



**JOINT AND INDIVIDUAL SAVINGS WITHIN FAMILIES:  
EVIDENCE FROM BANK ACCOUNTS**

**Technical Report**

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**THINK  
FORWARD** INITIATIVE

# JOINT AND INDIVIDUAL SAVINGS WITHIN FAMILIES: EVIDENCE FROM BANK ACCOUNTS †

## TECHNICAL REPORT

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February 2020

### Abstract

In this paper, we investigate the ownership of financial assets within families and how pooling affects the individual savings of the partners. We use anonymised monthly transactional data from ING Bank to observe the financial data of Dutch couples for 2014-2016. We find that savings are quite equally allocated in almost half of households but in one-fifth of households there is only one partner who owns an individual account. The estimations show that joint savings contribute to a more equal division of savings since they are held equally. However, we find larger differences in individual savings among partners who pool, suggesting that the use of joint savings does not lead to individual savings being more evenly distributed, but rather to the opposite. The pattern is more apparent for households in their 20s and for saving accounts. The results of the study highlight the need to understand how families make decisions about applying the sharing rule to joint and individual savings.

**Keywords:** Household, Savings, Financial assets, Financial management, Allocation of resources in households, Sharing rule, Pooling, Joint and separate/individual assets, Bank and savings accounts.

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†This report has been prepared by the authors for the Think Forward Initiative.

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The authors would like to thank Dimitry Fleming for his help with the database and technical issues, Jaanika Meriküll, Kim Peijnenburg, Tairi Rõõm, and participants at a TalTech research seminar, at EMS 2019, at the IAREP/SABE 2019 conference, and at the CEPR European Conference on Household Finance 2019 for their useful comments.

# 1. Introduction

The extensive literature on intra-household money management confirms that most households do not pool all their resources, but they do frequently use partial pooling (Burgoyne et al., 2007), where some expenses are joint and other expenses are individual. Sonnenberg (2008) points out that individualisation in a family is associated with the partners in a household having greater independence in their money management. This individualisation has been thoroughly investigated in the United Kingdom (Vogler et al., 2006; Pahl, 2008; Sonnenberg, 2008; Ashby and Burgoyne, 2009) and empirical evidence suggests that more and more households are using partial pooling.

More independent money management also has an impact on how families accumulate their financial assets, whether jointly or separately. Kan and Laurie (2013) use data from the British Household Panel Study (BHPS) from 1995-2005 in the UK to show that individual holdings have become more prevalent. Full pooling of savings implies that both partners have access to the accumulated assets, which equalises income differences between partners. If there is partial pooling or none at all, the savings of partners may become uneven, which would have further implications for their ability to manage unexpected financial difficulties.

There is only limited understanding of how financial assets are allocated within families as wealth data are usually collected at the household level, which assumes that all resources are jointly owned within a family, whatever the legal ownership of the resources. However, the ownership of assets matters as there are more cohabiting relationships now and married couples may choose a separate property regime. Whether household members do or do not have access to accumulated financial resources has

severe implications for the financial well-being of household members.

A few surveys have studied wealth differences within households. Sierminska et al. (2010) found that among married German couples, men possess on average 56% more wealth than women, while the wealth gap is 74% among cohabiting partners. They did not find any gap in housing because of joint ownership, but observed large differences in other asset types such as financial assets, private pensions and business assets.

We hypothesise that pooling also affects the way household members manage their individual resources. When household members agree how much of the household's resources are shared and how much each household member owns individually, the individual share depends on the joint share as we will explain in more detail in the next section. The sharing rule, which considers the well-being of all the household members, is expected to lead to more equal distribution of individual resources. However, Chang (2010) concludes from interviews of married partners in the US that partial pooling may have a negative effect on equal sharing, because if partial pooling means that both household members make an equal contribution despite income differences, the amounts that each has left over for individual use and individual savings may be quite unequal. Huang et al. (2016) note that those who rely exclusively on a joint account but have partners who have a separate individual account as well are particularly disadvantaged. Pahl (2008) and Vogler et al (2006) argue that the purpose of independent money management within a household is to give more autonomy and equality, but the actual result may be the opposite.

The aim of this study is to investigate how financial assets are distributed within families and the role of pooling in the distribution of individual savings between partners. The main focus of this paper is on how the savings are allocated between joint and individual accounts rather than how income and spending are distributed. There are only a few studies that focus on savings and the studies that investigate the gender wealth gap do not look more closely at the joint and individual ownership of financial assets within families. This paper is the first paper to investigate joint and individual financial assets comprehensively by looking at the ownership of savings accounts. The use of bank data provides quantitative evidence about how financial assets are distributed within families. Using 36 months of monthly panel data from 2014 to 2016 lets us analyse the triggers of changes in the joint and individual savings by controlling for time-invariant unobserved household characteristics.

Rowlingson and Joseph (2009) show that household members may perceive the ownership of resources to be different from the actual ownership of accounts. However, Ashby and Burgoyne (2008) conclude that individual and joint saving accounts reflect the actual ownership of the resources. How the ownership of the resources is perceived may change when the relationships in the family change, making it important to get a picture of how resources are accumulated on joint and individual accounts. We focus on financial assets as these are more liquid than real estate assets and so have an important role as a buffer for emergencies and other adverse shocks. Moreover, it has been found that home ownership is relatively equal between partners (Sierminska, et al. 2010), which is further confirmed by the evidence that mortgage loans are mainly joint (Rowlingson & Joseph 2009). This means financial

assets provide a valid picture of the sharing rule for total assets.

We do indeed find substantial differences between the individual financial assets of household members. The individual assets are distributed evenly in almost 50% of the households that do not use full pooling. Only in 8% of the households where there is partial pooling does one partner hold most of the assets, as having a joint account implies that the assets are distributed equally. However, when we compare the individual assets of the partners, we find that in 54% of the households that pool partially, one household member holds most of the individual assets on their account. The panel estimations reveal that in the households that keep more assets on joint accounts, the individual savings are distributed more unevenly, as an increase of 10 percentage points in the share of joint savings is associated with an increase of 1.4 percentage points in the gap in the individual savings. The findings indicate that joint savings in themselves are shared equally by couples but the sharing is not reflected in how the individual savings are divided.

The paper proceeds as follows. Section 2 provides theoretical background for the distribution of savings within families, and section 3 gives a brief literature review. Section 4 provides an overview of the legal arrangements for the savings of a couple in The Netherlands, Section 5 presents the dataset, while section 6 introduces the measures used to analyse individual financial assets. Statistical analysis of the measures will be discussed in section 7. The estimations for the different model specifications will be examined in section 8. Section 9 is for conclusions and discussion.

## 2. Theoretical background

Decision-making for how savings are allocated within households may be considered to follow the same theoretical framework as decision-making for spending, which is described well by Chiappori and Meghir (2015). Savings are resources that have not been consumed, and so are not directly linked to current utility, but rather to future utility and to intertemporal consumption choices, as the aim of saving is to permit future spending and consumption. Therefore we explain a household sharing rule for consumption and saving.

We consider a collective model with two adult household members, who are partners with different preferences and resources. A household consumes joint goods given in a vector  $Q$  and individual goods given in a vector  $q$ .

Each household member has their own utility function depending on their consumption, but household members also care about other household members. We can express the caring type utility of household member 1:

$$w^1 = (u^1(Q, q^1), u^2(Q, q^2)) \quad (1)$$

The total utility of the household is the weighted sum of individual utilities:

$$U = \mu^1 w^1 + \mu^2 w^2 \quad (2)$$

where  $\mu$  denotes Pareto weights expressing the weight of the utility of each household member in household welfare:

$$\mu^1 + \mu^2 = 1 \quad (3)$$

If households do not spend all their resources but save some resources either jointly  $S_Q$  or individually  $s^1$  and  $s^2$  for future consumption, the budget constraint of a household can be written as:

$$\sum_i P_i Q_i + \sum_j p_j (q_j^1 + q_j^2) + S_Q + s^1 + s^2 = y^1 + y^2 = Y \quad (4)$$

Blundell et al. (2005) introduce the conditional sharing rule, where in the first stage household members decide jointly on allocating aggregate household income to joint consumption and saving, and on distributing the remaining income between household members as individual shares. In the second stage, the members can freely spend or save the shares they have received, conditional on the level of joint consumption and saving decided on in stage one. Hence the sharing rule  $r$  determines the distribution of resources between joint and individual consumption and saving:

$$\sum_i P_i Q_i + S_Q = r_Q Y$$

$$\sum_j p_j q_j^1 + s^1 = r^1 Y \quad (5)$$

$$\sum_j p_j q_j^2 + s^2 = r^2 Y$$

with the condition for the sharing rule that

$$r_Q + r^1 + r^2 = 1.$$

The sharing rule determines the individual share of consumption and the individual share of savings, and in a model without joint consumption the sharing rule reflects the Pareto weights of individual utilities. However, in a model with joint goods the sharing rule does not explicitly reflect welfare. A model by Chiappori & Meghir (2014) shows that if preferences

are different, perhaps if one household member values joint consumption more than the other member does, so  $u^1(Q) > u^2(Q)$ , it may outweigh the lower share of individual consumption. So that even  $r^1Y < r^2Y$ , and  $u^1(Q) \gg u^2(Q)$ , the outcome can be  $u^1(Q, q^1) > u^2(Q, q^2)$ . We may assume that the preferences for joint or individual consumption and saving are not extremely different between household members. The caring type utility function implies that the consumption and saving of other household members is important, so an extremely unequal sharing rule is less beneficial for the household than a more equal sharing rule.

Both the share in consumption and the share in saving depend on the sharing rule in the family. Savings are mainly accumulated for future spending and consumption, whereas the division of current consumption might be different from the division of

joint and individual savings for several reasons. First, the amount of assets accumulated is the outcome of intertemporal consumption and saving choices over a longer time span. Second, if a couple agrees on the sharing rule of income, which also requires a common understanding about joint spending and saving, individual savings may be a residual after individual consumption. So even when the individual consumption shares of partners are equal, their ability to save may be very different. Third, savings are collected to achieve utility in the future, but there must be uncertainty about the composition of the family in the future, which means the division of savings reflects the expectations about joint and separate consumption in the future. The division between joint and individual saving provides a longer-term view about how resources are shared or about the bargaining power over future consumption rather than the share of current consumption.

