Risk Sharing, Financial Integration, and Welfare

Christian Friedrich*

September 9, 2012

Abstract

This paper uses the European Community Household Panel (ECHP) and the European Union Statistics on Income and Living Conditions (EU-SILC) to assess the impact of financial integration on welfare across countries and across households. The two datasets yield balanced panels of more than 17,000 and 31,000 households from up to 22 European countries over the periods 1994-2000 and 2004-2008. The dependent variable is given by a household's personal assessment of its *ability to make the ends of its balance sheet meet*. I argue that this measure mirrors household utility better than current ones in the literature. I first document a negative welfare-effect arising from labor income uncertainty. I then show that financial integration significantly mitigates this effect for the average household in a country. Finally, I assess the distribution of these gains across households: while in the first part of the sample, households strongly exposed to financial markets have gained slightly less than the average household, in more recent years, the negative differential effect for the same group has disappeared.

Key Words: Financial Integration, Risk Sharing, Consumption Smoothing, Household Welfare

JEL Classification: E2, F2, F3

*Address: Graduate Institute for International and Development Studies, Avenue de la Paix 11A, Geneva, Switzerland; e-mail: christian.friedrich@graduateinstitute.ch. The author would like to thank, without implicating, Cédric Tille, Jean Imbs, Shang-Jin Wei, Erich Battistin, Jean-Louis Arcand, Rahul Mukherjee, participants at the *Swiss Society of Economics and Statistics Meeting* in Zuerich, the *Recent Developments in Macroeconomics Conference* in Mannheim, and seminar participants at the Graduate Institute Geneva and the European Central Bank for helpful discussions, comments, and suggestions. All mistakes remain my own.

1 Introduction

The literature on risk sharing and consumption smoothing is vast. Nevertheless, it has been difficult to document substantial gains from financial integration in terms of risk sharing or consumption smoothing in the past. This paper adds to the literature by examining the effect of financial integration on welfare across countries *and* across households using two international household micro datasets: The European Community Household Panel (ECHP) and the European Union Statistics on Income and Living Conditions (EU-SILC).[1] The paper makes the following three contributions:

First, the paper replaces the traditional left-hand side variable in the literature, a measure of consumption variance, by a more appropriate welfare-based measure. Latter one is derived from a household's subjective assessment of its financial situation and thus comes closer to the theoretical concept of utility. It allows quantifying the negative effect of labor income uncertainty on welfare. Second, the analysis is based on two consistent international household dataset at the micro-level that yield balanced panels of more than 17,000 and 31,000 households from up to 22 European countries over the periods 1994-2000 and 2004-2008. The two samples represent time periods in which standard financial integration measures for European countries have picked up rapidly. In the empirical analysis, subsequently a clearly positive and thus counterbalancing welfare-effect arising from financial integration is identified. And third, by using household data on the micro-level, the paper examines the distributional aspects of financial integration on different types of households, where heterogeneity is represented by differences in the exposure of households to financial markets.

Following the recent financial crisis and the European debt crisis, policy discussions are increasingly centered on the question about the optimal level of foreign capital that a country should be exposed to. To answer this question in a satisfying way, one needs to carefully examine the impact of financial integration on a country and thus, on its economic sectors in the first place. The predictions of early theoretical models are clear: The gains from financial integration are potentially large. For the household sector, the positive effect of financial integration on consumption smoothing and risk sharing is prominently stressed. Subsequently, a vast empirical literature has emerged and has tested these claims with a variety of approaches and datasets. However, not only that the high potential gains suggested by theory could not be verified, but also the limited number of studies finding a positive impact of financial integration present a heterogeneous pattern of its gains: substantial degrees of consumption risk sharing could only be detected in the advanced world and here especially at the intra-country level, such as for risk sharing across states or regions. Nevertheless, predicted gains derived from theoretical models could never be fully confirmed. In addition, more recently, the theoretical literature has pointed out the importance of heterogeneity and related distributional questions in determining the outcome for the individual household (e.g. Heathcote et al. 2009, Caselli and Ventura, 2000).

This paper takes up these insights and ties to the literature by examining the effect of financial integration on welfare via a reduction of labor income uncertainty for European households using two internationally consistent household panel datasets. Using household-level data in panel form has several benefits in addition. Besides the econometric advantages of controlling for individual heterogeneity due to the panel nature of the data, as well as obtaining more precisely estimated coefficients due to a larger number of observations, there are two essential short-comings that regional or country-level data exhibits. As already noted by Jappelli and Pistaferri (2011), studies using aggregated data make the two strong assumptions that countries or regions are populated

[1] This paper is accompanied by an Online Appendix that documents the dataset preparation in greater detail.

by identical consumers and that shocks within the examined aggregates can be smoothed perfectly among its residents. Indeed, both do not seem to be the case. A large share of a household's income uncertainty may be of household-specific nature and thus will be averaged out when the next higher geographical aggregate is considered. In addition, finding a positive effect of financial integration on consumption risk sharing at the country or the regional level does not provide information on the distribution of these gains among its residents. Compared to the firm sector, where all types of firms are to some extent profit maximizing (if not, they will be driven out of the market), households are of a much more heterogeneous nature with respect to economic outcome variables, such as income, consumption and savings. The determination of these outcome variables in turn may be influenced by the level of initial endowments, demographic characteristics, individual preferences, and the extent of optimizing behavior that a household exhibits. This gives rise to the presumption that the gains from financial integration are not uniformly distributed. Using household-level data will therefore allow examining all components of consumption risk that a household faces and in addition, to better quantify the gains arising from financial integration in mitigating them across the distribution of households.

In addition, this paper recognizes that basically all studies in the literature examine the effect of financial integration on households by focusing on the comovement of consumption growth rates with those of an income variable, where both underlying variables are measured in monetary terms. Although it is easily derived from theory that a lower consumption volatility yields a higher utility for the household, the current setup misses the possibilities that firstly, households may differ in their assessment of the disutility they suffer from a higher consumption volatility and secondly, also the reduction in utility may not be proportional to the size of the income shock. This paper tries to improve on this obstacle by introducing a welfare-based measure of the household's evaluation of its consumption path given its income that incorporates the assessment of the mean and the standard deviation of the consumption process. The measure is obtained by the household's subjective answer to a question on its ability to *make the ends of its balance sheet meet*. Section 3 will describe the measure, henceforth referred to as the household's *ability to meet ends*, in greater detail and especially provide profound evidence for the welfare interpretation.

The results of this paper indicate that labor income uncertainty has a negative welfare impact for households. When the perspective of the average household in a country is taken, this negative impact can be counterbalanced to a certain extent when high levels of financial integration are present. By splitting up households according to their degree of exposure to financial markets, it can then be shown in addition, how financial integration affects households along the distribution: while in the first part of the sample, households strongly exposed to financial markets have gained slightly less than the average household, in more recent years, the negative differential effect for the same group has disappeared.

The remainder of the paper is structured as follows: section two reviews the literature on financial integration and consumption risk sharing and sets the contribution of this paper in relation to previous work. The third section introduces the two datasets and presents the ability to meet ends measure in greater detail. In addition, section three sketches the financial integration dynamics on which the empirical analysis builds. The fourth section presents the estimation framework and briefly summarizes the data work. Section five contains the results as well as evidence from extensive robustness checks. Finally, section six concludes.

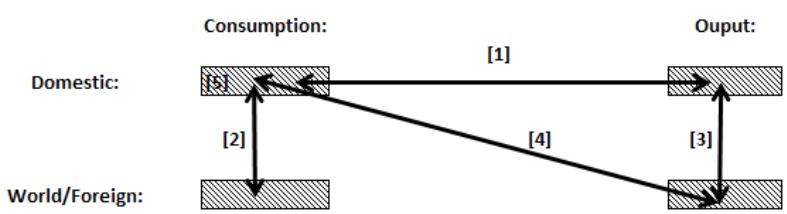
2 Literature on Financial Integration and Risk Sharing

2.1 Theoretical Literature

Although to a varying extent, the early theoretical literature on international risk sharing (e.g. Lucas (1982), Cole and Obstfeld (1991), Baxter and Jermann (1997)) pointed out a rationale for a positive effect of foreign investments on consumption risk sharing. Following Backus, Kehoe Kydland (1992), dynamic stochastic general equilibrium models with complete markets imply that under autarky, domestic output and consumption (or their growth rates respectively) should be highly correlated, as agents can smooth consumption only over time via domestic investment. Under full (financial and trade) integration, however theory implies that the following patterns should emerge (see Figure 1 below).

The correlation between domestic output and domestic consumption should be much lower, since agents are now able to diversify their portfolios by purchasing shares of foreign output and thus can effectively share their risks [1]. At the same time, this implies that – as a proxy for marginal rates of substitution – consumption across countries should be highly correlated [2] (or consumption growth rates respectively) and the correlation between domestic consumption and world output should increase [4]. In terms of relative correlations, theory predicts that cross-country consumption correlations should be higher than cross-country output correlations [2] > [3] and higher than the correlation between domestic consumption and domestic output [2] > [1]. Finally, also the correlation between domestic consumption and world output should be higher than the one between domestic consumption and domestic output [4] > [1]. Since financial integration in addition allows countries to smooth consumption better over time, the volatility of domestic consumption relative to domestic output (or their growth rates respectively) should also become smaller [5]. The empirical analysis of the consumption smoothing abilities in this paper will largely focus on a variation of case [5]. However, due to the short time dimension and the use of the standard deviation of labor income over time as a measure of individual labor income risk, the analysis may also incorporate elements of consumption risk sharing. Therefore, the paper does not take an explicit stance on the label and seeks to quantify the role of financial integration in mitigating the negative welfare impact of *labor income uncertainty* on households instead.

Figure 1: Structure of Literature



Although a vast amount of studies has emerged, the empirical literature at that time failed to verify the predicted degree of both, international financial integration and risk sharing in the data and thus gave rise to a series of famous puzzles in international economics (French and Poterba (1991), Backus, Kehoe, and Kydland (1992)). Faced with this obstacle, the more recent theoretical literature then shifted focus and started to lower the benchmark for empirical evaluations by intro-

ducing various frictions in theoretical models. Areas in which such frictions are introduced include the individual's preferences, the goods markets, and more recently especially the financial market. As pointed out in the very detailed introduction of Heathcote and Perri (2008), latter ones comprise costs for foreign asset holdings, the presence of non-tradable assets, the non-contingency of international bonds, liquidity or short selling constraints, enforcement problems for international assets and informational frictions such as asymmetric information or ownership concentration among insiders.

2.2 Empirical Literature

The list of studies that have explicitly examined the link between financial integration and consumption risk sharing at the aggregate level is long and dates back at least to Lewis (1996). Using a test for perfect risk sharing and a measure of capital restrictions from the IMF's AREAER database, the findings indicate that risk sharing in tradable goods is not rejected for countries that have unrestricted capital accounts.

Subsequently, Asdrubali, Sorensen, and Yosha (1996) decompose the cross-sectional variances of the gross state products in US states and thus are able to quantify the amounts of risk sharing through alternative channels. The authors identify three different channels of which two (capital markets, federal government) can be categorized as ex ante risk sharing and one channel (credit markets) represents ex post risk sharing. Building on the same approach, a number of studies emerged (e.g. Sorensen and Yosha (1998), Mélitz and Zumer (1999), Mélitz (2004), Kalemli-Ozcan et al. (2003, 2008)) that apply the methodology at the international level and examine risk sharing in the European Union and in various OECD countries. Also Hoffmann and co-authors apply this definition of channels and focus primarily on risk sharing at different frequencies (e.g. Becker and Hoffmann, 2006; Artis and Hoffmann, 2008) and the impact of portfolio home bias in the analysis (Artis and Hoffmann 2006a, 2006b).

The list of studies that applied alternative methods is rich: Notable examples comprise Kose, Prasad, and Terrones (2003) and Kose, Otrok, and Whiteman (2008) that use dynamic latent factor models to estimate common, country-specific, and variable-specific components of output and consumption, Giannone and Reichlin (2006) by using a VAR framework, Imbs (2006) who employs a simultaneous equation approach, and Sorensen, Yosha, Wu, and Zhu (2007) who apply panel regressions on a year-by-year basis. More recently, Flood, Marion, and Matsumoto (2009) compute a welfare-based measure that captures how far countries are from the ideal of perfect risk sharing. It corresponds to the variance of the log share of individual-country per capita consumption in world per capita consumption. The findings indicate that international risk sharing for industrial countries has improved during the globalization era. However, in opposite to previous findings, the authors find strong improvements for low frequency risk sharing.

Although the role of financial integration at the household-level has been examined much less frequently, there is a growing literature that examines the effect of portfolio choice on consumption risk sharing with more disaggregated data. In an early study, Mankiw and Zeldes (1991) examine empirically (with simple correlation exercises and tests) the hypothesis that the consumption of stockholders differs from the consumption of non-stockholders. Using data from the U.S. Panel Study of Income Dynamics over the years 1970-1984, stockholders' consumption is found to be more volatile and more highly correlated with the stock market.[2]

[2] A more elaborate approach is taken by Attanasio, Banks, and Tanner (2002) who estimate ownership probabilities to separate "likely" shareholders from non-shareholders to control for changing composition effects as well as selection

More recent contributions take also regional and industry-specific exposures into account: Becker and Hoffmann (2010) examine the link between portfolio home bias and consumption risk sharing at the regional level in Italy. Using data from the Survey of Household and Wealth (SHIW) from 1987 to 2004, the authors aggregate household data on income, consumption and on mutual fund holdings at the regional level. It is argued that mutual funds are nationally and internationally well diversified and thus individuals that hold such funds may share idiosyncratic risks better. Their core results indicate that (i) regions with more asymmetric business cycles are more diversified (due to higher participation rates – the extensive margin – and due to higher average holdings of equity funds – the corresponding intensive margin), (ii) fund holdings increase with a higher exposure of non-tradable income components (e.g. labor income) to regional shocks and (iii) interregional consumption risk sharing increases with fund holdings.

Further, Fugazza, Giofré and Nicodano (2010) investigate at the industry-level whether equity markets help to diversify away industry-related labor income risk. The authors construct an equilibrium model of optimal portfolio choice and calculate optimal portfolio allocations for workers in various industries in the US, Canada and Italy using employment data. Although this study does not explicitly examine consumption risk sharing, it empirically demonstrates the importance of the industry dependence of labor income and fleshes out the consequences for the portfolio decision of the household.

