Mortgage Choice in Families*

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Abstract

I show that family experience impacts mortgage choice. Using the universe of Danish residential mortgage originations, I document that borrowers whose immediate family members have previously selected adjustable-rate mortgages (ARMs) are more likely to choose ARMs themselves. This relationship persists after conditioning on rich borrower characteristics and fixed effects that account for systematic differences in origination timing. To address potential within-family correlation in risk preferences or other reflection concerns, I implement an instrumental variables strategy that compares otherwise similar borrowers whose relatives faced different interest rate environments. The estimates indicate that recent exposure to an ARM—rather than a fixed-rate mortgage—increases a borrower's probability of originating an ARM by nearly 6 percentage points.

Keywords: Mortgage choice; household finance; social finance.
JEL Codes: G21; D14; D85.

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1 Introduction

The structure of residential mortgages—most notably whether rates are fixed or adjustable—is a fundamental determinant of the financial risks households face and the passthrough of monetary policy (Campbell & Cocco, 2003; Calza *et al.*, 2013; Di Maggio *et al.*, 2017; Campbell *et al.*, 2021). While existing research has characterized key time-series factors driving mortgage choice (e.g. Koijen *et al.*, 2009; Badarinza *et al.*, 2018), much less is known about the cross-section. Borrowers who look similar on paper, and who face similar prices, often make different decisions. Standard models explain only a limited share of this dispersion (Andersen *et al.*, 2023). Meanwhile, a growing literature has highlighted the central influence peers, friends, and co-workers play in household finance (e.g., McCartney & Shah, 2022; Maturana & Nickerson, 2019; Kuchler & Stroebel, 2021). Together, these patterns suggest that social interactions—left out of traditional frameworks—may meaningfully affect the mortgages borrowers choose.

In this paper, I show that family experience impacts mortgage choice. Specifically, borrowers whose parents, siblings, or children have previously taken an adjustable-rate mortgage are more likely to choose one themselves. To do so, I use administrative data covering the universe of mortgage originations in Denmark—a setting that, like the United States, was historically dominated by fixed-rate mortgages but now includes a substantial adjustable-rate segment. The Danish data allow me to construct the history of mortgage borrowing within families, and to link these histories to detailed information on demographics and household balance sheets.

I begin by documenting a robust correlation in adjustable-rate mortgage (ARM) choice within families. For example, if the most recent mortgage taken by a family member was an ARM, a borrower is roughly 7 percentage points more likely to choose an ARM as well. The relationship holds even with a comprehensive set of fixed effects and controls that account for timing, geography, and observable borrower characteristics. Still, an important question remains: does this correlation reflect the influence of family members on mortgage choice, or simply unobservables—such as risk preferences, expectations, or financial constraints—that are shared in families.

To address this identification challenge, I implement an instrumental variables strategy that compares otherwise similar borrowers whose *relatives* faced different interest rate environments in the past. Specifically, I instrument the relative's ARM choice with the prevailing *FRM-ARM Spread* the month they originated their mortgage.[1] This spread is a well-established time-series driver of the aggregate ARM share, and is a strong predictor of the relative's choice in the Danish data.

The key finding is that the *FRM-ARM Spread* the relative faced, even years ago, is also a strong predictor

[1] The *FRM-ARM Spread* captures the difference in interest rates on fixed- versus adjustable-rate mortgages.

of the borrower's choice today. Under the assumption that these historical spreads affect the borrower only through the relative's decision, the design identifies a causal effect of within-family exposure to ARMs. My estimates indicate that exposure increases a borrower's likelihood of choosing an ARM by nearly 6 percentage points. The result is robust to alternative exposure measures, holds across parents, children, and siblings, and remains stable across various sample restrictions and levels of fixed effects—including those that address the timing of relatives' originations.

This evidence shows that mortgage choice is a function of social interactions that sit outside standard models of household decision-making. These patterns could reflect the transmission of useful information, helping borrowers better navigate a complex financial product. Alternatively, they could stem from other forms of social influence that distort household choices. Regardless of the mechanism, my results indicate that mortgage choices are deeply tied to borrowers' social environments.

