Houses and Families across Countries

Alessandra Peter, Monika Piazzesi and Martin Schneider

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Motivation

- How are housing services produced and sold?
- HFCS: new data on houses and families
Home ownership rates across European countries

- Slovakia
- Slovenia
- Spain
- Greece
- Belgium
- Portugal
- Finland
- Italy
- Netherlands
- France
- Austria
- Germany

![Chart showing home ownership rates across European countries.](chart.png)
Home ownership rates and family structure

- Germany
- Austria
- France
- Netherlands
- Italy
- Finland
- Portugal
- Belgium
- Greece
- Spain
- Slovenia
- Slovakia
- Hungary
- Poland

- head & spouse
- single head
Motivation

- How are housing services produced and sold?
- HFCS: new data on houses and families
- This paper: joint choice of houses and families.
This paper

- model of household formation, savings and housing
  - builds on standard model of tenure choice
    - low productivity of renting, collateral constraint
  - household technology depends on \# household members
  - cohabitation = informal rental and credit market

- study model predictions with HFCS data
  - within countries: singles more housing intensive $\rightarrow$ rent more,
    cohabitation of owner parents & poor kids
  - across countries, two forces for higher ownership:
    1. weaker rental markets $\rightarrow$ more savings by owners & cohabitation
    2. stronger credit $\rightarrow$ less savings by owners & cohabitation

$\Rightarrow$ both at work in different sets of countries
Outline

- evidence on household technology
  - cohabitation & age
  - renters’ expenditure shares
- model
- within country predictions
- cross country predictions
How old are adult children who live with their parents?
How old are parents who live with adult children?

- adult kids with parents
- parents with adult kids
Differences across countries in cohabitation

**adult kids with parents**

**parents with adult kids**

[Graph showing differences across countries in cohabitation]
Differences across countries in cohabitation

![Graph showing differences in cohabitation rates across countries.](image-url)
Evidence on housing intensity

- mean expenditure share on rent across countries ± one sd
- single households spend more than couple households
- regressions of expenditure share on household characteristics
  - single dummy has large & significant coefficient in all specs
  - zero coefficients for log savings or income
Demographics & income

- 3 period lives: young, middle, old
  - young have middle-aged parents

- agent type $\theta$ captures anticipated evolution of life
  - whether single or partner in couple at date $t$; couples do not split
  - whether or not a parent at date $t$
  - individual income $y_t(\theta)$
    - low when young, high in middle aged, zero in old age
    - for couples, $y_t$ includes 1/2 household income
    - new partner at $t \rightarrow y_t$ also includes wealth of partner
  - for young: parents’ income, wealth & whether single or couple
Preferences & technology

- utility over housing services & other consumption

\[ \log f_0 (c_0, h_0, \tau_0, \theta) + \beta(\theta) \log f_1 (c_1, h_1, \tau_1, \theta) + \beta(\theta)^2 \log c_2 \]

- household felicity

\[ f_t (c, h, \tau, \theta) = c^{1-\alpha_t(\tau,\theta)} (\eta(\tau,\theta) h)^{\alpha_t(\tau,\theta)} \]

- tenure choice \( \tau \): own/rent + cohabiting yes/no
  - cohabitation only possible for single young

- housing intensity \( \alpha_t(\tau,\theta) \)
  - higher for singles than others

- productivity of making housing services \( \eta(\tau,\theta) \)
  - lower for renters than owners; stand-in for moral hazard, regulation...
  - additional knockoff for cohabiting child
  - parents’ felicity not affected by cohabitation
Markets

- competitive credit, housing and rental markets
  - constant interest rate $R$
  - constant house price $p$; rent = user cost: $p_r = p \left(1 - \frac{1 - \delta}{R}\right)$

- borrowing constraints
  - collateral constraint for owners: $-b \leq \lambda p h$
  - liquidity constraint for renters: $b \geq 0$

