Strategic Interactions between Parents and Daughters: Co-residence, Marriage and Intergenerational Transfers in Japan

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Background

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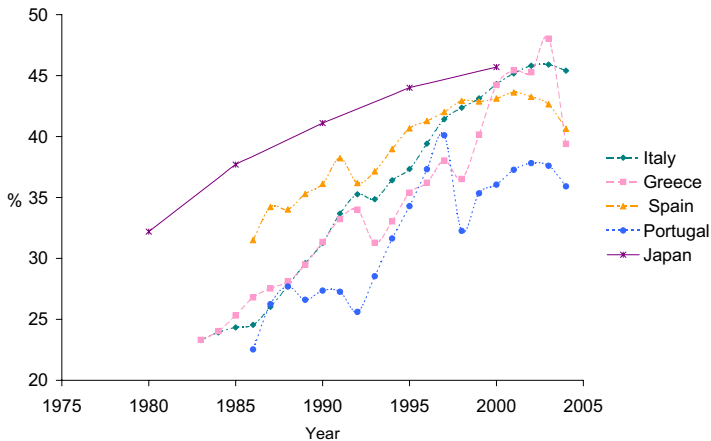

Figure: Young adults aged 25-34 living with parent(s)

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This study analyzes the microeconomic determinants of co-residence decisions.

Marriage Market Conditions

	Italy	Japan	United States
Never married	81%	65%	28%
Married	5%	16%	5%

Table: Young adults aged 25-34 residing with parents in 2000

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- ▶ Never married adults are more likely to reside with their parents than married adults in all countries.
- ▶ The proportion of married adults living with parents is substantially higher in Japan.

Housing Market Conditions

- Large heterogeneity even within high-housing-price group of countries

Japan	United Kingdom
41%	11%

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32%	55-60%

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- Legal restriction affecting rental market in Japan

The Role of Parents

- The frequency of intra-household transfers of money dominates that of inter-household transfers in Japan.

Living with parents	20%
Living alone	9%

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- Transfers of money from children to parents

Living with parents	60%
Living alone	30%

Table: Percent singles aged 20-34 handing some money to parents in Japan 2000

This paper develops and estimates a model of co-residence decisions.

Model

- ▶ Economic Agents
    - ▶ Parents
    - ▶ Never-married Daughter

Model

- Economic Agents
  - Parents
  - Never-married Daughter
- Economic Environment
  - Marriage Market
    - Matching probability
  - Housing Market:
    - If she lives alone, the daughter pays rent for the housing.
    - If she lives with parents, the daughter pays imputed rent to parents.

- Tastes
  - Parents are concerned about marriage outcome of their daughter.
  - Parents and their daughter respectively have (potentially different) preferences for co-residence.
  - Altruism within the family
    - The parents care about their daughter's welfare (consumption).
    - The daughter cares about her parents' welfare (consumption).

- Decision making about marriage, co-residence, and monetary transfers
- Bargaining game
  - Possibility of different preference for intergenerational co-residence and marriage (sometimes leads to conflicting interests) between parents and children

Preferences

- ▶ Daughter's Utility

$$W(c^F, c^P, q, \gamma, \epsilon_{xq}^F, type)$$
$$= \max\{C^F(c^F, c^P, q, \gamma, \epsilon_{mq}^F, type), S^F(c^F, c^P, q, \epsilon_{sq}^F, a, type)\} \tag{1}$$

  - ▶ C^F (utility of married daughter) depends on c^F (daughter's consumption), c^P (parents' consumption), q (co-residential status), γ (matching quality), ϵ_{mq}^F (random preference shock of daughter) and $type$ (family type).
  - ▶ S^F (utility of single daughter) depends on c^F (daughter's consumption), c^P (parents' consumption), q (co-residential status), ϵ_{sq}^F (random preference shock), a (age) and $type$ (family type).

► Parents' Utility

$$U^P(c^P, c^F, t^F, x, q, \epsilon^P_{xq}, type) \qquad (2)$$

  ► U^P (utility of parents) depends on c^P (parents' consumption),
    c^F (daughter's consumption), t^F (net transfers), x (marital
    status of daughter), q (co-residential status), ϵ^P (random
    preference shock) and $type$ (family type).

