment insurance generosity and household portfolio choices. For example, changes in labor-market conditions, inflation dynamics, or economic development may influence both policy settings and household financial behavior over time. Failing to control for such factors could lead to omitted-variable bias even in a fixed-effects framework.

To address this concern, the preferred baseline specification augments equation (3) by including a vector of time-varying macroeconomic control variables as well as year fixed effects:

$$\mathrm{SMP}_{it} = \beta_1 \mathrm{NRR}_{it} + \gamma \mathrm{X}_{it} + \alpha_i + \delta_t + \varepsilon_{it} \quad (4)$$

where X_{it} includes inflation, the unemployment rate, and GDP per capita, and δ_t denotes year fixed effects. Inflation captures changes in the real return environment faced by households, which may influence the attractiveness of risky financial assets relative to safer alternatives. The unemployment rate controls for contemporaneous labor-market conditions that may affect households' perceived income risk and liquidity needs independently of unemployment insurance generosity. GDP per capita works as a proxy for economic development and average income levels, which may shape households' capacity to invest in risky assets.

The inclusion of year fixed effects further strengthens the identification strategy by controlling for common macroeconomic shocks affecting all countries simultaneously, such as global financial cycles or changes in international interest rates. By absorbing these aggregate shocks, year fixed effects ensure that the estimated coefficient on unemployment insurance generosity reflects relative changes within countries rather than global trends in financial markets.

Taken together, the fixed-effects specifications in equations (3) and (4) are well aligned with the research question of this thesis. They allow for an assessment of whether within-country changes in unemployment insurance generosity are systematically associated with changes in household portfolio allocation, conditional on macroeconomic conditions and common shocks. While these models do not permit a fully causal interpretation, they provide a substantially more credible empirical framework than pooled regressions and form the baseline for all subsequent analyses.

6.3 Random-effects specifications

While the primary empirical strategy of this thesis relies on fixed-effects estimation, a random-effects (RE) model is estimated for comparison. Differences between the FE and RE estimates provide evidence on whether unobserved country-specific heterogeneity is correlated with the regressors, as the RE model additionally uses between-country variation.

The random-effects model is specified as:

$$\text{SMP}_{it} = \beta_1 \text{NRR}_{it} + \gamma X_{it} + u_i + \varepsilon_{it} \quad (5)$$

where SMP_{it} denotes the share of household financial assets invested in risky assets in country i and year t, NRR_{it} is the net replacement rate of unemployment benefits, and X_{it} is a vector of macroeconomic control variables including GDP per capita, inflation, and the unemployment rate. The term u_i represents an unobserved, time-invariant country-specific effect, while ε_{it} is an idiosyncratic error term.

Unlike fixed effects, which allow unobserved country-specific characteristics to be correlated with the explanatory variables, the random-effects model assumes that these unobserved factors are unrelated to the regressors. If this assumption holds, the random-effects estimator is more efficient because it uses both variation over time within countries and differences across countries.

In the context of this thesis, however, there are strong theoretical reasons to be cautious about the random-effects assumption. Unobserved country-specific characteristics such as financial culture, institutional quality, and historical patterns of stock market participation are likely to be correlated with both unemployment insurance generosity and household portfolio allocation. As a result, the fixed-effects estimator is expected to provide more credible estimates of the relationship of interest. The random-effects model is therefore included primarily as a robustness than as the preferred specification.

6.4 Hausman test

To compare the fixed-effects and random-effects estimators, a Hausman test is used. The purpose of the Hausman test is to assess the key identifying assumption underlying the random-effects model, namely that the unobserved country-specific effects are uncorrelated with the explanatory variables.

The Hausman test evaluates whether the difference between the fixed-effects and random-effects coefficient estimates is systematic. Under the null hypothesis, both estimators are consistent, and any difference in coefficients arises solely from sampling variation. Rejection of

the null hypothesis therefore implies that the random-effects assumption does not hold and that fixed effects should be preferred.

6.5 Control for income inequality

To make sure that the estimated relationship between unemployment insurance generosity and household portfolio risk-taking is not driven by changes in the income distribution, the baseline fixed-effects model is extended to include a measure of income inequality. Income inequality may affect aggregate stock market participation through the extensive margin, as a more unequal income distribution implies that a larger share of households may fall below the wealth or income threshold required for holding risky financial assets.