A recent study that explicitly examines the role of financial integration on consumption risk sharing at the household level is Jappelli and Pistaferri (2011). To answer this question, the authors decompose the variance of consumption into the variance of permanent income and transitory income. In the next step, standard household survey data at the cohort-level from Italy (SHIW) and the UK (Family Expenditure Survey, FES and British Households Panel Survey, BHPS) is used to test whether the introduction of the Euro has changed the sensitivity of consumption with respect to income in Italy (the UK severs as a benchmark). The empirical findings indicate however that this was not the case.

Summarizing the evidence from the literature survey, it turns out that the results of the empirical literature seem to be largely in line with the predictions from the theoretical one. This holds especially for US states and advanced countries, where asset holdings are substantial enough to actually improve risk sharing abilities of households. However, quantitatively there still seems to be a gap between predicted and actual levels of risk sharing, even though recent theory has revised the benchmark levels downwards. Using household-level data, which does not average out idiosyncratic shocks, focusing on a set of advanced countries, during two time periods in which financial integration has increased substantially, and focusing on welfare, the dimensions households eventually care about, this papers documents a clearly positive effect of financial integration on households.

3 Financial Integration and the Ability to Meet Ends

3.1 The Datasets

This paper uses the European Community Household Panel (ECHP) and the European Union Statistics on Income and Living Conditions (EU-SILC), two large-scale international household

into the group. The authors use data from the UK Family Expenditure Survey from 1978 to 1995 and conclude that consumption growth of shareholders is more volatile than that of non-shareholders.

datasets, to systematically assess the impact of financial integration on welfare across countries and across households. The datasets were both obtained from Eurostat and rely on a consistent methodology. After cleaning, the datasets yield balanced panels of more than 17,000 and 31,000 households from up to 22 European countries over the periods 1994-2000 and 2004-2008. The periods covered corresponds to times, when European countries have received large inflows of foreign capital and thus standard measures of financial integration have picked up rapidly.

Both datasets are primarily targeted to determine the living conditions of European households and therefore have very rich information on income, employment, and socioeconomic characteristics. However, the datasets do not provide information about actual financial assets holdings of households. Hence in this paper, financial integration will be measured at the country-level and affect the left-hand side variable via an interaction with household-specific labor income uncertainty. Nevertheless, both datasets provide a clear picture of individual income streams and include a set of questions on the financial situation of the household.

These three components - good income data, financial integration at the country-level, and a left-hand side variable taken from the financial situation modules in the datasets - will form the basis of the empirical analysis. This key variable will now be described in greater detail.

3.2 The Ability to Meet Ends

The key variable in the datasets is the ability of households to make the ends of their balance sheet meet, henceforth, referred to as *the ability to meet ends*. The original variable is labelled HF002 in the ECHP and HS120 in the EU-SILC dataset.[3] The corresponding question in the datasets is consistently posed as follows: [4]

> "A household may have different sources of income and more than one household member may contribute to it. Thinking of your household's total monthly income, is your household able to make ends meet?"

The answer to this question is given on a scale from 1 to 6 and ranges from "1 = with great difficulty" to "6 = very easily". Hence, a higher value in the ability to meet ends implies a better evaluation of the financial situation by the household. In terms of economic theory, the derivation of the abiltiy to meet ends can be demonstrated by examining the budget constraint of a household. The budget constraint of a household can be written as follows:

$$c + s = y^T \tag{1}$$

Total income y^T is equal to consumption and savings. Assuming that consumption consists of an income dependent part $c(y^T)$ and a income independent part $c^{\min}$ which can be thought of as subsistence consumption or habit formation, yields the following definition of consumption:

$$c = c(y^T) + c^{\min} \tag{2}$$

[3] A complete description of this variable can be found in the Online Appendix, Sections 3 and 4. The following subsection will only summarize the main features and focus primarily on its interpretation.

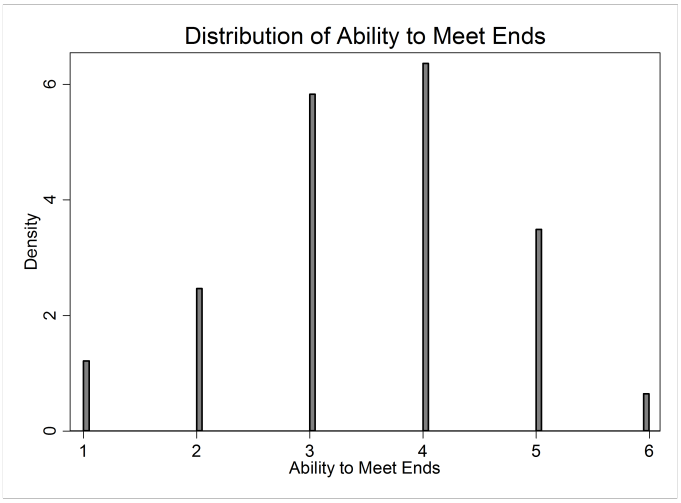
[4] There is a slight change in the wording for the 2009 wave of the EU-SILC, however, this does not constitute a problem as only income information is taken from this wave.

Replacing consumption by its definition and rearranging subsequently, yields the following expression for the budget constraint:

$$\underbrace{c(y^T) + s}_{abtme} = y^T - c^{\min} \tag{3}$$

The right-hand side represents the generation process of income: Total income y^T less the income independent part of consumption, i.e. minimum consumption $c^{\min}$. At the same time, the left-hand side represents the use of income expressed in terms of income dependent consumption $c(y^T)$ and net savings s. The ability to meet ends, $abtme$, is now derived from this equation by letting households evaluate their financial situation - represented by the left-hand side - based on their subjective assessment. In a wider sense, a change in the ability to meet ends characterizes the change in the household's subjective evaluation of its financial situation following a change in income. Hence, the ability to meet ends can therefore also be interpreted as the Lagrange multiplier of a household optimization problem, as it indicates the gain in units of the objective function following a relaxation of the constraint by one unit. And as in the household optimization problem, the objective function is the utility function, the ability to meet ends obtains a welfare interpretation.

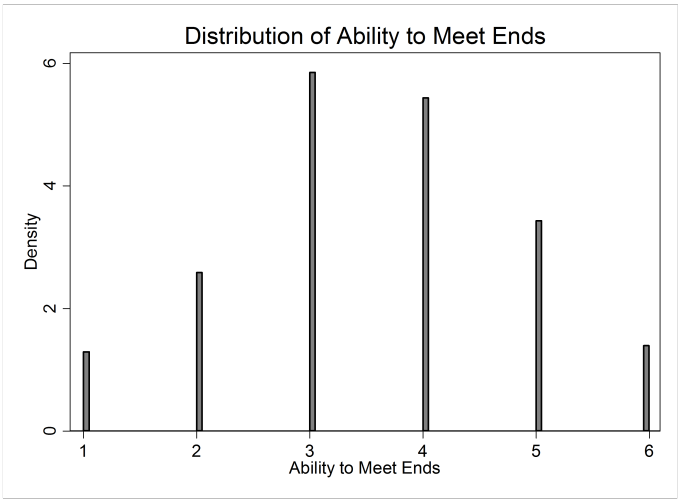
Figure 2: ECHP



The key assumption in this setup is that a household's assessment of its ability to meet ends incorporates information of both, the mean and the standard deviation of the consumption process. Hence, when a household states that it is very difficult to meet the ends of its balance sheet, this can be due to a low average consumption but also due to an unexpectedly low realization of consumption in the current period.

Using the ability to meet ends as a measure of the impact of income shocks on households in a risk sharing framework is an innovation to the literature. Normally, the degree of consumption risk sharing is measured based on the covariation of consumption with another aggregate. Hence, the variation in consumption is calculated based on a monetary measure, such as a time series

Figure 3: EU-SILC



of consumption expenditures. Here, eventually, one ends up with a figure that exactly tells how high and volatile consumption is. However, it is difficult to believe that all households share the same underlying utility function and thus measures for risk sharing currently used in the literature are based on a very strong assumption. An example may illustrate the argument: Let a set of households suffers a negative income shock. Then using a consumption volatility figure based on a monetary measure indicates the same drop of utility for all households. However, this way of proceeding does not provide information about the actual disutility that households suffer from making an adjustment in either the income dependent consumption part or in net savings. Hence, it is implicitly assumed that the disutility of a reduction in these two variables is the same across households. Instead, this paper argues that the assumption of constant utility is highly questionable as the household may first cut purchases that get assigned only little value by its members. Hence, the disutility arising from these (initial) cuts may be rather small, while for stronger cuts, the disutility may be larger. By using the subjective assessment of a household's ability to meet ends, the measure is much closer to the theoretical concept of utility - the dimension economics actually cares about.

The sample distribution of the ability to meet ends across all households, countries, and time periods is shown in Figure 2 for the ECHP dataset and in Figure 3 for the EU-SILC dataset. It turns out that the ability to meet ends has a substantial variation across households in both samples. In addition, it can be seen that in both datasets the majority of the probability mass centers around values of 3 and 4 and only a small amount of households has answered using the extreme values of 1 and 6. This reinforces the credibility of the measure, as one potential concern with it would be that wealthier households may potentially be able to finance their consumption expenditures very well and hence may be entirely insensitive to current income fluctuations. In terms of the ability to meet ends measure, this would be indicated by a substantial amount of "wrongly assigned" 6-values, as this number represents the highest possible answer option. However, assuming that some of the 6-values are indeed true, according to Figures 2 and 3 , the number of ability to meet ends values that have potentially been cut off seems to be very small.

3.3 Financial Integration Dynamics

This subsection presents the developments in the key measures of financial integration in Europe on which the econometric specifications in Sections 4 and 5 build. It starts by presenting the developments of the measures of financial integration over time. Financial integration is in this paper is primarily defined in *de facto* terms and measured by cross-border asset and liability holdings taken from Lane and Milesi-Ferretti (2007). In the original database, there are five different capital classes: FDI, portfolio equity, portfolio debt, financial derivatives, and other investments, which comprise mainly bank loans. The categories that are most closely related to the theoretical literature on consumption risk sharing are portfolio equity assets as "contingent claims" and portfolio debt and other investments as "riskless assets". For the empirical analysis, the categories of FDI flows are not considered separately, as such flows are rarely related to households directly. In addition, the category of financial derivatives is excluded from the empirical analysis as it is not available for several countries over substantial parts of the sample. These categories are only included in the sum of all assets and all liabilities in percent of GDP, the so called Gross Financial Integration measure, which is used in the analysis. For the empirical analysis, each of the four remaining capital classes is then divided into assets and liabilities and included separately. Here, also the category of equity liabilities is excluded as it exhibits very large outliers for some of the countries that are probably due to mergers and acquisitions in the firm sector.

Figure 4: Financial Integration: 1994-2007

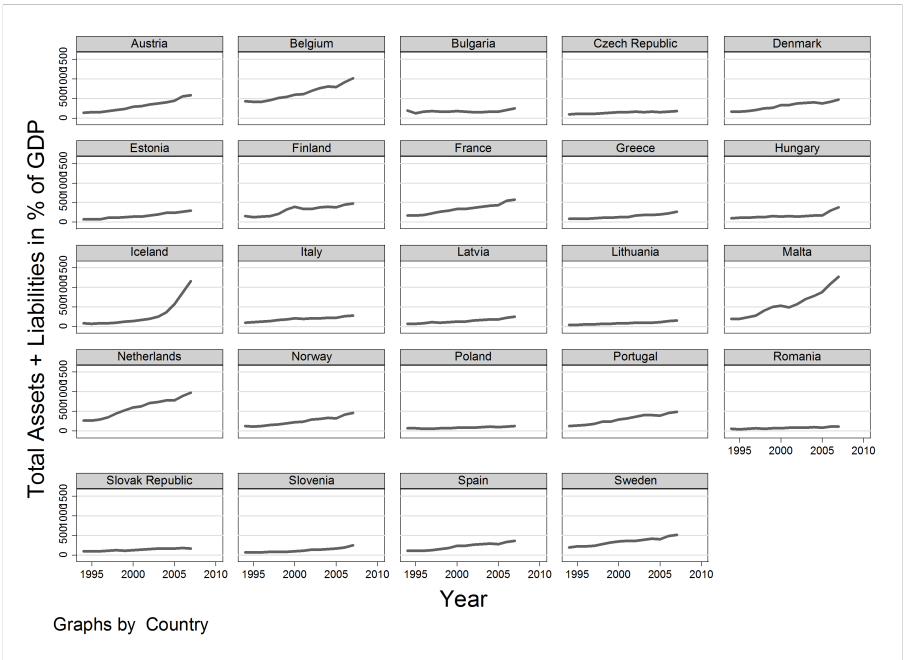


Figure 4 plots the measure of Gross Financial Integration, i.e. the sum of assets and liabilities in percent of GDP, across countries and time. It can clearly be seen that the measures trends up

on average. However, the dynamics of this upward trend are highly heterogeneous across countries. While in the first part of the sample, countries such as the Netherlands and Belgium show relatively strong increases, the Mediterranean countries, Greece, Portugal, Spain, and Italy show much smaller levels and more modest dynamics. In the second part of the sample, the measure picks up especially for Iceland and Malta. The countries Luxembourg and Ireland are not even included in the figure as both serve as money centers and hence, the dynamics of their Gross Financial Integration measure is so strong that they cannot be considered in the empirical analysis.

Examining the composition of assets and liabilities (not shown here), it turns out that more integrated countries rely on a more balanced mix of capital classes, including significant amounts of portfolio equity assets. The less integrated countries however, which can especially be seen in the case of Greece, rely largely on portfolio debt liabilities.

4 Methodology

The following section consists of two subsections. The first subsection motivates the empirical specification and outlines its extensions. The second subsection then describes the data preparation in greater detail and additionally presents descriptions and sources of the variables used in the empirical analysis.