- ▶ Two stages
  1. Parents make an offer of net transfers contingent on their daughter's marital and residential status.

  $$t^F = (t^F_{s0}, t^F_{s1}, t^F_{m0}, t^F_{m1}, t^F_{m2})^\top \in \mathbb{R}^5$$

     - ▶ The transfer amount can be *negative* or positive.
  2. The daughter makes a decision about marriage (if she has an marriage offer) and co-residence.

     $o \in \{A \text{ (accept)}, R \text{ (reject)}\}$,
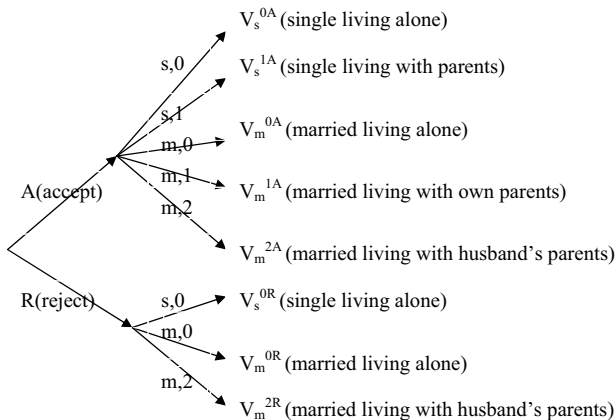 $x \in \{s \text{ (single)}, m \text{ (married)}\}$,
     $q \in \{0 \text{ (alone)}, 1 \text{ (with own parents)}, 2 \text{ (with husband's parents)}\}$
     $D = \{(A, s, 0), (A, s, 1), (A, m, 0), (A, m, 1), (A, m, 2),$
     $\quad (R, s, 0), (R, m, 0), (R, m, 2)\}$.

     - ▶ When rejecting the offer, there is no monetary transactions between parents and children. They do not co-reside.

2nd Stage

V_s^{0A} (single living alone)

V_s^{1A} (single living with parents)

V_m^{0A} (married living alone)

V_m^{1A} (married living with own parents)

V_m^{2A} (married living with husband's parents)

V_s^{0R} (single living alone)

V_m^{0R} (married living alone)

V_m^{2R} (married living with husband's parents)

s,0

s,1

m,0

m,1

m,2

A(accept)

Daughter

R(reject)

s,0

m,0

m,2

Realization

y^P: Earnings of parents (random)
y^F: Earnings of daughter (random)
ε^p: Preference shocks of parents (random)

Parents   **Daughter**

Actions

Realization

y^p: Earnings of parents (random)
y^F: Earnings of daughter (random)
ε^p: Preference shocks of parents (random)

y^M: Earnings of male (random)
t^M: Contingent net transfers from male's parents (random)
γ: Matching quality (random)

Parents   **Daughter**

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Realization

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y^M: Earnings of male (random)
t^M: Contingent net transfers from male's
    parents (random)
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Parents   **Daughter**

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t^F: Contingent net transfers

Realization

y^p: Earnings of parents (random)
y^F: Earnings of daughter (random)
ε^p: Preference shocks of parents (random)

ε^F: Preference shocks of daughter (random)

y^M: Earnings of male (random)
t^M: Contingent net transfers from male's
   parents (random)
γ: Matching quality (random)

Parents

Daughter

Actions

t^F: Contingent net transfers

First Stage   **_Second Stage_**

Realization

y^P: Earnings of parents (random)
y^F: Earnings of daughter (random)
ε^P: Preference shocks of parents (random)

y^M: Earnings of male (random)
t^M: Contingent net transfers from male's
     parents (random)
γ: Matching quality (random)

ε^F: Preference shocks of daughter (random)

Actions

Parents

t^F: Contingent net transfers

Daughter

o: Accept/Reject
x : Marital choice
q : Residential choice

Additional settings

- Married couple decides consumption levels in a Nash bargaining game.
  - The budget constraint is pooled under the cooperative marriage.
  - Under non-cooperative marriage, a husband and a wife have separate budgets and each has to pay half of the rent.

$\Rightarrow$ Consumption of single daughters and that of married daughters may differ.

► Unobserved Cultural Heterogeneity
Combination of a female's family type and a male's family type $\in \Psi \times \Psi$

$\Psi \equiv \{$ modern family, traditional family$\}$

Female's family \ Male's family	Modern	Traditional
Modern	A	C
Traditional	D	B

If belonging to a traditional family, available co-residence choices are restricted depending on their siblings.

