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Employment as Insurance Against Liquidity Risk: Evidence from the Eurozone Household Finance and Consumption Survey

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Abstract

Diese Masterarbeit untersucht, ob Erwerbstätigkeit Haushalte davor schützt, als poor hand-to-mouth (pHtM) – also einkommensarm mit fehlenden liquiden Rücklagen – eingestuft zu werden. Auf Basis der Household Finance and Consumption Survey (HFCS) 2021 werden gewichtete logistische Regressionsmodelle mit multipler Imputation und Replikationsgewichten für 19 Mitgliedstaaten des Euroraums geschätzt.

Die Ergebnisse zeigen, dass Erwerbstätigkeit die Verwundbarkeit gegenüber pHtM-Status verringert, die Stärke dieses Versicherungseffekts jedoch stark variiert. In Kernländern wie Österreich, Belgien, Frankreich, Finnland, den Niederlanden und Irland wirkt Einkommen aus Beschäftigung deutlich schützend, während der Effekt in mehreren mittel- und osteuropäischen Volkswirtschaften schwach ist und in Griechenland sogar umgekehrt auftritt.

Die Qualität der Beschäftigung und die Haushaltsstruktur erweisen sich dabei als entscheidend: unbefristete Arbeitsverträge und hochqualifizierte Tätigkeiten bieten Stabilität, wohingegen Abhängigkeit von einem einzelnen Einkommen und Alleinerziehendenhaushalte das Risiko erhöhen.

Diese Ergebnisse deuten darauf hin, dass Erwerbstätigkeit keinen einheitlichen Schutz darstellt, sondern einen kontextabhängigen Puffer, der durch Arbeitsmarktinstitutionen und demografische Strukturen im Euroraum geprägt ist.

Contents

1 Introduction

In the context of macroeconomic theory and policy, consumption remains a crucial driver of economic activity, shaping both short-term demand and long-term growth. Changes in consumption levels driven by shifts in consumer confidence, income, or wealth—directly impact economic output and employment. A reduction in consumption can trigger a downward spiral, exacerbating recessions, while an increase can fuel economic expansion.

A cornerstone idea of economic theory is consumption smoothing, where households aim to maintain stable consumption over time despite income fluctuations. However, many households deviate from this idealized model, exhibiting hand-to-mouth (HtM) behavior, spending all their income each period without building savings. These households allocate most of their income to immediate necessities such as food, housing, and utilities, leaving little room for precautionary savings, even when income rises temporarily. HtM households are categorized based on their asset composition:

- `Wealthy HtM (wHtM)`: Households with substantial illiquid wealth (e.g., homes, pension accounts) but minimal liquid savings, often by choice to prioritize illiquid investments.
- `Poor HtM (pHtM)`: Households with neither significant liquid nor illiquid assets, facing involuntary financial vulnerability.

The HtM phenomenon has profound implications for economic policy, particularly in designing stimulus measures during recessions. HtM households' high Marginal Propensity to Consume (MPC) makes them highly responsive to income changes. During downturns, income drops lead to sharp consumption reductions, amplifying recessions, while fiscal transfers, for instance tax rebates or direct payments, generate strong multiplier effects, as these households spend rather than save additional income. Employment stability is crucial, as job losses reduce aggregate demand. Policies such as wage subsidies or unemployment insurance can stabilize consumption by preventing financial distress, softening economic downturns.

Using the 2021 Household Finance and Consumption Survey (HFCS), we calculate the prevalence of pHtM and wHtM households across 19 Euro Area (EA) countries.

Table 1: Prevalence of Poor and Wealthy Hand-to-Mouth Households by Country

Country	Group	Result
AT	pHtM	0.06
AT	wHtM	0.02
BE	pHtM	0.07
BE	wHtM	0.10
CY	pHtM	0.12
CY	wHtM	0.30
DE	pHtM	0.08
DE	wHtM	0.06
EE	pHtM	0.05
EE	wHtM	0.13
ES	pHtM	0.08
ES	wHtM	0.09
FI	pHtM	0.10
FI	wHtM	0.09
FR	pHtM	0.09
FR	wHtM	0.07
GR	pHtM	0.09
GR	wHtM	0.18
IE	pHtM	0.09
IE	wHtM	0.09
IT	pHtM	0.06
IT	wHtM	0.09
LT	pHtM	0.02
LT	wHtM	0.35
LU	pHtM	0.03
LU	wHtM	0.14
LV	pHtM	0.09
LV	wHtM	0.24
MT	pHtM	0.05
MT	wHtM	0.11
NL	pHtM	0.07
NL	wHtM	0.03
PT	pHtM	0.07
PT	wHtM	0.11
SI	pHtM	0.08
SI	wHtM	0.30
SK	pHtM	0.03
SK	wHtM	0.20

Table 1 shows that HtM proportions range from 2% in Austria to 13% in Cyprus, while wHtM spans 2% in Austria to 35% in Lithuania, reflecting diverse economic structures and financial behaviors.

This study further focuses on pHtM households due to their lack of any wealth buffer, which renders them highly vulnerable to income shocks, unlike wHtM households, many of whom strategically limit liquid savings to avoid erosion of cash value. This involuntary precarity makes pHtM households critical for understanding consumption dynamics and designing targeted economic policies.

Table 2: Proportion of employed Poor Hand-To-Mouth Households

Country	Result
AT	0.04
BE	0.05
CY	0.09
DE	0.07
EE	0.04
ES	0.07
FI	0.07
FR	0.06
GR	0.10
IE	0.06
IT	0.03
LT	0.02
LU	0.03
LV	0.04
MT	0.05
NL	0.04
PT	0.04
SI	0.08
SK	0.02

Intuitively, employment should serve as a primary mechanism for securing stable income and mitigating pHtM status. A steady job provides regular wages, enhances credit access, reduces income volatility, and supports precautionary savings, all of which should lower the probability of pHtM behavior. Table 2 shows the proportion of employed pHtM households across the EA, with shares as high as 13.1% in Cyprus and 8.6% in Greece, and a median of around 7% across countries.

Consequently, 93% of such households are not in this precarious pHtM state, suggesting a degree of financial stability among the majority. However, this observation prompts a deeper inquiry: does the financial resilience of the 93% stem solely from their employment income, or are additional factors necessary to lift them beyond the threshold of pHtM status?

To explore this further, we examine income composition. Table 3 shows that employed households reliant on a single income source (employment or self-employment income) are more likely to be pHtM than those with multiple sources (e.g., social transfers, investments), with considerable disparities,

Table 3: Proportion of employed Poor Hand-To-Mouth Households with single income stream

Country	Result
AT	0.10
BE	0.18
FR	0.26
DE	0.08
ES	0.09
FI	0.10
GR	0.12
EE	0.09
CY	0.11
SK	0.04
SI	0.11
PT	0.08
LV	0.06
LU	0.03
LT	0.03
IT	0.39
IE	0.03
MT	0.06
NL	0.03

ranging from 39% in Italy to 3% in the Netherlands.

These findings motivate the research question: Does employment serve as an insurance mechanism against being classified as pHtM in the EA, and does this relationship hold consistently across diverse EA economies? To address this, we employ a logistic regression model to identify factors driving pHtM status among employed households and test their consistency across countries.

2 Literature Review

(Keynes, 1936) places consumption at the core of economic activity, arguing that the Marginal Propensity to Consume (MPC), which measures the fraction of additional income spent on consumption, determines aggregate demand, output, and employment. Consumption is shaped by objective factors, such as income and wealth distribution, and subjective factors, including expectations and social norms, making it a dynamic force in the economy. Unlike classical economics, which assumes supply creates its own demand, Keynes asserts that insufficient consumption can lead to deficient effective demand, causing unemployment and economic stagnation.

Keynes' critique of classical economics highlights its failure to account for consumption's role in economic fluctuations. Classical theory posits that all income from production is spent on consumption or investment, ensuring full employment. Keynes refutes this, arguing that saving does not automatically translate into investment due to differing motives, leading to a shortfall in demand when consumption is weak. He challenges the classical view that saving enriches the economy, demonstrating that excessive saving reduces consumption, lowers aggregate demand, and triggers unemployment. Additionally, classical theories that labor can determine real wages through money-wage bargains are flawed, as workers typically resist money-wage cuts but not real-wage reductions due to price increases, affecting consumption levels.

Keynes draws on historical under-consumption theories to support his model. He references Mandeville (1732)'s work, which illustrates how reduced consumption due to thrift leads to economic decline, emphasizing the need for spending to sustain demand. Malthus (1836) argues that excessive saving by capitalists diminishes consumption, weakening production incentives and causing unemployment. These perspective reinforce Keynes' view that consumption drives economic activity and that excessive thrift can destabilize economies.

The Life-Cycle Hypothesis (LCH) of saving, developed by Modigliani and Brumberg (2005) represents a seminal contribution to the theory of consumption and saving behavior. It contrasts with the Keynesian consumption function, which emphasizes current income as the primary determinant of consumption. The LCH, on the other hand, assumes that individuals aim to maintain a stable consumption path, adjusting saving to buffer income fluctuations due to life-cycle patterns, such as high earning years followed by retirement.

The LCH is grounded in the microeconomic principle of utility maximization over an individual's lifetime. Modigliani and Brumberg (2005) argue that consumers allocate their resources—comprising current net worth and the present value of expected future earnings—to smooth consumption over time.

Modigliani (2005) tests the LCH using U.S. data from 1929 to 1959 (excluding 1941–1946). Two hypotheses are tested: Hypothesis I, where expected income equals current income ($Y_t^e = \beta Y_t$), and Hypothesis II, which accounts for employment status differences in expected income.

The results broadly support the LCH, with net worth consistently significant in explaining consumption, with coefficients around 0.06–0.08. The long-run

marginal propensity to consume (MPC) from nonproperty income ($\alpha_1 + \alpha_2$) is estimated at 0.65–0.72, while short-run MPC varies (0.41–0.65), reflecting cyclical sensitivity. Tests across prewar and postwar periods show parameter stability, though slight downward shifts may reflect changes in asset returns.

The LCH's ability to explain both long-run stability and cyclical variability in the saving-income ratio is a substantial contribution. Modigliani (2005) show that, in the long run, the income-net worth ratio stabilizes, leading to a constant saving-income ratio (0.15). Cyclically, net worth buffers consumption, increasing the consumption-income ratio during recessions and reducing it during recoveries, aligning with observed patterns.

However, the LCH has limitations. The assumption of no inheritances may oversimplify behavior, particularly for high-income groups, as noted in cross-sectional studies. The reliance on net worth data, which may be subject to measurement errors, and the challenge of estimating expected income introduce empirical uncertainties. Later developments, such as FRIEDMAN (1957) offer a framework for understanding household consumption behavior by distinguishing between permanent and transitory components of income and consumption. The PIH posits that consumption is primarily determined by permanent income, defined as the expected long-run average income reflecting factors such as non-human wealth, personal attributes such as training and ability, and economic characteristics such as occupation and location. Measured income, observed over a finite period, is expressed as the sum of this permanent component and a transitory component, which captures short-term fluctuations due to factors such as illness, windfalls, or cyclical economic changes, as well as measurement errors. Similarly, measured consumption is the sum of permanent consumption, driven by permanent income, and transitory consumption, influenced by temporary factors such as medical expenses or opportunistic purchases.

Friedman argues that direct estimates of permanent income and consumption, adjusted for expenses, accrual accounting, or durable goods, fail to align with the theoretical relationship, as empirical data show a lower marginal propensity to consume at higher incomes. To address this, he proposes an indirect approach, interpreting measured data as manifestations of unobservable permanent components. For example, if a household's income fluctuates widely, its measured income is a less reliable indicator of permanent income compared to a household with stable income. The PIH explains the observed flatter consumption-income regression by showing that the regression slope, $b = kP_y$, is the product of the consumption propensity k and the fraction of income variance due to the permanent component, P_y. When transitory variance is high, P_y is low, reducing the slope and explaining lower consumption responses at high measured incomes.

The hypothesis avoids defining permanent income as a fixed lifetime average, allowing flexibility in its interpretation. Possible definitions range from the mean of anticipated future income distributions to an intermediate horizon, with empirical data determining the appropriate time frame. Friedman suggests that permanent income may shift with new information, reflecting dynamic expectations. The PIH also considers a logarithmic specification, where

consumption and income are expressed in logarithms, yielding simpler elasticity results, though the additive form is primarily used.

The idea that transitory income and consumption are uncorrelated is central but debated. Friedman defends its plausibility by noting that savings are often a residual, suggesting consumption is driven by long-term plans. He acknowledges that windfalls might increase consumption, particularly for durable goods, but argues that defining consumption as the value of services, not purchases, reclassifies such spending as savings, supporting the zero-correlation theory. Expected windfalls, such as inheritances, are incorporated into permanent income, and negative correlations, such as reduced consumption due to overtime work, may offset positive ones. Measurement errors can bias correlations, especially if consumption is derived from income and savings data, but independent measurements support the hypothesis.

The PIH's strength lies in its ability to explain empirical anomalies, such as varying marginal propensities to consume, by emphasizing the role of transitory income variance. It integrates evidence from income volatility studies, allowing a nuanced interpretation of consumption behavior.

The investigation of consumption behavior under liquidity constraints, as explored by Zeldes (1989) represents a substantial contribution to the empirical analysis of the PIH and LCH. Zeldes' study addresses the empirical rejections of the PIH/LCH observed in prior literature and tests whether these rejections can be attributed to liquidity constraints that prevent individuals from borrowing against future labor income. By deriving and testing implications of consumption behavior under borrowing constraints using panel data from the Panel Study of Income Dynamics (PSID), Zeldes provides a nuanced alternative to the Keynesian consumption model, advancing the understanding of how credit market imperfections influence household consumption decisions.

Zeldes begins by situating his work within the context of prior empirical studies that have challenged the PIH/LCH. He notes that aggregate time-series studies, such as those by Flavin (1981), Hansen and Singleton (1983), and Mankiw et al. (1982), have consistently rejected the stochastic restrictions implied by the PIH/LCH under rational expectations. These rejections suggest that consumption does not align with the prediction that individuals smooth consumption based on expected lifetime income. Some authors, as Zeldes highlights, propose liquidity constraints as a potential explanation for these discrepancies, arguing that the inability to borrow may cause consumption to track current income more closely than predicted. However, Zeldes critiques the common practice of contrasting the PIH/LCH with a Keynesian alternative, where consumption is assumed to be proportional to income. He argues that this approach oversimplifies the effects of borrowing constraints, as constrained consumers can save but not borrow, distinguishing their behavior from the Keynesian model.

The theoretical foundation of Zeldes' study draws on the Euler equation approach. In the unconstrained PIH/LCH model, consumers maximize a time-separable utility function subject to a budget constraint, leading to an Euler equation that equates the marginal utility of consumption across periods, adjusted for interest rates and time preference. Zeldes introduces borrowing

constraints as a non-negativity restriction on net wealth, following models by Bewley (1977) and Scheinkman and Weiss (1986), which suggest that such constraints can arise due to private information or credit rationing, as discussed by Stiglitz and Weiss (1981). This constraint modifies the Euler equation by introducing a Lagrange multiplier, representing the utility gain from relaxing the borrowing limit. Zeldes emphasizes that even when the current constraint is not binding, future constraints can lower current consumption for risk-averse individuals, a concept he terms "global constraints," distinguishing his approach from earlier studies that focus solely on current constraints.

Zeldes splits the sample into two groups based on the ratio of liquid assets to income, hypothesizing that households with low assets (less than two months' income) are more likely to face binding constraints. The first test examines whether the Euler equation holds for the high-asset group but is violated for the low-asset group, indicated by implausible parameter estimates or rejected overidentifying restrictions. The second test assesses whether the Euler equation exhibits a one-sided inequality for the low- asset group, with a positive average Lagrange multiplier indicating higher marginal utility today due to borrowing constraints. The third test explores the relationship between the Lagrange multiplier and current income, expecting a negative correlation as higher income relaxes constraints. This approach builds on prior work by (Juster and Shay, 1964), (Bernanke, 1984), and (Hayashi, 1985), who also split samples to identify constrained households, but Zeldes' method is distinct in estimating the Lagrange multiplier without requiring a closed-form solution for consumption.

Unlike classical Keynesian models that assume flexible prices and wages, the New Keynesian model emphasizes nominal rigidities, such as sticky prices and wages, which prevent instantaneous market clearing. These rigidities imply that only a fraction of firms and households can adjust prices and wages each period, leading to sluggish responses to economic shocks. The models also incorporate real frictions, such as habit formation in consumption and investment adjustment costs, which introduce persistence in economic variables.

Cogan et al. (2010) extend the Smets and Wouters (2007) new Keynesian model to include rule-of-thumb consumers, who consume all their disposable income, to assess the impact of the American Recovery and Reinvestment Act (ARRA) of 2009.

Rule-of-thumb consumers represent households that do not optimize intertemporally but instead consume their entire after-tax labor income in each period. This behavior contrasts with forward-looking, optimizing households assumed in standard new Keynesian models, where consumption decisions account for expected future earnings and taxes. Cogan et al. (2010) note that such consumers are proposed to make new Keynesian models "more Keynesian" by introducing a high marginal propensity to consume, potentially amplifying the effects of fiscal stimulus. The study cites Campbell and Mankiw (1989) as a foundational work, which suggests that a portion of households follow simple consumption rules, spending all current income rather than smoothing consumption over time.

Further development of the rule-of-thumb concept is evident in Coenen and

Straub (2005) and Galí et al. (2007), who investigate the implications of rule-of-thumb consumers for fiscal policy within new Keynesian frameworks. Coenen and Straub (2005) provide empirical evidence from the EA, estimating that 25–35% of households exhibit rule-of-thumb behavior, suggesting a high but not dominant share of such consumers. Similarly, Galí et al. (2007) assume a higher share of rule-of-thumb consumers (50%) and find that their presence can lead to crowding-in of consumption following government spending increases, contrasting with the crowding-out predicted by models with only optimizing households. Cogan et al. (2010) highlight that these studies demonstrate how rule-of-thumb consumers can break Ricardian equivalence, making the timing of taxes and government spending relevant for aggregate outcomes.

Cogan et al. (2010) specify a prior mean of 0.5 for the share of rule-of-thumb consumers, aligning with the high end of literature estimates, but find a posterior mean of 26.5%, consistent with Coenen and Straub (2005) and Ratto et al. (2009). This lower estimate suggests that U.S. data support a smaller proportion of rule-of-thumb consumers than assumed in some theoretical models, such as Galí et al. (2007). The study also introduces a fiscal policy rule, as suggested by Galí et al. (2007), where lump-sum taxes respond to government debt and spending with elasticities of 0.06 and 0.13, respectively, implying slow debt repayment and substantial debt accumulation following spending increases.