- cohabitation
  - single young make take-it-or-leave-it offer to parents for joint choices of consumption, housing, tenure & savings

→ collection of choice problems
  - single adults optimize given expectations of future income & partner
  - couples plan based on joint income and wealth
  - cohabitation between single kid and parents?
    - kids maximize utility s.t. participation constraint for parents
    - parent utility independent of cohabitation because of TIOLI offer

→ to predict house size & household wealth, aggregate individual members
Dynamic programs

- singles (couples) who remain singles (couples)

\[ v_t (a, \theta) = \max_{c, h, b, a', \tau} \log f_t (c, h, \theta, \tau) + \beta(\theta) v_{t+1} (a' + y_{t+1} (\theta)) \]

rent

\[
\begin{align*}
    c + b + p_r h &= a \\
    a' &= Rb \\
    b &\geq 0
\end{align*}
\]

own

\[
\begin{align*}
    c + b + ph &= a \\
    a' &= Rb + p (1 - \delta) h \\
    -b &\leq \lambda ph
\end{align*}
\]

- substitute out \( b \) and house price:

\[
\begin{align*}
    c + p_r h + a' / R &= a \\
    a' &\geq 0 \\
    a' &\geq \frac{1 - \delta - \lambda R}{1 - (1 - \delta) / R} p_r h
\end{align*}
\]

- single who meets new partner keeps only \( a' / 2 \),
  but \( y_{t+1} (\theta) \) includes 1/2 income & wealth of new partner
Tradeoffs

- **Standard elements of tenure choice**
  1. high productivity $\eta$ for housing services favors ownership
  2. collateral constraint: low desire to save favors renting
     $\rightarrow$ discount factor, slope of income profile matter

- **New elements with endogenous family choice**
  1. household technology $(\eta, \alpha)$ depends on tenure $\tau$ & type $\theta$
  2. desire to save depends on type $\theta$
     $\rightarrow$ slope of income profile now reflects also matching with partner
  3. cohabitation with parents allows for informal credit, rental
Middle age

- all agents save (no income when old!)
  - homothetic utility & linear constraints: tenure doesn’t depend on $a$
  - owning more productive than renting (higher $\eta$)
  - desire to save depends on discount factor $\beta(\theta)$, single / couple
  - cohabitation irrelevant, but compare singles, couples

- proposition: threshold $\beta^*$ s.t. $\beta(\theta) \geq \beta^*$ own, otherwise rent. threshold $\beta^*$ is increasing in housing intensity $\alpha$.

- intuition:
  - trade-off: productivity $\eta$ vs desire to save
    owning is more productive for all agents
    owning requires savings for downpayment
    low $\beta(\theta)$ agent would like to save less
    own only if high enough desire to save
  - household production is more housing intensive $\rightarrow$ want more housing
    higher downpayment $\rightarrow$ renting more attractive
    own only if desire to save is really high
Middle age: observable implications

- Couples own more than singles
  - Household production is less housing intensive
  - Choose lower house value relative to income
  - But: Couples may own larger house (higher household income)

- Owners save more than renters
  - Agents with higher desire to save select themselves into ownership
  - In proposition above, exogenous variation in discount factor
  - Alternatively: Differences in $\eta(\theta)$ by type $\theta$;
    agents who are more efficient at owning save more
agents save or borrow (income in both periods!)
  ▷ fix expected income next period
  ▷ cash today matters: high slope of income profile $\rightarrow$ low desire to save

proposition: threshold $a^*$ s.t. $a \geq a^*$ own, otherwise rent. threshold $a^*$ is increasing in housing intensity $\alpha$.

intuition:
  ▷ trade-off: productivity $\eta$ vs desire to save owning is more productive for all agents owning requires savings for downpayment own only if high enough desire to save
  ▷ household production is more housing intensive $\rightarrow$ want more housing higher downpayment $\rightarrow$ renting more attractive own only if desire to save is really high
Young age: cohabitation

- agents save or borrow (income in both periods)
  - fix expected income next period
  - cash today matters: slope of income profile $\rightarrow$ desire to save
  - shut down rental market: productivity of renting $\eta = 0$
  - owning more productive than living with parents

- proposition: threshold $a^*$ s.t. $a \geq a^*$ own, otherwise live with parents. threshold $a^*$ is increasing in wealth of parents.

