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Keywords
Precautionary savings, consumption, income risk, offspring

JEL Codes
D13, D15, C23

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Intergenerational Precautionary Saving in Europe

Francesco Scervini* Serena Trucchi†

May 7, 2019

Abstract

This paper examines the interaction between altruism towards offspring and precautionary savings. It investigates whether increased uncertainty in children labor income fosters savings of parents. We first construct a two-periods and two-generations model, to underline which are the mechanisms behind the intergenerational precautionary motive for savings. Second, we exploit two micro datasets to test the main theoretical implications. Parents' consumption turns out to respond to the offspring's income risk. This result is robust to the presence of family fixed effects and to many alternative empirical specifications.

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1 Introduction

A wide strand of economic literature anlysed consumption and saving choices, and identified several broad reasons why individuals decide to save part of their resources (see Lusardi, 1997; Attanasio and Weber, 2010, for two impressive reviews of the literature on this topic). The standard life cycle and permanent income models of individual behaviour (Modigliani and Brumberg, 1954, 1980; Friedman, 1957), in which households are endowed with a

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concave utility function, posits a strong incentive for intertemporal smoothing of income changes. Individuals save when income is relatively high – namely, when current income is higher than its permanent level – in order to consume more than current income when it shrinks. The second motive for saving is to cope with uncertainty. Uncertainty leads risk-averse and prudent individuals to save more than the amount predicted by the baseline life-cycle model. The economic literature defines this motive "precautionary saving", that is the additional savings due to the possible uncertainty about the future which is impossible or too costly to insure against (Lusardi, 1997; Carroll and Samwick, 1998; Mastrogiacomo and Alessie, 2014).[1] A third motive for saving is altruism. Individuals may want to accumulate additional wealth over their life-cycle in order to transfer financial resources to other individuals (De Nardi, 2004; De Nardi and Yang, 2014). Even in absence of uncertainty about the future, bequest motives are, then, a reason why individuals leave positive net wealth at the end of their life and/or save and transfer resources to the offspring over the entire life-cycle (McGarry, 2016).

While these reasons for saving have been extensively investigated by the literature, much less attention has been devoted to the interaction among them.[2] This paper contributes to closing this gap by analyzing the interaction between altruism towards offspring and precautionary savings. We examine whether increased uncertainty in children's labor income fosters saving by parents, and determine an *intergenerational precautionary motive for saving*. This channel is at work under two main assumptions: households must save for precautionary motives, and they must care about offspring and save for altruistic motives.

We develop a stylized theoretical framework to point out the economic rationale behind the intergenerational precautionary motive for saving. We show that in a two-periods two-generations model, the amount of parents' savings depend positively on offspring's income uncertainty and negatively on offspring's expected income. We allow the results to change according to the relative weight that parents attach to offspring's cash-on-hand. Different weights can be due to different family ties and altruism. The model is also able to account for the heterogenous generosity and efficacy of welfare programs, incorporated in a lower variability of disposable income.

Testing the main predictions of the theoretical model requires informa-

[1] Uncertainty can refer to negative income shocks/unemployment spells or unexpected increase in expenditures, such as medical expenditure (De Nardi, French, and Jones, 2010). Moreover, uncertain of death leads individuals to die with a positive net wealth, the so-called unintended bequest.

[2] Boar (2017) represents a notable exception. In this unpublished paper, she examines the importance of dynastic precautionary savings in the US.

tion about parental consumption and saving, along with offspring's income risk. To this purpose, we combine two cross-country data sources, which cover a period of about a decade. First, we use the Survey of Health, Ageing and Retirement in Europe (SHARE) to gather information about parents' generation. This longitudinal panel dataset on European individuals older than 50 years collects several socio-economic variables, notably information on household consumption and on family composition, including a set of characteristics of each child. The second data source is the European Union Statistics on Income and Living Conditions (EU-SILC). It provides micro-data on income, and it is used to construct an exogenous measure for income risk faced by the offspring generation. More precisely, we rely on two indices for income risk, which measure, respectively, income and unemployment risk within the same 'type' of individuals. Individual 'type' is identified by age, gender, education level, year and country of residence. The first indicator is the dispersion of the unexplained component of income; the second one is the probability of unemployment. Combining these two data sources, we are able to match each adult child of individuals interviewed in SHARE to her own indicator for income risk. The longitudinal dimension of the dataset allows to control for unobservable time-invariant characteristics, including country of residence and family composition, along with time fixed effect. Therefore, identification of the effect of offspring's income risk on parental consumption exploits the heterogeneity in the evolution of uncertainty faced by different 'types' of children over time (within the same country). Estimate results show a significant impact of offspring's income uncertainty on parental consumption: One standard deviation increase in offspring's income risk determine a contraction by 1% in parental consumption.

This paper is related to two strands of literature. First, it contributes to the analysis of the determinants of consumption and saving over the life-cycle, by investigating a new channel, namely whether precautionary saving and altruistic motives interact, and determine an *intergenerational precautionary motive for saving*. In this respect, it relates to the wide literature examining precautionary savings. Starting from the seminal papers by Kimball (1990) and Caballero (1991), some recent examples are Meghir and Pistaferri (2004) and Low, Meghir, and Pistaferri (2010). Moreover, this paper adds to the literature analyzing the role of intergenerational transfers – in the form of either *inter vivos* transfers or bequest – to shape consumption and saving choices. In the theoretical framework, we rely on a model with altruism, where individuals deprive themselves of some of their resources to transfers them to their heirs. This altruistic motive for savings has been shown to be relevant in driving consumption, especially for the wealthier (De Nardi, 2004; De Nardi and Yang, 2014; McGarry, 2016). Second, this paper contributes to the literature analyzing the insurance role of the family. The recent contribution by Blundell, Pistaferri, and Saporta-Eksten (2016) examines insurance within two earners households, and highlights the role of family labor supply as a smoothing device against (persistent) income shocks. Attanasio, Meghir, and Mommaerts (2015) illustrate the extent to which idiosyncratic shocks to household income are insured within the extended family. More in general, there is evidence supporting an effect of shocks on behavior not only of spouses, but also of other family members. This link relates to several margins, such as labor supply (Baldini, Torricelli, and Brancati, 2018) and transfers (McGarry, 2016). In addition, Kaplan (2012) demonstrates that the option to move in and out of the parental home is a valuable insurance channel against labor market risk.

The closest paper to our work is the unpublished paper by Boar (2017). We depart from her approach along several dimensions. First, she relies on permanent income uncertainty, defined as the standard deviation of the forecast error of lifetime earnings, which hinges on strong assumptions about the way individuals form their expectations about future income. Moreover, identification in Boar (2017) is based on differences in uncertainty across age and sector (notably, the latter is a choice variable, potentially related to other individual characteristics), and does not allow for unobserved heterogeneity. Our approach and identification strategy exploit variation in income risk within groups identified by less problematic variables and, more importantly, it does not impose any restriction between unobserved individual characteristics and the explanatory variables.

Three main reasons motivate the analysis of this issue from a cross-country perspective. First, it is well known that social norms and family ties may differ across countries. Offspring typically rely on parents' resources more extensively and for a longer period in Mediterranean countries than in Nordic countries (Albertini, Kohli, and Vogel, 2007). In Southern European economies, extended household is often considered as a substitute for welfare policies targeted to youth, such as labor market and childcare public interventions. The direction of causality between the strong family ties and the weak welfare state is, however, still debated. Second, labor market segmentation makes young generations relatively more exposed to income shocks in Mediterranean countries than in Nordic countries. In the former, labour market's reforms in the last two decades shifted the burden of uncertainty disproportionately on the young generations, increasing inter-generational inequality. In addition, retirees in Southern European countries receive relatively generous public pension benefits with respect to young's wages, which further increases the gap in resources across generations. The combination of the greater uncertainty about offspring's income and the lower availability of labor market instruments to face uncertainty may increase parents' saving in Mediterranean countries. Moreover, weaker labor market institutions may strengthen the precautionary motive for saving. This channel may contribute to explain high savings in Mediterranean countries (Attias-Donfut, Ogg, and Wolff, 2005). Third, understanding cross-country differences in the way households' savings react to an increase of perceived uncertainty in offspring's labor income has relevant policy implications. Almost a decade of stagnation and crises asymmetrically affected the economic systems within the European Union. Shedding light on this channel and its heterogeneity across Europe may be useful to evaluate spill-over of labor market features on savings and, in turn, to implement policies targeted to savings.

2 The theoretical framework

The present section illustrates the theoretical setting of our analysis and points out the economic relation between parental choices and offspring's income uncertainty. We build a simple theoretical model with two generations (parents and offspring) living for two periods, and we focus on the consumption/saving decision of parents, who derive some utility from their own consumption and from cash-on-hand of their offspring.

Utility function. All the individuals in the generation of parents maximize the following utility function:

$$U_t^{1,y} = u\left(c_t^{1,y}\right) + \mathbb{E}_t\, u\left(c_{t+1}^{1,o}\right) + \alpha\, \mathbb{E}_t\, u\left(w_{t+1}^{2,y}\right) \tag{1}$$

where c is consumption and w is cash-on-hand, namely the sum of income and transfers received by the young in period 2. The subscripts t and $t+1$ represent present and future periods, the superscripts 1 and 2 indicates parents and offspring, and the superscripts y and o indicates whether the generation is young or old, respectively. According to this additively separable utility function, the total utility at present (time t) of parents (generation 1) when they are young (y) is the sum of the utility from their own contemporary consumption $u\left(c_t^{1,y}\right)$, their expected utility from future consumption $\mathbb{E}_t\, u\left(c_{t+1}^{1,o}\right)$ (that is, the utility from consumption of the same generation 1 when old o in $t+1$), and the additional term, $\alpha\, \mathbb{E}_t\, u\left(w_{t+1}^{2,y}\right)$. The latter is the expected value at time t of the utility from the cash-on-hand of the offspring generation when young $(2, y)$ in the period $t+1$ ($\mathbb{E}_t\, u\left(w_{t+1}^{2,y}\right)$), weighted by α, which represents the relative weight given by parents to the wealth of their offspring. For the sake of simplicity, we assume that the intertemporal rate of time preferences and the real interest rate on the only risk-free asset are

both equal to zero.
The utility function in equation 1 implies that the choice between consumption and saving of the offspring generation does not affect the utility of the parents generation. Stated differently, what matters for the parents is the amount of cash-on-hand of the offspring at the beginning of their life-cycle, while they are indifferent regarding their allocation of resources over time.

Constraints. In every period each individual earns some income y, that must be devoted either to consumption c or to savings s. Savings of the elderly (parents in period $t+1$) are transferred to the next generation.[3] Since we are interested in choices of parents generation, we do not model consumption choices of the offspring here. In general, the arguments of the utility function in equation (1) can then be stated as

$$c_t^{1,y} = y_t^{1,y} - s_t^{1,y} \tag{2a}$$

$$c_{t+1}^{1,o} = y_{t+1}^{1,o} + s_t^{1,y} - s_{t+1}^{1,o} \tag{2b}$$

$$w_{t+1}^{2,y} = y_{t+1}^{2,y} + s_{t+1}^{1,o} \tag{2c}$$

where $y_t^{1,y}$ includes also possible transfers from the previous generation.[4] Consumption of generation 1 when old in (2b) is equal to the current income and savings in previous period ($s_t^{1,y}$) minus the transfers to the next generation ($s_{t+1}^{1,o}$). In the following, we assume that $s_{t+1}^{1,o}$ is non-negative, since parents cannot freely dispose of offspring income and cannot decide to increase their own consumption by means of offspring income.

Income process and utility function. Income realization in $t+1$ is uncertain. For the sake of simplicity, we assume that income of both generations follows a normal distributions:

$$y_{t+1}^{1,o} \sim \mathcal{N}\left(\bar{y}^{1,o}, \sigma^{2\,1,o}\right) \tag{3}$$

and

$$y_{t+1}^{2,y} \sim \mathcal{N}\left(\bar{y}^{2,y}, \sigma^{2\,2,y}\right) \tag{4}$$

[3] All the conclusions of the model are independent of the fact that such transfers are *intra-vivos* or bequests, and the same is true for the empirical analysis. Indeed, we focus on the savings decision of the elderly, irrespective on whether they are actually transferred to offspring.