2 Background and Data

I analyze mortgage data drawn from annual 2009-2018 snapshots of all outstanding mortgages issued by Danish mortgage banks. The data include details on mortgage terms, the municipality of the mortgaged property, and personal identifiers for all borrowers.[2] To construct the sample, I first select all residential mortgages originated between 2009 and 2018. Close to half of these mortgages are fixed-rate (FRMs). The remainder are adjustable-rate mortgages (ARMs).[3]

I use personal identifiers to match each borrower to data provided by the Danish Civil Registration System (*CPR Registret*), which includes identifiers for each individual's parents. This allows me to identify any immediate family members: parents, children, and siblings. For each borrower, I also merge on age, gender, marital status, net income, and net wealth, all as recorded in the year the loan was originated. Income and wealth data are provided by the Danish Tax Authority (*SKAT*), which receives wage information directly from employers and financial information directly from financial institutions.

I link each borrower to the full set of mortgages originated by immediate family members satisfying the following criteria: (i) the relative originated the mortgage prior to the borrower, (ii) the borrower is not listed on the relative's mortgage, (iii) the relative originated the mortgage in the year 2000 or later, and (iv) the relative's mortgage was active at some point after 2009.[4] I retain only borrowers with at least one match.

[2]These data are provided by Danmarks Nationalbank, which collects the underlying information through the Association of Danish Mortgage Banks (*Realkreditrådet*) and the Danish Mortgage Banks' Federation (*Realkreditforeningen*). Throughout, I define a borrower as an individual at the time that they originate a mortgage. Consequently, the same individual can appear as a borrower more than once if they originate multiple mortgages, and each co-borrower on a given mortgage is treated as a separate borrower.

[3]The large majority are traditional hybrid-ARMs with initial interest rates fixed for an introductory period, but roughly 4 percent are variable rate with no fixed introductory period.

[4]Note that requirement (iv) is a consequence of the coverage of the mortgage data, because I do not observe loans that were origi-

Using this matched data, I construct three summaries of exposure to ARMs within the family. For borrower i and mortgage j, *Any ARM in Family*$_{ij}$ is a binary indicator equal to one if any matched relative's loan is an ARM. *Family ARM Share*$_{ij}$ captures the fraction of originations by matched relatives that are ARMs. *Most Recent Relative Chose ARM*$_{ij}$ is equal to one if the most recent mortgage originated by a relative was an ARM.

Table 1 presents summary statistics. Panel A considers all residential mortgages originated between 2009-2018, while Panels B and C consider the sample matched to at least one relative's mortgage. Panel D considers the sample of originations by matched relatives.

3 Analysis and Results

3.1 Mortgage Choice is Correlated in Families

I begin by showing that borrowers whose relatives have taken ARMs in the past are more likely to do so themselves. This pattern is immediately evident in the summary statistics presented in Table 1. Columns 3 and 4 restrict the sample to borrowers linked to a previous ARM in the family (*Any ARM in Family*$_{ij}$=1), while columns 5 and 6 restrict to borrowers without one (*Any ARM in Family*$_{ij}$=0). The ARM share is 5 percentage points higher in the former group than in the latter.

Figure 1 demonstrates that this relationship is stable in the time series. While there is substantial aggregate variation in the use of ARMs across market conditions—rising from over 75% in 2009 to below 40% in the mid 2010s—there is a persistent gap between borrowers with family exposure to ARMs (shown in red), and those that have not been exposed (shown in black).

I next show that the within-family correlation in mortgage choice holds even when conditioning on observable borrower characteristics and a rich set of fixed effects for the timing and location of both the borrower and the relative's mortgage. Specifically, for borrower i originating mortgage j, I consider linear regressions of the following form:

$$ARM_{ij} = \beta Family\ ARM\ Exposure_{ij} + X'_{it(j)}\eta + \tau^B_{t(j)} + \mu^B_{geo(j)} + \tau^R_{t(r(i,j))} + \mu^R_{geo(r(i,j))} + \varepsilon_{ij} \quad (1)$$

Here, ARM_{ij} is an indicator equal to one if the borrower chooses an ARM. $X_{it(j)}$ represents borrower characteristics (dummies for age in 10-year bins, gender, deciles of net wealth and net income, and marital status). $\tau^B_{t(j)}$ and $\tau^R_{t(r(i,j))}$ are dummies for the origination month of the borrower B and relative R that most recently took a mortgage. $\mu^B_{geo(j)}$ and $\mu^R_{geo(r(i,j))}$ are dummies for the municipality of the mortgaged property of the

nated and terminated prior to 2009.

borrower and most recent relative.[5] Depending on the specification, *Family ARM Exposure*$_{ij}$ is defined either as *Most Recent Relative Chose ARM*$_{ij}$ or *Family ARM Share*$_{ij}$.

