Houses and Families across Countries

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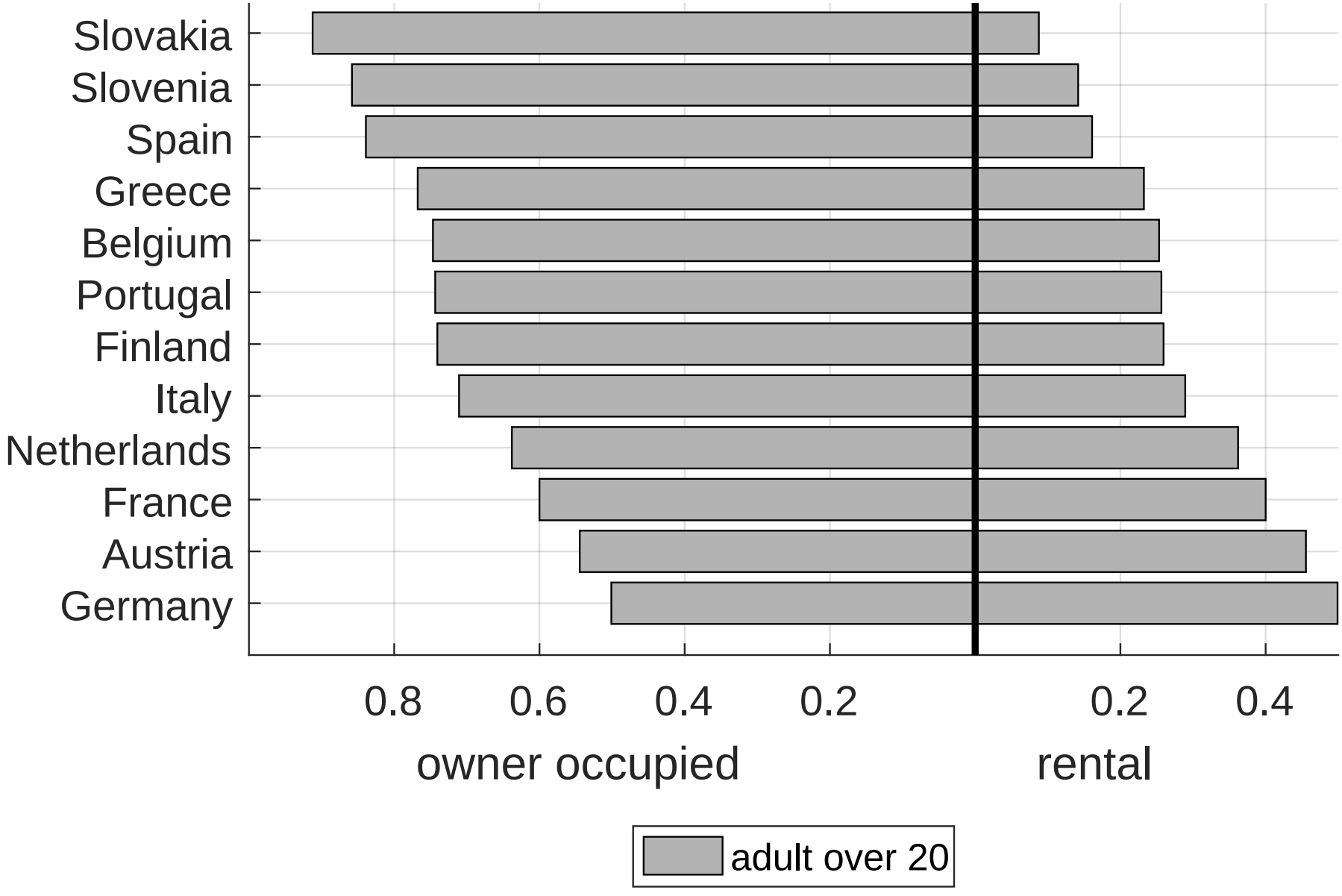
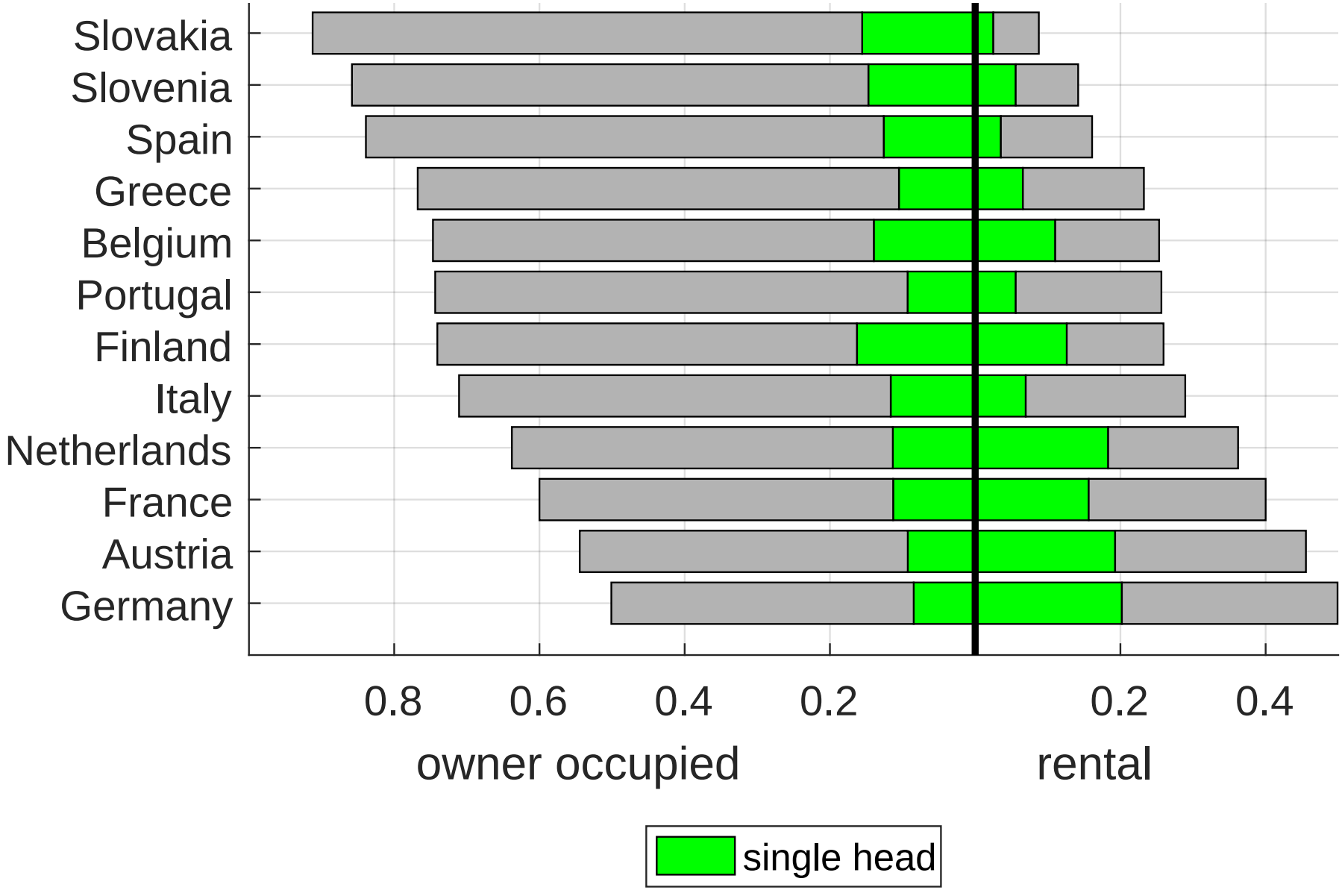
Motivation

- How should housing services be produced and sold?
- HFCS: new data on houses and families

