

# Family Size, Household Wealth, & the Generosity of Family Policy in 20<sup>th</sup> Century Europe

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## **Abstract:**

As baby boomers enter retirement, an increasingly large portion of the population in Europe will rely on wealth as a source of financial security. This study addresses two research questions: what is the association between family size, i.e. the number of children, and wealth for adults who are preparing for or have entered retirement and does the generosity of family policy, i.e. the extent that countries compensate families for the costs of children, moderate the association between family size and wealth? We use data from the Survey of Health, Ageing, and Retirement in Europe (SHARE) to estimate the relationship between family size and the total household net worth of men and women between ages 50-65, born 1939-1963 from 14 European countries. In addition, we draw rich family policy dataset to estimate whether the generosity of family policy moderates the association between family size and wealth. We use logistic regression modelling to investigate the probability of wealth ownership and unconditional quantile regression modelling analyse family size differences across the wealth distribution among wealth owners. We find no relationship between family size and the probability to own wealth among individuals with one to three children, but men and women with four or more children have a substantially lower probability to own wealth. For those with wealth, the number of children is generally associated with less wealth, especially at the lower end of the distribution. We provide evidence that the generosity of family policy can ameliorate the negative association between larger family sizes and the probability of wealth ownership.

**Keywords:** Wealth; Family Size; Inequality; Childless; Family

## **Introduction**

Interest in wealth as a crucial dimension of social inequality has increased dramatically in the last two decades among both scholars and the general public (Killewald, Pfeffer, and Schachner 2017a; Piketty 2014). While sociological research has focused on wealth's role in the intergenerational transmission of social status (Keister and Moller 2000a; Spilerman 2000), economists have concentrated on how individuals accumulate wealth spending and saving (Modigliani and Brumberg 1954; Deaton 2005) and whether those patterns vary between households with and without children (Modigliani 1986). The findings of recent sociological and economic studies on the relationship between the number of children and wealth are nonetheless mixed (Scholz and Seshadri 2007a; Tin 2000a; Yamokoski and Keister 2006a; Schmidt and Sevak 2005; Lersch, Jacob, and Hank 2017a; Alfred Mich Dockery and Bawa 2015). However, the relationship between family size and accumulated wealth can have serious consequences for society, especially at a time where pension systems are under pressure from demographic change.

Despite the increased interest in wealth accumulation among households of various sizes, there are a number of critical gaps in the literature. First, most sociological and economic research on the association between family size and household wealth has been conducted on data from the United States (for exceptions, see Lersch, Jacob, and Hank 2017; Dockery and Bawa 2015). This has important implications for our understanding of how family size impacts the amount of wealth that individuals accumulate. Due to the lack of cross-national studies on the relationship between family size and wealth, theoretical considerations about how and to what extent social policy can moderate the association between family size and wealth remain underdeveloped and empirically untested. Second, most studies focus on how the number of children or the transition to parenthood affects wealth accumulation while adults are still relatively young. However, it is important to observe wealth differences for older adults with

and without children. Couples may save disproportionately after children leave the household to prepare for retirement, which could lead to biased estimates. Further, wealth has a greater meaning for older adults, as it becomes one of their primary source of income and financial security.

In this study, we address these gaps with two research questions: First, what is the association between family size, i.e. the number of children, and household wealth for adults who are preparing for or have entered retirement? Specifically, we test competing assertions on how the presence of children influence wealth accumulation over the life course. On the one hand, parents may save or invest more of their disposable income and accumulate more wealth than childless adults with the intention of leaving their children an inheritance. On the other hand, the costs of children may hinder wealth accumulation and leave parents with less wealth than childless adults. Second, does the generosity of family policy, i.e. the extent that countries compensate families for the costs of children, moderate the association between family size and wealth?

We use data from the 1<sup>st</sup>, 2<sup>nd</sup>, and 4<sup>th</sup> through 7<sup>th</sup> waves of the Survey of Health, Ageing, and Retirement in Europe (SHARE) to estimate the relationship between family size and the total household net worth of men and women between ages 50-65, born 1939-1963 from 14 European countries. In addition, we draw on Gauthier's (2011) comparative family policy dataset to estimate whether the generosity of family policy moderates the association between family size and wealth. We use logistic regression modelling to investigate the probability of wealth ownership and unconditional quantile regression modelling analyse family size differences across the wealth distribution among wealth owners.

We make two contributions to the literature on wealth differences. First, we provide the first cross-national account of family size differences in wealth ownership. We find no relationship between family size and the probability to own wealth among individuals with one to three

children after accounting for selection into parenthood. However, men and women with four or more children have a substantially lower probability to own wealth. For those with wealth, the number of children is generally associated with less wealth, especially at the lower end of the distribution. Second, we provide evidence that the generosity of family policy can ameliorate the negative association between larger family sizes and the probability of wealth ownership. Moreover, generous family policy can reduce the negative association between all family sizes and the amount of wealth owned, especially at the lower end of the wealth distribution.

### **Previous Research on Family Size & Wealth**

To date, most of the studies on family size and wealth, or studies that report results on family size and wealth, were performed on US data. Although nearly two decades ago Keister and Moller (2000) concluded in their review of wealth inequality in the US that family size likely decreases wealth ownership. Land and Russell (1996) use the 1984-1991 Survey of Income and Program Participation (SIPP) to demonstrate that the number of children in the household is negatively associated with total net wealth and increase the probability of zero wealth ownership. Using the 1993 SIPP, Tin (2000) shows that the number of children decreases the demand for a number of assets, such as market deposits and savings accounts. Scholz and Seshadri (2007) argue using data from the US Health and Retirement Study (HRS) that the number of children decreases wealth by reducing resources available for consumption or saving. They argue that variation in available resources induced by fertility is even greater than that induced by the distribution of earnings. Further, they argue that after variation in family size has been accounted for, means-tested cash and near-cash transfer programs have little impact on household wealth. More recently, Maroto (2017) reports using the 1979 National Longitudinal Survey of Youth (NLSY) that the probability to have any savings as well as the

amount of total savings and financial wealth decreases when children over the age of 18 are present in the household.