### 3. Literature review

There are several studies that test the collective model and confirm that households do not act as a unit, but rather household members share household resources. Less is known about the sharing rule. Following from the typology of money management systems developed by Pahl (1983, 1990, 2008), the full pooling system implies full sharing of resources. More interesting cases are the partial pooling system (Burgoyne et al, 2007), in which some family resources are held in one common pot and some resources are held separately, and the independent or autonomic management system, in which household members keep their resources separately and are each responsible for specific expenditures. In the independent management system, the sharing rule determines how resources are divided between partners. In the partial pooling system, household members determine the joint share and the separate individual shares.

Blundell et al. (2005) investigate the sharing rule for income in the UK in 1978-2001 using the Family Expenditure Survey (FES). Their main focus is on the sharing rule for the labour supply, but they also investigate the consumption share of men within families. They find that the man's consumption depends positively not only on family income but also on his own income. The relationship with his wife's income is not precisely estimated.

Cherchye et al. (2015) derive a method for estimating the sharing rule using data on household income and spending and individual earnings when individual consumption is not known. They estimate the income shares of men and women, as these also reflect the share of household resources consumed by men and women. The method has been applied to data from the US Panel Survey of Income Dynamics (PSID), and they find that men have only slightly larger

income shares than women. They also find that in some households the distribution of resources is quite uneven, as the relative income share of women is less than 15% in a number of households, but there are also households where this share is above 80%. They show that relative income shares are stable over total income.

There is limited quantitative evidence about the shares of savings within couples. Treas (1993) investigates the use of joint and separate bank accounts in the US using data from the Survey of Income and Program Participation (SIPP) in 1984. She emphasises the role of transactional costs in the choice of whether to have separate or joint accounts. Kan and Laurie (2014) explore the probability of individual and joint saving, investment and debt in 1995-2005 in the UK. They divide the sample into non-savers, individual or separate savers, and joint savers, and it is not clear which group households with both individual or separate and joint savings fall into. They observe that partners have increasing independence in money management over the period and find that savings are more common on joint accounts than investments or debts are. Similarly, Lyngstad et al. (2011) investigate the probability of Norwegian households pooling their resources. They use survey data on the ownership of a joint bank account together with a joint decision on large purchases as a measure of pooling and find that cohabiting couples are less likely to pool their income than married couples are.

There are two papers that go beyond the binary indicator for the ownership of the bank accounts and focus on the amounts held by couples. Phipps and Woolley (2008) use data on the Registered Retirement Savings Plans (RRSP) in Canada to compare the retirement savings of couples. They find

that the main explanatory variable is income, notably the income of both partners in the amounts held by women for retirement and only the income of men in their retirement amounts. Lee and Pocock (2007) focus on the distribution of financial assets within couples on private bank accounts in South Korea using survey data for 1993-1998. They find that the wife's share in total monthly saving depends mainly on her relative earnings.

All the studies use cross-sectional survey data in which household members report whether they have separate or joint accounts. We will use the actual data on the ownership of bank accounts and the longitudinal or panel dimension to identify causal relationships. It is usually easier to collect data about the ownership of different accounts than about the distribution of amounts between accounts, and therefore no study has focused on the inequality of how resources are divided between partners. We believe that analysing bank data adds new insights into the intra-household allocation of resources, particularly of financial assets.

Kukk and Van Raaij (2018) investigated the pooling of income, spending and savings in The Netherlands using bank panel data. They find that older age groups and couples with lower income or more children use full income pooling more often than other groups do. They show that full pooling of savings decreases with the number of children and with age, reflecting different patterns for everyday money management and saving. The probability of couples having joint accounts increases with their income but the share of savings accumulated on the joint accounts declines with income. Similarly, full pooling of savings increases with income at lower income levels but declines at higher income levels, suggesting that at higher income levels household members prefer to hold savings on individual accounts. In this paper we focus on how individual

accounts are used by couples that do not pool or use partial pooling.

### 3.1. Financial arrangements between partners in The Netherlands

The Netherlands stands out among European countries for having the highest share of part-time jobs, as 50% of those in employment in 2015 were working part-time (Eurostat)<sup>2</sup>. Among them, 77% of women work part-time, while 27% of men do so. There is a gender pay gap in the Dutch labour market, and it is at the average for the euro area of 16% (Eurostat)<sup>3</sup>. Consequently, earnings may differ markedly within a family and it is important to understand how widely the financial circumstances of the family members diverge.

The divorce rate in The Netherlands for first marriages doubled from 19.3% in 1975 to 38.8% in 2017 (Statistics Netherlands)<sup>4</sup>. The financial situation of the partners after a divorce depends a lot on their financial arrangements during the marriage. What agreement there was between partners about the ownership of financial assets and goods becomes a crucial issue when there are problems in the relationship.

There are three types of financial arrangement between partners in The Netherlands: (1) complete joint ownership of assets and goods ("community of goods"); (2) partial joint ownership of assets and goods ("partial community of goods"); and (3) separate financial assets ("marriage or relationship conditions"). The second option of partial joint ownership of assets and goods has been the standard option since January 2018. This option promotes partial pooling of new financial assets, while assets that the partners already owned before marriage or cohabitation remain separate. For marriages entered into before 2018, the first option was standard, and it is still the most common variant,

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<sup>2</sup> Eurostat database at ec.europa.eu, code [lfsa\_eppga]

<sup>3</sup> Eurostat database at ec.europa.eu, code [sdg\_05\_20]

<sup>4</sup> The statistics are available from the Statistics Netherlands database

<https://opendata.cbs.nl/statline/#/CBS/en/dataset/37425eng/table?ts=1571308829477>



applying to about 73% of all marriages (Van Raaij et al. 2019). The third option has been possible, but has to be specifically arranged by a notary as a prenuptial agreement when the marriage or cohabitation begins. The third option is preferred if one partner owns a company, wants to keep their assets within their own family, or wants to keep assets to leave to children from an earlier marriage.

Marriage has become less popular in The Netherlands over the past 50 years, and the number of marriages registered has declined by 50% since 1970. This trend is more prevalent among younger generations. In 1997, 70% of women and 60% of men were married at the age of 35, while 20 years later, in 2017, 45% of women and 36% of men were (Statistics Netherlands). Cohabitation has become more common in The Netherlands, and about 50% of those who are not married have a cohabitation agreement (Statistics Netherlands). The financial arrangements of marriage apply automatically to a registered partnership, but a cohabiting couple who do not have a registered partnership can draw up a cohabitation agreement in which they agree on how to divide their property. An increase in the use of prenuptial and postnuptial notary agreements on property division rights can be observed in 2019, both for married and cohabiting couples, and for couples without a registered partnership.

When there is a marriage or cohabitation agreement, all savings can legally be considered joint, whether they are kept jointly or separately. However, as already discussed in previous sections, there are good reasons to assume that joint and individual bank accounts are treated separately within families, otherwise there would hardly be any reason to hold both joint and individual accounts.

A couple may keep individual accounts for tax reasons. Until 2016, savings and investments above a certain threshold, which was € 24,437 in 2016 or

double that amount if held with a tax partner, were taxed at 1.2% regardless of the actual returns on the savings (Tax and Customs administration)<sup>5</sup>. The tax system does not force a couple to use individual accounts instead of joint accounts, but if partners do not hold joint accounts for some reason, they are inclined to divide their savings and investments between their individual accounts so that the individual amounts do not exceed the tax threshold. The deposit guarantee system is another reason for holding financial savings on the individual bank accounts of the two partners. The maximum deposit guarantee for a savings account is €100,000, so if the total savings of a couple are larger, they may prefer to split the savings between the individual accounts of the two partners to have €200,000 of family savings guaranteed. Another option is to have another savings account with another bank where the same threshold applies. In this way the deposit guarantee system encourages the two partners to keep their savings on their individual accounts.

Dutch couples are able to secure legally the joint ownership of family property. However, a significant share of cohabiting partners do not do this, so it matters for them whose account the savings are kept on. Equally, it is easier for married couples to conceal savings that are kept separately from those of the other partner, and this incentive can be strong when problems arise in the relationship, such as the threat of divorce. This makes it important to investigate how the assets are held within a family in general.

In this paper, we focus on the financial assets of families. These are liquid assets that can be used for consumption when needed, such as deposits and securities. Typically, real estate is the main wealth component of households, and financial assets are a much smaller share of household wealth. The Dutch share of financial assets within the total assets of households is one of the largest in the euro area at 39%, while the euro area average is 29% (ECB

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<sup>5</sup> The tax rules are provided by Tax and Customs administration at <https://www.belastingdienst.nl>

2016). Liquid assets are important for smoothing unexpected income shocks or for future consumption. There is evidence that the family residence is usually owned jointly, while the ownership of financial assets may be more diverse (Sierminska et al. 2010).

## 4. Data & analyses

We use transactional data from ING Bank to investigate how financial assets are shared. We are aware that bank data do not reflect exactly the sharing rule of a given household. Kenney (2006) shows that couples in the US may also use separate money management that is controlled by one partner or a pooling system in which one partner controls the money. As Ashby and Burgoyne (2008, 2009) point out, qualitative surveys in the United Kingdom show that some households without a joint account still consider that they share their income, with spending from the checking account of one individual covering the common interests of family members. However, any adult can easily open any kind of bank account at negligible cost, and so the use of individual and joint accounts does not reflect the preferences of household members for sharing or for control in their bank accounts.

Because an individual bank account can only be accessed by its owner, all transactions from individual accounts require the owner's consent. A survey by Woolley (2003) confirms that owners of individual accounts have primary access and control over their accounts. Joint accounts give equal rights of access and use to both partners, though rules can be set within a family for how joint accounts are used. Active use of individual accounts or individual accumulation of assets indicates that the partners prefer independence in their everyday spending and saving. Ashby and Burgoyne (2008) also find that individual accounts are considered to be used independently in a partial pooling system, whereas joint accounts are managed together. Hence we consider the information about which account savings are accumulated on to be a good proxy for how savings are shared, as those savings can only

be used following a joint decision for a joint bank account, or independently and without the consent of household members from individual bank accounts. The sample is a random subset of anonymised ING Bank customers in The Netherlands. Although the customer base is not representative of the Dutch population, the sample consists of customers who are under different economic conditions and provides a good overview of how resources are allocated by households from different socioeconomic groups with two working-age adults.

In our sample, a household consists of two adults aged between 18 and 70 and living at the same address. The age difference between the two adults should be smaller than 15 years, indicating that the household members in the sample are probably a couple. The dataset on the households contains information about the ages of both the household members. In the analysis, we use the age of the oldest household member as one of the characteristics of the household. We calculate household income as the median of monthly inflows in the past seven months. Monthly inflows compile all inflows from outside the bank into the checking accounts of all household members within a month. We use the household income level to analyse the differences in sharing rules across economic conditions. Information about the number of children in the household under the age of 18 will be used to investigate how the number of children affects the distribution of financial assets<sup>6</sup>.