Home ownership rates across European countries



Home ownership rates and family structure



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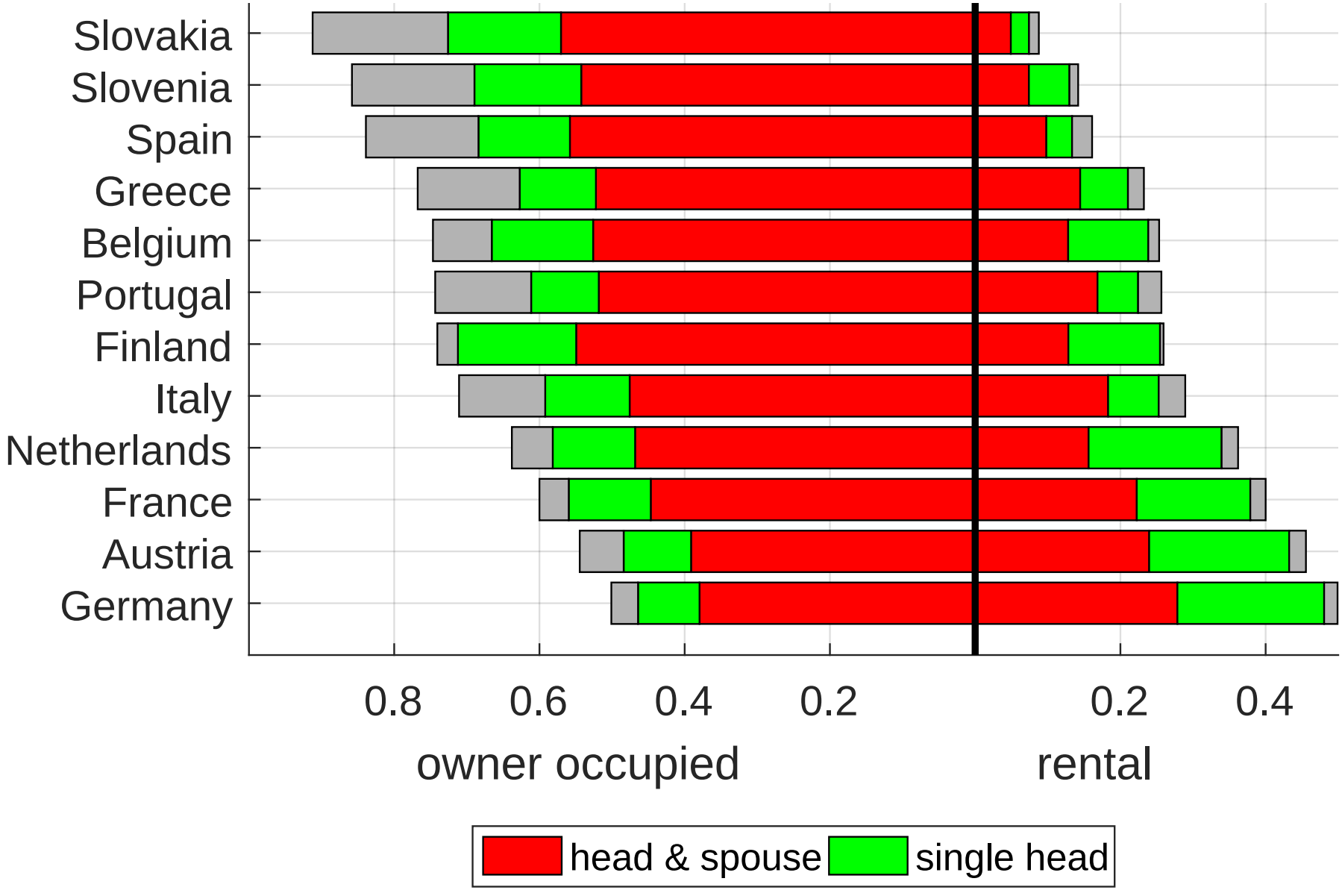

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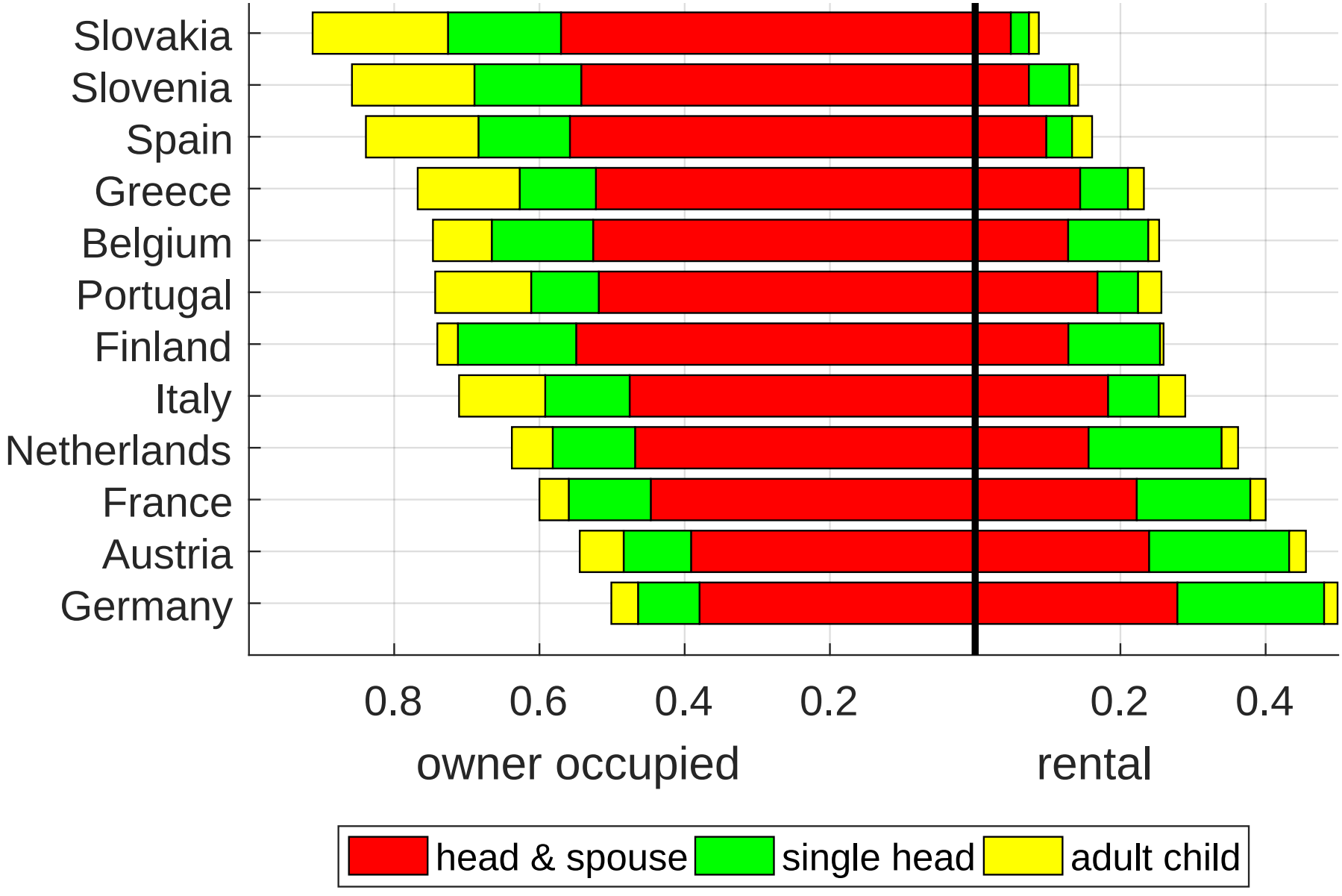