4.1 The Empirical Specification

The empirical specification is essentially a test for consumption smoothing. It is examined how the individual household is affected by the uncertainty about its labor income process over time. Studies in the literature so far have examined the effect of consumption smoothing by relating the variation of consumption growth to the time mean of income growth (see Asdrubali and Kim, 2008 for example). Given the different nature of the ability to meet ends measure, the standard approach of consumption smoothing cannot be implemented here. Instead the following approach is taken. Throughout the paper, labor income uncertainty over time is measured by taking the logarithm of the standard deviation of labor income for each household, over all seven available years of data. The result is a household-specific measure of labor income uncertainty that is constant over time. Although in theory, the concept of uncertainty may refer to the labor income uncertainty over the life cycle, the presence of only seven years of data in the ECHP dataset and even less in the EU-SILC shifts the focus more to a medium-term uncertainty. The purpose of the baseline specification is to quantify the impact of this labor income uncertainty on welfare of households:

$$abtme_{i,r,c,t} = a_{i/r/c} + a_t + \beta_1 \ln y^T_{i,r,c,t} + \beta_2 \ln m_t(y^L_{i,r,c,t}) + \beta_3 \ln sd_t(y^L_{i,r,c,t}) + \beta_4 X_{i,r,c,t} + \varepsilon_{i,r,c,t} \quad (4)$$

The left-hand side, and thus the welfare measure, is represented by the ability to meet ends, $abtme_{i,r,c,t}$, varying over household i, all higher aggregates such as region r and country c, as well as over time t. As described in section 3, it is assumed that the left-hand side variable incorporates the assessments of the mean and the variance of the consumption process and therefore enters here in levels. The impact of the above described labor income uncertainty - represented by $\ln sd_t(y^L_{i,r,c,t})$, the logarithm of the standard deviation of labor income over time - on household's welfare is given by the coefficient β_3. Keeping all other factors constant, from theory, one would expect

households to have a lower utility when labor income uncertainty is high and therefore β_3 to be negative. As the standard deviation of labor income increases in the mean of the income process, also the logarithm of the household-specific time-mean of labor income, $\ln m_t(y^L_{i,r,c,t})$, is added and its impact is captured by coefficient β_2. It should be noted that in both cases, the logarithm of the mean and the standard deviation is taken and not the mean and the standard deviation of log-income is computed. At a first glance, this way of proceeding seems to differ from other studies in the literature that all take the logarithm of income. However, this difference arises from the above mentioned modification of the standard approach. The rationale behind this way of proceeding is that computing the standard deviation from the labor income data in levels fully takes into account all shocks to the household as they appear. Taking instead the logarithm first and then computing mean and standard deviation, would artificially smooth the income process - a route that should not be followed when the response of households to income shocks is examined. To nevertheless obtain an approximately normal distribution of the means and standard deviations of labor income in the regressions, the logarithm is taken afterwards and thus strong outliers in both moments along the cross-sectional distribution of households are discounted.

In addition, several control variables are added. To account for all level changes in the household-specific income process over time, the logarithm of total household income, which varies in the same way as the ability to meet ends, is added to the specification. Its impact is measured by β_1. Coefficient vector β_4 captures in addition the impact of two sets of additional control variables contained in vector $X_{i,r,c,t}$. While the first set of control variables is household-specific, the second one relates to the country-level. All variables contained in these sets are described in greater detail in the next subsection. Further, depending on the specification, fixed effects for time a_t and the household or a higher geographical aggregate, such as the region or the country, $a_{i/r/c}$, are added to capture all period-specific and time-invariant effects that cannot be controlled for otherwise. In case household fixed effects are used, the coefficient β_3 cannot be identified separately as the labor income uncertainty variable is time-invariant and therefore taken up by the fixed effects.

Following the baseline specification, the next specification assesses the broad impact of financial integration at the country-level on the consumption smoothing abilities of the average household:

$$\begin{aligned} abtme_{i,r,c,t} &= a_{i/r/c} + a_t + \beta_1 \ln y^T_{i,r,c,t} + \beta_2 \ln m_t(y^L_{i,r,c,t}) + \beta_3 \ln sd_t(y^L_{i,r,c,t}) + \beta_4 X_{i,r,c,t} \\ &\quad + \beta_5 FI_{c,t} + \beta_6 \ln sd_t(y^L_{i,r,c,t}) \times FI_{c,t} + \varepsilon_{i,r,c,t} \end{aligned} \tag{5}$$

To determine the impact of financial integration, an interaction term of household-specific labor income uncertainty and financial integration at the country-level is added. The corresponding coefficient β_6 will now capture the differential effect of the standard deviation of labor income on the ability to meet ends depending on the degree of financial integration in the country of residence. This effect is supposed to be positive and thus should counterbalance the negative level effect of labor income uncertainty. To obtain unbiased coefficient estimates, also the level term of financial integration is added and measured by the coefficient β_5. The total marginal effect of labor income uncertainty on the ability to meet ends can now be calculated by differentiating Equation 5 with respect to labor income uncertainty. The resulting marginal effect is then given by:

$$\frac{\partial abtme_{i,r,c,t}}{\partial \ln sd_t(y^L_{i,r,c,t})} = \beta_3 + \beta_6 FI_{c,t} \tag{6}$$

A higher level of financial integration in a country should help to insure its residents against fluctuations in individual labor income over time. If there is perfect consumption smoothing in a

country with financial integration, one would expect the marginal effect of labor income uncertainty in Equation 5 even to become insignificant.

As the use of household data brings the advantage to examine the strength of these effects across different types of households, the next specification breaks down the country-wide effect of financial integration on labor income uncertainty according to household-specific characteristics. Loosely speaking, the household characteristics are targeted to capture the household's exposure to the country-level financial integration variable or to financial markets in general. All household characteristics are designed as dummy variables taking on the value of 1 when the household may profit more from financial integration and being 0 in all other cases. To take such heterogeneity of the marginal effect of labor income uncertainty across households into account, Equation 5 is augmented by an interaction with the household-specific dummy variable:

$$\begin{aligned} abtme_{i,r,c,t} &= a_{i/r/c} + a_t + \beta_1 \ln y^T_{i,r,c,t} + \beta_2 \ln m_t(y^L_{i,r,c,t}) + \beta_3 \ln sd_t(y^L_{i,r,c,t}) + \beta_4 X_{i,r,c,t} \\ &\quad + \beta_5 FI_{c,t} + \beta_6 HH_{i,t} + \beta_7 \ln sd_t(y^L_{i,r,c,t}) \times FI_{c,t} + \beta_8 \ln sd_t(y^L_{i,r,c,t}) \times HH_{i,t} \\ &\quad + \beta_9 FI_{c,t} \times HH_{i,t} + \beta_{10} \ln sd_t(y^L_{i,r,c,t}) \times FI_{c,t} \times HH_{i,t} + \varepsilon_{i,r,c,t} \end{aligned} \tag{7}$$

The resulting setup is shown in Equation 7. The core term of this specification is the triple interaction in the third row, measured by β_{10} and comprises the differential effect of the interaction term of labor income uncertainty, financial integration, and the newly introduced exposure of households to financial integration, measured by $HH_{i,t}$. To account also for all lower level interactions, β_3, β_5, and β_6 capture the effects arising from the level terms of the three variables, keeping all modifying variables equal to zero. The triple interaction requires further including three double interactions. The first double interaction resembles the interaction term shown in Equation 5 and is captured by coefficient β_7. However, in opposite to the previous case, β_7 only measures the interaction effect of labor income uncertainty and financial integration when the dummy for household exposure to financial integration is equal to zero. Similarly, coefficient β_8 measures the interaction effect of labor income uncertainty and the dummy for household exposure to financial integration for financial integration being equal to zero. Eventually β_9 measures the interaction effect of financial integration and the dummy for household exposure to financial integration, when labor income uncertainty is equal to zero. Especially the latter two terms show intuitively the importance of calculating the marginal effect of labor income uncertainty as both labor income uncertainty and financial integration will not be zero in the present sample and thus the isolated interpretation of the coefficients does not make any sense. The corresponding total marginal effect of labor income uncertainty is now obtained by differentiating Equation 7 with respect to labor income uncertainty.

$$\frac{\partial abtme_{i,r,c,t}}{\partial \ln sd_t(y^L_{i,r,c,t})} = \beta_3 + \beta_7 FI_{c,t} + \beta_8 HH_{i,t} + \beta_{10} FI_{c,t} HH_{i,t} \tag{8}$$

Hence, the total marginal effect of labor income uncertainty on the ability to meet ends depends in two ways on the country-level effect of financial integration as well as in two ways on the household-specific characteristics: through their respective double interaction terms as well as through the common triple interaction term.

4.2 Dataset Preparation and Variable Construction

4.2.1 Preparation of Datasets

This section is dedicated to the preparation of the datasets and the construction of the variables used in the empirical analysis. It gives a short overview over the data work required for the analysis. A more detailed picture with all required steps of the data preparation and the construction of the variables is documented in the corresponding Online Appendix to this paper.

The ECHP is an unbalanced panel dataset following individuals and households for up to eight years. As the dataset has been constructed several years ago, data quality is relatively high and the dataset is already very clean. Therefore, only minor adjustments have to be made in the data.

The EU-SILC dataset covers the more recent years and is available in two different formats: In a cross-sectional format, consisting of a set of repeated cross-sections and in a longitudinal format, in form of a rotating panel in which survey units usually remain up to four years. This analysis uses the longitudinal format. Latter one is a rotating panel that is organized in different waves. Each wave usually contains data on households and individuals over a period of four years. This paper uses the waves 2007, 2008, and 2009 that cover a time period from 2004 to 2009. All waves exhibit the same labelling of variables. In the EU-SILC dataset, a more substantial number of adjustments has to be made. Latter ones are outlined in great detail in the Online Appendix.

In the next step, income variables are made comparable across countries and time. This is achieved by converting income variables to *Constant Purchasing Power Parity Per Capita Units*. While deflating the series makes the income variables independent of time, the subsequent Purchasing Power Parity (PPP) conversion ensures in addition a comparability across countries. The conversion process starts by converting all income variables to national currencies. The newly obtained series is then deflated using a GDP deflator in national currency from the April 2012 version of the World Economic Outlook (WEO) database. To apply the GDP deflator to the income series, one additional step has to be made. As GDP deflator series differ in their base years, for each of the datasets a common base year is selected and all price indices are rebased accordingly. For the ECHP, the year 2000 and for the EU-SILC, the year 2007 are selected as corresponding base years. Once the income variables have been deflated with the rebased price indices, the real income variables are converted in constant PPP units with the PPP weights of the base year. All PPP weights are delivered by Eurostat. To eventually account for different household sizes, the income values in constant PPP units are then divided by the household size to get per capita values. For the ECHP dataset, the measure of equalized household size is based on the OECD, modified scale. For the EU-SILC dataset, the (not further specified) variable HX050, *equalised household size*, that is delivered in the User Database of the EU-SILC dataset by Eurostat is used.

Further, it should be noted that in both datasets, the questions on all income variables relate to the "year prior to the survey". Hence, in both datasets, the income variables have to be forwarded by one year leading to the unfortunate situation that the last year for each household cannot be used in the empirical analysis. It should also be mentioned that the fact that income in the original data is recorded with a one year lagged is taken into account in all previously described deflation and conversion procedures.

Finally, to ensure a reasonable outcome of the income conversion processes, the constant PPP per capita household income values derived from the ECHP and the EU-SILC datasets are in addition compared with GDP data from the WEO database. Unfortunately, the WEO database does not contain constant PPP values of GDP per capita, hence instead the series for GDP per capita

in current PPP units as well as the series of GDP per capita in US Dollars (converted to Euros with annual average exchange rates) are used for a comparison. Although it turns out that there are slight differences in the two data sources (besides the fact that the household data accounts for inflation dynamics, additional differences are most likely arising from the fact that the GDP concepts also contain income to non-households), the differences are generally small and of systematic nature across countries and time. Hence, after all income modifications, the time variation and the relative country ranking in the constant PPP per capita household income variables seems to be highly in line with independently collected external data.

Then, a household head for each household is determined to get a reference point for individual-specific control variables as well as in case of the ECHP dataset, the occupational sector in which the main earner of the household is active. There are three reasons why an analysis on the household is preferable to one at the individual level. First, the dependent variable is measured at the household level and thus also the income variables should be taken from here. Second, some control variables are individual-specific and thus they may ideally be represented by a single person in the household (in some cases it is difficult to average them). Third, the members of the household may optimize their income generating process by specializing in certain tasks and thus their income may not represent their true efforts.

An individual can only become household head if it remains within a household over the entire sample length. For all individuals that fulfil this requirement, the following additional criteria have to be met. First, an age limitation is set. For the ECHP, individuals older than 17 and younger than 83 years are considered as here age is top-coded from 83 onwards. For the EU-SILC dataset, individuals older than 17 and younger than 73 years are considered, as here the top-coding takes place at 73 years. Second, in both datasets, households of these individuals need to have several key variables non-missing in all "relevant periods" (for the definition, see below). These variables comprise the ability to meet ends, equalized household size, total income, and labor income. In addition, the empirical analysis considers only households with a total annual income of more than 100 constant PPP per capita units and a labor income greater than zero. Although restricting the sample to only complete records with positive labor income causes a substantial number of observations to drop from the sample, it ensures that results are not driven by the sample selection, as well as that means and standard deviations can be computed over non-zero values and a minimum number of periods. Hence, a balanced sample in the key variables is preferable.

Finally, the number of "relevant periods" for each country is determined. In the ECHP dataset, most countries are covered over the entire sample period 1994-2001 (or 2000 when the income forwarding is considered). There are three exceptions however: Austria and Luxembourg are available from 1995 onwards and Finland is available from 1996. As the number of countries in the ECHP dataset is already relatively small, the three countries are allowed to enter at their respective starting points and thus the number of relevant periods in these cases is slightly smaller.

In the EU-SILC dataset, households are present for 4 years (or 3 years when the income forwarding is considered) within the period from 2004-2009 (or 2008 when the income forwarding is considered). To allow for the largest possible number of households from each country, in the EU-SILC case, the consecutive presence over 3 year (or 4 years respectively) is sufficient. Due to their functions as money centers in Europe and their resulting incomparably high financial integration measures, Luxembourg and Ireland are excluded from the analysis. For most specifications, this leaves 17,625 unique households from 11 countries in the ECHP and 31,162 from 22 countries in the

EU-SILC for the analysis. In the robustness section, also Cyprus, Iceland, and Malta are excluded from some of the specifications in addition.

4.2.2 Construction of Variables

It follows a short description of the variables used in the empirical analysis. The summary statistics of all right-hand side variables are depicted in the Tables 6 and 7 in the Appendix:

Ability to Meet Ends: For a more detailed description, see also section 3.2. Based on HF002. The variable enters in its original form.

Total Income: Total income is the sum of all income components of a household. It is based on HI100 and has been modified in the same way as all income variables. The logged values of the variable have been winsorized at the 0.5 percent level on both sides.

Mean of Labor Income: The mean of labor income is the time mean of HI110 for each household. HI110 has been modified as all income variables. The logged values of the mean have been winsorized at the 0.5 percent level on both sides.