[4] In principle, one could explicitly separate the two components in the proper income $y_t^{1,y}$ and the transfer received by the previous generation 0, $s_t^{0,o}$. However, since they are both exogenous, the present notation is equivalent, but simpler.

where $\bar{y}$ are the means and σ^2 the variances. Correlation between the two income processes is not restricted: They can be either perfectly correlated ('systemic' shock that affects all the individuals), or perfectly uncorrelated (idiosyncratic shocks), or any intermediate case.

We assume that utility of consumption is exponential, that is $u(c) = \frac{1-\mathrm{e}^{-kc}}{k}$. The exponential utility function is quite tractable, and enjoys the property of convex marginal utility function, which determines a precautionary motive for saving (Kimball, 1990). Absolute prudence is constant and equal to the parameter k.[5]

Maximization problem. Within the framework described above, in period t the representative member of generation 1 chooses the levels of consumption that maximize the following utility function:

$$U_t^{1,y} = \frac{1-\mathrm{e}^{-kc_t^{1,y}}}{k} + \mathbb{E}_t \frac{1-\mathrm{e}^{-kc_{t+1}^{1,o}}}{k} + \alpha\, \mathbb{E}_t \frac{1-\mathrm{e}^{-kw_{t+1}^{2,y}}}{k} \tag{5}$$

subject to the constraints in (2a), (2b), (2c). Substituting the constraints into (5), and exploiting properties of exponential functions and of log-normal distribution,[6] we obtain the first order conditions:

$$\frac{\partial U_t^{1,y}}{\partial s_t^{1,y}} = -\,\mathrm{e}^{-k\left(y_t^{1,y}-s_t^{1,y}\right)} + \mathrm{e}^{-k\left(\bar{y}^{1,o}-\frac{k}{2}\sigma^{2\,1,o}+s_t^{1,y}-s_{t+1}^{1,o}\right)} = 0 \tag{6a}$$

$$\frac{\partial U_t^{1,y}}{\partial s_{t+1}^{1,o}} = -\,\mathrm{e}^{-k\left(\bar{y}^{1,o}-\frac{k}{2}\sigma^{2\,1,o}+s_t^{1,y}-s_{t+1}^{1,o}\right)} + \alpha\mathrm{e}^{-k\left(\bar{y}^{2,y}-\frac{k}{2}\sigma^{2\,2,y}+s_{t+1}^{1,o}\right)} = 0 \tag{6b}$$

that can be more effectively summarized as

$$\mathrm{e}^{-k\left(y_t^{1,y}-s_t^{1,y}\right)} = \mathrm{e}^{-k\left(\bar{y}^{1,o}-\frac{k}{2}\sigma^{2\,1,o}+s_t^{1,y}-s_{t+1}^{1,o}\right)} = \alpha\mathrm{e}^{-k\left(\bar{y}^{2,y}-\frac{k}{2}\sigma^{2\,2,y}+s_{t+1}^{1,o}\right)} \tag{7}$$

that is equivalent to the more general

$$u'\left(c_t^{1,y}\right) = \mathbb{E}_t\, u'\left(c_{t+1}^{1,o}\right) = \alpha\, \mathbb{E}_t\, u'\left(w_{t+1}^{2,y}\right) \ . \tag{8}$$

Results. The Euler conditions in (7) and (8) imply that individuals fully smooth their expected consumption between t and $t+1$. Moreover, marginal utility of parents' consumption optimally equalize the expected marginal utility from the cash-on-hand of the offspring, namely the young generation in

[5]The same qualitative conclusions of the model can be drawn by assuming a logarithmic utility function of the form $u(c) = \ln(c)$ with decreasing prudence.

[6]According to which $\mathbb{E}\,\mathrm{e}^{-kx} = \mathrm{e}^{-k\bar{x}+k^2\frac{\sigma^2}{2}}$ if $x \sim \mathcal{N}(\bar{x}, \sigma^2)$

$t+1$, discounted by α. In the special case of $\alpha = 0$ (parents do not derive any utility from the utility of their offspring) this leads to the very standard consumption smoothing solution in a two-periods, one-generation framework.

Solving the Euler conditions (all details in Appendix B) leads to the following optimal saving behavior at time t

$$s_t^{1,y} = \frac{2}{3} y_t^{1,y} - \frac{1}{3}\bar{y}^{1,o} + \frac{k}{6}\sigma^{2\,1,o} - \frac{1}{3}\bar{y}^{2,y} + \frac{k}{6}\sigma^{2\,2,y} + \frac{1}{3}\frac{\ln\alpha}{k} \tag{9}$$

that shows some interesting features: i) saving is increasing with present known income and decreasing with the expected value of the future uncertain incomes; ii) holding constant the expected incomes, it is increasing with the variance of future income; iii) the sensitivity of saving to income uncertainty increases with k, that is the parameter of prudence; iv) the saving depends positively on the relative weight given to offspring utility, α.

Expected saving in $t+1$, that is the final transfer from generation 1 to the next generation 2, is the following

$$s_{t+1}^{1,o} = \frac{1}{3} y_t^{1,y} + \frac{1}{3}\bar{y}^{1,o} - \frac{k}{6}\sigma^{2\,1,o} - \frac{2}{3}\bar{y}^{2,y} + \frac{k}{3}\sigma^{2\,2,y} + \frac{2}{3}\frac{\ln\alpha}{k} \tag{10}$$

and also gives interesting insights: i) the transfer is increasing with income of generation 1 and decreasing with income of generation 2; ii) it increases with the variance of income of generation 2, but is decreasing with the variance of income of generation 1; iii) the sensitivity of saving to uncertainty of future incomes increases with the parameter of prudence, k; iv) the transfer depends positively on how altruistic are parents, α.

Finally, the consumption profile determined by the saving decisions of parents is the following

$$c_t^{1,y} = \frac{1}{3}\left(y_t^{1,y} + \bar{y}^{1,o} + \bar{y}^{2,y}\right) - \frac{k}{6}\sigma^{2\,1,o} - \frac{k}{6}\sigma^{2\,2,y} - \frac{1}{3}\frac{\ln\alpha}{k} \tag{11a}$$

$$c_{t+1}^{1,o} = \frac{1}{3}\left(y_t^{1,y} + \bar{y}^{1,o} + \bar{y}^{2,y}\right) + \frac{k}{3}\sigma^{2\,1,o} - \frac{k}{6}\sigma^{2\,2,y} - \frac{1}{3}\frac{\ln\alpha}{k} \tag{11b}$$

$$w_{t+1}^{2,y} = \frac{1}{3}\left(y_t^{1,y} + \bar{y}^{1,o} + \bar{y}^{2,y}\right) - \frac{k}{6}\sigma^{2\,1,o} + \frac{k}{3}\sigma^{2\,2,y} + \frac{2}{3}\frac{\ln\alpha}{k} \tag{11c}$$

showing that expected parents' consumption and offspring's cash-on-hand is equal to the average of total incomes, corrected for the level of uncertainty of income (that in turn depends on the coefficient of prudence, k) and for the degree of altruism, α. In detail, an increase of uncertainty on future income leads the parents to consume less in period t, but to increase own future consumption or transfers to the next generation in $t+1$. Indeed, in order to smooth the expected marginal utility from consumption/cash-on-hand, they need to lower actual consumption and raise future expected consumption, even if the expected income is unchanged. For instance, holding constant the income profile, an increase in uncertainty of future own income, $\sigma^{2\,1,o}$, leads to a proportional reduction of consumption in t and of transfers to the offspring, $w^{2,y}_{t+1}$. Stated differently, since uncertainty affects the level of expected utility, the consumption/transfer path react to change of variance even if the expected income does not change.

In the following empirical analysis we test the main prediction of the model, that is the negative correlation between income uncertainty and consumption in (11a).

3 Empirical strategy

To test whether parents respond to offspring's income uncertainty, we employ a first difference estimator as in the following equation

$$\Delta \log c_{pt} = \gamma \Delta\sigma_{ot} + \zeta \Delta\sigma_{pt} + \Delta X'_{ot}\beta_o + \Delta X'_{pt}\beta_p + \delta_t d_t + \Delta\varepsilon_{pt} \qquad (12)$$

where subscripts p and o denotes parent and offspring generations, respectively, and t is the time period. The dependent variable $\Delta \log c_{pt}$ is the change in the logarithm of food consumption of parents, namely their consumption growth rate. The main coefficient of interest is γ, which captures the response of parental consumption to a change in offspring's income risk (σ_{ot}). Other control variables are change in parental risk, $\Delta\sigma_{pt}$, chenges in parental family variables ($\Delta X'_{pt}$), which incorporates socio-economic covariates and the logarithm of parental income, and change in child's characteristics $\Delta X'_{ot}$, which include the logarithm of imputed income and offspring's socio-economic features.[7] Time-invariant characteristics, both observable and unobservable, are differentiated out and their impact cannot be identified in this setting. We include time dummies,[8] and ε_{pt} is the usual idiosyncratic error term. In the baseline specification we rely on information about the oldest child to measure characteristics of the offspring.

[7] More precisely, the baseline specification X'_{pt} includes the following variables: log of parental income, a dummy capturing whether the respondent is married or cohabiting with a partner, and respondent's job status, described by two dummy indicators for unemployment and retirement. Offspring's covariates (X'_{ot}) include child's job status, namely three indicators capturing whether she is in full time or part-time work or unemployed, and her log of income, which is the log of the average predicted value for individuals of the same type (recovered from EU-SILC data).

[8] Coefficients δ_t measure the joint effect of time and age, which are collinear in a first difference framework.

To estimate equation (12), we use the first-difference methodology: We do not impose any restriction on the correlation between covariates and unobserved heterogeneity. Unobserved heterogeneity in equation (12) includes both country fixed effect, namely economic, cultural and institutional differences which are persistent over time, and child-parent characteristics which are time invariant, such as intertemporal preferences and degree of altruism of parents, ability and risk aversion of the offspring, and birth cohort.

Identification of the effect of offspring's uncertainty on parental consumption relies on heterogeneous dynamics in income risk, according to the "type" of child. We exploit changes in risk between types to estimate the impact of child's risk net of individual and time fixed effects. These heterogeneous patterns are illustrated in figures 1 and 2.

In Section 5 we present the results of the main specification and we discuss its potential issues and how we deal with them. We also present several robustness checks in Section 6.

4 Data

The empirical analysis is aimed to test the main theoretical prediction, namely whether parents' consumption behavior responds to offspring's income uncertainty. To this purpose, we exploit two data sources which allow to observe and link two generations. The core dataset is the Survey of Health, Ageing and Retirement in Europe (SHARE), which is a cross country panel collecting detailed information on the parental generation. Notably, the dataset collects information on children characteristics. The second dataset is the European Union Statistics on Income and Living Conditions (EU-SILC), which provides information about individual income in several European countries. We use these data to compute two measures of income risk for the offspring generation, which are described in detail later in this section.[9]

SHARE. SHARE is a cross-national longitudinal survey representative of the non-institutionalised European population aged 50 or more. We use five waves of the survey: wave 1 (interview years 2004–2005), wave 2 (2006–2007), wave 4 (2011–2012), wave 5 (2013) and wave 6 (2015).[10] We select 17 European countries, which took part to SHARE and EU-SILC in the same year.

[9] All measure of monetary variables are expressed in euro 2005 in Germany, using PPP indices provided by SHARE.

[10] Wave 3 (SHARELIFE) includes information non comparable to the other waves.

The distribution of our sample over time and across countries is provided in Table 1.

The survey gathers information about several socio-economic variables, employment status, income, and household composition, either at personal or at household level. In our analysis, family characteristics are measured by covariates of the *household respondent*, namely the person who answers questions on household composition. A key set of variables to our analysis refer to characteristics of offspring, either co-resident with the respondent or not. More precisely, for every single child, SHARE provides socio-demographics information such as gender, education level, marital status, household size and composition, job status, living distance from parental residence.

Finally, respondents report their food consumption. The dependent variable we use in the empirical analysis is the logarithm of food expenditure, either at home or out. Despite the fact that food expenditure typically represents a large fraction of household budget, food can be thought as a necessity good, whose consumption is difficult to adjust. In this line, unemployment turns out to significantly cut small durables expenditure, rather than food consumption (Browning and Crossley, 2009). Demand rigidity determines a response of food consumption to uncertainty which is expected to be smaller than total or non durable consumption. For this reason, we might expect our estimate to be a lower bound for the impact of increasing uncertainty in offspring's income risk on total or non durable consumption. We also test whether the intergenerational precautionary saving channel is stronger when considering food consumed outside home only, whose expenditure is expected to be less rigid.