Motivation

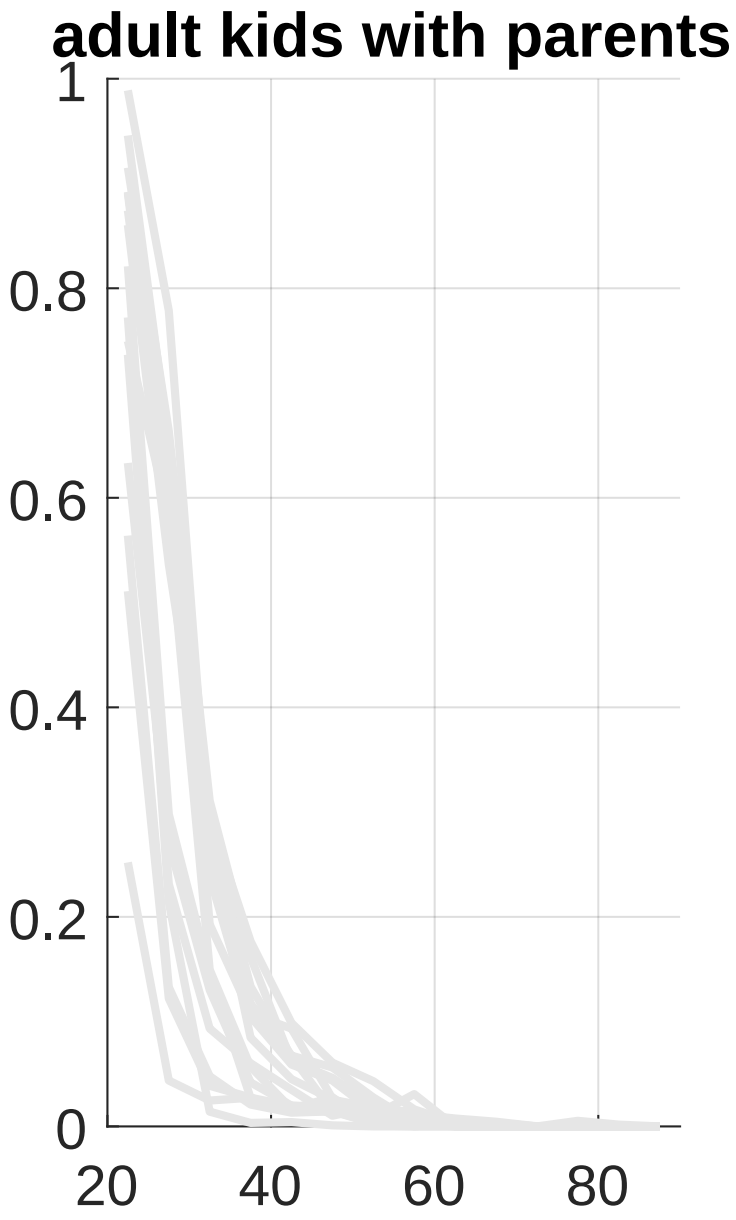
- How should housing services be produced and sold?
- HFCS: new data on houses and families
- This paper studies joint choice of houses and families.

Outline

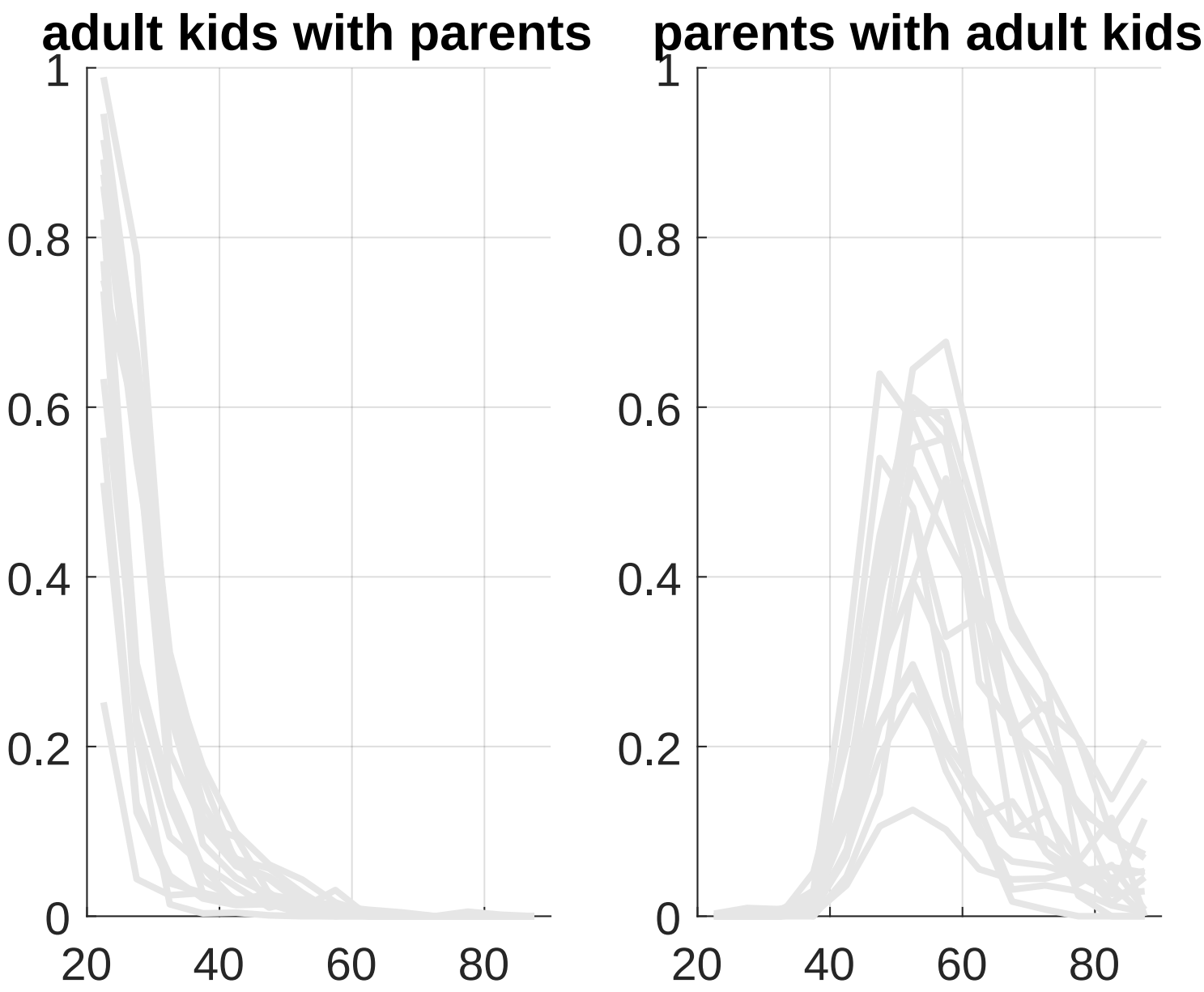
- model of household formation, savings and housing
  - builds on standard model of tenure choice
    low productivity of renting, collateral constraint
  - household technology depends on # household members
  - cohabitation = informal rental and credit market
- study model predictions with HFCS data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

    $\Longrightarrow$ both at work in different sets of countries

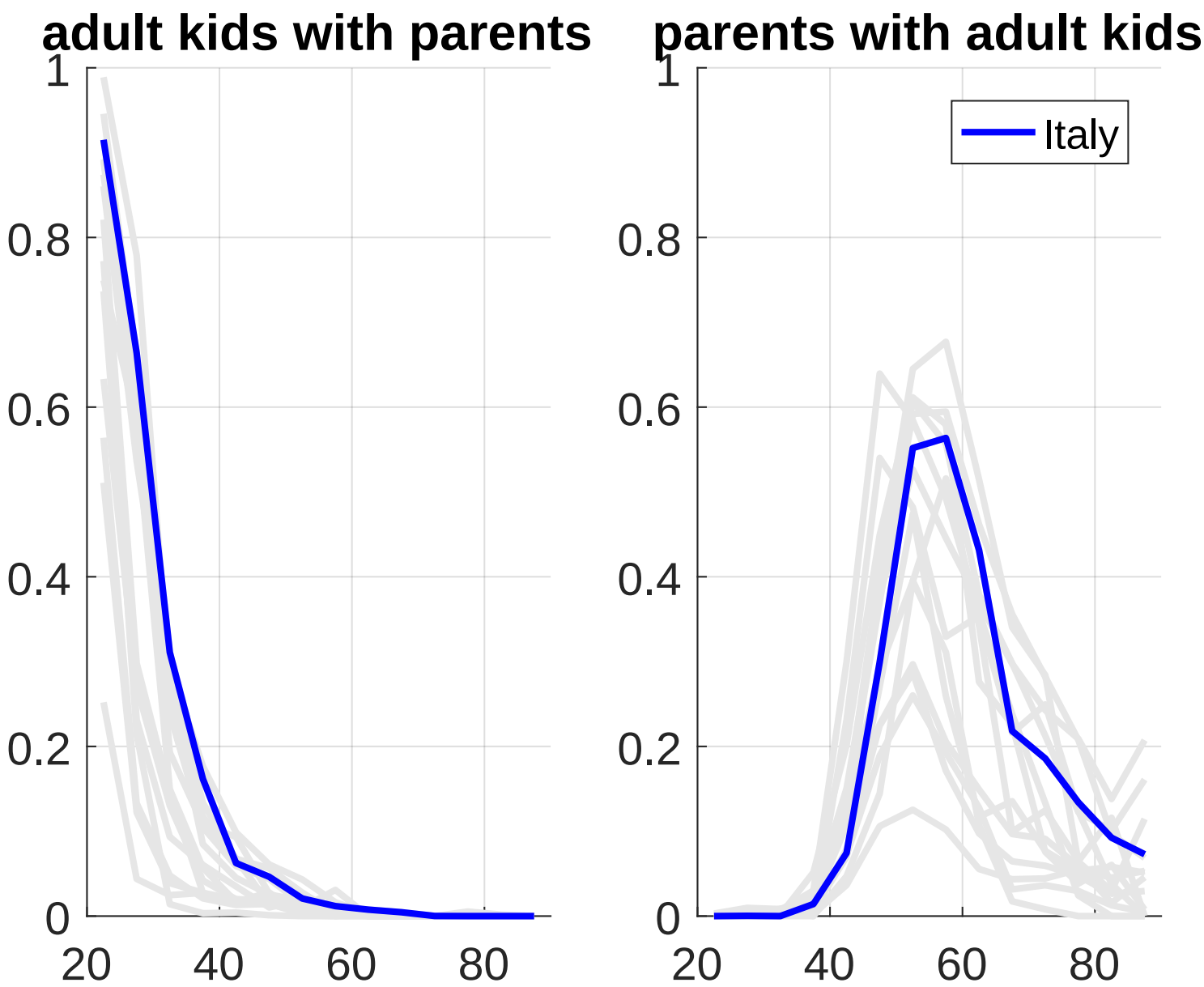
How old are adult children who live with their parents?