Standard Deviation of Labor Income/Labor Income Uncertainty: The standard deviation of labor income is the standard deviation of HI110 over time, computed for each household. HI110 has been modified as all income variables. The logged values of the standard deviation have been winsorized at the 0.1 percent level on both sides. Plotting these values in the cross-sectional dimension (i.e. each household is represented by one standard deviation) yields a distribution that is approximately normal. Figures 5 and 6 verify this by plotting the cross-sectional distribution of the standard deviations of labor income in logs for both datastes against the normal distribution as a benchmark (indicated by the black line).

Figure 5: ECHP

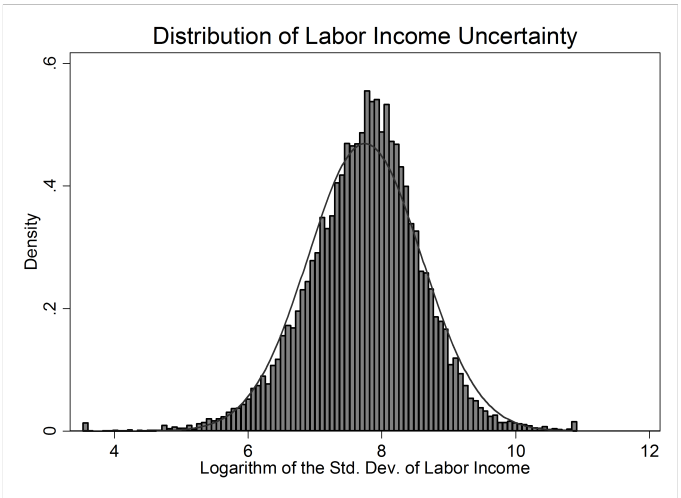
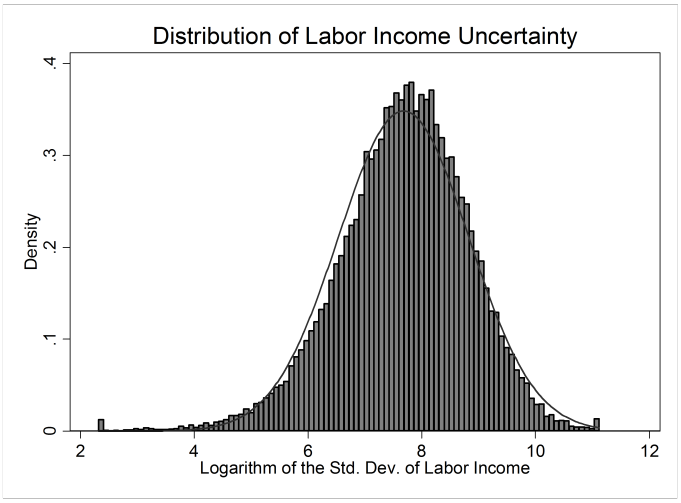


Figure 6: EU-SILC



Household Controls: The following household controls are included in all regressions: a) The age of the household head. b) The age variables squared. c) A dummy variable for being married. d) A dummy variable indicating a bad health status. e) In addition, for the ECHP dataset, a dummy for being self-employed is used. This variable is not available in the EU-SILC dataset. As however, the share of self-employed workers in the ECHP dataset is relatively large (about 20 percent) and self-employment may come in line with a different attitude towards the evaluation of the personal ability to meet ends, the dummy for self-employment is included in the ECHP dataset nevertheless. Further, all specifications that use cross-sectional variation also include g) a dummy variable for the household head being male and h) a dummy for higher education.

Country Controls: To control for alternative explanations to financial integration and other long-term trends on the country-level that are not captured by the fixed effects, four country-level controls are added to the specification. It has been noted in the theoretical (e.g. Kraay and Ventura, 2002) and the empirical (e.g. Imbs, 2006) literature that trade integration can improve consumption risk sharing. To control for trade integration, the sum of exports and imports to GDP are added. The corresponding variable is taken from the Penn World Tables, Version 7.0. A second trend that may affect risk sharing is (local) financial development of a country. The literature frequently uses the ratio of private credit to GDP as a corresponding measure. However, as facilitating the provision of credit is one of the channels through which financial integration may affect households, it should not be kept constant while assessing the effect of financial integration on a household's ability to meet ends. Instead, stock market capitalization in percent of GDP from Beck, Demirgüç-Kunt, and Levine (2000) is used. Although, after including this variable, the effects of financial integration through stock market development cannot be identified anymore, stock market capitalization seems to be preferable to the broader credit measure. Eventually, one would like to control for real and monetary policies that may change over the business cycle in addition. To capture the first effect, the unemployment rate is included, to capture the second effect, the inflation rate is used. Alternatively, one also could have included the interest rate,

however, this would have kept another potential channel of financial integration constant. Both, the unemployment rate and the inflation rate are taken from the WEO Database, September 2011.

Measures of Financial Integration: As the household datasets do not contain information on asset holdings, the measures of financial integration have to be taken from the most closely related entity for which data is available, which is the country-level. This also counterbalances the concern that reverse causality may arise from the fact that households with a higher ability to meet ends are more likely to hold foreign assets and thus a country may be more financially integrated. Using financial integration data on the country-level, it is literally impossible that a household can have any influence on it. As there are no existing *de jure* measures that provide a sufficient differentiation between European countries, this analysis relies entirely on *de facto* measures of financial integration. I use four different types of financial integration measures:

First, a broad set of quantitative de facto measures from Lane and Milesi-Ferretti (2007) is used. The core measure comprises gross financial integration and thus the sum of total foreign assets and total foreign liabilities in percent of GDP. In addition, the measure is disaggregated by capital class (FDI, portfolio equity, portfolio debt, other investments) and balance sheet side (assets and liabilities) and all components are used separately.[5] Note that from now on, the category of "Other Investments" will be referred to as "Bank and Other Assets/Liabilities". It should also be noted that the Lane and Milesi-Ferretti measures comprise assets and liabilities from all sectors of a country and thus, including the firm and the government sector as well. There are some data restrictions related to these measures however. The last available value is for 2007 which reduces the sample length by one year. In addition, for several measures, there is no data available for Greece, especially during the ECHP period. Hence some specifications rely on a slightly smaller number of countries.

Second, a quantitative measure of household asset holdings is used. As the paper is primarily concerned with asset holdings of private households, I follow Becker and Hoffmann (2010) and include household asset holdings of investment funds in addition. Although there is no information on the investment pattern of such funds, the authors argue that investment funds are the most diversified asset class and thus such a measure would capture the expected effects from financial integration best. As the arguments and variables used in Becker and Hoffmann (2010) refer to Italy, I use alternatively investment fund shares of households in percent of GDP provided by the OECD. The investment fund shares are only available from 1995 onwards and hence, the sample length is slightly reduced also here.

Third, a price-based measure of financial integration is used. Since advanced countries account for a potentially large share of world output, theory suggests that their optimal foreign capital exposure to the rest of the world may be lower than for developing countries. Hence, quantitative measures may underestimate the true degree of financial integration, especially in large advanced countries. Although there is no European country that captures a substantial share of world output and thus, the problem seems to be not severe in the present case, for robustness, a price-based measure of financial integration is used in addition. I follow Jappelli and Pistaferri (2011) who use 10-year bond yield spreads of Italian over German government bonds. To expand the measure to the European dataset, I compute for each country in the dataset the spread of the 10-year national government bond yield to the German 10-year government bond yield, taken from Eurostat.

[5] An exception is portfolio equity where only the asset side measure is used in the analysis as the liability side measure is theoretically less appealing and in addition seems to be heavily affected by outliers.

Finally, for the EU-SILC dataset, an additional set of measures can be used. As the above mentioned investment fund shares do not incorporate information on the eventual allocation of assets between countries, for the recent years, a more informative measure can be computed in addition. As the OECD also provides information on asset allocations of investment and pension funds with regard to domestic and foreign assets, latter ones are weighted by the above mentioned investment fund shares. The result is a composite index of foreign equity asset holdings by households via investments funds .

Measures of Household Exposure: To capture the heterogeneity among households with respect to the impact of financial integration in specific and with respect to financial markets in general, the following household-specific exposure variables are used in the interaction terms: Six specifications with variables that are identical in both datasets: A dummy variable taking on the value of 1 when the household owns a house, a similar variable capturing ownership of a car, and a third dummy variable being equal to 1 when the household has a mortgage debt. The three remaining variables are based on income measures. A first one taking on the value of 1 when the household receives capital income, a second one when the household is in the top 50 percent quantile of total income, and a third one taking on the value of 1 when the household is among the top 10 percent income receivers in the sample. Eight variables only present in the ECHP dataset: A dummy variable taking on the value of 1 when the household has saved based, a dummy variable being equal to 1 when the household has a consumer debt, and two dummy variables indicating whether the household head is working in the "Financial intermediation" or the "Real estate, renting and business activities" sector. Further, there is a dummy being equal to 1 when the household head is working in a local firm unit with more than 50 employees and a dummy variable capturing the position of the household head in terms of job hierarchy. Finally, a dummy variable assessing whether the household owns a second house and also the previously mentioned self-employment dummy is considered in the interaction terms. Two specifications with variables only present in the EU-SILC: A first one that takes on the value of 1 if a household owns a computer and a second dummy variable that takes on the value of 1 when the household has the capacity to face unexpected expenses.

5 Results

The result section presents the results of the empirical specifications for both of the datasets in parallel. First the negative impact of a labor income uncertainty on the ability to meet ends is documented. Then, the role of financial integration in reducing this negative impact is examined with respect to the average household in a country. Eventually, the impact of financial integration is split up across the distribution of households by differentiating households according to their potential exposure to financial integration. The main econometric analysis is followed by a robustness section and a general discussion of the results.

5.1 The Impact of Financial Integration on Labor Income Uncertainty

5.1.1 The Baseline Specification

First, the baseline specification based on Equation 4 is considered to deliver an estimate of the negative impact that labor income uncertainty has on a household's ability to meet ends. The key results for both the datasets are summarized in Table 1. Corresponding complete tables containing all control variables for each of the datasets can be found in the Appendix (see Table 8 for the ECHP and Table 9 for the EU-SILC).

Based on Equation 4, which was flexibly written down in terms of time and household/ regional/ country fixed effects, a series of six different baseline specifications for each of the datasets is estimated. In all of them, the *Ability to Meet Ends* is regressed on *Total Income*, the household-specific (time-) *Mean of Labor Income*, and the key variable of interest, the household-specific *Standard Deviation of Labor Income*, as well as household and country controls as explained in the previous section.

While specification (1) is does not contain any fixed effects, specifications (2)-(6) include different types of fixed effects in addition. For specification (2), the fixed effects are time fixed effects with the intention to capture all unobserved heterogeneity that is related to a specific year. Specification (3) combines time and country fixed effects and thus captures unobserved heterogeneity on the country-level and in the time dimension. Specification (4), then replaces the country aggregate with regional fixed effects, based on a combination of NUTS level 1 and 2 regions in Europe. As some of the countries do not provide geographical information for their households, the number of observations is somewhat lower here. Specification (5) then continues to contain time fixed effects but in addition, assumes household-specific random effects. However, as the assumption of randomness may not be justified, specification (6) assumes the household-specific effects to be deterministic. As this corresponds to a within estimator and only allows the inclusion of variables that vary over time, the *Mean* and the *Standard Deviation of Labor Income* cannot be identified in this framework. Also the gender dummy (*Dummy for Being Male*) and the education dummy (*Dummy for Higher Education*) are excluded from this specification as both are time-invariant.

Each of the specifications also reports the number of observations, the number of unique household IDs, and the number of countries. Also the corresponding R^2 measure is reported. The stars on the coefficients indicate the level of significance (* = 1%, ** = 5%, and *** = 10%) and the values in brackets under each coefficient indicate the corresponding p-values of a t-test for insignificance.

Most of the six specifications in the ECHP are based on 119,531 observations, 17,625 households, and 11 countries and in the EU-SILC on 93,486 observations, 31,162 households, and 22 countries. Differences appear in specification (4) where information on the region in which the household lives is not available for all countries (hence, slightly less observations) and in specification (6) where time-invariant variables are excluded (hence, slightly more observations). The corresponding R^2 measures are similar across the datasets and vary in similar ways across specifications. The R^2s range between 0.32 and 0.40 when between variation is considered and between 0.01 and 0.02 when within variation is considered.

Turning to the interpretation of the coefficients, the two datasets deliver remarkably similar results. Starting with an examination of significance and signs of the household and country controls (see Tables 8 and 9), it turns out that nearly all control variables are highly significant and have the expected sign. Being male, married, more educated or self-employed increases the ability to meet ends, while having bad health reduces latter one. The coefficient for the age impact is dependent on the level of age, leading to an increases in the ability to meet ends for high age values. Also

Table 1: Baseline Specification

Top Panel: ECHP

Dependent Variable: "Ability to Meet Ends"	(1)	(2)	(3)	(4)	(5)	(6)
Total Income	0.437***	0.449***	0.441***	0.432***	0.266***	0.194***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Mean of Labor Income	0.498***	0.471***	0.438***	0.425***	0.636***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Std. of Labor Income	-0.036***	-0.036***	-0.037***	-0.034***	-0.028***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Time Fixed Effects	No	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	Yes	No	No	No
Regional Fixed Effects	No	No	No	Yes	No	No
Random Effects	No	No	No	No	Yes	No
Household Fixed Effects	No	No	No	No	No	Yes
Observations	119,531	119,531	119,531	108,695	119,531	121,659
HH IDs	17,625	17,625	17,625	16,077	17,625	17,929
Countries	11	11	11	10	11	11
R-squared	0.32	0.33	0.35	0.33	0.32	0.02

Bottom Panel: EU-SILC

Dependent Variable: "Ability to Meet Ends"	(1)	(2)	(3)	(4)	(5)	(6)
Total Income	0.422***	0.424***	0.503***	0.493***	0.228***	0.067***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Mean of Labor Income	0.341***	0.328***	0.320***	0.322***	0.462***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Std. of Labor Income	-0.011**	-0.014***	-0.032***	-0.029***	-0.019***	
	(0.04)	*(0.01)*	*(0.00)*	*(0.00)*	*(0.00)*	
Time Fixed Effects	No	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	Yes	No	No	No
Regional Fixed Effects	No	No	No	Yes	No	No
Random Effects	No	No	No	No	Yes	No
Household Fixed Effects	No	No	No	No	No	Yes
Observations	93,486	93,486	93,486	81,825	93,486	94,515
HH IDs	31,162	31,162	31,162	27,275	31,162	31,505
Countries	22	22	22	19	22	22
R-squared	0.33	0.34	0.40	0.39	0.33	0.01

the country controls have the expected signs. A higher stock market capitalization and a higher degree of trade integration lead to an improvement of the ability to meet ends and a higher inflation or unemployment rate lead to a reduction. The only unexpected result is a gender dummy that insignificant in most of the specifications in the ECHP dataset. This implies that the gender of the household head does not matter for the ability to meet ends. This in turn could potentially give rise to the interpretation that within-family risk sharing is working relatively well.