To account for this channel, the Gini coefficient of equivalized disposable income is included as an additional control variable. The extended specification is given by:

$$\text{SMP}_{it} = \beta_1 \text{NRR}_{it} + \beta_2 \text{Gini}_{it} + \gamma X_{it} + \alpha_i + \delta_t + \varepsilon_{it} \qquad (6)$$

where all variables are defined as in the baseline fixed-effects model. By including country and year fixed effects, the specification isolates the effect of within-country changes in income inequality over time, controlling for persistent cross-country differences in the income distribution.

6.6 Interaction with the Covid-19 pandemic

To examine whether the relationship between unemployment insurance generosity and household portfolio risk-taking differs during periods of heightened macroeconomic uncertainty, the baseline fixed-effects model is extended to include an interaction between the net replacement rate and a COVID-19 period dummy. The COVID-19 dummy takes the value one for the years 2020–2021 and zero otherwise, capturing the main pandemic period.

The motivation for this specification is that the COVID-19 shock represents an unusually severe and sudden increase in labor-market and income uncertainty. If unemployment insurance plays a stronger role in shaping household risk-taking when background risk is elevated, the marginal

effect of unemployment insurance generosity on risky asset holdings may differ during this period. To test this hypothesis, the following model is estimated:

$$\text{SMP}_{it} = \beta_1 \text{NRR}_{it} + \beta_2 \text{COVID}_t + \beta_3 (\text{NRR}_{it} \times \text{COVID}_t) + \gamma X_{it} + \alpha_i + \delta_t + \varepsilon_{it} \quad (7)$$

where all variables are defined as in the baseline fixed-effects specification. The interaction term allows the effect of unemployment insurance generosity on household portfolio allocation to vary between the pandemic and non-pandemic periods.

6.7 Interaction with the Nordic countries

To examine whether the relationship between unemployment insurance generosity and household portfolio risk-taking differs systematically across institutional settings, the baseline fixed-effects model is modified to incorporate an interaction between the net replacement rate and a Nordic-country dummy. The Nordic dummy takes the value one for Sweden, Denmark, Finland, and Norway, and zero otherwise. These countries are commonly characterized by relatively generous welfare systems, strong labor-market institutions, and comparatively high levels of household participation in financial markets.

The motivation for this specification is that the effect of background income risk on financial risk-taking may depend on the broader institutional environment. In economies with extensive social insurance and stable labor-market arrangements, changes in unemployment insurance generosity may have a different marginal effect on household portfolio choice than in countries with weaker safety nets. To test for such heterogeneity, the following specification is estimated:

$$\text{SMP}_{it} = \beta_1 \text{NRR}_{it} + \beta_2 \text{Nordic}_i + \beta_3 (\text{NRR}_{it} \times \text{Nordic}_i) + \gamma X_{it} + \alpha_i + \delta_t + \varepsilon_{it} \quad (8)$$

where all variables are defined as in the baseline fixed-effects model.

7. Results

7.1 Baseline results

7.1.1 Baseline pooled ols specifications

Table 3, Columns (1) and (2), reports the results from the baseline pooled OLS regressions Column (1) presents the relationship between unemployment insurance generosity and risky asset holdings without controlling for other factors. The estimated coefficient on the net replacement rate is positive but statistically insignificant, indicating that when macroeconomic controls and country-specific factors are ignored, there is no clear unconditional association between unemployment insurance generosity and aggregate risky asset shares.

Column (2) extends the pooled OLS specification by including controls for inflation, the unemployment rate, and GDP per capita. Once these macroeconomic factors are accounted for, the estimated coefficient on the net replacement rate becomes positive and statistically significant. This result suggests that, conditional on observable macroeconomic conditions, countries with more generous unemployment insurance systems tend to exhibit higher household exposure to risky financial assets.

While the pooled OLS estimates should be interpreted with caution, as they do not account for unobserved country-specific characteristics or potential endogeneity, the results are consistent with the core prediction of background risk theory. In particular, the positive and significant association in the controlled specification aligns with the hypothesis that stronger income insurance reduces background income risk and is associated with greater household willingness to hold risky financial assets.