The product-related dataset contains data for each product type, these being checking accounts, saving accounts, investment accounts, and pension accounts. Each product type has been divided into

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<sup>6</sup> Since the data on children are collected indirectly, some data may be missing. This would lead to lower estimates.

individual and joint accounts. A joint product is defined as a product where both household members own the account. We observe the balance of individual accounts for both household members.

The third monthly transaction dataset provides monthly inflows into and outflows from individual and joint checking accounts, making it possible to analyse the share of inflows and outflows of the joint and individual checking accounts. The resources for all the other joint saving and investment products are transferred from joint checking accounts. Pension accounts are all individual accounts<sup>7</sup>.

Where the income of a household member is transferred directly to the joint account, which is a common practice, we are not able to identify the income of each partner separately as we do not know whose income is being transferred to the joint account. However, we are able to observe the individual incomes of members of households that only use individual accounts.

As transactional data may contain extraordinary transactions, we use three-month average values for the inflows and outflows and for the balance of the accounts. Additionally, we exclude observations with the highest 1% of values in the balance of total financial assets for both inflows and outflows.

The statistical analysis and the regression models use the ages of both household members, household income, and the number of children as categorical variables. The age groups are defined as 18–29, 30–39, 40–49, 50–59, and 60–70. We categorise the number of children as zero, one, two, three or four, and five or more. The income groups are defined as monthly household income of up to €999, €1,000–1,999, ..., €5,000–5,999, and more than €6,000, calculated as the median household monthly inflow during the past seven months. The asset groups are

defined as the household balance for total financial assets of up to €1999, €2,000–4,999, €5,000–9,999, €10,000–19,999, €20,000–49,999, €50,000–99,999 and more than €100,000.

Households do not have to use only one bank for all financial matters, and loans and investment products especially may have come from other financial institutions. We compare the presence of different products in our sample with the Household Finance and Consumption Survey (HFCS), which is representative of the Dutch population in 2013. The share of households with investment products is 13% in the HFCS, which is similar to the 11% share in our sample, while the share of mortgages is smaller in our sample at 25% against 42%, and the share of households with consumer loans is also much lower in our sample at 5%, against 27% in the HFCS (ECB 2016). We may conclude that the saving products are well captured in the dataset, but we will nevertheless complement this with additional robustness analyses to address the issue of there being limited information about all financial assets.

#### 4.1 . Measures of individual financial assets

We compare how individual accounts are used by non-pooling households without joint accounts and by households with joint accounts. In the sample, 40% of households have full pooling and only use joint accounts over the sample period, 12.5% use only individual accounts, and the others use both individual and joint accounts in partial pooling. We do not analyse couples without individual accounts in households with full pooling, as we are comparing how individual accounts are used.

As households may have joint accounts for different products, we use the data on the accounts where households can accumulate their financial assets, which are checking, saving, investment and pension accounts. A checking account is meant for daily

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<sup>7</sup> The ownership of pension accounts is very small because the data cover only voluntary defined contribution pension schemes, but the majority of voluntary pension schemes are

in life insurance (HFCS 2017). However, we include these pension assets in the analysis as these can be liquidated when needed.

transactions and households are expected to use other accounts for saving purposes. Table A.1 in the Appendix shows that households also hold some of their assets on checking accounts.

In order to analyse how financial assets are allocated between the two partners, we calculate the share of individual financial assets that are owned by each household member. We calculate the share of the individual financial assets of each household member for each month as:

$$Share_{it}^{Tot} = Bal_{it}/(Bal_{it} + Bal_{kt} + Bal_{jt}) \quad (6)$$

Where  $Bal_{it}$  and  $Bal_{kt}$  denote the balance of the individual accounts of household members  $i$  and  $k$  respectively, while  $Bal_{jt}$  denotes the balance of the joint account at the end of the month. The share expresses the individual ownership of the assets by one household member as a share or proportion of total financial assets and reflects the outcome of the sharing rule given in equation (5) for the allocation of savings. The share indicates how independent each household member is in their savings. However, this measure does not capture the allocation between partners, because if the majority of assets are held on joint accounts, the individual share is small for both partners, since  $Share_2 = 1 - Share_j - Share_1$ . To assess the distribution between the partners, we calculate a share of the assets of each household member only from the *private* or individual financial assets of the household:

$$Share_{it}^{Priv} = Bal_{it}/(Bal_{it} + Bal_{kt}) \quad (7)$$

This measure indicates the distribution of individual financial assets between the partners. The share calculated is the same for households without joint financial assets, while in the families with joint accounts, the second measure indicates how equally the *individual* financial assets are distributed. This gives a better picture of whether individual assets are distributed equally, similarly to joint assets, or unevenly, as pointed out by Chang (2010). For example, if one partner has a small share, it directly

indicates that the other partner must have a large share, since  $Share_2^{Priv} = 1 - Share_1^{Priv}$ .

To model the relative *differences* between the household members, we compute a measure of the difference between the individual shares of the partners. The difference has been estimated as a proportion of total assets:

$$Diff_{indiv,t}^{Tot} = \frac{|Bal_{it} - Bal_{kt}|}{(Bal_{it} + Bal_{kt} + Bal_{jt})} \quad (8)$$

The measure gives the proportion of unequally distributed assets in total assets. So if one partner owns, say, 30% of the family's assets on their account and the spouse also owns 30%, while 40% of the total financial assets are held on a joint account, the difference between the partners is 0. But if the distribution of the financial assets is 30%, 0% and 70%, the difference between the partners is 30%. In the last example, the information about the drastic difference between the individual accounts of 30% against 0% is not explicitly captured, and so we compute an additional measure as a proportion of the separately held financial assets:

$$Diff_{indiv,t}^{Priv} = \frac{|Bal_{it} - Bal_{kt}|}{(Bal_{it} + Bal_{kt})} \quad (9)$$

In the last example, if the proportions for the private assets of the partners are 100% and 0%, the difference between the partners is 100%. This measure reflects the difference in the savings shares of the household members.

We use two different variables to indicate pooling, a binary variable and a continuous one. If a couple has a positive balance on any of their joint accounts, or if there are inflows into or outflows from joint checking accounts, we consider this to be a couple with some pooling of resources. Additionally, we compute a continuous variable that denotes the extent of joint financial assets as a share of total financial assets:

$$Share_{jt} = Bal_{jt}/(Bal_{it} + Bal_{kt} + Bal_{jt}) \quad (10)$$

The range of the variable is 0-1, where it is 0 if no assets (0%) are held on the joint account and 1 if all the financial assets (100%) are held on the joint account.

#### 4.2 Statistical analysis

We give the mean values for different financial measures for the households that pool and for those that do not pool in Table 1. As we focus on the distribution of individual financial assets, we investigate the sub-sample that has a positive balance on any of the individual accounts.

Panel (b) in Table 1 shows that financial assets held separately are quite disproportionately distributed. The average gap in financial assets is 38% between partners who do not pool. This means that on average one household member holds 31% of the total financial assets on their account, while the other household member holds 69% on their account. The gap for households using joint accounts is lower at 32%, meaning that if one partner holds 12.5% on their individual account, the other holds 44.5% on their individual account, and the remaining 43% is held on joint accounts, as the average share of joint financial assets is 43%.

For the financial assets held individually as shown in Table 1 panel (c), the average gap in individual financial assets is substantially larger for households that pool, as it is 63% of all the individual assets. When one partner has 18%, the other has 82% of individual financial assets. The differences between individual income and spending are also large at 54% for individual income and 55% for individual spending, but this difference is smaller than that for financial assets. Financial assets accumulate over time, so small differences in ongoing saving end up producing large differences over a long period.

Table 1 panel (d) shows the mean shares of financial assets, income and spending held by women in households. The average share in the sample of financial assets held by women is 50%, and it is 51%

among pooling households and 49% among non-pooling households. Interestingly, the share of individual income and spending is higher at 54-55%, for women in pooling households than in households which do not pool, where women have a slightly lower share of income and spending. The difference in income is to be expected given the prevalence of part-time jobs for women in The Netherlands and among couples that pool there seems to be more sharing, from which women benefit more than men do.

We dig further into the distributional differences. Figure 1 panel (a) shows that in almost 50% of the non-pooling households, men and women own equal amounts on their individual accounts. In households with pooling, both women and men own less of the total financial assets because some of the assets are joint. Figure 1 panel (b) reveals that in half of the households that pool partially, one partner does not own any individual assets. There are slight gender differences in favour of women in households that pool, since in 23% of these households women do not own any individual assets, but in 25% of them men do not own any individual assets. Among non-pooling households the difference is marginally in favour of men, as in 8% of these households women do not own an individual account, while in 5% of them men do not own an individual account.

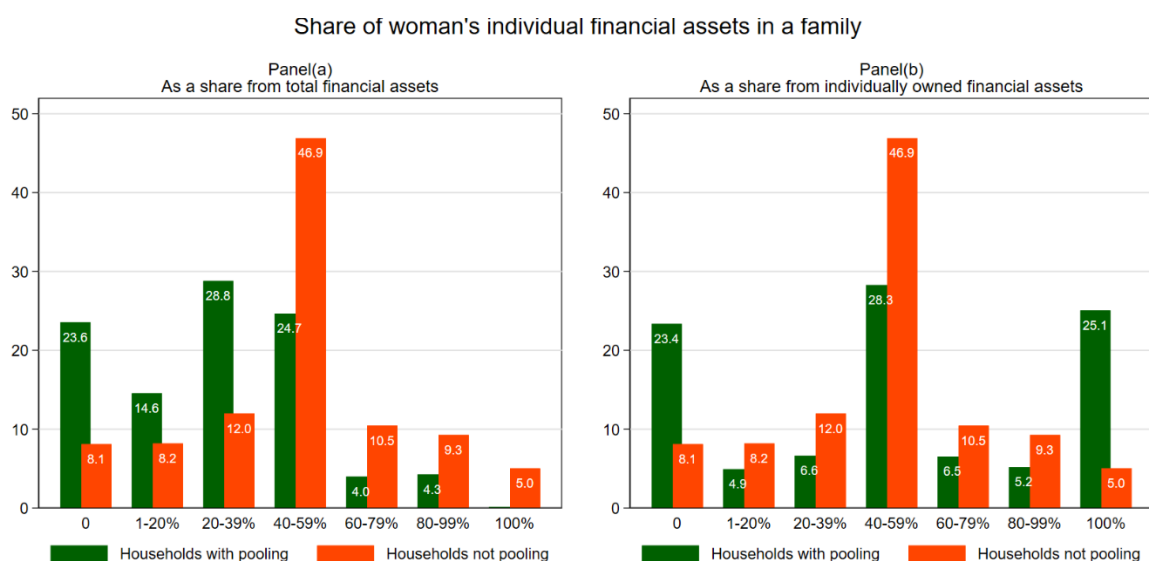
Treas (1993) provides some statistics on how US couples use joint and separate accounts. The statistics are from the SIPP survey of 1984, so the long time gap may make the comparison challenging. She shows that in one third of the couples with only separate bank accounts, who were 18% of the sample compared to 12.5% in our sample, both partners owned an account, in one third of them only the husband had an account, and in the other third only the wife had an account. In one fifth of the couples that use partial pooling, who were 17.6% of the sample compared to 47.5% in our sample, both partners owned an individual account, in a quarter of the cases only the husband had an individual