  ► (Example) C: A young female is from a modern family and a young male is from a traditional family. Young couple can not choose to live with the husband's parents if he is not the eldest son.

Data

JPSC (Japanese Panel Survey of Consumers), 1993-2001
Random samples on women in Japan (all 47 regions);

- 1993: age 24–34, sample size=1500 (cohort A)
- 1997: age 24–27, sample size=500 (cohort B)
  - Marital status
  - Living arrangements
  - Region
  - Siblings and siblings' gender composition (respondents, husbands)
  - Education
  - Income (respondents, parents, husbands)
  - Financial transfers between parents and children in both directions regardless of living arrangements
  - Housing rents

Estimation results
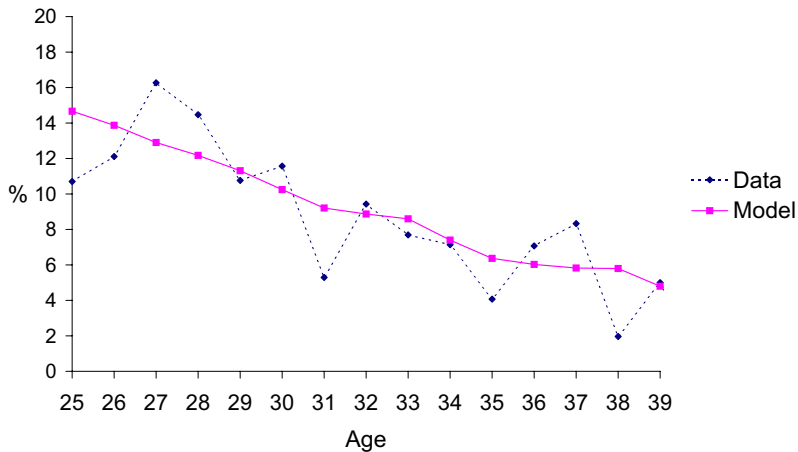
Figure: Percent getting married by age
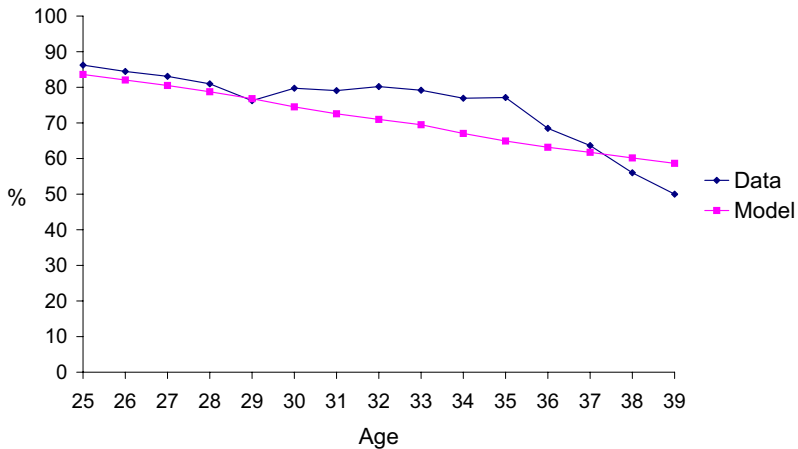
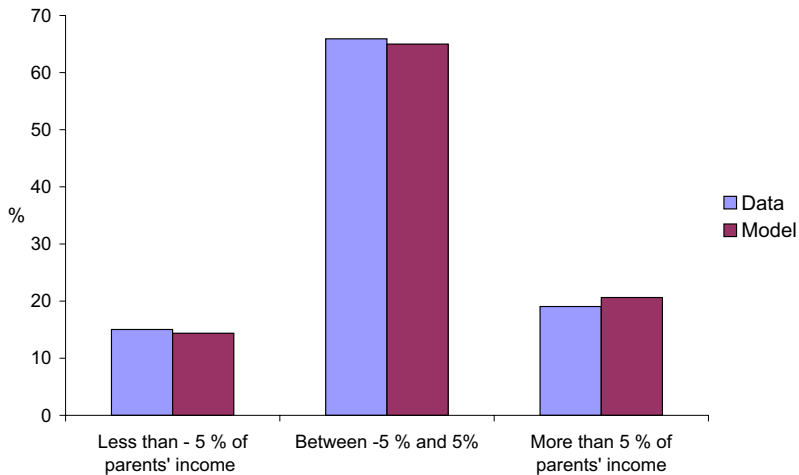Figure: Percent living with parents among women staying single by age

Figure: Net monetary transfers from parents to daughters

Counterfactual Policy Experiments

- ► (A, B) Parental involvements are shut down in order to assess how strategic behavior on the part of parents affects co-residence and marriage.
- ► (C) The government supports matching services to raise matching probability.
- ► (D) The government provides housing subsidies to young people living alone.

