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**Motives for Transfers from Parents to Children:
Tests with First-Time Homeowners' Data**

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Motives for Transfers from Parents to Children: Tests with First-Time Homeowners' Data

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Abstract

There are good theoretical reasons why transfers from parents are likely to be important around the time of the first home purchase. Transactions costs associated with trading houses make people with increasing income paths prefer to buy a house that is more expensive than what matches their current income. This together with a down-payment constraint make some first-time house owners borrow to the limit and run down liquid assets at purchase thereby making them vulnerable to adverse income shocks. Intergenerational transfers can alleviate these constraints. Moreover, previous papers have suggested that transfers from parents to children are significant exactly around the time where children buy their first home. Using a panel data set issued from Danish administrative registers with information about wealth of a sample of first-time homeowners and their parents, we document that child and parent resources, house value as well as financial resources are correlated. We then go on to test if there are direct parental transfers targeted to the purchase of the house, and in case of an unemployment spell during the years after the purchase where children typically hold little liquid assets. We also test whether children consider parental wealth as part of their own precautionary savings. We do not find strong evidence of any of these hypotheses.

JEL code: D91, E21, R29

Keywords: Intergenerational transfers, home purchase, saving, empirical analysis

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1. Introduction

There is great interest in the importance of intergenerational transfers. Transfers can for example alleviate adverse consequences of credit constraints, Cox (1990), and thereby influence the effect of public transfer policies and social insurance schemes, but transfers are also important for giving an adequate description of the wealth distribution, De Nardi (2004), and for understanding the persistence of wealth inequality. It is well established that wealth is correlated across generations, and we also document it in this study, but there is little evidence sorting out if this correlation exists because highly productive children have highly productive parents, or because children inherit the savings-behaviour (preference parameters) of their parents, or is it because children receive direct transfers from their parents? In this paper the focus is on examining the importance of direct transfers.

Intergenerational transfers are potentially important in many situations. At the point of the first house purchase they are, however, likely to be of particular importance. Purchasing the first house is usually associated with a requirement to save for a down payment. Down-payment constraints work similarly to credit constraints to the extent that they depress consumption. Moreover, trading a house is associated with significant transactions costs, and this makes it optimal for most people to trade infrequently. People with increasing income paths, i.e. current income below permanent income, potentially would like to anticipate future income levels by buying a house that matches their permanent income rather than their current income.³ Since it is generally difficult to borrow against future expected earnings intergenerational transfers may overcome this constraint. The wish to anticipate future earnings in the face of imperfect credit markets can lead first-time house buyers to run down liquid assets thereby leaving limited capacity to insure themselves against (even transitory) adverse income shocks appearing soon after the house purchase. Ejarque and Leth-Petersen (2008) document that first-time house owners in Denmark mortgage to the limit and run down liquid assets aggressively at purchase making them particularly vulnerable to adverse income shocks appearing shortly after having committed to the housing expenditure. Transfers from parents to children may insure recent house owners against adverse income shocks.

While there are good theoretical reasons that intergenerational transfers should play a role, also previous empirical studies have suggested that transfers from parents to children are significant around the time where children buy their first home. Engelhardt and Mayer (1998) find that for a

³ This is, for example, the case when agents are relatively impatient and face increasing income paths. Such agents are known as buffer-stock savers, Carroll (1997).

group of US first-time house buyers transfers significantly loosen the borrowing constraint caused by the down payment requirement and that transfers increase the value of the home purchased. Guiso and Jappelli (2002) find using Italian data that private transfers are associated with the purchase of larger homes. There are no previous papers focusing on the risk-sharing hypothesis in relation to first-time house owners. However, Altonji et al. (1992) investigate if US households in the PSID exhibit intergenerational risk sharing. They find that parental resources do not break the link between variations in income and food consumption of their children thus providing evidence against intergenerational risk sharing.

The objective of this paper is to examine the importance of direct financial transfers from parents to children around the point where the children purchase their first home. We choose to focus on the first house purchase because the down-payment constraint is likely to be more binding here than at subsequent purchases. Specifically, we ask if parental transfers influence the value of the house purchased or the size of the mortgage relative to the house value. We also ask if parental wealth is used as a buffer to cushion adverse income shocks for people that have just bought their first home. If this is the case then direct transfers from parents to children should be observed when the children face adverse income shocks. Alternatively, it should be observed that first-time house owners run down their liquid assets more aggressively when buying their home in the anticipation that they will receive transfers from their parents if adverse income shocks appear before they have restored a sufficient level of precautionary savings. Finally, we investigate if the share of risky assets in the portfolio of the children is increasing with parental wealth as should be expected if parents provide implicit insurance against the risk faced by their children.

The analysis is based on a data set with panel information about wealth for a large group of Danish first-time house owners and their parents. Panel data are particularly valuable in this context. Lifetime income, the value of assets, and ownership of assets tend to be correlated across generations. This can both be because parents pass on wealth to their children, but it can also be because parents pass on inherent productivity and/or preference parameters governing savings behaviour. Indeed, Charles and Hurst (2003) find that these two factors are significant in explaining intergenerational correlations in wealth and income. Using panel data enable us to control for both parents and children fixed effects, and thereby to control for such confounding factors. Specifically, this is done by investigating if the timing and magnitude of changes in parental wealth are correlated with the timing and magnitude of the house purchase and savings behaviour of their children.

The Danish data confirm that unconditional correlations of parental resources and child resources are positive. However, when we introduce conditioning variables these intergenerational correlations weaken and disappear entirely when we condition on fixed unobserved effects. This suggests that for Danish first-time house owners transfer of productivity and/or preference parameters is more important than direct transfers.