How old are parents who live with adult children?



Differences across countries in cohabitation



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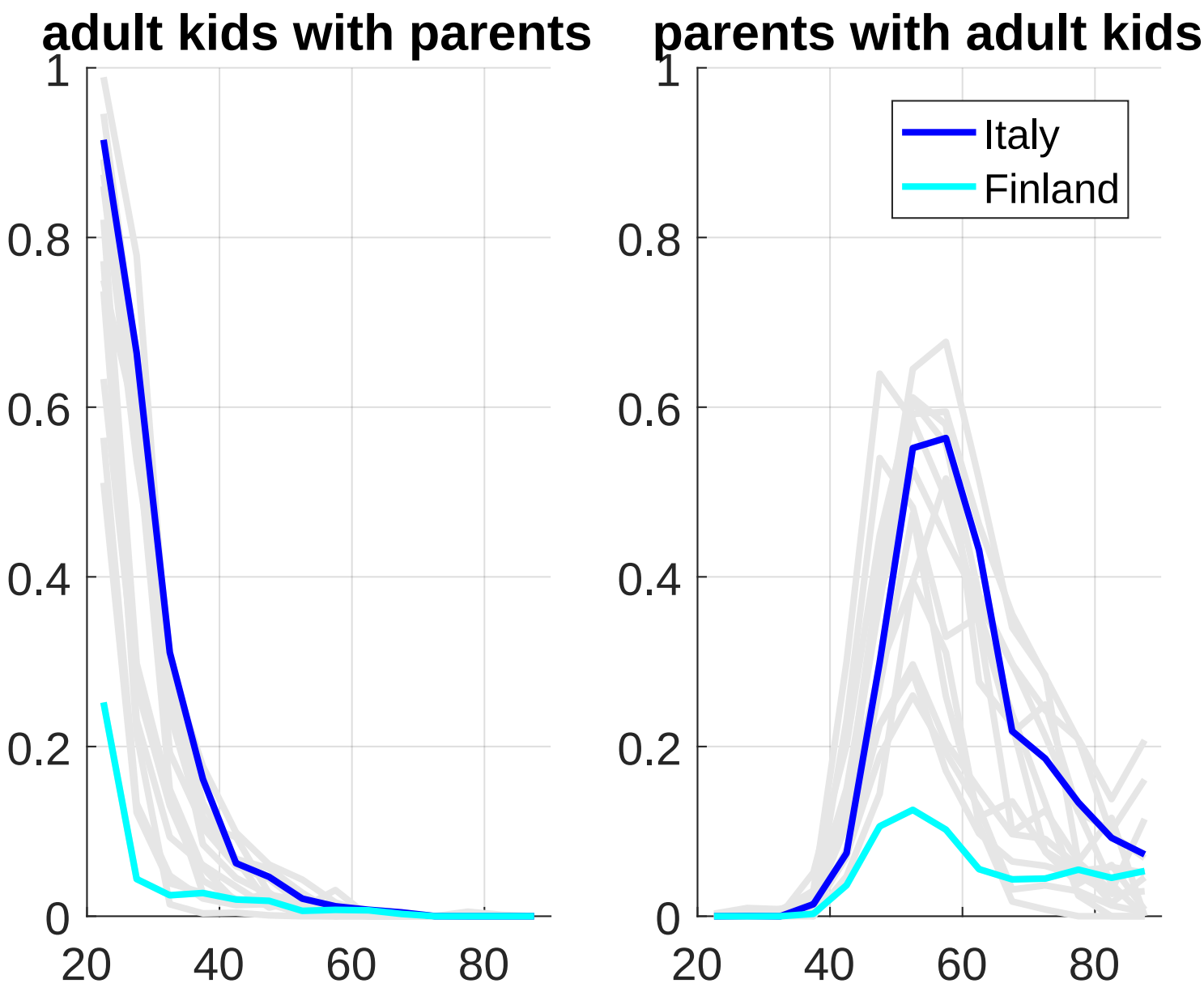


Preferences and technology

- 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 θ 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 τ and type θ

$$f(c, h, \tau, \theta) = c^{1-\alpha(\tau,\theta)} (\eta(\tau, \theta) h)^{\alpha(\tau,\theta)}$$

  - 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

$$-b \leq \lambda p h$$

  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 η in production of housing services depends on tenure τ
   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 (η, α) depends on tenure τ as well as type θ

2. desire to save depends on type θ

   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

$\rightarrow$ standard dynamic programming works

Dynamic programs

- single (couple) who remain single (couple)

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

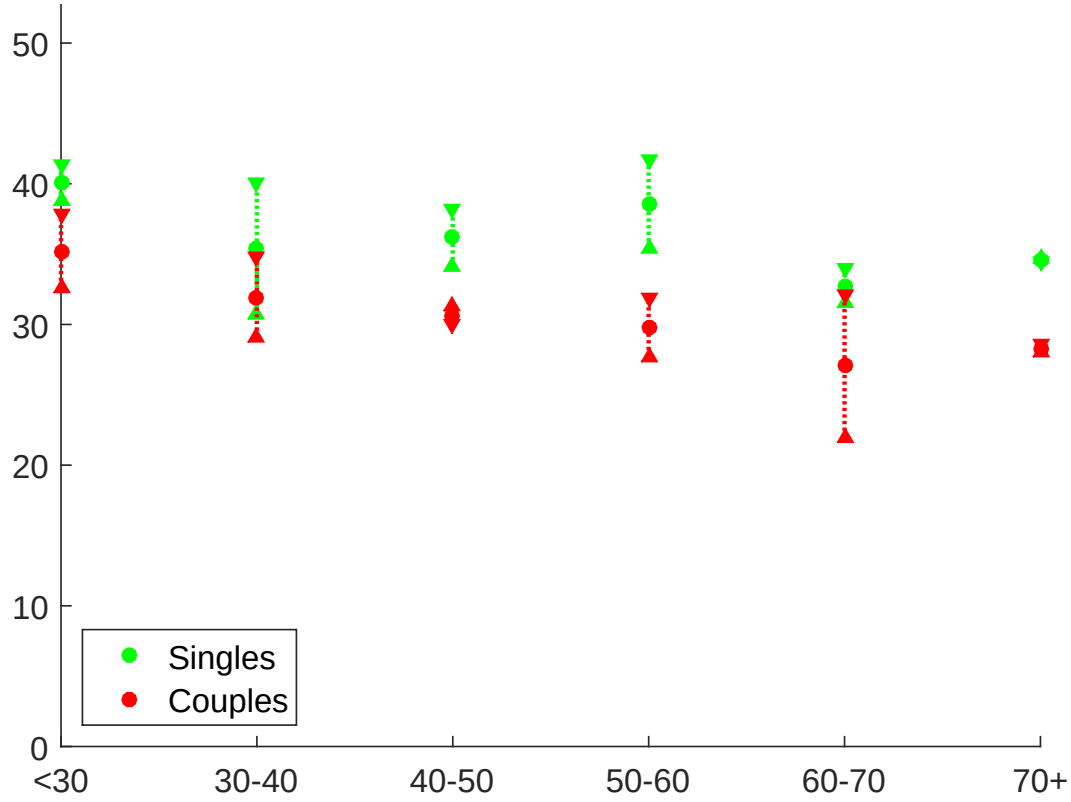
rent	own
$c + p_r h + b = a$	$c + ph + b = a$
$a' = Rb$	$a' = Rb + p(1-\delta)h$
$b \geq 0$	$-b \leq \lambda ph$