7.1.2 Fixed-effects specifications and preferred baseline

Table 3, Columns (3) and (4), reports the results from the fixed-effects specifications. Column (3) presents estimates from the fixed-effects model without additional macroeconomic controls, as specified in equation (3). The estimated coefficient on the net replacement rate is positive and statistically significant, indicating that increases in unemployment insurance generosity

within a country are associated with higher shares of household financial assets invested in risky assets.

Column (4), the preferred baseline specification, adds controls for GDP per capita, unemployment, inflation, and income inequality. The net replacement rate coefficient remains positive and significant, with a point estimate of 0.002. Quantitatively, this implies that a 10-percentage-point increase in the net replacement rate is associated with a 0.02 percentage point increase in SMP_share, which corresponds to an increase of about 6 percent relative to the sample mean, as,

$$\frac{0.02}{0.344} = 0.0581 \approx 6\%$$

This represents a modest but economically meaningful effect. With country fixed effects, the estimates are based only on changes within countries over time, and not on permanent differences between countries. The fact that the coefficient is stable across specifications suggests that the positive link between unemployment insurance generosity and household portfolio risk-taking reflects a systematic within-country relationship rather than differences across countries. This specification therefore serves as the main baseline for the later fixed-effects extensions.

7.1.3 Random-effects specification

The results from the random-effects specification are reported in Column (5) of Table 3. The estimated coefficient on the net replacement rate is positive and statistically significant, indicating that higher unemployment insurance generosity is associated with a larger share of household financial assets invested in risky assets. The magnitude of the estimated coefficient is very similar to that obtained under the fixed-effects specification, suggesting that the relationship observed within countries over time is broadly similar to the relationship observed across countries.

7.1.4 Hausman test

The Hausman test comparing the fixed-effects and random-effects models yields a chi-squared test statistic of 4.52 with a corresponding p-value of 0.3403. As the null hypothesis cannot be

rejected at conventional significance levels, there is no statistical evidence that the random-effects estimates differ systematically from the fixed-effects estimates. From a purely statistical standpoint, this result suggests that the random-effects estimator may be appropriate.

Nevertheless, the fixed-effects specification is retained as the preferred empirical approach in this thesis. Given the cross-country nature of the data, unobserved country-specific characteristics such as financial culture, institutional structure, and long-standing differences in welfare regimes are likely to be correlated with unemployment insurance generosity. In this context, the fixed-effects estimator provides a more conservative and conceptually credible identification strategy. The Hausman test results are therefore interpreted as complementary evidence supporting the robustness of the findings rather than as grounds for abandoning the fixed-effects framework.

Table 3. Effect of NRR on SMP_share – Full regression set

	(1) OLS no controls	(2) OLS controls	(3) FE no controls	(4) FE controls + year FE	(5) RE controls
NRR	0.001	0.002***	0.002***	0.002*	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Inflation		0.006***		0.002	0.003***
		(0.002)		(0.002)	(0.001)
Unemployment		0.002		0.001	-0.002*
		(0.002)		(0.003)	(0.001)
GDPpercapita		-0.000***		-0.000	-0.000
		(0.000)		(0.000)	(0.000)
Year=2015				0.000	
				(.)	
Year=2016				-0.001	
				(0.004)	
Year=2017				0.009	
				(0.007)	
Year=2018				0.004	
				(0.011)	
Year=2019				0.008	
				(0.012)	
Year=2020				0.007	
				(0.011)	
Year=2021				0.029**	
				(0.012)	
Year=2022				0.021	
				(0.017)	
Year=2023				0.032**	
				(0.014)	
Year=2024				0.042**	
				(0.016)	
Constant	0.283***	0.237***	0.202***	0.243**	0.249***
	(0.039)	(0.044)	(0.036)	(0.092)	(0.046)
Observations	278	278	278	278	278

Standard errors in parentheses

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

7.2 Fixed-effects extensions

7.2.1 Fixed-effects extensions and robustness tests

Table 4 reports a series of fixed-effects extensions that examine the robustness of the baseline relationship between unemployment insurance generosity and household portfolio choice, as well as potential heterogeneity in the estimated effect. Column (1) reproduces the preferred fixed-effects specification from Table 1, Column (4).