Counterfactual Policy Experiments

(A) Option to live with parents, but parents don't affect daughters' choices

- Zero *real* net transfers between parents and children
  - When parents and children (single daughters or married couples) live together, costs associated with co-residence arise. Children pay imputed rent to parents.

Note

- In the base model, parents offer transfers strategically. In the hypothetical world, the government financially supports only when young people suffer from low consumption. There is no strategic consideration for the government.

Results

- ▶ Quantitative impacts
  - ▶ Co-residence increases by 6.2 percentage points (from 66.6% to 72.8%).
    - ▶ Co-residence conditional on singles increases by 5.1 percentage points (from 71.7% to 76.8%).
    - ▶ Co-residence conditional on married increases by 2.6 percentage points (from 23.0% to 25.6%).

- ▶ Reason why co-residence increases in the hypothetical world
  - ▶ There is net monetary gain from co-residence in terms of rent (market rent - imputed rent). Parents and children divide the surplus, hence children pay more than imputed rent to parents when co-residing in the base model.

The average percentage of getting married *decreases* by 2.6 percentage points (from 10.5% to 7.9%).
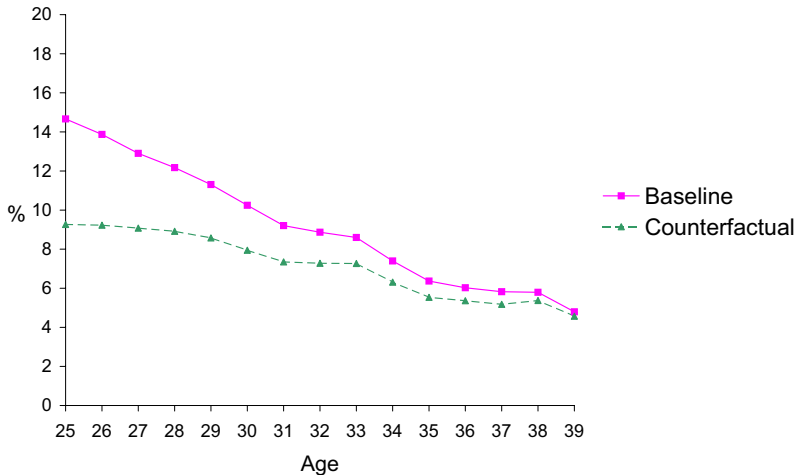

Figure: Percent getting married by age

- ▶ Reason why daughters become less likely to get married
  - ▶ Parents expect that their daughters' consumption is higher when daughters get married. Parents are concerned about daughters' consumption.
    - ▶ (1) Men's income is higher than women's income on average. (2) Housing rent per person is less expensive for married couples than for singles.
  - ▶ Parents are endowed with relatively strong preference for their daughters' marriage.

- ▶ Quantitative impact on welfare
  - ▶ The average welfare of parents decreases by 81.4%.
  - ▶ The average welfare of daughters decreases by 88.4%.

- ▶ Reason why welfare of parents decreases
  - ▶ Parents offer net transfers to try to manipulate their daughter's choice and to obtain higher utility.
- ▶ Reason why welfare of daughters decreases
  - ▶ Net monetary transfers from parents to their daughter are especially larger when there is a conflict between parents' preference and daughter's preference. Put it differently, the daughter chooses the option she originally does not prefer only when parents give a lot of money contingent on it, and the option gives her higher utility.