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

$$c + p_r h + a'/R = a$$
$$a' \geq (1 - \delta - \lambda R) ph$$
$$a' \geq 0$$

- 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 $\pm$ 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

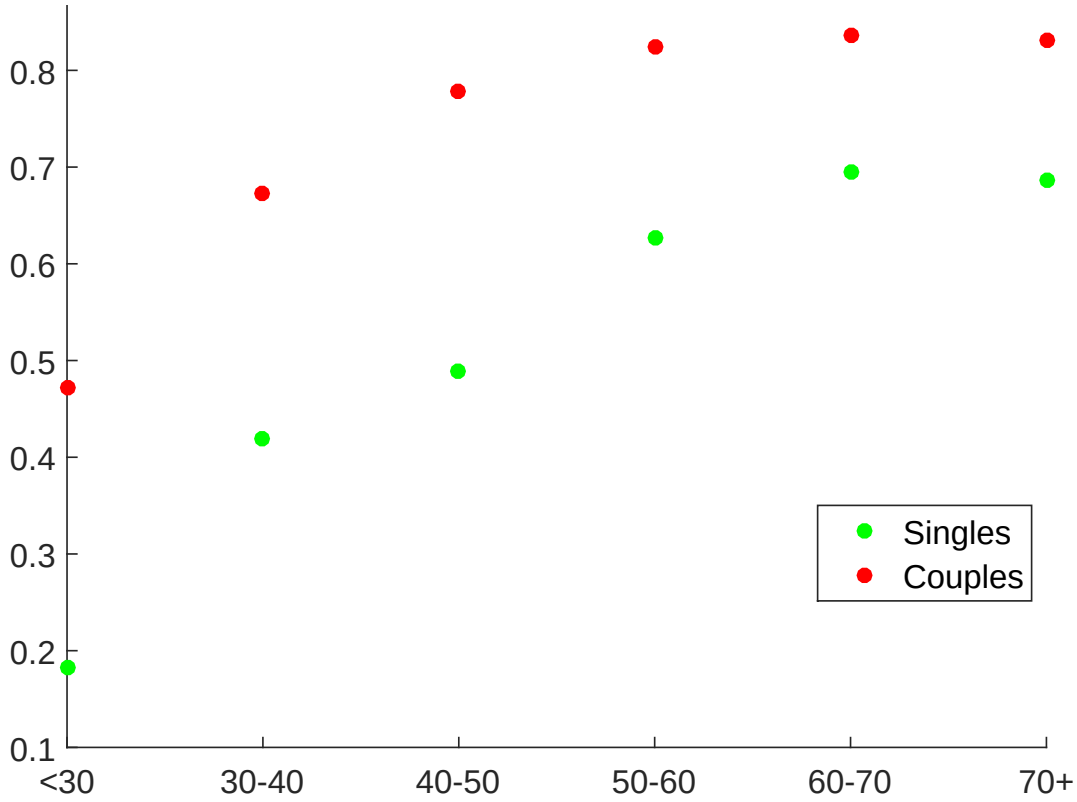
Middle age

- 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 η
  - agents differ in discount factor $\beta(\theta)$
- proposition: threshold β^* s.t. $\beta(\theta) \geq \beta^*$ own, otherwise rent.
  threshold β^* is increasing in housing intensity α.
- intuition:
  - trade-off: productivity η 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 θ
  - 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 α.
- intuition:
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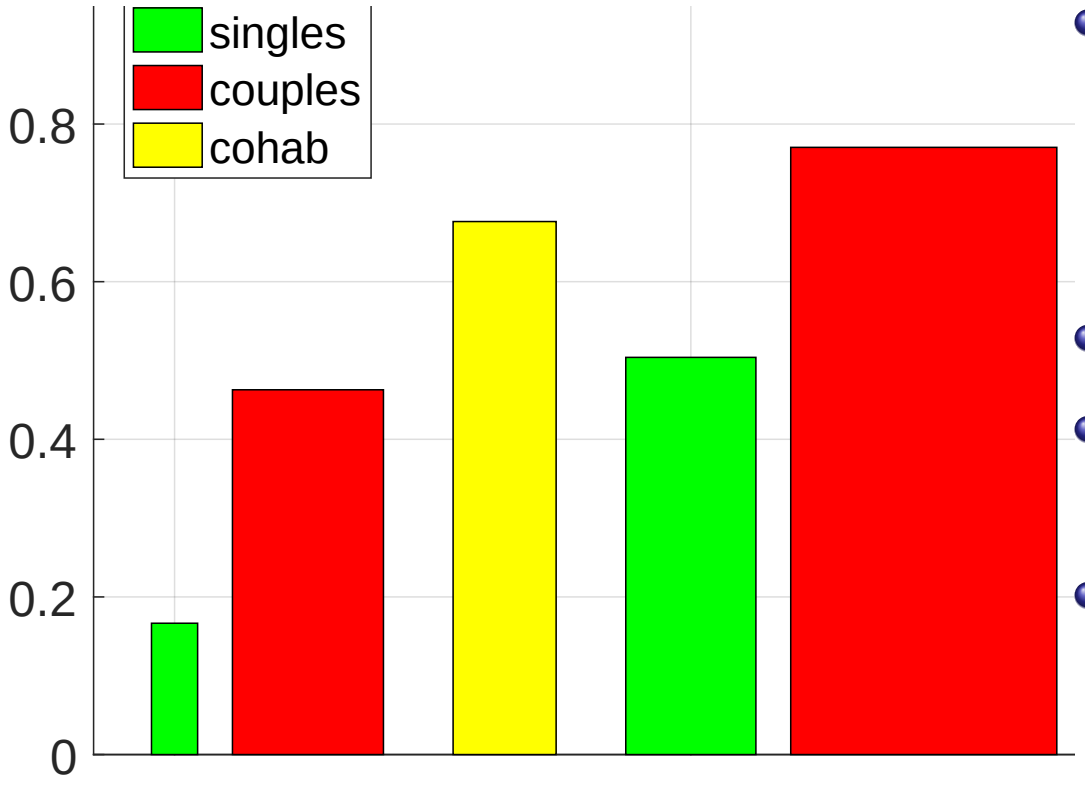
Young age

- 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

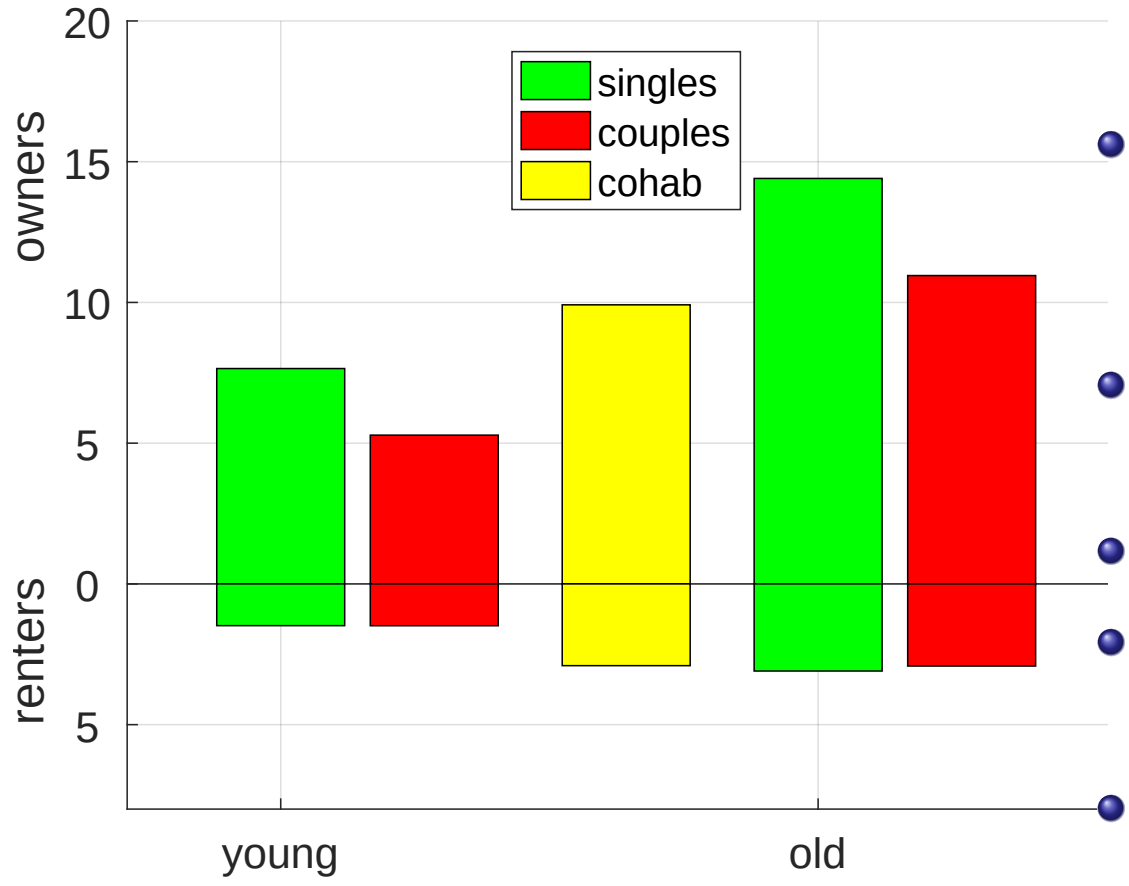
- what if both rental market and living with parents are available?
  - depends on productivity of renting and owning, living parents
- young and temporarily poor rent or live with parents
  - low desire to save
  - evidence from probit for cohabitation:
    large negative coefficient on income by adult 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 $\surd$
- 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