Moving on to the coefficients of the key variables, coefficients β_1 and β_2 are positive in all cases as expected (all coefficients are depicted in Table 1 as well). Hence, *Total Income* and also the household-specific *Mean of Labor Income* have the anticipated positive signs indicating that higher income - in each period but also a higher labor income over the sample - lead to a higher ability to meet ends.[6]

The core interest however lies in the significance and the sign of coefficient β_3. This coefficient represents the effect of the *Standard Deviation of Labor Income* on the *Ability to Meet Ends*. According to economic theory, one would expect that a household suffers from a utility reduction when the uncertainty in its income process, represented by the standard deviation of labor income, increases. And indeed, the results show that coefficient β_3 is highly significant (i.e. at the 1 percent level) and negative in all specifications in which it can be identified. In the ECHP dataset, β_3 turns out to be very stable across specifications ranging from -0.028 to -0.037. In the EU-SILC dataset, coefficient β_3 is somewhat less stable ranging from -0.011 to -0.029. However, in all cases β_3 is negative and highly significant and the stricter the set of fixed effects becomes, the closer the magnitude gets to the one found in the ECHP dataset.

Hence, from this section, it should be taken away that labor income uncertainty has a negative effect on household utility and thus on welfare.

5.1.2 The Role of Financial Integration

After the baseline specification has been carried out, the role of financial integration in smoothing the negative effect of income uncertainty can now be examined. This section therefore deals with the estimation of Equation 5, which was introduced earlier. As the within estimator, i.e. the specification including household (and time) fixed effects is the most restrictive one, the subsequent analysis relies primarily on this estimator. The corresponding disadvantage is that time-constant variables have to be dropped from the regression and thus also the *Mean* and the *Standard Deviation of Labor Income* cannot be identified.

In the following, for both of the datasets, the same eight specifications will be estimated, each of them relying on a different measure of financial integration. The results are depicted in Table 2 for the ECHP and in Table 3 for the EU-SILC. In addition, for the EU-SILC dataset, a ninth specification containing the previously introduced composite index of foreign equity asset holdings of households as the financial integration variable is estimated. With the exception of the *Interest Rate Spread* specification, all specifications examine the effect of financial integration on the ability to meet ends via a reduction of the (negative) impact of labor income uncertainty. Thus, coefficient β_6, on the interaction term of labor income uncertainty and financial integration is expected to carry a positive sign. As, on the other hand, an increase in the spread over the German long-term interest

[6] It should be kept in mind that the logs of Total Income, the Mean of Labor Income and the Standard Deviation of Labor Income have been taken. For simplicity, this fact is often not mentioned separately in the remainder of the paper. However, the fact is taken into account when the coefficients of these three variables are interpreted.

rate is considered to be a reduction in financial integration, the interest rate spread specification is expected to carry an opposite sign on the interaction term.

It should also be noted that there is no data on some of the Lane and Milesi-Ferretti financial integration measures for Greece during the early years of the ECHP sample. Hence, Greek households are excluded from all *Portfolio Debt* and *Bank and Other* specifications in Table 2. Further, financial integration variables in the *Interest Rate Spread* specification and the *Investment Fund Shares* specification are not available before 1995 and thus the corresponding specifications only cover six years for most of the countries (the exception is Finland which is present for five years). As in the EU-SILC, the Lane and Milesi-Ferretti measures are only available until 2007, the requirement of a three years presence for each household is relaxed and replaced by a two years presence (the standard deviation of labor income has been calculated over three years nevertheless). During this period however, the measures are available for 22 countries. This is not the case for the *Interest Rate Spread* measure and the *Investment Fund Shares* measures which are available for most but not all countries.

The interpretation of the results is as follows. For simplicity, household and country controls are not reported in the tables and only the key terms of interest are depicted. These include the coefficients of *Total Income*, the level effect of financial integration (*Financial Integration*) and the interaction term of labor income uncertainty and financial integration (*Std. of Labor Income* x *Financial Integration*). As described above, the level term for labor income uncertainty is taken up by the household fixed effects. It should be noted that the financial integration variable changes in each specification and is described by the column header.

Turning to the interpretation of the coefficients, it can be seen that with the exception of some coefficients in the three last columns of Table 3, all coefficients have the expected sign and are highly significant: *Total Income* enters positively in all specifications and has a size equal to the coefficients seen in specifications (6) in Table 1. The level terms of financial integration lack a clear interpretation as they indicate the effect of financial integration on the ability to meet ends for a zero-value of labor income uncertainty, a condition that is not fulfilled in the sample.

The core interest lies on the interaction terms between labor income uncertainty and the various financial integration measures. It can be seen that all interaction terms involving the Lane and Milesi-Ferretti measures are positive. They comprise *Gross Financial Integration*, *Portfolio Equity Assets*, *Portfolio Debt Assets*, *Portfolio Debt Liabilities*, *Bank and Other Assets*, *Bank and Other Liabilities* - all in percent of GDP. This finding holds across both of the datasets and implies that more financial integration increases the ability to meet ends by reducing the uncertainty from labor income. As it has been shown that latter one reduces household utility, an increase in financial integration goes along with a welfare increase for the average household in a country. The same holds also for the *Investment Fund Shares* specification in the ECHP sample which contains a highly significant interaction terms that also carries a positive sign. This is not the case in the EU-SILC sample where the interaction term on the *Investment Fund Shares* has become insignificant. As there is no information contained in the investment fund shares variable where investment funds have made their investments, the use of the composite index that takes into account foreign equity asset holdings of households is preferable. Although insignificant as well, the p-value of 11 percent on the positive interaction term indicates that also this measure is in line with the other ones. Due to its different definition, the interaction terms in the price-based *Interest Rate Spread* measure specification is expected to have a negative sign. The reason is that a higher spread indicates a lower level of financial integration. As the coefficient on the interaction term in the *Interest Rate*

Table 2: The Impact of Financial Integration - ECHP

Dependent Variable: "Ability to Meet Ends"	Gross Financial Integration	Portfolio Equity Assets	Portfolio Debt Assets	Portfolio Debt Liabilities	Bank and Other Assets	Bank and Other Liabilities	Interest Rate Spread	Inv. Fund Shares of HH
Total Income	0.192***	0.192***	0.192***	0.193***	0.194***	0.194***	0.193***	0.175***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Financial Integration	-0.002***	-0.016***	-0.015***	-0.016***	-0.012***	-0.012***	0.095***	-0.024***
(see label)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Std. of Labor Income	0.000***	0.002***	0.002***	0.002***	0.002***	0.002***	-0.008***	0.002***
x Financial Integration	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Part. marg. effect, high FI	0.10***	0.05***	0.07***	0.08***	0.09***	0.13***	0.01***	0.03***
Part. marg. effect, low FI	0.04***	0.01***	0.02***	0.04***	0.05***	0.05***	0.00***	0.02***
Observations	121,659	121,659	110,081	110,081	110,081	110,081	121,659	107,062
HH IDs	17,929	17,929	16,275	16,275	16,275	16,275	17,929	18,069
Countries	11	11	10	10	10	10	11	11
R-squared	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

Table 3: The Impact of Financial Integration - EU-SILC

Dependent Variable: "Ability to Meet Ends"	Gross Financial Integration	Portfolio Equity Assets	Portfolio Debt Assets	Portfolio Debt Liabilities	Bank and Other Assets	Bank and Other Liabilities	Interest Rate Spread	Inv. Fund Shares of HH	Foreign Holdings of HH
Total Income	0.054***	0.052***	0.053***	0.055***	0.055***	0.054***	0.062***	0.063***	0.071***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Financial Integration	-0.002***	-0.011**	-0.020***	-0.008***	-0.004***	-0.006***	0.081	0.001	-0.037
(see label)	*(0.00)*	*(0.04)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.15)*	*(0.94)*	*(0.34)*
Std. of Labor Income	0.000***	0.003***	0.003***	0.001***	0.001***	0.001***	0.000	0.001	0.008
x Financial Integration	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.95)*	*(0.23)*	*(0.11)*
Part. marg. effect, high FI	0.12***	0.14***	0.17***	0.07***	0.05***	0.06***	0.00	0.02	0.03
Part. marg. effect, low FI	0.04***	0.01***	0.02***	0.01***	0.01***	0.02***	0.00	0.01	0.00
Observations	84,031	84,031	84,031	84,031	84,031	84,031	86,952	85,710	55,350
HH IDs	33,466	33,466	33,466	33,466	33,466	33,466	28,984	28,570	18,450
Countries	22	22	22	22	22	22	20	17	11
R-squared	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02

Spread specification is indeed negative and significant in the ECHP dataset, the interpretation that financial integration is welfare-increasing applies also here.

To obtain an better interpretation of the interaction terms, the total marginal effects of labor income uncertainty according to Equation 6 should be calculated. As the analysis is carried out with the within estimator, it is not possible to recover the value of coefficient β_3. Instead, for now only the positive part, the differential effect due to the presence of financial integration is examined. The resulting positive effect from the interaction term has to be considered as counterpart to the negative level effect of labor income uncertainty that was shown throughout all specifications in Table 1. In the following, the total marginal effect without the level term will be referred to as the "partial marginal effect". As the effect of labor income uncertainty differs depending on the level of financial integration, the partial marginal effect is evaluated at two different levels of financial integration. First, a low level of financial integration at the 25th quantile of the financial integration distribution is considered. Then, a high level of financial integration at the 75th quantile is considered. This analysis is carried out separately for both of the datasets. It should also be noted that the two percentiles and the sign of the coefficient for the *Interest Rate Spread* measure have been reversed to make it comparable to the other measures.

Tables 2 and 3 show the size of the partial marginal effects for each of the specifications in greater detail under the regression results (*Part. marg. effect, high/low FI*):

Partial marginal effect values range from 0.17 to 0. The upper bound effect emerges, when *Portfolio Debt Assets* in a highly financially integrated country in the EU-SILC dataset are considered. The lower bound effect shows up when in the same dataset a financially low integrated country is considered and the *Interest Rate Spread* measure or the *Foreign Equity Asset Holdings by Households* measure is used. This result is not surprising as firstly, one would expect a stronger effect in financially integrated countries than in less financially integrated ones. And secondly, one would expect the smoothing effect of *Portfolio Debt Assets* to be very effective in reducing the negative impact of labor income uncertainty.

5.1.3 The Impact of Financial Integration Across the Distribution of Households

Finally, the positive effect of financial integration on the average household is disaggregated along the distribution of households. Households are split according to 16 measures of household exposure with respect to financial integration into a low exposed group and a highly exposed group. In more general terms, this exposure to financial integration could be interpreted as an exposure of households to financial markets. To keep the analysis traceable, interpretation takes again mainly place via an evaluation of the marginal effects. The corresponding total marginal effects should be computed according to Equation 8. However, as again a within estimator is used to obtain coefficient estimates, only the partial marginal effects can be recovered and the negative level term of labor income uncertainty, coefficient β_3, cannot be examined. The partial marginal effects are presented in Tables 4 and 5 and should be weighted against the negative effect of labor income uncertainty again.

In all cases, the financial integration variable is represented by Gross Financial Integration in percent of GDP. [7] The variable capturing the exposure of households to financial integration varies across specifications and is each time explained by the column label. 16 different variables of household exposure are used. Six appear in the ECHP and the EU-SILC at the same time and

[7] The results using Equity Assets in percent of GDP as measure of financial integration are very similar.

Table 4: The Effect of Financial Integration Across Households I

Top Panel: ECHP

Dependent Variable: "Ability to Meet Ends"	House Owner Ship	Car Owner Ship	Capital Income Receiver	Mortgage Debt Holder	Top 50% of HH Income	Top 90% of HH Income
Triple Interaction	-0.000**	-0.000**	-0.000**	-0.000	-0.000*	-0.000*
	(0.01)	*(0.03)*	*(0.03)*	*(0.78)*	*(0.08)*	*(0.08)*
Part. marg. effect, high FI, high Exp.	0.20***	0.17***	0.12***	0.06**	0.14***	0.11***
Part. marg. effect, high FI, low Exp.	0.15***	0.16***	0.11***	0.06**	0.11***	0.11***
Part. marg. effect, low FI, high Exp.	0.16***	0.12***	0.08***	0.03	0.09***	0.08***
Part. marg. effect, low FI, low Exp.	0.06***	0.06***	0.05***	0.02**	0.04***	0.04***
Observations	121,532	118,751	121,659	80,663	121,659	121,659
HH IDs	17,910	17,513	17,929	11,890	17,929	17,929
Countries	11	11	11	11	11	11
R-squared	0.02	0.02	0.02	0.02	0.02	0.02

Bottom Panel: EU-SILC

Dependent Variable: "Ability to Meet Ends"	House Owner Ship	Car Owner Ship	Capital Income Receiver	Mortgage Debt Holder	Top 50% of HH Income	Top 90% of HH Income
Triple Interaction	0.000**	0.000	-0.000	-0.000	0.000**	0.000
	(0.04)	*(0.52)*	*(0.74)*	*(0.96)*	*(0.04)*	*(0.38)*
Part. marg. effect, high FI, high Exp.	0.12***	0.14***	0.14***	0.08**	0.15***	0.14***
Part. marg. effect, high FI, low Exp.	0.04	0.10**	0.12***	0.05	0.11***	0.12***
Part. marg. effect, low FI, high Exp.	0.03	0.06**	0.06***	0.05**	0.04*	0.04*
Part. marg. effect, low FI, low Exp.	0.01	0.03**	0.04***	0.02	0.03***	0.04***
Observations	84,007	83,965	77,222	60,401	84,031	84,031
HH IDs	33,457	33,459	30,370	24,476	33,466	33,466
Countries	22	22	18	17	22	22
R-squared	0.02	0.02	0.02	0.02	0.02	0.02

Table 5: The Effect of Financial Integration Across Households II

Top Panel: ECHP

Dependent Variable: "Ability to Meet Ends"	HH Saves	Consumer Debt Holder	Work in Banking Sector	Work in Real Estate Sector	Work in Large Firm	Work in Supervisory Position
Triple Interaction	-0.000**	0.000	0.000	-0.000	0.000	-0.000
	(0.02)	*(0.27)*	*(0.62)*	*(0.98)*	*(0.93)*	*(0.13)*
Part. marg. effect, high FI, high Exp.	0.18***	0.05***	0.17***	0.11***	0.10***	0.18***
Part. marg. effect, high FI, low Exp.	0.11***	0.06***	0.08***	0.08***	0.09***	0.13***
Part. marg. effect, low FI, high Exp.	0.14***	0.02	0.10	0.06	0.05	0.13***
Part. marg. effect, low FI, low Exp.	0.04***	0.03***	0.04***	0.04***	0.04***	0.05***
Observations	119,761	99,480	103,528	103,528	56,423	69,844
HH IDs	17,653	14,759	15,135	15,135	8,463	10,305
Countries	11	10	11	11	11	11
R-squared	0.06	0.02	0.02	0.02	0.02	0.02

Left Bottom Panel: ECHP, cont.