The analysis presented in this paper contributes to the existing literature by both considering the risk-sharing hypothesis and transfers for the house purchase using panel data with wealth information. Access to panel data with wealth information is unique and is important because it allows us to control for effects related to equal preference parameters and productivity across generations. The paper also contributes by considering the role of intergenerational transfers in a country where significant redistribution takes place through the tax system. In Scandinavian countries redistribution via the tax system is massive, particularly in Denmark, and this is likely to reduce the importance of intergenerational transfers. Previous studies of intergenerational transfers have considered countries with less developed public welfare and transfer systems. These institutional differences likely explain the different findings.

The next section of the paper presents the data and simple correlations of housing and financial wealth across generations. As expected, levels of housing and financial variables are correlated across generations, but so is earnings/income and parental wealth, and it is not clear if these correlations are evidence of direct transfers or transfer of productivity/permanent income or preferences. Section 3 defines a series of tests that we are going to perform in order to test if parents transfer funds for the house purchase and/or for supporting income when their children experience adverse income shocks. In section 4 the tests are implemented that will take full advantage of the panel aspect of the data to check if changes in financial and housing variables are correlated across generations. Section 5 concludes.

2. The data

We use a panel data set constructed by merging different Danish administrative registers for 10% of the Danish population. The data set covers the period 1987 to 1996 and contains information at the individual level on demographic characteristics of the household, labour market status, housing tenure, income, and wealth/assets holdings. The data are obtained from the income-tax registers, and the wealth information exists because a wealth tax existed in Denmark in this period. The asset data

can be divided into a number of sub-categories: liquid assets and housing assets. Liquid assets can be divided into the value of bonds, stocks, cash in the bank, mortgage deeds (securities), a particular type of shares in ships, and a self-reported measure of high value items such as cars, and boats. Housing assets are based on tax-assessed values⁴. The liability data can be divided into mortgage debt and other debt up to 1993 after which we can only construct a consistent measure of total debt. These data can be linked to each other with the help of a personal number for individuals, which is common to all registers in Denmark. A nice feature of the data is that we can retrieve the same set of information for the partner of the main person in the sample. Moreover, and this is especially important for our analysis, we can also link this information with the same set of information for the parents of the individual and his/her partner. Because the gross data set is so comprehensive, we are able to focus on first-time house owners and still be left with a fairly large data set with panel data on the wealth of both first-time homeowners and their parents.

The focus is on couples who are first-time owners who bought their house during the period 1989-1993. First-time homeowners are defined as people aged between 20 and 40 who bought a house in this period and who were observed as renters at least two years before the house purchase. For these units the data set contains information on the value of the house and about income, labour-market status and demographic variables such as age, education and family composition. More importantly we have detailed information on assets and total liabilities, and we can separate assets into housing assets and liquid assets. Specifically, we observe the tax-assessed value of the house, and the size of the mortgage, but we also observe holdings of cash, stocks, bonds and securities, and high-value items including cars, boats, etc. All wealth variables are measured at the end of the year.

Data selection

We started out with a data set including 194,116 individuals aged between 20 and 40 who were observed between 1987 and 1996. From this initial data set, we have selected individuals living in couples during this period and who bought their first house between 1989 and 1993. We then selected the observations where individuals are observed with the same partner and where the couple is observed at least two years as renters prior to the purchase and two years as owners after the purchase. This left us with 5,709 couples. Finally, we left out observations with negative disposable income or

⁴ Tax-assessed house values are updated annually by the tax authorities according to the development in the market value. The tax-assessed value is typically slightly lower than the market value.

negative liquid assets and kept in the sample couples observed in consecutive years. The final sample includes 4,500 couples who are first-time homeowners with a total of 39,303 observations.

The financial situation of first-time house owners

We start out by showing a few summary statistics illustrating how households build up assets before the house purchase and then run them down at purchase to a fairly low level leaving them with limited capacity to self-insure against adverse income shocks. This reflects legal restrictions or lending policies imposed by banks that typically require potential homeowners to put a minimum share of the house price as a down payment for the purchase of their house. In Denmark legal restrictions in place during the period covered by our sample allow house owners to mortgage up to 80% of the house value in mortgage banks. Mortgage banks are specialised banks offering mortgage loans based on underlying mortgage bonds. Mortgage loans use the house as collateral and they are typically cheaper than conventional bank loans. On top of the mortgage loan households are allowed to borrow 15% of the house value for the purpose of buying a house in conventional banks. Also these loans are offered using the house as collateral, but they are typically more expensive than the loans offered by mortgage banks. House buyers are thus required to provide financing for the remaining 5% of the house value themselves. This is the effective down payment requirement. Besides this type of formal constraint banks can impose further restrictions on the ability to borrow for the purchase of a house. For example, anecdotal evidence suggests that banks often apply rule-of-thumb lending policies restricting the amount that can be borrowed to a multiple of the annual income of the household.

Figure 1 plots the savings profile around the time of the house purchase for the observations in our sample. This savings profile is constructed from coefficients obtained from a regression of one period changes in liquid assets relative to the value of the house purchased on a set of dummies indicating the distance in time from the point where the house is purchased and a set of controls for changes in the number of children in the family and year dummies. Liquid assets consist of cash, bonds, stocks, securities and high-value items. The savings profile is scaled with the unconditional level of liquid assets measured in period two after the house purchase.