**Table 1.** Mean statistics of the main measures

	Households:		
	Not pooling	Pooling	
<i>(a) Total balance</i>	27,278	30,233	***
Total individual balance	27,278	17,981	***
Total income (inflow)	4,877	5,045	***
Total spending (outflow)	3,045	3,121	***
<i>Difference on individual accounts:</i>			
Absolute difference in individual fin. assets	8,602	8,939	***
<i>(b) Difference as the share of total resources</i>			
Financial assets	0.382	0.317	***
Income (inflow)	0.323	0.374	***
Spending (outflow)	0.366	0.373	***
<i>(c) Difference as the share of individual resources</i>			
Financial assets	0.382	0.631	***
Income (inflow)	0.323	0.542	***
Spending (outflow)	0.366	0.549	***
<i>(d) Share of resources owned by women:</i>			
Financial assets	0.486	0.509	***
Income (inflow)	0.466	0.545	***
Spending (outflow)	0.454	0.545	***
Number of observations in the sample	39,801	162,447	

Note: The stars \*\*\* denote statistically significant difference at the 1% confidence level between the mean values of the sub-groups.

**Figure 1.** The share of households with the given share of individual assets of women in the total financial assets in panel (a) and in individually hold financial assets in panel (b)



account, and in over half of the couples it was only the woman who had an individual account. In our sample, the cases where both partners have an individual account are more common, as having a bank account is also more common now than it was in the 1980s, though the gender differences in favour of women also seem to be present in our sample.

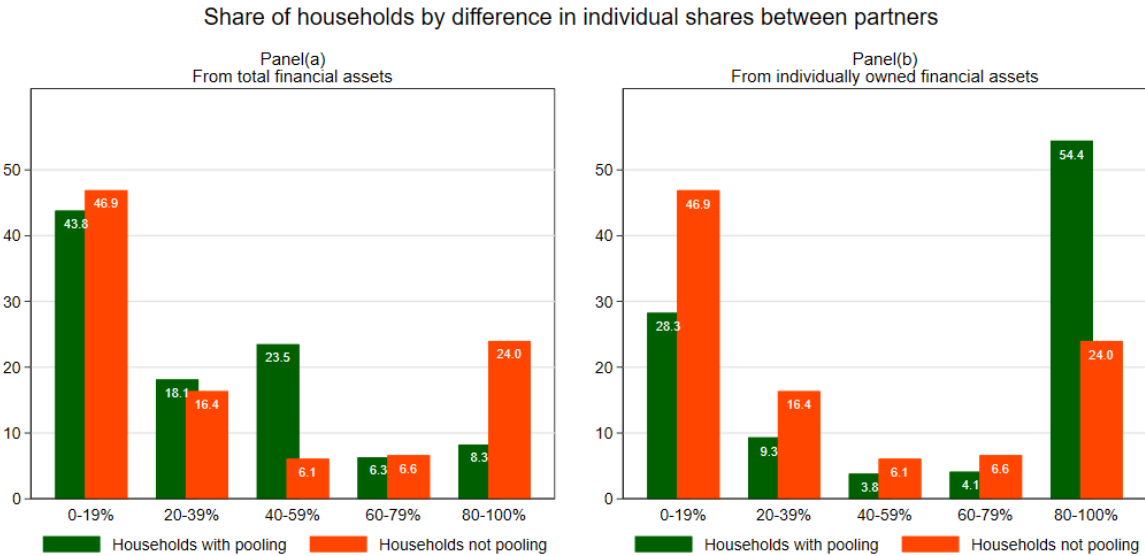
The 0% or 100% share means the other partner has the opposite amount. As the gender differences are marginal, we look at the difference in the individual shares of the partners without focusing on gender, as given by equations (8) and (9). In Figure 2 panel (a), we observe that the individual assets within total financial assets are distributed evenly in almost 50% of the households, and the gap in individual financial assets is less than 20% of the assets. However, in a substantial number of households the assets are very unevenly held on individual accounts, since in almost one quarter of households that do not pool, the gap is over 80% of total assets meaning that one household member holds most of the financial assets. In households with pooling, the fraction of households with a very uneven split of financial assets is small at 8%. This is expected because some of the assets are held on joint accounts, implying equal distribution. For the distribution of

individually held financial assets, the picture is more striking. Panel (b) reveals that in over 50% of households with pooling, one household member holds most of the individual assets.

One explanation for why only one partner owns an individual account is that the other partner may be using the joint account more actively. Kenney (2006) analyses money management-control systems and shows that it is common for the joint account to be controlled by one partner, more often the woman rather than the man. We can hypothesise that the partner who controls the joint account may not need a separate account. However, this explanation applies better to everyday money management than to savings. It is less obvious that savings on the joint account would be considered to be owned by one partner.

The strikingly disproportionate distribution raises the question of whether one household member may have an individual account with another bank and so does not own any assets in the sample. As explained in Section 4, the deposit guarantee system may incentivise people to hold a bank account with another bank. Although Treas (1993) shows that it is very common for one partner not to have a bank

**Figure 2.** The share of households with the given difference in individual assets from total financial assets in panel (a) and from individually held financial assets in panel (b).





account, we would need more recent data to be able to assess the validity of this for our sample. There are no publicly available data but we can use data from a survey run in The Netherlands in January 2017 that covered 1116 couples (Van Raaij et al. 2019). The survey reveals that in 14% of couples without a joint account, one partner reports not having an individual account. These statistics are very similar to the statistics from the ING transactional data, and confirm that we have observed a comprehensive

financial picture of couples. However, in 48% of the households with pooling in the sample, one partner does not have an individual account while in the survey 31% of households report that one partner does not have an individual account, indicating that we might be missing some data on individual accounts for these households. We address this issue in the robustness estimations in the next section.

## 5. Empirical model & results

### 5.1. Financial assets on joint and individual accounts

Before analysing the differences in the individual financial assets of spouses, we explore how far the accumulation of assets on different accounts is related to socio-economic factors such as age, household income and number of children. We estimate a fixed-effects (FE) model in which the dependent variable is the balance of financial assets on joint and individual accounts:

$$y_{it} = u_i + \sum_{k=1}^4 \alpha_k AGE_{it} + \sum_{k=1}^4 \beta_k CHLD_{it} + \sum_{k=1}^6 \gamma_k INC_{it} + \tau_t + \varepsilon_i, \quad (11)$$

where  $u_i$  denotes household effects, and the estimated  $\alpha_k$  captures the relationship between the balance and each age group of men and women compared to the base age group of 18–29. The coefficient  $\beta_k$  captures the association with the number of children expressed in four categories and compared to the group without children, the estimated coefficient  $\gamma_k$  captures the link to income groups compared to the base group with income of up to €999,  $\tau_t$  denotes the monthly time dummies, and  $\varepsilon_i$  is the error term.

In the fixed-effects model, we use the within-household variance over the time dimension to estimate the coefficients. This means that the time invariant unobserved characteristics that may correlate with the explanatory variable and may also affect the accumulation of financial assets do not bias the estimated coefficients. Time-fixed effects capture the aggregate shocks to financial assets.

To address the issue of the large positive skewness of the data, a common issue with wealth data, and zero values, the inverse hyperbolic sine (IHS) transformation of the dependent variables is used, as proposed by Pence (2006):

$$IHS(y_i) = \ln(y_i + (y_i^2 + 1)^{\frac{1}{2}}).$$

The interpretation of the results with IHS transformation is similar to that of results with log-transformation.<sup>8</sup>

In Table 2, we compare the regression results for the balance on joint financial assets and for the balance on individual financial assets held separately, while the individual assets are further split into the financial assets of men and women. The estimated coefficient for the number of children is positive for the joint balance and negative for the individual balance, but we cannot draw any conclusions as the coefficients are imprecisely estimated.<sup>9</sup>

Age is positively associated with the accumulation of financial assets on individual accounts. When we distinguish between the assets of men and women, we find that older age groups are more strongly related to the balance of financial assets for both men and women. Interestingly, the accumulation of assets on the joint balance is not related to the age of women, while it seems to be related to the age of men. The results suggest that both men and women accumulate individual assets at a similar rate over age but joint assets are more strongly related to the age of the man than to that of the woman.

<sup>8</sup> Pence (2006) shows that over the full distribution, the IHS transformed results may be interpreted as elasticities except at low values where the IHS results are closer to those from a non-transformed model.

<sup>9</sup> Alternatively, we could use variation between individuals with a random-effects model. The results are somewhat stronger for age groups with the RE-model but the interpretation of the results would be more challenging as in the RE-model unobserved heterogeneity is not controlled for.

We find that household income is an important determinant of savings. The accumulation of financial assets on both individual and joint accounts is related to income. Savings on joint accounts increase faster with income than savings on individual accounts do, indicating that households start to share more when their income increases. This is consistent with the findings in the study by Kukk and Van Raaij (2018) that

the probability of joint accounts increases with household income. When we compare the balance of the individual accounts of men and women, we see that the individual balance of women is somewhat more strongly related to household income than the individual balance of men is. This finding suggests that women benefit more from the increase in household income than men do.