Counterfactual Experiment

(B) No option to live with parents, no monetary transfers

- ▶ No monetary transaction between parents and children
- ▶ No option for parents and children to co-reside

- ▶ Quantitative impacts
  - ▶ The percentage of getting married increases by 2.6 percentage points (from 10.5% to 13.1%).
    - ▶ 4.5 percentage points (from 13.6% to 18.1%) in the young age group
    - ▶ 4.7 percentage points (from 15.4% to 20.1%) in the group of low income of daughters

- ▶ Reasons why daughters are more likely to get married
  - ▶ Daughters obtain higher utility from getting married and living alone than from staying single and living alone.
  - ▶ (1) Men's income is higher than women's income on average. (2) Housing rent per person is less expensive for married couples than for singles. The combined monetary benefit from getting married is larger than the social benefit women would receive if staying single.

- ▶ Quantitative impact on welfare
  - ▶ The average welfare of parents decreases by 80.3%.
  - ▶ The average welfare of daughters decreases by 88.1%.

- ▶ Reason why welfare of parents and daughters decreases
  - ▶ There is net monetary gain from co-residence. In other words, imputed rent is much lower than market housing rent, and parents and children can save a lot in terms of housing rent when they live together.
  - ▶ Daughters obtained very high utility from single living with parents.

Background of counterfactual policy experiments

- ▶ Co-residence and marriage are important issues in Japan.
    - ▶ Young people tend to stay single and live with their parents.
- ▶ A number of government policies have been recently instituted to encourage earlier marriage and household formation.
    - ▶ The average age of first marriage has risen over the last few decades.

Year	1975	2003
Males	27.0	29.4
Females	24.7	27.6

    - ▶ The average number of childbirth has fallen to 1.25 in year 2005.
    - ▶ For example, the government supports the matching services industry.
        - ▶ In the past, parents and community encourage matching of young people. Recently, the opportunity is scarce.
        - ▶ The current quality of matching services provided by private companies is low. $\Rightarrow$ The government introduces the approval system.

Counterfactual Experiment

(C) Government intervention in the marriage market

▶ The matching probability (marriage offer probability) increases by 5 percentage points.

- ▶ Quantitative impacts
  - ▶ Marriage rate increases by 2.4 percentage points (from 10.5% to 12.9%).
  - ▶ Co-residence rate *decreases* by 1.4 percentage points (from 66.6% to 65.2%).
    - ▶ Co-residence conditional on singles decreases by 0.3 percentage points (from 71.7% to 71.4%)
- ▶ Reason why co-residence conditional on singles decreases
  - ▶ Parents' transfers become more strategic rather than altruistic when daughters' consumption levels are guaranteed to reach certain levels due to the marriage opportunities and the expected financial benefits.
    Knowing that daughters prefer to stay single and to co-reside, some parents strategically charge (more) money to their daughters contingent on single living with them. Therefore, the co-residence rate conditional on staying single decreases.

(D) Housing subsidy program

▶ The government provides financial supports of a half of market housing rent to young people if they live alone.

Results

- The fraction of staying single and living with parents decreases by 2.4 percentage points. (Elasticity=0.1)
  - The impact is 4.7 percentage points in the group of high housing rent and low parental income.

- Net monetary transfers from parents decrease when daughters live alone, and increase when they live with parents.

	Counterfactual	Base	Change	Elasticity
Singles				
live alone	4.74%	6.06%	-1.32	0.44
live with parents	30.00%	25.02%	4.97	-0.40

Table: Net monetary transfers from parents more than 5% of parental income

- ▶ Reason why parents become to provide more net monetary transfers contingent on co-residence
  - ▶ Lowering rent makes the daughter's relative utility of living alone higher. Parents have preference for co-residence.
- ▶ Reason why people in the group of high housing rent and low parental income became relatively less likely to co-reside than others
  - ▶ The amount of housing subsidies is larger in the areas of high housing rent. Parents with low income cannot provide large transfer amounts.

Conclusion

- If no parental strategic monetary transfer take places, the co-residence rate increases by 6.2 percentage points, and the marriage rate declines by 2.6 percentage points.

- If there is no intergenerational transfer transactions (both in-kind and monetary), the marriage rate increases by 2.6 percentage points, especially in the young age group by 4.5 percentage points.

- Intergenerational transfers enhance welfare of both parents and daughters.

- If matching probability increases by 5 percentage points due to the government intervention to the marriage market, marriage increases by 2.4 percentage points, and co-residence *decreases* by 1.4 percentage points.

- Even if the government provides housing rent subsidies of a half of market rent, the fraction of young women staying single and living with parents decreases only by 2.4 percentage points.