However, a number of studies have reported positive associations between family size and wealth. Using the 2001 SIPP, Grinstein-Weiss and colleagues (2008) show that households with three or more children have higher net wealth than childless households. However, this family size premium is only evident among married couples. With the NLSY, Yamokoski and Keister (2006) demonstrate that the number of children is positively associated with net total wealth. Bogan (2013) finds using the NLSY that only female offspring increases the probability of household stock market participation. Recently, Bernardi, Boertien, and Geven (2019) report in a study on the association between childhood family structure and wealth accumulation in adulthood using the NLSY report that having children is positively associated with net worth, but that the number of younger children is negatively associated with net worth.

A number of studies have also reported mixed findings, highlighting that the relationship between family size and wealth may be simultaneously positive and negative. Using the Panel Study of Consumer Durables and Instalment Debt, Smith and Ward (1980) show that young children decrease asset accumulation for couples married less than 5 years, but increase accumulation rates for those married 5 years or more. Schmidt and Sevak (2006) use the Panel Study of Income Dynamics to demonstrate that, on average, having older children is negatively related household wealth. However, they present some evidence that having children may be positively associated with wealth for households above the 50<sup>th</sup> percentile in the conditional wealth distribution. Recently using the NLSY, Maroto (2018) finds that the association between parenthood and net wealth varies starkly across the unconditional wealth distribution: parenthood is negligibly associated with wealth below the 15<sup>th</sup> percentile, then is associated with up to an 40 percent decrease in wealth between the 20<sup>th</sup> and 50<sup>th</sup> percentile before the

association becomes positive. Among the wealthiest families, parenthood increases net total wealth by well over 100 percent.

However, a number of studies have also found no association between family size and wealth. Ozawa and Lee (2006) use the US 1998 Survey of Consumer Finances (SCF) and show no statistically or substantively significant association between the number of children and net wealth. In a study that examines the relationship between union histories and wealth among women that experienced a non-marital birth using the NLSY, Painter, Frech, and Williams (2015) find that the number of children is not related to women's wealth accumulation. Tamborini and Purcell (2016) use the 2001-2010 SCF and find that the number of children in the household is not associated with coupled women's retirement account wealth, but does reduce the amount of single women's wealth.

The few studies that report on the association between family size and wealth on non-US data are also mixed. Using data from 13 countries from the Survey of Health, Ageing, and Retirement in Europe (SHARE), the HRS, and the English Longitudinal Study of Aging, Semyonov and Lewin-Epstein (2013) report that household size is not associated with net wealth in a pooled sample of 16 countries, but they do find negative associations in France and the United Kingdom as well as positive associations in Denmark, Switzerland, Belgium, and the United States. While parenthood is not associated with wealth accumulation among men, Lersch, Jacob, and Hank (2017) demonstrate using the German Socio-Economic Panel Study (GSOEP) that entering parenthood decreases mothers' rates of wealth growth compared to both childless women and fathers. Dockery and Bawa (2015) demonstrate that the net worth of couples is reduced by a small amount for every year that a dependent child is in the household with data from the Household, Income, and Labour Dynamics in Australia Survey. However, the penalty increases across the wealth distribution, nearly doubling from the 25<sup>th</sup> to the 75<sup>th</sup> percentile of the conditional wealth distribution. Using data from the British Household Panel

Survey and the (GSOEP), Lersch and Dewilde (2018) find that underage children in the household decrease the amount of money saved each month In both the UK and Germany. Further, while in the UK, underage children increase the probability of holding financial wealth but decreases the amount of wealth held, underage children increase the amount of financial wealth held in Germany.

In sum, a review of previous research shows that more research is needed to understand the relationship between family size and the number of children. However, there at least two common themes in the literature. First, individuals' position in the wealth distribution matters: the direction and strength of the relationship between parenthood and wealth varied depending on where individuals and households found themselves in the wealth distribution. Second, context matters: there are stark contrasts between results from different countries. Killewald, Pfeffer, and Schachner (2017) in their review of wealth inequality and accumulation conclude that there is still a lack of cross-national research and that little is known on the specific institutional and economic determinants of wealth inequality.

## **Theoretical Background**

### *Family Size and Wealth*

Why should we expect wealth differences between individuals and households with smaller and larger families? The traditional life-cycle hypothesis initially developed by Modigliani & Brumberg (1954) conceptualizes wealth accumulation in terms of a save and spend model (Deaton 2005). The model assumes that disposable income can either be consumed, i.e. spent, or saved. Rational actors will save their income that is not spent while active on the labour market, thereby accumulating wealth. Following retirement, the accumulated wealth will be spent in total. This model is displayed in panel A of Figure 1. A first revision of the life-cycle

hypothesis incorporates the observation that wealth is not saved and spent within one generation, but is inherited from the former generation and bequeathed to the next, as is displayed in panel B of Figure 1.

*Figure 1: The Life-Cycle Hypothesis for Wealth Accumulation with and without Children*

However, even the revised life-cycle model proved too static for an adequate representation of how wealth is accumulated during different life course stages or among different segments of the population. Saving and spending patterns vary with the amount of disposable income and household needs, which influence the rate at which wealth is accumulated or consumed (Modigliani 1986).

The transition to parenthood and the number of children in the household are one of the main factors that affect disposable incomes. Motherhood wage penalties, i.e. the negative differences in average wages between mothers and childless women, are well documented (e.g., Budig and England 2001; Budig and Hodges 2010; Correll, Benard, and Paik 2007). Explanations for these wage penalties include selection, e.g. more or less productive and work oriented individuals might select into parenthood, lower productivity due to the loss of human capital or a limited ability to fulfil the ideal worker norm of reliability, flexibility and working long hours (Weeden, Cha, and Bucca 2016), and discrimination of mother's in terms of hiring, firing as well as wages and promotions (Correll, Benard, and Paik 2007; Acker 2012). Regardless of why or how motherhood wage penalties are generated, they suggest that the disposable incomes of households will be negatively affected by women's transition into motherhood. Although the reduction in household income may be compensated by fatherhood wage premiums, i.e. the



positive differences in average wages between fathers and childless men, research suggests that these are likely smaller in size than motherhood wage penalties (e.g., Killewald 2013).

The transition to parenthood and the number of children in the household also affect household needs through both the direct and indirect costs of children. Direct costs include all the additional costs that are incurred by households with a dependent child, e.g. food, clothing, childcare, housing, etc. Indirect costs include the loss of income in both the short and long term that are incurred as a result of the presence of children, e.g. mothers' employment reductions, wage penalties, loss of pension rights, etc. In a report to the European Union on the costs of children, Letablier and colleagues (2009) estimate the relative direct cost of a first child to be between 20 and 30 percent the budget of an average childless couple. Due to economies of scale, the marginal cost of a child is thought to decrease as the number of children increases, but the cumulated costs compared to a childless household will continue to increase with family size.