**Table 2:** Fixed-effects estimations with inverse hyperbolic transformation of the total balance of financial assets

	(1)		(2)		(3)		(4)	
	Joint balance		Individual balance		Individual balance of women		Individual balance of men	
Age groups of women (base < 30)								
30-39	-0.035	(0.085)	0.068*	(0.036)	0.064	(0.075)		
40-49	-0.051	(0.099)	0.129***	(0.047)	0.119	(0.087)		
50-59	-0.101	(0.112)	0.168***	(0.058)	0.202*	(0.104)		
60-70	-0.003	(0.126)	0.183***	(0.067)	0.220*	(0.114)		
Age groups of men (base < 30)								
30-39	0.211*	(0.115)	0.078	(0.053)			0.117*	(0.064)
40-49	0.117	(0.126)	0.044	(0.062)			0.110	(0.076)
50-59	0.092	(0.134)	0.034	(0.071)			0.152	(0.093)
60-70	0.173	(0.142)	0.069	(0.082)			0.248**	(0.11)
Number of children								
1	0.096	(0.076)	-0.020	(0.038)	-0.040	(0.08)	-0.050	(0.051)
2	0.022	(0.073)	-0.039	(0.044)	-0.087	(0.08)	0.014	(0.056)
3-4	0.028	(0.178)	-0.063	(0.073)	-0.028	(0.129)	0.002	(0.09)
over 5	-0.001	(0.194)	-0.076	(0.109)	-0.118	(0.164)	0.010	(0.131)
Household income (base < €1000)								
1000-1999	0.293***	(0.114)	0.051	(0.048)	0.042	(0.052)	-0.080	(0.104)
2000-2999	0.449***	(0.125)	0.166***	(0.051)	0.135**	(0.058)	-0.032	(0.114)
3000-3999	0.555***	(0.127)	0.254***	(0.052)	0.215***	(0.06)	0.082	(0.121)
4000-4999	0.627***	(0.129)	0.337***	(0.053)	0.307***	(0.062)	0.157	(0.124)
5000-5999	0.692***	(0.131)	0.414***	(0.056)	0.394***	(0.066)	0.242*	(0.126)
over € 6000	0.771***	(0.133)	0.465***	(0.056)	0.489***	(0.071)	0.329**	(0.128)
adj. R <sup>2</sup>	0.355		0.049		0.155		0.138	
Number of groups	6,389		6,389		6,389		6,389	
Number of obs.	204,534		204,534		204,534		204,534	

Note: Monthly time dummies are included in the estimations but not reported. Standard error estimates are robust to disturbances that are heteroskedastic and autocorrelated. Superscripts \*\*\*, \*\* and \* indicate that the coefficient is statistically different from 0 at the 1%, 5% and 10% level respectively.

The statistical analysis in the previous section reveals only marginal differences between the shares of financial assets held by women and by men. On

average, 50% of the financial assets are held by women and the remainder by men. From the estimation of the FE model of equation (10), where the dependent variable is women's share of individual financial assets, it is barely possible to explain the change in the share within a family from the observed variables, as none of these variables is significant and the explanatory power of the regression is below 0.1% (these results are not reported).

The limitation of the study is that we cannot observe individual income when it is transferred directly to the joint account. In the collective model, the sharing rule within a household is an outcome of the decision process. Individual income, or the individual share of total income, is expected to affect the bargaining power in the decision process. There is mixed empirical evidence about the importance of relative income for individual consumption shares. Browning et al. (1994) find that income distribution between partners is not too sensitive to their income shares, while Blundell et al. (2007) show that income share affects the consumption of men more than the consumption of women.

To understand the importance of individual income for the share of individual financial assets we run additional estimations for the sub-sample of households without a joint account. With the FE model, the estimations use the variation within a household, controlling for other time-invariant unobservable characteristics that correlate with individual income and may determine bargaining power in a household. The results are shown in the Appendix in Table A.2, and they indicate that the share of individual income matters for the share of individual savings. It is the only significant variable that can explain the share of financial assets held by women or men, although the link is much smaller than proportional. If the woman's share of household income increases by 10

percentage points, her individual savings increase as a share of the total by 0.51 percentage point. Comparing the role of income share for the distribution of spending and savings shows that the income share is more strongly linked to individual spending than to individual savings, as an increase of 10 percentage points in the income share increases spending by 1.76 percentage points (Appendix Table A.2). As with the women's share of assets, other explanatory variables barely explain women's share of spending. The upshot of the analysis is that in families with individual accounts, the spending shares of men and women depend on their income, suggesting that families are not practising full pooling when they use individual accounts.

## 5.2 The difference in individual savings

To investigate which household characteristics are related to the larger gap in individual savings that we saw in Figure 2, we use a similar model to that given in equation (11):

$$y_{it} = u_i + X'_{it}\beta + \tau_t + \varepsilon_{it}, \quad (12)$$

in which the dependent variable is the difference in individual shares relative to total financial assets, the measure given in equation (8), and to total individual assets, the measure given in equation (9). The set of explanatory variables is the same as in equation (11) and six categories of total household financial assets are added. The results for the two measures are given in Figure 3 while the estimated coefficients and standard errors are provided in the Appendix in Table A.3.

Although the point estimates for the age of men are positive and are largest for men aged 40-59 in both regressions, the large standard errors mean that these estimates are statistically significant only for age group 40-49. Similarly we find that the number of children is unrelated to the differences in individual financial assets. The coefficients are negative but imprecisely estimated. Higher income reduces the differences between partners (Panel (a)), but this may come from their preferences for joint accounts, as the differences

between partners for their individual accounts are not related to income (Panel (b)). Comparing the results with those from the regressions where the difference in individual spending and the difference in individual or non-pooled income is the dependent variable indicates that the distributions of income and spending are more strongly related to household income than the distribution of financial assets is (Appendix Table A.4 and Table A.5). With a rise in household income, the difference in non-pooled income and individual spending declines.

As total financial assets increase, the differences between partners in the individually held assets become smaller, meaning that the more financial assets a household owns, the more equally those assets are distributed between the individual accounts of the partners. This applies for the differences both relative to total financial assets and relative to individually held financial assets. The tax threshold on savings and the deposit guarantee system may explain

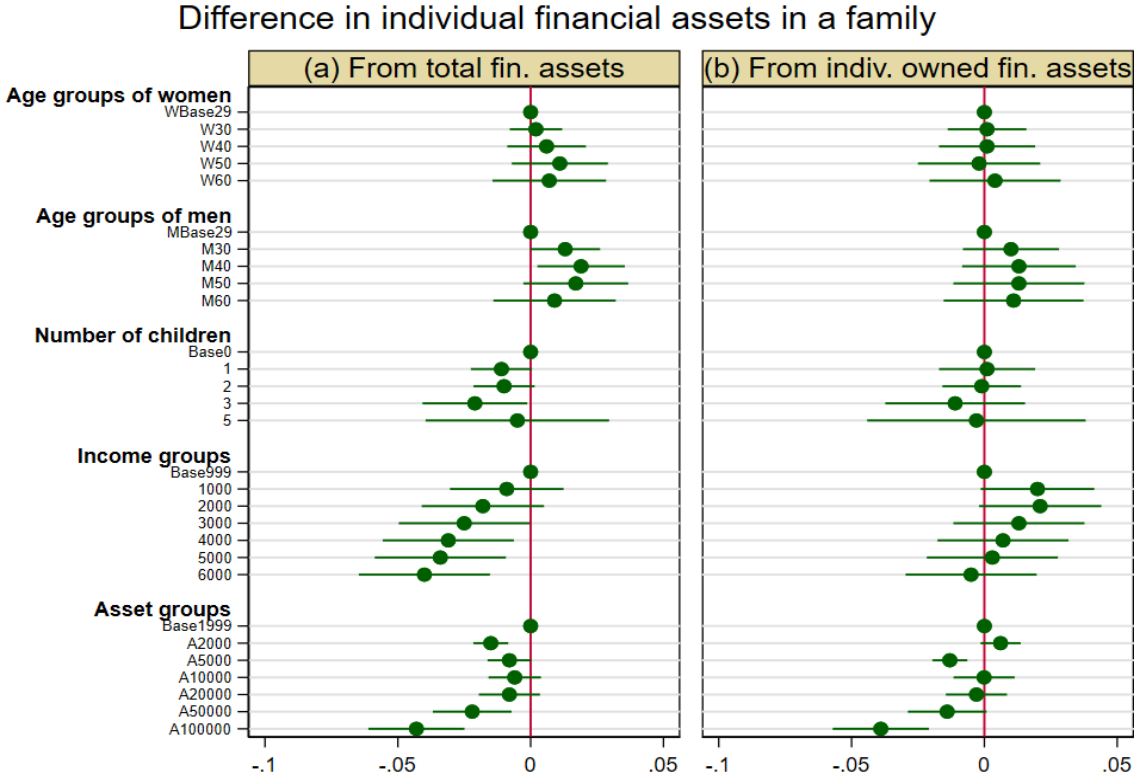
the smaller differences in families with large amounts of financial assets. As explained in Section 4, the tax system and the deposit guarantee encourage large savings on individual accounts to be held more equally.

**5.3 Partial pooling and the difference in individual financial assets**

Table 1 in Section 7 reveals that households that use joint accounts show a more equal distribution of individual financial assets, as the gap in financial assets is 31% compared to 38%. To investigate

whether pooling savings on joint accounts affects how financial assets are divided on individual accounts while controlling for other observed and time invariant unobserved characteristics, we estimate a model that includes an indicator for pooling. As discussed in Section 2, households that share joint savings may apply a more equal sharing rule for individual savings, but sharing joint savings may leave individual savings

**Figure 3:** The estimated coefficients of the FE model are shown with 90% confidence intervals. Monthly time dummies are included in the model but not reported here.



less equal if households focus and agree only on their joint savings.

The fixed-effects model with the additional variable for pooling is:

$$y_{it} = u_i + X_{it}\beta + \gamma P_{it} + \tau_t + \varepsilon_{it}, \quad (13)$$

in which the estimated coefficient  $\gamma$  expresses the relationship of pooling to the difference in individual savings. We run two regressions, one with a binary pooling variable that is 1 when a household has any inflows into or outflows from the joint checking account or a positive balance on any joint account, and the second with a continuous variable denoting the share of joint financial assets calculated as in equation (10). When households keep some savings jointly, the differences in individual savings are expected to be smaller since the caring-type household members would benefit from a more equal division of the resources, as explained in Section 2.

The estimated coefficients for the pooling variable are presented in Table 3 in column (1), and they confirm with the fixed-effects model the statistical findings from Section 7. The more households hold on their joint accounts, the smaller the difference between partners is on their individual accounts as a share of total financial assets. On average, if the share of total financial assets on joint accounts is 10 percentage points higher, the difference on individual accounts is 6.1 percentage points smaller. The finding of a smaller gap in individual savings as a share of total savings is not surprising given that partners share joint accounts equally. This implies that the more the partners shift to joint accounts, the smaller the share of assets is on the individual accounts of both partners, as discussed in Section 6. The result confirms that pooling leads to a more equal allocation of savings.