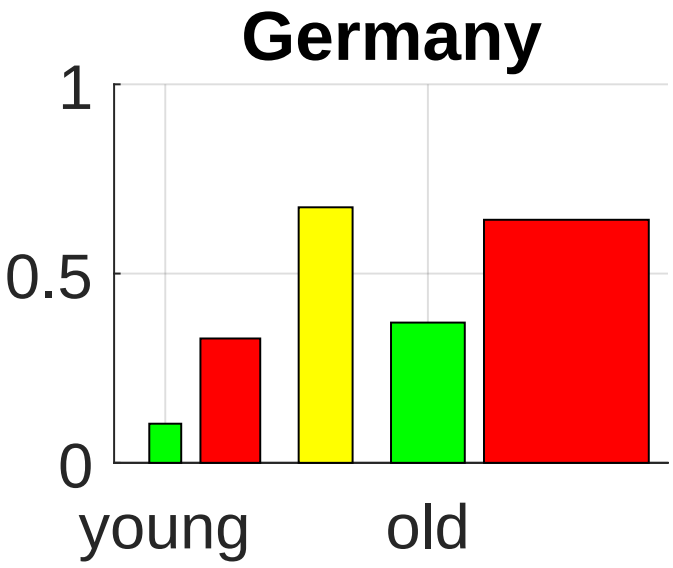
- same width,
  sav/inc in each group
  owners up, renters down
- owners save more than renters
- old save more than young
- single owners save more than couples
- cohabiters save in between

What explains cross-country differences?

Two forces

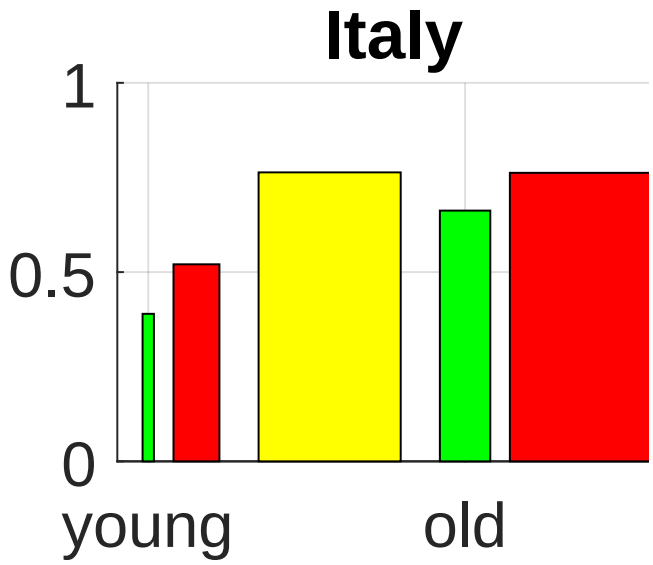
- worse rental markets: lower η when renting)
  - standard effect: higher ownership, higher savings
  - with families: fewer young and single households, more cohabitation
  - extreme case: $\eta = 0$, everyone lives in owner-occupied housing, few rich young own their own home
- better credit markets: higher λ
  - 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