[Figure 1 about here; see end of paper]

Figure 1 shows a clear build-up of liquid assets in the periods leading up to the time of the house purchase. Liquid assets peak the year before purchasing the house, where average liquid assets relative to the value of the house to be purchased are about 3.5 percentage points higher than in the year of the house purchase. The households in the sample keep de-accumulating liquid assets for another period after the house purchase, presumably due to initial repairs. In the third year after the purchase liquid assets are starting to build up again, but only modestly. Not until period four after the purchase are liquid assets built up to a level matching the level in the year of the purchase. Table 1 presents summary statistics for liquid assets (henceforth denoted LA in the tables) across time where the time is centred at the point of the house purchase and normalised with the house value (henceforth denoted H in the tables) at purchase similarly to figure 1. The table shows that in period 1 and 2, where liquid assets are at the minimum, the mean *level* of liquid assets constitute some 8% of the house value measured at the time of the purchase. This, however, covers that the median household holds liquid assets corresponding to only 4% of the house value. Considering that the house value corresponds to roughly three times annual disposable income this means that the median household holds liquid assets corresponding to about 1½ months of income. This suggests that the typical first-time house owner has limited capacity to self-insure adverse income shocks based on the liquid asset holdings. Table 1 also presents summary statistics of the debt level, and for income, unemployment, and the share of risky assets in the portfolio. Already before the house purchase these households have significant debt, and in the year of the house purchase the total debt amounts to some 117% of the value of the house. The level of debt continues to be higher than the value of the house event seven years after the purchase.

Table 1 also presents summary statistics for the development of income and for unemployment. Disposable income (relative to the house value at purchase) is increasing in the period leading up to the house purchase, but then decreases again after the purchase. The unemployment statistic presents the maximum unemployment duration (measured as a fraction of a year) between the two partners in the household. The risk of unemployment decreases after the house purchase, but the incidence is still significant. Finally, table 1 shows the development in the share of risky assets, measured as the fraction of shares in the portfolio. This measure will be used to test if the willingness to take on risk is related to the level of assets of the parents. Generally, the share of risky assets is low, and it is lower after the house purchase than before.

[Table 1 about here; see end of paper]

The point of departure of the empirical analysis is that wealth and house values are correlated across generations. On the one hand, we observe in our sample that households with expensive houses tend to have wealthy parents both in terms of liquid and illiquid assets (mainly the house value). On the other hand, we observe that wealthy parents tend to have wealthy children. In table 2 we report slope parameters from four regressions: (1) Children liquid assets on parental liquid assets (2) the value of the house purchased by the household on the level of liquid assets of the parents (3) the value of the house at time of purchase on the value of the parents' house (4) children's disposable income on parental liquid assets. Following Kofi & Hurst (2003) we purge for age effects, as we would like to control for the influence of the position in the lifecycle on wealth accumulation.

[Table 2 about here; see end of paper]

In all cases these slope parameters are positive and significant. Liquid asset holdings are strongly correlated, house values are correlated, but the house value of the children is also correlated with the level of liquid assets of the parents. These correlations across generations could be the result of direct transfers from the parents to children where wealthy parents tend to transfer more to their children. They could, however, also reflect transmission of productivity/permanent income across generations. Wealthy parents are likely to have been productive throughout their work life and if they have children that are productive as well this will likely generate such correlations even if no direct financial transfers have taken place. In fact, parental liquid asset holdings are correlated with the income of the children. The two explanations are obviously not mutually exclusive. We try in the empirical part of this paper to design tests that can discriminate them.

3. Tests of intergenerational transmission of wealth

The main objective is to investigate if there are direct transfers from parents to children around the point of the first house purchase, and we focus on tests that are possible to implement with the Danish register data. In particular we will focus on financial transfers for two purposes. The first is transfers for purchasing the house. The second is for parents sustaining income of their children during spells of low income. We also extend the second test by investigating if children anticipate parental transfers for

emergencies just after they have purchased the house, i.e. if the children consider parental wealth as part of their buffer-stock savings. In this section we motivate and present the tests.

Transferring funds for the purchase

Engelhardt (1996) suggests that down-payment restrictions are similar to credit constraints. Although households have a level of life-cycle wealth which could allow them to purchase their optimal house, they are prevented from doing so because of these constraints. Buying and selling a house is associated with significant transactions costs, and this makes it optimal for most people to trade infrequently. People with increasing income paths, i.e. current income below permanent income, would potentially like to anticipate future income levels by buying a house that matches their permanent income rather than their current income. Since it is generally difficult to borrow against future expected earnings intergenerational transfers may overcome this constraint.

In the case where parents transfer money for the purchase of the house, two effects are likely to occur. Recipients can either increase the value of the house that they will purchase or they can decide to use this transfer for the down payment thereby reducing the need for financing through (mortgage) banks. This suggests a test for the transfer of parental wealth for the house purchase.

1. Does the value of the house purchased or the amount of house equity (price-mortgage) explain the development in parental wealth or liabilities at the point of the purchase?

Transferring funds when adverse income shocks appear after the purchase

First-time home buyers in Denmark face a significant down-payment constraint (figure 1 illustrated the effect of this), and selling the house again is associated with significant transactions costs. As shown by Ejarque and Leth-Petersen (2008) these two features are important for the savings behaviour of home buyers, and they leave a potential for parents to act as an insurance device. Households in the age span where they are buying their first home typically (expect to) have increasing incomes that they would like to anticipate. This coupled with the down-payment requirement make them borrow as much as they can and to run down their liquid assets when they buy the house. The transaction costs make housing expenditures committed, Chetty and Szeidl (2007), i.e. when adverse income shocks appear housing is only adjusted if the shock is large. If the shock is small then adjustment is made entirely on nondurable consumption, and this has large welfare costs. Ejarque and

Leth-Petersen (2008) show that Danish first-time house owners respond to an income shock appearing soon after the home purchase and decreasing income by 1% by reducing non-housing expenditure by 0.7%. In effect, when making the purchase decision households optimally decide to take on a credit constraint thereby trading away some capacity to self-insure non-housing expenditure event of facing small/ medium sized adverse income shocks soon after the house purchase. Cox (1990) finds that parents may act as an insurance device exactly when children are facing constraints. This type of behaviour can be rationalised by an altruism motive where parents try to smooth their children's marginal utility. We denote this as the risk-sharing hypothesis.