7.2.2 Controlling for income inequality

The results from the extended specification are shown in Column (2) of Table 4. Adding the Gini coefficient does not meaningfully change the estimated effect of the net replacement rate, which remains positive and statistically significant at the 10 percent level. This suggests that the baseline relationship between unemployment insurance generosity and households' risky asset holdings is not sensitive to controlling for income inequality.

The coefficient on the Gini index itself is not statistically significant, indicating that short-run changes in income inequality within countries do not, on their own, explain changes in the aggregate share of risky household assets once country and year fixed effects are included. The fact that the NRR coefficient remains stable further suggests that the baseline results are not driven by simultaneous changes in the income distribution.

7.2.3 Interaction with the COVID-19 period

The results from the interaction specification are reported in Column (3) of Table 4. The estimated interaction between the net replacement rate and the COVID-19 dummy is statistically insignificant, while the main effect of the net replacement rate remains positive and statistically significant. This indicates that the marginal association between unemployment insurance generosity and household risky asset shares does not differ in a statistically meaningful way during the pandemic period.

7.2.4 Interaction with Nordic institutional context

The results from the Nordic interaction specification are reported in Column (4) of Table 4. Because the Nordic dummy is time-invariant, its main effect is absorbed by the country fixed effects. The interaction term captures whether the within-country effect of unemployment insurance generosity differs between Nordic and non-Nordic countries.

The estimated interaction coefficient between the net replacement rate and the Nordic dummy is statistically insignificant, while the main effect of the net replacement rate remains positive and statistically significant. This indicates that there is no evidence that changes in unemployment insurance generosity have a stronger or weaker marginal association on household exposure to risky financial assets in Nordic countries compared to the rest of Europe.

Table 4. Fixed-effects robustness and heterogeneity

	(1) Baseline FE	(2) FE + Gini	(3) FE + NRR × COVID	(4) FE + NRR × Nordic
NRR	0.002*	0.002*	0.002*	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)
Inflation	0.002	0.002	0.002	0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Unemployment	0.001	0.001	0.001	0.001
	(0.003)	(0.004)	(0.003)	(0.003)
GDPpercapita	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.001)
Year=2015	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)
Year=2016	-0.001	-0.001	-0.001	-0.001
	(0.004)	(0.005)	(0.004)	(0.005)
Year=2017	0.009	0.009	0.009	0.009
	(0.007)	(0.007)	(0.007)	(0.007)
Year=2018	0.004	0.004	0.004	0.005
	(0.011)	(0.012)	(0.011)	(0.011)
Year=2019	0.008	0.008	0.008	0.008

	(0.012)	(0.012)	(0.012)	(0.012)
Year=2020	0.007	0.007	-0.022***	0.007
	(0.011)	(0.011)	(0.005)	(0.011)
Year=2021	0.029**	0.029**	0.000	0.029**
	(0.012)	(0.013)	(.)	(0.012)
Year=2022	0.021	0.021	0.021	0.023
	(0.017)	(0.017)	(0.017)	(0.017)
Year=2023	0.032**	0.033**	0.032**	0.034**
	(0.014)	(0.014)	(0.014)	(0.014)
Year=2024	0.042**	0.042**	0.042**	0.043**
	(0.016)	(0.016)	(0.016)	(0.016)
Gini		-0.000		
		(0.003)		
COVID-19 shock period=1			0.023	
			(0.018)	
COVID-19 shock period=1 # NRR			0.000	
			(0.000)	
Nordic=1# NRR				-0.002
				(0.002)
Constant	0.243**	0.256***	0.244**	0.245**
	(0.092)	(0.085)	(0.092)	(0.094)
Observations	278	278	278	278

Standard errors in parentheses

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

7.3 Summary of findings

Across all specifications, the results provide consistent evidence of a positive relationship between unemployment insurance generosity and households' willingness to hold risky financial assets. The fixed-effects estimates indicate that increases in unemployment insurance generosity within a country are associated with higher shares of household financial assets invested in risky assets. This is consistent with background risk theory, as formalized by Gollier and Pratt (1996) and grounded in Pratt's (1964) analysis of risk aversion.