The results, presented in Table 2, demonstrate a robust positive relationship between family ARM exposure and ARM choice, which holds across specifications that progressively introduce the controls in Equation 1. Conditioning on borrower characteristics and fixed effects slightly attenuates the unconditional correlation, but leaves a large and precisely estimated coefficient. For example, column 3—which corresponds exactly to Equation 1—indicates that borrowers whose most recent matched relative chose an ARM are 7.2 percentage points more likely to choose an ARM themselves, while a shift in the Family ARM share from 0 to 1 predicts 10.5 percentage point higher take-up.

Notably, the results are unchanged when comparing borrower-relative pairs with identical origination timing, implemented by including fixed effects for every $\tau^B_{t(j)} \times \tau^R_{t(r(i,j))}$ pair (column 4). This rules out explanations based on families systematically originating mortgages at times when ARMs are relatively more or less attractive. The results are also robust to requiring a gap of at least five years between borrower and relative originations (column 6), and to restricting attention to relatives who originated after 2009 to address potential issues with sample selection (column 5).

3.2 The Causal Impact of Family Exposure on Mortgage Choice

Of course, these regression estimates do not demonstrate that there is a causal impact of family exposure on ARM choice. Even conditional on observable controls, unobserved factors like risk preferences or beliefs might correlate within families and impact mortgage choice.

To provide causal evidence, I turn to an instrumental variables strategy based on the *FRM-ARM Spreads* a borrower's relatives faced at the time of origination. This spread captures differences in initial interest costs between FRMs and ARMs, is correlated with expected costs over the life of the loan, and is a strong empirical predictor of ARM choice across countries and contexts (see, e.g., Badarinza *et al.*, 2018).

In practice, I instrument for Family ARM Exposure$_{ij}$ with the *FRM-ARM Spread* in a slightly modified version of Equation 1:[6]

$$\text{Family ARM Exposure}_{ij} = \gamma\, \textit{FRM-ARM}_{t(r(i,j))} + X'_{it(j)}\theta + \tau^B_{t(j)} + \mu^B_{geo(j)} + \tau^R_{y(r(i,j))} + \mu^R_{geo(r(i,j))} + \nu_{ij}. \quad (2)$$

The slight modification is that I include fixed effects for the *year* of the most recent relative's origination,

[5] Throughout, origination month refers to the specific month and year a mortgage was originated (e.g. June, 2015). In all specifications, I double-cluster standard errors by the connected set of all mortgages ever originated by all co-borrowers of the borrowers on mortgage j, and by origination month $t(j)$. The results are not sensitive to alternative clustering choices, such as clustering only on mortgage j.

[6] In any month t, I measure the FRM-Spread as the average interest rate difference among all originations in the Danish data.

rather than the *month*, because the latter would be collinear with the instrument. This restricts to variation in the FRM-ARM spread across relatives who originated their mortgages in different months of the same year. In the main specification, I define Family ARM Exposure$_{ij}$ as *Most Recent Relative Chose ARM*$_{ij}$, and measure *FRM-ARM*$_{t(r(i,j))}$ in the month the most recent family member originated their mortgage. I also show results using *Family ARM Share*$_{ij}$, defining *FRM-ARM*$_{t(r(i,j))}$ as the average across all originations by matched relatives.

The key intuition is that the historical *FRM-ARM Spread* faced by a relative is a meaningful determinant of the relative's mortgage choice, but should not otherwise affect the borrower's decision. This variation therefore allows us to compare otherwise similar borrowers who differ in their exposure to ARMs solely because their relatives originated mortgages under different interest-rate environments.

Figure 2 illustrates this logic by plotting the results from a reduced-form version of the approach. Specifically, it shows coefficient estimates from versions of Equation 2 that omit $X'_{it(j)}$ and use a range of alternative dependent variables. The first estimate, labeled *ARM*, corresponds to a reduced-form specification in which the borrower's own ARM choice is the outcome. The relative's *FRM-ARM Spread* is a strong and statistically significant predictor of this choice. In contrast, the remaining estimates show no relationship between the relative's spread and observable borrower characteristics—such as wealth, income, age, gender, or marital status—consistent with the identifying assumptions underlying the instrument.