If household incomes decrease following child birth and household needs increase, then it follows that households have fewer resources to consume or save. Especially, if the costs of children exceed household needs and parents' ability to save, as is displayed in panel D of Figure 1, then we would expect *the number of children to be associated with less wealth after age 50 (H1a)*. Another possibility however, is that couples save more following childbirth to prepare for the costs associated with childrearing and bequest motives (Land 1996). That is, even though parents have less disposable income to consume or save, they save a larger absolute and relative portion of that income than childless households. In this case, as displayed in panel C of Figure 1, we would expect *the number of children to be associated with higher wealth after age 50 (H1b)*.

### *The Role of Family Policy for Family Size and Wealth*

Although the family policy arrangements vary to a great extent across countries, there are some common trends during the 20th century (Van Winkle forthcoming), motivated by economic and demographic pressures. While most European countries provided little public family support before the onset of the Second World War, state provisions for families increased substantially during the post-war period (Ferrera 2008; Anne H. Gauthier 1999). Familistic policies, e.g. family allowances, were among the most popular across much of Europe and aimed to support a traditional male-breadwinner female-homemaker division of labor (Saraceno 2016; Leitner 2003). In light of decreasing fertility rates across much of Europe (Kohler, Billari, and Ortega 2002; Billari 2008), a number of Continental European countries have implemented individualizing or defamilizing policies common only in Nordic countries, e.g. public childcare, that aim to decrease women's dependence (Cho 2014; Mätzke and Ostner 2010; Orloff 2006).

One of the most common theoretical approach to theorize how family policy affects fertility decisions draws on Becker's (1960) family economics approach. This approach assumes that family demographic processes and events, such as parenthood, are rational decisions and the result of utility maximization process (see Anne H. Gauthier 2007 for a critical discussion). This process is conceived as a function of the (opportunity) costs and benefits of a having a child that are additionally subject to economic constraints and individual preferences. Therefore, family policies influence individuals' fertility decisions by increasing or reducing the (opportunity) costs or benefits of entering parenthood or having an additional child. Costs and benefits can be both economic, such as (forgone) income, or social, such as stigmata.

Familizing policies incentivize early marriage and parenthood within marriage as well as a male-breadwinner female-homemaker division of labor (Leitner 2003; Anne H. Gauthier 2007). Direct transfers, e.g. family or child allowances, reduce the economic costs of entering

parenthood, but are often conditional on women caring for children. Indirect transfers, e.g. tax benefits for married couples, generally increase the benefits of marriage and also reduce the costs of parenthood. Saraceno (2016) brands these transfers as supported familism, because they enable individuals within families to uphold traditional care responsibilities regardless of economic constraints. In contrast, individualizing policies reduce the opportunity costs of parenthood by outsourcing care responsibilities to the public sphere and facilitating a gender egalitarian division of labor within partnerships (Lohmann and Zagel 2016; Saraceno 2016; Esping-Andersen 1999). For example, public childcare and eldercare that is widely available, of high quality, and affordable reduces care obligations within families. Short-term, well-paid, and job-protected parental leave systems aimed at both mothers and fathers facilitate women's quick return to the labor market after childbirth and a more active childrearing role for fathers. As mentioned above, the aim of recent policy reforms has been, at least implicitly, pronatalistic. Although, some evidence suggests that the effects of family policy on fertility may be small or even negligible (Gauthier 2007; Balbo, Billari, and Mills 2013). What has not been studied is whether or to what extent that the generosity of family policy impacts the wealth accumulation of parents. However, if family policy reduces the monetary costs of children, then households with children have more disposable income to consume or save. Therefore, we expect that *the negative association between wealth and family size is smaller in contexts with more generous family policy (H2a)*. In contrast, family policy may give households with children that save more than childless households an additional wealth advantage. In other words, we expect that *the positive association between wealth and family size is larger in contexts with more generous family policy (H2b)*.

## Data & Methods

### *Sample*

To test our hypotheses, we draw on data from the 1<sup>st</sup>, 2<sup>nd</sup>, and 4<sup>th</sup> through 7<sup>th</sup> waves of the Survey of Health, Ageing, and Retirement in Europe (SHARE). SHARE is household panel study fielded on a biennial basis that collects a wide range of economic, social, demographic, and health data on respondents age 50 or older and their partners residing in a number of European countries and Israel. Note that we do not use the 3<sup>rd</sup> wave of SHARE, SHARELIFE, and SHARELIFE respondents in the most recent wave, because the life history module did not collect a number of the variables used in our analyses. The first wave was collected in 2004 in 12 countries. The most recent wave was fielded in 27 countries in 2017, bringing the total number of respondents in all seven SHARE waves to approximately 140,000.

We restrict our sample to respondents and their partners age 50-65, because we are interested in wealth accumulation leading up to retirement. Therefore our oldest respondents were born in 1939, i.e. age 65 in 2004, and our youngest were born in 1963, i.e. age 50 in 2017. This restriction additionally reduces mortality bias in our analyses. To increase comparability across households, we include only single and couple households and exclude respondents living in nursing homes. As will be discussed further below, high quality data on the generosity of family policy is only available for 14 Western European countries. Therefore, we can only include individuals residing Austria, Belgium, Switzerland, Germany, Denmark, Spain, France, Italy, the Netherlands, Sweden, Ireland, Luxemburg, and Portugal. After these restrictions, our sample includes 86,290 observations nested in 41,684 individuals.

### *Dependent Variables*

We measure wealth as the total net worth of the household, which encompasses both household real assets and household net financial assets. Household real assets is the sum of the

proportional value of the primary residence owned by the respondent, the proportional value of the respondent's business owned by the respondent, the values of automobiles and other real estate, minus the mortgage on the main residence. Household net financial assets is the sum of bank accounts, bonds, stock and mutual funds, and savings for long-term investments, minus financial liabilities. We convert household net worth to purchasing power parities equivalent to 2015 Euros in Germany.