By introducing rule-of-thumb consumers, who exhibit non-Ricardian behavior, the study provides a framework that can generate a positive consumption response, aligning with empirical evidence. This extension builds on the empirical literature documenting deviations from the permanent income hypothesis, which show that consumption depends excessively on current income, and Wolff (1998), who notes that many households have near-zero net worth. The study thus responds to Mankiw (2000) call for incorporating non-Ricardian households into macroeconomic models to better capture economic dynamics.

The presence of rule-of-thumb consumers breaks Ricardian equivalence, as their consumption depends on current labor income, which is influenced by real wages and hours. Sticky prices allow the price markup to adjust downward, enabling real wages to rise or fall less, boosting labor income and thus rule-of-thumb consumption. Deficit financing further enhances this effect by reducing the immediate tax burden. These mechanisms are absent in the RANK model, which assumes flexible consumption adjustment and no heterogeneity in consumer behavior.

The 2014 paper by Kaplan et al. (2014) introduces the concept of wealthy HtM households, a group characterized by substantial holdings of illiquid assets, such as housing or retirement accounts, but little to no liquid wealth, resulting in consumption patterns that mirror their current income. This study advances the understanding of consumption behavior by challenging traditional macroeconomic models that rely on net worth to identify HtM consumers. By employing a two-asset model framework and analyzing cross-sectional survey data from eight countries, the authors provide a comprehensive empirical and theoretical analysis of the prevalence, characteristics, and economic implications of wealthy HtM households, particularly their high MPC out of transitory income shocks.

The paper positions its contribution within the framework of the Permanent Income Hypothesis and its buffer-stock extensions, as developed by (Deaton, 1991) and (Carroll, 1997). These models suggest that households adjust consumption based on expected lifetime income, with transitory income changes exerting minimal influence. Yet, empirical studies reveal substantial consumption sensitivity to such changes. Micro-level evidence from (Parker, 1999), (Souleles, 1999), (Shapiro and Slemrod, 2003a,b, 2009), (Johnson et al., 2006), and (Broda and Parker, 2014) demonstrates this excess sensitivity, while Campbell and Mankiw (1990) provide macro-level support. Furthermore, the lack of correlation between expected consumption growth and real interest rates, as observed by (Attanasio and Weber, 1993) and (Ludvigson and Michaelides, 2001), challenges the Euler equation central to the PIH. The authors innovate by proposing that these discrepancies arise from HtM consumers, whose prevalence is underestimated by traditional net worth-based measures that fail to account for wealthy HtM households, thus offering a novel explanation for the observed anomalies.

To illustrate the determinants of wealthy HtM behavior, the authors develop a stylized three-period model, where households allocate an initial endowment between a liquid asset with a lower return and an illiquid asset with a higher return. The model shows that households may optimally choose to hold zero liquid wealth and positive illiquid wealth when the return on the illiquid asset is sufficiently high, income growth is steep, or the elasticity of intertemporal substitution is large. This choice reflects a trade-off: forgoing consumption smoothing to achieve higher long-run consumption via illiquid assets.

The empirical findings, reveal that 25–40% of U.S. households are HtM, with a preferred estimate of one-third, of which two-thirds are wealthy HtM and one-third are poor HtM. This indicates that traditional net worth-based measures, as used in Huggett (1996), miss the majority of HtM households. The age profile shows poor HtM prevalence among younger households, while wealthy HtM status peaks around age 40, with median illiquid wealth of approximately $50,000.

Authors employ the identification strategy of Blundell et al. (2008) using PSID data to estimate the MPC out of transitory income shocks. Both wealthy and poor HtM households exhibit substantially higher MPCs than non-HtM households. Authors argue that wealthy HtM households warrant a distinct category in macroeconomic models, as their behavior differs from both poor HtM and non-HtM households.

Slacalek et al. (2020) adopt a framework inspired by Kaplan et al. (2014), classifying households into three groups: non-HtM, wealthy HtM, and poor HtM. While their classification largely follows Kaplan's model, Slacalek et al. (2020) introduce slight adjustments, such as categorizing all households with housing or business wealth as wHtM, even if they are burdened by mortgages. This distinction is crucial for understanding how different types of wealth influence consumption behavior under liquidity constraints.

The primary aim of their study is to quantify how monetary policy affects household spending through various transmission channels, which they catego-

rize into direct (partial equilibrium) and indirect (general equilibrium) effects. Direct channels include intertemporal substitution, where households adjust consumption in response to interest rate changes, and net interest rate exposure, which depends on whether households are net borrowers or savers. Indirect channels encompass broader economic responses, such as shifts in labor income, asset prices (particularly housing), and inflation, all of which are triggered by monetary policy actions such as an unexpected interest rate cut. The authors emphasize that the strength of these channels varies across households due to differences in their MPC, balance sheet composition, and sensitivity to aggregate economic fluctuations.

A key insight from their study is the critical role of labor income as an indirect channel through which monetary policy influences consumption, particularly for pHtM households. Due to their low liquid and illiquid wealth, pHtM households are highly sensitive to labor income fluctuations, exhibiting an MPC of approximately 1.0% in response to the interest rate cut, compared to 1.8% for wHtM and 0.5% for non-HtM households. This high MPC amplifies their consumption response when labor income rises following monetary easing, as lower interest rates stimulate economic activity, boost employment, and increase wages. The authors estimate that indirect channels, including labor income and housing wealth/collateral effects, account for about 60% of the total consumption increase after the rate cut, with labor income being especially statistically significant for pHtM households.

Slacalek et al. (2020) emphasis on labor income's impact on pHtM consumption aligns closely with this thesis's focus on employment stability as a key determinant of pHtM risk. Their finding that pHtM households' consumption is highly sensitive to labor income fluctuations supports the central premise of this study: that employment plays a critical role in mitigating financial vulnerability. However, their study does not explore how income diversification or institutional factors, such as social safety nets, moderate this relationship—a gap this thesis addresses by examining how multiple income sources and country-specific policies influence employment's protective role.

Moreover, while Slacalek et al. (2020) provide valuable insights using pre-2019 HFCS data, their analysis does not account for more recent economic shifts, such as those triggered by the COVID-19 pandemic. This thesis leverages the 2021 HFCS to capture post-pandemic trends and economic developments, offering a more current perspective on pHtM households in the Eurozone. Additionally, Slacalek et al. (2020) focus on monetary policy's indirect channels, particularly labor income, resonates with this study. By examining how Eurozone-specific measures such as unemployment insurance and wage subsidies can further reduce pHtM risk through employment stabilization, this thesis extends their work into practical, regionally tailored insights.

Aguiar et al. (2020) explore why some households consistently maintain low wealth levels, challenging the traditional view that income shocks are the primary cause, as suggested by standard precautionary savings models. Using data from the Panel Study of Income Dynamics (PSID) spanning 1999 to 2019 and a two-asset model, they propose that differences in household preferences,

specifically impatience and intertemporal elasticity of substitution (IES), better explain the persistence of HtM. behavior.

The authors identify HtM households by their high marginal propensities to consume, noting that 40.6% of their sample qualifies as HtM, 17.3% as pHtM (low liquid wealth) and 23.3% as wealthy HtM (wHtM, with illiquid assets but limited liquid wealth). Contrary to standard models, which predict faster consumption growth as low-wealth households rebuild savings post-shock, Aguiar et al. (2020) find that HtM households, particularly pHtM, exhibit flat or negative consumption growth. This persistence is striking: wHtM households are ten times more likely to remain in that state after two years, suggesting that low wealth reflects more than temporary misfortune.

To explain this, the authors build on Kaplan and Violante's (2014) two-asset framework, incorporating preference heterogeneity. Their model highlights three household types: patient with low IES, impatient with low IES, and patient with high IES. The impatient and high-IES types align with pHtM and wHtM behaviors, respectively, showing that preference differences account for 84% of the MPC gap in pHtM households - far more than income shocks alone. This challenges prior literature, such as Zeldes (1989), which emphasizes income variability, and suggests that employment stability may not fully address pHtM risk if preferences favor consumption over saving.

3 The HFCS Data

This study draws on data from the fourth wave (2021) of the Household Finance and Consumption Survey (HFCS), a harmonized cross-national dataset coordinated by the European Central Bank (ECB). The HFCS collects detailed microdata on household finances, including assets, liabilities, income, consumption, and socio-demographic characteristics, with the primary aim of informing monetary policy and financial stability analysis across the EA. The data are gathered and harmonized by the ECB in collaboration with the national central banks of 19 EA countries plus the Czech republic and Hungary, ensuring comparability across national contexts through a standardized questionnaire and common methodological framework. Access to the dataset was granted through the ASTRA research platform, which is the ECB's secure environment for handling confidential microdata.

The fourth wave includes data on approximately 90,000 households, with sample sizes varying by country. Smaller countries such as Malta are represented by around 1,000 households, while larger economies such as Germany and France contribute samples exceeding 10,000 households. This variation is accounted for in the survey's weighting and variance estimation procedures.

The ECB provides a comprehensive methodological report about the HFCS, European Central Bank (2023). The national samples in the HFCS are designed to be representative of the entire household population in each participating country, including the very wealthy. To achieve adequate representation of the upper tail of the wealth distribution—which is typically underrepresented in standard household surveys—many countries implemented oversampling strategies targeted at high-wealth households.

The primary income variables in the HFCS are reported on a gross basis, meaning they include both taxes and social contributions. However, the method of collecting income data varied across countries. In eight countries, respondents reported their income exclusively in gross terms. In contrast, Italy collected net income data, and subsequently estimated gross income by applying institutional and legal parameters related to taxation and social security contributions. In several other countries, respondents were given the option to report net income for all or part of their income sources; in these cases, gross income was derived using appropriate estimation procedures.

Some countries also made use of administrative register data to varying degrees. For example, in France, all income data were obtained solely from registers, whereas in Latvia, income information was compiled from a combination of register sources and direct survey responses. Moreover, some countries provided additional income-related variables: Italy and Finland included data on income taxes and social contributions, while Belgium, Italy, and Portugal also supplied net income figures alongside gross values.

3.1 Oversampling

The criteria and mechanisms for oversampling vary by country. Some countries rely on regional indicators such as average taxable income or local property values to identify areas likely to contain wealthier households. Others employ individual-level indicators such as reported personal income, taxable wealth, or asset ownership, often obtained from administrative tax or social security records. In certain countries, hybrid criteria are used, for example, combining income level with dwelling size or geographical region.

Notably, countries such as France, Spain, and Germany implement comprehensive wealth-based stratification, where high-income or asset-rich households are explicitly targeted and oversampled. France, for instance, creates four strata of wealthy households (e.g. equity-based, real estate-based, etc.) within each primary sampling unit. Estonia, Latvia, and Finland use detailed income registers to stratify households based on personal income or the taxable income of the main income earner. Meanwhile, countries such as Ireland, Belgium, and Greece rely on regional property and income indicators to define strata likely to contain wealthier populations.

In contrast, several countries including Austria, the Netherlands, Malta, and Slovenia, do not implement any specific oversampling strategy for the wealthy. However, effective oversampling can still occur due to variation in household response rates or sample design effects.

The effective oversampling rate quantifies how overrepresented the wealthiest households are in the final sample compared to a uniform 10% or 5% shares. For example, in Spain, the top 10% and top 5% of the net wealth distribution are oversampled by 193% and 345%, respectively. Similarly high oversampling rates are observed in France (157% and 256%) and Ireland (127% and 155%). On the other hand, countries such as Austria, Greece, and Slovakia display negative oversampling rates, indicating underrepresentation of high-wealth households relative to the population benchmark.

Table 4: Oversampling Criteria and Methods by Country
(European Central Bank, 2023)

Country	**Criteria for Oversampling**	**Details**
Belgium	Regional indicators	Neyman allocation based on income dispersion. Wealthier statistical sectors in expensive municipalities were oversampled.
Czech Republic	No oversampling	
Germany	Regional indicators	Wealthy districts oversampled in large cities; in smaller towns, high share of high-income taxpayers used as selection criterion.
Estonia	Personal income	Sample stratified by income from 2020 tax records. Income includes employment, benefits, and capital income.
Ireland	Regional indicators	Primary sampling units chosen from high-wealth areas (homeownership + property tax base). 100 additional areas selected proportionally to size.
Greece	Regional indicators and income	Oversampling based on disposable income and taxable property values, stratified by municipality and tax code.
Spain	Personal taxable wealth	Seven strata based on taxable wealth; sample size increased in higher wealth strata using tax return data.
France	Personal wealth	Two subsamples selected within each area: one for wealthy households (four wealth-based strata) and one for others.
Croatia	Dwelling size	Oversampling of dwellings with floor area ¿120 m^2.
Italy	Household income and debt	Sampling stratified by income (50 strata) and indebtedness (10 debt strata from tax and credit registers).
Cyprus	Electricity consumption	Top 10% of households by electricity use oversampled.
Latvia	Personal income	Different sampling fraction for top income decile based on tax records.
Lithuania	Wealth, real assets	25% of gross sample from top wealth decile based on asset data.
Luxembourg	Personal income	20% of sample drawn from top decile of gross income per social security registry.
Hungary	Dwelling values	50% Neyman allocation, 50% proportional allocation based on dwelling value.
Malta	No oversampling	
Netherlands	No oversampling	
Austria	No oversampling	
Portugal	Dwelling size, income, region	44% of sample based on dwellings with large floor area in high-income regions.
Slovenia	No oversampling	
Slovakia	Personal income	Based on Labour Force Survey: income ¿90th percentile oversampled.
Finland	Personal income	High-income earners oversampled based on taxable income of household head; data from tax and dwelling registers.

Table 5: Effective Oversampling Rates of the Wealthy by Country
(European Central Bank, 2023)

Country	**Top 10% Oversampling (%)**	**Top 5% Oversampling (%)**
Belgium	44	53
Czech Republic	-20	-28
Germany	136	149
Estonia	36	29
Ireland	127	155
Greece	-13	-7
Spain	193	345
France	157	256
Croatia	21	46
Italy	89	120
Cyprus	75	91
Latvia	57	60
Lithuania	23	13
Luxembourg	15	23
Hungary	15	21
Malta	22	24
Netherlands	33	33
Austria	-22	-25
Portugal	117	119
Slovenia	-2	3
Slovakia	-18	-17
Finland	97	103

3.2 Weighting

To ensure the validity and representativeness of its estimates, the HFCS implements a comprehensive *weighting strategy* designed to correct for *unit non-response*, *coverage errors*, and *sampling design effects*. These procedures are harmonized across countries to the extent possible, following international best practices, while still allowing for certain national adaptations.

Unit non-response occurs when eligible households do not participate in the survey due to inability to contact, refusal, or other barriers such as language issues or illness. Given the sensitivity of wealth-related questions, non-response rates in the HFCS tend to be higher than in standard income surveys. To mitigate this, the HFCS emphasizes the use of best practices in interviewer selection, training, and incentivization. Nevertheless, substantial cross-country variation in *response behavior* remains, especially in terms of contact protocols, eligibility rates, and refusal rates.

The *response rate*, defined as the ratio of completed interviews to eligible households, varies widely across countries in Wave 4. For example, countries such as *Germany* and the *Czech Republic* reported response rates above 70%, whereas others such as *Luxembourg* and *Italy* showed considerably lower figures.

Moreover, the deliberate oversampling of wealthy households, while methodologically important, tends to reduce response rates due to lower cooperation among affluent respondents.

The construction of final estimation weights in the HFCS proceeds in four main stages:

1. **Design Weights:** Initial weights are calculated as the inverse of each unit's probability of selection, as defined by the sample design. These include both responding and non-responding units.

2. **Coverage Adjustment:** Weights are adjusted to correct for *frame imperfections*, such as the presence of non-eligible units or unequal probabilities of selection (e.g., in dwelling-based sampling frames).

3. **Non-response Adjustment:** Further adjustments are made to mitigate bias from selective response. This involves estimating response probabilities via logistic regression or response homogeneity groups using auxiliary information available for both respondents and non-respondents.

4. **Calibration:** In the final step, weights are calibrated to known population totals using auxiliary variables such as *age*, *gender*, and *household size*. The calibration aligns the weighted sample with external benchmarks, thereby reducing bias not corrected in previous stages.

In countries with a panel component, the weighting procedure incorporates additional adjustments for attrition and changes in household composition between survey waves. Separate weights are computed for each wave and are subsequently calibrated to the current wave's population before merging.

While weighting improves the accuracy of population-level estimates, it may also increase the variance of results—particularly in the presence of highly variable weights. To balance this trade-off, the HFCS allows for constrained calibration or trimming of extreme weights, though this must be done carefully, especially given the added variability introduced by the oversampling of high-wealth households.

The specific calibration variables and data sources used vary across countries, depending on the availability of reliable population data. Nonetheless, most countries calibrate on *age*, *gender*, and *household size*. Additional variables such as *education*, *employment status*, *urbanization*, and *homeownership* are also commonly used. Calibration sources include national population registers, tax records, labor force surveys, and the EU-SILC dataset.

3.3 Editing, Item Non-response and Multiple Imputation

High-quality data editing and imputation are central to the HFCS methodology, given the sensitive and complex nature of the survey's financial questions. These procedures ensure that estimates remain reliable despite frequent item non-response.

Editing involves identifying and correcting errors or inconsistencies in collected responses. All participating countries included range and consistency checks within their questionnaires, and interviewer comments were often systematically reviewed. Editing also utilized auxiliary information such as administrative registers or audio recordings (e.g., in Spain). Edits corrected erroneous entries and converted values (e.g., net to gross income, legacy currencies to euro). These procedures help reduce under- or over-estimation biases that may occur in raw, unedited data.

Item non-response arises when respondents decline or are unable to answer specific questions—often those about sensitive financial variables. The HFCS addresses this through a structured imputation process. Instead of excluding incomplete cases (which would lead to biased or inefficient estimates), missing values are systematically replaced by plausible values based on information from similar households.

To ensure transparency, "flag" variables accompany the dataset. These indicate whether a value was directly reported, edited, derived from a range, or imputed due to missingness.

3.4 Imputation Methodology and Country Practices

Each country is responsible for imputing its own data using a harmonized methodology. This decentralized approach accounts for national-specific questionnaire routing, auxiliary data, and institutional knowledge about missingness patterns.

The HFCS uses *multiple imputation* (MI), producing five versions of each missing value. MI is preferred over simpler methods (e.g., mean substitution) because it preserves the distribution and variance of imputed variables, and better reflects uncertainty. The imputation models are sequential and iterative. They incorporate a broad set of predictors, including empirically strong covariates, theoretically relevant variables, and variables that help explain missingness.

MI in the HFCS assumes a Missing At Random (MAR) mechanism, meaning that conditional on observed covariates, the probability of missingness is unrelated to the unobserved value.