EU-SILC. We exploit EU-SILC to retrieve information on offspring's income and to measure income risk. EU-SILC is a European cross-country panel collected yearly and coordinated by Eurostat to provide comparability across countries and over time. We rely on cross-sectional waves for the period 2004-2015. We combine each wave in SHARE with two waves in EU-SILC, namely the two years when the SHARE survey is run. The underlying assumption is that consumption and saving react to changes in income uncertainty observed in the recent past, namely during the two years before the interview. The combinations of year and wave used in this analysis are described in Table 1. Descriptive statistics of the baseline sample are shown in Table 2.

Measuring income risk. We use the EU-SILC dataset to construct two indicators for, respectively, income and unemployment risk. The first one is a measure of overall income uncertainty, and it captures the dispersion of the unexplained component of income. We first estimate the deterministic component of income as a function of gender, age, and education. We allow the age profile of income to depend on gender and education, and we run separate regressions by country and wave.[11] The dispersion of the unexplained component of labor earnings is the standard deviation of the residuals from such regressions by 'type' of individual. A 'type' is defined as a partition of the sample including all respondents with the same age, gender and educational level, surveyed in the same county and wave. In the empirical analysis (equation 12), we estimate the impact of a *change* in this measure on the growth rate of parents' consumption. Identification hinges on two main assumptions. First, the relevant reference group to evaluate income risk is denoted by gender, age, education level and country.[12] Second, the change in the dispersion of the unexplained income component ($\Delta\sigma_{ot}$ in equation 12) captures the revision in offspring's income uncertainty. As pointed out by Banks, Blundell, and Brugiavini (2001), to assess the precautionary motive for saving what matters is the conditional variance of the income shock, namely the expected value of the variance of income innovation. We argue that a change in the dispersion of the unexplained component of income is a good proxy the update in the information set used to make predictions of the variance of innovations. In other words, a change in the dispersion of unexplained income component within the reference group, determines a revision in expectated uncertainty on future income. This assumption hinges on Meghir and Pistaferri (2004), who show a strong evidence of state dependence in the conditional variance of income shocks.[13] It follows that a change in conditional variance of income innovation reflects into a revision

[11] More precisely, we regress individual income on a set of dummy variables for gender, age brackets (five year dummies), educational level (below secondary, secondary, tertiary) and the full set of interactions among them, to allow the age profile of income to depend on gender and education. We run separate regressions by country and wave. We consider separately the sub-sample of respondents aged 21-55 for offspring and 51-80 for parents.

[12] Which is the geographical size of the labor market considered by individuals to form their expectations is not straightforward. We calculate the dispersion of income residual at the *national* level because of several reasons. First of all, within country migration may weaken the relevance of local labor market conditions, while language and institutional factors make the country labor market the natural geographical unit. In addition, there are data limitations. Information about the region of residence (NUTS regions) is not available in EU-SILC data for all the years and country we consider. Moreover, the sample size of cells delimited by gender, age, education *and* region is often too small to provide a reliable measure for income dispersion.

[13] They estimate an ARCH process for the conditional variance of permanent and transitory shocks. The persistence parameter turns out to be up to 0.9 for the permanent shock of high school graduates.

in expectations of future income risk, which is our measure of interest.[14]

We calculate the indicator for uncertainty described above using two alternative income variables. First, in line with Banks, Blundell, and Brugiavini (2001), we refer to a broad definition which includes all sources of non-asset income – including benefit income. By considering dynamics of income, rather than wages or earnings, we implicitly consider uncertainty in the level of earnings as well as the unemployment risk. Therefore, we include benefits to our income definition to account for the income attached to the non participation state, whatever its source. The second measure of risk is based on labor earnings only. This allows to examine the role of the welfare state to explain cross-country heterogeneity in the response of parental choice to offspring's income risk.

The second indicator we use in the empirical analysis is designed to capture unemployment risk. It is the change in the observed share of unemployed individuals by 'type'. We expect consumption to be particularly sensitive to this measure, because unemployment is associated with zero income and, therefore, with a larger utility loss. Moreover, we expect the impact of unemployment risk of children on parental consumption to be negatively correlated with the availability of other forms of insurance, namely private savings and unemployment benefits.

The average predicted income in our sample for the second generation is about 29,000 euros, while the average indicator for income risk is about 19,000 euros (Table 3).[15] Some examples of the estimated age profile of income and income risk are plotted in Figure 1. Both expected income and its uncertainty are higher for older, more educated and male respondents. While this may seem counter-intuitive, Meghir and Pistaferri (2004, p.10) state that 'the higher returns emanating from increased education come at the cost of higher income risk'. Figure 2 displays the trends of unemployment for the same countries and years showing the opposite result: expectedly, unemployment is higher for younger and less educated individuals, while there is no significant difference between women and men.

[14]Unfortunately, the panel dimension of our data is too narrow to disentangle permanent and transitory shocks, using the method developed by Meghir and Pistaferri (2004).

[15]We rely on cells with at least 50 observations, while we drop partitions with less than 50 individuals.

5 Results

First-difference estimate baseline results are reported in Table 4.[16] A key aspect of the present study is the measurement of risk. As described in section 4, the standard deviation of the residuals is a good proxy for uncertainty, even more in a first difference setting, where we assess the effect of the variation of such standard deviation over the previous period. However, in order to study the possible effect of a different income measure, we replicate the analysis in the baseline model using three measures of risk: the standard deviation of residuals of disposable income (panel a), the same measure computed excluding transfers from the notion of income (panel b), and the risk of unemployment (panel c). In all panels, the most parsimonious specification (column 1) only includes as controls the logarithm of self-reported equivalent income of parents, of predicted (from EU-SILC) income of the offspring and the standard deviation of residuals of parental income. Parental consumption turns out to respond significantly to a change in offspring's income risk, as predicted by the theoretical model, as well as to a change in the income of both generation. One standard deviation increase in income risk reflects into a contraction by about 1.2% in parental consumption,[17] while a one percentage point increase in unemployment risk lowers parental consumption by about .285%. With respect to income, a one percent increase in parental income increases consumption by about .02% and the same variation in offspring income fosters consumption by .05% to .096%, depending on the model. These key findings support the implications of the theoretical model illustrated in Section 2. First, we find evidence on altruism of parents, who care about their offspring's income. Moreover, inter-generational precautionary savings turns out to be relevant in our sample: we find a significant link between income risk of offspring and parents' consumption and saving choices.

Estimate results for the main coefficients of interests are robust to the addition of controls. Columns (2) and (3) report estimate results when controlling for additional child's and parents' covariates. As expected, parents' consumption is increasing with their own family income, while it does not react to increasing uncertainty. This is possibly due to respondents older than 50 – who are close to their retirement or retired – facing modest uncertainty, and by the negligible impact of labor income risk in late stage of the life-cycle, when human capital represents a minor component of permanent

[16]Tables A.1, A.2 and A.3 in appendix report all the coefficients relative to the control variables.

[17]More precisely, $-.00064 * 18.915 = -.0121$ in the model with overall income and $-.00060 * 19.482 = -.0117$ when excluding transfers.

income. In this line, estimated coefficients are almost identical when excluding parental income risk (column 4). Such specification also controls for the potential collinearity between parents' and children's income risk: once parental income risk is dropped, the coefficient for offspring risk is virtually unchanged, confirming the absence of collinearity.

A possible threat to causal interpretation of our results is related to reverse causality: respondents who consume more could be more willing to work more, this reflecting into a higher income. This reverse causality, along with the presence of unobserved shocks which can affect both consumption and labor supply, may determine endogeneity in equation (12). To address this issue, we substitute self-reported income with predicted family income from EU-SILC. Being determined only by age, gender and educational status, such predicted income should be significantly less affected, if any, by the reverse causality issue. Results are shown in column (5) and corroborate the hypothesis of no reverse causality: the coefficient related to uncertainty of offspring is almost unchanged, while the effect of parental income turns out to be positive and significant.

6 Robustness checks

Omitted variables. One threat to causal interpretation of our results is related to omitted variables, which could be correlated with consumption of parents and some of the regressors, biasing our results. In this regard a powerful advantage of the first difference regression is that it conditions out any household unobserved heterogeneity. However, to address the issue, in the baseline model we control for a set of time-varying covariates for both generations. To further mitigate this potential problem we extend the baseline specification to include additional controls for parents and offspring, which could determine a revision in parental consumption choices.

Tables 5 and 6 check the robustness of our findings to the inclusion of additional controls for, respectively, parents and offspring.[18] The rationale for these tests is to rule out that the impact we estimate is weakened by spurious correlation of estimated income risk with omitted time-varying variables. First, consumption choices could depend on job status not only of the household head, but also of the spouse. For this reason, in column (2) of Table 5, we control for retirement and unemployment of the two spouses and results are confirmed. Second, we add to the vector of regressors a self-reported measure for poor health status, which is possibly associated with an increase

[18]Column (1) of both tables report the full set of regressors of the baseline model as in column (3), panel a of Table 4.

in out-of-pocket expenditure (column 3). We also include a variable for the number of children and grandchildren, which could drive an increase in child-care expenditure of children (column 4) and in turn a larger saving for the grandparents. These two variables do not significantly affect consumption, and their inclusion does not alter estimate of the main coefficient of interest. Finally, children of wealthier households may choose riskier education and job career *because* they can rely on parental resources to face income risk or shocks. First difference estimation allows to tackle this issue inasmuch as the position in the wealth distribution of parents is persistent over time. However, we also test the robustness of our findings to the inclusion of net financial assets among the controls (column 5). The coefficient is positive and significant but leaves unchanged the effect of income uncertainty, suggesting that its role does not depend on the parental net financial asset. Given the drop in sample size, however, we choose not to include this control variable in the baseline model.

Table 6 shows estimate results when extending the set of child variables. We control for child's marital status (column 2), since married children could rely on more sources of income from partner and parents in law in case of a negative shock; for cohabiting child (column 3), assuming that cohabitation itself is a way to self-insure against income shocks; frequency of contacts with parents (column 4), to control for time-varying relations between child and parents; and disability (column 5), that may affect the reaction of parents to possible income shocks of the child. None of these variables significantly affects our findings. Finally, in column (6) we control for children other than the first who are unemployed or disabled. Again, no effect is found.

Sample selection and placebo test Even if the first difference approach allows to rule out any time-invariant personal and household characteristic and the time fixed effects do the same for time trends common to all individuals, one may suspect that the source of variability we identify is correlated to some other feature that may affect parental consumption. In order to verify that this is not the case, we can replicate the model by adding also households without children (for which we set to 0 both income and risk of children) and by randomizing child risk across households (both with children only and in the enlarged sample). Table 7 shows that the inclusion of about one sixth of the sample without children lowers the coefficient of child risk and child income and makes them not statistically significant at usual levels. The coefficients referred to parental income and characteristics are virtually unaffected, while we drop child controls in order to pool households with and without children in the same regression.

Household composition. In the baseline model we consider the effects of income level, income uncertainty and personal characteristics of the oldest child on parental consumption. However, in case of more than one child, consumption decisions of parents might be driven by income risk of younger children, or – more generally – may be driven by the riskiest child. In order to control for this, we replicate the analysis in the baseline model by replacing the standard deviation of residual income of the first child with that of the riskiest child, of the less risky child, and an average of all children (up to the fifth). In this model, we also drop single children characteristics and we include (the log of) the average of all children incomes. Table 8 compares the baseline results on the first child (column 1) with those on the less risky child (column 2), the average risk of all children (column 3) and the riskiest child (column 4) and results seem to corroborate our main hypotheses: parental consumption is unaffected by the risk of the less risky child, while it is negatively influenced by the pooled risk of all children and by the risk of the riskiest child. Unsurprisingly, the coefficients of risk variables are slightly lower than the baseline model, since the driving channel is moderated by the presence of other children than may counteract it.

