Houses and Families across Countries

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Banque de France Dec 14+15, 2018
Motivation

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

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

Adult over 20

- Owner occupied
- Rental

Graph showing home ownership rates across European countries.
Home ownership rates and family structure

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

Single head owner occupied and rental rates for various European countries.
Home ownership rates and family structure

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

head & spouse single head adult child

owner occupied rental

0.8 0.6 0.4 0.2 0.2 0.4

head & spouse single head adult child
Motivation

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

- 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 has owner parents and poor kids
  - across countries, two forces for higher ownership:
    1. weaker rental markets \(\rightarrow\) more savings and cohabitation
    2. stronger credit \(\rightarrow\) less savings and cohabitation

\(\Rightarrow\) both at work in different sets of countries
How old are adult children who live with their parents?
How old are parents who live with adult children?

![Graph showing the distribution of ages for adult kids with parents and parents with adult kids.](image)
Differences across countries in cohabitation

- **adult kids with parents**
- **parents with adult kids**

Graphs showing the distribution of adult kids with parents and parents with adult kids across different countries, with emphasis on Italy.
Differences across countries in cohabitation

- **adult kids with parents**
- **parents with adult kids**

Charts showing the percentage of adults with children and parents with adult children in Italy and Finland. The graphs display trends over age, with Italy generally showing higher percentages of adult children with parents compared to Finland.
Preferences and technology

- 3 period lives: young, middle and old age
  - young age: 20-40 years, single, couple or cohabit with parents
  - middle age with income, old age without income
- agent type $\theta$ captures evolution of life
  - whether attached to a partner or not
  - income $y_t(\theta)$ for singles, averaged for couples
    with new partner: includes 1/2 income and wealth of partner
  - parents income, wealth and whether single or couple
- utility over housing services and other consumption
  \[
  \log f(c_0, h_0, \tau_0, \theta) + \beta(\theta) \log f(c_1, h_1, \tau_1, \theta) + \beta(\theta)^2 \log c_2
  \]
- household technology depends on tenure choice $\tau$ and type $\theta$
  \[
  f(c, h, \tau, \theta) = c^{1-\alpha(\tau, \theta)} (\eta(\tau, \theta) h)^{\alpha(\tau, \theta)}
  \]
  - productivity $\eta(\tau, \theta)$ in production of housing services
  - housing intensity $\alpha(\tau, \theta)$
Markets

- constant interest rate $R$
- competitive housing and rental markets
  - constant rental rate $p_r$, house price $p$
  - landlords equate rent and user cost $p_r = p \left(1 - \left(1 - \delta \right) / R\right)$
- collateral constraint for owners

$$-b \leq \lambda ph$$

liquidity constraint for renters

$$b \geq 0$$

- optimization problems
  - unattached adults optimize given expectations of future income (includes possible future attachment to partners)
  - attached adults plan jointly based on average income and wealth
  - cohabitation with parents only possible when young (in period 0) kid makes take-it-or-leave-it offer to parents for joint choices of consumption, housing, tenure and savings
Standard elements of tenure choice

1. productivity $\eta$ in production of housing services depends on tenure $\tau$ stand in for moral hazard of renting, regulation, taxation etc.

2. collateral constraint: desire to save matters slope of income profile over time important for ownership

New elements with endogenous family choice

1. household technology ($\eta, \alpha$) depends on tenure $\tau$ as well as type $\theta$

2. desire to save depends on type $\theta$ slope of income profile has a different meaning, matching with partner determines slope: assortative or nonassortative forecast wealth of future partner

3. cohabitation with parents parent utility is independent of cohabitation because of TIOLI offer predicted house size, household wealth not independent

→ standard dynamic programming works
Dynamic programs

- single (couple) who remain single (couple)

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

rent

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

own

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

- combine with user cost \( p_r = p(1 - (1 - \delta) / R) \)

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

single who meets new partner will keep only 1/2 wealth, but \( y_{t+1}(\theta) \) includes 1/2 income and wealth of new partner

- kids maximize their utility s.t. participation constraint for parents
Evidence on housing intensity

- mean expenditure share on rent across countries ± one std of share
- single households spend more than couple households
- single dummy has large coefficient and is significant in all specs
- regress expenditure share on log savings or income, get zero slope
Middle age

- all agents save
  - no income when old
  - homothetic utility and linear constraints: tenure does not depend on cash on hand $a$
  - owning is more productive than renting, has higher $\eta$
  - agents differ in discount factor $\beta(\theta)$

- 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
  - Couples own larger house (have more income)

- Owners save more than renters
  - Agents with higher desire to save select themselves into ownership

- Alternative mechanism: differences in $\eta(\theta)$ by type $\theta$
  - Agents who are more efficient at owning save more
Evidence on ownership rates

- couple households own more than single households
- probit for ownership rates by age:
  - get large positive slope coefficient on log savings
  - prob of owning increases by roughly .25 if savings higher by 1 st. dev.
Young age

- agents save or borrow
  - income in both periods
  - fix expected income next period
  - cash today matters: slope of income profile $\rightarrow$ desire to save
  - owning is more productive than renting

- 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
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  household production is more housing intensive $\rightarrow$ want more housing
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  own only if desire to save is really high
Young age

- 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 is 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
Young age: observable implications

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

- young and temporarily poor rent or live with parents
  - low desire to save
  - evidence from probit for cohabitation:
    - large negative coefficient on income by adult children

- cohabitation households are more likely to own
  - gains from trade higher if parents have high desire to save and own
  - evidence from probit for cohabitation:
    - large positive coefficient on household savings

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

- young singles rent more than couples √

- young who do not match assortatively own
  - higher desire to save with small slope in income profile
Ownership rates in France

- Ownership rate by group, colors as before, width indicates fraction of adults in the group.
- Old own more than young.
- Couples own more than singles, at all ages.
- Cohabitation households mostly own.
Savings/income in France

- same width, sav/inc in each 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 $\eta$ when renting)
  - standard effect: higher ownership, higher savings
  - with families: fewer young and single households, more cohabitation
  - extreme case: $\eta = 0$, everyone lives in owner-occupied housing, few rich young own their own home

- better credit markets: higher $\lambda$
  - standard effect: higher ownership, somewhat higher savings
  - 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

- both forces are relevant
Ownership rates across countries

Germany

- country with lowest ownership
Ownership rates across countries

- **Germany**
  - Country with high cohabitation
  - High ownership for young and old, including singles
  - Consistent with bad rental market
  - Fewer young households are formed, their contribution to overall ownership is similar to Germany

- **Italy**
Ownership rates across countries

- **Finland**: High ownership rates, especially for the elderly.
- **Italy**: Moderate ownership rates, with a slight increase for the elderly.
- **Germany**: Low ownership rates, with a notable trend for young households.

- Country with lowest cohabitation.
- High ownership, also for young/single.
- Consistent with good credit market.
- Many young households are formed, as in Germany where they rent.
Savings/income across countries

- Patterns consistent with 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 scatter plots for adult children with parents against ownership rate and young savings/income against young savings/income for countries labeled AT, BE, DE, ES, FI, FR, GR, IT, NL, PT, SI, SK.]
Cross country evidence

![Graph showing correlation between adult children with parents and ownership rate, and another graph showing correlation between young savings/income and ownership rate. Each graph has data points for different countries such as AT, BE, DE, ES, FI, FR, GR, IT, NL, PT, SI, and SK.](image-url)
Summary

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  - builds on standard model of tenure choice
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  - household technology depends on # household members
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