The frequency of missing values among wealth variables in SHARE is extremely high. In our sample, 33,859 observations (39.2% of the analysis sample) did not answer at least one question needed to calculate net total wealth. We therefore draw upon the imputed data that SHARE provides for observations that were not the designated household respondent, i.e. information provided by another person in the household, or imputations based on unfolding brackets range information. In the latter case, respondents that did not provide information for wealth variables, then they were presented with a card containing three county-specific values and asked whether the value a) lies below the lower range, b) around the lower range, c) between the lower and mid-range, d) around the mid-range, e) between the mid- and upper range, f) around the upper range, or g) above the upper range. We do not use values that are imputed based completely on other information and hot-deck imputation methods. When using values from the designated respondents and imputed values based on unfolding brackets range information, the number of missing values is considerable reduced. The frequency of non-missing values on all wealth variables increases to 61,872 observations (71.7 percent of the analysis sample).

### *Independent Variables*

Family size is measured as the number of biological or adoptive children of both the respondent and their spouse. We include family size as a categorical variable (childless, one child, two children, three children, or four plus children) to account for non-linear associations between family size and wealth.

We use Gauthier's (2011) comparative family policy database to create a country-cohort indicator on the generosity of family policy. For all our study countries, we have an annual indicator for the total tax and benefit transfers for a two-parent, two-child, one-earner family expressed as the percent of average gross earnings of a production worker. We then calculate country-cohort specific values by averaging over the years that individuals were between age 20 and 45. For example, we average the benefit values from 1980 to 2005 for individuals born in 1960. Therefore our indicator expresses the generosity of family policy experienced by individuals over their life course, rather than at a single point in time (see Van Winkle forthcoming for country-cohort family policy indices and Van Winkle and Fasang 2017 for labour market indices). Note that we do not have complete information for individuals born before 1952, but use all the information available when creating their averages.

### *Analytical Strategy*

We use two sets of regression models to estimate the association between family size and household wealth as well as the interaction between family size, the generosity of family policy and wealth across the distribution of wealth. First, model the association between the number of children and the probability of wealth ownership using logistic regression models. Second, we use Recentered Influence Function regressions, also known as unconditional quantile regressions (see Firpo, Fortin, and Lemieux 2007) to model the association between family size and absolute wealth above zero across the wealth distribution.

We use unconditional quantile regression for two reasons: First, previous research suggests that the association between family size and wealth varies starkly across the wealth distribution. Second, while Schmidt and Sevak (2006) and Dockery and Bawa (2015) use conditional quantile regressions, we follow Maroto (2018) and estimate unconditional quantile regressions (see Killewald and Bearak 2014 for a brief discussion of conditional and unconditional quantile regressions). Estimates from unconditional quantile regression models can be interpreted as the association between family size and wealth at a given percentile of the distribution before being adjusted for the covariates in the model. We estimate models one model for every percentile from the 5<sup>th</sup> to the 95<sup>th</sup> percentile and display these estimates graphically. This enables us to provide a comprehensive picture of how the association between family size and wealth varies at different segments of the distribution.

For each analysis, we estimate three models. The first models estimates the association between family size and wealth including only country and birth year fixed effects as well as age, age-squared, and gender as control variables. The second models additionally include indicators for selection into parenthood: years of education, years of education squared, current labour market status (retirement, employed or self-employed, unemployed, permanently sick, homemaker, or other), marital status (married and living with spouse, registered partnership, married and not living with partner, never married, divorced, or widowed), and whether individuals have previously received an inheritance or gift over 5,000. The final models include an interaction between our family policy indicator and family size. After listwise deletion, we retain 58,755 observations (68 percent of the original analysis sample) nested in 33,097 individuals.

## **Results**

### *Descriptive Statistics*

Average total household net worth by family size across the wealth distribution is displayed in Figure 1. Further summary statistics by family size and wealth quantile (zero wealth, between the first and 50<sup>th</sup> quantile, and between the 50<sup>th</sup> and final quantile) are presented in Table A1 (see manuscript appendix). As can be seen in Figure 1, the lowest 20 percent of respondents have zero or negative wealth regardless of family size. However, family size differences become apparent at the 30<sup>th</sup> quantile, where respondents with two children have an average of 11,500€, compared to 1,640€ and 4,360€ for individuals with one and three children, respectively, and no wealth for childless individuals and those with large families. Family size differences continue to grow across the wealth distribution. At the median, men and women with one to three children have a net total worth between 117,000€ and 158,000€, while childless individuals have an average of 42,400€ and individuals with four or more children have an average of 57,500€. At the 90<sup>th</sup> quantile, individuals with one to three children have over 100,000€ greater wealth than childless individuals and those with large families. In sum, our descriptive statistics suggest that individuals with smaller families have a wealth advantage over individuals without children or with larger families.

*Figure 2: Average Total Household Net Worth across the Wealth Distribution by Family Size*

There are also other important differences by family size and wealth (see Table A1 in manuscript appendix). Marriage is more common among men and women with children compared to childless individuals and among wealthy respondents. For example, only 22 percent of respondents without wealth are married compared to 51 percent of childless wealthy individuals and 90 percent of wealthy men and women with two children. Divorce is not only more common among persons with less wealth, but among both individuals without children



and those with four or more children. Indeed, 20 percent of individuals with large families but no wealth are divorced. Unsurprisingly, wealthier individuals are higher educated, but men and women with four or more children are less educated than individuals with smaller families regardless of their total wealth. Finally, there are negligible differences by family size in the propensity to have received an inheritance or gift and differences in labour market participation are relatively small.

### *Results from Logistic Regression*

The results of the logistic regressions of family size and the generosity of family policy on the probability of wealth ownership are displayed in Table A2 (see manuscript appendix). As can be seen in model 1 of Table A2, individuals with one, two, and three children are more likely to own wealth when adjusted only for country, birth year, and gender. For example, the odds of wealth ownership are 56 percent higher for individuals with two children compared to childless men and women. Individuals with four or more children are estimated to have a roughly 13 percent lower odds of wealth ownership than childless individuals, however the estimate is not statistically significant. However, the positive association between smaller family sizes and the probability to own wealth attenuate substantially and are no longer statistically significant once adjusted for marital status, educational attainment, labour market status, and having received an inheritance. In contrast, the negative association between larger families and wealth becomes stronger and statistically significant. Compared to childless individuals, men and women with four or more children have over a 40 percent lower odds to own wealth.