In addition, the effect of uncertainty on consumption may differ across households type.[19] A first dimension we can take into account is the number of children parents have, independently of their riskiness, and whether the parent lives alone or with a partner. Table 9 shows that parents with more than one child reacts significantly more than others to their first child income shocks and that single parents are more willing to save in response to an increase of child income uncertainty. A second, related aspect is the geographical distance between parents and child. Even if we have controlled for the frequency of contacts between parents and child in Table 6, we replicate the baseline model for different samples according to the geographical distance between the child and the parents. Not surprisingly, Table 10 shows how the effect is decreasing with the distance.

Cross-country comparison. Cross-country differences in the strength of the intergenerational precautionary motive for saving could be related to different degrees of generosity in welfare systems, and by heterogeneity in culture and family ties. We investigate the extent to which the average effect is heterogeneous across European countries in Tables 11 and 12, in which we *exclude* groups of countries from the general sample and we compare the

[19]Since these sample selections are not completely exogenous, we must be cautious when interpreting the results.

results to the baseline model.[20] The coefficients for both the standard deviation of residuals and the risk of unemployment are lower and less significant when excluding Southern and Eastern countries, suggesting that the effect of uncertainty is stronger in these clusters of countries, while the opposite is true for Scandinavian countries and Central European countries, in the latter group only for unemployment risk.

The reasons behind these findings might be either that in Scandinavian countries and – to a lesser extent – in Central European countries income and unemployment risks are not perceived as an important issue which it is not worthy to save for, or that in those countries the welfare state is a good substitute for the informal parental and family support. In principle, it is also possible that non of these is true, but that parents just care less about children income risk, that is, in terms of out theoretical model, the parameter α could be lower in those regions.

Age comparison. The coefficient of prudence might change according to the age of the second generation. Indeed, not only risk is different across age groups, but also the possible reaction of parents to offspring risk may change. Figures 3 and 4 show how the coefficients vary across first child age groups for standard deviation of residual income and unemployment risk, respectively. While the trend for the first risk measure is not very clear, apart from a spike for children aged 31-35, unemployment risk seems to negatively affect the consumption of all parents with offspring younger than 45.

Heterogeneity by income class. We have shown previously that results are consistent after the inclusion of net financial asset. However, one may wonder whether the effect of uncertainty on precautionary saving is constant for every level of income, or it is stronger among the poorest (maybe because they have a larger coefficient of prudence) or the richest (maybe because they can afford to adjust consumption more than poor households close to subsistence income). Table 13 reports the baseline specification for households above and below the median[21] and for two risk measures.

Food consumption as a lower bound. Even if the effects shown in the baseline model are statistically significant, their magnitude seems to be

[20] Our choice is due to the relatively small sample size within groups of countries, that does not allow to estimate reliable coefficients.

[21] Given the panel structure of the data, medians have been computed by country and wave, that is we have splitted the sample for every country and every wave in the final sample. Due to the relatively low sample size, we did not disaggregate at a lower level, nor we split the sample in quartiles.

small. However, as highlighted in section 4, it should be noticed that it is a lower bound, since we analyze the effects on food consumption only. More in detail, the elasticity of demand is increasing with the 'durability' of goods, meaning that the more durable the good, the more elastic its demand. We can safely assume that food consumption has a rigid demand, and therefore should be less sensitive to income or risk shocks. Indeed, if we estimate our baseline model using only food consumption at home (Table 14), the size of both coefficients on income and risk drop by about 8% and 17% with respect to the baseline model. Consistently, if we include as a dependent variable only food consumed outside (Table 15) the coefficients rise dramatically (by 5% and 100%)), confirming that our results can indeed be considered as a lower bound.

7 Conclusion

Several motives for saving have been extensively analyzed by the economic literature. This paper contributes to the literature on consumption and saving by examining the *interaction* between altruistic reasons and the precautionary motive. A simple theoretical model predicts that current consumption of parents depends not only on their own and their offspring life cycle income, positively, but also on the perceived dispersion of future incomes, negatively. We test these implications using an individual panel data with exogenous measures of income risk, and we find a significant negative effect of income uncertainty in the offspring's generation on parents' consumption choices, which are consistent with inter-generational precautionary savings.

This channel is expected to be particularly relevant in the last decade, when the financial crisis worsened labor market conditions and increased income uncertainty, especially among the young. In the period 2006-2015 total unemployment in the Euro area, reported by Eurostat, increased from 8.4% to 10.9%. Youth unemployment rose in the same period from 17.2% to 22.4%, with dramatic figures for Greece (from 25.0% to 49.8%), Spain (from 17.9% to 48.3%), Italy (from 21.8% to 40.3%). The paper conveys two main messages from a policy perspective. On the one side, future income uncertainty lowers consumption not only of those individuals affected by it, but also of their parents, or other people supporting their income. On the other side, public welfare policies (as unemployment benefits and income support) may substitute family ties and informal networks, generating a positive spill-over beyond the target of the policies.

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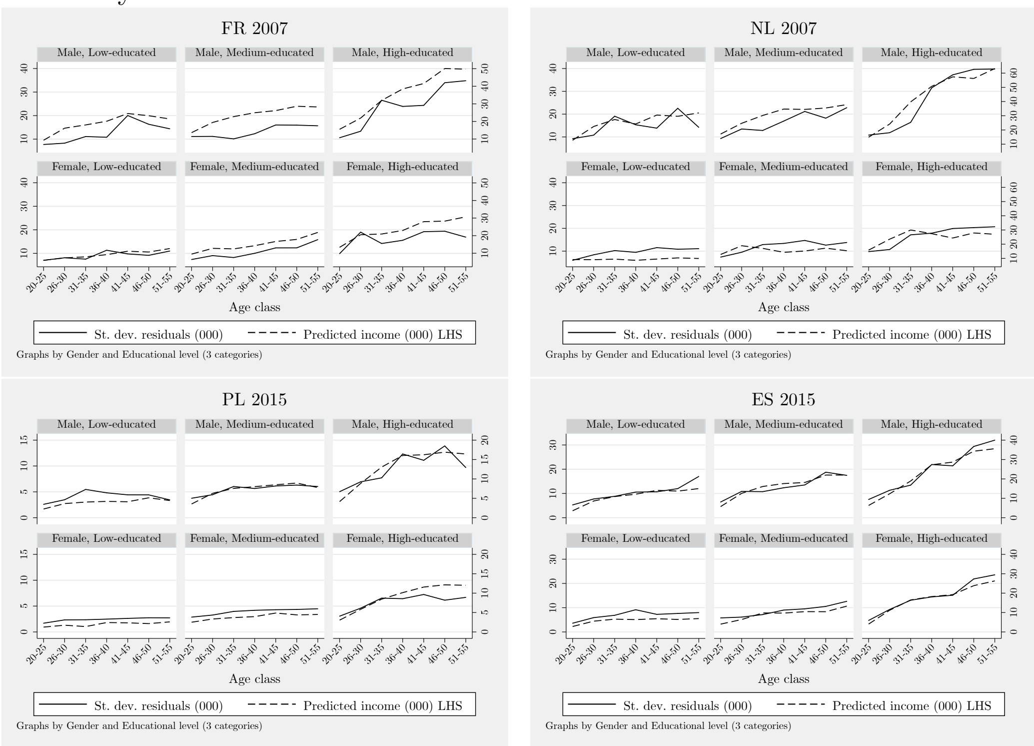
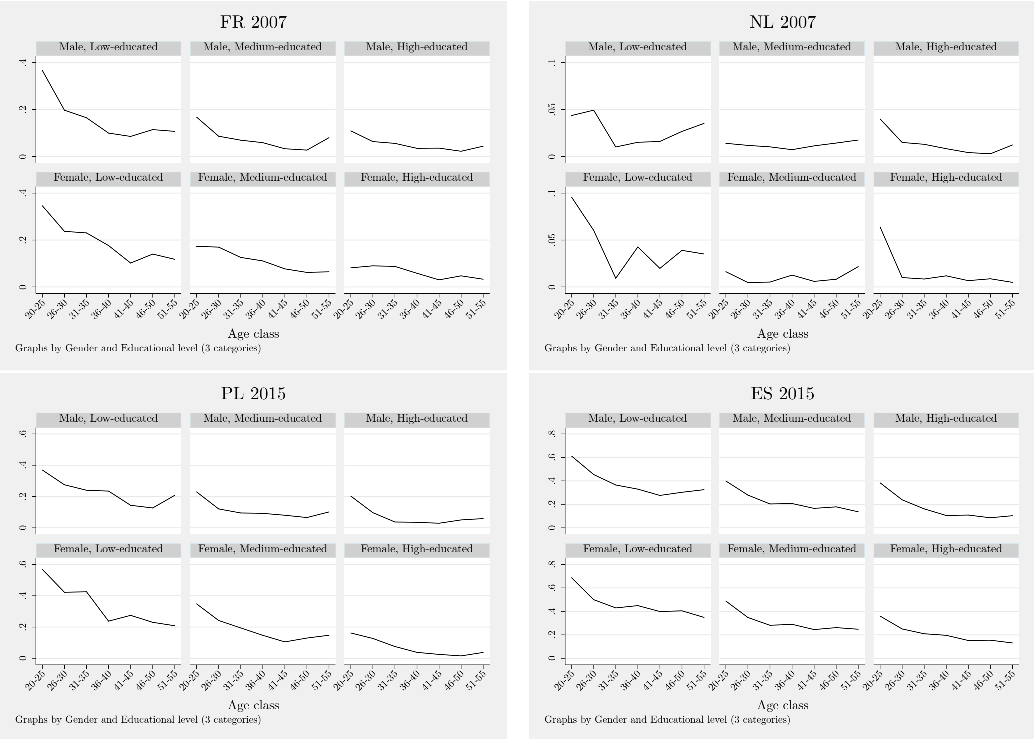
Figures and Tables

Figure 1: Estimate of predicted income and standard deviation of residuals: selected years and countries



Source: EU-SILC, PPP real values (thousand euros, Germany 2005).

Figure 2: Estimate of unemployment rates: selected years and countries



Source: EU-SILC.

Figure 3: Baseline specification across age – Standard deviation of residuals

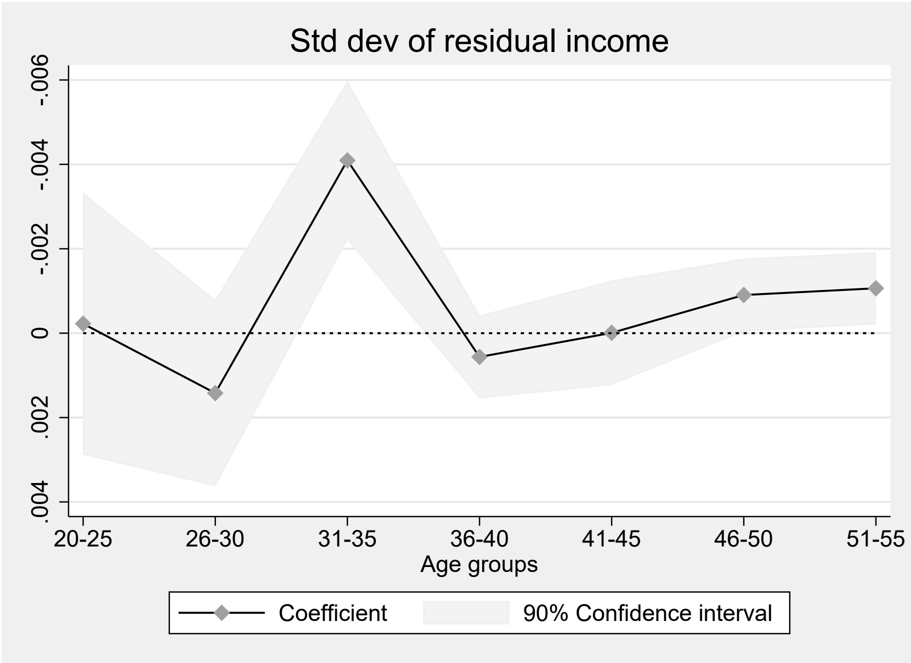


Figure 4: Baseline specification across age – Unemployment risk

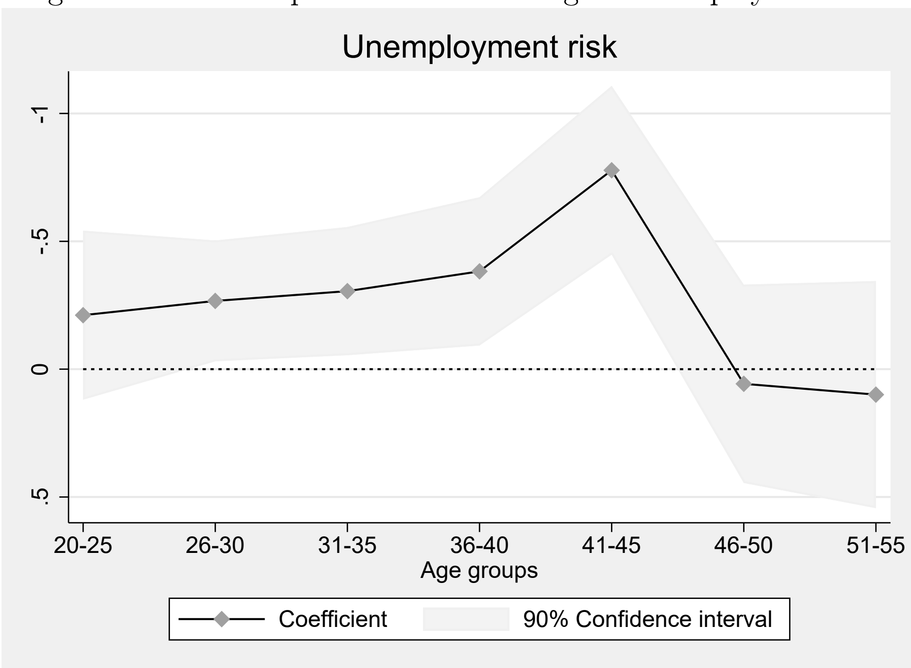


Table 1: Distribution of SHARE and EU-SILC observations across countries and over time.