Countries adopt different technical choices in constructing imputation models. While all countries apply MI, some incorporate survey weights into their imputation either through weighted regressions or by including weights as predictors. Others use case-by-case selection or automated variable selection procedures. Empirical evidence suggests that including design information improves imputation accuracy, though it can reduce model efficiency.

Comparative information shows that imputation plays a critical role for key variables such as home values, mortgage balances, and savings. In many countries, a substantial portion of these values were derived from ranges reported by respondents or entirely imputed. This does not necessarily imply bias but reflects variation in households' ability or willingness to disclose financial details.

Table 6: Imputation methodology European Central Bank (2023)

Country	Use of MI	Weighted regression	Weight as covariate	No weights used	Automatic with limited editing	Automatic pre-selection with case-by-case evaluation	Case-by-case evaluation
Belgium	X	X					X
Czech Republic	X			X			X
Germany	X						X
Estonia	X			X	X		
Ireland	X						X
Greece	X	X					X
Spain	X				X*		X
France	X						X
Croatia	X	X					X
Italy	X						X
Cyprus	X			X	X		
Latvia	X	X					X
Lithuania	X						X
Luxembourg	X	X					X
Hungary	X	X					X
Malta	X						X
Netherlands	X		X				
Austria	X	X					X
Portugal	X	X					X
Slovenia	X				X		X
Slovakia	X	X					X
Finland	X						X

Source: ECB – HFCS metadata.
* Depending on the variable.

3.5 Variance Estimation in the HFCS

Variance estimation is crucial for distinguishing between statistically significant results and those arising from random variation in the sample. Underestimating variance can lead to false positives, while overestimating it can reduce the utility of the data by diminishing statistical significance.

The total variance of an estimator includes several components. The key one is **sampling error**, caused by the random selection of sample units. Another major component is **item non-response**, which is dealt with through multiple imputation. The HFCS uses a **replication-based method** to estimate variance, specifically the *Rao-Wu rescaled bootstrap*, suitable for complex sampling designs.

Replication methods draw subsamples (replicates) from the full sample and compute the statistic of interest on each. Variance is estimated as the variance of these replicate estimates. The HFCS uses a bootstrap method to provide replicate weights, which are used to estimate sampling variance without releasing detailed design information that could risk confidentiality.

Let strata be indexed by $h = 1, \ldots, H$, with N_h total units and n_h sampled units per stratum. The sampling fraction is $f_h = \frac{n_h}{N_h}$. Each unit (h, i) has a variable of interest y_{hi} and weight $w_{hi} = \frac{N_h}{n_h}$. The estimated total is:

$$\hat{Y} = \sum_{h=1}^{H} \sum_{i=1}^{n_h} w_{hi} y_{hi}$$

The statistic of interest is a function $\hat{\theta} = f(\hat{Y})$. For B replicates, each replicate draws a sample of $m_h = n_h - 1$ units with replacement from each stratum. Let r^*_{hi} be the number of times unit (h, i) is selected. The adjusted weight is:

$$w^*_{hi} = \left(1 - \lambda_h + \lambda_h \frac{n_h}{m_h} r^*_{hi}\right) w_{hi}, \quad \text{where } \lambda_h = \sqrt{\frac{m_h(1 - f_h)}{n_h - 1}}$$

The replicate total is $\hat{Y}^*_b = \sum_{h=1}^{H} \sum_{i=1}^{n_h} w^*_{hi} y_{hi}$ and the statistic becomes

$\hat{\theta}_b^* = f(\hat{Y}_b^*)$. The bootstrap variance estimate is:

$$V^*(\theta) = \frac{1}{B-1}\sum_{b=1}^{B}(\hat{\theta}_b^* - \bar{\hat{\theta}}^*)^2$$

HFCS replicate weights are adjusted through post-stratification or calibration to match population margins, ensuring estimates are approximately unbiased.

For $M = 5$ implicates and $B = 1000$ replicate weights:

- For each implicate m, estimate θ_m using the main weights.
- For each replicate b, estimate θ_{mb}^*.
- The within-imputation variance is:

$$W = \frac{1}{M}\sum_{m=1}^{M} U_m, \quad U_m = \frac{1}{B-1}\sum_{b=1}^{B}(\theta_{mb}^* - \bar{\theta}_m^*)^2$$

- The between-imputation variance is:

$$Q = \frac{1}{M-1}\sum_{m=1}^{M}(\theta_m - \bar{\theta})^2$$

- The total variance is:

$$T = W + \left(1 + \frac{1}{M}\right) Q$$

The test statistic $\frac{(\theta-\bar{\theta})^2}{T}$ follows an approximate t-distribution with degrees of freedom:

$$\nu_M = (M-1)\left(1 + \frac{W}{(1+1/M)Q}\right)^2$$

A small-sample adjustment by Barnard and Rubin (1999) can also be applied, especially when the number of PSUs is small.

4 Methodology

4.1 HtM Definition

The goal of this thesis is to investigate whether employment serves as an insurance mechanism against being classified as a pHtM household in the EA. To this end, this study employs a logistic regression framework.

The Thesis will follow the classification used by Slacalek et al. (2020), a household is considered *hand-to-mouth* if the reference person is not self-employed and if it meets one of the following conditions:

- `Net liquid wealth` ≥ 0 `AND net liquid wealth` $\leq$ biweekly (net) income, OR
- `Net liquid wealth` < 0 `AND net liquid wealth` $\leq$ biweekly (net) income - credit limit

Households are further divided into three categories:

1. `Poor Hand-to-Mouth (pHtM)`: Households with `net illiquid wealth` ≤ 0, meaning they lack both liquid savings and substantial assets.
2. `Non-Hand-to-Mouth (nHtM)`: Households that do not meet the hand-to-mouth criteria and have either liquid savings or substantial financial flexibility.

Net Income Calculation

To approximate net income from gross income in the absence of detailed tax microdata, we simulate income taxation using a piecewise-defined progressive tax schedule. For each country c, we use a set of predefined tax brackets, where each bracket i is defined by a lower threshold T_i, an upper threshold T_{i+1}, and a corresponding marginal tax rate r_i.

Let y denote a household's gross income. The total tax $\tau_c(y)$ is computed as:

$$\tau_c(y) = \sum_{i=1}^{n_c} \left(\min(y, T_{i+1}) - T_i\right)^+ \cdot r_i$$

Where:

- n_c is the number of tax brackets in country c,
- T_i is the lower bound of the i-th bracket
- r_i is the marginal tax rate in bracket i,
- $(x)^+ = \max(x, 0)$ ensures that negative values are excluded, so only income above the bracket threshold is taxed,

- The taxable portion in each bracket is $\min(y, T_{i+1}) - T_i$ if $y > T_i$, and 0 otherwise.

The net income y_{net} is then defined as:

$$y_{\text{net}} = y - \tau_c(y)$$

This formulation respects the principle of marginal taxation, whereby each segment of income is taxed at the rate corresponding to its bracket. For high incomes, the marginal tax rate converges to that of the highest bracket.

The tax brackets and marginal rates used in this simulation are obtained from the OECD's *Personal Income Tax – Central Government Rates and Thresholds* dataset. This source provides internationally harmonized annual data on personal income tax regimes, under the following specifications:

- **Frequency of observation:** Annual
- **Measure:** Personal income tax
- **Institutional sector:** Central government
- **Civil status:** Single person
- **Household type:** Single person, no children
- **Earnings of the principal:** 100% of average wage
- **Time period:** 2021

4.2 Logistic regression

In the first step, a simple logistic regression model is specified with an indicator for whether the household has received employment income as the explanatory variable. We begin by conducting a so-called Weight of Evidence (WoE) analysis and subsequently descriptive analysis to investigate the baseline relationship between employment and the probability of being classified as a pHtM household. This includes examining the distribution of each variable across the 19 EA countries, computing summary statistics, and visualizing the incidence of pHtM households across categories of the variable. These descriptive exercises allow us to establish cross-country differences and to contextualize the regression results.

The model is given by

$$\log\left(\frac{P(Y=1 \mid X)}{P(Y=0 \mid X)}\right) = \beta_0 + \beta_1 X_{\text{E}},$$

where Y is the binary indicator of being classified as pHtM and X_{E} denotes the indicator for whether the household has received employment income. The coefficients β_i are estimated using weighted logistic regression.

The estimation is conducted separately for each country by subsetting the HFCS data to the national sample and applying the same regression framework.

To facilitate cross-country comparison and highlight geographical patterns, the results are then visualized using heat maps of the estimated coefficients.

To improve the interpretability of these visualizations, coefficients that are not statistically significant are imputed with a value of zero, so that the heat maps reflect only robust associations.

Self-employed households as described by `DHEMPH1` are dropped, in order to only include households who have a non-zero probability of being pHtM, in line with the definition by Slacalek et al. (2020),

This restriction ensures internal consistency with the pHtM construct and allows for unbiased interpretation of employment-related covariates. If self-employed individuals were included in the estimation sample, any interpretation of the estimated log-odds associated with employee status would be compromised. This is because employees, by construction, are more likely to be classified as pHtM than self-employed individuals. The resulting coefficient on employee indicators (such as having received employee income or holding a permanent contract) would thus be biased due to confounding with fundamentally different income-generating processes.

In the next step, in order to isolate the marginal associations of different employment characteristics with pHtM status, the same procedure is applied to additional employment-related variables: an indicator for high-skilled employment, an indicator for holding a permanent contract, and an indicator for having multiple jobs.

By extending the analysis in this way, we move beyond the binary distinction of whether a household has received employment income and begin to capture the quality of employment. Whereas the baseline specification establishes whether employment itself provides insurance against liquidity risk, the additional regressions allow us to assess whether the type and stability of employment matter for this insurance channel.

While the regressions on employment and employment quality provide initial insights, the estimated effects of receiving permanent income may be attenuated by demographic characteristics that are correlated with both employment status and pHtM risk.

To address this, in the next step we conduct so called risk profile and WoE analyses for key demographic variables using the pooled EA sample to examine the incidence of pHtM across categories of demographic and household characteristics. Then, we expand the single-variable specification by including receiving employment income together with groups of control for every EA member state.

4.2.1 Employment variables of interest

The main variable of interest is the binary variable `PG0100 - RECEIVED_EMP_INCOME`, which indicates whether the household reference person received any form of gross employee income in the reference period. Conceptually, this variable identifies whether the respondent earned income in an employee capacity, as distinct from self-employment or passive income.

The HFCS defines employee income as the sum of monetary remuneration paid by an employer to an employee in cash or near cash. According to the HFCS core documentation (2021 wave), this includes:

- Regular wages and salaries for time worked in primary, secondary, or casual jobs,
- Payments for time not worked (e.g., holiday pay),
- Overtime compensation,
- Thirteenth-month payments and supplementary bonuses,
- Commissions, gratuities, and tips,
- Piece-rate payments and productivity-linked pay,
- Director fees for incorporated enterprises,
- Allowances related to the job (e.g., housing or transport allowances),
- Employer-paid supplements for sick, maternity, disability, or survivor benefits,
- Foster care payments regarded as labor compensation.

This income should be included even if received in arrears. The following items are explicitly excluded from the definition:

- Reimbursements for work-related expenses (e.g., business travel),
- Severance, termination, and redundancy payments (recorded under `HG0600`),
- Allowances for protective clothing or subsistence,
- Lump-sum retirement payments,
- Union strike pay,
- Employers' social insurance contributions.

By using `PG0100` as a dummy variable, we distinguish households in which the reference person participates in wage employment, which is conceptually aligned with liquidity patterns consistent with pHtM vulnerability. This variable is especially useful for determining the insurance value of labor market participation, beyond the presence of formal labor status alone.

To model quality and type of employment, we derive two binary variables from the HFCS variable `PE0300`, which codes the respondent's main occupation using the International Standard Classification of Occupations (ISCO-08). The ISCO system classifies jobs based on the nature of tasks and required skills, with major groups corresponding to distinct skill levels. In our analysis, we define:

- **LOW_SKILL**: equals 1 if the respondent's main job falls within ISCO major groups 5 (Service and Sales Workers), 8 (Plant and Machine Operators and Assemblers), or 9 (Elementary Occupations), and 0 otherwise. These groups correspond primarily to ISCO skill level 2 or 1.
- **HIGH_SKILL**: equals 1 if the main job is classified under ISCO major groups 1 (Managers), 2 (Professionals), 3 (Technicians and Associate Professionals), or 7 (Craft and Related Trades Workers), and 0 otherwise. These occupations are typically associated with skill levels 3 or 4.

To further refine the characterization of employment quality, we examine the variable **HAS_PERM_CONTRACT**, derived from HFCS variable `PE0220`. This indicator captures whether the respondent's current main job is of a permanent nature or based on a temporary or informal agreement.

In accordance with HFCS guidelines, a job is classified as *temporary* if its termination is based on objective conditions, such as reaching a predetermined date, completing a specific task, or the return of another employee. Temporary employment also includes:

- Seasonal workers,
- Workers hired through an employment agency for a fixed mission,
- Individuals under specific training contracts,
- Probationary contracts that expire automatically unless renewed.

Conversely, jobs are classified as permanent when there is no predefined endpoint. For example, renewable contracts (e.g. annual contracts) are considered permanent if the respondent views them as such. The focus is on the contractual or institutional nature of the job's duration, not the respondent's personal plans to leave for non-contractual reasons (such as studying or traveling). Thus, a student who holds a job without a formal time limit, despite planning to leave after graduation, would still be coded as permanently employed.

The binary variable **HAS_MULTIPLE_JOBS** is derived from the HFCS variable `PE0800`, which records whether the reference person is currently working for more than one employer or holds more than one job. This variable captures the extent of diversified employment among respondents and may reflect income smoothing strategies or economic necessity. A value of 1 indicates that the individual holds multiple jobs; a value of 0 indicates single-job employment.

4.2.2 Demographic variables of interest

In addition to `PG0100 - RECEIVED_EMP_INCOME` variables, we incorporate a set of demographic controls, that proxy for household composition, life-cycle stage, and socio-demographic characteristics known to influence both income capacity and liquidity. These variables are not of primary interest in themselves, but serve to isolate the conditional effect of employment from confounding factors. Specifically, they capture three broad dimensions:

Model scope	Demographic controls
Lifecycle	AGE, AGE2
Human capital	EDUCATION, LIVING_IN_THE_COUNTRY, AGE
Family structure	MARITAL_STATUS, SINGLE_MOTHER, MORE_CHILDREN
Household composition	TWO_ADULTS_SENIOR, THREE_ADULTS, SINGLE_HOUSEHOLD

Table 7: Model specifications combining RECEIVED_EMP_INCOME with demographic blocks

Together, these controls help ensure that the estimated association between receiving employee income and pHtM vulnerability is not driven by systematic differences in household composition, lifecycle stage, or socio-demographic attributes.

4.3 Risk Profile analysis

To examine the average effect of demographic controls in the pooled EA dataset, the dataset is divided into bins based on the values of each X_i. To ensure balanced representation, bins are constructed using deciles, such that each bin contains an approximately equal number of observations. The pHtM rate is computed for each bin. For a given bin j, the empirical probability of pHtM status is calculated as:

$$\hat{p}_j = \frac{\text{Number of pHtM households in bin } j}{\text{Total number of households in bin } j},$$

where pHtM status is defined as $Y = 1$.

The empirical log-odds for each bin are calculated as:

$$\text{log-odds}_j = \log\left(\frac{\hat{p}_j}{1-\hat{p}_j}\right).$$

To avoid undefined values due to $\hat{p}_j = 0$ or $\hat{p}_j = 1$, a Laplace smoothing technique is applied, adding a small constant (e.g., $\epsilon = 0.001$) to the numerator and denominator, such that:

$$\text{log-odds}_j = \log\left(\frac{\hat{p}_j + \epsilon}{1-\hat{p}_j + \epsilon}\right).$$

The risk profile is visualized by plotting the log-odds against the median value of X_i in each bin.

The shape of the risk profile is interpreted to assess the variable's impact on pHtM probability. An increasing trend in log-odds as X_i increases suggests that higher values of the variable are associated with a greater probability of pHtM status. A decreasing or flat trend indicates a negative or negligible effect, respectively.

It is required that the mean values of the explanatory variable X_i across the quantile bins be distinct. This condition was enforced to ensure that each bin

provides unique information about the distribution of the explanatory variable. If two or more bins have identical mean values for X_i, it suggests that the variable's distribution is not sufficiently varied across those bins, which could indicate issues such as sparsity, clustering, or a lack of discriminatory power in the variable. Such non-unique means could lead to unreliable estimates of the log-odds, as bins with identical means might not reflect meaningful differences in the risk profile, thereby confounding the interpretation of the logistic regression coefficients.

To address this issue, a systematic procedure was implemented. Initially, the dataset was divided into 10 bins (deciles). If any bins had identical mean values for the explanatory variable, the number of bins was reduced to five, and the means were re-evaluated. If non-unique means persisted, the number of bins was further reduced to four. If non-unique means persisted after these steps, the variable was discarded from the analysis. This iterative approach ensures that only variables with sufficient variability across bins are retained, thereby enhancing the robustness and interpretability of the risk profile and subsequent logistic regression model.

4.4 Weight of Evidence Analysis

For categorical variables, where risk profile analysis based on log-odds and quantile bins is not suitable, WoE analysis is employed to assess their association with pHtM status.

Formally, for a category j of variable X_i:

$$\text{WoE}_j = \ln\left(\frac{\frac{\text{pHtM}_j}{\text{Total pHtM}}}{\frac{\text{Non-pHtM}_j}{\text{Total non-pHtM}}}\right),$$

where pHtM_j is the number of pHtM households in category j, Non-pHtM_j is the number of non-pHtM households in category j, and Total pHtM (Total non-pHtM are the total counts of pHtM and non-pHtM households in the dataset, respectively.

Categories are then sorted by their WoE values to identify those with the strongest association with pHtM status. As a rule of thumb, variables with at least one category exhibiting an absolute WoE value greater than 0.5 ($|\text{WoE}| > 0.5$) are considered to have sufficient predictive power and are retained for inclusion in the logistic regression model. This threshold ensures that only categorical variables with a meaningful impact on pHtM status are selected.

5 Protective effect of receiving employee income

5.1 Weight of Evidence

Table 8: WoE Table for RECEIVED_EMP_INCOME

	Category	pHtM_count	Total_count	pHtM_rate	WoE
1	1	9238.00	175665.00	0.05	-0.10
2	0	9523.00	148217.00	0.06	0.11

Intuitively, one would expect households with employee income to have a lower pHtM rate, as regular earnings should enable savings, debt repayment, or maintenance of positive net liquid wealth, reducing liquidity constraints. However, the data indicates that many households with employee income remain financially precarious, with a pHtM rate only marginally below that of non-earning households.

The WoE Table 10 for the variable `RECEIVED_EMP_INCOME` shows only a modest contrast between the two categories: Category 1 has a slightly negative WoE of -0.10 and a pHtM rate of 5%, while Category 0 has a slightly positive WoE of 0.11 and a pHtM rate of 6%.