Children can also anticipate this motive from their parents. In that case it will affect their willingness to take risks and consequently will affect their wealth accumulation and their willingness to hold risky assets.⁵ If parental wealth serves as a buffer, i.e. as a substitute for precautionary wealth, then people with more wealthy parents will be less risk averse, hold lower levels of liquid assets, and/or to hold a larger fraction of risky assets for a given level of wealth. The risk-sharing hypothesis therefore suggests three tests that can be implemented using the wealth data.

2. Are changes in parental wealth correlated with the size of adverse income shocks experienced by the children and appearing soon after the purchase of the house?
3. Is the level of precautionary savings as measured by the level of liquid assets related to the level of parental wealth?
4. Is the share of risky assets out of total liquid assets held by the children correlated with the level of parental wealth?

4. Empirical analysis

In this section we implement the tests suggested in the previous section.

Direct transfers for the purchase of the house – test 1

For testing for the presence of direct parental transfers targeted to purchase of the house we employ the following regression

⁵ These two types of behaviour can also be motivated by the existence of exchange of services (Laitner, 1997).

$$\Delta \ln LA_{it=t0}^P = \beta_0 + \beta_1 \ln H_{it=t0}^C + \beta_2 X_{it=t0}^C + \beta_3 X_{it=t0}^P + u_{it=t0} \quad (1)$$

Where $LA_{it=t0}^P$ is liquid asset holdings of the parents, and $t0$ is the point in time where the children purchase the house. $H_{it=t0}^C$ is a measure of the value of the house purchased by the children at the point of the purchase. We also estimate versions of (1) where we include the mortgage or the amount of housing equity. This is to allow for the fact that a parental subsidy may be allocated to increasing either the value of the house or for increasing the down payment. $X_{it=t0}^C$ is a vector of control variables pertaining to the children. This includes number of children, age controls, number of adults, and indicators for educational attainment. $X_{it=t0}^P$ is a vector of parental control variables including age and age squared, the highest education level among the parents and two variables indicating the change in income from $t0-1$ to $t0$ and for unemployment in period $t0$. We include the latter two to control for the saving effects of adverse shocks appearing at the parental level.

The hypothesis of no transfers is $\beta_1 = 0$. We would expect that the change in parental wealth at the time of purchase is negatively related to the value of the house if any transfers have taken place. The alternative is therefore $\beta_1 < 0$, and rejecting against this we take it as evidence that parents have transferred funds for supporting the purchase of their children's house.

Results are presented in table 3. All variables are measured at the end of the year where the household have purchased their house. We estimated the models by OLS and computed a covariance matrix robust to the presence of unknown forms of heteroscedasticity. The dependent variable is the change in log parental liquid assets. Column 1 contains results for the case where $H_{it=t0}^C$ is the value of the house purchased by the children. Column 2 presents results from regressions where the size of the mortgage is added and in column 3 $H_{it=t0}^C$ is replaced with the amount of equity at the point of the purchase. In all three cases the parameter to the variable measuring the financial need associated with the house purchase is insignificant suggesting that the children do not benefit from financial transfer from their parents when they buy their first house. As an alternative measure of transfers we have also tried to use the change in the level of mortgage of the parents. Parents might have a better access to the credit market than their children and be able to borrow money on behalf of their children (not

reported). Neither in this case did we find any evidence of transfers. We conclude that direct transfers targeted to the children’s first home purchase are not widespread.

[Table 3 about here; see end of paper]

Risk sharing: Direct transfers when income drops – test 2

We now turn to test 2 which is a test for the presence of direct parental transfers to children when the children experience adverse income shocks soon after the house purchase where liquid assets are relatively low. For implementing test 2 we employ the following regression of the change in parental assets on the income shocks homeowners of our sample have incurred after the home purchase and a set of control variables.

$$\Delta \ln LA_{it>t0}^P = \beta_0 + \beta_1 \Delta y_{it>t0}^C + \beta_2 X_{it>t0}^P + \beta_3 X_{it>t0}^C + u_{it>t0} \quad (2)$$

$LA_{it>t0}^P$ is liquid asset holdings of the parents measured after the point in time where their child has bought the house. $t0$ is the point in time where the children purchase the house. $y_{it>t0}^C$ is the log of disposable income of the children at some time t after the house purchase. $X_{it>t0}^P$ and $X_{it>t0}^C$ are vectors of control variables pertaining to the parents and children respectively, and their contents correspond to the ones used in the previous test. If there are direct transfers from parents to children then we would expect $\beta_1 > 0$. We therefore test if $\beta_1 = 0$ against the alternative that $\beta_1 > 0$.

In practice we try different measures of adverse income shocks hitting the children. In some specifications we have included the change in log earnings as well as the unemployment rate and have tried some asymmetric responses to earnings’ shocks. We use dummy variables for whether the household has experienced a loss in earnings and interactions of this variable with the change in earnings. We have also tried to include interactions between the unemployment rates with the level of liquid assets over the value of the house at the time of purchase which is an indicator of the level of precautionary savings. The results of these regressions are reported in table 4. None of the variables with which we are trying to capture income shocks are significant. Since we do not find any effect of

children income shocks on the change in parental wealth, we conclude that there is no evidence of actual parental transfers when their children experience adverse income shocks. These results suggest that parents do not provide risk sharing to their children in such situations. This is in line with recent evidence by Bentolila and Ichino (2008) suggesting that family transfers constitute a less important insurance device during unemployment shocks in Northern European countries, where unemployment insurance schemes are well developed, compared to Southern European countries.