	Year				
Country	2004	2007	2011	2013	2015
AT	Yes	Yes	Yes	Yes	Yes
BE	Yes	Yes	Yes	Yes	Yes
CH	.	Yes	Yes	Yes	Yes
CZ	.	Yes	Yes	Yes	Yes
DE	Yes	Yes	Yes	Yes	Yes
DK	Yes	Yes	Yes	Yes	Yes
EE	.	.	Yes	Yes	Yes
ES	.	Yes	Yes	Yes	Yes
FR	Yes	Yes	Yes	Yes	Yes
IT	.	Yes	Yes	Yes	Yes
LU	.	.	.	Yes	Yes
NL	Yes	Yes	Yes	Yes	.
PL	.	Yes	Yes	.	.
SE	Yes	Yes	Yes	Yes	Yes
SI	.	.	Yes	Yes	Yes

Each country-year includes 42 cells, defined by 7 age classes, 3 education classes and 2 genders.

Table 2: Summary statistics

Variable	Obs	Mean	Std. Dev.
Food cons., equiv. (in log)	43193	8.125	.477
Child sd. dev. residual income	43193	18.915	14
Child income (predicted, 000)	43193	27.995	17.572
Child sd. dev. residual income, net of transfers	43193	19.482	14.066
Child income (predicted, 000), net of transfers	43193	26.805	17.322
HH st. dev. residual income	43193	16.59	22.433
HH equiv. income (000)	43193	23	106.63
HH equiv. income (predicted, 000)	43193	23.72	17.525
HH head in a couple	43193	.692	.462
HH head retired	43193	.607	.488
HH head unemployed	43193	.023	.149
Child in full-time work	43193	.763	.425
Child in part-time work	43193	.088	.283
Child unemployed	43193	.05	.217
Child unempl. risk (SILC)	43193	.071	.066
Child married	42386	.598	.49
Child cohabiting with parents	37957	.083	.275
Child living within 1 km	37957	.231	.422
Many contacts (at least once a week)	38723	.804	.397
Child disable	43193	.015	.123
At least one child unemployed	43193	.1	.3
At least one child disable	43193	.03	.172
HH head in poor health conditions	43193	.343	.475
HH head children	43193	2.331	1.094
HH head grand-children	43193	2.813	2.677
Net financial assets (in log)	38429	9.039	3.808

Table 3: Summary statistics: offspring's imputed income and income risk.

Variable	Mean	Std. Dev.
Predicted income	22757.535	16648.28
St. dev. residuals	16164.387	14224.797

Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Observations are the 2.666 country-year cells.

Table 4: First-differences regressions; dependent variable: logarithm of household equivalent food consumption.

	(1)	(2)	(3)	(4)	(5)
	b/se	b/se	b/se	b/se	b/se
Child sd. dev. residual income	-0.00064**	-0.00064**	-0.00064**	-0.00064**	-0.00060**
	(0.00027)	(0.00027)	(0.00027)	(0.00027)	(0.00027)
Child income (predicted, in log)	0.09563***	0.09621***	0.09596***	0.09604***	0.08466***
	(0.01423)	(0.01422)	(0.01428)	(0.01428)	(0.01433)
HH st. dev. residual income	0.00003	0.00003	0.00003	.	-0.00005
	(0.00010)	(0.00010)	(0.00010)	.	(0.00010)
HH equiv. income (in log)	0.02229***	0.02252***	0.02251***	0.02251***	.
	(0.00235)	(0.00236)	(0.00236)	(0.00236)	.
HH equiv. income (predicted, in log)	.	.	.	.	0.08127***
	.	.	.	.	(0.00840)
Obs.	43193	43193	43193	43193	43193
Child sd. dev. residual income, net of transfers	-0.00060**	-0.00060**	-0.00060**	-0.00060**	-0.00057**
	(0.00028)	(0.00028)	(0.00028)	(0.00028)	(0.00028)
Child income (predicted, in log), net of transfers	0.07991***	0.08038***	0.08014***	0.08021***	0.07136***
	(0.01263)	(0.01263)	(0.01268)	(0.01268)	(0.01269)
HH st. dev. residual income	0.00003	0.00003	0.00003	.	-0.00006
	(0.00010)	(0.00010)	(0.00010)	.	(0.00010)
HH equiv. income (in log)	0.02230***	0.02254***	0.02253***	0.02253***	.
	(0.00235)	(0.00236)	(0.00236)	(0.00236)	.
HH equiv. income (predicted, in log)	.	.	.	.	0.08199***
	.	.	.	.	(0.00839)
Obs.	43193	43193	43193	43193	43193
Child unempl. risk (SILC)	-0.28500***	-0.28332***	-0.28444***	-0.28456***	-0.30102***
	(0.06908)	(0.06907)	(0.06914)	(0.06913)	(0.06904)
Child income (predicted, in log)	0.05338***	0.05421***	0.05387***	0.05392***	0.04108***
	(0.01572)	(0.01571)	(0.01575)	(0.01575)	(0.01577)
HH st. dev. residual income	0.00003	0.00002	0.00002	.	-0.00006
	(0.00010)	(0.00010)	(0.00010)	.	(0.00010)
HH equiv. income (in log)	0.02223***	0.02246***	0.02246***	0.02246***	.
	(0.00235)	(0.00236)	(0.00236)	(0.00236)	.
HH equiv. income (predicted, in log)	.	.	.	.	0.08203***
	.	.	.	.	(0.00839)
Obs.	43193	43193	43193	43193	43193
Control variables (in all panels above)					
Household head[a]	No	Yes	Yes	Yes	Yes
Child[b]	No	No	Yes	Yes	Yes
Time dummies[c]	Yes	Yes	Yes	Yes	Yes

$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Robust standard errors in parenthesis.

[a] Household head in a copule, household head retired, household head unemployed.

[b] Child in full-time work, child in part-time work, child unemployed.

[c] Year dummies (2007, 2011, 2013, 2015).

Table 5: Robustness. First-differences regressions; dependent variable: logarithm of household equivalent food consumption. Additional parental controls.

	(1) b/se	(2) b/se	(3) b/se	(4) b/se	(5) b/se
Child sd. dev. residual income	-0.00064**	-0.00064**	-0.00064**	-0.00064**	-0.00067**
	(0.00027)	(0.00027)	(0.00027)	(0.00027)	(0.00030)
Child income (predicted, in log)	0.09596***	0.09560***	0.09602***	0.09581***	0.09311***
	(0.01428)	(0.01429)	(0.01428)	(0.01428)	(0.01616)
HH st. dev. residual income	0.00003	0.00003	0.00003	0.00003	0.00007
	(0.00010)	(0.00010)	(0.00010)	(0.00010)	(0.00011)
HH equiv. income (in log)	0.02251***	0.02253***	0.02251***	0.02250***	0.02321***
	(0.00236)	(0.00236)	(0.00236)	(0.00236)	(0.00265)
HH head in a couple	-0.02595*	-0.02358	-0.02597*	-0.02653*	-0.03018*
	(0.01480)	(0.01481)	(0.01479)	(0.01481)	(0.01654)
HH head retired	-0.01948***	.	-0.01943***	-0.01961***	-0.02344***
	(0.00694)	.	(0.00694)	(0.00695)	(0.00774)
HH head unemployed	-0.06187***	.	-0.06195***	-0.06185***	-0.06759***
	(0.01423)	.	(0.01423)	(0.01423)	(0.01634)
Child in full-time work	0.00211	0.00216	0.00213	0.00235	0.00560
	(0.00794)	(0.00794)	(0.00794)	(0.00794)	(0.00892)
Child in part-time work	0.01229	0.01241	0.01230	0.01243	0.01328
	(0.00982)	(0.00981)	(0.00982)	(0.00982)	(0.01089)
Child unemployed	0.00682	0.00715	0.00682	0.00691	0.01403
	(0.01089)	(0.01089)	(0.01089)	(0.01089)	(0.01253)
HH head or partner retired	.	-0.01903***	.	.	.
	.	(0.00642)	.	.	.
HH head or partner unemployed	.	-0.05250***	.	.	.
	.	(0.01155)	.	.	.
HH head in poor health conditions	.	.	0.00203	.	.
	.	.	(0.00537)	.	.
HH head children	.	.	.	0.00414	.
	.	.	.	(0.00596)	.
HH head grand-children	.	.	.	0.00223	.
	.	.	.	(0.00245)	.
Net financial assets (in log)	.	.	.	.	0.00352***
	.	.	.	.	(0.00069)
Constant	-0.04658***	-0.04583***	-0.04675***	-0.04723***	-0.04385***
	(0.00834)	(0.00835)	(0.00835)	(0.00837)	(0.00947)
Wave FE	Yes	Yes	Yes	Yes	Yes
Obs.	43193	43193	43193	43193	34514

$^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Robust standard errors in parenthesis.

Table 6: Robustness. First-differences regressions; dependent variable: logarithm of household equivalent food consumption. Additional child's controls.

	(1)	(2)	(3)	(4)	(5)	(6)
	b/se	b/se	b/se	b/se	b/se	b/se
Child sd. dev. residual income	-0.00064**	-0.00063**	-0.00061**	-0.00069**	-0.00064**	-0.00064**
	(0.00027)	(0.00028)	(0.00029)	(0.00030)	(0.00027)	(0.00027)
Child income (predicted, in log)	0.09596***	0.09902***	0.11342***	0.12365***	0.09611***	0.09647***
	(0.01428)	(0.01449)	(0.01601)	(0.01662)	(0.01429)	(0.01428)
HH st. dev. residual income	0.00003	-0.00000	0.00012	0.00015	0.00003	0.00003
	(0.00010)	(0.00010)	(0.00011)	(0.00011)	(0.00010)	(0.00010)
HH equiv. income (in log)	0.02251***	0.02197***	0.02173***	0.02254***	0.02250***	0.02248***
	(0.00236)	(0.00239)	(0.00251)	(0.00256)	(0.00236)	(0.00236)
HH head in a couple	-0.02595*	-0.02824*	-0.02011	-0.02649	-0.02595*	-0.02581*
	(0.01480)	(0.01497)	(0.01609)	(0.01631)	(0.01480)	(0.01480)
HH head retired	-0.01948***	-0.02012***	-0.01710**	-0.01923***	-0.01947***	-0.01945***
	(0.00694)	(0.00702)	(0.00740)	(0.00744)	(0.00694)	(0.00694)
HH head unemployed	-0.06187***	-0.06387***	-0.06349***	-0.07166***	-0.06185***	-0.06172***
	(0.01423)	(0.01446)	(0.01540)	(0.01555)	(0.01423)	(0.01422)
Child in full-time work	0.00211	0.00352	0.00093	0.00117	0.00026	-0.00447
	(0.00794)	(0.00810)	(0.00869)	(0.00885)	(0.00805)	(0.00714)
Child in part-time work	0.01229	0.01314	0.01140	0.01026	0.01043	0.00614
	(0.00982)	(0.00996)	(0.01063)	(0.01088)	(0.00990)	(0.00929)
Child unemployed	0.00682	0.00823	0.00964	0.01297	0.00452	.
	(0.01089)	(0.01106)	(0.01183)	(0.01210)	(0.01105)	.
At least one child unemployed	.	.	.	.	.	-0.01205
	.	.	.	.	.	(0.00736)
Child married	.	-0.00490	.	.	.	.
	.	(0.00805)	.	.	.	.
Child cohabiting with parents	.	.	-0.03146**	.	.	.
	.	.	(0.01412)	.	.	.
Many contacts (at least once a week)	.	.	.	0.00260	.	.
	.	.	.	(0.00680)	.	.
Child disable	.	.	.	.	-0.02331	.
	.	.	.	.	(0.02433)	.
At least one child disable	.	.	.	.	.	-0.00196
	.	.	.	.	.	(0.01685)
Constant	-0.04658***	-0.04743***	-0.04927***	-0.04140***	-0.04653***	-0.04666***
	(0.00834)	(0.00837)	(0.00840)	(0.00879)	(0.00834)	(0.00834)
Wave FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	43193	42202	37814	36865	43193	43193

$^{*}p < 0.1,^{**} p < 0.05,^{***} p < 0.01$. Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Robust standard errors in parenthesis.

