

# The Joint Distribution of Income, Wealth and Consumption in Germany

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How are wealth, income and consumption distributed? Do income rich households also accumulate the highest wealth holdings? Does inequality in wealth and income translate into consumption inequality? Most studies on these questions thus far rely on micro data from different sources and usually present results on the different distributions separately, because the availability of micro-level data on income, wealth and consumption in one data set has been limited. In this paper we address this gap and make use of state of the art methods to estimate consumption in a survey on individual households' wealth and income. The main data set we employ is the German wealth panel survey – the Panel of Household Finances (PHF) - for the years 2010 and 2014. The PHF collects detailed data on wealth and income at the household level. It also offers different ways to estimate total and nondurable consumption: First, the PHF contains various questions on consumption components, such as food consumption, utilities and rent. Using the method by Browning et al (2014) these components of consumption can be used to estimate total and non-durable consumption. The basic idea is to use consumption items and socio-demographic variables present in the German budget survey (EVS) and the PHF and estimate the relationship between those indicators and non-durable/total consumption using the budget survey dataset. The coefficient estimates obtained using the budget survey are then used to make out of sample predictions of total and non-durable consumption for the PHF survey. Second, the 2014 PHF survey contains a direct one-shot question on total non-durable consumption. Third, to get an alternative measure of total consumption we make use of the household's budget constraint and calculate income - savings flows. This is possible because the PHF survey is unique in the sense that it contains a large set of questions on active savings flows. For each financial asset the PHF not only collects information on its current value, but also on active regular savings directed towards these assets. In addition, detailed information on mortgage repayments and other types of loan repayments are collected. Finally, the regular savings measures are complemented with questions on irregular savings. Data on (consumer) loans and dissolved savings is also collected. Our measure of total savings thus comprises a whole range of savings information and dissaving by households. Our main findings can be summarized as follows: As in other countries, the income and consumption distributions are more equal than the wealth distribution. About 60% of total wealth belong to the 10% wealthiest households, while only 30% of total income and 20% of nondurable consumption are generated by the 10% of the income (consumption) richest households. The correlation between the three measures is high but far from perfect. 1.5% of all households are among the top 10% for all three measures simultaneously.

These results improve our understanding of inequality in the largest Euro area economy and furthermore add new dimensions to measuring inequality which has been impeded by data limitations in the past. They will also help to advance the micro and macro literature. Recent research stresses the importance of reliable information on the joint distributions of consumption, income and wealth. In microeconomics, existing inequality literature studies inequality in at most two dimensions at the same time with a strong focus on income inequality (Piketty and Saez 2003, Biewen 2014, Guvenen 2009). Only few papers attempt to put inequality in a broader context or for different countries but the US (see papers in the Special Edition of the RED 2010). Following the Great Recession, information on consumption, income and wealth in one panel data set has also been used extensively to study consumption responses to income and wealth shocks in the presence of indebtedness (see Dynan 2012, Browning et al 2013, Disney et al 2010), to house price changes (Cooper 2013, Campbell and Cocco 2007) or to changes in policy (Jappelli and Pistaferri 2014, Sodini et al. 2016). These papers reveal that there is substantial heterogeneity of consumption responses along the income and wealth distributions. Recent macroeconomic models account for the fact that different groups of households across the income and wealth distribution behave differently with respect to saving and consumption and hence keeping track of the income and wealth distributions is important for understanding the distributional effects of shocks such as the Great Recession. The latest generation of models with heterogeneous agents is set up such that the distribution of income and wealth in the population has substantial impacts on the aggregate dynamics of consumption, investment and output (see Krueger et al 2016, Kaplan and Violante 2014, Luetticke 2016 etc). Another motivating factor for this type of analysis is pointed out by Kaplan and Violante (2014): some households can be both wealthy but still behaving as poor hand to mouth households as they can have high holding of illiquid wealth but little liquid wealth that could buffer shocks to their income. Evidence on the joint distributions of consumption, income and wealth is therefore informative for the calibration and estimation of these models.