*Figure 2a: Estimated Association between Family Size and the Probability of Wealth  
Ownership by the Generosity of Family Policy*

*Figure 2b: Predicted Probability of Wealth Ownership by Family Size and the Generosity of  
Family Policy*

While only marginally significant, the generosity of family ameliorates the negative relationship between larger families and the propensity to own wealth. The estimated association between family size and the probability of wealth ownership by the generosity of family policy is displayed in Figure 2a. Figure 2b shows the predicted probability of wealth ownership by family size and the generosity of family policy. As can be seen in Figure 2a, the estimated association between having four or more children and the propensity to own wealth is negative and statistically significant in contexts few family transfers. However, in contexts where family transfers equal 20 percent of average earnings, the association is virtually zero. This has a considerable impact on the overall probability to own wealth. The estimated probability to own wealth is less than 65% in less generous contexts, but nearly 80% in more generous contexts. In sum, our results support hypotheses H1a and H2a that larger family sizes are associated with a lower probability to own wealth, but that family policy can reduce this negative relationship.

*Results from Unconditional Quantile Regression*

The results from unconditional quantile regressions of family size and the generosity of family policy on total household net worth above zero from the 5<sup>th</sup> to the 95<sup>th</sup> percentile are displayed in Figures 3a and 3b (see also Tables A2-A4 in manuscript appendix). The results from models that include only country and birth year fixed effects as well as age and gender reflect the

results from logistic regressions above: persons with one, two, or three children have more wealth than childless individuals (see Table A2 in manuscript appendix). However, the associations between family size and absolute wealth grow larger across the distribution. At the 5<sup>th</sup> quantile, one to three children are associated with an additional 10,800€ to 19,600€. At the median, the same associations have grown to between 46,900€ and 84,100€, while at the 95<sup>th</sup> quantile two children is associated with 177,000€ in total household net worth.

However, the associations between family size and absolute net worth differ starkly across the wealth distribution once adjusted for marital status, educational attainment, labour market status, and having received an inheritance (see Table A3 in the manuscript appendix). At the lower end of the wealth distribution, smaller family sizes are associated with less wealth: between 6,000€ for two children and 9,900€ for three children. The penalty for larger family sizes considerable larger. At the 5<sup>th</sup> quantile, men and women with four or more children have an estimated 23,200€ less wealth than childless individuals. While the negative association between larger family sizes and wealth increases to 53,800€ at the 23<sup>rd</sup> percentile and dissipates at the 62<sup>nd</sup> percentile, the association between smaller family sizes and wealth reach zero much sooner. Moreover, the association between two and eventually three children becomes positive at the mid- and upper end of the wealth distribution. Compared to childless men and women, persons with two children at the median have an average of 22,600€ more and at the 90<sup>th</sup> quantile over 70,000€ more.

*Figure 3a: Estimated Association between Family Size and Wealth by the Generosity of Family Policy across the Wealth Distribution*

*Figure 3b: Predicted Wealth Ownership by Family Size and the Generosity of Family Policy across the Wealth Distribution*

As can be seen in Figures 3a and 3b, the generosity of family policy tends to ameliorate the negative association between family size and wealth, but not consistently across the distribution (see also Table A4 in the manuscript appendix). The estimated associations between family size and absolute total household net worth with varying degrees of the generosity of family policy across the wealth distribution are displayed in Figure 3a. Predicted net worth by family size and policy generosity is presented in Figure 3b. Note that estimates that are statistically different from zero are displayed as oblique points, whereas estimates that are not statistically different from zero are opaque.

Regardless whether one, two, three, or four or more children, the association between family size and wealth is less negative or even positive between the 5<sup>th</sup> and 15<sup>th</sup> percentile in context with generous family policy. For example, at the 5<sup>th</sup> percentile in contexts where family transfers equal 5 percent of average earnings, individuals with two children have 26,900€ lower wealth compared to childless individuals. In the same contexts, men and women with three children have 32,300€ less and those with four or more children have 54,000€ less. In contrast, at the 5<sup>th</sup> percentile in contexts where family transfers equal 20 percent of average earnings, having two children is associated with 17,900€ higher wealth compared to childless respondents, and the association between larger family sizes and wealth is no longer statistically different from zero.

Family size differences by the generosity of family policy become more varied as average wealth increases. Amongst individuals with only one child, the association between family size and wealth does not vary statistically or substantially across contexts with different levels of family transfers. For men and women with three or four or more children, the family size associations remain relatively constant until the 70<sup>th</sup> and 55<sup>th</sup> quantile, respectively, where differences become negligible. In contrast, the moderation of the family size association by

family policy remains relatively constant for individuals with two children until the 75<sup>th</sup> percentile where differences increase dramatically. For example, the wealth advantage of persons with two children relative to those without children at the 75<sup>th</sup> quantile in contexts with low transfers ranges around 20,000€ compared to a 70,200€ advantage in high transfer contexts. At the 90<sup>th</sup> percentile, there is no statistically significant advantage for individuals with two children in less generous contexts compared to a 165,500€ advantage for those in the most generous contexts. In sum, our hypothesis H1a and H2a are partially supported: larger family sizes are have more negative associations with wealth across the distribution, but the generosity of family policy reduces the negative association of family size for all family sizes only among those with the least wealth. At the median family policy moderates the association between family size and wealth for individuals with two or more children, and at the upper end of the distribution only for those with two children.

## **Discussion**

In this study, we addressed two research questions: what is the association between family size, i.e. the number of children, and household wealth for adults who are preparing for or have entered retirement, and does the generosity of family policy, i.e. the extent that countries compensate families for the costs of children, moderate the association between family size and wealth? We hypothesized that if the costs of children exceed household needs and parents' ability to save, then the number of children will be associated with less wealth (H1a), if couples save more to prepare for the costs of childrearing and bequest motives then the number of children will be associated with higher wealth (H1b). Further, we argued that if family policy reduces the monetary costs of children, then either the negative association between wealth and family size is smaller in contexts with more generous family policy (H2a) or the positive

association between wealth and family size is larger in contexts with more generous family policy (H2b).

We used data from the Survey of Health, Ageing, and Retirement in Europe (SHARE) to estimate the relationship between family size and the total household net worth of men and women between ages 50-65, born 1939-1963 from 14 European countries and Gauthier's (2011) comparative family policy dataset to estimate whether the generosity of family policy moderates the association between family size and wealth. Results from logistic regressions and unconditional quantile regressions support to hypothesis H1a and H2a: larger family sizes tend to be associated with a lower probability of wealth ownership and less wealth among wealth owners. Further, the generosity of family policy reduces the negative relationship between larger family sizes and the probability of wealth ownership as well as the negative relationship between all family sizes and total wealth, especially among those wealth below the median.