Table 7: Robustness. First-differences regressions; dependent variable: logarithm of household equivalent food consumption. Random child risk.

	(1)	(2)	(3)	(4)
	b/se	b/se	b/se	b/se
	Baseline	No children	Baseline	No children
Child sd. dev. residual income	-0.00064**	-0.00014	.	.
	(0.00027)	(0.00026)	.	.
Child sd. dev. residual income (random)	.	.	0.00004	-0.00001
	.	.	(0.00012)	(0.00011)
Child income (predicted, in log)	0.09621***	0.00191	0.08669***	0.00159
	(0.01422)	(0.00193)	(0.01355)	(0.00183)
HH st. dev. residual income	0.00003	0.00007	0.00003	0.00007
	(0.00010)	(0.00009)	(0.00010)	(0.00009)
HH equiv. income (in log)	0.02252***	0.01971***	0.02256***	0.01972***
	(0.00236)	(0.00217)	(0.00236)	(0.00217)
HH head in a couple	-0.02595*	-0.02449*	-0.02601*	-0.02445*
	(0.01479)	(0.01369)	(0.01479)	(0.01369)
HH head retired	-0.01943***	-0.01363**	-0.01947***	-0.01364**
	(0.00694)	(0.00648)	(0.00694)	(0.00648)
HH head unemployed	-0.06189***	-0.06025***	-0.06194***	-0.06026***
	(0.01422)	(0.01315)	(0.01422)	(0.01315)
Constant	-0.04655***	-0.03625***	-0.04695***	-0.03649***
	(0.00834)	(0.00763)	(0.00833)	(0.00761)
Wave FE	Yes	Yes	Yes	Yes
Obs.	43193	50083	43193	50083

$^{*}p < 0.1,^{**}p < 0.05,^{***}p < 0.01$. Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Robust standard errors in parenthesis. The sample in columns (2) and (4) is increased by 6889 households with no children.

Table 8: Robustness. First-differences regressions; dependent variable: logarithm of household equivalent food consumption. Pooled children risk.

	(1)	(2)	(3)	(4)
	b/se	b/se	b/se	b/se
Child sd. dev. residual income	-0.00064**	.	.	.
	(0.00027)	.	.	.
Min of children sd. dev. residual income	.	0.00057	.	.
	.	(0.00045)	.	.
Mean of children sd. dev. residual income	.	.	-0.00059	.
	.	.	(0.00037)	.
Max of children sd. dev. residual income	.	.	.	-0.00054**
	.	.	.	(0.00022)
Child income (predicted, in log)	0.09621***	.	.	.
	(0.01422)	.	.	.
Mean of children income (predicted, in log)	.	0.09107***	0.10396***	0.10505***
	.	(0.01595)	(0.01609)	(0.01574)
HH st. dev. residual income	0.00003	0.00003	0.00002	0.00003
	(0.00010)	(0.00010)	(0.00010)	(0.00010)
HH equiv. income (in log)	0.02252***	0.02249***	0.02243***	0.02242***
	(0.00236)	(0.00236)	(0.00236)	(0.00236)
HH head in a couple	-0.02595*	-0.02576*	-0.02582*	-0.02568*
	(0.01479)	(0.01480)	(0.01480)	(0.01480)
HH head retired	-0.01943***	-0.01987***	-0.01981***	-0.01981***
	(0.00694)	(0.00694)	(0.00694)	(0.00694)
HH head unemployed	-0.06189***	-0.06167***	-0.06148***	-0.06140***
	(0.01422)	(0.01422)	(0.01423)	(0.01423)
Constant	-0.04655***	-0.04802***	-0.04719***	-0.04701***
	(0.00834)	(0.00839)	(0.00840)	(0.00839)
Wave FE	Yes	Yes	Yes	Yes
Obs.	43193	43193	43193	43193

$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Robust standard errors in parenthesis.

Table 9: Robustness. First-differences regressions; dependent variable: logarithm of household equivalent food consumption. Household composition.

	(1)	(2)	(3)	(4)	(5)
	b/se	b/se	b/se	b/se	b/se
	One child	Two children	More than two	Single	Couple
Child sd. dev. residual income	0.00050	-0.00088**	-0.00078*	-0.00110**	-0.00038
	(0.00063)	(0.00040)	(0.00045)	(0.00045)	(0.00035)
Child income (predicted, in log)	0.10600***	0.10107***	0.07997***	0.22219***	0.05123***
	(0.03004)	(0.02030)	(0.02677)	(0.03191)	(0.01578)
HH st. dev. residual income	0.00018	0.00011	-0.00009	0.00025	-0.00000
	(0.00024)	(0.00015)	(0.00016)	(0.00029)	(0.00010)
HH equiv. income (in log)	0.01401***	0.02617***	0.02238***	0.02306***	0.02225***
	(0.00537)	(0.00336)	(0.00419)	(0.00455)	(0.00266)
HH equiv. income (predicted, in log)	.	.	.	.	.
	.	.	.	.	.
HH head in a couple	-0.00285	-0.03315	-0.03111	0.00512	-0.09279***
	(0.03079)	(0.02148)	(0.02715)	(0.01787)	(0.02916)
HH head retired	-0.02335	-0.00013	-0.04304***	-0.03323**	-0.01273
	(0.01662)	(0.01003)	(0.01182)	(0.01360)	(0.00794)
HH head unemployed	-0.04654	-0.05863***	-0.07605***	-0.10732***	-0.03981**
	(0.03264)	(0.02082)	(0.02414)	(0.02917)	(0.01594)
Child in full-time work	0.02660	-0.01307	0.00721	-0.00497	0.00558
	(0.01718)	(0.01170)	(0.01387)	(0.01677)	(0.00873)
Child in part-time work	0.06432***	-0.02316	0.02907*	0.00433	0.01623
	(0.02176)	(0.01437)	(0.01706)	(0.02032)	(0.01098)
Child unemployed	0.04164*	-0.00999	0.00730	-0.00532	0.01313
	(0.02365)	(0.01591)	(0.01926)	(0.02150)	(0.01240)
Constant	-0.05295***	-0.03360***	-0.05864***	-0.07313***	-0.03420***
	(0.01910)	(0.01204)	(0.01438)	(0.01681)	(0.00945)
Wave FE	Yes	Yes	Yes	Yes	Yes
Obs.	8205	20419	14566	13302	29891

$^{*}p < 0.1,^{**}p < 0.05,^{***}p < 0.01$. Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Robust standard errors in parenthesis.

Table 10: Robustness. First-differences regressions; dependent variable: logarithm of household equivalent food consumption. Distance from the child.

	(1)	(2)	(3)	(4)	(5)
	b/se	b/se	b/se	b/se	b/se
	Cohabiting	Non-cohabiting	< 25 km	>= 25 km	All
Child sd. dev. residual income	-0.00177§	-0.00061**	-0.00062§	-0.00058	-0.00065**
	(0.00109)	(0.00031)	(0.00041)	(0.00048)	(0.00030)
Child income (predicted, in log)	0.12877***	0.11925***	0.12490***	0.10745***	0.11715***
	(0.03963)	(0.01775)	(0.02381)	(0.02676)	(0.01618)
HH st. dev. residual income	-0.00005	0.00011	0.00009	0.00011	0.00010
	(0.00050)	(0.00011)	(0.00018)	(0.00014)	(0.00011)
HH equiv. income (in log)	0.02131***	0.02174***	0.02033***	0.02393***	0.02183***
	(0.00700)	(0.00275)	(0.00339)	(0.00473)	(0.00256)
HH head in a couple	0.07024	-0.03181*	-0.01783	-0.05347**	-0.02372
	(0.05782)	(0.01720)	(0.02213)	(0.02728)	(0.01650)
HH head retired	-0.03603	-0.01846**	-0.01857*	-0.01824§	-0.01949***
	(0.03063)	(0.00774)	(0.01007)	(0.01209)	(0.00751)
HH head unemployed	-0.00377	-0.07253***	-0.09423***	-0.04257*	-0.06363***
	(0.04376)	(0.01673)	(0.02217)	(0.02540)	(0.01563)
Child in full-time work	-0.03938§	0.00823	0.01145	0.00404	0.00159
	(0.02659)	(0.00934)	(0.01307)	(0.01334)	(0.00879)
Child in part-time work	0.00180	0.01421	0.01239	0.01804	0.01059
	(0.03189)	(0.01139)	(0.01520)	(0.01745)	(0.01075)
Child unemployed	-0.01806	0.01481	0.01607	0.01457	0.00924
	(0.03027)	(0.01310)	(0.01760)	(0.01966)	(0.01199)
Constant	-0.12011***	-0.04636***	-0.04927***	-0.04168***	-0.04932***
	(0.03940)	(0.00875)	(0.01134)	(0.01376)	(0.00852)
Wave FE	Yes	Yes	Yes	Yes	Yes
Obs.	3139	33376	19690	13686	36515

§$p < 0.15$, $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Robust standard errors in parenthesis.

Table 11: Heterogeneity by country group. First-differences regressions; dependent variable: logarithm of household equivalent food consumption.

	(1)	(2)	(3)	(4)	(5)
	b/se	b/se	b/se	b/se	b/se
	Baseline	South	Scandinavian	Center	East
Child sd. dev. residual income	-0.00064**	-0.00051	-0.00074**	-0.00067*	-0.00052*
	(0.00027)	(0.00031)	(0.00034)	(0.00035)	(0.00028)
Child income (predicted, in log)	0.09596***	0.09650***	0.10755***	0.12637***	0.04235**
	(0.01428)	(0.01554)	(0.01564)	(0.01773)	(0.01746)
HH st. dev. residual income	0.00003	0.00003	0.00020	0.00004	-0.00002
	(0.00010)	(0.00010)	(0.00024)	(0.00011)	(0.00010)
HH equiv. income (in log)	0.02251***	0.02281***	0.02231***	0.02559***	0.01920***
	(0.00236)	(0.00282)	(0.00250)	(0.00303)	(0.00262)
HH head in a couple	-0.02595*	-0.02247	-0.02429	-0.01375	-0.04096**
	(0.01480)	(0.01620)	(0.01662)	(0.01898)	(0.01669)
HH head retired	-0.01948***	-0.02013***	-0.01967**	-0.02786***	-0.01265
	(0.00694)	(0.00762)	(0.00776)	(0.00922)	(0.00771)
HH head unemployed	-0.06187***	-0.07367***	-0.06929***	-0.05675***	-0.04384***
	(0.01423)	(0.01586)	(0.01590)	(0.01793)	(0.01611)
Child in full-time work	0.00211	0.00145	0.00395	0.00186	0.00192
	(0.00794)	(0.00876)	(0.00916)	(0.01011)	(0.00873)
Child in part-time work	0.01229	0.00652	0.01821	0.01009	0.01367
	(0.00982)	(0.01068)	(0.01108)	(0.01399)	(0.01049)
Child unemployed	0.00682	0.00256	0.00821	0.00560	0.01289
	(0.01089)	(0.01292)	(0.01215)	(0.01305)	(0.01230)
Constant	-0.04658***	-0.03625***	-0.06861***	-0.03524***	-0.04287***
	(0.00834)	(0.00843)	(0.01071)	(0.01234)	(0.00841)
Wave FE	Yes	Yes	Yes	Yes	Yes
Obs.	43193	34510	36504	26369	32196

$^{*}p < 0.1,^{**}p < 0.05,^{***}p < 0.01$. Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Robust standard errors in parenthesis. Southern countries: France, Greece, Italy, Spain; Scandinavian countries: Denmark and Sweden; Central European countries: Austria, Belgium, Germany, Luxembourg, Netherlands and Switzerland; Eastern countries: Czech Republic, Estonia, Poland and Slovenia.