This result is robust across different fixed-effects specifications. As shown in Table 4, the estimated coefficient on the net replacement rate remains unchanged when controlling for income inequality, when allowing the effect to differ during the COVID-19 period, and when interacting unemployment insurance generosity with a Nordic-country indicator.

8. Discussion

This thesis set out to examine whether unemployment insurance generosity influences household stock market participation by reducing background income risk. Using country–year panel data for European countries and a fixed-effects estimation, the analysis finds a robust positive association between the net replacement rate of unemployment benefits and the aggregate share of household financial assets invested in risky assets. This finding is consistent with the core prediction of background risk theory: When income risk is partially insured through public policy, households are more willing to take financial risk. Importantly, the result survives a range of robustness checks, including additional macroeconomic controls, and interaction terms designed to capture heterogeneity across periods of heightened uncertainty and institutional contexts. This suggests that the relationship is stable over time, rather than being driven by temporary conditions or special circumstances.

From a theoretical perspective, the findings align closely with the framework developed by Pratt (1964) and extended by Gollier and Pratt (1996). Within expected utility theory, background risk raises the effective risk premium associated with holding risky assets, leading risk-averse households to reduce their exposure to financial risk. Unemployment insurance mitigates this background risk by stabilizing disposable income during job loss, thereby lowering the risk premium households require to hold risky assets. The positive association between the net replacement rate and risky asset shares observed in the data is therefore consistent with the prediction that public income insurance crowds in, rather than crowds out, financial risk-taking.

The aggregate nature of the dependent variable implies that the estimated effect captures changes in overall household portfolio composition rather than individual participation decisions. Nevertheless, the result complements existing micro-level evidence showing that households adjust their risky asset holdings in response to changes in labor income risk. While household-level studies identify this mechanism through individual income volatility, the present analysis demonstrates that institutional differences in income insurance can shape portfolio

outcomes at the macro level. In this sense, the findings help bridge the gap between micro evidence on background risk and macro discussions of financial market participation.

The absence of statistically significant interaction effects with both the COVID-19 period and the Nordic institutional context calls for careful interpretation. The COVID-19 pandemic represents an extreme episode of economic uncertainty, during which background risk increased sharply across all countries. One might therefore expect unemployment insurance generosity to play a stronger role during such periods. However, the results indicate that while the pandemic had a substantial level effect on household portfolio allocation, the marginal relationship between insurance generosity and risky asset shares did not change significantly. This suggests that the impact of the COVID-19 shock on household portfolio choice may have been mediated by other institutional or behavioral mechanisms that reduced effective background risk, thereby offsetting any negative effect associated with heightened unemployment uncertainty.

The interaction between the net replacement rate and the Nordic dummy is not statistically significant. This means that the relationship between unemployment insurance generosity and household portfolio risk-taking does not appear to differ systematically between Nordic countries and other European countries. In other words, even though background income risk is generally lower in Nordic economies, changes in unemployment insurance generosity do not seem to work differently there.

One possible explanation is that Nordic countries differ from other European countries in many ways beyond unemployment insurance that also matter for household investment behavior. Other parts of the welfare state, pension systems, financial market structures, and habits or institutions may all influence household portfolios and may offset or mask any effect linked specifically to lower background risk. As a result, even if theory suggests that unemployment insurance should matter less in low-risk settings, this may be difficult to detect in aggregate data. In addition, limited changes in unemployment insurance generosity over time within Nordic countries may make it harder to identify such differences.

From a policy perspective, the findings have important implications for debates surrounding Europe's Capital Markets Union. Much of the CMU agenda focuses on reducing regulatory fragmentation and deepening cross-border capital markets. While these reforms are necessary, the results of this thesis highlight the importance of household-side institutions in shaping financial market participation. Even in an integrated capital market, households facing high income risk may remain reluctant to invest in equities. Strengthening income insurance can

therefore complement market integration by expanding the domestic investor base, increasing liquidity, and supporting long-term capital formation.