This study contributes both theoretically and empirically to the literature on wealth accumulation and inequality. Theoretically, we extend the life-cycle models of wealth accumulation found in both the sociological and economic literatures. Partially due to the lack of non-US research on wealth, there has been little thought on how context might interact with the association between family size and wealth. We argue that it is integral to account for the generosity of family policy when hypothesizing about how the number of children will influence wealth accumulation and the amount of wealth that adults own. Indeed, we show that context, and specifically the generosity of family policy, matter in important ways.

We provide one of the first accounts of family size differences in wealth ownership in a sample of 14 European countries. We find no relationship between family size and the probability to own wealth among individuals with one to three children after accounting for selection into parenthood. However, men and women with four or more children have a substantially lower

probability to own wealth. For those with wealth, the number of children is generally associated with less wealth, especially at the lower end of the distribution. Our results are generally in line with a number of US studies (e.g., Land and Russell 1996; Tin 2000; Scholz and Seshadri 2007; Maroto 2017). Our results are also in line with Maroto's (2018) finding parenthood is negatively associated with wealth between the 20<sup>th</sup> and 50<sup>th</sup> percentile and positively thereafter, although primarily for two-child families.

However, we show that whether the number of children is associated with wealth may depend on two factors that have been overlooked in past research. Moreover, these two factors may account for some of the diverging findings. First, the association between family size and wealth depends on the number of children. With the exception of men and women at the lower end of the wealth distribution, the wealth differences between parents and childless individuals are weakest for persons with one child, but become stronger with increasing family size. It is possible that some null-results may be attributable to measuring family size continuously (e.g., Ozawa and Lee 2006; Painter, Frech, and Williams 2015; Tamborini and Purcell 2016). Second, we provide evidence that the generosity of family policy can ameliorate the negative association between larger family sizes and the probability of wealth ownership. Moreover, generous family policy can reduce the negative association between all family sizes and the amount of wealth owned, especially at the lower end of the wealth distribution. This is especially important, because it indicates that countries can limit the negative impact of family size on wealth accumulation by compensating for the direct costs of children.

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Figures

Figure 1: The Life-Cycle Hypothesis for Wealth Accumulation with and without Children

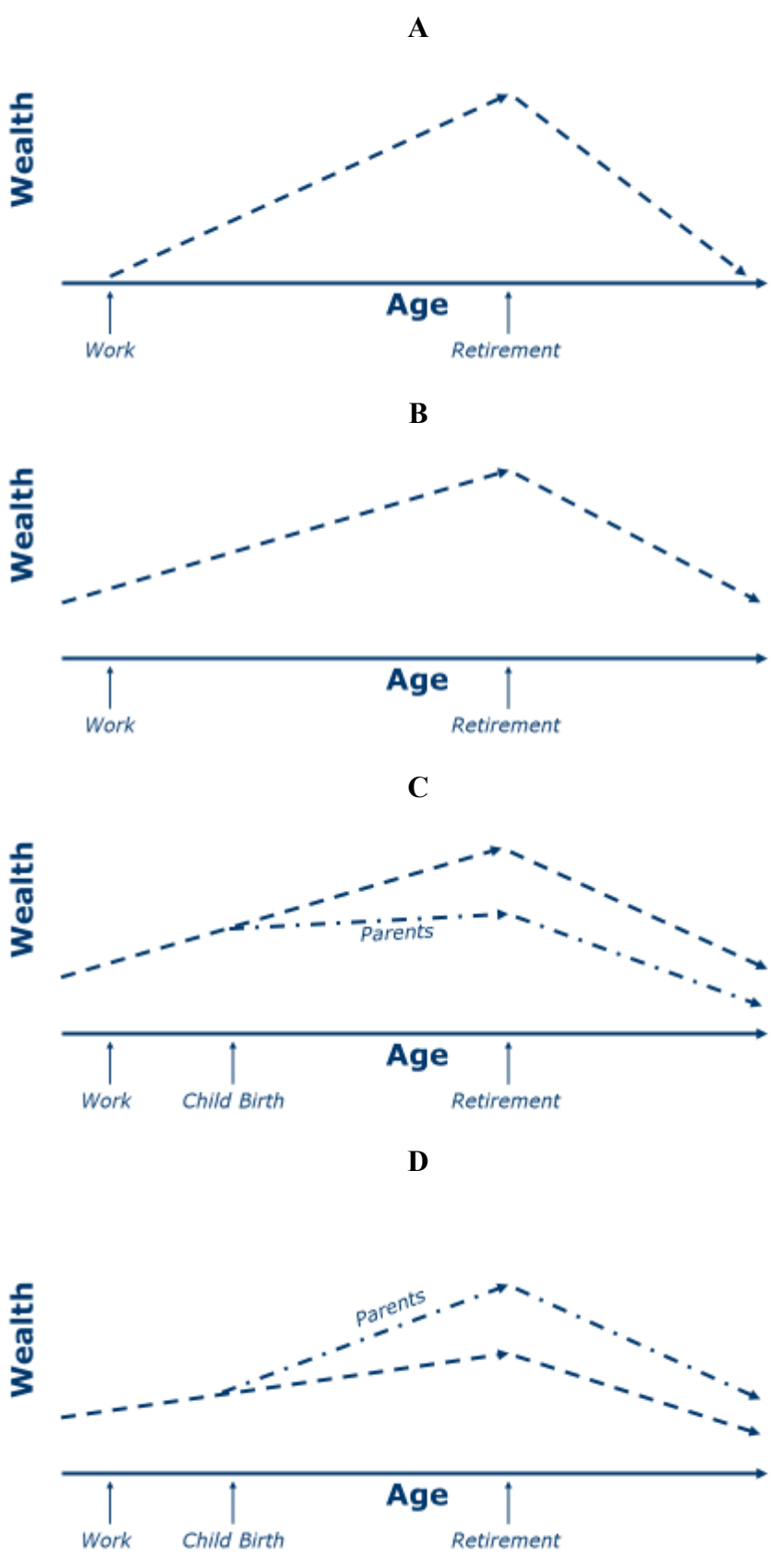


Figure 2: Average Total Household Net Worth across the Wealth Distribution by Family Size