Right Bottom Panel: EU-SILC

Dependent Variable: "Ability to Meet Ends"	Work in Self-Employment	Owner of a Second House	HH Owns Computer	Deal With Unexp. Expendit.
Triple Interaction	-0.000*	-0.000	-0.000	0.000
	(0.10)	*(0.11)*	*(0.58)*	*(0.14)*
Part. marg. effect, high FI, high Exp.	0.09***	0.14***	0.14***	0.14***
Part. marg. effect, high FI, low Exp.	0.11***	0.10***	0.14***	0.09***
Part. marg. effect, low FI, high Exp.	0.06**	0.11***	0.06***	0.06***
Part. marg. effect, low FI, low Exp.	0.04***	0.04***	0.04***	0.03***
Observations	121,659	118,546	83,970	83,840
HH IDs	17,929	17,483	33,463	33,417
Countries	11	11	22	22
R-squared	0.02	0.02	0.02	0.05

comprise dummies for house and car ownership, as simple proxies for household wealth, dummies for capital income receipts, mortgage holdings, and dummies for being among the top 50 percent and the top 10 percent of the income distribution. Eight measures are available only in the ECHP and include work-related dummies for working in the financial sector, the real estate sector, being self-employed, the size of the local firm unit, and the job hierarchy. Additional variables comprise dummies for whether the household is able to save, holds consumer debt, or owns a second house. Finally, there are two variables only available in the EU-SILC dataset. Whether the household owns a computer and if the household can deal with unexpected expenditures.

The evaluation of the coefficients takes place via the computation of partial marginal effects again. In the case of double interactions, there were two different partial marginal effects, one effect for households living in highly financially integrated countries and one effect for households living in low financially integrated countries. By differentiating the effect of labor income uncertainty on the ability to meet ends according to household characteristics, there are now four different types of households and thus also four partial marginal effects: A first one for households residing in a country with high financial integration that are highly exposed to financial markets. A second one for households in a country with high financial integration that are less exposed to financial markets. A third one for households residing in a country with low financial integration that are highly exposed to financial markets. And a fourth effect for a household in a country with low financial integration that are less exposed to financial markets. The significance of the partial marginal effects is assessed via an F-test whose corresponding levels of significance are indicated through stars behind the partial marginal effect.

It turns out that in the majority of specifications, the first type reaches the most positive partial marginal effect. Exceptions are both kinds of debt indicators, work in self-employment, owning a computer and being among the top 10 percent in the income distribution in the ECHP dataset. The results are only surprising at the first glance. Regarding the interpretation of the debt variables, i.e. the dummy for mortgage and consumer debt, it should be noted that all households for which these dummy variables take on a value of 1 already have received a corresponding loan. Hence, a household owing a debt of any kind may not necessarily be better off in terms of making ends meet as the subsequent interest and payments and the repayment of the principle may weight heavier in the evaluation than the gains from not being financially constraint. This also implies that the frequently postulated first order effect of financial integration in facilitating the provision of credit to households may not be captured here. Only the second order effect that arises through a cheaper provision of credit may be included. Hence, the fact that the first of the four household types is not better off in at least one of the cases may not be contradicting the argument. Regarding the dummy for self-employment, it should be considered that firms of self-employed individuals may substantially differ in terms of size and revenue and thus a clear tendency in the strength of the effect of financial integration on the impact of labor income uncertainty may be washed out. In addition, using a dummy for owning a computer may be a relatively poor proxy for household wealth. Hence, also in the latter two cases, the similarity between type one and two is not be very surprising. Somewhat surprising, however, is the result for the dummy indicating that a household is part of the top 10 percent income earners in the sample. This finding implies that very high income households do not profit more than the bottom 90 percent households. In combination with the finding that being among the top 50 percent households in terms of income has still a positive differential effect, suggests that the majority of gains is not located in the very top of the income distribution.

A possible explanation for this finding may be that high income households from low financially

integrated countries may already have been able to ensure well against fluctuations in labor income, even though their country was not strongly integrated as a whole. Once integration takes place across the board, these households may face a situation where the exposure to world-wide investment demand depresses returns in the home country and additional foreign investments make households dependent on macroeconomic and financial conditions abroad. Both developments may therefore reduce welfare gains for this group of household in relative terms. This effect can be observed especially in the ECHP sample, where several of the triple interaction are negative and significant (the coefficients of the triple interaction terms are depicted separately in Tables 4 and 5). The effect seems to be less pronounced in the EU-SILC sample, where triple interaction terms become insignificant or in some cases even positive. It should nevertheless be noted that households more exposed to financial markets in financially more integrated countries still do better in absolute terms than all other types of households according to nearly all measures of household exposure.

Analogously, with the exception of the above mentioned specifications, households of type four are in all specifications worse off than the other types and thus suffer most from a negative labor income uncertainty. The finding that households of type four still have a positive partial marginal effect stems from the fact that also in this case, financial integration is measured with values from the 25th quantile of the financial integration distribution and thus also in this case, a certain level of financial integration is present in the country.

Regarding the relative ranking between types two and three, it turns out that the presence of financial integration may lead even for households with a low level of financial market interaction to an improvement in the negative effect of labor income uncertainty that is equivalent or in some cases even higher than those of households with a high financial market exposure in countries with low financial integration. This is a finding of high policy-relevance. It may be explained by indirect effects of financial integration that are documented prominently in the literature and comprise a better development of financial markets, an improvement of institutions or a higher government discipline (see for example Kose et al., 2006, who refer to such indirect effects as "collateral benefits"). Although all specifications control for effects of stock market capitalization, trade integration, the unemployment rate, and inflation and hence keep a number of potential channels constant, there may be still enough room for indirect effects of financial integration to materialize.

5.2 Discussion and Robustness

The following subsection deals with the robustness of the previously obtained results. First, the question of endogeneity with respect to the income measures is examined more closely. Second, a different empirical approach is presented in addition that reaches similar results as the main approach.

5.2.1 Potential Sources of Endogeneity

The current econometric approach deals with regressing the ability to meet ends on three income-related concepts. The first one is *Total Income*, the second one is the *Mean of Labor Income* and the third one is the *Standard Deviation of Labor Income*. As shown in Section 3.2, the ability to meet ends can be thought of as subjective assessment of the variable part of consumption and savings that a household has at its disposal. Economic theory considers income as exogenous and

consumption and savings as ways of allocating it among different uses. Nevertheless, in this specific setup, it could happen that having a good ability to meet ends derives from large holdings of wealth that in turn generate capital income. As capital income enters via *Total Income*, the coefficients of all variables in the regression may be biased. Another potential problem derives from the fact that households could increase their work effort depending on the ability to meet ends. Thus, a household with a low ability to meet ends may want to increase its work effort to cover expenses with greater ease. This would lead to the fact that labor income becomes endogenous. While the core approach deals with the summation of a negative and a positive effect, both arising from the measure of labor income uncertainty, a potential bias should occur in both terms and thus cancel out. As this treatment may leave some doubts nevertheless, a completely different approach to assess the robustness of the results is pursued and examined in the next subsection.

Endogeneity of the country-level measures of financial integration is not considered to be a severe issue here, as the analysis is centered on the individual household and thus a single household is too small to significantly affect the corresponding country-level measure.

A remaining problem may arise from including the dummy variable indicating whether a household saves as a measure of financial market exposure. Households may decide on their savings based on the ability to meet ends. Even though in theory, one would expect the savings decision to follow the realization of income, depending on the one-year time horizon between two interviews, this may not be the case for all households. The interpretation of this specification should be therefore treated with some caution.

5.2.2 Robustness Approach

The idea of the robustness approach is to leave mean and standard deviation of income out of the analysis and thus be better protected against potential endogeneity concerns. This is obtained by splitting the samples according to the standard deviation of labor income into households with low and with high labor income uncertainty. One would then expect that an increase in financial integration leads to a stronger welfare improvement in the latter group.

As taking the logarithm of the standard deviation of labor income may not be a standard procedure in the literature, this approach takes the logarithm first. Log-labor income is then regressed on a dummy for higher education, the age of the household head, and the age squared. By introducing these control variables, one can proxy for the main expected differences in labor income over the life-cycle across households. Hence, the residuals of this regression can be interpreted as unexpected shocks to the labor income of a household. In the next step, the standard deviation of these residuals is taken. Due to the nature of the robustness approach, it is not necessary any more to control for the mean of labor income as its main effect got purged out by controlling for the expectable income profile. Hence, all variables included in the analysis will be time varying (with the exception of gender and education dummies in the cross-sectional approaches) - this substantially reduces the endogenity concerns. As suggested above, to split the sample into households with a low and a high labor income uncertainty, a dummy variable is created that takes on the value of one when a household has a higher standard deviation of labor income compared to the median household in its country. The definition of the dummy variables is carried out in relation to the country as this ensures that in all specifications a complete sample of countries will be included. However, the results do not change much when the median household of the entire sample is used to determine the sample split. The control variables are identical to those in the main approach. As the robustness approach is more sensitive to country inclusions, I exclude Cyprus, Iceland, and

Malta in addition to Luxembourg and Ireland as all countries serve at least to some extent as money centers and exhibited very strong financial integration dynamics.

The results are very much in line with the ones of the main approach. All tables are depicted in the appendix. Starting with the replication of the baseline specification, Table 10 shows specifications 1 (without fixed effects), 3 (including time and country fixed effects), and 6 (including time and household fixed effects) from Table 1 with the robustness approach for both of the datasets. The column labels a) and b) indicate for each specification the previously mentioned sub-sample with a low and a high degree of labor income uncertainty respectively. To document the negative impact of labor income uncertainty on the ability to meet ends, coefficients have been standardized by subtracting the mean and thus the relative size of the constant captures the impact of labor income uncertainty. And indeed, across all specifications it can be seen that the sub-sample with the higher labor income uncertainty, i.e. b), has a lower constant than the one with the lower labor income uncertainty, i.e. a), in all of the cases. This implies that labor income uncertainty is evaluated negatively by the households.[8]

In the next step, the impact of financial integration on the ability to meet ends is examined. For this exercise, the financial integration variables are included in the specifications once at a time without further interactions. One would now expect the positive effect of financial integration on the ability to meet ends to be stronger for households with a higher labor income uncertainty.[9]

Table 12 confirms that this is indeed the case for the EU-SILC dataset. In six out of nine cases, the coefficient of the financial integration measures in the lower panel, the one containing households with higher labor income uncertainty, is higher. Notable exceptions are the *Interest Rate Spread* specification that gives unintuitive results throughout the entire robustness approach, the *Portfolio Equity Asset* specification where both coefficients are relatively close and positive, as well as the *Portfolio Debt Liabilities* specification that carries a negative sign in this approach. Latter one would imply that countries that rely strongly on external debt do even worse in terms of risk sharing - a plausible interpretation as one would expect risk sharing to mainly occur via the asset side and thus highly indebted households being unable to participate in it (a finding that was confirmed by the low additional gains found for indebted households in the main approach).

For the ECHP dataset, results are less clear-cut. Table 11 shows that the coefficient of financial integration in the high labor income uncertainty sample is only higher in three out of eight cases and once even lower. Investigating potential reasons for this finding eventually leads to the observation that the size of the financial integration effect differs according to countries. To follow this route further, the 11 countries in the ECHP dataset are split in two groups: Northern[10] and Mediterranean[11] countries. The results are depicted in Table 13 for the Northern countries and in Table 14 for the Mediterranean countries respectively. Comparing the coefficients of financial integration for households with a low and a high standard deviation for Northern countries leads to the observation that now in five out of eight cases, the coefficient in the high labor income uncertainty sample is positive and strictly greater than in the low labor income uncertainty cases confirming the previously developed line of arguments. For the Mediterranean countries, the opposite is the case. Nearly all financial integration measures have a negative impact on the ability to meet ends, often independently of the degree of labor income uncertainty but sometimes even

[8]The same negative impact of labor income uncertainty on the ability to meet ends is obtained when the dummy variable is included directly in the regression.

[9]In this exercise, the constant is not standardized any more and therefore loses its interpretation.

[10]Austria, Belgium, Denmark, Finland, France, Netherlands, and UK

[11]Greece, Italy, Portugal, and Spain

increasing in it. Potential reasons for this finding may be related to a less developed financial system in the Mediterranean countries or a different concentration of wealth and will have to be investigated further. Nevertheless, the robustness approach confirms independently and with much weaker assumptions on the exogeneity of variables the findings of the main approach. It comes however with the drawback that it has proven to be more sensitive to the country selection and also cannot establish an unanimous effect for all countries in the ECHP sample.

Additional robustness checks were carried out for the ECHP dataset and included a Hausman-Talyor estimation in which Total Income and the Mean of Labor Income were treated as endogenous variables. Also the incorporation of work sector-specific fixed effects and the impact of a preference shock have been examined. Latter one is accounted for by including the logarithm of variable HF014 that asks the household for the lowest net monthly income to make ends meet. This variable is therefore the empirical analogy to minimum consumption C^{min} in Equation (3) and should capture a shift in the consumption habits of a household. All additional robustness checks confirm the results of the previous analysis.

6 Conclusion

The paper has examined the impact of financial integration on household welfare via a reduction in labor income uncertainty. Data has been taken from the European Community Household Panel (ECHP) and the European Union Statistics on Income and Living Conditions (EU-SILC), two large household micro datasets provided by Eurostat. The two datasets yield balanced panels of more than 17,000 and 31,000 households from up to 22 European countries over the periods 1994-2000 and 2004-2008. As dependent variable, a household's personal assessment of its ability to meet the ends of its balance sheet has been used. It has been argued that this measure captures the utility of households better than expenditure-based measures that are currently used in the literature. The empirical analysis was then carried out in three steps: First, the negative welfare impact arising from labor income uncertainty was established. In a second step, a counterbalancing positive effect of financial integration on the average household in a country was identified. And thirdly, to examine distributional aspects, the effect of financial integration was differentiated according to the exposure of households to financial markets.