The results of the instrumental variables strategy, reported in Table 3, indicate a meaningful causal effect of family exposure on mortgage choice. Across specifications, the first stage is highly significant: the *FRM-ARM Spread* strongly predicts relatives' mortgage decisions in the Danish data. The corresponding second-stage estimates are positive and significant in all columns. For example, column 2 indicates that family exposure (*Most Recent Relative Chose ARM*$_{ij}$=1) increases the probability of choosing an ARM by 5.8 percentage points. This effect is modestly smaller than the corresponding OLS estimate, but economically meaningful. The estimates are qualitatively similar—and somewhat larger—when exposure is measured using the *Family ARM Share*$_{ij}$, and are robust to restricting the sample to borrower-relative pairs separated by at least five years or to relatives who originated their mortgages in 2009 or later.

Figure 3 shows that the effect of family exposure on ARM choice is present across different types of family relationships. These bars report coefficient estimates from both OLS and IV approaches, where Family ARM Exposure$_{ij}$ is constructed using only a specific relative type. Across specifications, exposure through parents and children generates larger effects than exposure through siblings, but the estimates are economically meaningful and statistically significant for all groups. Taken together, these patterns suggest that family experience is an important determinant of mortgage choice.

4 Conclusions

Using comprehensive administrative data from Denmark, I link borrowers to their family members and document a strong within-family correlation in mortgage contract choice. Borrowers are substantially more likely to choose an adjustable-rate mortgage when a relative has done so previously, even after conditioning on origination timing, location, and detailed borrower characteristics. To establish causality, I implement an instrumental variables strategy that exploits time-series variation in relatives' incentives to choose ARMs driven by movements in the *FRM-ARM spread*. The estimates imply that a recent ARM origination within the family raises a borrower's likelihood of choosing an ARM by nearly 6 percentage points. Consistent with recent work in social finance, these results show that family experience plays a central role in mortgage choice.

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Tables

TABLE 1: SUMMARY STATISTICS

	Full Sample		Any ARM in Family		No ARM in Family	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Panel A: ARM Share in the Full Sample of Danish Mortgage Originations						
ARM Share	0.51	0.50				
Panel B: Mortgage Characteristics in the Matched Sample						
ARM Share	0.51	0.50	0.52	0.50	0.47	0.50
FRM-ARM Spread at Origination	2.05	0.34	2.04	0.34	2.10	0.35
# of Matched Relatives	3.86	2.83	4.25	2.94	2.37	1.69
ARM Share (Relatives)	0.54	0.37	0.68	0.28	0.00	0.00
Most Recent Relative Chose ARM	0.55	0.49	0.70	0.45	0.00	0.00
FRM-ARM Spread (Relatives)	2.06	0.30	2.09	0.28	1.94	0.36
Panel C: Borrower Characteristics in the Matched Sample						
Age	45	13	45	13	44	13
Male	0.52	0.50	0.52	0.50	0.53	0.50
Married	0.67	0.47	0.67	0.47	0.66	0.48
Income (DKK, millions)	0.43	0.32	0.44	0.33	0.42	0.28
Net Wealth (DKK, millions)	0.18	1.17	0.19	1.20	0.18	1.04
Panel D: Relative Characteristics in the Matched Sample						
Mother	0.16	0.36	0.15	0.36	0.18	0.39
Father	0.18	0.39	0.18	0.38	0.22	0.41
Sibling	0.48	0.50	0.49	0.50	0.44	0.50
Child	0.18	0.39	0.18	0.39	0.16	0.37
Originated 2000–200	0.34	0.47	0.32	0.47	0.44	0.50
Originated 2007–2012	0.48	0.50	0.49	0.50	0.39	0.49
Originated 2013–2018	0.18	0.39	0.18	0.39	0.17	0.38
Borrowers in Full Sample	3,468,135					
Borrowers in Matched Sample	2,633,933		2,077,155		556,778	
Relative Originations × Borrowers	10,153,591		8,836,352		1,317,239	

Notes: Panels A–C report summary statistics for Danish residential mortgages originated between 2009–2018. Panel A includes all originations; Panels B and C restrict the sample to mortgages linked to a prior mortgage originated by an immediate family member. Income and wealth are winsorized at the 0.1st and 99.9th percentiles. Statistics are weighted at the borrower level, defined as an individual taking out a specific mortgage. Each co-borrower on a given mortgage is treated as a separate borrower, and the same individual may appear as a borrower more than once if they originate multiple mortgages. Panel D reports summary statistics for the mortgage originations of the corresponding matched relatives, weighted at the relative–origination × borrower level. The third and fourth columns consider only borrowers linked to a relative who has taken an ARM in the past, while the fifth and sixth columns consider only borrowers not linked to a relative who has taken an ARM in the past.