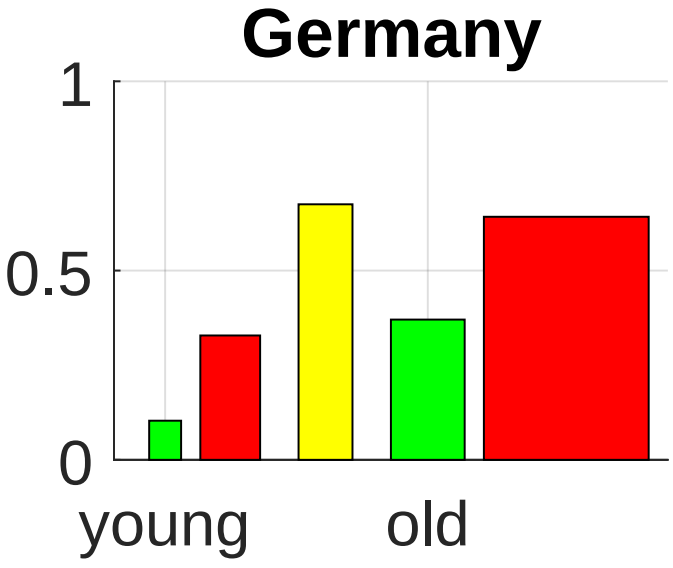
Ownership rates across countries



- country with lowest ownership

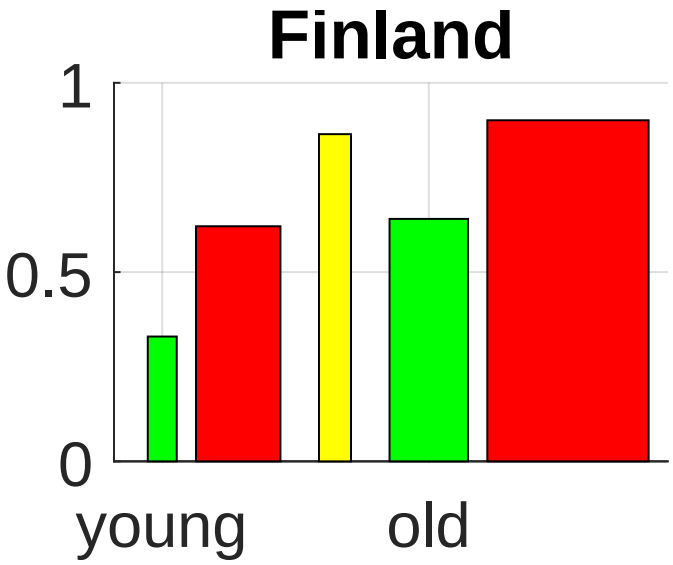
Ownership rates across countries

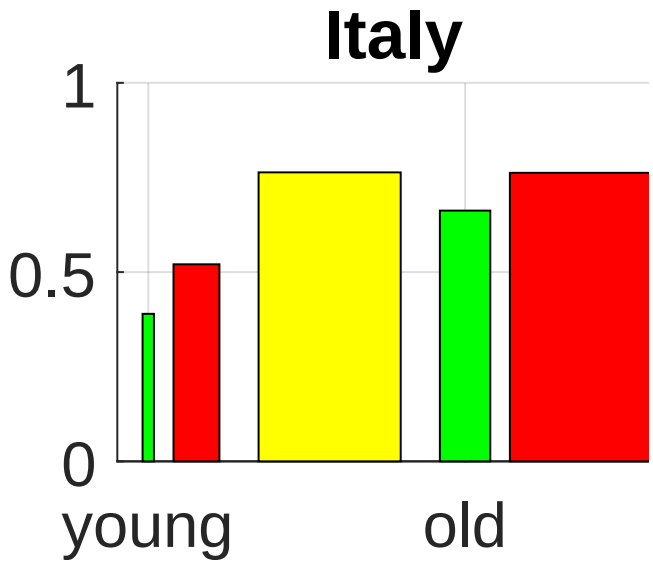


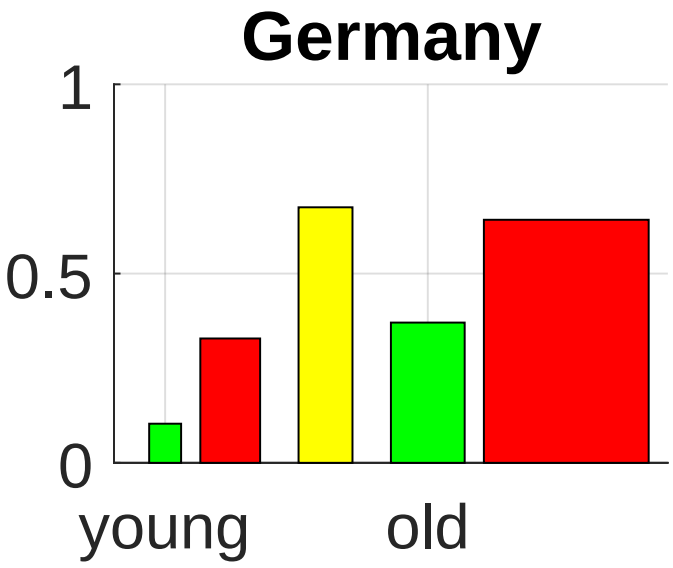


- country with high cohabitation
- high ownership for young and old, including singles
- consistent with bad rental market
- fewer young households are formed, their contribution to overall ownership is similar to Germany

Ownership rates across countries

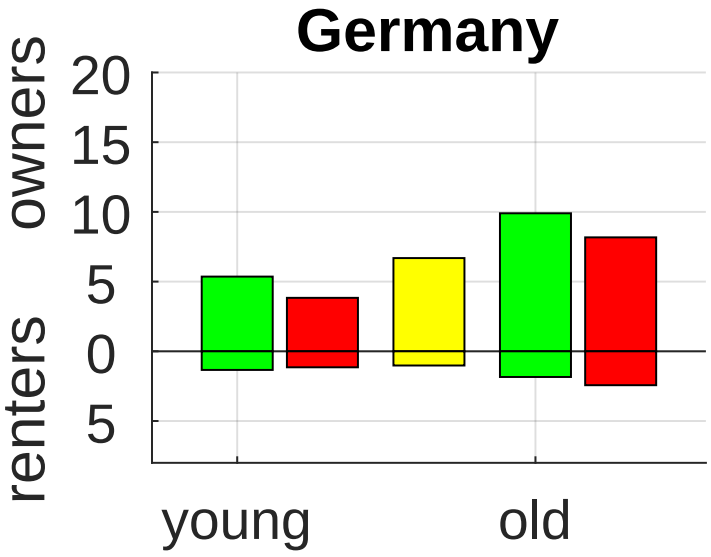






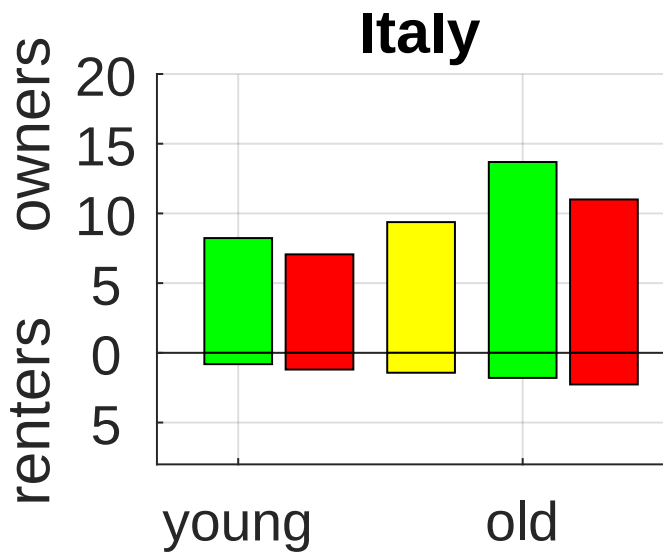
- country with lowest cohabitation
- high ownership, also for young/single
- consistent with good credit market
- many young households are formed, as in Germany where they rent

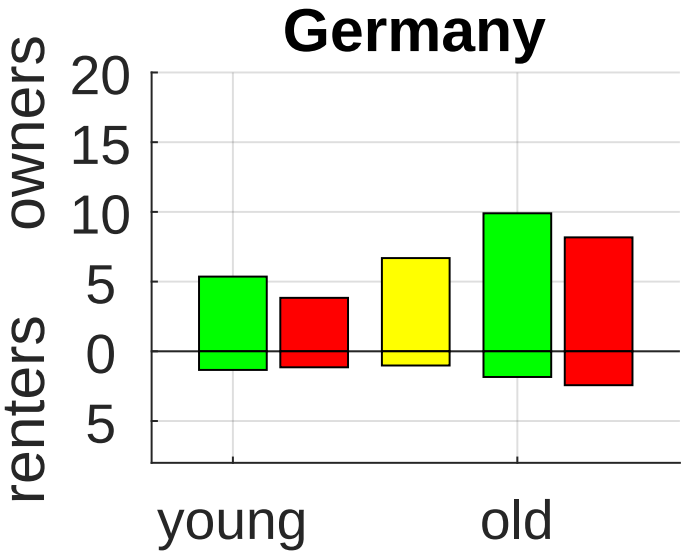
Savings/income across countries



- patterns consistent with France
- low savings across the board

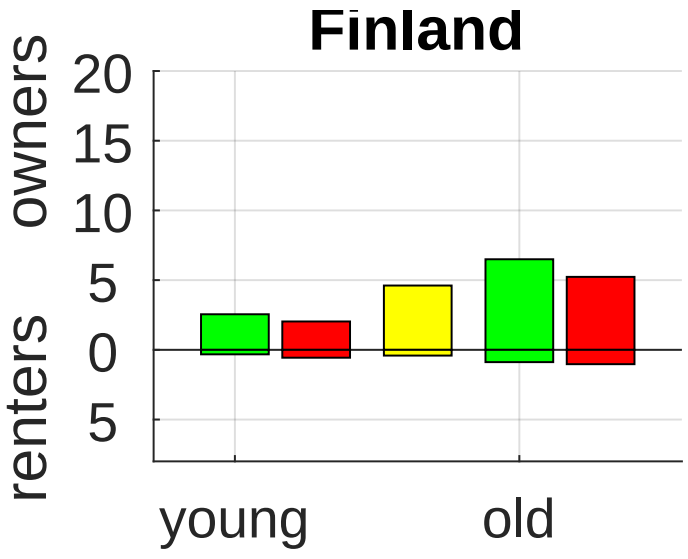
Savings/income across countries

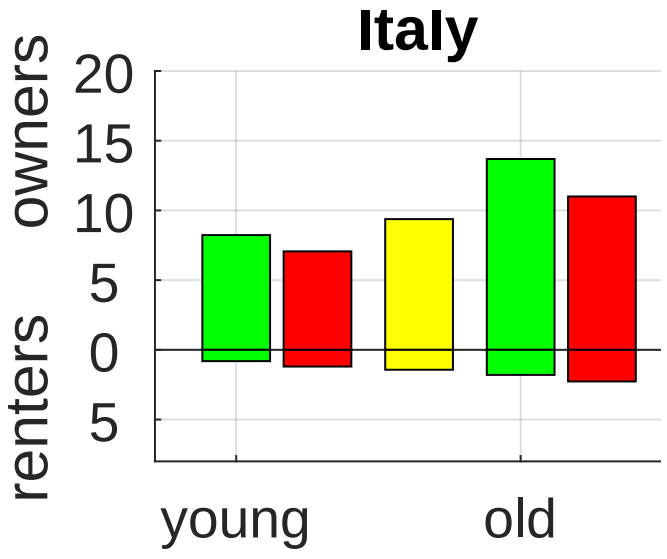


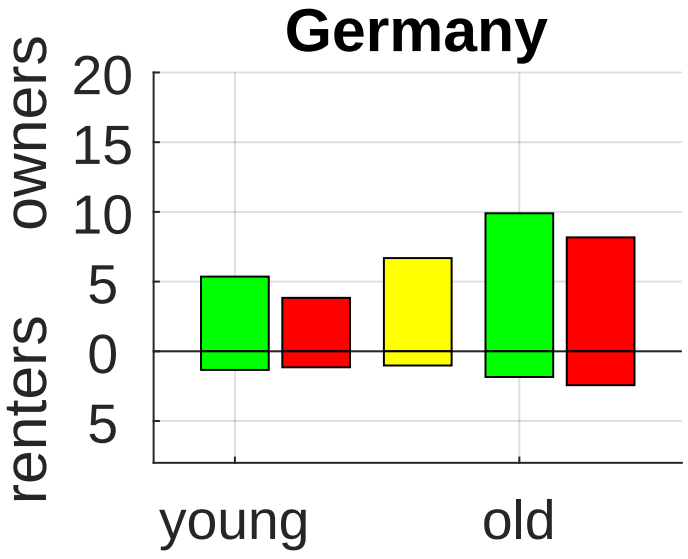


- higher savings in Italy,
  also for young owners and singles
- consistent with bad rental market