The small difference in pHtM rates between the two groups suggests that on average, households with employee income are somewhat less likely to be pHtM, reflecting the role of regular wages as a stabilizing force. However, the difference is very small - mere 1 percentage point. This suggests that employment in itself might not be enough to insure households against liquidity constraints.

5.2 Descriptive analysis

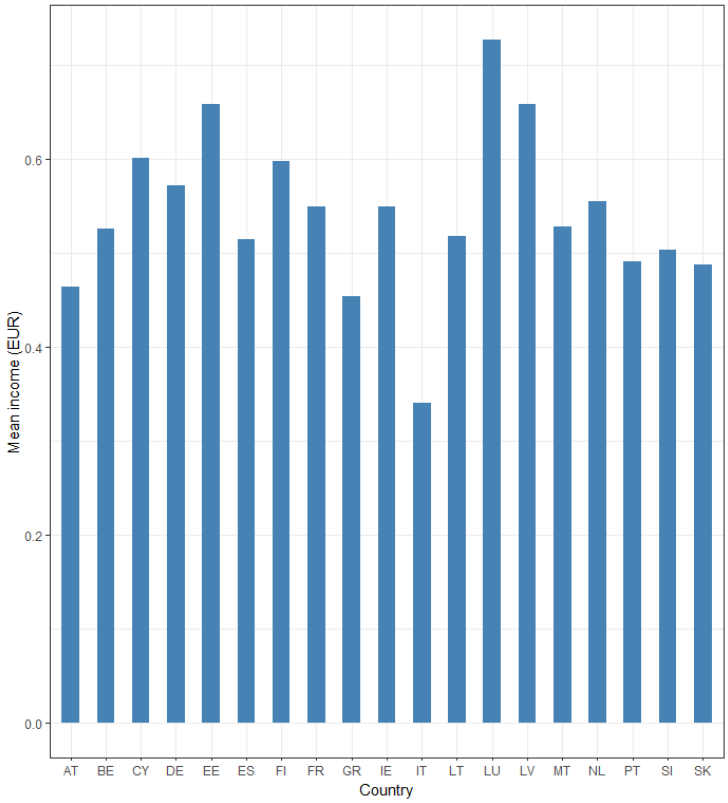


Figure 1: Share of households receiving employee income across EA countries

The share of households receiving employee income varies considerably across the EA. At the upper end, Luxembourg records the highest incidence at 72.7%, followed by Estonia and Latvia at nearly 66% each. Finland (59.7%) and Cyprus (60.2%) also report high proportions, indicating that employee earnings form the dominant source of household income in these contexts.

A broad middle group includes Germany (57.2%), the Netherlands (55.5%), France (55.0%), Ireland (55.0%), Belgium (52.6%), Spain (51.5%), Slovenia (50.3%), Portugal (49.1%), and Slovakia (48.8%). In these countries, roughly one in two households derives income from dependent employment.

Lower values are observed in Austria (46.4%) and Greece (45.4%), while Italy stands out as a clear outlier with only 34.1% of households reporting employee income. This unusually low incidence likely reflects a combination of demographic and structural factors, possibly including a high share of retiree households and the greater role of self-employment in Italy's income distribu-

tion.

These figures point to distinct regional patterns. Small open economies such as Luxembourg and the Baltic states show very high reliance on employee earnings, while Southern Europe is more heterogeneous: Spain and Portugal fall in the middle range, Greece is lower, and Italy is exceptionally low. Within the Core North-Western countries, Germany, France, the Netherlands, Belgium, and Ireland cluster in the middle-to-high range, whereas Austria is comparatively low.

5.3 Simple logistic regression model

Table 9: Country-specific logistic regressions of pHtM status on receiving employee income (PG0100)

	Country	Result	Lower	Upper
1	AT	-0.57	-0.99	-0.15
2	BE	-0.63	-1.06	-0.20
3	FR	-0.30	-0.54	-0.07
4	DE	-0.31	-0.83	0.21
5	ES	0.27	-0.06	0.59
6	FI	-0.48	-0.68	-0.28
7	GR	0.96	0.69	1.23
8	EE	-0.42	-0.96	0.12
9	CY	-0.55	-1.04	-0.06
10	SK	0.06	-0.64	0.76
11	SI	0.21	-0.17	0.59
12	PT	-0.53	-0.92	-0.14
13	LV	-0.81	-1.61	0.00
14	LU	-0.46	-2.65	1.73
15	LT	0.58	-0.81	1.96
16	IT	-0.46	-0.90	-0.01
17	IE	-0.48	-0.82	-0.14
18	MT	0.07	0.04	0.10
19	NL	-0.70	-1.21	-0.19

Table 10: WoE Table for RECEIVED_EMP_INCOME

	Category	pHtM_count	Total_count	pHtM_rate	WoE
1	1	9238.00	175665.00	0.05	-0.10
2	0	9523.00	148217.00	0.06	0.11

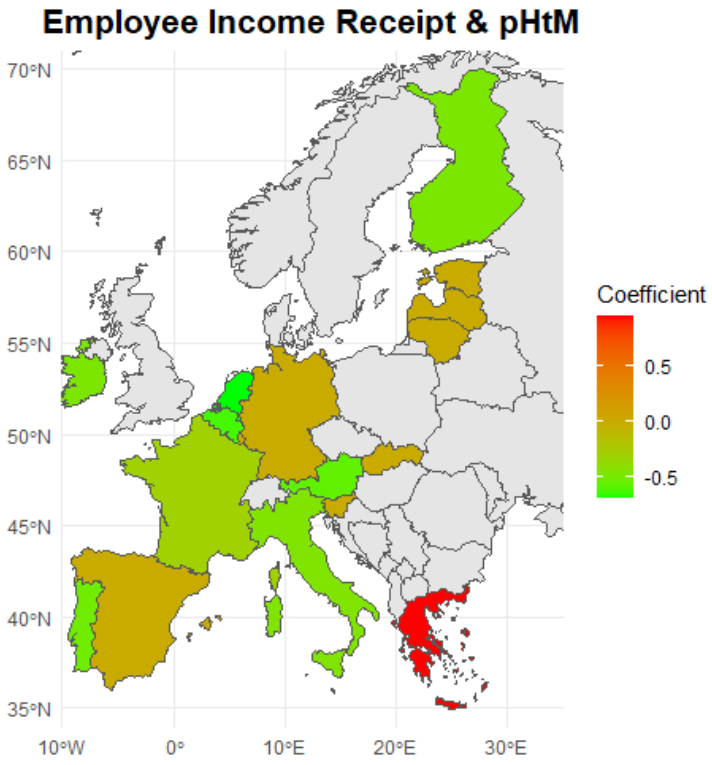


Figure 2: Heatmap of point estimates for coefficient RECEIVED_EMP_INCOME

In the continental core of the EA—exemplified by Austria, Belgium, France, Finland, the Netherlands, and, to a somewhat lesser extent, Ireland, receiving employee income emerges as a consistently protective factor against pHtM status. In these countries the coefficients are negative and statistically significant, with some of the largest effect sizes in the entire sample. This is consistent with the institutional architecture of the core: wage employment is typically embedded in highly regulated labor markets with strong collective bargaining, extensive coverage of permanent contracts, and comprehensive social insurance systems. In addition, financial inclusion is nearly universal, with widespread access to current accounts, overdraft facilities, and consumer credit. Taken together, these features reduce both the incidence of transitory income shocks and the probability that such shocks translate into binding liquidity constraints. Thus, households reliant on wage income in the core countries occupy a relatively privileged position in terms of consumption smoothing and financial resilience.

By contrast, the Southern European economies present a more heterogeneous picture. In Portugal, Cyprus, and Italy, the protective effect of employee income is also clearly visible, with statistically significant negative coefficients. However, the mechanisms at work differ subtly from those in the continental core. Labor markets in Southern Europe are segmented and dualized, with large temporary sectors and weaker enforcement of contracts, which would normally attenuate the stabilising role of employment. Yet, in Portugal, Cyprus, and Italy, the receipt of employee income still reduces the risk of being classified as pHtM. This suggests that even within more precarious institutional settings, wage income provides a degree of regularity and access to credit that differentiates employees from non-employees, who are often clustered in self-employment with highly volatile earnings or in inactive categories with only limited benefit entitlements.

On the other hand, Spain, which is geographically and culturally proximate to Portugal and arguably shares many institutional characteristics, stands out as an exception: the coefficient on employee income is not statistically significant. This divergence underscores that even in countries which share borders and display strong cultural similarities, the composition and functioning of their labor markets can differ markedly, leading to distinct dynamics in how employee income relates to household liquidity constraints.

In contrast to the majority of EA countries, Greece and Malta display a positive association between receipt of employee income and the probability of being classified as pHtM. The magnitude of this effect is strikingly large in Greece, while in Malta it is smaller but nonetheless also statistically significant.

These results indicate that, in these two economies, the stabilising role of wage employment is either absent or dominated by other structural features. Both Greece and Malta are typically considered as labor markets heavily segmented into low-wage services and tourism, where employment is often seasonal, temporary, or otherwise precarious. Under such conditions, the mere fact of receiving employee income does not necessarily shield households from income volatility or liquidity stress, in sharp contrast to the continental core where wage employment typically implies stability. Furthermore, the observed relationship reflects the relative position of the comparison group. A positive coefficient does not imply that employees are uniquely vulnerable; rather, it suggests that non-employee households in these contexts are not the most exposed. Non-employees might encompass retirees, the self-employed, and transfer recipients—groups which, in Greece and Malta, might often enjoy comparatively stable or diversified income flows. In this setting, employees emerge as relatively more prone to liquidity constraints, even if their absolute vulnerability is not unusually high.

In Slovakia, Slovenia, and Lithuania, the coefficient on receiving employee income is statistically insignificant. One possible explanation lies in the institutional and structural features of these economies. Unlike the core euro-area countries, several Eastern European member states have only relatively recently completed their transition from centrally planned to market-based systems.

In such contexts, the mere receipt of employee income is not necessarily a marker of financial security. On the contrary, it may often capture workers in

marginal or unstable jobs, possibly younger households with limited savings and substantial credit or housing burdens, who are especially vulnerable to liquidity shocks. By contrast, non-receivers in these samples could include retirees, who typically benefit from relatively stable public pensions and may have accumulated greater wealth buffers. This compositional contrast can generate the counterintuitive result that households receiving employee income appear more financially fragile than those without.

The broader implication is that in post-transition economies, employment per se does not automatically act as insurance against liquidity risk. What matters more is the quality and stability of jobs, the adequacy of wage levels, and the maturity of complementary social insurance institutions. Employment expansion without improvements in these dimensions may therefore fail to deliver substantial reductions in pHtM vulnerability.

In Germany, receiving employee income does not have a statistically significant effect on the probability of being classified as pHtM. One plausible explanation could be that the German welfare state dampens the protective effect of employee income. Generous social insurance provisions, strong unemployment protection, and institutional arrangements such as sickness pay and short-time work schemes could reduce the extent to which households without stable labor income are financially exposed. As a result, the risk profiles of households with and without employee income would appear more similar than in other euro-area countries.

At the same time, the `RECEIVED_EMP_INCOME` variable itself provides only a very coarse distinction. It treats mini-jobs, part-time employment, and secure full-time contracts alike, and it also counts payments for time not worked—such as sickness benefits, as well as overtime premia, tips, bonuses, and employer top-ups to maternity benefits. This expansive definition could blur the liquidity risk differences within the employee group and mechanically attenuate the average effect toward zero. The issue is particularly relevant in Germany, where the labor market features a broad mix of marginal jobs, dual-earner households, and long-tenure contracts.

Since a majority of German households report employee income (around 57%), the group of income receivers is both large and internally heterogeneous. Variation in wealth buffers and job contract quality within this group further reduces the precision of the estimate, leading to a wide confidence interval and an effect that is not statistically significant.

While these findings do not contradict the broader conclusion that wage employment can act as a form of insurance against pHtM risk, they suggest that its protective value is highly conditional on institutional context. Where labor market structures are dominated by precarious sectors and where non-employment is not strongly associated with financial fragility, the expected insurance role of employment may weaken or even invert. Greece and Malta thus illustrate the limits of generalising about employment as a uniform buffer against household liquidity risk within the EA.

6 Protective effect of having a permanent contract

Permanent employment contracts typically confer critical economic benefits: predictable income streams, stronger legal protections against arbitrary dismissal, access to formal financial systems, and eligibility for social benefits and credit. These attributes substantially enhance households' ability to buffer themselves against income shocks, and thus sharply reduce the probability of falling into pHtM status. In contrast, temporary or informal employment typically involves frequent income fluctuations, higher uncertainty regarding future earnings, limited access to formal credit markets, and reduced incentives or ability to save. Thus, households lacking permanent employment contracts must operate closer to the liquidity-constrained boundary, resulting in elevated vulnerability and pHtM behavior.

Table 11: WoE Table for PE0500 - TYPE OF CONTRACT

Contract Type	**pHtM_count**	**Total_count**	**pHtM_rate**	**WoE**
Permanent position	5,572	135,310	0.04	-0.18
Temporary contract	1,481	12,603	0.12	0.95
No contract or other agreement	246	1,694	0.15	1.20

6.1 Weight of Evidence

The WoE Table 11 for the `TYPE_OF_CONTRACT` variable, which categorizes employees by contract type in their main job, shows that permanent positions (pHtM rate = 4%, WoE = -0.18) offer moderate protection against pHtM status. However, the low $|WoE|$ for permanent positions suggests that on average, they are not a strong differentiator in the EA, possibly due to heterogeneity in wages or living costs, consistent with findings from `RECEIVED_EMP_INCOME`.

Temporary contracts (pHtM rate = 12%, WoE = 0.95) and other arrangements (pHtM rate = 15%, WoE = 1.20) increase financial vulnerability. Temporary contracts often involve income uncertainty, shorter job tenure, and limited access to benefits, increasing the probability of low or negative net liquid wealth. The high WoE reflects over representation among pHtM households. With the highest pHtM rate and WoE, this category represents extreme vulnerability. Workers without contracts or under informal agreements face severe income instability, lack of legal protections, and minimal savings, possibly leading to a high probability of pHtM status.

6.2 Descriptive analysis

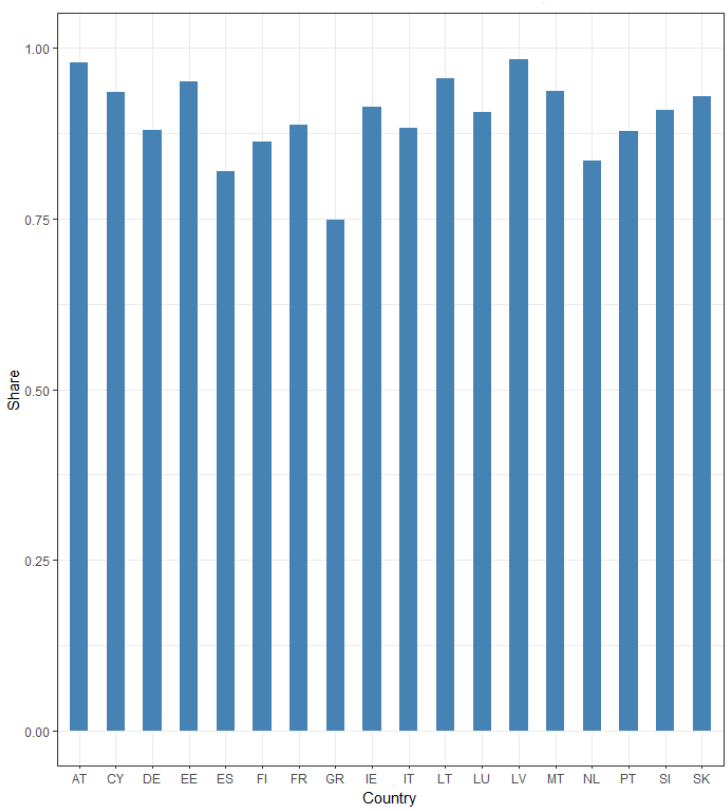


Figure 3: Share of permanent contract job holders across EA countries

The prevalence of permanent contracts differs markedly across the EA. At the upper end, Austria (97.9%) and Latvia (98.2%) record the highest incidence, with Lithuania (95.6%), Estonia (95.1%), Cyprus (93.5%), Malta (93.7%), and Slovakia (92.9%) also displaying very broad coverage of permanent employment. Slovenia (90.9%), Luxembourg (90.5%), and Ireland (91.3%) fall just below this group but still maintain high levels.

A second cluster is formed by France (88.8%), Germany (88.0%), Italy (88.2%), Portugal (87.8%), and Finland (86.2%), where permanent contracts remain the dominant arrangement but are somewhat less universal.

At the lower end of the distribution, the Netherlands (83.4%) and Spain (82.0%) show a noticeably smaller share of households with permanent employment, while Greece stands out as an outlier with only 74.7%—indicating a comparatively large segment of non-permanent contracts.

Several geographical and institutional contrasts are evident. The Central and

Eastern European countries, including the Baltic states, generally report very high permanent-contract penetration, often surpassing levels found in Western Europe. Southern Europe, by contrast, is more heterogeneous: Italy and Portugal fall in the mid-high range, while Spain is considerably lower and Greece the lowest in the entire sample. Among the core North-Western economies, Austria combines exceptionally high rates of permanent employment with Germany and France at mid-high levels, whereas the Netherlands is comparatively low within this group.