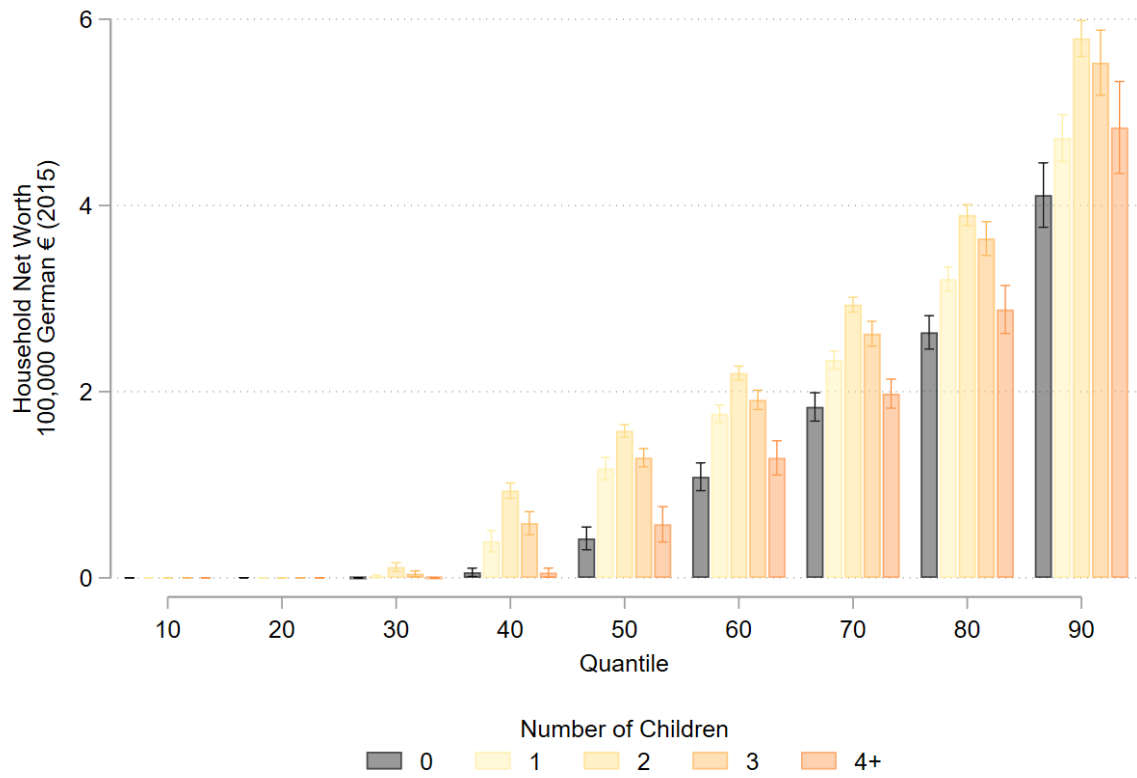


Figure 2a: Estimated Association between Family Size and the Probability of Wealth

Ownership by the Generosity of Family Policy

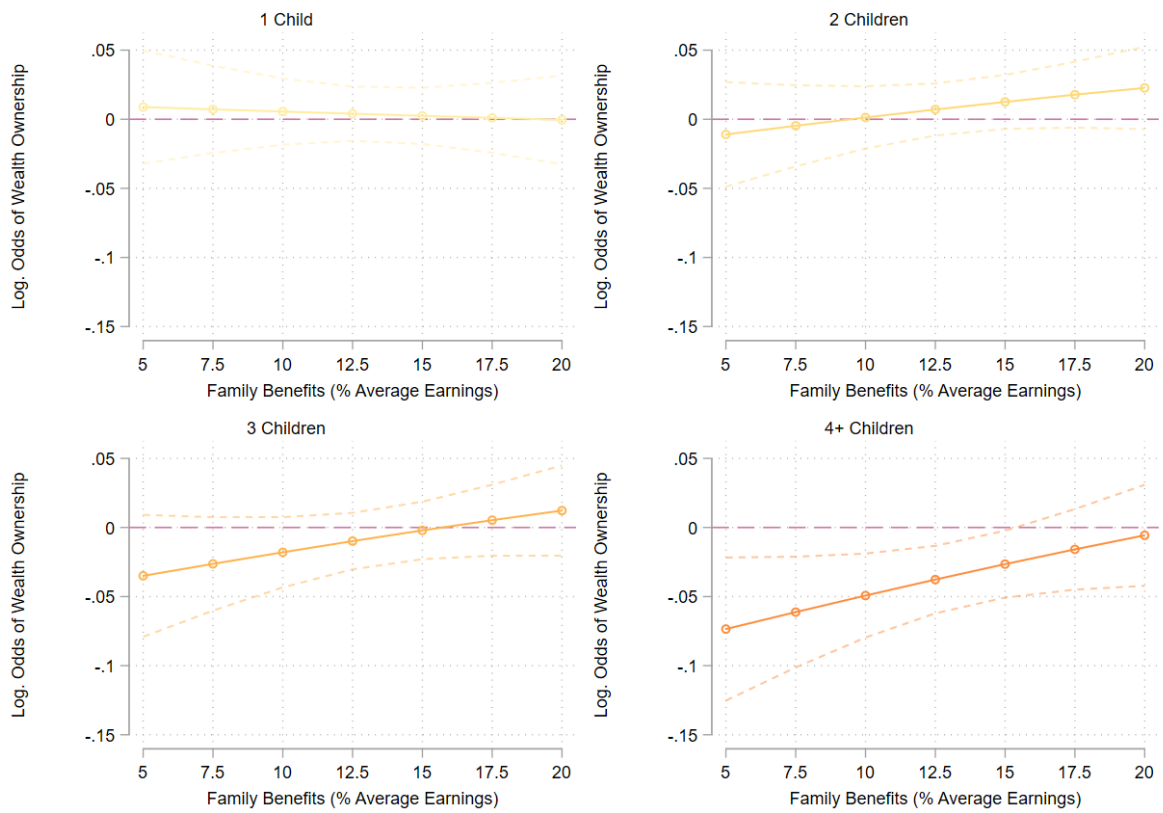


Figure 2b: Predicted Probability of Wealth Ownership by Family Size and the Generosity of Family Policy