TABLE 2: ARM CHOICE BY EXPOSURE WITHIN THE FAMILY – OLS ESTIMATES

	Full Sample				2009–2018	Gap: 5 Years+
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Most Recent Relative						
Relative Chose ARM	0.096***	0.069***	0.072***	0.072***	0.082***	0.051***
	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Panel B: All Matched Relatives						
ARM Share Among Relatives	0.126***	0.104***	0.105***	0.105***	0.110***	0.069***
	(0.005)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
Observations	2,633,933	2,618,427	2,618,415	2,617,730	1,938,055	1,989,881
Controls and Fixed Effects						
Borrower Controls + Municipality FE	×	✓	✓	✓	✓	✓
Borrower Origination Month FE	×	✓	✓	×	✓	✓
Relative Municipality FE	×	×	✓	✓	✓	✓
Relative Origination Month FE	×	×	✓	×	✓	✓
Borrower × Relative Orig. Month FE	×	×	×	✓	×	×

Notes: Coefficients from OLS regressions of an indicator equal to 1 if a borrower chooses an ARM on measures of family exposure to ARMs. Panel A considers only the most recently linked relative to take a mortgage, and defines exposure as a dummy variable equal to one if that relative chose an ARM. Panel B considers all linked relatives, and defines exposure as the average ARM share among those relatives. The sample is constructed at the borrower level, defined as an individual taking out a specific mortgage. Each co-borrower on a given mortgage is treated as a separate borrower, and the same individual may appear as a borrower more than once if they originate multiple mortgages. The first four columns consider the full linked sample. The fifth column restricts to relatives with originations in 2009–2018. The final column restricts to relatives with originations at least 5 years before the borrower. Standard errors are double clustered by the connected set of all mortgages ever originated by the co-borrowers on the mortgage and by the borrower's origination month, and are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