6.3 Simple regression model

Table 12: Country-specific logistic regressions of pHtM status on having permanent contract (derived from PE0500)

	Country	Result	Lower	Upper
1	AT	-1.34	-4.83	2.15
2	FR	-1.21	-1.73	-0.69
3	DE	-0.89	-1.78	0.01
4	ES	-0.99	-1.54	-0.43
5	FI	-0.92	-1.34	-0.51
6	GR	-0.46	-0.83	-0.09
7	EE	0.18	-10.79	11.16
8	CY	-1.30	-4.63	2.03
9	SK	-1.53	-5.91	2.86
10	SI	-1.15	-1.80	-0.49
11	PT	-0.93	-2.20	0.35
12	LV	13.83	7.04	20.62
13	LU	-0.03	-7.97	7.92
14	LT	14.89	8.40	21.38
15	IT	-1.71	-2.70	-0.71
16	IE	-0.94	-1.79	-0.09
17	MT	-0.69	-0.77	-0.62
18	NL	-0.89	-1.72	-0.05

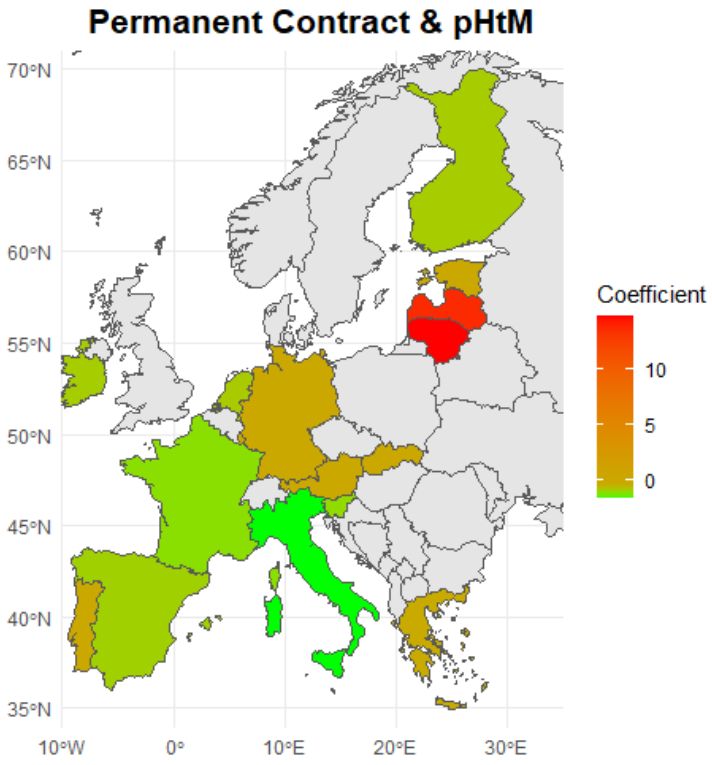


Figure 4: Heatmap of point estimates for coefficient HAS_PERMANENT_CONTRACT

Although the WoE analysis revealed a moderate protective effect of having a permanent contract in the EA, this effect is not uniformly observed across all EA countries. Among the 19 fitted models, only 9 countries exhibit a negative and statistically significant association between holding a permanent contract and the probability of being classified as pHtM. These include France, Spain, Finland, Greece, Slovenia, Italy, Ireland, Malta, and the Netherlands. In these contexts, having a permanent contract appears to meaningfully reduce household vulnerability, consistent with the theoretical expectation that employment stability facilitates consumption smoothing and reduces liquidity constraints.

The strongest protective effect is observed in Italy, where holding a permanent employment contract is associated with 82% lower odds of being classified as pHtM. This finding aligns with existing evidence on the structure and implications of Italy's labor market institutions. As noted by Kugler and Pica (2008), Italy has historically ranked among the strictest OECD countries in terms of

employment protection legislation, particularly for permanent contracts.

Our empirical result that Italy exhibits a pronounced protective effect of permanent contracts is consistent with this institutional backdrop. The high degree of job security conferred by permanent contracts likely enhances workers' ability to plan consumption, build liquid buffers, and access formal financial systems, thereby reducing their exposure to liquidity-driven consumption constraints. In a segmented labor market where temporary and informal jobs dominate specific sectors (e.g., tourism and services), the economic stability of permanent employment may play a particularly critical role in shielding households from falling into the pHtM category. It is notable that Italy's share of permanent contracts, at around 88%, is not the highest in the EA, yet the protective effect is the strongest. This underlines that it is not just the prevalence of permanent contracts but the strict protection afforded to insiders—documented by Kugler and Pica (2008)—that drives their role as a powerful safeguard against financial vulnerability.

Portugal offers an interesting contrast. Despite a relatively high share of permanent contracts (about 88%, comparable to Italy), the estimated coefficient is not statistically significant. This suggests that prevalence alone does not determine the protective value of permanent employment and institutional settings play an important role.

Beyond Italy, the protective effect of permanent contracts is also pronounced in other tourism-oriented Southern European economies, notably Spain, Greece, and Malta. In Spain, the coefficient is moderately strong (-0.99, 63% reduction in pHtM odds), while in Greece and Malta, the effects are weaker in magnitude but still statistically significant, with the Maltese estimate standing out for its precision. This pattern suggests a broader regional trend: in countries where informal, seasonal, or temporary employment is more prevalent (often linked to service and tourism sectors). the relative advantages of stable employment contracts become especially salient. In such labor markets, households with permanent contracts may have more predictable income, stronger legal protections, and greater access to financial services, all of which contribute to a lower probability of falling into the pHtM category.

Greece appears to be a partial outlier within this Southern cluster, with a comparatively modest coefficient (-0.46, 37% reduction in odds). Several factors may explain this deviation. The high degree of informality in the Greek labor market (82 % of contracts are permanent) could blur the effective distinction between permanent and non-permanent contracts. Moreover, weak institutional enforcement may limit the practical benefits of formal employment compared with Italy. Furthermore, Cyprus does not exhibit a statistically significant effect, despite a higher share of permanent contracts. This suggests that institutional quality, enforcement, and access to financial infrastructure may condition whether permanent contracts translate into greater financial resilience.

A more moderate protective effect of permanent contracts is observed in Finland, Ireland, and the Netherlands, where estimated coefficients are less extreme but still statistically significant. These findings may reflect broader institutional

differences in labor market design and welfare provision. In these countries, universal social safety nets and more generous welfare states may provide a baseline level of economic security that is less tightly linked to employment type. As a result, households without permanent contracts may still benefit from public income support, health coverage, and access to basic services, thereby mitigating the financial vulnerability typically associated with temporary or informal employment. Additionally, if the distribution of income and access to credit is less polarized across contract types, the marginal protective effect of holding a permanent job becomes less pronounced. In such contexts, permanent employment remains beneficial, but its role as a shield against pHtM risk is comparatively weaker.

In Austria, Germany, Portugal, Slovakia, Luxembourg, and Estonia, the confidence intervals around the estimated coefficients are statistically insignificant. This outcome is particularly understandable in countries where permanent contracts dominate almost universally—such as Austria (98%), Latvia (98%), Lithuania (96%), Estonia (95%), Slovakia (92%). In such contexts, the lack of variation in employment type limits the model's ability to detect a statistically meaningful effect, and the protective role of permanent contracts does not emerge clearly in the regression estimates.

Extensive policy research highlights the structural limitations of employment-based financial security in Latvia and Lithuania. According to Lace (2019), even workers with permanent contracts in Latvia face a non-negligible risk of in-work poverty: in 2017, the rate stood at 6.7%, markedly above that of tertiary-educated workers (2.5%). The country also exhibits an exceptionally high share of low-wage earners, with nearly one-third of the employed population earning below two-thirds of the median wage. Similarly, Lazutka et al. (2019) report that Lithuania's in-work poverty rate for permanent employees was 8.8%, well above the EU-28 average. In both countries, permanent employment does not reliably indicate financial resilience, as a large fraction of formal workers remain in low-income, high-risk positions.

These structural characteristics undermine the informational content of the HAS_PERM_CONTRACT variable. When permanent contract holders do not differ meaningfully from temporary workers in terms of income volatility, buffer capacity, or access to financial tools, the variable loses its predictive power with respect to pHtM status.

These socioeconomic realities likely contribute to the statistically implausible results produced by our model for Latvia and Lithuania. In both cases, the logistic regression estimates large positive coefficients for HAS_PERM_CONTRACT, implying that holding a permanent contract increases the odds of being pHtM by several orders of magnitude, which is an interpretation that runs counter to both theory and common sense. The most probable statistical explanation is quasi-complete separation or model instability arising from limited within-country variation and non-linearities induced by small sample sizes. In effect, the model attempts to infer a relationship from a distorted signal, where contract status does not correlate in the expected way with household financial conditions. These estimates should therefore be treated with caution.

This analysis reveals that the protective effect of permanent employment contracts against pHtM status is real but highly uneven across the EA. Only half of the fitted countries show statistically significant negative associations, suggesting that employment stability does not universally shield households from liquidity constraints. The strongest effect is observed in Italy, where strict employment protection legislation and a segmented labor market amplify the financial security conferred by permanent contracts. Conversely, implausible positive coefficients in Latvia and Lithuania highlight structural failures as high in-work poverty among formal workers, weak social safety nets, and compressed wage distributions undermine the protective signal of contract status. In moderate and high welfare countries such as Finland, Ireland, and the Netherlands, universal benefits appear to substitute for employment-based security, weakening the marginal effect of contract type.

7 Protective effect of having a high-skill occupation

High-skill occupations are expected to provide a strong buffer against pHtM status due to their association with more stable and higher income streams, greater long-term employment security, and enhanced access to employer-based benefits. Workers in such positions should be generally better positioned to accumulate both liquid and illiquid wealth, either through precautionary saving or through access to housing, pensions, and other forms of asset ownership. In contrast to low-skill jobs, which often entail irregular hours, income volatility, and limited career progression, high-skill employment tends to facilitate both the means and the incentives to build financial buffers. Since pHtM status, by definition, requires both limited liquidity and the absence of illiquid assets, the ability of high-skill workers to accumulate wealth across multiple domains should make them systematically less likely to fall into this category.

7.1 Weight of Evidence

Table 13: WoE Table for PE0300 - ISCO 08 JOB DESCRIPTION

Occupation Group	**pHtM_count**	**Total_count**	**pHtM_rate**	**WoE**
Professionals (2)	744	45,866	0.02	-1.32
Technicians (3)	714	27,036	0.03	-0.82
Clerical Support Workers (4)	884	16,305	0.05	-0.07
Service and Sales Workers (5)	2,042	21,069	0.10	0.56
Skilled Agricultural Workers (6)	124	2,490	0.05	-0.16
Craft and Related Trades Workers (7)	861	11,975	0.07	0.23
Plant and Machine Operators(8)	724	9,745	0.07	0.27
Elementary Occupations (9)	1,219	9,578	0.13	0.86
Managers (1)	106	14,951	0.01	-2.15
Armed Forces (00)	114	1,285	0.09	0.46

The WoE Table 13 for the variable `JOB_DESCRIPTION` , which classifies main jobs using ISCO-08 codes, shows that high-skill occupations such as Managers (pHtM rate = 1%, WoE = -2.15) and Professionals (pHtM rate = 2%, WoE = -1.32) offer strong protection against pHtM status, while low-skill occupations such as Elementary Occupations (pHtM rate = 13%, WoE = 0.86) and Service and Sales Workers (pHtM rate = 10%, WoE = 0.56) increase financial vulnerability.

Table 14 confirms the intuition that the type of the employment is decisive when escaping the pHtM status. When pooled, HIGH_SKILL and LOW_SKILL show the highest deviations from the mean, with WoE values of -0.68 and 0.81 and this is further confirmed by Table 11

Table 14: Woe Table for JOB DESCRIPTION - constructed from ISCO-08 occupational codes

	Category	pHtM_count	Total_count	pHtM_rate	WoE
1	High_skill	2425.00	99828.00	0.02	-0.68
2	Mid_skill	1008.00	18795.00	0.05	0.15
3	Low_skill	3985.00	40392.00	0.10	0.81

7.2 Descriptive analysis

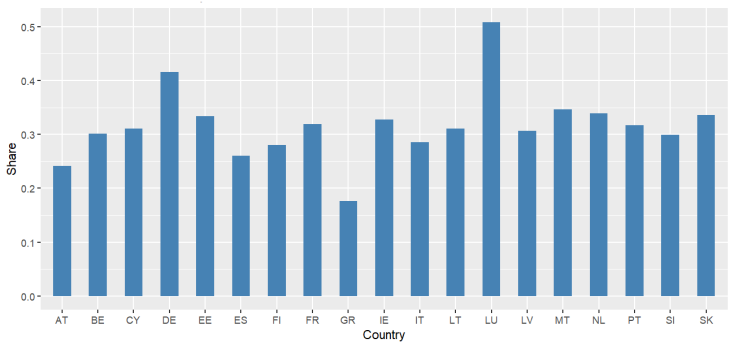


Figure 5: Share of High-skill job holders across EA countries

A clear pattern of regional clustering emerges. The Core North-West countries stand out with the highest shares of high-skill jobs. Luxembourg, at 51 percent, is a clear outlier, while Germany also ranks very high with 42 percent. One notable irregularity within this group is the divergence between Germany and Austria: despite having closely related labor market institutions and similar vocational training traditions, Austria's high-skill share (24 percent) falls well below Germany's.

In the Core and North-Western countries, the incidence of low-skill jobs is generally low. The Netherlands reports the lowest share in the entire sample at just 8.5 percent, while Luxembourg (11.9 percent), Belgium (13.8 percent), Ireland (14.4 percent), Germany (14.0 percent), Austria (14.4 percent), and France (14.9 percent) also record comparatively modest levels. This outcome is consistent with the concentration of knowledge-intensive services, headquarters functions, and well-developed vocational training systems in these economies.

By contrast, Southern Europe records substantially lower levels. Greece is at the very bottom with just 18 percent, followed by Spain (26 percent) and Italy (29 percent). On the other hand, Greece has the highest low-skill share in the South at 21.5 percent, followed by Spain at 17.7 percent, while Portugal and Cyprus are at around 16–17 percent. Malta also stands out with a relatively high figure of 19.0 percent. By contrast, Italy represents an irregular

case: despite only middling levels of high-skill employment, it records one of the lowest proportions of low-skill jobs in the EA. This suggests that the Italian occupational structure is weighted toward intermediate categories rather than clustering at either extreme of the skill distribution.

The Central and Eastern European countries occupy an intermediate position. Results from Slovakia (34 percent), Estonia (33 percent), and Latvia and Lithuania (around 31 percent each) mirror the influence of foreign direct investment in manufacturing and ICT sectors, which has likely created substantial demand for technicians and associate professionals (ISCO group 3). Looking at the shares of low_skill occupations, Latvia has the highest overall share at 25.1 percent, while Estonia also lies above the euro-area mean at 19.3 percent. Slovakia and Slovenia follow closely with values around 18–19 percent. Lithuania, however, is more closely aligned with the Core countries at just 13.8 percent.

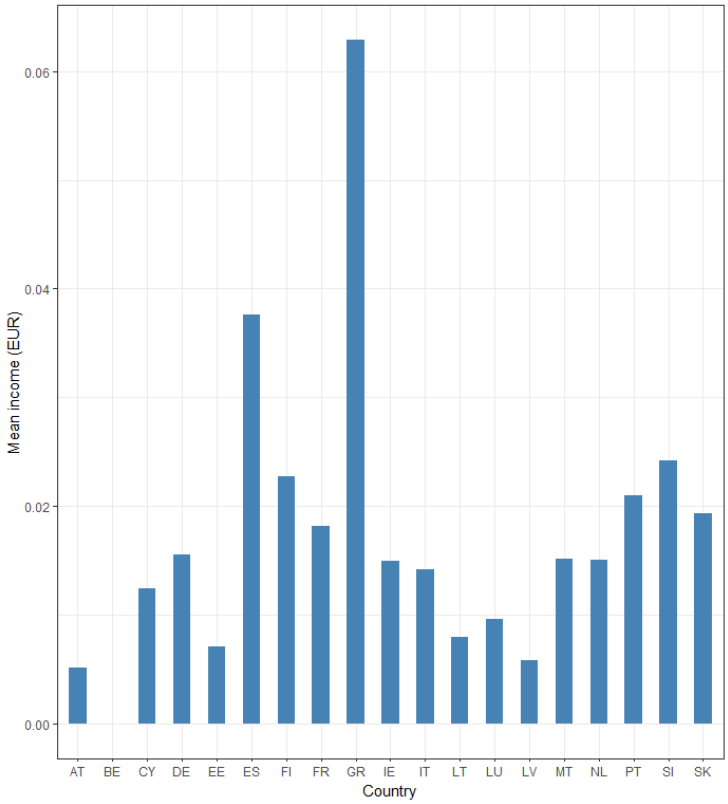


Figure 6: Share of Low-skill job holders with temporary contracts across EA countries

The incidence of low-skill temporary employment varies considerably across the EA. At the lower end of the distribution, Belgium reports virtually no

workers in this category, while Austria (0.5 percent), Latvia (0.6 percent), and Estonia (0.7 percent) also record very small shares. Slightly higher values are found in Lithuania (0.8 percent) and Luxembourg (1.0 percent). Italy, Ireland, Malta, the Netherlands, and Germany cluster around 1.4–1.6 percent, indicating a relatively modest prevalence of low-skill temporary jobs in these labor markets.

In the middle of the distribution are France (1.8 percent), Cyprus (1.2 percent), Slovakia (1.9 percent), and Slovenia (2.4 percent), while Finland stands at 2.3 percent. Portugal, at 2.1 percent, also lies in this range.

At the higher end, Spain (3.8 percent) and Greece (6.3 percent) stand out as clear outliers, with low-skill temporary employment accounting for a much larger share of the workforce than in other member states.