The analysis delivers three key insights: First, using a household's personal assessment of its ability to meet ends and thus, a welfare-based measure that is closely related to the theoretical concept of utility, allows documenting the expected negative impact of labor income uncertainty on welfare. Second, financial integration can counterbalance this negative effect of labor income uncertainty for the average household in a country. These findings are robust to various measures of financial integration applied in the literature and to the use of different empirical approaches. And third, gains from financial integration affect all households along the distribution and thus, also households that do not have access to financial markets. Under the presence of financial integration, these households can reach similar levels of welfare as households that have access to financial markets in countries with low levels of financial integration. The results also indicate that households with a high exposure to financial markets still do best in absolute terms under high levels of financial integration in both of the datasets. In relative terms however, i.e. considering only the differential impact of financial integration on households that are strongly exposed to financial markets and the evidence from income distribution dummies, it turns out that especially in the ECHP sample, the majority of gains from financial integration might be located slightly

above the median household of the income distribution. However, this negative differential effect becomes insignificant or even positive when the more recent EU-SILC sample is considered.

Three major routes of future research can be taken from here: First, as some countries have received relatively high inflows of foreign assets and liabilities but have gained much less from latter ones than others, a different functional form, such as quadratic relationship between the financial integration measures and the ability to meet ends, would deliver be an interesting extension. This would allow also including countries like Ireland in the empirical analysis which could provide an answer to the question if there can be too much financial integration. Second, the current approach focuses primarily on the labor income uncertainty of the individual household. It would be interesting to examine the relationship of the personal income towards the income of other households in the same geographical aggregate and thus, more explicitly test for risk-sharing. Third, eventually, it would be very interesting to recognize that also the distribution of labor income may be affected by financial integration and hence to endogeneize labor income. Potential tests could differentiate between an indirect labor income channel that incorporates the exposure of a household's employer or industry sector to financial integration and a financial income channel that captures the direct exposure of households to financial integration via personal financial income.

7 References

Artis, Michael J., and Mathias Hoffmann, 2006a, "Declining Home Bias and the Increase in International Risk Sharing: Lessons from European Integration" (unpublished; Manchester: University of Manchester).

Artis, Michael J., and Mathias Hoffmann, 2006b, "The Home Bias and Capital Income Flows Between Countries and Regions," CEPR Discussion Paper No. 5691 (London: Centre for Economic Policy Research).

Asdrubali, Pierfederico, Bent E. Sorensen, and Oved Yosha, 1996, "Channels of Interstate Risk Sharing: United States 1963–90," Quarterly Journal of Economics, vol. 111, No. 4, pp.1081–110.

Attanasio, Orazio P. and James Banks, and Sarah Tanner, 2002. "Asset Holding and Consumption Volatility," Journal of Political Economy, University of Chicago Press, vol. 110(4), pp 771-792, August.

Baxter, Marianne, and Urban J. Jermann, 1997, The international diversification puzzle is worse than you think, American Economic Review 87(1), pp 170-180.

Backus, David, Patrick Kehoe, and Finn Kydland, 1992, "International Business Cycles: Theory and Evidence," in Frontiers of Business Cycle Research, ed. by Thomas Cooley (Princeton: Princeton University Press), pp. 331–56.

Beck, Thorsten, Asli Demirgüç-Kunt, and Ross Levine, 2000, "A New Database on Financial Development and Structure," World Bank Economic Review 14, pp 597-605.

Becker, Sascha O. and Mathias Hoffmann, 2006. "Intra- and international risk-sharing in the short run and the long run," European Economic Review, Elsevier, vol. 50(3), pp 777-806, April.

Becker, Sascha O. and Mathias Hoffmann, 2010. "Equity fund ownership and the cross-regional diversification of household risk," Journal of Banking & Finance, Elsevier, vol. 34(1), pp 90-102, January.

Caselli, Francesco and Jaume Ventura, 2000, "A Representative Consumer Theory of Distribution," American Economic Review, vol. 90(4), pp. 909-926.

Cole, Harold L and Maurice Obstfeld, 1991, "Commodity trade and international risk sharing", Journal of Monetary Economics 28, pp 3-24.

Ekinci, Mehmet F., Şebnem Kalemli-Özcan, and Bent E. Sørensen, 2009. "Financial Integration within EU Countries: The Role of Institutions, Confidence and Trust," NBER Chapters, in: NBER International Seminar on Macroeconomics 2007, pages 325-391. National Bureau of Economic Research, Inc.

Eurostat, 2011. European Community Household Panel (ECHP), ECHP User Database, Contract Number: *ECHP 2011/01*.

Eurostat, 2011. European Union Statistics on Income and Living Conditions (EU-SILC), EU-SILC Longitudinal User Database 2007-2009, Contract Number: *EU-SILC/2011/29*.

Flood, Robert P., Nancy P. Marion, and Akito Matsumoto, 2009. "International Risk Sharing During the Globalization Era," IMF Working Papers 09/209, International Monetary Fund.

French, Kenneth R. and James M. Poterba, 1991. "Investor Diversification and International Equity Markets," American Economic Review, American Economic Association, vol. 81(2), pp 222-26, May.

Fugazza, Carolina, Maela Giofré, and Giovanna Nicodano, 2011. "International diversification and industry-related labor income risk," International Review of Economics & Finance, Elsevier, vol. 20(4), pp 764-783, October.

Giannone, Domenico and Lucrezia Reichlin, 2006, "Trends and Cycles in the Euro Area: How Much Heterogeneity and Should We Worry About It?" ECB Working Paper No. 595 (London: European Central Bank).

Heathcote, Jonathan and Fabrizio Perri, 2008. "The International Diversification Puzzle is Not as Bad as You Think," CEPR Discussion Papers 6982, C.E.P.R. Discussion Papers.

Heathcote, Jonathan, Kjetil Storesletten, and Giovanni L. Violante, 2009, "Quantitative Macroeconomics with Heterogeneous Households," Annual Review of Economics, Annual Reviews, vol. 1(1), pp. 319-354.

Imbs, Jean, 2006, "The Real Effects of Financial Integration," Journal of International Economics, Vol. 68, No. 2 (March), pp. 296–324.

Jappelli, Tullio and Luigi Pistaferri, 2011. "Financial Integration and Consumption Smoothing," Economic Journal, Royal Economic Society, vol. 121(553), pp. 678-706, 06.

Kalemli-Ozcan, Sebnem and Bent E. Sørensen and Oved Yosha, 2003. "Risk Sharing and Industrial Specialization: Regional and International Evidence," American Economic Review, American Economic Association, vol. 93(3), pp 903-918, June.

Kalemli-Ozcan, Sebnem, Simone Manganelli, Elias Papaioannou, and Jose Luis Péydró, 2008, "Financial Integration and Risk Sharing: The Role of the Monetary Union", http://ec.europa.eu/dgs/policy_advisers/docs/5_kalemli_ecb_conf_oct31.pdf

Kalemli-Ozcan, Sebnem, Elias Papaioannou, and José-Luis Peydró, 2010. "Financial regulation, financial globalization and the synchronization of economic activity," Working Paper Series 1221, European Central Bank.

Kose, Ayhan M., Eswar Prasad, Kenneth S. Rogoff, and Shang-Jin Wei, 2006. "Financial Globalization: A Reappraisal", NBER Working Papers, no. 12484, National Bureau of Economic Research, Inc.

Kose, Ayhan M., Eswar S. Prasad, and Marco E. Terrones, 2003. "How Does Globalization Affect the Synchronization of Business Cycles?," American Economic Review, American Economic Association, vol. 93(2), pp 57-62, May.

Kose, Ayhan M., Christopher Otrok, and Charles H. Whiteman., 2008. "Understanding the evolution of world business cycles," Journal of International Economics, Elsevier, vol. 75(1), pp 110-130, May.

Kraay, Aart and Jaume Ventura, 2002. "Trade integration and risk sharing," European Economic Review, Elsevier, vol. 46(6), pages 1023-1048, June.

Lane, Philip R. and Gian Maria Milesi-Ferretti, 2007. "The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970-2004," Journal of International Economics, vol. 73(2), pp 223-250, November.

Lewis, Karen K., 1996, "What can explain the apparent lack of international consumption risksharing?" Journal of Political Economy 104(2), pp 267-297.

Lucas, Robert Jr., 1982. "Interest rates and currency prices in a two-country world," Journal of Monetary Economics, Elsevier, vol. 10(3), pp 335-359.

Mankiw, N. Gregory and Stephen P. Zeldes, 1991. "The consumption of stockholders and nonstockholders," Journal of Financial Economics, Elsevier, vol. 29(1), pp 97-112, March.

Mélitz, Jacques, 2004. "Risk-sharing and EMU," Journal of Common Market Studies, Blackwell Publishing, vol. 42(4), pp 815-840, November.

Melitz, Jacques and Frederic Zumer, 1999. "Interregional and international risk-sharing and lessons for EMU," Carnegie-Rochester Conference Series on Public Policy, Elsevier, vol. 51(1), pp 149-188, December.

Prasad, Eswar S., Raghuram G. Rajan, and Arvind Subramanian (2007): "Foreign Capital and Economic Growth," Brookings Papers on Economic Activity, 38(2007-1), pp 153–230.

Sorensen, Bent E. and Oved Yosha, 1998. "International risk sharing and European monetary unification," Journal of International Economics, Elsevier, vol. 45(2), pp. 211-238, August.

Sorensen, Bent E., Yi-Tsung Wu, and Yosha, Oved and Zhu, Yu, 2007. "Home bias and international risk sharing: Twin puzzles separated at birth," Journal of International Money and Finance, Elsevier, vol. 26(4), pp.587-605, June.

8 Appendix

Table 6: Summary Statistics ECHP

Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
Key Variables (all in Logs)					
Total Income	119531	9.4	0.6	7.1	10.9
Mean of Labor Income	119531	9.3	0.6	6.9	10.7
Std. of Labor Income	119531	7.7	0.8	3.5	10.9
Control Variables					
Age	119531	43.5	10.7	17	83
Age Squared	119531	2003.8	973.1	289	6889
Dummy for Being Married	119531	0.7	0.4	0	1
Dummy for Bad Health	119531	0.0	0.2	0	1
Dummy for Being Male	119531	0.7	0.4	0	1
Dummy for Higher Education	119531	0.6	0.5	0	1
Dummy for Self-Employment	119531	0.2	0.4	0	1
Stock Market Capitalization	119531	0.7	0.5	0.1	2.7
Trade Openness	119531	66.0	25.1	41.6	153.6
Inflation Rate	119531	2.6	1.8	0.5	10.9
Unemployment Rate	119531	9.6	4.4	3.1	24.1
Measures of Financial Integration					
Gross Financial Integration	119531	253.3	143.3	89.9	601.3
Portfolio Equity Assets	119531	15.0	15.4	0.5	65.7
Portfolio Debt Assets	112915	22.5	16.4	2.0	74.2
Portfolio Debt Liabilities	112915	30.5	12.1	10.6	73.8
Bank and Other Assets	112915	52.6	33.5	20.6	139.1
Bank and Other Liabilities	112915	61.4	41.5	24.7	166.5
Investment Fund Shares	119531	1.5	2.4	-0.1	13.8
Interest Rate Spread	104398	16.5	9.8	0.7	42.9
Measures of Household Exposure					
Dummy for Owning a House	119505	0.8	0.4	0	1
Dummy for Owning a Car	119114	0.9	0.3	0	1
Dummy for Capital Income	119531	0.5	0.5	0	1
Dummy for Mortgage Debt	91171	0.5	0.5	0	1
Dummy for 50th+ Percentile of Tot. Inc.	119531	0.5	0.5	0	1
Dummy for 90th+ Percentile of Tot. Inc.	119531	0.2	0.4	0	1
Dummy for Savings	119145	0.4	0.5	0	1
Dummy for Consumer Debt	116299	0.3	0.5	0	1
Dummy for Working in the Financial Sector	113955	0.0	0.2	0	1
Dummy for Working in the Real Estate Sector	113955	0.1	0.2	0	1
Dummy for Working in a Large Firm	86065	0.4	0.5	0	1
Dummy for Working in a Supervisory Position	88216	0.3	0.5	0	1
Dummy for Owning a Second House	119067	0.1	0.3	0	1

Table 7: Summary Statistics EU-SILC

Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
Key Variables (all in Logs)					
Total Income	93486	9.4	0.7	7.4	11.1
Mean of Labor Income	93486	9.4	0.9	6.2	11.3
Std. of Labor Income	93486	7.7	1.2	2.4	11.1
Control Variables					
Age	93486	43.2	11.2	17	74
Age Squared	93486	1990.3	975.5	289	5476
Dummy for Being Married	93486	0.6	0.5	0	1
Dummy for Bad Health	93486	0.0	0.2	0	1
Dummy for Being Male	93486	0.6	0.5	0	1
Dummy for Higher Education	93486	0.8	0.4	0	1
Stock Market Capitalization	93486	0.7	0.4	0.1	2.0
Trade Openness	93486	109.7	36.3	54.8	170.5
Inflation Rate	93486	3.2	2.3	0.1	15.3
Unemployment Rate	93486	7.3	3.0	1.0	17.7
Measures of Financial Integration					
Gross Financial Integration	79257	402.1	263.2	102.0	1160.3
Portfolio Equity Assets	79257	25.3	25.3	0.4	85.2
Portfolio Debt Assets	79257	37.6	33.9	1.0	119.4
Portfolio Debt Liabilities	79257	53.6	46.3	4.8	297.1
Bank and Other Assets	79257	64.2	65.1	10.9	268.0
Bank and Other Liabilities	79257	80.1	67.7	18.8	294.4
Investment Fund Shares	85941	0.6	0.9	-0.1	4.3
Interest Rate Spread	84696	11.9	9.1	0.0	43.3
Measures of Household Exposure					
Dummy for Owning a House	93469	0.8	0.4	0	1
Dummy for Owning a Car	93423	0.8	0.4	0	1
Dummy for Capital Income	88967	0.4	0.5	0	1
Dummy for Mortgage Debt	77338	0.3	0.5	0	1
Dummy for 50th+ Percentile of Tot. Inc.	93486	0.5	0.5	0	1
Dummy for 90th+ Percentile of Tot. Inc.	93486	0.2	0.4	0	1
Dummy for Owning a Computer	93424	0.7	0.4	0	1
Dummy for Ability to Face Unex. Exp.	93340	0.7	0.5	0	1