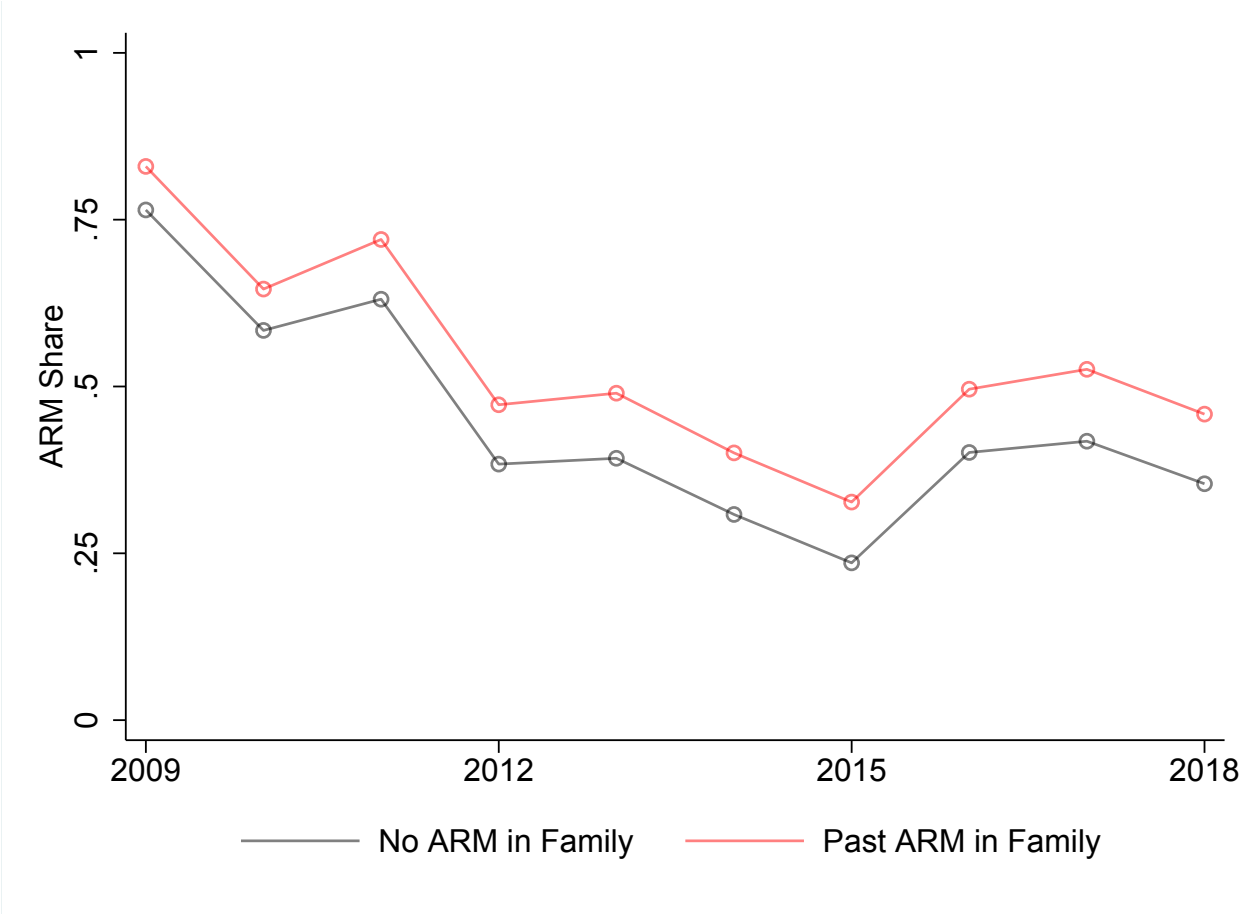
TABLE 3: THE IMPACT OF FAMILY EXPOSURE ON ARM CHOICE – IV ESTIMATES

	Most Recent Relative				All Matched Relatives			
	Full Sample		2009–2018	Gap: 5 Years+	Full Sample		2009–2018	Gap: 5 Years+
	IV	IV	IV	IV	IV	IV	IV	IV
Relative Chose ARM	0.056***	0.058***	0.031***	0.069***				
	(0.003)	(0.007)	(0.004)	(0.005)				
					0.100***	0.075***	0.054***	0.084***
					(0.005)	(0.009)	(0.004)	(0.007)
First stage								
FRM-ARM Spread (Relative)	0.343***	0.251***	0.480***	0.213***	0.250***	0.202***	0.484***	0.205***
	(0.011)	(0.014)	(0.015)	(0.012)	(0.004)	(0.005)	(0.016)	(0.007)
Observations	2,618,415	2,618,415	1,938,055	1,989,881	2,618,415	2,618,415	1,938,055	1,989,881
First-stage F-Statistic	906.8	315.6	1013.6	331.9	3892.8	1435.8	934.5	875.9
Controls and Fixed Effects								
Borrower Controls + Municipality FE	✓	✓	✓	✓	✓	✓	✓	✓
Borrower Origination Month FE	✓	✓	✓	✓	✓	✓	✓	✓
Relative Municipality FE	✓	✓	✓	✓	✓	✓	✓	✓
Relative Origination Year FE	×	✓	×	×	×	✓	×	×

Notes: Coefficients from instrumental variables regressions of an indicator equal to 1 if a borrower chooses an ARM on measures of family exposure to ARMs. The first four columns consider only the most recently linked relative to take a mortgage and define exposure as an indicator equal to one if that relative chose an ARM. In these columns, exposure is instrumented with the FRM–ARM spread in the relative's origination month, measured as the average difference in interest rates on fixed- versus adjustable-rate mortgages in the full sample of Danish residential mortgage originations. The final four columns consider all linked relatives and define exposure as the average ARM share among those relatives; exposure is instrumented with the average FRM–ARM spread across all originations by matched relatives. Across all columns, the sample is constructed at the borrower level, defined as an individual taking out a specific mortgage. Each co-borrower on a given mortgage is treated as a separate borrower, and the same individual may appear as a borrower more than once if they originate multiple mortgages. First-stage F-Statistic refers to the Kleibergen–Paap rk Wald F-statistic. The third and seventh columns restrict to relatives with originations in 2009–2018. The fourth and eighth columns restrict to relatives with originations at least 5 years before the borrower. Standard errors are double-clustered by the connected set of all mortgages ever originated by the co-borrowers on the mortgage and by the borrower's origination month, and are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