7.3 Simple logistic regression model

Table 15: Country-specific logistic regressions of pHtM status on having a high-skill occupation (derived from PE0300)

	Country	Result	Lower	Upper
1	AT	-1.08	-1.78	-0.37
2	BE	-1.04	-1.71	-0.37
3	FR	-1.07	-1.45	-0.70
4	DE	-1.08	-1.66	-0.50
5	ES	-0.94	-1.39	-0.49
6	FI	-1.28	-1.59	-0.98
7	GR	-0.31	-0.65	0.03
8	EE	-0.95	-1.78	-0.12
9	CY	-0.32	-0.96	0.31
10	SK	-0.50	-2.50	1.49
11	SI	-0.42	-0.83	-0.01
12	PT	-1.29	-1.99	-0.58
13	LV	-1.62	-2.78	-0.46
14	LU	-0.56	-1.71	0.59
15	LT	0.19	-0.73	1.11
16	IT	-1.00	-1.86	-0.15
17	IE	-1.89	-2.66	-1.13
18	MT	-0.80	-0.84	-0.76
19	NL	-0.98	-1.51	-0.45

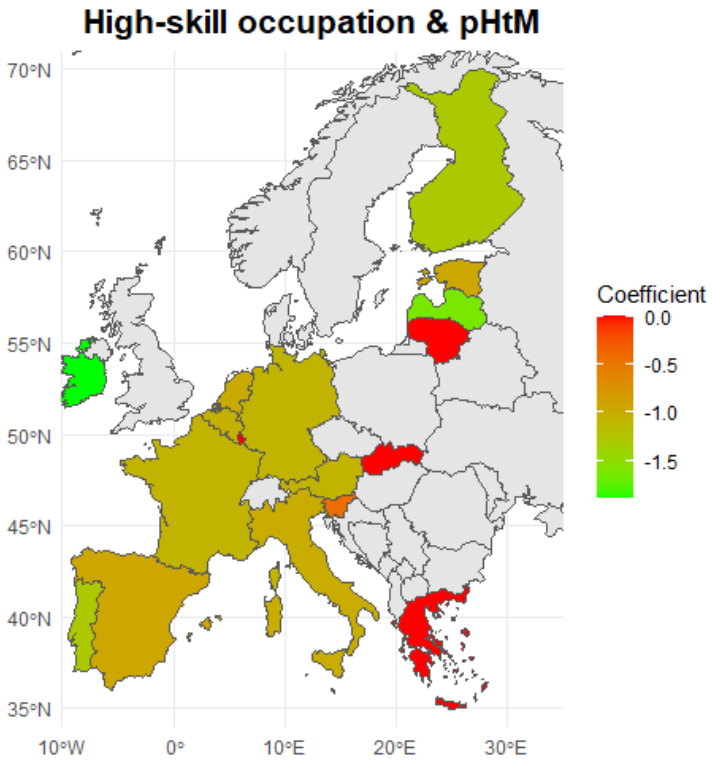


Figure 7: Heatmap of point estimates for coefficient HIGH_SKILL

Table 16: Country-specific logistic regressions of pHtM status on having a low-skill occupation (derived from PE0300)

	Country	Result	Lower	Upper
1	AT	0.04	-0.60	0.67
2	BE	0.22	-0.42	0.87
3	FR	0.23	-0.07	0.53
4	DE	0.86	0.15	1.58
5	ES	0.61	0.23	0.99
6	FI	0.27	0.01	0.53
7	GR	0.87	0.61	1.13
8	EE	0.53	-0.01	1.08
9	CY	0.22	-0.42	0.86
10	SK	0.49	-0.45	1.44
11	SI	0.86	0.43	1.29
12	PT	0.18	-0.49	0.84
13	LV	-0.73	-2.13	0.67
14	LU	0.91	-1.23	3.05
15	LT	0.63	-1.06	2.33
16	IT	0.42	-0.13	0.97
17	IE	0.70	0.24	1.16
18	MT	0.83	0.80	0.86
19	NL	0.20	-0.55	0.96

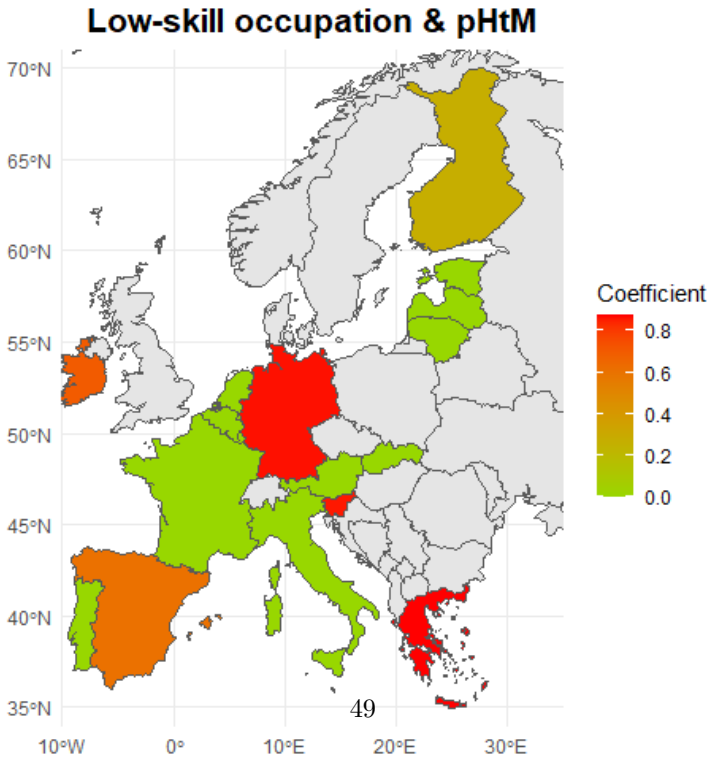


Figure 8: Heatmap of point estimates for coefficient LOW_SKILL

Austria, Belgium, France, and the Netherlands display asymmetric gradients. While high-skill workers still experience robust protection against pHtM status, low-skill coefficients are not statistically significantly positive, indicating that financial vulnerability does not sharply escalate at the lower end of the occupational hierarchy. This likely reflects the mitigating role of redistributive institutions: these countries operate steeply progressive income tax systems, with top marginal rates reaching 50 percent in Austria and Belgium and 45–49.5 percent in Germany, France, and the Netherlands. This might allow the state to redistribute income effectively through public transfers and social insurance without eroding the incentives to acquire and leverage skills. Because the labor market rewards skill, and the tax system tempers but does not erase that reward, high-skill households retain a meaningful post-tax advantage. Simultaneously, low-skill workers are shielded from the most acute forms of financial precarity, reducing the marginal impact of occupational status on pHtM vulnerability. In this institutional context, skill remains beneficial, but the gradient is softened by a comprehensive welfare apparatus.

Surprisingly, a similar occupational pattern emerges in Italy and Portugal - South European countries, with arguably different economic patterns from those in Austria, the Netherlands and others. While this outcome resembles patterns observed in highly redistributive welfare states, it may stem from distinct underlying mechanisms. In particular, the structure of Southern labor markets is characterized by a large informal sector, seasonal tourism-related employment, and household-level income pooling, which may mitigate the financial vulnerabilities typically associated with low-skill work. These informal or non-institutional buffers can obscure the link between occupational status and financial fragility, even in the absence of comprehensive state-led redistribution.

However, Southern European countries are also not uniform. In Spain, 3.8 percent of the population is employed in jobs that are simultaneously low-skill and temporary. This share is markedly higher than in Portugal, where only 2.1 percent of workers occupy such positions, and especially compared to Italy, where the corresponding figure is just 1.4 percent.

This descriptive evidence maps almost perfectly onto the regression results. In Spain, the coefficient for low-skill employment is positive and statistically significant, indicating that low-skilled workers are indeed more likely to be classified as pHtM. By contrast, in both Portugal and Italy, low-skill employment does not increase the probability. The implication is that it is not the mere presence of a large low-skill segment that drives vulnerability, but rather the interaction between low-skill and contractual insecurity. Where a substantial fraction of low-skilled workers are employed on temporary terms—as is the case in Spain—the resulting earnings volatility, job insecurity, and limited access to credit or social insurance sharply amplify liquidity risk. In Portugal and Italy, where low-skill temporary jobs are less prevalent, the marginal effect of being in a low-skill occupation is correspondingly muted.

Ireland exhibits one of the steepest occupational gradients in the EA in terms of protection against pHtM status. The coefficient for high-skill employment is strongly negative and statistically significant, suggesting that workers in

high-skill occupations enjoy substantial insulation from financial fragility. This likely reflects the structure of the Irish economy, which is heavily shaped by foreign direct investment and global integration, particularly in high-paying sectors such as technology, pharmaceuticals, and finance. Given that the employment in these internationally exposed firms is stable and well-compensated, and often accompanied by access to occupational pensions, employer-provided health insurance, and credit-based wealth accumulation mechanisms, it would enable high-skill workers to accumulate both liquid and illiquid assets, reducing their exposure to consumption volatility and enabling them to avoid pHtM status.

By contrast, the coefficient for low-skill employment is positive and statistically significant, indicating that low-skilled workers in Ireland face a higher risk of being classified as pHtM.

This steep gradient might be explained by Ireland's institutional context. As documented by Schäfer (2009), The Irish welfare system diverges markedly from the Continental or Nordic model. Its liberal welfare regime places a stronger emphasis on market income than on universal social entitlements. While means-tested supports exist, the welfare state remains residual in design, primarily targeting those in acute need rather than engaging in broad redistribution across the income distribution. This institutional architecture amplifies the economic consequences of occupational status and increases the conditionality of financial resilience on labor market position.

In contrast to Ireland's liberal welfare regime, Germany represents a paradigmatic welfare state, characterized by strong employment protections, generous contributory social insurance, and coordinated wage bargaining institutions. Nevertheless, the regression results suggest that even this traditional welfare architecture does not sufficiently shield low-skill workers from liquidity-driven financial fragility. While high-skill employment in Germany is associated with a strong and statistically significant reduction in pHtM probability (-1.08), low-skill employment increases the odds of being classified as pHtM ($+0.86$), despite the broader safety net. This asymmetric pattern reflects underlying structural features of the German labor market. Wage-setting institutions continue to reward skill, especially in export-oriented and industrial sectors, generating stable income streams and asset accumulation opportunities for skilled workers.

Finland exemplifies a strong universalist welfare state, characterized by generous social benefits, universal coverage, and an explicit goal of reducing income inequality. As a core Nordic country, it features extensive public services, including healthcare, childcare, and active labor market programs, financed through high progressive taxation and broad-based social insurance.Yet despite this egalitarian architecture, our regression results reveal a clear occupational gradient. High-skill employment in Finland is associated with a strongly negative and statistically significant coefficient (-1.28), indicating robust protection against pHtM status. Surprisingly, however, low-skill workers in Finland still exhibit a positive and statistically significant coefficient (0.27), suggesting that even within a comprehensive welfare state, employment at the lower end of the occupational hierarchy does not suffice to ensure financial resilience.

These results challenge the idea that generous welfare regimes uniformly

neutralize skill-based disparities. While Finnish and German states likely reduce the depth of poverty, they may not fully eliminate liquidity constraints among low-income earners. In particular, asset accumulation (especially illiquid assets) remains highly dependent on stable and sufficient earnings—something low-skill employment may fail to provide, even in Finland and Germany. Thus, the structure of the labor market continues to matter, and skill remains a decisive factor in shaping household financial vulnerability, even within one of Europe's most inclusive welfare states.

Malta stands out not only for the exceptional precision of the estimate: the 95% confidence interval ranges from -0.84 to -0.76 and from 0.80 to 0.86 for HIGH_SKILL and LOW_SKILL respectively, making it one of the tightest intervals in the entire sample and categorising it as another dual effect economy.

Latvia shows one of the strongest negative coefficients for high-skill employment (-1.62). The magnitude is comparable to or stronger than most advanced welfare states (for example FI), despite Latvia being a post-transition economy with weaker institutions.

Lithuania stands out in the regression results for the absence of an occupational gradient. Neither high-skill nor low-skill employment appears to meaningfully affect the probability of being classified as pHtM. In a post-transition economy such as Lithuania, even high-skill jobs may not offer the levels of income stability, asset ownership, or credit access typically associated with economic resilience in Western Europe. This would imply that market income alone is insufficient to build buffers, regardless of occupational status. Moreover, as LABANAUSKAS (2020) notes, Lithuania has experienced substantial labor emigration in recent decades, particularly among young and skilled workers. This phenomenon may have distorted both the occupational structure and the age-income distribution. Furthermore, institutional coverage (e.g., social insurance, pensions, housing policy) may still lag behind more developed welfare states, failing to reinforce skill-based resilience through redistribution or social investment.

In Slovakia, high-skill occupations do not significantly reduce the probability of being classified as pHtM, suggesting that even workers in managerial or professional roles often do not earn substantially more than the national median, which limits their ability to accumulate liquid buffers. Moreover, in-work poverty might remain widespread in Slovakia, reflecting weak redistributive mechanisms and a social safety net that provides only limited protection for households with unstable incomes. The structure of national economy also plays a role. Slovakia is known for being a highly export oriented economy with heavy emphasis on automobile industry, where the added value is typically low, even if high-skill qualifications are required.

Similarly, the coefficient for high-skill occupations is statistically insignificant in Greece. One possible explanation is that the distinction between high- and low-skill employment is blurred in the Greek labor market, where widespread informality, weak contract enforcement, and high rates of precarious employment may limit the financial advantages typically associated with skilled occupations

In summary, the regression results show a diverse set of patterns across

the EA, revealing that the relationship between occupational skill and financial vulnerability is highly contingent on national labor market structures and institutional contexts. While many countries exhibit the expected protective effect of high-skill employment against pHtM status, the extent and symmetry of this gradient vary considerably. A group of dual economies show strong polarization, where high-skill workers are insulated from financial fragility while low-skill workers face elevated pHtM risk. Given their robust welfare states, Germany and Finland are two surprising members of this group. In another group, we observe asymmetric or blunted gradients: high-skill employment reduces risk, but low-skill employment does not increase it, suggesting the presence of robust redistributive institutions that mitigate vulnerability at the lower end. Cases such as Latvia and Lithuania stand out as structural outliers: Latvia exhibits an unusually steep gradient driven by skill-based exclusion, while Lithuania shows no significant occupational gradient at all, possibly due to emigration-driven distortions and institutional gaps. These varied results suggest that skill-based resilience is real but uneven, and that the protective value of employment depends not just on job characteristics but on the broader institutional capacity to convert work into financial security.

8 Protective effect of having multiple jobs

Table 17: WoE Table for MORE_JOBS

	Category	pHtM_count	Total_count	pHtM_rate	WoE
1	1	251.00	8837.00	0.03	-0.56
2	0	7259.00	145711.00	0.05	0.03

8.1 Weight of evidence

WoE Table 17 for the `MORE_JOBS` variable helps to draw further insights on the role of employment in the pHtM classification. The table shows that those working multiple jobs have on average a pHtM rate of 3% and a WoE of -0.56, while those with at most one employment have a pHtM rate of 5% and a WoE of 0.030. This difference in pHtM rates suggests that holding multiple jobs offers a more notable protective effect against pHtM status in the EA, than merely receiving any employment income, as mapped in `RECEIVED_EMP_INCOME`

Multiple jobs likely increase total income, enabling households to accumulate liquid wealth above biweekly income thresholds or reduce reliance on credit, thus avoiding pHtM status. The negative WoE suggests that these households are underrepresented among pHtM cases relative to their overall prevalence. The pHtM rate and slightly positive WoE of those who do not work multiple jobs suggest that they are more vulnerable to pHtM status. These households, relying on a single job or no additional employment, may have less income to allocate toward savings, making it harder to maintain net liquid wealth above biweekly income or avoid negative wealth exceeding income minus credit limits. The near-zero WoE indicates that these households are close to the average, reflecting the heterogeneity of single-job households. Some might have stable, high-paying jobs that prevent pHtM status, while others face precarious or low-wage employment that increases vulnerability.

8.2 Descriptive analysis

The proportion of multiple job holders is generally low across the euro area, with values ranging from just above 1 percent in Greece to around 11 percent in Latvia. Despite this narrow range, a number of regional and institutional patterns emerge.

In Southern Europe, the incidence of multiple job holding is comparatively low. Greece records the lowest share in the euro area at just 1.2 percent, while Spain (4.7 percent), Italy (4.5 percent), and Portugal (6.2 percent) all remain at or below the EA midrange. This pattern may not only reflect a genuine reliance on single, full-time jobs, but could also point to underreporting in survey data. In countries where informal employment and undeclared work are more widespread, secondary jobs are less likely to be captured in official statistics, leading to artificially low measured rates of multiple job holding.

By contrast, Northern and Eastern European countries tend to report higher levels. In Finland and Estonia, around 8 percent of workers hold more than one job, while Latvia reaches 11.1 percent, the highest share among all EA countries. Lithuania also registers a moderately elevated level at 5.6 percent. These figures indicate that multiple job holding is more common in Nordic and Baltic labor markets, at least officially.

Western and Central Europe present a more mixed picture. Germany stands out with a relatively high proportion of 10.3 percent, while Belgium lies in the midrange at 5.6 percent and Austria records a comparatively low figure of 3.7 percent. These contrasts within a geographically cohesive region suggest that differences in national labor market institutions and practices play an important role in shaping the prevalence of multiple job holding.

8.3 Simple logistic regression model

Table 18: Country-specific logistic regressions of pHtM status on working multiple jobs (PE0800)

	Country	Result	Lower	Upper
1	BE	-14.90	-20.91	-8.88
2	FR	-0.50	-1.49	0.49
3	DE	-0.11	-3.33	3.10
4	ES	-0.22	-1.30	0.87
5	FI	0.09	-0.57	0.76
6	GR	0.48	-1.49	2.45
7	EE	-15.61	-21.70	-9.53
8	CY	-0.05	-11.95	11.84
9	SK	-14.19	-20.77	-7.61
10	SI	-15.51	-21.17	-9.85
11	LV	-15.78	-22.56	-9.00
12	LT	-14.93	-21.38	-8.49
13	IT	-1.58	-11.51	8.36
14	IE	-1.35	-17.07	14.36
15	MT	-16.04	-19.87	-12.20
16	NL	-3.75	-24.22	16.72

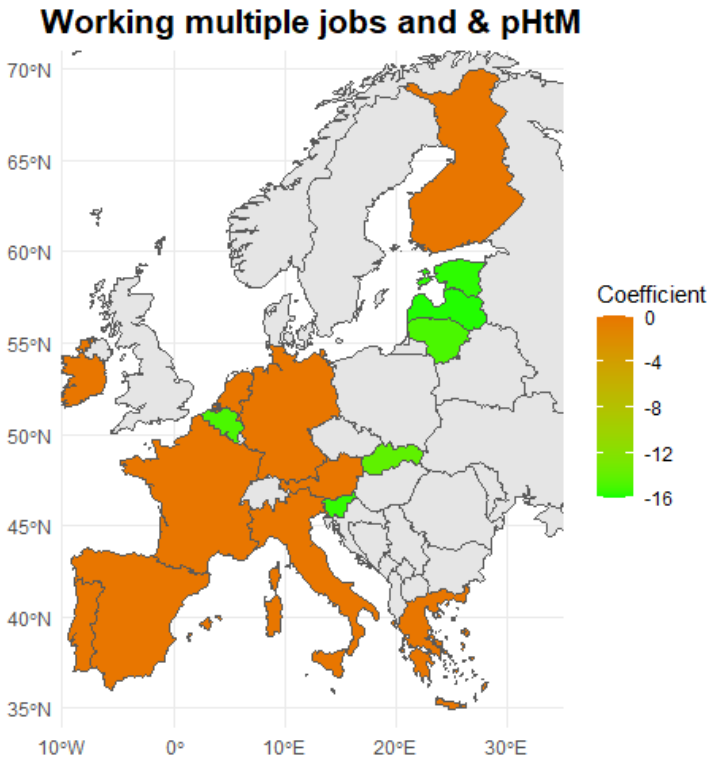


Figure 9: Heatmap of point estimates for coefficient HAS_MULTIPLE_JOBS

The estimated effects of multiple job holding on pHtM vulnerability are highly heterogeneous across countries. In Belgium, Estonia, Latvia, Lithuania, Slovenia, Slovakia, and Malta, the coefficients are strongly negative and statistically significant. This indicates that in these contexts, households with multiple jobs face a substantially lower risk of being pHtM, consistent with the notion that secondary employment provides an additional buffer against liquidity shocks.

By contrast, in France, Finland, Germany, Greece, Spain, Cyprus, Italy, Ireland, and the Netherlands, the coefficients are not statistically significantly different from zero. In these cases, multiple job holding does not appear to systematically influence the probability of being classified as pHtM, suggesting that the protective effect of additional employment is absent or offset by other forms of precarity.

In Belgium, Estonia, Latvia, Lithuania, Slovenia, Slovakia, and Malta, the coefficients are large, negative, and statistically significant, consistent with very

low pHtM prevalence among multi-job holders; however, the magnitudes likely reflect sparse cells/quasi-separation rather than precise elasticities.