- intuition:
  - parents require no downpayment
  - living with parents works like renting
  - parents also give unsecured loans
  - live with poorer parents only if really poor

- what if both rental market and living with parents are available?
  - depends on productivity of renting and owning, living parents
Young age: observable implications

- young and temporarily poor rent or live with parents
  - low desire to save

- young couples own more than singles
  - more housing intensive

- cohabitation households more likely to own
  - gains from trade higher if parents have high desire to save & own

- cohabitation households save less than old couples w/o kids
  - combine borrower and lender under one roof

- young who do not match assortatively own
  - higher desire to save with small slope in income profile
Evidence on housing over the life cycle

- Ownership rates by age & family status

- Predicting ownership
  - probit regressions with household characteristics
  - large positive coefficient on household savings
    prob of owning increases by .25 if savings higher by one sd

- Predicting cohabitation
  - probit regressions with household characteristics
  - large negative coefficient on income of adult children
  - large positive coefficient on household savings

- Ownership rates & savings / income by age & tenure
  - pictures for France...
Evidence on ownership rates

[Graph showing ownership rates for different age groups (under 30, 30-40, 40-50, 50-60, 60-70, 70+) with data points for singles and couples.]
Ownership rates in France

- Ownership rate by group; old now ≥ 40, width = fraction of adults
- Old own more than young
- Couples own more than singles at all ages
- Cohabitation households mostly own
Savings/income in France

- Savings/income by group; owners up, renters down
- Owners save more than renters
- Old save more than young
- Single owners save more than couples
- Cohabiters save in between
What explains cross-country differences?

Two forces

- worse rental markets: lower $\eta$ from rentals
  - standard effect: higher ownership, higher savings by owners
  - with families: fewer young and single households, more cohabitation
  - extreme case: rental $\eta = 0$, everyone lives in owner-occupied housing, some rich young own their own home, others cohabit

- better credit markets: higher $\lambda$
  - standard effect: higher ownership, savings unclear & possibly lower
  - with families: more young and single households, less cohabitation
  - extreme case: $\lambda = 1$, everyone lives in owner-occupied housing, including young households, only poorest young live at home

- GE effects? With CD felicity, results hold also with endogenous price

- in data, both forces are relevant...
Ownership rates across countries

Germany

country with lowest ownership
Ownership rates across countries

- **Italy**: high cohabitation
- High ownership for young and old, including singles
- Consistent with bad rental market
- Fewer young households formed, but contribution to overall ownership similar to Germany
Ownership rates across countries

- Finland: lowest cohabitation
- high ownership, also for young/single
- consistent with good credit market
- many young households formed, as in Germany, but more owners
Savings/income across countries

Patterns similar to France

Low savings across the board
Savings/income across countries

- higher savings in Italy, also for young owners and singles
- consistent with bad rental market
Savings/income across countries

- Lower savings in Finland, especially for young.
- Consistent with good credit market.
Cross country evidence

![Graph showing the relationship between ownership rate and adult children with parents, as well as young savings/income for various countries. The countries included are Austria (AT), Belgium (BE), Germany (DE), Spain (ES), Finland (FI), France (FR), Greece (GR), Italy (IT), Netherlands (NL), Portugal (PT), Slovenia (SI), and Slovakia (SK).]
Cross country evidence

- Ownership rate vs. adult children with parents
- Ownership rate vs. young savings/income
Summary

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  - builds on standard model of tenure choice
    - low productivity of renting, collateral constraint
  - household technology depends on # household members
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$\implies$ both at work in different sets of countries