[Table 4 about here; see end of paper]

Parental wealth as a determinant of the level of precautionary savings – test 3

In our third test we test if the level of liquid assets held by the children is related to the level of parental wealth. One way to test this hypothesis is to take a sample of households who have just bought a house and relate their level of assets to parental wealth. If people use parental wealth as a buffer, then they will anticipate this and reduce the level of liquid assets, *ceteris paribus*. If this mechanism is at work we expect a negative correlation between the level of liquid assets and parental wealth. To implement the test we put up the following regression.

$$\left(LA_{it>t0}^C / H_{it=t0} \right) = \beta_0 + \beta_1 \ln LA_{it>t0}^P + \beta_2 X_{it>t0}^P + \beta_3 X_{it>t0}^C + u_{it>t0} \quad (3)$$

The dependent variable $\ln\left(LA_{it>t0}^C / H_{it=t0} \right)$ measures the level of liquid asset holdings of the children after the purchase $LA_{it>t0}^C$ as a proportion of $H_{it=t0}$, the value of the house at purchase. We also attempt different versions where $LA_{it>t0}^C$ is normalised by the annual level of disposable income, and the size of the mortgage. We regress this on the log level of parental liquid assets, and a set of parental control variables, $X_{it>t0}^P$, and a set of child control variables, $X_{it>t0}^C$. $X_{it>t0}^P$ and $X_{it=t0}^C$ contain the same variables as in the previous tests. However, we add the change in log disposable income and the unemployment rate to the set of child controls as these variables are expected to directly influence children's holdings of liquid assets. If children anticipate that parents will transfer funds in the case of emergencies then we would expect to see a negative correlation between parental wealth and the level

of liquid assets held by the child. We therefore test the hypothesis of no risk sharing by testing $\beta_1 = 0$ against $\beta_1 < 0$.

The dependent variable is censored at zero, and we therefore apply a tobit estimator. We first estimate the parameters by applying a random effects estimator. Estimation results are reported in table 5, and they show that the level of liquid assets tends to be either positively related or unrelated to the level of parental wealth depending on the definition of the commitment applied. A positive correlation between parental wealth and the level of liquid assets of their children could be indicating that preferences and/or permanent income/productivity of children and parents are correlated, and that this effect dominates the effect of the children anticipating that parents would be willing to transfer funds in the case of an emergency situation. The first explanation is due to time constant unobserved factors, but the anticipation hypothesis should lead the level of precautionary savings to vary with the level of parental wealth. We therefore do a fixed effect censored regression, Honoré and Leth-Petersen (2006), to control for such fixed unobserved factors, and the results are presented in table 6. The results generally suggest that there is no relationship between parental liquid assets and the level of liquid assets held by the children, except for the case where liquid assets are normalised by income.

[Table 5 about here; see end of paper]

[Table 6 about here; see end of paper]

The level of parental wealth could also influence the rate at which liquid assets are accumulated by the children. After the house purchase children are left with modest level of liquid assets. If parental wealth substitutes for precautionary wealth accumulated by the children themselves then they may accumulate liquid assets at a slower rate if they have wealthy parents. To investigate this we ran regressions where the dependent variable in equation (3) was replaced with the *change* in liquid assets (relative to the level of commitment). Results from running these regressions (not reported) indicated that the rate of accumulation of liquid assets after the purchase had no association with parental wealth.

Parental wealth as a determinant of share of risky assets in the portfolio–test 4

The fourth test of the risk-sharing hypothesis tests if children are more willing to take risks if parents are wealthier. We do this by checking if the share of risky assets in the portfolio of the children is positively related to the level of parental wealth. To implement the test we run regression (4).

$$s_{it>t0}^C = \beta_0 + \beta_1 \ln LA_{it>t0}^P + \beta_2 X_{it>t0}^P + \beta_3 X_{it>t0}^C + u_{it>t0} \quad (4)$$

Where $s_{it>t0}^C$ is the share of risky assets held by the children, $LA_{it>t0}^P$ is the parent's liquid asset holdings, $X_{it>t0}^P$ and $X_{it>t0}^C$ are the usual set of parental and children control variables. We also include controls for income, unemployment, and for the level of resources held by the children, since this in itself will influence the share of risky assets. Finally, we include the portfolio share of the parents to control for the transmission of preferences between the two generations.

The share of risky assets is a quantity between zero and one, but in practice censoring appears only at zero. The model is first estimated using a random effects tobit specification. Results are reported in table 7 where we in each column have based the regressions on different definitions of risky assets. The different definitions of the risky assets are explained in the appendix. Irrespective of the definition of risky assets results indicate that the parameter measuring the effect of parental resources on the share of risky assets is positive. This suggests that the more assets held by the parents the more risk is taken by the children, and this appears to support the risk-sharing hypothesis.

[Table 7 about here; see end of paper]

To the extent that our control variables do not capture preference parameters of children and parents appropriately the random effects specification does not control for the confounding effect of common preferences across generations. A positive correlation between parental wealth and the share of risky assets (conditional on the level of wealth) could be indication that preferences of children and parents are correlated. We therefore re-estimate the equation using a fixed effects censored regression specification. This last specification tries to control for unobserved fixed heterogeneity and this should control for the confounding effects of similar preferences shared by parents and children. Results from

estimating fixed effects are presented in table 8. Results suggest that parental wealth is positively related to the share of risky assets held by the children, but the estimates are insignificant in all specifications. This suggests that much of the unconditional correlation is due to similarities in preferences between parents and children.