In in smaller or catching-up EA economies such as the Baltics, Slovenia, Slovakia, and Malta, adding a second formal job can represent a very large fraction of monthly earnings. In these contexts, even a modest additional wage can easily lift households above the liquidity threshold that defines pHtM. At the same time, selection into multiple employee jobs likely plays an important role. The ability to combine two employee positions is often limited to higher-ability, higher-skill, or permanently contracted workers—groups that are already less exposed to financial vulnerability.

Belgium is a noteworthy outlier in this group. Despite its high marginal effective tax rates, the coefficient is still strongly negative.

In highly redistributive EA countries such as France, Germany, Finland, and the Netherlands, the estimated effect of multiple job holding on the probability of being classified as pHtM is close to zero. This suggests that the institutional environment in these economies largely neutralizes the potential insurance role of holding more than one job.

One important factor might be the design of the tax–benefit system. In countries with relatively high marginal effective tax rates or steep withdrawal of means-tested transfers, the additional disposable income generated by a second job would be eroded. As a result, even if households supply extra hours of labor, the net improvement in liquidity is often too modest to move them out of the pHtM category.

Labor-market frictions can limit the feasibility and effectiveness of combining multiple jobs. Administrative restrictions, contractual exclusivity clauses, or simple scheduling conflicts often mean that second jobs are irregular, low-hours, and low-pay. Under these conditions, "moonlighting" cannot provide the stable income buffer needed to counter liquidity risk.

However, we observe statistically insignificant effect of working multiple jobs also in Southern European countries such as Greece, Spain, Cyprus, and Italy.

A comparison between Finland and Greece might illustrate why multiple job holding fails to provide effective insurance in both highly redistributive welfare economies and Southern Europe, albeit through different mechanisms. In Finland, multiple job holders are primarily drawn from high-skill occupations in their main employment. Here, the positive association with pHtM reflects volatility in income timing rather than low income levels, indicating that even workers with secure primary employment may struggle to maintain liquid buffers. In Greece, by contrast, multiple job holders are concentrated in services, agriculture, and manual occupations—sectors that are typically low-wage, seasonal, and precarious. In this context, households resort to additional jobs out of financial necessity, but the unstable nature of these jobs prevents them from providing a meaningful liquidity buffer. Thus, despite stark differences in labor-market structures, both the redistributive institutional environment of the "core" and the precarious labor conditions of Southern Europe converge on the same outcome: working multiple jobs does not shield households from poor hand-to-mouth status.

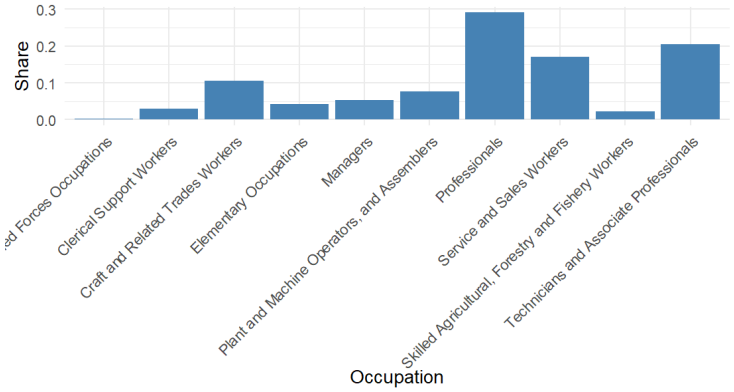


Figure 10: ISCO Main Job Descriptions of moonlighters in Finland

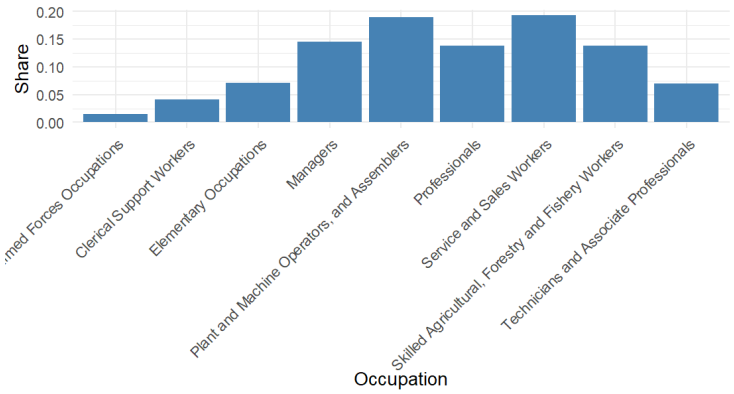


Figure 11: ISCO Main Job Descriptions of moonlighters in Greece

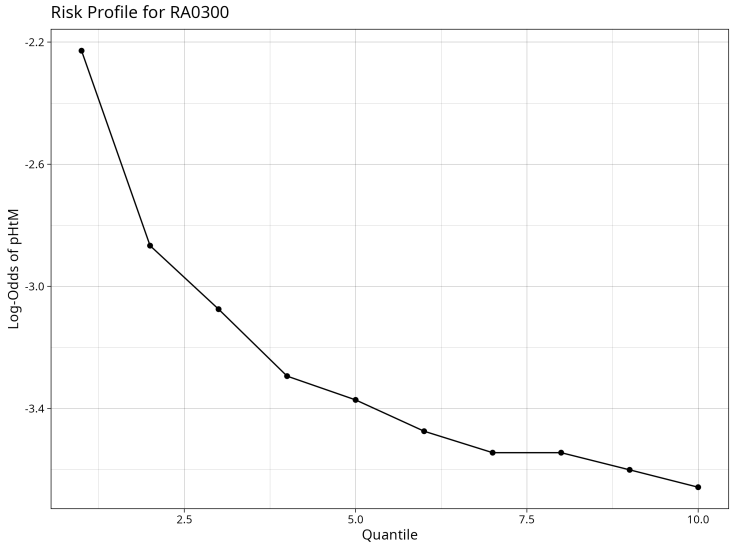
Portugal and Austria were excluded from the multiple-jobs specification because the estimated coefficients produced implausibly wide confidence intervals, consistent with quasi-separation problems in the data.

9 Demographic controls

9.1 Life cycle and pHtM status

The LCH suggests that individuals maximize lifetime utility by allocating resources to maintain stable consumption across their life cycle. This involves saving during high-earning years (typically middle age) to finance consumption during low-earning periods, such as retirement.

Figure 12: Risk profile for RA0300 - Age

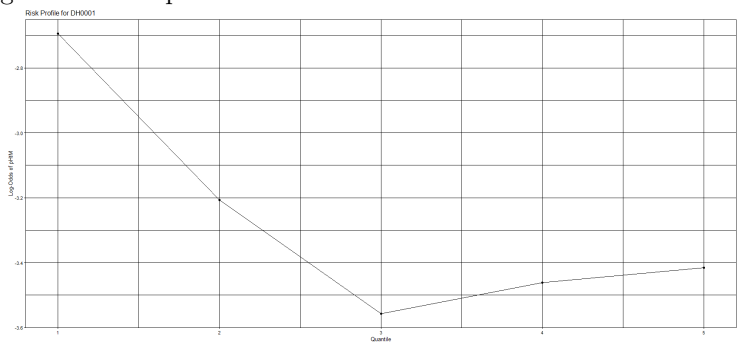


The log-odds profile for `RA0300` (age) supports this framework, showing a clear decline in pHtM probability with age. On average, in the youngest quantile, with an average age of 27.2 years, 11.1% of individuals are classified as pHtM, reflecting a high prevalence of financial vulnerability. This elevated proportion among younger individuals could be attributed to lower incomes typical of early-career stages, higher relative expenses such as rent or student loan repayments, and limited access to savings or credit, which impose liquidity constraints that force them to spend all their income. As age increases, the proportion of pHtM consumers declines steadily, falling to 6.9% in the second decile (average age 37.9 years), 4.27% in the fifth decile (average age 54.8 years), and 3.81% in the eighth decile (average age 68.7 years). This downward trend suggests that middle-aged individuals experience improved financial stability, likely due to career progression that boosts income, accumulation of assets such as savings or home equity, and reduced financial burdens such as paying off debts or supporting fewer dependents. In the oldest quantile, with an average age of 82.0 years, 3.61% of individuals are hand-to-mouth, the lowest proportion observed, indicating that older individuals are the least likely to live

paycheck-to-paycheck. The marginal decline in pHtM probability—from 3.65% at an average age of 63.8 years to 3.61% at 82 years—reflects the flattening of the life-cycle consumption curve in old age, consistent with the LCH prediction that asset accumulation ceases and dissaving begins once individuals exit the labor force and rely predominantly on pensions or previously accumulated wealth to sustain consumption.

9.2 Household composition

Figure 13: Risk profile for DH0001 - Number of household members



The risk profile of the variable `DH0001` (number of household members) indicates a weak linear relationship between household size and the risk of pHtM status, at least when average across the EA.

According to this relationship, single-person households in the EA face the highest pHtM probability, probably because they depend on a sole source of income. In the event of income disruption, these households lack income diversification, thereby increasing their exposure to financial shocks. Moreover, they might be at a disadvantage due to the absence of cost-sharing. Fixed expenses such as rent, utilities, and internet fall entirely on one individual, leaving no room for economies of scale—where costs per person decrease as household size grows.

Households comprising two members exhibit the lowest risk of pHtM status. This reduced vulnerability could be attributed to economies of scale, whereby fixed costs—such as housing, utilities, and transportation—are distributed across individuals, thereby lowering per capita expenditure. Furthermore, such households are likely to include multiple potential income earners, typically two working adults. This composition facilitates both cost-sharing and income diversification, providing a robust buffer against economic shocks.

In contrast, households with an average of around three to four members experience a slight increase in pHtM risk. Intuitively, if households encompass a greater number of non-income-generating members, such as children, elderly relatives, or other dependents, their consumption needs might place additional burden on household resources. These increased expenditures would

then counterbalance the savings accrued from cost-sharing, limiting the household's capacity to accumulate liquid or illiquid wealth and thereby elevating the probability of pHtM status.

The weight of evidence for the variable `DHHTYPE` (household type) shows that Category 7 (two adults, at least one aged 65 or over) has the lowest WoE (-0.89) and a pHtM rate of 2%, suggesting exceptional protection against pHtM status. This aligns with the risk profile of number of members in a household and age, where we have seen that two person households as well as older households have lower log odds of being classified as pHtM. These households, likely retired couples, benefit from stable income sources such as pensions or social security, which provide predictable cash flows to maintain liquid wealth above biweekly income thresholds, aligning with the LCH. Their lower consumption needs, due to no dependent children and possibly paid-off mortgages, might further enable savings accumulation, reducing liquidity constraints. Similarly, Category 8 (three or more adults, WoE = -0.64, pHtM rate = 3%) also shows strong resilience. These households, often multi-generational or shared living arrangements, likely pool income from multiple earners, enhancing financial stability and access to informal safety nets, which buffer against pHtM risk. Moreover, they might experience economies of scale, where expenses such as rent or energy are split between multiple adults.

The most financially vulnerable household types are Categories 51 (one adult younger than 64 years, WoE = 0.69, pHtM rate = 10%), 9 (single parent with dependent children, WoE = 1.04, pHtM rate = 13%), and 12 (two adults with three or more dependent children, WoE = 0.22, pHtM rate = 6%), also aligning with our previous findings about the vulnerability of households with multiple dependent children. Category 9's high WoE and pHtM rate reflect the severe financial strain on single parents, who bear sole responsibility for income and childcare costs. Category 51's positive WoE suggests that single working-age adults struggle to accumulate savings, making them prone to pHtM status.

9.3 Family structure and pHtM status

The names of the categories in `DHCHILDRENDEPENDENT` (Dependent children defined as all persons aged 0-15 and person aged 16-24 not at work and living with a parent) in the WoE Table 19 represent number of children in a household, for instance Category 0 means 0 children.

The WoE shows a clear pattern. households with more dependent children (4+) have a higher probability of pHtM status, with pHtM rates rising from 11% (4 children) to 21% (7 children). This is reflected in the increasing positive WoE values (0.87 to 1.59). Intuitively, dependent children increase household expenses (e.g., childcare, education, food, housing), reducing the ability to save or accumulate wealth. Additionally, larger households experience higher consumption needs.

Households with 0–3 children have pHtM rates close to or below the sample average (5%), with WoE values near zero or negative.

There are some outliers present, for instance households with more than 9

Table 19: WoE Table for DHCHILDRENDEPENDENT - NUMBER OF DEPENDENT CHILDREN

	Category	pHtM_count	Total_count	pHtM_rate	WoE
1	9.00	0.00	40.00	0.00	-Inf
2	11.00	0.00	10.00	0.00	-Inf
3	13.00	0.00	5.00	0.00	-Inf
4	2.00	2152.00	46076.00	0.05	-0.11
5	0.00	12422.00	249861.00	0.05	-0.04
6	1.00	2710.00	49349.00	0.05	0.06
7	3.00	944.00	13859.00	0.07	0.29
8	8.00	5.00	45.00	0.11	0.83
9	4.00	350.00	3055.00	0.11	0.87
10	5.00	115.00	655.00	0.18	1.36
11	6.00	43.00	205.00	0.21	1.58
12	7.00	20.00	95.00	0.21	1.59

dependent children. Interestingly, none of them is classified as pHtM, meaning their WoE is infinite. This could be a case of reverse causation, where already wealthy households choose to have many children.

Table 20: WoE Table for PA0100 - MARITAL STATUS

	Category	pHtM_count	Total_count	pHtM_rate	WoE
1	2.00	5917.00	199875.00	0.03	-0.58
2	4.00	1836.00	37233.00	0.05	-0.05
3	3.00	336.00	6635.00	0.05	-0.02
4	1.00	6764.00	76831.00	0.09	0.57
5	5.00	3908.00	42681.00	0.09	0.62

Households where the reference person is married (Category 2), as defined in the variable `PA0100` shown in the Table 20 exhibit WoE value of -0.58, indicating a lower probability of being pHtM compared to the overall sample. With a pHtM rate of just 3%, married households demonstrate greater financial stability, likely due to the economic advantages of dual-income structures, shared financial responsibilities, and potentially higher accumulated wealth.

In contrast, households led by divorced individuals (Category 5) show WoE value of 0.62, with a pHtM rate of 9%, signaling a substantially elevated risk of financial vulnerability. Divorce often entails substantial economic costs, including asset division, legal expenses, and the loss of shared income, which can deplete both liquid and illiquid wealth. Similarly, households where the reference person is single or never married (Category 1) have a positive WoE of 0.57, reflecting a higher probability of being pHtM, with a pHtM rate of 9%.

The WoE table for the variable `DHGENDERH1`, which categorizes the reference person of households as male (Category 1) or female (Category 2), shows that households with a male reference person exhibit a pHtM rate of 4% and a

Table 21: WoE Table for DHGENDERH1 - GENDER OF THE REFERENCE PERSON

	Category	pHtM_count	Total_count	pHtM_rate	WoE
1	1.00	9736.00	224776.00	0.04	-0.18
2	2.00	9025.00	138479.00	0.07	0.25

slightly negative WoE of -0.18, indicating a modest protective effect against pHtM status compared to the overall population. This suggests that male-led households are slightly underrepresented among pHtM cases, potentially due to higher average earnings or greater labor market participation, which may facilitate maintaining net liquid wealth above biweekly income thresholds. In contrast, households with a female reference person have a higher pHtM rate of 7% and a positive WoE of 0.25, reflecting increased financial vulnerability. This overrepresentation among pHtM households aligns with economic literature highlighting gender disparities, such as lower wages, higher probability of part-time work, or single-parent responsibilities for women, which can limit liquid wealth and increase pHtM risk. The modest WoE values below the $|WoE| > 0.5$ guideline, suggest, however, that gender alone is not a strong predictor of pHtM status.

The `SINGLE_MOTHER` variable is defined as follows:

- 1: Households where the reference person is female (`DHGENDERH1 = 2`), not married (`PA0100` $\neq$ `2`), and a single parent with dependent children (`DHHTYPE = 9`).
- 0: All other households.

Similarly, The `SINGLE_FATHER` variable is defined as follows:

- 1: Households where the reference person is male (`DHGENDERH1 = 1`), not married (`PA0100` $\neq$ `2`), and a single parent with dependent children (`DHHTYPE = 9`).
- 0: All other households.

Table 22: WoE Table for SINGLE_MOTHER

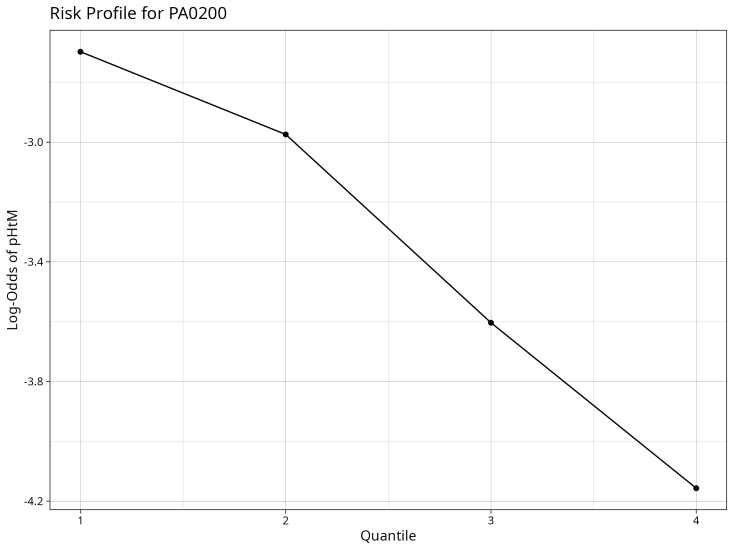
	Category	pHtM_count	Total_count	pHtM_rate	WoE
1	0.00	16951.00	352013.00	0.05	-0.07
2	1.00	1810.00	11242.00	0.16	1.26

Single mothers exhibit a high pHtM rate of 16% and a strong positive WoE of 1.26, indicating substantial financial vulnerability. With 11,242 households and 1,810 pHtM events, this group is markedly overrepresented among pHtM households, reflecting the economic precarity of single mothers. The high pHtM rate aligns with the intuition that single mothers often face limited income due

to sole breadwinner status, childcare responsibilities, and potential labor market disadvantages (e.g., part-time work, lower wages). These factors increase the probability of low or negative net liquid wealth, pushing households below pHtM thresholds (biweekly income or income minus credit limits).

9.4 Human capital and pHtM

Figure 14: Risk profile for PA0200 - Highest level of education completed



The education categories as mapped in `PA0200` reflect increasing levels of education.

The decline in pHtM probability with higher educational achievements confirms the basic intuition that education is an effective insurance mechanism against the pHtM classification, perhaps because it is commonly associated with better work perspectives.