At the same time, the results indicate that unemployment insurance should not be viewed solely as a labor-market institution. By reducing background risk, unemployment insurance also affects financial behavior, household wealth accumulation, and ultimately the depth of domestic capital markets. In this sense, social insurance and financial development should be seen as mutually reinforcing rather than competing policy domains.

Overall, the analysis supports the view that public income insurance can facilitate household risk-taking in financial markets, with potential benefits for both individual welfare and macroeconomic performance. While the estimated effects are modest in magnitude, they are economically meaningful when aggregated across households and over time. Small changes in portfolio allocation can translate into substantial differences in market liquidity and domestic ownership of capital, particularly in economies where household participation remains low.

8.1 Limitations

Despite its contributions, this study is subject to several limitations that should be acknowledged. First, the use of the net replacement rate as a proxy for unemployment insurance generosity introduces measurement constraints. The indicator is calculated for a standardized household and does not capture heterogeneity in unemployment risk, benefit eligibility, or replacement rates across income levels and employment histories. As a result, the analysis cannot distinguish between households that are well insured and those that face substantial residual income risk. This limitation is common in cross-country studies but implies that the estimated effects should be interpreted as average institutional effects rather than precise behavioral responses.

Second, the dependent variable measures the aggregate share of household financial assets invested in risky assets and therefore captures the intensive margin of portfolio choice rather than the extensive margin of stock market participation. Changes in the risky asset share may reflect increased participation among non-investors, higher risk-taking among existing investors, or compositional effects driven by asset price movements. While fixed effects help reduce some of these concerns, the analysis cannot fully separate these different channels.

Third, although the fixed-effects strategy addresses time-invariant unobserved heterogeneity, it does not fully resolve concerns about time-varying omitted variables. For example, reforms to pension systems, changes in financial literacy, or shifts in tax treatment of capital income may correlate with both unemployment insurance generosity and household portfolio allocation. As a result, the estimates should be interpreted as robust associations rather than strictly causal effects.

9. Conclusion

This thesis examines whether unemployment insurance generosity influences household portfolio risk-taking by reducing background income risk. Using country–year panel data for European countries and a fixed-effects framework, the analysis finds a robust positive association between the net replacement rate of unemployment benefits and the aggregate share of household financial assets invested in risky assets. The results are consistent with background risk theory: when income risk is partially insured through public policy, households appear more willing to hold financial risk.

The estimated relationship is stable across a range of specifications and does not vary systematically across institutional contexts or periods of heightened uncertainty. While the effects are modest in magnitude, they are economically meaningful when considered at the aggregate level and over time. Taken together, the findings suggest that unemployment insurance can influence household financial behavior beyond the labor market, with implications for capital market participation and portfolio composition.

From a broader perspective, the results highlight the importance of household-side institutions in discussions of financial market development. In the context of Europe's Capital Markets Union, policies aimed at reducing background income risk may complement market integration efforts by supporting a broader domestic investor base. Social insurance and financial development should therefore be viewed as complementary rather than competing policy domains.

9.1 Future research

Several extensions could further deepen the analysis. First, future research could examine whether the effect of unemployment insurance generosity depends on the level of unemployment. When unemployment is high, background income risk is likely greater, and the marginal

role of insurance generosity may be amplified. Second, an interaction between unemployment insurance generosity and income inequality could be explored. In more unequal societies, households may face higher background risk, potentially strengthening the role of public insurance in shaping portfolio choices. Investigating these interactions would help clarify how institutional settings and macroeconomic conditions jointly influence household risk-taking behavior.

Appendix

Table A1: List of countries included

Countries	Years covered	Obs.	Control data
Austria	2015-2024	10	Complete
Belgium	2015-2024	10	Complete
Bulgaria	2015-2024	10	Complete
Croatia	2015-2024	10	Complete
Cyprus	2017-2024	8	Complete
Czechia	2015-2024	10	Complete
Denmark	2015-2024	10	Complete
Estonia	2015-2024	10	Complete
Finland	2015-2024	10	Complete
France	2015-2024	10	Complete
Germany	2015-2024	10	Complete
Greece	2015-2024	10	Complete
Hungary	2015-2024	10	Complete
Ireland	2015-2024	10	Complete
Italy	2015-2024	10	Complete
Latvia	2015-2024	10	Complete
Lithuania	2015-2024	10	Complete
Luxembourg	2015-2024	10	Complete
Malta	2015-2024	10	Complete
Netherlands	2015-2024	10	Complete
Norway	2015-2024	10	Complete
Poland	2015-2024	10	Complete
Portugal	2015-2024	10	Complete
Romania	2015-2024	10	Complete
Slovakia	2015-2024	10	Complete
Slovenia	2015-2024	10	Complete
Spain	2015-2024	10	Complete
Sweden	2015-2024	10	Complete