[Table 8 about here; see end of paper]

5. Conclusion

In this paper we have tested for the importance of direct parental transfers targeted to the purchase of the house and to buffer income shocks whenever households become unemployed for a sample of Danish first-time homeowners. The analysis is based on an extraordinary data set with panel information about wealth for a group of first-time house owners and their parents. Based on this data set we document that (housing) wealth is correlated across generations. However, when we condition on observed as well as fixed unobserved factors then we find no evidence that direct transfers have been important for Danish first-time homebuyers. We have also tried to test if the house buyers anticipate financial help from their parents in case they become unemployed. The results gave little support to this hypothesis as well.

The results suggesting no direct transfers for the house purchase or for supporting the children after the purchase of the house where the children's own buffer capacity is limited are likely related to institutional factors characterizing Denmark. Although there is a positive intergenerational correlation of wealth, credit markets are well developed in Denmark and a great deal of risk sharing is provided by the government through a generous unemployment insurance scheme and other transfer schemes. This is likely to reduce the importance of transfers across generations even for households under financial stress.

Appendix

Definitions of risky assets

We define liquid assets to include assets that can be relatively easy realised, i.e. cash, bonds, securities, shares and big items. In some of the tests we will perform the focus will be on the allocation of the portfolio into risky/non-risky assets. For this purpose we define the share of risky assets in financial wealth. This can be done in several ways, and we therefore choose to make three different definitions, cf. table A1, of risky assets and perform the test using all the definitions.

Table A1: Definitions of risky assets

Portfolio shares	I		II		III	
	Risky assets	Financial wealth	Risky assets	Financial wealth	Risky assets	Financial wealth
Cash		X		X		X
Shares	X	X	X	X	X	X
Bonds		X		X		X
Securities	X	X	X	X	X	X
High-value items			X	X	X	X
Shares in ships					X	X

Table A2 Evolution of liquid assets around the time of purchase

	(1)	
	$\Delta \ln(LA)/(H t=0)$	
	b	se
5 years before purchase	0.0176**	0.0058
4 years before purchase	0.0055	0.0037
3 years before purchase	0.0092**	0.0032
2 years before purchase	0.0122***	0.0025
1 year before purchase	0.0192***	0.0026
Year of purchase	-0.0344***	0.0031
1 year after purchase	-0.0074*	0.0031
2 years after purchase	0.0005	0.0032
3 years after purchase	0.0037	0.0033
4 years after purchase	0.0057	0.0037
5 years after purchase	0.0012	0.0040
6 years after purchase	0.0025	0.0045
7 years after purchase	-0.0012	0.0055
Child born 5 years before purchase	-0.0469**	0.0161
Child born 4 years before purchase	-0.0095	0.0080
Child born 3 years before purchase	-0.0080	0.0063
Child born 2 years before purchase	-0.0036	0.0034
Child born 1 year before purchase	-0.0066	0.0034
Child born year of purchase	-0.0053	0.0046
Child born 1 year before purchase	0.0012	0.0030
Child born 2 years after purchase	0.0025	0.0034
Child born 3 years after purchase	-0.0008	0.0031
Child born 4 years after purchase	0.0029	0.0039
Child born 5 years after purchase	0.0013	0.0062
Child born 6 years after purchase	-0.0048	0.0092
Child born 7 years after purchase	-0.0071	0.0128
Year==1989	-0.0055*	0.0027
Year==1990	0.0018	0.0027
Year==1991	0.0002	0.0029
Year==1992	-0.0210***	0.0030
Year==1993	0.0008	0.0032
Year==1994	-0.0019	0.0033
Year==1995	0.0063	0.0035
Year==1996	0.0011	0.0038
Observations	34803	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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Tables to be inserted in the text

Table 1: Diverse measures of financial commitments around the time of purchase

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	t=-5	t=-4	t=-3	t=-2	t=-1	t=0	t=1	t=2	t=3	t=4	t=5	t=6	t=7
LA t/(H t=0)	0.106 (0.129) [0.053]	0.111 (0.127) [0.060]	0.114 (0.134) [0.063]	0.124 (0.142) [0.072]	0.137 (0.151) [0.086]	0.097 (0.116) [0.057]	0.086 (0.109) [0.047]	0.084 (0.113) [0.044]	0.085 (0.117) [0.043]	0.092 (0.129) [0.045]	0.093 (0.130) [0.045]	0.099 (0.138) [0.046]	0.100 (0.134) [0.045]
Disp. inc. t/(H t=0)	0.381 (0.161) [0.357]	0.387 (0.159) [0.361]	0.397 (0.181) [0.367]	0.406 (0.182) [0.374]	0.414 (0.180) [0.380]	0.386 (0.168) [0.352]	0.359 (0.158) [0.329]	0.364 (0.161) [0.332]	0.367 (0.167) [0.333]	0.373 (0.176) [0.339]	0.377 (0.172) [0.341]	0.366 (0.168) [0.331]	0.369 (0.183) [0.324]
Debt t/(H t=0)	0.278 (0.387) [0.144]	0.236 (0.336) [0.133]	0.206 (0.357) [0.124]	0.179 (0.277) [0.120]	0.172 (0.247) [0.120]	1.167 (0.601) [1.126]	1.191 (0.550) [1.110]	1.181 (0.564) [1.106]	1.182 (0.579) [1.106]	1.196 (0.652) [1.093]	1.197 (0.664) [1.083]	1.189 (0.746) [1.061]	1.284 (0.955) [1.095]
Unempl. rate	0.156 (0.242) [0.009]	0.157 (0.243) [0.016]	0.160 (0.250) [0.014]	0.170 (0.258) [0.019]	0.171 (0.261) [0.019]	0.176 (0.266) [0.019]	0.161 (0.262) [0.000]	0.148 (0.252) [0.000]	0.140 (0.246) [0.000]	0.130 (0.243) [0.000]	0.113 (0.225) [0.000]	0.109 (0.218) [0.000]	0.083 (0.180) [0.000]
Portfolio share I [*]	0.055 (0.173) [0.000]	0.051 (0.156) [0.000]	0.048 (0.145) [0.000]	0.041 (0.131) [0.000]	0.032 (0.116) [0.000]	0.049 (0.154) [0.000]	0.042 (0.148) [0.000]	0.030 (0.125) [0.000]	0.023 (0.108) [0.000]	0.026 (0.121) [0.000]	0.027 (0.121) [0.000]	0.025 (0.121) [0.000]	0.028 (0.128) [0.000]
Observations	767	1549	2741	4500	4500	4500	4500	4500	4237	3104	2205	1316	594