We use the same model specification to compare the results for the gap in individual financial assets with the results for the gap in individual income and spending. The estimated coefficients for the pooling variable are

given in Table 3 columns (2) and (3) in panel (a). The differences in the income in individual accounts and spending from them is not negatively associated with pooling but rather positively so. The binary variable is statistically insignificant and the continuous variable is positive, but the small estimated coefficients indicate a marginal economic impact, as the share of joint income being 10 percentage points higher implies a difference in individual shares that is 0.45 percentage point larger, and 10 percentage points more spending gives 0.42 percentage point more difference. We may conclude that income and spending tend to have a similar sharing rule, as the estimated coefficients are similar, but the sharing is different for accumulated savings.

Comparison of the difference between the financial assets on individual accounts as a share of the total *individual* balance (equation 9), meaning comparing only the savings that are held separately, shows that these funds are *more* unevenly distributed for couples who use joint accounts (Table 3 panel (b)). When the share of joint savings increases by 10 percentage points, the difference in individual shares increases by 1.4 percentage points. Similarly, income going into individual accounts and spending from individual accounts are more uneven when the household uses both individual and joint accounts. However, the gap in income and spending is somewhat narrower for pooling than the gap in savings is, as increases of 10 percentage points in the share of joint income and in the share of joint spending are associated respectively with increases in the gap between individual shares of 1 percentage point and of 0.9 percentage point. This implies that small differences in the individual flows may end up as somewhat larger differences in the individual accumulated funds.

One explanation for this could be that the difference between individual accounts for total financial assets on individual accounts seems to be larger, since households with pooling have smaller amounts on their individual accounts, as seen in Table 1. A small absolute difference may end up as a large relative difference. However, this explanation can be ruled out by additional robustness checks that control for the

**Table 3:** Estimations for the relationship between pooling and the difference in the individual share of financial assets in a family

	(1)		(2)		(3)	
	<i>Financial assets</i>		<i>Income (inflow)</i>		<i>Spending (outflow)</i>	
	Pool (binary)	Share on joint account	Pool (binary)	Share on joint account	Pool (binary)	Share on joint account
(a) Share of total balance	-0.114*** (0.020)	-0.613*** (0.011)	0.008 (0.016)	0.045*** (0.009)	-0.012 (0.015)	0.042*** (0.009)
Adj. R <sup>2</sup>	0.110	0.324	0.283	0.284	0.247	0.248
No. of groups	6,389	6,389	5,464	5,464	5,463	5,463
No. of observations	204,534	204,534	160,463	160,514	160,389	160,390
(b) Share of private balance	0.134*** (0.023)	0.143*** (0.012)	0.064*** (0.022)	0.098*** (0.013)	0.047*** (0.021)	0.093*** (0.013)
Adj. R <sup>2</sup>	0.098	0.128	0.207	0.209	0.180	0.182
No. of groups	6,389	6,389	5,464	5,464	5,463	5,463
No. of observations	204,534	204,534	160,463	160,514	160,389	160,390

Note: FE estimations of equation (13). All explanatory variables and monthly time dummies are included in the estimations but not reported. Standard error estimates are robust to disturbances that are heteroskedastic and autocorrelated. Superscripts \*\*\*, \*\* and \* indicate that the coefficient is statistically different from 0 at the 1%, 5% and 10% level respectively.

financial assets on individual accounts instead of total financial assets. For households with the *same* amount of assets on *individual* accounts, households with pooling tend to have more unbalanced individual funds between partners (Appendix Table A.6 column (1)).

We also investigate how much the results are driven by the extreme differences, since we observed in Section 6 that in a substantial share of households only one household member owns an individual account. If some of the other household members hold individual accounts in other financial institutions, our results about the differences may be biased. We are not able to detect which household members may have another account outside the sample. As explained in Section 7, comparing our sample and survey statistics tells us that our sample has fewer households among those with joint accounts in which both household members have an individual account than the survey data do. As the FE model uses within household variation, the estimates are only biased if the decision to pool is also linked to shifting some individual savings into another institution, which does not seem plausible.

Nevertheless, we run additional estimations to address this. We do the estimations for a sub-sample without those households where one household member does not have an individual account, which means we also exclude those households in which one member does not truly own individual savings. This sub-sample would provide a very conservative, or downward biased, estimate. The estimations are provided in the Appendix in Table A.6 column (2). We still get statistically significant estimates, although as expected they are slightly lower, and this indicates that more pooling is related to larger differences in the savings accumulated on individual accounts. The results presented in Table 3 are not driven by extreme cases where only one household member holds individual assets. The pattern is similar for households where both partners hold individual assets.

The estimations also rule out another explanation, which is that families with partial pooling consider individual savings to be joint and they keep only one individual account for convenience. We still see that in families where both partners have individual accounts,

**Table 4:** Estimations for the relationship between pooling and the individual financial assets across age groups.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Age up to 29	Age 30-39	Age 40-49	Age 50-59	Age 60-70	Checking account	Saving account	Investment account
Share of couples pooling	0.755	0.818	0.802	0.788	0.821	0.793	0.580	0.370
Share of assets on joint account	0.244	0.314	0.319	0.356	0.426	0.390	0.330	0.320
Difference between individual accounts, as a share of total resources	0.270	0.314	0.340	0.352	0.342	0.270	0.373	0.075
Difference between individual accounts, as a share of individual resources	0.398	0.517	0.562	0.635	0.704	0.480	0.515	0.079
No. of groups	391	1418	1959	1347	1269	5703	5621	694
No. of observations	13,197	47,570	64,218	42,358	37,142	187,289	171,472	17,952

the amounts on those accounts differ significantly when there is a joint account.

Neither are the results driven by forced pooling, which is when households have to use joint accounts when they apply for a joint loan as the loan repayments are made from a joint checking account. Consequently, the savings on individual accounts may become more diverged. As mentioned in Section 1, mortgage loans are mainly taken jointly, but when a dummy variable that indicates a joint loan is included in the model, the estimated coefficient for the dummy variable is negative and significant while the pooling variable is not affected by the inclusion of the additional variable (not reported). This implies that in families with joint loans, the difference in individual savings becomes smaller but it does not explain why partial pooling is related to individual savings being more uneven.

We ran additional robustness estimations for the differences in net financial assets, which we get when consumer loans and credit card debt are deducted from financial assets. The results remain the same as in the baseline model (Appendix Table A.6 column (3)). We see that the result that pooling is related to larger differences in individual assets between partners is robust to different model specifications. The first set of estimations in Table 3 show that the use of joint

accounts makes the distribution of savings more equal as joint savings are owned by partners equally. But joint savings lead savings on individual accounts to be more diverse. Apparently there is a re-distribution of resources within the family that results in uneven individual savings.

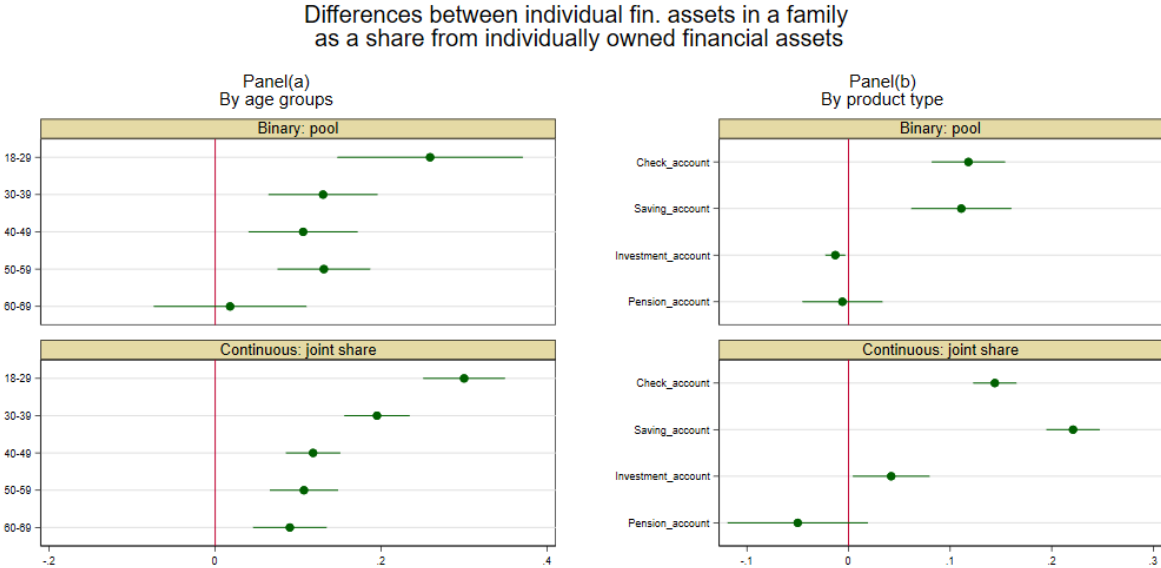
#### 5.4 Estimations by age groups and product types

We investigate further the relationship between pooling and individual financial assets in sub-groups. Individualisation has evolved over time, suggesting that young age groups are more individualistic in their money management. We define the age group from the age of the oldest household member at the beginning of the period. Indeed, statistics in Table 4 columns (1) – (5) show that the younger the age group in the sample is, the smaller the share of joint assets is. Although the gap in individual savings is lower for younger age groups, in sub-section 8.2 we found that age is not related to the gap in the individual assets, suggesting that families do not change their sharing rules over time.

We link the pooling of resources to the differences in individual assets by estimating equation (13) for each age group separately. The estimated coefficients for pooling are shown in Figure 4 and also in the Appendix



**Figure 4.** The estimated coefficients of the FE model shown with 90% confidence intervals. Other explanatory variables and monthly time dummies are included in the model, but not reported here.



in Table A.7. Estimations by age groups in Figure 4 panel (a) reveal that pooling is most strongly associated with the gap in individual savings for couples in which the oldest household member is in their 20s. The relationship between pooling and the gap is substantially weaker for households aged over 30, and is not present in households aged over 60. Although age is not related to the gap in individual savings, it seems to play a role indirectly. The results may reflect generational differences rather than the role of age. Younger age groups are apparently more individualistic (a cohort effect pointed out by Kukk and Van Raaij, 2018) and the purpose of pooling does not seem to be related to the equality within a family, especially among households aged below 30.

If the partner who is responsible for everyday money management is using the joint account while the other partner has an individual account, the differences in financial assets may be driven by everyday finances rather than by actual savings. Therefore we distinguish between different types of account in further estimations. The primary goal of checking accounts is everyday money management while money is transferred to saving accounts, investment accounts and pension accounts for different saving purposes.

Saving accounts are more commonly used for short-term saving, while investments usually take a longer perspective. Table 4 columns (6) – (8) reveal that pooling on a checking account is the most prevalent but the differences between individual balances are largest for saving accounts.