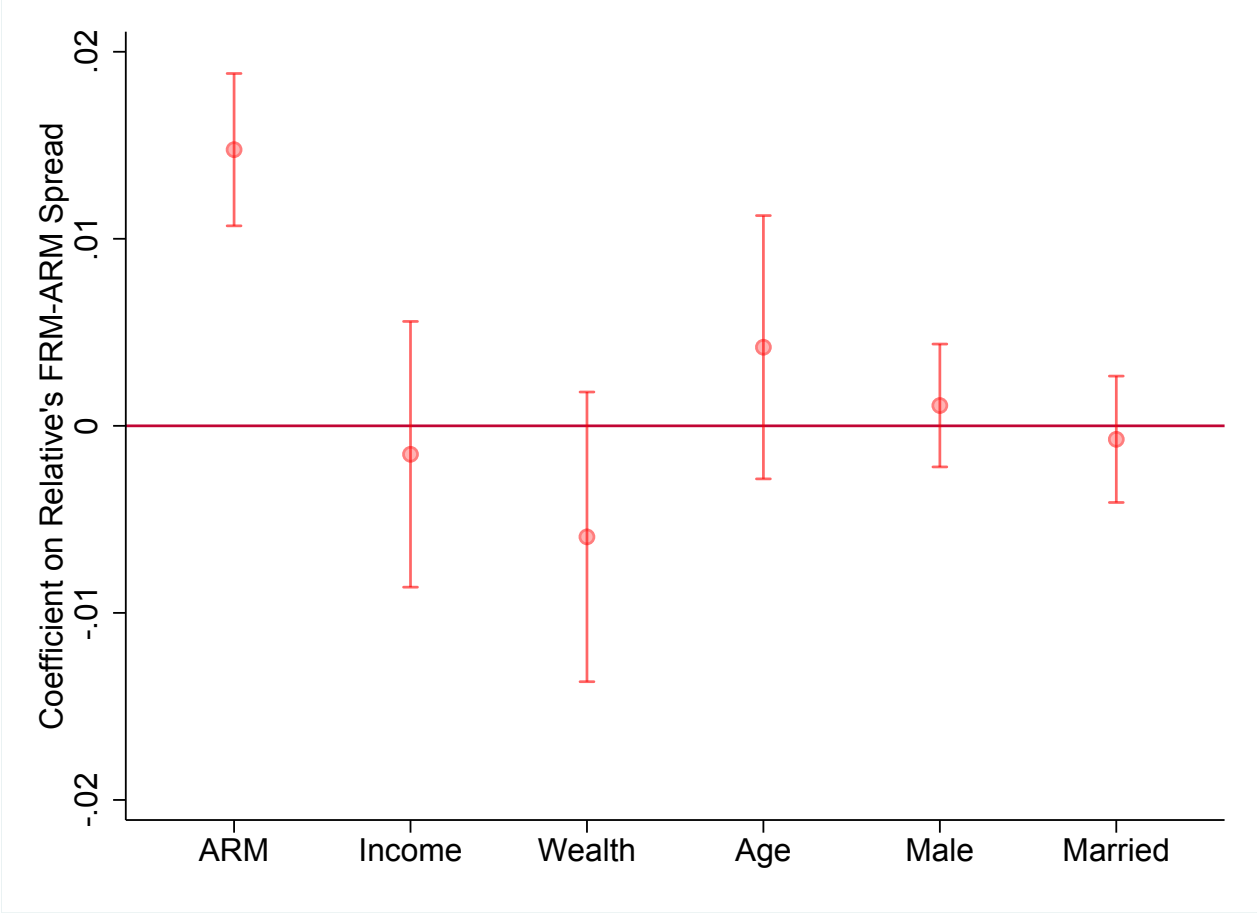
Figures

FIGURE 1: ARM CHOICE BY PAST EXPOSURE TO ARMS IN THE FAMILY



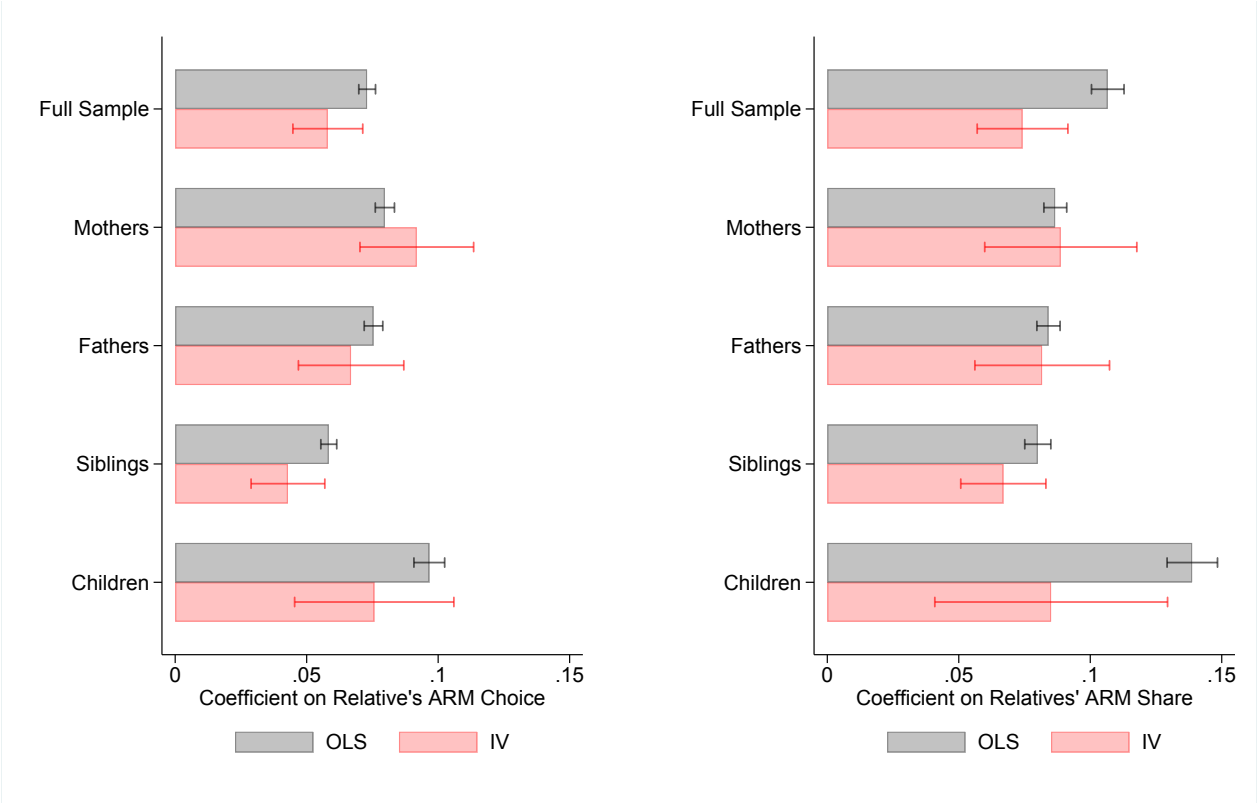
Notes: The red line plots the annual ARM share among borrowers linked to at least one relative who previously chose an ARM. The black line plots the annual ARM share among borrowers linked only to relatives who previously chose FRMs.

FIGURE 2: RELATIVE'S FRM-ARM SPREAD PREDICTS BORROWER'S ARM CHOICE BUT NOT BORROWER CHARACTERISTICS



Notes: This figure presents coefficients and 95% confidence intervals from regressions of the listed borrower-level variables on the FRM–ARM spread in the origination month of the most recently linked relative to take out a mortgage. ARM is an indicator equal to 1 if the borrower chose an ARM. Continuous variables (income, wealth, and age) are measured in standard deviations. All regressions include fixed effects for the borrower's origination month, the relative's origination year, and the municipality of both the relative and the borrower. Confidence intervals are based on standard errors double-clustered by the connected set of all mortgages ever originated by the co-borrowers on the mortgage and by the borrower's origination month.

FIGURE 3: THE IMPACT OF FAMILY EXPOSURE TO ARMS BY RELATIONSHIP



PANEL A: MOST RECENT RELATIVE **PANEL B: ALL RELATIVES (AVERAGE EXPOSURE)**

Notes: This figure presents coefficients and 95% confidence intervals from OLS and instrumental variables regressions of an indicator equal to 1 if a borrower chooses an ARM on measures of family exposure to ARMs. Panel A considers only the most recently linked relative to take a mortgage and defines exposure as an indicator equal to one if that relative chose an ARM. For the IV regressions, exposure is instrumented with the FRM–ARM spread in the relative's origination month, measured as the average difference in interest rates on fixed- versus adjustable-rate mortgages in the full sample of Danish residential mortgage originations. Panel B considers all linked relatives and defines exposure as the average ARM share among those relatives. For the IV regressions, exposure is instrumented with the average FRM–ARM spread across all originations by matched relatives. Across all regressions, the sample is constructed at the borrower level, defined as an individual taking out a specific mortgage. Each co-borrower on a given mortgage is treated as a separate borrower, and the same individual may appear as a borrower more than once if they originate multiple mortgages. Each specification limits the sample to consider only the listed relative type when linking borrowers. All regressions include borrower controls and fixed effects for the borrower's origination month, the most recently linked relative's origination year, and the municipality of both the relative and the borrower. Confidence intervals are based on standard errors double-clustered by the connected set of all mortgages ever originated by the co-borrowers on the mortgage and by the borrower's origination month.