Savings/income across countries

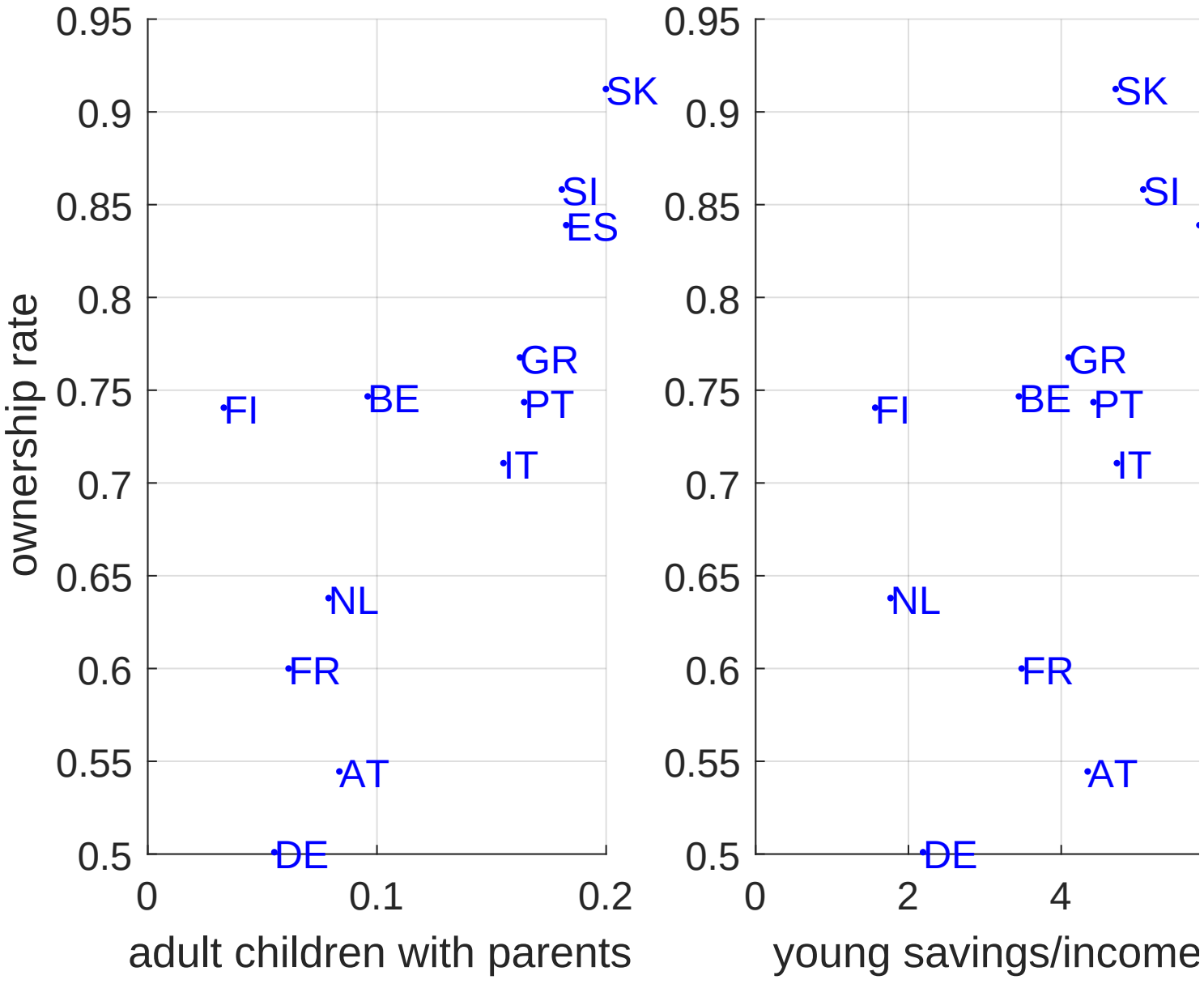






- lower savings in Finland, especially for young
- consistent with good credit market

Cross country evidence



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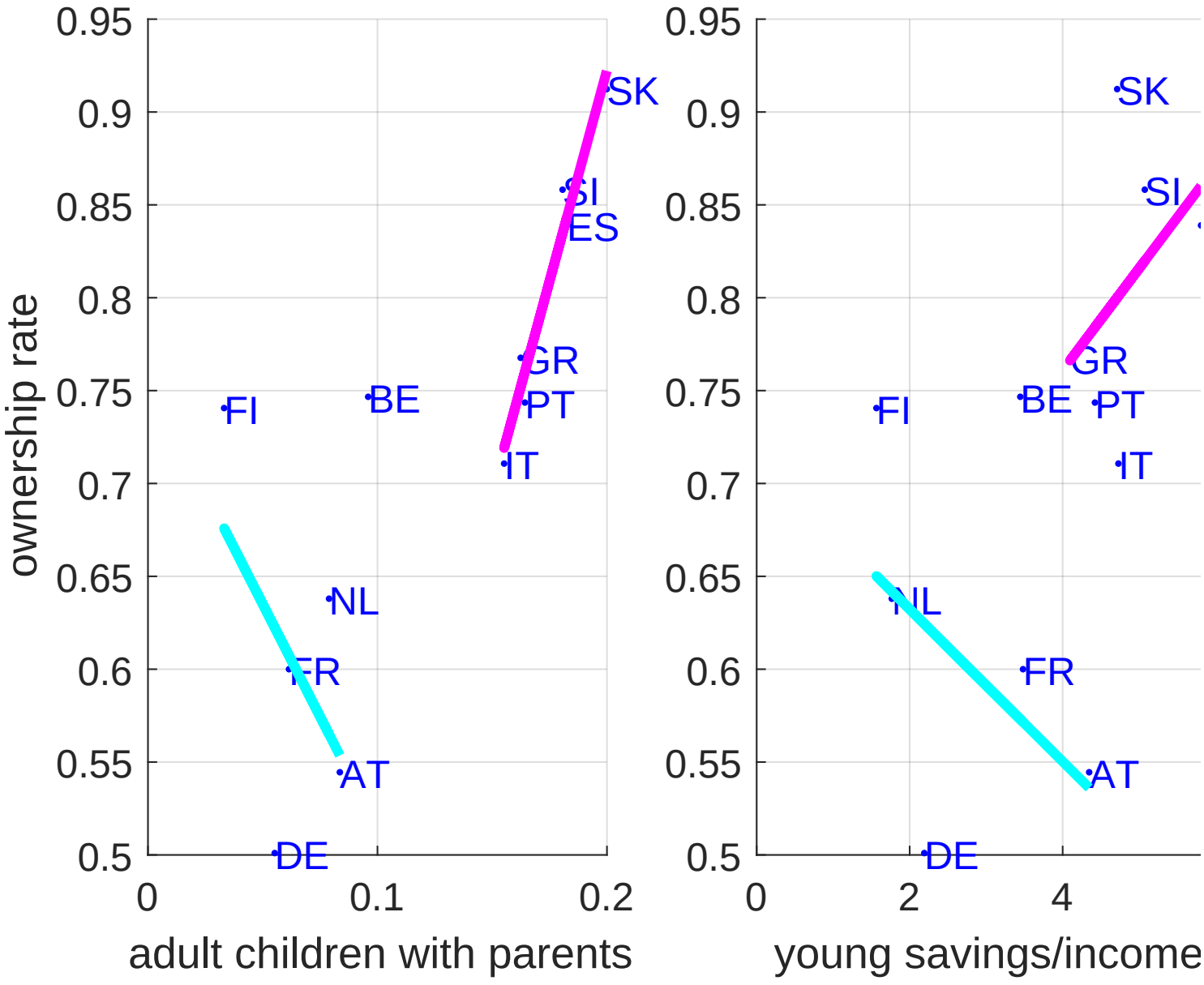

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