Years covered refer to periods in which both the dependent variable (SMP_share) and the main independent variable (NRR) are jointly observed. Obs. denotes the number of country–year observations with joint availability of these variables. For Cyprus, NRR data are unavailable in 2015–2016, resulting in a shorter coverage period. Control variables are available for all countries over the sample period

Table A2: Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SMP_share	1.000							
NRR	0.097	1.000						
Inflation	0.179	-0.099	1.000					
Unemployment	-0.004	-0.112	-0.319	1.000				
GDPpercapita	-0.114	0.404	-0.060	-0.237	1.000			
Gini	0.144	0.112	-0.053	0.352	-0.275	1.000		
Covid	0.001	0.000	-0.158	-0.033	0.012	-0.027	1.000	
Nordic	0.275	0.163	-0.060	-0.078	0.231	-0.293	-0.000	1.000

Use of AI

ChatGPT was used in three specific capacities: (1) to explain theoretical concepts (Arrow-Pratt risk aversion, risk vulnerability, DARA/CRRA) during early literature review and theory development for better understanding; (2) to rephrase sentences for clarity, grammar, academic tone; and (3) to provide practical instructions for Stata commands and syntax during data processing and regression analysis.

References

Bayer, C., Luetticke, R., Pham-Dao, L. & Tjaden, V. (2019). Precautionary Savings, Illiquid Assets, and the Aggregate Consequences of Shocks to Household Income Risk, *Econometrica*, vol. 87, no. 1, pp.255–290

Betermier, S., Jansson, T., Parlour, C. A. & Walden, J. (2011). Hedging Labor Income Risk, *SSRN Electronic Journal*, [e-journal], Available Online: http://www.ssrn.com/abstract=1972883 [Accessed 13 December 2025]

Campbell, J. Y. (2006). Household Finance, *The Journal of Finance*, vol. 61, no. 4, pp.1553–1604

Capital Markets Union Explained. (2024). *Consilium*, Available Online: https://www.consilium.europa.eu/en/policies/capital-markets-union-explained/ [Accessed 3 November 2025]

Cardak, B. A. & Wilkins, R. (2009). The Determinants of Household Risky Asset Holdings: Australian Evidence on Background Risk and Other Factors, *Journal of Banking & Finance*, vol. 33, no. 5, pp.850–860

EU Capital Markets Fragmentation. (2025)., Eurofi, p.4, Available Online: https://www.eurofi.net/wp-content/uploads/2025/07/6.3-eu-capital-markets-fragmentation.pdf

European Commission (ed.). (2024). The Future of European Competitiveness: Part A: A Competitiveness Strategy for Europe, Luxembourg: Publications Office

Europe-US Relisting Trend: $1 Trln More in Store | Reuters. (2026)., Available Online: https://www.reuters.com/commentary/breakingviews/europe-us-relisting-trend-1-trln-more-store-2026-01-08/ [Accessed 15 January 2026]

Gati, Z., Lambert, C., Ranucci, D., Rouveyrol, C. & Schölermann, H. (2024). Examining the Causes and Consequences of the Recent Listing Gap between the United States and Europe, [e-journal, Avaible Online: https://www.ecb.europa.eu/press/fie/box/html/ecb.fiebox202406_07.en.html [Accessed 10 November 2025]

Gollier, C. & Pratt, J. W. (1996). Risk Vulnerability and the Tempering Effect of Background Risk, *Econometrica*, vol. 64, no. 5, p.1109

Pratt, J. W. (1964). Risk Aversion in the Small and in the Large, *Econometrica*, vol. 32, no. 1/2, p.122