We carried out another set of regressions of equation (13) by product type. Although pension accounts are not held jointly, it is possible to estimate the difference in the shares of individual balances and how pooling is linked to the gap for any other products. The estimations for all product types are presented in Figure 4 panel (b). We see that pooling is most strongly associated with the differences in individual assets on saving accounts, while no relationship is seen for individual investment and pension accounts. On average, when the share of joint assets increases by 10 percentage points, the difference between individual saving accounts increases by 2 percentage points. Given that 96.7% of households in the sample own saving accounts, while only 12.3% have investment accounts and 0.8% pension accounts, the strongest relationship between pooling and individual assets is for the most common type of account. The upshot of the estimations is that pooling does not seem

to help create a more balanced allocation between individual financial assets. On the contrary, individual assets are less evenly distributed with partial pooling.

Regression estimations on the share of individual savings held by women or men show that neither gender benefits systematically from pooling. The variable indicating pooling is not statistically significant, whether the binary or continuous variable is used (not reported). The statistical analysis in Section 7 shows that in households with pooling, women have 51% of individual assets and in households without pooling they have 49%. The regression results indicate that this marginal difference is unrelated to pooling. Although women work part-time considerably more often than men and earn less than them, the outcome of large

differences between the individual accounts does not make women worse off than men in Dutch families. Hence the earnings gap does not directly lead to the difference in the savings in the majority of families, which is consistent with the literature on the gender wealth gap (Meriküll et al. 2019, Schneebaum et al. 2018). There are apparently other reasons for holding different amounts of individual assets as well as joint assets. The stronger relationship of the individual saving gap to the joint savings in the younger age group suggests that couples may focus on their contributions to joint savings and less so on their individual savings. Individualisation implies that both partners want to decide on their own about their individual savings, leading the partners to take rather different positions.

## 5. Discussion & implications

The aim of this paper is to investigate how financial assets are distributed within families and whether partial pooling is linked to a more equal distribution of savings between partners. The main focus is on how savings are allocated between joint and individual accounts rather than on the distribution of income and spending. There are only a few studies that focus on savings, mainly on the probability of there being joint savings, and this paper is the first comprehensive study to distinguish between joint and individual financial assets using bank transaction data. Equal access to family financial assets may lead to partners having more mutual control and more discussion about expenses, and maybe also to more joint financial decision-making, and hopefully to there being fewer financial mistakes and problems (Van Raaij et al. 2019). These beneficial consequences will improve the satisfaction and wellbeing of the partners.

We find that in almost 50% of households that do not use full pooling, the individual assets within total financial assets are distributed quite evenly. However, in surprisingly many families with partial pooling one partner does not own an individual savings account apart from the joint account. In 24% of households that do not pool, one household member holds most of the financial assets, while in 54% of the households that use partial pooling, one partner holds most of the assets.

The panel estimations show that the larger the joint savings are, the smaller the gap is in individual savings within total savings, as joint savings are owned by the partners equally. Hence joint savings imply there is less inequality in the savings of a family. However, when we compare individual savings, the estimations reveal that the more savings there are on joint accounts, the larger the difference is between the amounts on individual accounts as a share of all individual savings. An

increase of 10 percentage points in the share of joint savings is related to an increase of 1.4 percentage points in the difference between the individual shares. The estimations are robust to different model specifications and for different samples. We find the negative relationship between pooling and individual savings to be larger than the relationship between pooling and individual spending. There seems to be a similar sharing rule for income and spending, but the sharing is different for accumulated savings. Partial pooling implies increased financial well-being, as joint savings contribute to the equal distribution of savings. At the same time, the fraction of savings held individually becomes more unevenly distributed. Full pooling would be the way to achieve equality of all assets, but this is counteracted by the present trend of individualisation.

We cannot detect whether the difference between the individual savings is caused by the contributions to joint expenses being equal, which would leave larger differences in individual resources. Ashby and Burgoyne (2009) find that making an equal contribution is as common in the UK among households that use independent money management at 75% as it is among those that use partial pooling, 72% of which do it. The finding that more pooling corresponds to a larger gap in individual savings indicates that the share of individual saving of the partners might not be agreed between them. If they focus on the contributions to joint accounts, their individual saving may be not directly managed and may come from the remainder left after individual consumption. Lee and Pocock (2007) find that the division of savings is not determined together with total savings in South Korea. If individualisation leads to partners having individual savings besides the joint savings while the amounts are not agreed with the other partner, the accumulation of individual savings may be divergent within a family. It would be worth

exploring the decision process for joint and individual savings to understand why the distribution of individual savings is unbalanced.

There is empirical evidence in the literature of the gender gap for heterosexual couples. Despite the prevalence of part-time jobs for women and the gender wage gap in The Netherlands, we do not find any systematic gender differences in individual savings. There are equal numbers of men and women who do not own the individual financial assets in a family, so that on aggregate they hold equal shares of the financial assets. Woolley (2004) finds that in Canadian households, men's earnings were more likely to be kept on joint accounts and women's earnings on separate accounts. This might also be the case in The Netherlands, and that would offset to some extent the earning gaps, resulting on aggregate in men and women having equal shares despite the large differences at the individual level. In Section 7 we found that in households that pool, there are slightly more households where women hold a separate account, while among households that do not pool the opposite is the case. Women might benefit from sharing in a family that uses joint accounts, where the differences in individual savings are driven by factors other than the income gap.

Age may have the lifecycle effect that couples in a relationship of increasing length change their financial behaviour to have more joint savings or to use more role specialisation and division of work in financial management. However, we find only generational differences as young cohorts are more individualistic than older ones. This may result in a more separated regime for assets and a lower level of income pooling, and thus to more unequal access to family financial assets. On top of that, our estimations show that when young households pool more of their savings, the distribution of individual savings between partners becomes more uneven. In order to distinguish cohort and age effects precisely, more longitudinal research is needed to test these hypotheses on how age and

relationship length affect the distribution of financial assets.

Less pooling of the income or savings of a couple does not necessarily mean that partners do not agree on and contribute to joint expenses such as spending on children, the home and holiday trips. In this study, we observe the ownership of joint and individual savings from bank data. A couple may have enough mutual trust towards each other that they do not feel that they need to identify joint resources explicitly. This may explain why we do not find gender differences. However, spending from an individual account is controlled by the owner of that account, giving them more power in the family. As long as there is a good relationship between the partners, this is not a problem, but in cases of conflict and potential divorce, it becomes a problem. The divorce rate has increased in The Netherlands, as it has in other European countries. Agreement between partners on the ownership of financial assets and goods then becomes a crucial issue. The regulations on financial arrangements, explained in Section 4, promote a cohort effect of generational differences between complete and partial pooling of financial assets.

Financial satisfaction and wellbeing are drivers of overall satisfaction and wellbeing. Other drivers are health, meaningful work and job satisfaction, security of work and income, good social relationships with relatives and friends, the quality of schools and governmental institutions, and other factors as well. Financial wellbeing is obviously not the most important driver, though it may be expected that a lack of financial means and poor financial management will have severe adverse effects on mutual trust and the overall satisfaction and wellbeing of the partners. In this sense, low financial wellbeing may be stronger as a factor causing dissatisfaction than high financial wellbeing as a factor causing satisfaction. Again, this hypothesis may be tested in future research.

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## 7. Appendix

**Table A.1.** Ownership of different account types and the balances on these accounts.

	Participation rate	Mean balance	Median balance
Checking account	99.0%	4,385	2,682
Saving account	96.7%	23,939	10,554
Investment account	12.3%	15,963	4,906
Pension account	0.8%	10,215	6,144

**Table A.2.** Fixed-effects estimations for the women's share in individual financial assets and spending.

	Women's share of financial assets		Women's share of spending	
Age groups of women (base < 30)				
30-39	0.004	(0.006)	0.001	(0.006)
40-49	0.002	(0.01)	0.007	(0.007)
50-59	-0.01	(0.015)	0.011	(0.008)
60-70	-0.009	(0.019)	0.007	(0.011)
Age groups of men (base < 30)				
30-39	0.012	(0.01)	0.005	(0.007)
40-49	0.013	(0.013)	0.004	(0.008)
50-59	0.015	(0.016)	0.006	(0.01)
60-70	0.016	(0.02)	0.013	(0.012)
Number of children (base 0)				
1	0.009	(0.011)	0,019***	(0.007)
2	-0.002	(0.012)	0.004	(0.009)
3-4	-0.006	(0.019)	0.004	(0.012)
≥ 5	-0.011	(0.019)	0.009	(0.012)
Household income (base < €1000)				
1000-1999	0.005	(0.013)	0.024	(0.017)
2000-2999	-0.001	(0.014)	0.016	(0.017)
3000-3999	-0.001	(0.015)	0.012	(0.017)
4000-4999	-0.004	(0.016)	0.009	(0.017)
5000-5999	-0.01	(0.016)	0.008	(0.017)
≥ 6000	-0.012	(0.017)	0.011	(0.018)
Household financial assets (base < €2000)				
2000-4999	0.006	(0.006)	0,005*	(0.003)
5000-9999	0.012	(0.009)	0.005	(0.004)
10000-19999	0.008	(0.011)	0,007*	(0.004)
20000-49999	0.002	(0.013)	0,010*	(0.005)
50000-99999	-0.005	(0.015)	0,011*	(0.006)
≥ 100000	-0,032*	(0.017)	0.012	(0.009)
Income share of women	0,051***	(0.019)	0,176***	(0.019)
adj. R <sup>2</sup>	0.006		0.027	
Number of groups	2,199		2,199	
Number of obs.	39,801		39,801	

Note: FE estimations of equation (11). Monthly time dummies are included in the estimations but not reported. Standard error estimates are robust to disturbances that are heteroskedastic and autocorrelated. Superscripts \*\*\*, \*\* and \* indicate that the coefficient is statistically different from 0 at the 1%, 5% and 10% level respectively.