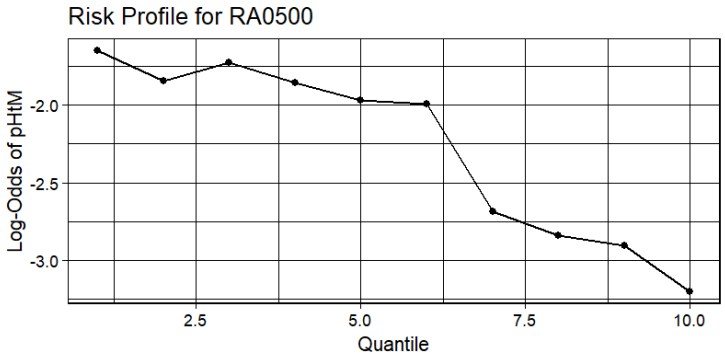
At the lowest education quantile, where the median education level is 1.64 (corresponding to primary education (ISCED 1) or no formal education), the proportion of pHtM households is 9%, translating to log-odds of the pHtM classification of -2.31. As education rises to the second quantile (median level 3, upper secondary (ISCED 3) or post-secondary (ISCED 4) education), the pHtM rate drops to 6.45%, with log-odds falling to -2.67. This trend accelerates in the third quartile (median level 4.32), where the pHtM rate is 3.41% and log-odds drop to -3.38. At the highest quartile (median level 5, short-cycle tertiary education), the pHtM rate is a mere 1.89%, with log-odds of -3.95.

Households with higher education levels should be more likely to secure stable, well-paying jobs, which not only increase biweekly income but also enable savings that exceed the threshold of biweekly income defined for pHtM status.

However, the relatively low correlation of 0.24 between employee income and education suggests that the protective effect of education against pHtM status operates through channels beyond a simple, direct boost to income. This could further suggest that employment is not the sole insurance mechanism against being classified as pHtM.

The moderate negative correlation with age (-0.21) adds nuance. In theory, the relationship should be positive, as older people have had more time to achieve their educational goals. The negative sign might perhaps show an attitude switch, for instance education being more accessible for the younger generation today than it was in the past.

Figure 15: Risk profile for RA0500 - How long have you been living in the country



The log-odds of variable `RA0500` (how long have you been living in the country) indicate that longer residency in a EA country reduces the risk of pHtM status. As years in the country increase from 3.2 to 66.3, the odds of pHtM status drop almost fivefold. Economically, this suggests that extended residency enhances financial stability, likely through improved labor market integration, higher disposable income, or access to credit.

The weak negative correlation (-0.09) between `RA0500` and `PG0110` (gross cash employee income) implies that years in country do not substantially boost gross employment income, yet longer residency reduces pHtM risk. This further suggests that the protective effect of `RA0500` against pHtM status indeed operates through channels beyond employment income, such as wealth accumulation, access to credit, or non-employment income sources (e.g., pensions, investments, or social transfers).

To summarize, the pHtM households in the EA are a heterogeneous group, but key demographic groups stand out: single-person households reliant on a sole income and unable to share costs, larger households with dependents and limited income earners, recent migrants facing integration barriers, households with few or no employed members struggling with income volatility, and younger households early in their wealth-building cycle.

9.5 Multiple logistic regression model

Table 23: Country-specific multiple logistic regressions of pHtM status on receiving employee income with life-cycle controls

	Country	AGE	AGE^2	RECEIVED_EMP_INCOME
1	AT	0.00	0.00	-1.05
2	BE	0.00	0.00	-1.22
3	FR	0.00	0.00	-0.91
4	DE	0.00	0.00	-0.83
5	ES	0.00	0.00	0.00
6	FI	0.00	0.00	-1.49
7	GR	-0.11	+0.00	0.91
8	EE	-0.09	0.00	0.00
9	CY	-0.11	+0.00	0.00
10	SK	0.00	0.00	0.00
11	SI	-0.10	+0.00	0.00
12	PT	0.00	0.00	0.00
13	LV	0.00	0.00	0.00
14	LU	0.00	0.00	0.00
15	LT	-0.21	+0.00	0.00
16	IT	0.00	0.00	-0.65
17	IE	0.00	0.00	-1.20
18	MT	0.12	-0.00	0.09
19	NL	0.11	-0.00	-1.09

Note: Values marked as +0.00 are positive and statistically significant but very close to zero.

Table 24: Country-specific multiple logistic regressions of pHtM status on receiving employee income with human capital controls

	Country	EDUCATION	AGE	LIVING_IN_THE_COUNTRY	RECIEVED_EMP_INCOME
1	AT	-0.75	0.05	0.00	0.00
2	BE	-0.28	0.00	0.00	0.00
3	FR	-0.28	0.00	0.00	0.00
4	DE	-0.87	0.00	0.00	0.00
5	FI	-0.35	0.00	-0.04	-1.53
6	GR	0.00	0.00	-0.07	0.88
7	EE	0.00	0.00	0.00	0.00
8	CY	0.00	0.00	0.00	0.00
9	SK	0.00	0.00	0.00	0.00
10	SI	0.00	0.00	-0.07	0.00
11	PT	0.00	0.00	0.00	0.00
12	LV	0.00	0.00	0.00	0.00
13	LU	0.00	0.00	0.00	0.00
14	LT	0.00	0.00	0.00	0.00
15	IT	0.00	0.00	0.00	0.00
16	IE	-0.58	0.00	-0.04	0.00
17	MT	-19.88	8.99	-23.49	-296.30
18	NL	-0.58	0.00	0.00	0.00

Table 25: Country-specific multiple logistic regressions of pHtM status on receiving employee income with family structure controls

	Country	MARITAL_STATUS	SINGLE_MOTHER	MORE_CHILDREN	RECIEVED_EMP_INCOME
1	AT	0.00	0.00	0.00	-0.50
2	BE	0.00	1.07	0.00	-0.53
3	FR	0.00	1.60	0.89	-0.48
4	DE	0.00	1.32	0.00	0.00
5	ES	-0.17	1.32	0.93	0.00
6	FI	-0.11	1.10	0.00	-0.62
7	GR	0.00	0.78	0.75	1.18
8	EE	0.00	0.00	-14.57	0.00
9	CY	0.25	0.00	0.00	0.00
10	SK	0.00	0.00	0.00	0.00
11	SI	0.00	0.82	0.00	0.00
12	PT	0.00	0.00	0.00	0.00
13	LV	0.37	0.00	0.00	0.00
14	LU	0.00	0.00	0.00	0.00
15	LT	0.00	0.00	0.00	0.00
16	IT	0.00	1.41	0.91	0.00
17	IE	0.00	1.95	0.62	-0.60
18	MT	0.26	1.47	1.18	0.29
19	NL	0.00	1.45	0.00	-0.73

Table 26: Country-specific multiple logistic regressions of pHtM status on receiving employee income with household structure controls

	Country	TWO_ADULTS_SENIOR	THREE_ADULTS	SINGLE_HOUSEHOLD	RECIEVED_EMP_INCOME
1	AT	-0.82	0.00	1.04	-0.65
2	BE	-0.74	-14.98	0.92	-0.58
3	FR	-0.57	0.00	0.50	-0.36
4	DE	-1.05	0.00	0.77	0.00
5	ES	-0.96	-0.73	0.48	0.00
6	FI	-1.60	0.00	1.29	-0.94
7	GR	0.00	0.00	0.63	1.14
8	EE	-0.86	0.00	1.74	0.00
9	CY	0.00	0.00	0.00	0.00
10	SK	0.00	0.00	0.00	0.00
11	SI	0.00	-2.21	1.02	0.48
12	PT	0.00	0.00	0.00	0.00
13	LV	0.00	-15.12	0.00	0.00
14	LU	0.00	0.00	0.00	0.00
15	LT	0.00	-14.08	1.45	0.00
16	IT	0.00	0.00	0.00	0.00
17	IE	-1.09	0.00	0.00	-0.59
18	MT	-1.48	-1.66	0.39	-0.11
19	NL	-1.18	0.00	0.91	-0.86

For Germany, the simple regression of pHtM status on receipt of employee income yielded an imprecise and statistically insignificant estimate (–0.31 log-odds, 95% CI –0.83 to 0.21). At first glance, this suggested that employee income did not systematically reduce liquidity risk in the German sample. However, once basic lifecycle controls (AGE and AGE^2) were added, the coefficient became substantially more negative (around –0.83) and statistically significant. This shift indicates that age composition was masking the protective effect of employment: younger households are more likely to both report employee income and to face liquidity constraints, which attenuated the raw relationship in the simple logistic regression. After controlling for age, the underlying insurance value of employment becomes visible, consistent with the notion that stable labor income reduces the probability of being pHtM in Germany. Similarly, when lifecycle controls are introduced, the coefficient on receiving employee income becomes materially more negative in Austria, Belgium, France, Finland, Ireland, and the Netherlands.

In the Central and Eastern European member states of Slovakia, Slovenia, and Lithuania, the coefficient on receiving employee income remains statistically insignificant even after introducing demographic controls. Economically, this further suggests that in post-transition economies, employment per se does not reliably function as an insurance mechanism against liquidity risk.

Greece stands out as a robust outlier in the euro-area comparison. Across all model specifications, including those with lifecycle, human capital, and household composition controls, the coefficient on receiving employee income remains positive, in the range of +0.9 to +1.2 log-odds. This means that, unlike in most other countries, households reporting employee income are more likely to be classified as pHtM than those without, even after accounting for age, education, and family structure. Unlike in core euro-area countries, where controlling for lifecycle effects reveals that employee income clearly reduces the probability of being pHtM, receiving employee income in Greece is not systematically

associated with improved liquidity outcomes.

In several countries, the estimated age effects follow a U-shape, with AGE negative and AGE^2 positive (Greece, Cyprus, Slovenia, Lithuania). Economically, this pattern reflects distinct phases of the household life cycle. In early adulthood, pHtM status is relatively common because entry wages are low and volatile, credit constraints bind, and households have not yet accumulated liquid buffers. At the same time, many households are in the process of setting up, which involves substantial outlays on durables, deposits, or housing, so even small shocks can push them into liquidity stress. In mid-life, the risk of being pHtM falls: earnings and job tenure rise, dual-earner arrangements are more frequent, access to credit improves, and households begin to accumulate precautionary balances. At older ages, however, the risk rises again.

In contrast, in the Netherlands and Malta the estimates point to an inverted-U, with AGE positive and AGE^2 negative. Here, pHtM risk rises into mid-life and declines thereafter. The upward slope toward middle age reflects the "mid-life squeeze": households face high recurring cash needs from mortgages and dependent children at precisely the time when they are servicing debt and smoothing education and childcare expenditures. Even with decent income levels, liquid cash-on-hand can be tight. In later life, however, the risk of liquidity stress falls. Mortgages are typically amortised, children leave the household, and pension income provides a stable and predictable stream, making it easier to maintain liquid buffers. In the Dutch case, this pattern is consistent with the role of strong occupational pensions, while in Malta it may align well with very high homeownership rates and family support networks, though both interpretations remain hypotheses to be validated by further research.

When human capital and settlement variables are introduced, the results show that education is consistently protective. In Austria, France, Germany, Finland, Ireland, and the Netherlands, higher levels of education substantially reduce the probability of being pHtM. In addition, the indicator for years living in the country tends to carry small negative coefficients where estimated (e.g. Finland, Greece, Slovenia, Ireland), suggesting that longer settlement and assimilation provide modest protection, possibly by improving labor market attachment and access to financial services. At the same time, Finland stands out with a strongly negative employment coefficient (around –1.5), while Greece remains the main exception, with a persistently positive effect of employee income.

Adding family structure variables highlights the role of household responsibilities in shaping liquidity risk. The single-mother dummy is large and positive almost everywhere, with coefficients between +0.8 and +2.0, indicating a substantially higher probability of being pHtM in single-parent households. Similarly, having more children increases risk in several countries, including France, Spain, Greece, Italy, and Malta, consistent with higher recurring expenditure and tighter liquidity. After absorbing these family-related factors, the protective effect of employee income remains visible in Austria, Belgium, France, Finland, Ireland, and the Netherlands.

Household composition effects also align with theoretical expectations. House-

holds with two senior adults are consistently less likely to be pHtM, with coefficients between –0.6 and –1.6, reflecting the stabilising role of pensions and accumulated wealth. By contrast, living in a single-adult household increases the log-odds of being pHtM (+0.4 to +1.3), consistent with the absence of intra-household income pooling. After accounting for these composition effects, the employment coefficient remains robustly negative in Austria, Belgium, France, Finland, Ireland, and the Netherlands, while Greece continues to stand out with a positive sign.

Taken together, the results show that the insurance value of employment against liquidity risk in the EA is highly context-dependent. In core countries such as Austria, Belgium, France, Finland, Ireland, the Netherlands—and, once lifecycle effects are controlled, employee income clearly reduces the probability of being pHtM. By contrast, in several Central and Eastern European economies, employment status by itself carries little explanatory power, reflecting the persistence of precarious jobs and thin household buffers. Greece emerges as a notable outlier, where receiving employee income is consistently associated with greater, not lower, fragility, underscoring the dualism between insecure employment and relatively stable pensions. Across countries, demographic factors such as age, education, and household structure strongly shape vulnerability, and the protective role of employment only materializes once these are taken into account.

10 Conclusion

In the core EA—Austria, Belgium, France, Finland, the Netherlands, and Ireland—employment generally functions as a reliable insurance mechanism against liquidity risk, though the channels differ. Regulated labor markets and near-universal financial inclusion ensure that wage income carries a stabilizing effect. Permanent contracts remain protective, but their marginal value is reduced in Nordic and liberal welfare regimes such as Finland, Ireland, and the Netherlands, where generous universal safety nets already provide households with substantial baseline security. The vulnerability of low-skill workers is largely neutralized in Austria, Belgium, France, and the Netherlands through redistributive taxation and transfers, whereas in Ireland, Germany, and Finland, sharp gradients between high- and low-skill occupations persist, reflecting dualized labor markets. Finally, the potential buffer of holding multiple jobs is absent in high-tax core economies—including France, Germany, Finland, and the Netherlands—because additional earnings are heavily offset by marginal tax rates and the withdrawal of means-tested benefits.

In Southern Europe, the protective role of employment is more heterogeneous and shaped by segmented, tourism-oriented labor markets. Portugal, Cyprus, and Italy show clear protective effects of receiving employee income, while Spain—despite strong institutional similarities to Portugal—does not, underlining the importance of labor market composition over geography. Permanent contracts are especially decisive in this region, with the strongest effect observed in Italy (an 82 percent reduction in pHtM odds), consistent with its strict employment protection legislation. Spain, Greece, and Malta also display significant protective effects from permanent contracts, reflecting the heightened value of job stability in economies where informal, seasonal, and temporary work is widespread. Yet Greece stands out as a partial outlier, with only a modest coefficient, suggesting weaker institutional enforcement. Occupational patterns reinforce these findings: in Italy and Portugal, the vulnerability of low-skill jobs is largely neutralized, likely through informal household and community buffers, whereas in Spain a symmetric gradient emerges, with high-skill work protective and low-skill work strongly associated with pHtM status—evidence of a dualized labor market. Finally, across Southern Europe as a whole, holding multiple jobs does not reduce vulnerability. Secondary employment in this region is typically irregular, low-paid, and seasonal, preventing it from functioning as an effective insurance mechanism against liquidity risk.

In Eastern Europe, the protective role of employment is weak and often counterintuitive. Employment status by itself is not a reliable predictor of financial resilience. In countries with near-universal permanent contracts, such as the Baltics and Slovakia, the effect of contract type cannot be identified due to limited variation. Occupational gradients also diverge from the Western European pattern: high-skill jobs do not consistently provide protection, reflecting weaker wage premia, limited asset accumulation, and persistent in-work poverty. By contrast, multiple job holding appears more meaningful in this region. In the Baltics, Slovenia, and Slovakia , secondary employment is associated with

significantly lower pHtM risk, likely because even modest additional earnings represent a large relative income gain and are feasible primarily for workers who already enjoy some degree of stability in their main job.

Greece stands out as a clear outlier in the EA. The coefficient on receiving employee income is positive, meaning that households reporting wage income are actually more likely to be classified as pHtM than those without. This result persists even after controlling for age, education, and family structure, and contrasts sharply with most other member states, where employment income generally provides protection against liquidity constraints.

Occupational patterns in Greece further underscore this atypical profile. High-skill employment is associated with a statistically insignificant coefficient, suggesting that skilled jobs do not consistently reduce the probability of being pHtM. By contrast, low-skill employment has a positive and statistically significant effect, suggesting that households at the lower end of the occupational hierarchy face a pronounced risk of liquidity stress.

Contract stability also emerges as a critical weakness of the Greek labor market. Only 74.7 percent of employees hold permanent contracts, the lowest incidence among EA countries. This unusually high reliance on temporary and informal arrangements undermines the insurance value typically associated with dependent employment.

The prevalence of multiple job holding is also the lowest in the EA, at just 1.2 percent. Moreover, the estimated coefficient is statistically insignificant.

These results suggest that in Greece, employment status alone does not insure households against liquidity risk. The weak protective role of employee income, the insignificance of high-skill occupations, the limited reach of permanent contracts, and the precarious nature of secondary jobs together explain why Greece diverges so markedly from core EA economies.

A recurring finding across the EA is that contract stability matters more than employment status per se. Simply receiving employee income provides only a modest reduction in the probability of being classified as pHtM, and in some countries the effect is even absent or reversed. By contrast, holding a permanent contract is consistently associated with greater financial resilience, though the strength of this effect varies by institutional context. The distinction highlights that employment alone does not guarantee liquidity security: what matters is the stability, predictability, and institutional protection embedded in the contract.

Another consistent pattern is that the type of employment matters greatly, with high-skill jobs offering strong protection against pHtM status. Across most EA countries, households in high-skill occupations show markedly lower probabilities of being liquidity constrained, reflecting higher and more stable earnings, stronger attachment to formal labor markets, and greater access to credit and asset accumulation. By contrast, low-skill occupations are often associated with irregular hours, lower wages, and limited career progression, which translate into higher vulnerability.

This divergence underscores that monetary union does not automatically translate into convergence in household financial resilience. Even under a com-

mon currency, the insurance value of employment remains highly conditional on domestic institutional settings. Employment can and often does provide protection against liquidity risk, but not all forms of employment offer the same degree of security. In some contexts, stable permanent contracts and high-skill occupations translate directly into reduced vulnerability, while in others—particularly where labor markets are segmented, informal work is widespread, or social safety nets are weak—the protective effect of employment is absent or even reversed. The EA is therefore highly heterogeneous: while employment acts as a buffer in core and parts of the EA, its effectiveness varies substantially across regions, highlighting the importance of national institutions and labor market structures in shaping household financial resilience.

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