Note: t=0 is time of purchase. * See table A1 for definitions.
mean,(standard-deviation),[median]

Table 2: Intergenerational correlation income, liquid assets and house value

	(1)	(2)	(3)	(4)
	ln(LA)	ln(H)	ln(H)	ln(disp.inc)
ln(LA parents)	0.168 ^{***} (33.70)	0.130 ^{***} (9.15)		0.078 ^{***} (15.55)
ln(H parents)			0.068 ^{***} (4.57)	
Observations	39303	4500	4500	39303
Adjusted R^2	0.028	0.018	0.004	0.006

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
 Controls for age included

Table 3: Are there direct parental transfers at time of purchase?

	(1)	(2)	(3)
	$\Delta \ln(\text{LA parents, } t_0)$	$\Delta \ln(\text{LA parents, } t_0)$	$\Delta \ln(\text{LA parents, } t_0)$
Ln(H, t0)	0.008 (0.15)	0.015 (0.27)	
Ln(mortgage, t0)		-0.008 (-1.39)	
Ln(home equity, t0)			0.002 (0.39)
Parental control variables ⁽ⁱ⁾	Yes	Yes	Yes
Child control variables ⁽ⁱⁱ⁾	Yes	Yes	Yes
Year dummies	yes	Yes	Yes
Adj. R2	0.002	0.003	0.002
N	4500	4500	4500
Log-likelihood	-7511.604	-7510.553	-7511.538
F	1.536	1.532	1.539

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

(i) age, age², education dummies, unemployment rate, $\Delta \text{disp. Income}$.

(ii) age, age², education dummies, number of adults, dummies for presence of children in different age groups.

Table 4: Parental transfers when unemployed

	(1)	(2)	(3)	(4)	(5)
	$\Delta \ln(\text{LA par.})$	$\Delta \ln(\text{LA par.})$	$\Delta \ln(\text{LA par.})$	$\Delta \ln(\text{LA par.})$	$\Delta \ln(\text{LA par.})$
Unempl. rate	0.004 (0.10)	0.002 (0.07)	0.025 (0.60)	-0.003 (-0.08)	-0.012 (-0.33)
$\Delta \ln(\text{earnings})$		-0.003 (-0.46)	-0.007 (-0.97)		
$\Delta \ln(\text{earnings}) * (\text{LA}/\text{H t0})$			0.039 (0.85)		
$u * (\text{LA}/\text{H t0})$			-0.332 (-1.01)		
$\text{LA}/(\text{H t0})$	-0.086 (-1.25)	-0.087 (-1.25)	-0.050 (-0.68)	-0.088 (-1.27)	-0.091 (-1.32)
$1(\Delta \text{earnings} < 0)$				0.0234 (1.30)	0.023 (1.24)
$1(\Delta \text{earnings} < 0) * \Delta \ln(\text{earnings})$					-0.010 (-1.04)
$1(\Delta \text{earnings} \geq 0) * \Delta(\text{earnings})$					0.010 (0.80)
Parental control variables ⁽ⁱ⁾	Yes	Yes	Yes	Yes	Yes
Child control variables ⁽ⁱⁱ⁾	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Adj. R2	0.003	0.003	0.003	0.003	0.003
N	20456	20456	20456	20456	20456
Log-likelihood	-33060.758	-33060.639	-33059.630	-33059.894	-33058.984
F	3.244	3.145	2.990	3.177	3.040

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

(i) age, age², education dummies, unemployment rate, $\Delta \text{disp. Income}$.

(ii) age, age², education dummies, number of adults, dummies for presence of children in different age groups.

Table 5: Liquid asset holdings, tobit random effects

	(1)	(2)	(3)
	LA/(H t0)	LA/(Y t0)	LA/(M t0)
Ln(LA parents)	0.002 ^{***} (4.41)	0.005 ^{***} (4.87)	0.004 ^{***} (4.94)
$\Delta \ln(\text{disp. inc.})$	0.021 ^{***} (4.22)	-0.104 ^{***} (-10.42)	0.029 ^{***} (3.47)
Unempl. rate	-0.009 ^{***} (-3.31)	-0.018 ^{**} (-3.07)	-0.010 [*] (-2.21)
Parental control variables ⁽ⁱ⁾	Yes	Yes	Yes
Child control variables ⁽ⁱⁱ⁾	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Sigma u			
Constant	0.092 ^{***} (80.61)	0.178 ^{***} (79.41)	0.127 ^{***} (75.59)
Sigma e			
Constant	0.075 ^{***} (176.39)	0.151 ^{***} (176.27)	0.124 ^{***} (175.43)
Observations	20456	20456	20190

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

(i) age, age², education dummies, unemployment rate.

(ii) age, age², education dummies, number of adults, dummies for presence of children in different age groups.