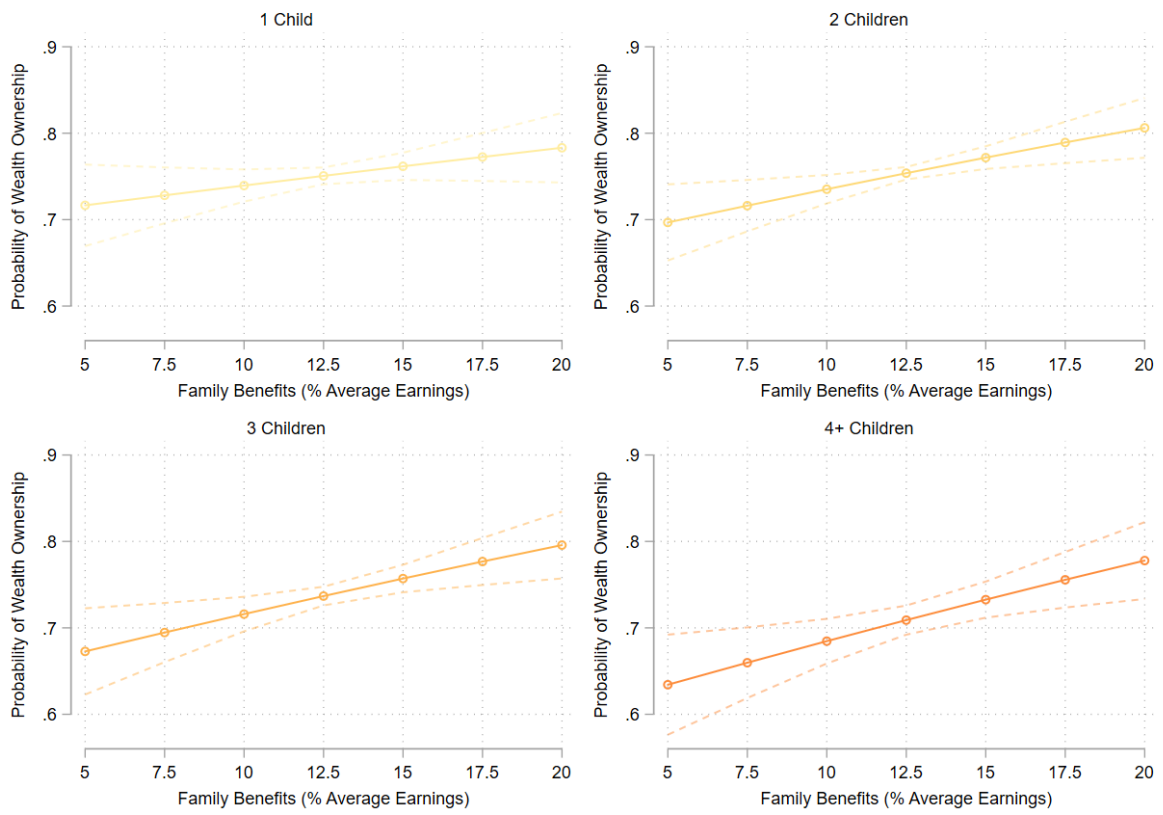




Figure 3a: Estimated Association between Family Size and Wealth by the Generosity of Family Policy across the Wealth Distribution

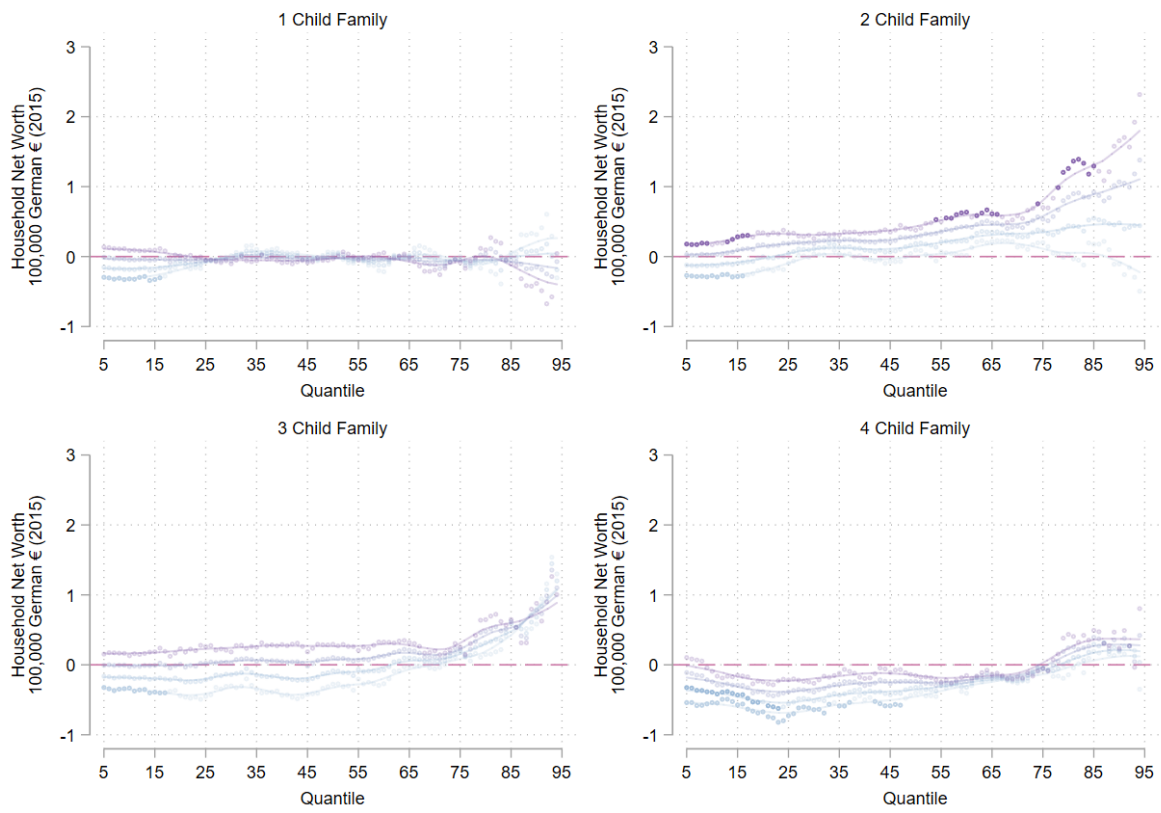


Figure 3b: Predicted Wealth Ownership by Family Size and the Generosity of Family Policy across the Wealth Distribution