Table 8: Baseline Specification - Full Table: ECHP

Dependent Variable: "Ability to Meet Ends"	(1)	(2)	(3)	(4)	(5)	(6)
Total Income	0.437***	0.449***	0.441***	0.432***	0.266***	0.194***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Mean of Labor Income	0.498***	0.471***	0.438***	0.425***	0.636***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Std. of Labor Income	-0.036***	-0.036***	-0.037***	-0.034***	-0.028***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Dummy for Being Male	0.019	0.027**	0.020	0.021	0.013	
	(0.16)	*(0.04)*	*(0.13)*	*(0.11)*	*(0.32)*	
Dummy for Higher Education	0.112***	0.099***	0.125***	0.147***	0.067***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Age of Household Head	-0.039***	-0.034***	-0.036***	-0.033***	-0.030***	-0.033***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Age Squared	0.001***	0.000***	0.000***	0.000***	0.000***	0.000**
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.02)*
Dummy for Being Married	0.092***	0.091***	0.095***	0.083***	0.065***	0.059***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Dummy for Bad Health	-0.269***	-0.277***	-0.276***	-0.283***	-0.151***	-0.110***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Dummy for Self-Employment	0.186***	0.203***	0.248***	0.251***	0.107***	0.044**
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.02)*
Stockmarket Capitalization	0.257***	0.363***	0.118***	0.111***	0.257***	0.099***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Trade Openness	0.006***	0.006***	0.006***	0.006***	0.006***	0.004***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Inflation Rate	-0.037***	-0.052***	-0.006*	-0.011***	-0.021***	-0.016***
	(0.00)	*(0.00)*	*(0.05)*	*(0.00)*	*(0.00)*	*(0.00)*
Unemployment Rate	0.000	-0.003**	-0.027***	-0.027***	-0.013***	-0.031***
	(0.79)	*(0.03)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Time Fixed Effects	No	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	Yes	No	No	No
Regional Fixed Effects	No	No	No	Yes	No	No
Random Effects	No	No	No	No	Yes	No
Household Fixed Effects	No	No	No	No	No	Yes
Observations	119,531	119,531	119,531	108,695	119,531	121,659
HH IDs	17,625	17,625	17,625	16,077	17,625	17,929
Countries	11	11	11	10	11	11
R-squared	0.32	0.33	0.35	0.33	0.32	0.02

Table 9: Baseline Specification - Full Table: EU-SILC

Dependent Variable: "Ability to Meet Ends"	(1)	(2)	(3)	(4)	(5)	(6)
Total Income	0.422***	0.424***	0.503***	0.493***	0.228***	0.067***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Mean of Labor Income	0.341***	0.328***	0.320***	0.322***	0.462***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Std. of Labor Income	-0.011**	-0.014***	-0.032***	-0.029***	-0.019***	
	(0.04)	*(0.01)*	*(0.00)*	*(0.00)*	*(0.00)*	
Dummy for Being Male	0.042***	0.043***	0.067***	0.063***	0.042***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Dummy for Higher Education	0.299***	0.315***	0.203***	0.200***	0.278***	
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	
Age of Household Head	-0.067***	-0.064***	-0.053***	-0.049***	-0.069***	-0.052***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.01)*
Age Squared	0.001***	0.001***	0.001***	0.001***	0.001***	0.000
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.40)*
Dummy for Being Married	0.094***	0.097***	0.132***	0.128***	0.082***	0.042*
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.08)*
Dummy for Bad Health	-0.436***	-0.438***	-0.425***	-0.410***	-0.281***	-0.188***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Stockmarket Capitalization	0.390***	0.438***	0.340***	0.313***	0.462***	0.311***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Trade Openness	0.005***	0.005***	0.004***	0.004***	0.005***	-0.000
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.69)*
Inflation Rate	-0.044***	-0.030***	0.005*	0.005	-0.017***	0.005*
	(0.00)	*(0.00)*	*(0.08)*	*(0.12)*	*(0.00)*	*(0.06)*
Unemployment Rate	-0.021***	-0.024***	-0.020***	-0.022***	-0.028***	-0.028***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Time Fixed Effects	No	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	Yes	No	No	No
Regional Fixed Effects	No	No	No	Yes	No	No
Random Effects	No	No	No	No	Yes	No
Household Fixed Effects	No	No	No	No	No	Yes
Observations	93,486	93,486	93,486	81,825	93,486	94,515
HH IDs	31,162	31,162	31,162	27,275	31,162	31,505
Countries	22	22	22	19	22	22
R-squared	0.33	0.34	0.40	0.39	0.33	0.01

Table 10: Robustness Approach - Baseline Specification

Top Panel: ECHP

Dependent Variable: "Ability to Meet Ends"	(1a) Low Std.	(1b) High Std.	(2a) Low Std.	(2b) High Std.	(3a) Low Std.	(3b) High Std.
Total Income	1.015***	0.669***	0.947***	0.623***	0.281***	0.176***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Constant	3.529***	3.482***	3.540***	3.465***	3.590***	3.447***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Time Fixed Effects	No	No	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	Yes	Yes	No	No
Regional Fixed Effects	No	No	No	No	No	No
Random Effects	No	No	No	No	No	No
Household Fixed Effects	No	No	No	No	Yes	Yes
Observations	60,011	59,520	60,011	59,520	60,011	59,520
HH IDs	8,845	8,780	8,845	8,780	8,845	8,780
Countries	11	11	11	11	11	11
R-squared	0.32	0.28	0.35	0.31	0.01	0.02

Bottom Panel: EU-SILC

Dependent Variable: "Ability to Meet Ends"	(1a) Low Std.	(1b) High Std.	(2a) Low Std.	(2b) High Std.	(3a) Low Std.	(3b) High Std.
Total Income	0.921***	0.638***	1.020***	0.654***	0.043	0.069***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.13)*	*(0.00)*
Constant	3.581***	3.503***	3.584***	3.517***	3.574***	3.391***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Time Fixed Effects	No	No	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	Yes	Yes	No	No
Regional Fixed Effects	No	No	No	No	No	No
Random Effects	No	No	No	No	No	No
Household Fixed Effects	No	No	No	No	Yes	Yes
Observations	45,948	47,538	45,948	47,538	45,948	47,538
HH IDs	15,316	15,846	15,316	15,846	15,316	15,846
Countries	22	22	22	22	22	22
R-squared	0.34	0.30	0.41	0.37	0.01	0.02

Table 11: Robustness Approach - Financial Integration: EU-SILC

Top Panel: Low Labor Income Uncertainty

Dependent Variable: "Ability to Meet Ends"	Gross Financial Integration	Portfolio Equity Assets	Portfolio Debt Assets	Portfolio Debt Liabilities	Bank and Other Assets	Bank and Other Liabilities	Interest Rate Spread	Inv. Fund Shares of HH	Foreign Holdings of HH
Total Income	0.016	0.007	0.012	0.010	0.016	0.014	0.027	0.037	0.038
	(0.64)	*(0.83)*	*(0.73)*	*(0.76)*	*(0.62)*	*(0.68)*	*(0.38)*	*(0.24)*	*(0.33)*
Financial Integration	0.000**	0.013***	0.006***	-0.001	0.002***	0.002***	0.044***	0.007**	0.007
(see label)	*(0.03)*	*(0.00)*	*(0.00)*	*(0.53)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.03)*	*(0.45)*
Observations	38,676	38,676	38,676	38,676	38,676	38,676	41,451	41,697	26,967
HH IDs	15,479	15,479	15,479	15,479	15,479	15,479	13,817	13,899	8,989
Countries	20	20	20	20	20	20	19	17	11
R-squared	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Bottom Panel: High Labor Income Uncertainty

Dependent Variable: "Ability to Meet Ends"	Gross Financial Integration	Portfolio Equity Assets	Portfolio Debt Assets	Portfolio Debt Liabilities	Bank and Other Assets	Bank and Other Liabilities	Interest Rate Spread	Inv. Fund Shares of HH	Foreign Holdings of HH
Total Income	0.060***	0.058***	0.058***	0.057***	0.061***	0.061***	0.065***	0.065***	0.071***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Financial Integration	0.001**	0.010***	0.007***	-0.003***	0.003***	0.003***	0.048***	0.018***	0.047***
(see label)	*(0.02)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Observations	40,052	40,052	40,052	40,052	40,052	40,052	42,822	42,999	27,693
HH IDs	15,942	15,942	15,942	15,942	15,942	15,942	14,274	14,333	9,231
Countries	20	20	20	20	20	20	19	17	11
R-squared	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

Table 12: Robustness Approach - Financial Integration: ECHP

Top Panel: Low Labor Income Uncertainty

Dependent Variable: "Ability to Meet Ends"	Gross Financial Integration	Portfolio Equity Assets	Portfolio Debt Assets	Portfolio Debt Liabilities	Bank and Other Assets	Bank and Other Liabilities	Interest Rate Spread	Inv. Fund Shares of HH
Total Income	0.282***	0.277***	0.261***	0.260***	0.261***	0.261***	0.282***	0.247***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Financial Integration	0.000	-0.002***	0.000	-0.000	0.001*	-0.000	0.026***	-0.011***
(see label)	*(0.36)*	*(0.01)*	*(0.69)*	*(0.56)*	*(0.08)*	*(0.57)*	*(0.00)*	*(0.00)*
Observations	60,011	60,011	54,173	54,173	54,173	54,173	60,011	52,721
HH IDs	8,845	8,845	8,011	8,011	8,011	8,011	8,845	8,898
Countries	11	11	10	10	10	10	11	11
R-squared	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02

Bottom Panel: High Labor Income Uncertainty

Dependent Variable: "Ability to Meet Ends"	Gross Financial Integration	Portfolio Equity Assets	Portfolio Debt Assets	Portfolio Debt Liabilities	Bank and Other Assets	Bank and Other Liabilities	Interest Rate Spread	Inv. Fund Shares of HH
Total Income	0.176***	0.177***	0.180***	0.180***	0.180***	0.181***	0.177***	0.162***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Financial Integration	0.000**	-0.001	0.002*	-0.000	0.001	-0.001	0.042***	-0.011***
(see label)	*(0.01)*	*(0.18)*	*(0.07)*	*(0.96)*	*(0.16)*	*(0.18)*	*(0.00)*	*(0.00)*
Observations	59,520	59,520	53,780	53,780	53,780	53,780	59,520	52,469
HH IDs	8,780	8,780	7,960	7,960	7,960	7,960	8,780	8,859
Countries	11	11	10	10	10	10	11	11
R-squared	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.02

Table 13: Robustness Approach - Financial Integration: ECHP, Northern Countries

Top Panel: Low Labor Income Uncertainty

Dependent Variable: "Ability to Meet Ends"	Gross Financial Integration	Portfolio Equity Assets	Portfolio Debt Assets	Portfolio Debt Liabilities	Bank and Other Assets	Bank and Other Liabilities	Interest Rate Spread	Inv. Fund Shares of HH
Total Income	0.355***	0.352***	0.358***	0.357***	0.356***	0.356***	0.357***	0.339***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Financial Integration	-0.000	-0.002*	0.002	0.002*	0.000	0.000	0.097***	-0.002
(see label)	*(0.68)*	*(0.06)*	*(0.14)*	*(0.06)*	*(0.52)*	*(0.68)*	*(0.00)*	*(0.28)*
Observations	33,355	33,355	33,355	33,355	33,355	33,355	33,355	29,813
HH IDs	5,037	5,037	5,037	5,037	5,037	5,037	5,037	5,080
Countries	7	7	7	7	7	7	7	7
R-squared	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01

Bottom Panel: High Labor Income Uncertainty

Dependent Variable: "Ability to Meet Ends"	Gross Financial Integration	Portfolio Equity Assets	Portfolio Debt Assets	Portfolio Debt Liabilities	Bank and Other Assets	Bank and Other Liabilities	Interest Rate Spread	Inv. Fund Shares of HH
Total Income	0.218***	0.219***	0.218***	0.216***	0.218***	0.218***	0.217***	0.199***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Financial Integration	0.000*	0.000	0.004***	0.004***	0.002**	0.001	0.096***	-0.006***
(see label)	*(0.07)*	*(0.91)*	*(0.00)*	*(0.00)*	*(0.04)*	*(0.46)*	*(0.00)*	*(0.01)*
Observations	33,032	33,032	33,032	33,032	33,032	33,032	33,032	29,699
HH IDs	4,996	4,996	4,996	4,996	4,996	4,996	4,996	5,064
Countries	7	7	7	7	7	7	7	7
R-squared	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02

Table 14: Robustness Approach - Financial Integration: ECHP, Mediterranean Countries

Top Panel: Low Labor Income Uncertainty

Dependent Variable: "Ability to Meet Ends"	Gross Financial Integration	Portfolio Equity Assets	Portfolio Debt Assets	Portfolio Debt Liabilities	Bank and Other Assets	Bank and Other Liabilities	Interest Rate Spread	Inv. Fund Shares of HH
Total Income	0.229***	0.217***	0.183***	0.155***	0.169***	0.169***	0.230***	0.177***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Financial Integration	-0.000	-0.012***	-0.036***	-0.021***	-0.002	-0.001	0.023**	-0.018***
(see label)	*(0.95)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.35)*	*(0.39)*	*(0.02)*	*(0.00)*
Observations	26,656	26,656	20,818	20,818	20,818	20,818	26,656	22,908
HH IDs	3,808	3,808	2,974	2,974	2,974	2,974	3,808	3,818
Countries	4	4	3	3	3	3	4	4
R-squared	0.02	0.02	0.03	0.03	0.02	0.02	0.02	0.03

Bottom Panel: High Labor Income Uncertainty

Dependent Variable: "Ability to Meet Ends"	Gross Financial Integration	Portfolio Equity Assets	Portfolio Debt Assets	Portfolio Debt Liabilities	Bank and Other Assets	Bank and Other Liabilities	Interest Rate Spread	Inv. Fund Shares of HH
Total Income	0.152***	0.151***	0.155***	0.153***	0.154***	0.154***	0.151***	0.137***
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Financial Integration	-0.001*	-0.008***	-0.035***	-0.012***	-0.009***	-0.003***	0.031***	-0.017***
(see label)	*(0.09)*	*(0.00)*	*(0.00)*	*(0.01)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*
Observations	26,488	26,488	20,748	20,748	20,748	20,748	26,488	22,770
HH IDs	3,784	3,784	2,964	2,964	2,964	2,964	3,784	3,795
Countries	4	4	3	3	3	3	4	4
R-squared	0.03	0.03	0.04	0.04	0.04	0.04	0.03	0.04