Table 6 : Liquid asset holdings. Censored fixed-effect

Variables	LA/(H t0)	LA/(disp. inc. t0)	LA/(Mortgage t0)
ln(LA parents)	-0.001 (-1.18)	-0.005* (-2.04)	0.000 (0.09)
$\Delta \ln(\text{disp. inc.})$	0.025** (2.64)	-0.243*** (-3.86)	0.047** (3.07)
Unempl. rate	-0.006 (-1.41)	-0.015 (-1.43)	-0.007 (-0.92)
Parental control variables ⁽ⁱ⁾	Yes	Yes	Yes
Child control variables ⁽ⁱⁱ⁾	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	20456	20456	20190

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

(i) age, age², unemployment rate.

(ii) age, age², number of adults, dummies for presence of children in different age groups.

Table 7: Do homeowners with wealthy parents hold a higher proportion of risky assets (R.E.)?

	(1)	(3)	(2)
	Portfolio share I	Portfolio share II	Portfolio share III
log(LA parents)	0.033* (2.32)	0.022*** (3.76)	0.016** (3.14)
Parents' portfolio share I	0.199 (1.81)		
Parents' portfolio share II		0.023 (1.85)	
Parents' portfolio share III			0.000 (0.19)
ln(LA)	0.177*** (12.28)	0.382*** (49.83)	0.381*** (51.27)
ln(dis. inc.)	-0.205** (-3.17)	-0.221*** (-7.91)	-0.210*** (-7.74)
Unempl. rate	-0.092 (-1.34)	-0.050 (-1.62)	-0.043 (-1.46)
Lagged unempl. rate	-0.069 (-1.10)	-0.003 (-0.11)	0.001 (0.04)
Parental control variables ⁽ⁱ⁾	Yes	Yes	Yes
Child control variables ⁽ⁱⁱ⁾	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Sigma u			
Constant	0.580*** (17.63)	0.620*** (44.08)	0.610*** (44.83)
Sigma e			
Constant	0.321*** (22.73)	0.366*** (68.21)	0.364*** (70.76)
N	10409	19672	20400
Log-likelihood	-1291.023	-6018.188	-6262.054
Chi2	272.761	3061.934	3225.006

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

(i) age, age², education dummies.

(ii) age, age², education dummies, number of adults, dummies for presence of children in different age groups.

Table 8: Do homeowners with wealthy parents hold a higher proportion of risky assets? Censored fixed effect

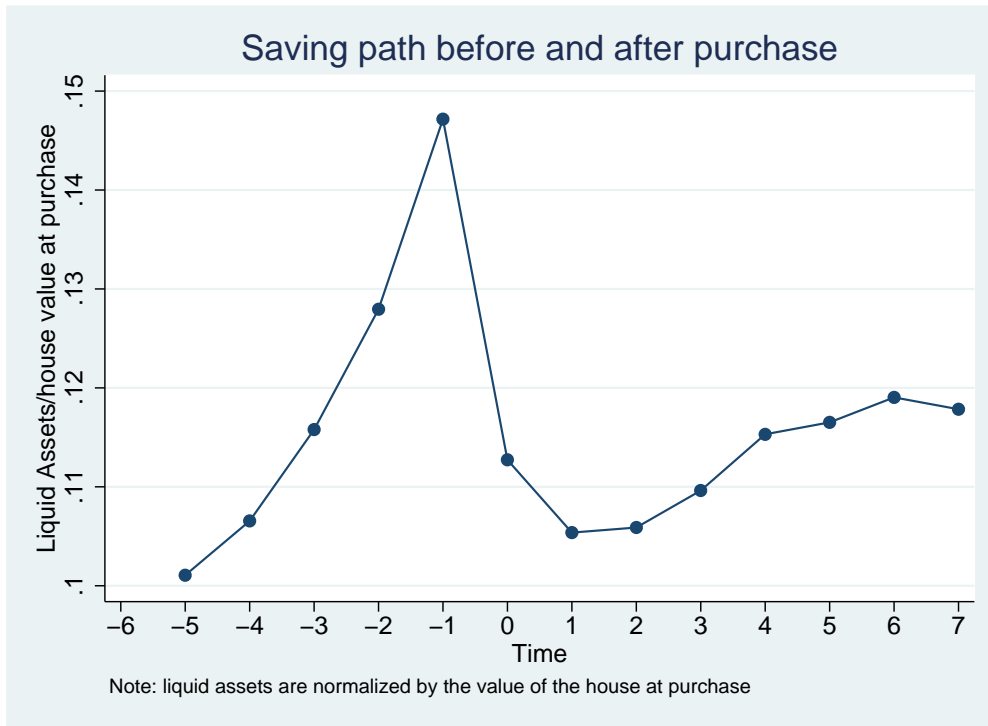
Variables	Portfolio I	Portfolio II	Portfolio III
log(LA parents)	0.046 (0.48)	0.0173 (1.58)	0.013 (1.78)
Parents' portfolio share I	0.253 (0.38)		
Parents' portfolio share II		-0.002 (-0.13)	
Parents' portfolio share III			0.001 (0.67)
ln(LA)	0.236*** (4.09)	0.417*** (25.39)	0.413*** (26.75)
ln(dis. Inc.)	-0.344 (-2.44)	-0.253 (-3.67)	-0.221 (-3.35)
Unempl. rate	0.070 (0.33)	-0.001 (-0.03)	-0.003 (-0.08)
Lagged unempl. rate	-0.035 (-0.24)	0.003 (0.07)	0.003 (0.06)
Parental control variables ⁽ⁱ⁾	Yes	Yes	Yes
Child control variables ⁽ⁱⁱ⁾	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	10409	19672	20400

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

(i) age, age², unemployment rate.

(ii) age, age², number of adults, dummies for presence of children in different age groups.

Figure 1: Liquid asset holdings at different points in time relative to home purchase



Note: This graph is based on parameters of regression presented in table A2.