**Table A.3.** Estimation results for the difference in individual shares of financial assets in a family

	(1)		(2)	
	From total financial assets		From individual financial assets	
Age groups of women (base < 30)				
30-39	0.002	(0.006)	0.001	(0.009)
40-49	0.006	(0.009)	0.001	(0.011)
50-59	0.011	(0.011)	-0.002	(0.014)
60-70	0.007	(0.013)	0.004	(0.015)
Age groups of men (base < 30)				
30-39	0.013	(0.008)	0.01	(0.011)
40-49	0.019*	(0.01)	0.013	(0.013)
50-59	0.017	(0.012)	0.013	(0.015)
60-70	0.009	(0.014)	0.011	(0.016)
Number of children (base 0)				
1	-0.011	(0.007)	0.001	(0.011)
2	-0.010	(0.007)	-0.001	(0.009)
3-4	-0.021*	(0.012)	-0.011	(0.016)
≥ 5	-0.005	(0.021)	-0.003	(0.025)
Household income (base < €1,000)				
1,000-1,999	-0.009	(0.013)	0.02	(0.013)
2,000-2,999	-0.018	(0.014)	0.021	(0.014)
3,000-3,999	-0.025*	(0.015)	0.013	(0.015)
4,000-4,999	-0.031**	(0.015)	0.007	(0.015)
5,000-5,999	-0.034**	(0.015)	0.003	(0.015)
≥ 6,000	-0.040***	(0.015)	-0.005	(0.015)
Household financial assets (base < €2,000)				
2,000-4,999	-0.015***	(0.004)	0.061	(0.046)
5,000-9,999	-0.008	(0.005)	-0.013***	(0.004)
10,000-19,999	-0.006	(0.006)	-0.0001	(0.007)
20,000-49,999	-0.008	(0.007)	-0.003	(0.007)
50,000-99,999	-0.022***	(0.009)	-0.014	(0.009)
≥ 100,000	-0.043***	(0.011)	-0.039***	(0.011)
adj. R <sup>2</sup>	0.160		0.120	
Number of groups	6,389		6,389	
Number of observations	204,534		204,534	

Note: FE estimations of equation (12). Monthly time dummies are included in the estimations but not reported. Standard error estimates are robust to disturbances that are heteroskedastic and autocorrelated. Superscripts \*\*\*, \*\* and \* indicate that the coefficient is statistically different from 0 at the 1%, 5% and 10% level respectively.

**Table A.4.** Estimation results for the difference in individual income, or income which is not pooled, in a family

	(1)		(2)	
	From total income		From individual income	
Age groups of women (base < 30)				
30-39	-0.011	(0.008)	-0.010	(0.010)
40-49	-0,007	(0.009)	-0.005	(0.011)
50-59	-0,007	(0.010)	-0.007	(0.014)
60-70	0.007	(0.012)	0.010	(0.015)
Age groups of men (base < 30)				
30-39	0.009	(0.007)	0.015	(0.010)
40-49	0.014*	(0.008)	0.021*	(0.011)
50-59	0.018*	(0.010)	0.023*	(0.013)
60-70	0.020*	(0.011)	0.027*	(0.015)
Number of children (base 0)				
1	0.003	(0.007)	0.007	(0.009)
2	0.002	(0.007)	0.007	(0.009)
3-4	0.003	(0.010)	0.012	(0.013)
≥ 5	0.033**	(0.016)	0.051***	(0.022)
Household income (base < €1000)				
1,000-1,999	-0.011	(0.015)	-0.005	(0.016)
2,000-2,999	-0.035**	(0.015)	-0.026	(0.016)
3,000-3,999	-0.049***	(0.015)	-0.044***	(0.016)
4,000-4,999	-0.059***	(0.016)	-0.056***	(0.017)
5,000-5,999	-0.067***	(0.016)	-0.066***	(0.017)
≥ 6,000	-0.073***	(0.016)	-0.075***	(0.017)
Household financial assets (base < €2000)				
2,000-4,999	-0.004	(0.003)	-0.003	(0.003)
5,000-9,999	-0.002	(0.003)	-0.0004	(0.004)
10,000-19,999	-0.003	(0.004)	-0.002	(0.004)
20,000-49,999	0.0002	(0.004)	0.002	(0.005)
50,000-99,999	0.005	(0.005)	0.008	(0.006)
≥ 100,000	0.007	(0.007)	0.013	(0.009)
adj. R <sup>2</sup>	0.283		0.120	
Number of groups	5,464		5,463	
Number of observations	160,514		160,514	

Note: FE estimations of equation (12). Monthly time dummies are included in the estimations but not reported. Standard error estimates are robust to disturbances that are heteroskedastic and autocorrelated. Superscripts \*\*\*, \*\* and \* indicate that the coefficient is statistically different from 0 at the 1%, 5% and 10% level respectively.

**Table A.5.** Estimation results for the difference in individual spending in a family

	(1)		(2)	
	From total spending		From individual spending	
Age groups of women (base < 30)				
30-39	-0.010	(0.007)	-0.009	(0.009)
40-49	-0.007	(0.009)	-0.004	(0.011)
50-59	-0.002	(0.010)	0.001	(0.014)
60-70	0.004	(0.012)	0.011	(0.015)
Age groups of men (base < 30)				
30-39	0.005	(0.008)	0.011	(0.010)
40-49	0.008	(0.009)	0.014	(0.011)
50-59	0.008	(0.010)	0.013	(0.013)
60-70	0.015	(0.012)	0.022	(0.015)
Number of children (base 0)				
1	0.001	(0.007)	0.004	(0.009)
2	-0.004	(0.007)	-0.002	(0.009)
3-4	-0.005	(0.010)	0.0001	(0.014)
≥ 5	0.012	(0.020)	0.022	(0.024)
Household income (base < €1000)				
1,000-1,999	-0.006	(0.014)	-0.003	(0.015)
2,000-2,999	-0.025*	(0.015)	-0.017	(0.015)
3,000-3,999	-0.038**	(0.015)	-0.033**	(0.016)
4,000-4,999	-0.047***	(0.015)	-0.044***	(0.016)
5,000-5,999	-0.052**	(0.015)	-0.051**	(0.016)
≥ 6,000	-0.058***	(0.016)	-0.060***	(0.017)
Household financial assets (base < €2000)				
2,000-4,999	-0.006**	(0.002)	-0.006**	(0.003)
5,000-9,999	-0.007**	(0.003)	-0.008**	(0.004)
10,000-19,999	-0.007**	(0.004)	-0.011**	(0.004)
20,000-49,999	-0.008**	(0.004)	-0.013***	(0.005)
50,000-99,999	-0.009**	(0.005)	-0.015***	(0.006)
≥ 100,000	-0.004	(0.007)	-0.009	(0.009)
adj. R <sup>2</sup>	0.247		0.120	
Number of groups	5,464		5,463	
Number of obs.	160,390		160,514	

Note: FE estimations of equation (12). Monthly time dummies are included in the estimations but not reported. Standard error estimates are robust to disturbances that are heteroskedastic and autocorrelated. Superscripts \*\*\*, \*\* and \* indicate that the coefficient is statistically different from 0 at the 1%, 5% and 10% level respectively.

**Table A.6.** Robustness checks for the estimations for the effect of pooling on the difference in the individual share of financial assets in a family.

	Control for total individual balance		Sample wo hh with 100% difference		Difference in net financial assets	
	Pool (binary)	Share on joint account	Pool (binary)	Share on joint account	Pool (binary)	Share on joint account
Share from total balance	-0.108*** (0.019)	-0.611*** (0.011)	-0.034 (0.022)	-0.303*** (0.015)	-0.087*** (0.026)	-0.569*** (0.029)
Adj. R <sup>2</sup>	0.133	0.324	0.027	0.031	0.0018	0.0036
No. of groups	6,385	6,389	3,776	3,777	6,385	6,389
No. of observations	202,248	204,534	118,759	120,480	202,248	204,534
Share from private balance	0.130*** (0.023)	0.144*** (0.012)	0.110*** (0.023)	0.082*** (0.007)	0.158** (0.064)	0.175*** (0.060)
Adj. R <sup>2</sup>	0.098	0.128	0.011	0.021	0.001	0.001
No. of groups	6,385	6,389	3,776	3,777	6,385	6,389
No. of observations	202,248	204,534	118,759	120,480	202,248	204,534

Note: FE estimations of equation (13). Sample without households with 100% difference contains all households where both household members own an individual account. Net financial assets are all financial assets minus consumer debt and credit card debt. All explanatory variables and monthly time dummies are included in the estimations but not reported. Standard error estimates are robust to disturbances that are heteroskedastic and autocorrelated. Superscripts \*\*\*, \*\* and \* indicate that the coefficient is statistically different from 0 at the 1%, 5% and 10% level respectively.

**Table A.7.** Estimations for the effect of pooling on the difference in the individual shares of financial assets in a family by age group.

	(1)	(2)	(3)	(4)	(5)
	-29	30-39	40-49	50-59	60-70
<i>Pool (binary)</i>	0.259*** (0.068)	0.130*** (0.040)	0.106*** (0.040)	0.131*** (0.034)	0.018 (0.056)
Adj. R <sup>2</sup>	0.166	0.155	0.123	0.122	0.095
No. of groups	391	1418	1959	1347	1269
No. of observations	13,197	47,570	64,218	42,358	37,142
<i>Share on the joint account</i>	0.300*** (0.030)	0.195*** (0.024)	0.118*** (0.020)	0.107*** (0.025)	0.090*** (0.027)
Adj. R <sup>2</sup>	0.166	0.155	0.123	0.122	0.095
No. of groups	391	1418	1959	1347	1269
No. of observations	13,197	47,570	64,218	42,358	37,142

Note: FE estimations of equation (13) by age groups. All explanatory variables and monthly time dummies are included in the estimations but not reported. Standard error estimates are robust to disturbances that are heteroskedastic and autocorrelated. Superscripts \*\*\*, \*\* and \* indicate that the coefficient is statistically different from 0 at the 1%, 5% and 10% level respectively.

**Table A.8.** Estimations for the effect of pooling on the difference in the individual share of financial assets in a family by product type.

	(1)	(2)	(3)	(4)
	Checking account	Saving account	Investment account	Pension account
<i>Pool (binary)</i>	0.118***	0.111***	-0.013**	-0.006
	(0.022)	(0.03)	(0.006)	(0.024)
Adj. R <sup>2</sup>	0.100	0.044	0.025	-0.017
No. of groups	5,700	5,618	694	63
No. of observations	185,224	169,624	17,846	1,649
<i>Share on the joint account</i>	0.144***	0.221***	0.042*	-0.050
	(0.013)	(0.016)	(0.023)	(0.042)
Adj. R <sup>2</sup>	0.130	0.074	0.026	-0.015
No. of groups	5,703	5,621	694	63
No. of observations	187,289	171,472	17,952	1,654

Note: FE estimations of equation (13) by product type. All explanatory variables and monthly time dummies are included in the estimations but not reported. Standard error estimates are robust to disturbances that are heteroskedastic and autocorrelated. Superscripts \*\*\*, \*\* and \* indicate that the coefficient is statistically different from 0 at the 1%, 5% and 10% level respectively.

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