Table 12: Heterogeneity by country group. First-differences regressions; dependent variable: logarithm of household equivalent food consumption.

	(1)	(2)	(3)	(4)	(5)
	b/se	b/se	b/se	b/se	b/se
	Baseline	South	Scandinavian	Center	East
Child unempl. risk (SILC)	-0.28444***	-0.15874**	-0.38552***	-0.37404***	-0.11777
	(0.06914)	(0.07850)	(0.08017)	(0.08145)	(0.08029)
Child income (predicted, in log)	0.05387***	0.07211***	0.05449***	0.06493***	0.02000
	(0.01575)	(0.01717)	(0.01732)	(0.02082)	(0.01812)
HH st. dev. residual income	0.00002	0.00002	0.00021	0.00004	-0.00002
	(0.00010)	(0.00010)	(0.00024)	(0.00010)	(0.00010)
HH equiv. income (in log)	0.02246***	0.02278***	0.02219***	0.02534***	0.01928***
	(0.00236)	(0.00282)	(0.00249)	(0.00303)	(0.00262)
HH head in a couple	-0.02553*	-0.02223	-0.02359	-0.01303	-0.04092**
	(0.01480)	(0.01620)	(0.01661)	(0.01900)	(0.01669)
HH head retired	-0.01972***	-0.02020***	-0.02005***	-0.02790***	-0.01286*
	(0.00694)	(0.00762)	(0.00776)	(0.00921)	(0.00772)
HH head unemployed	-0.06166***	-0.07365***	-0.06896***	-0.05631***	-0.04377***
	(0.01422)	(0.01585)	(0.01589)	(0.01792)	(0.01610)
Child in full-time work	0.00223	0.00159	0.00421	0.00195	0.00216
	(0.00794)	(0.00876)	(0.00916)	(0.01012)	(0.00873)
Child in part-time work	0.01237	0.00664	0.01856*	0.00986	0.01384
	(0.00982)	(0.01068)	(0.01109)	(0.01400)	(0.01049)
Child unemployed	0.00814	0.00293	0.01026	0.00754	0.01366
	(0.01089)	(0.01292)	(0.01215)	(0.01304)	(0.01230)
Constant	-0.04926***	-0.03829***	-0.07146***	-0.03809***	-0.04400***
	(0.00837)	(0.00848)	(0.01073)	(0.01236)	(0.00847)
Wave FE	Yes	Yes	Yes	Yes	Yes
Obs.	43193	34510	36504	26369	32196

$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Robust standard errors in parenthesis. Southern countries: France, Greece, Italy, Spain; Scandinavian countries: Denmark and Sweden; Central European countries: Austria, Belgium, Germany, Luxembourg, Netherlands and Switzerland; Eastern countries: Czech Republic, Estonia, Poland and Slovenia.

Table 13: First-differences regressions; dependent variable: logarithm of household equivalent food consumption. Sample split according to the median of household income by country and wave.

	(1) b/se	(2) b/se	(3) b/se	(4) b/se
	Lower half	Upper half	Lower half	Upper half
Child sd. dev. residual income	-0.00081**	-0.00040	.	.
	(0.00037)	(0.00042)	.	.
Child unempl. risk (SILC)	.	.	-0.19085*	-0.37264***
	.	.	(0.10307)	(0.09271)
Child income (predicted, in log)	0.09677***	0.09219***	0.06198***	0.04390**
	(0.02165)	(0.01906)	(0.02374)	(0.02100)
HH st. dev. residual income	0.00008	0.00002	0.00008	0.00001
	(0.00024)	(0.00011)	(0.00024)	(0.00011)
HH equiv. income (in log)	0.01864***	0.02492***	0.01861***	0.02474***
	(0.00315)	(0.00385)	(0.00314)	(0.00384)
HH head in a couple	-0.02510	-0.02892	-0.02511	-0.02838
	(0.01980)	(0.02228)	(0.01983)	(0.02224)
HH head retired	-0.02912***	-0.01118	-0.02929***	-0.01147
	(0.01020)	(0.00946)	(0.01020)	(0.00946)
HH head unemployed	-0.07021***	-0.05245**	-0.07004***	-0.05248**
	(0.01882)	(0.02167)	(0.01881)	(0.02164)
Child in full-time work	0.00648	-0.00220	0.00678	-0.00240
	(0.01251)	(0.01013)	(0.01251)	(0.01014)
Child in part-time work	0.01052	0.01446	0.01069	0.01421
	(0.01472)	(0.01315)	(0.01472)	(0.01317)
Child unemployed	0.00969	0.00446	0.01087	0.00547
	(0.01538)	(0.01566)	(0.01538)	(0.01564)
Constant	-0.06472***	-0.03191***	-0.06678***	-0.03498***
	(0.01215)	(0.01151)	(0.01220)	(0.01154)
Wave FE	Yes	Yes	Yes	Yes
Obs.	21045	22148	21045	22148

$^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Robust standard errors in parenthesis.

Table 14: First-differences regressions; dependent variable: logarithm of household equivalent food consumption at home.

	(1) b/se	(2) b/se	(3) b/se	(4) b/se	(5) b/se
Child sd. dev. residual income	-0.00050*	-0.00050*	-0.00050*	-0.00050*	-0.00046*
	(0.00027)	(0.00027)	(0.00027)	(0.00027)	(0.00027)
Child income (predicted, in log)	0.08805***	0.08841***	0.08839***	0.08835***	0.07693***
	(0.01406)	(0.01405)	(0.01411)	(0.01411)	(0.01415)
HH st. dev. residual income	-0.00001	-0.00001	-0.00001	.	-0.00010
	(0.00011)	(0.00011)	(0.00011)	.	(0.00011)
HH equiv. income (in log)	0.02078***	0.02051***	0.02052***	0.02051***	.
	(0.00234)	(0.00235)	(0.00235)	(0.00235)	.
HH equiv. income (predicted, in log)	.	.	.	.	0.08200***
	.	.	.	.	(0.00833)
HH head in a couple	.	0.01138	0.01142	0.01142	0.00762
	.	(0.01478)	(0.01478)	(0.01478)	(0.01480)
HH head retired	.	-0.01029	-0.01033	-0.01032	-0.00791
	.	(0.00691)	(0.00691)	(0.00691)	(0.00690)
HH head unemployed	.	-0.04122***	-0.04130***	-0.04130***	-0.04402***
	.	(0.01340)	(0.01341)	(0.01341)	(0.01340)
Child in full-time work	.	.	0.00101	0.00100	0.00150
	.	.	(0.00785)	(0.00785)	(0.00784)
Child in part-time work	.	.	0.00500	0.00500	0.00594
	.	.	(0.00976)	(0.00976)	(0.00976)
Child unemployed	.	.	0.00782	0.00783	0.00800
	.	.	(0.01075)	(0.01075)	(0.01074)
Constant	-0.04564***	-0.04521***	-0.04521***	-0.04521***	-0.05092***
	(0.00850)	(0.00852)	(0.00852)	(0.00852)	(0.00840)
Wave FE	Yes	Yes	Yes	Yes	Yes
Obs.	43193	43193	43193	43193	43193

$^{*}p < 0.1,^{**} p < 0.05,^{***} p < 0.01$. Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Robust standard errors in parenthesis.

Table 15: First-differences regressions; dependent variable: logarithm of household equivalent food consumption out of home.

	(1) b/se	(2) b/se	(3) b/se	(4) b/se	(5) b/se
Child sd. dev. residual income	-0.00122*	-0.00121*	-0.00118*	-0.00118*	-0.00115
	(0.00070)	(0.00070)	(0.00070)	(0.00070)	(0.00070)
Child income (predicted, in log)	0.09575**	0.10000**	0.09507**	0.09572**	0.08408**
	(0.03995)	(0.03987)	(0.04010)	(0.04011)	(0.04024)
HH st. dev. residual income	0.00030	0.00028	0.00027	.	0.00020
	(0.00022)	(0.00023)	(0.00023)	.	(0.00023)
HH equiv. income (in log)	0.01095*	0.01348**	0.01344**	0.01346**	.
	(0.00626)	(0.00628)	(0.00629)	(0.00629)	.
HH equiv. income (predicted, in log)	.	.	.	.	0.08147***
	.	.	.	.	(0.02388)
HH head in a couple	.	-0.18558***	-0.18549***	-0.18568***	-0.18741***
	.	(0.04317)	(0.04316)	(0.04316)	(0.04293)
HH head retired	.	-0.07922***	-0.07934***	-0.07963***	-0.07697***
	.	(0.02091)	(0.02092)	(0.02091)	(0.02092)
HH head unemployed	.	-0.12044***	-0.12014***	-0.12005***	-0.12090***
	.	(0.04591)	(0.04595)	(0.04595)	(0.04592)
Child in full-time work	.	.	0.02204	0.02217	0.02185
	.	.	(0.02199)	(0.02199)	(0.02199)
Child in part-time work	.	.	0.04811*	0.04829*	0.04821*
	.	.	(0.02703)	(0.02702)	(0.02702)
Child unemployed	.	.	0.02246	0.02235	0.02291
	.	.	(0.03602)	(0.03603)	(0.03599)
Constant	-0.02161	-0.01822	-0.01862	-0.01870	-0.02272
	(0.02022)	(0.02027)	(0.02027)	(0.02027)	(0.02003)
Wave FE	Yes	Yes	Yes	Yes	Yes
Obs.	21771	21771	21771	21771	21771

$^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$. Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Robust standard errors in parenthesis.

A Additional Tables

Table A.1: First-differences regressions; dependent variable: logarithm of household equivalent food consumption.

	(1) b/se	(2) b/se	(3) b/se	(4) b/se	(5) b/se
Child sd. dev. residual income	-0.00064**	-0.00064**	-0.00064**	-0.00064**	-0.00060**
	(0.00027)	(0.00027)	(0.00027)	(0.00027)	(0.00027)
Child income (predicted, in log)	0.09563***	0.09621***	0.09596***	0.09604***	0.08466***
	(0.01423)	(0.01422)	(0.01428)	(0.01428)	(0.01433)
HH st. dev. residual income	0.00003	0.00003	0.00003	.	-0.00005
	(0.00010)	(0.00010)	(0.00010)	.	(0.00010)
HH equiv. income (in log)	0.02229***	0.02252***	0.02251***	0.02251***	.
	(0.00235)	(0.00236)	(0.00236)	(0.00236)	.
HH equiv. income (predicted, in log)	.	.	.	.	0.08127***
	.	.	.	.	(0.00840)
HH head in a couple	.	-0.02595*	-0.02595*	-0.02595*	-0.02865*
	.	(0.01479)	(0.01480)	(0.01479)	(0.01482)
HH head retired	.	-0.01943***	-0.01948***	-0.01950***	-0.01697**
	.	(0.00694)	(0.00694)	(0.00694)	(0.00694)
HH head unemployed	.	-0.06189***	-0.06187***	-0.06187***	-0.06487***
	.	(0.01422)	(0.01423)	(0.01423)	(0.01422)
Child in full-time work	.	.	0.00211	0.00211	0.00266
	.	.	(0.00794)	(0.00794)	(0.00792)
Child in part-time work	.	.	0.01229	0.01230	0.01329
	.	.	(0.00982)	(0.00982)	(0.00982)
Child unemployed	.	.	0.00682	0.00681	0.00696
	.	.	(0.01089)	(0.01089)	(0.01088)
Constant	-0.04699***	-0.04655***	-0.04658***	-0.04660***	-0.05305***
	(0.00831)	(0.00834)	(0.00834)	(0.00834)	(0.00822)
Wave FE	Yes	Yes	Yes	Yes	Yes
Obs.	43193	43193	43193	43193	43193

$^{*}p < 0.1,^{**} p < 0.05,^{***} p < 0.01$. Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Robust standard errors in parenthesis.

Table A.2: First-differences regressions; dependent variable: logarithm of household equivalent food consumption. Transfers not included in measure for offspring's income.

	(1)	(2)	(3)	(4)	(5)
	b/se	b/se	b/se	b/se	b/se
Child sd. dev. residual income, net of transfers	-0.00060**	-0.00060**	-0.00060**	-0.00060**	-0.00057**
	(0.00028)	(0.00028)	(0.00028)	(0.00028)	(0.00028)
Child income (predicted, in log), net of transfers	0.07991***	0.08038***	0.08014***	0.08021***	0.07136***
	(0.01263)	(0.01263)	(0.01268)	(0.01268)	(0.01269)
HH st. dev. residual income	0.00003	0.00003	0.00003	.	-0.00006
	(0.00010)	(0.00010)	(0.00010)	.	(0.00010)
HH equiv. income (in log)	0.02230***	0.02254***	0.02253***	0.02253***	.
	(0.00235)	(0.00236)	(0.00236)	(0.00236)	.
HH equiv. income (predicted, in log)	.	.	.	.	0.08199***
	.	.	.	.	(0.00839)
HH head in a couple	.	-0.02599*	-0.02599*	-0.02600*	-0.02880*
	.	(0.01480)	(0.01480)	(0.01480)	(0.01482)
HH head retired	.	-0.01943***	-0.01947***	-0.01949***	-0.01696**
	.	(0.00694)	(0.00695)	(0.00694)	(0.00694)
HH head unemployed	.	-0.06176***	-0.06173***	-0.06173***	-0.06475***
	.	(0.01422)	(0.01423)	(0.01423)	(0.01422)
Child in full-time work	.	.	0.00241	0.00241	0.00289
	.	.	(0.00794)	(0.00794)	(0.00792)
Child in part-time work	.	.	0.01251	0.01251	0.01346
	.	.	(0.00982)	(0.00982)	(0.00982)
Child unemployed	.	.	0.00709	0.00708	0.00718
	.	.	(0.01089)	(0.01089)	(0.01088)
Constant	-0.04595***	-0.04550***	-0.04554***	-0.04556***	-0.05219***
	(0.00831)	(0.00833)	(0.00833)	(0.00833)	(0.00822)
Wave FE	Yes	Yes	Yes	Yes	Yes
Obs.	43193	43193	43193	43193	43193

$^{*}p < 0.1,^{**}p < 0.05,^{***}p < 0.01$. Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Robust standard errors in parenthesis.

Table A.3: First-differences regressions; dependent variable: logarithm of household equivalent food consumption. Share of unemployed individuals.

	(1)	(2)	(3)	(4)	(5)
	b/se	b/se	b/se	b/se	b/se
Child unempl. risk (SILC)	-0.28500***	-0.28332***	-0.28444***	-0.28456***	-0.30102***
	(0.06908)	(0.06907)	(0.06914)	(0.06913)	(0.06904)
Child income (predicted, in log)	0.05338***	0.05421***	0.05387***	0.05392***	0.04108***
	(0.01572)	(0.01571)	(0.01575)	(0.01575)	(0.01577)
HH st. dev. residual income	0.00003	0.00002	0.00002	.	-0.00006
	(0.00010)	(0.00010)	(0.00010)	.	(0.00010)
HH equiv. income (in log)	0.02223***	0.02246***	0.02246***	0.02246***	.
	(0.00235)	(0.00236)	(0.00236)	(0.00236)	.
HH equiv. income (predicted, in log)	.	.	.	.	0.08203***
	.	.	.	.	(0.00839)
HH head in a couple	.	-0.02555*	-0.02553*	-0.02553*	-0.02836*
	.	(0.01480)	(0.01480)	(0.01480)	(0.01482)
HH head retired	.	-0.01967***	-0.01972***	-0.01974***	-0.01721**
	.	(0.00694)	(0.00694)	(0.00694)	(0.00694)
HH head unemployed	.	-0.06167***	-0.06166***	-0.06167***	-0.06464***
	.	(0.01421)	(0.01422)	(0.01422)	(0.01421)
Child in full-time work	.	.	0.00223	0.00223	0.00274
	.	.	(0.00794)	(0.00794)	(0.00793)
Child in part-time work	.	.	0.01237	0.01238	0.01334
	.	.	(0.00982)	(0.00982)	(0.00982)
Child unemployed	.	.	0.00814	0.00813	0.00833
	.	.	(0.01089)	(0.01089)	(0.01088)
Constant	-0.04970***	-0.04922***	-0.04926***	-0.04927***	-0.05579***
	(0.00835)	(0.00837)	(0.00837)	(0.00837)	(0.00825)
Wave FE	Yes	Yes	Yes	Yes	Yes
Obs.	43193	43193	43193	43193	43193

$^{*}p < 0.1,^{**} p < 0.05,^{***} p < 0.01$. Monetary values are expressed in PPP real values (thousand euros, Germany 2005). Robust standard errors in parenthesis.

B Proof of the solution

The log-normal utility function takes the form

$$U_t^{1,y} = \frac{1-\mathrm{e}^{-kc_t^{1,y}}}{k} + \mathbb{E}_t \frac{1-\mathrm{e}^{-kc_{t+1}^{1,o}}}{k} + \alpha\,\mathbb{E}_t \frac{1-\mathrm{e}^{-kw_{t+1}^{2,y}}}{k}$$

that must be maximized over $s_t^{1,y}$ and $s_{t+1}^{1,o}$ subject to the following constraints:

$$\begin{aligned} c_t^{1,y} &= y_t^{1,y} - s_t^{1,y} \\ c_{t+1}^{1,o} &= y_{t+1}^{1,o} + s_t^{1,y} - s_{t+1}^{1,o} \\ w_{t+1}^{2,y} &= y_{t+1}^{2,y} + s_{t+1}^{1,o} \,. \end{aligned}$$

By substituting the constraints into the utility function, we express it in terms of savings:

$$U_t^{1,y} = \frac{1-\mathrm{e}^{-k\left(y_t^{1,y}-s_t^{1,y}\right)}}{k} + \mathbb{E}_t \frac{1-\mathrm{e}^{-k\left(y_{t+1}^{1,o}+s_t^{1,y}-s_{t+1}^{1,o}\right)}}{k} + \alpha\,\mathbb{E}_t \frac{1-\mathrm{e}^{-k\left(y_{t+1}^{2,y}+s_{t+1}^{1,o}\right)}}{k} \,.$$

Since, in general, $\mathbb{E}_t\,\mathrm{e}^{ax} = \mathrm{e}^{a\mu - a^2\frac{\sigma^2}{2}}$ if $x \sim \mathcal{N}\left(\mu, \sigma^2\right)$ and in our case $y_{t+1}^{1,o} \sim \mathcal{N}\left(\bar{y}^{1,o}, \sigma^{2\,1,o}\right)$ and $y_{t+1}^{2,y} \sim \mathcal{N}\left(\bar{y}^{2,y}, \sigma^{2\,2,y}\right)$, we can write the utility function as follows, by exploiting the properties of exponential:

$$U_t^{1,y} = \frac{1-\mathrm{e}^{-k\left(y_t^{1,y}-s_t^{1,y}\right)}}{k} + \frac{1-\mathrm{e}^{-k\left(\bar{y}^{1,o}-\frac{k}{2}\sigma^{2\,1,o}+s_t^{1,y}-s_{t+1}^{1,o}\right)}}{k} + \alpha\frac{1-\mathrm{e}^{-k\left(\bar{y}^{2,y}-\frac{k}{2}\sigma^{2\,2,y}+s_{t+1}^{1,o}\right)}}{k} \,.$$

First order conditions take the form

$$\begin{aligned} \frac{\partial U_t^{1,y}}{\partial s_t^{1,y}} &= -\mathrm{e}^{-k\left(y_t^{1,y}-s_t^{1,y}\right)} + \mathrm{e}^{-k\left(\bar{y}^{1,o}-\frac{k}{2}\sigma^{2\,1,o}+s_t^{1,y}-s_{t+1}^{1,o}\right)} = 0 \\ \frac{\partial U_t^{1,y}}{\partial s_{t+1}^{1,o}} &= -\mathrm{e}^{-k\left(\bar{y}^{1,o}-\frac{k}{2}\sigma^{2\,1,o}+s_t^{1,y}-s_{t+1}^{1,o}\right)} + \alpha\mathrm{e}^{-k\left(\bar{y}^{2,y}-\frac{k}{2}\sigma^{2\,2,y}+s_{t+1}^{1,o}\right)} = 0 \end{aligned}$$

that can be easily simplified by rearranging terms, taking the logarithm, and dividing by $-k$ as

$$\begin{aligned} y_t^{1,y} - s_t^{1,y} &= \bar{y}^{1,o} - \frac{k}{2}\sigma^{2\,1,o} + s_t^{1,y} - s_{t+1}^{1,o} \\ \bar{y}^{1,o} - \frac{k}{2}\sigma^{2\,1,o} + s_t^{1,y} - s_{t+1}^{1,o} &= -\frac{\ln\alpha}{k} + \bar{y}^{2,y} - \frac{k}{2}\sigma^{2\,2,y} + s_{t+1}^{1,o} \end{aligned}$$

that can be solved by isolating $s_t^{1,y}$ in the former

$$s_t^{1,y} = \frac{1}{2}y_t^{1,y} - \frac{1}{2}\bar{y}^{1,o} + \frac{k}{4}\sigma^{2\,1,o} + \frac{1}{2}s_{t+1}^{1,o}$$

and replacing it in the latter, getting the solution for saving in $t+1$

$$s_{t+1}^{1,o} = \frac{1}{3}y_t^{1,y} + \frac{1}{3}\bar{y}^{1,o} - \frac{k}{6}\sigma^{2\,1,o} - \frac{2}{3}\bar{y}^{2,y} + \frac{k}{3}\sigma^{2\,2,y} + \frac{2}{3}\frac{\ln\alpha}{k}$$

and replacing back in the former

$$s_t^{1,y} = \frac{2}{3}y_t^{1,y} - \frac{1}{3}\bar{y}^{1,o} + \frac{k}{6}\sigma^{2\,1,o} - \frac{1}{3}\bar{y}^{2,y} + \frac{k}{6}\sigma^{2\,2,y} + \frac{1}{3}\frac{\ln\alpha}{k}$$

that is the optimal saving in t. Accordingly, the consumption profile is the following:

$$c_t^{1,y} = y_t^{1,y} - s_t^{1,y} = \frac{1}{3}y_t^{1,y} + \frac{1}{3}\bar{y}^{1,o} - \frac{k}{6}\sigma^{2\,1,o} + \frac{1}{3}\bar{y}^{2,y} - \frac{k}{6}\sigma^{2\,2,y} - \frac{1}{3}\frac{\ln\alpha}{k}$$
$$c_{t+1}^{1,o} = \bar{y}^{1,o} + s_t^{1,y} - s_{t+1}^{1,o} = \frac{1}{3}y_t^{1,y} + \frac{1}{3}\bar{y}^{1,o} + \frac{k}{3}\sigma^{2\,1,o} + \frac{1}{3}\bar{y}^{2,y} - \frac{k}{6}\sigma^{2\,2,y} - \frac{1}{3}\frac{\ln\alpha}{k}$$
$$w_{t+1}^{2,y} = \bar{y}^{2,y} + s_{t+1}^{1,o} = \frac{1}{3}y_t^{1,y} + \frac{1}{3}\bar{y}^{1,o} - \frac{k}{6}\sigma^{2\,1,o} + \frac{1}{3}\bar{y}^{2,y} + \frac{k}{3}\sigma^{2\,2,y} + \frac{2}{3}\frac{\ln\alpha}{k}$$

that satisfies the constraints that

$$c_t^{1,y} + c_{t+1}^{1,o} + w_{t+1}^{2,y} = y_t^{1,y} + \bar{y}^{1,o} + \bar{y}^{2,y}$$

in expectations.