Living at Home: Non-Market Housing and Labour Market Risk

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Introduction

New empirical evidence (Health and Retirement Study)

- Children who lose their job are more likely to move home with parents
  - NEW Effect is present both at young adulthood and into middle age
  - Kaplan (2012): evidence for men 17-22, NLSY97
- Effect is robust to controlling for income, eldercare, and parent characteristics

Research questions

1. How does coresidence affect job market search among adult children?
2. How does coresidence affect welfare from unemployment insurance?

Approach and Findings

Approach

- Quantitative lifecycle model of job search and coresidence

Findings

- Children are more likely to move home when transitioning into unemployment
  - NEW Observed for children into middle age
- Welfare increases from coresidence are largest at low levels of UI

HRS Data Selection: Definition of Cross-wave Flows

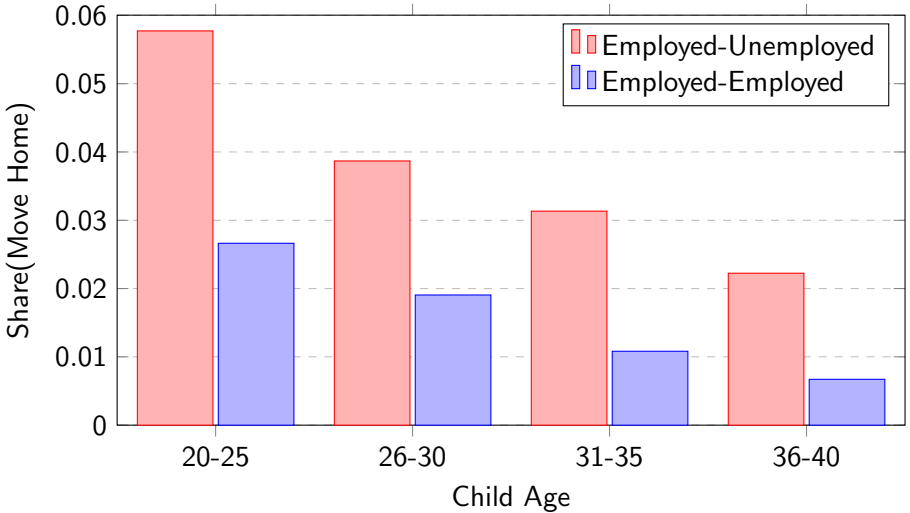
Employment: two types of job transitions

1. Employed-Employed: working in two subsequent waves
2. Employed-Unemployed: working in the previous wave but not in the current wave

Coresidence: child lives independently previously and coresides in the current wave

- If parent is a homeowner and child is not: child moves home
- If child is a homeowner and parent is not: child hosts parent
- Neither (or both) parent and child are homeowners: ambiguous coresidence

HRS: E-U children are more likely to move home at all working ages



NLSY97 Move Out Counterfactual

Probit: Average Marginal Effects on Share(Move Home)

Dependent variable: indicator for moving home after living independently

	Child Age			
Independent Variable	(1) 20-25	(2) 26-30	(3) 31-35	(4) 36-40
Employed-Unemployed	+100% ***	+117% ***	+150% ***	+77% **
Transfer from Parent	+31% *	+88% ***	+73% ***	+75% ***
Transfer to Parent	+46%	+3%	+127% ***	+76% *
Child Income				
<10K	*Base*			
10-35K	-55% ***	-24%	-127% ***	-121% ***
35-70K	-121% ***	-38%	-236% ***	-225% ***
70-100K	-69%	-47%	-257% ***	-224% ***
100K+	.	-45%	-268% ***	-241% ***
Child Gender (Female)	+15%	-14%	-82% ***	-60% **
Child Marital Status	-208% ***	-216% ***	-201% ***	-192% ***
Child Parental Status	+39%	-32% *	+55% ***	+4%

*** 99%, ** 95%, * 90%

Model Overview

- Overlapping generations model: lifecycle solved via backwards induction
- Consumers are heterogeneous productivity and assets
  - NEW option to move home with a parent
  - Assumed to be purely altruistic: no strategic interaction b/t parents and children
  - **Tradeoff:** can avoid housing costs but lose out on utility from living independently

- Wages are determined via piece-rate search
- Children choose:
  - Submarket (piece-rate) for search
  - Saving for next period
  - Whether to coreside or live independently

Algebra

Job Search

- Directed search in submarkets on age j, piece-rate ϕ, and worker productivity ϵ
- Den Haan matching function $M(u, v) = \frac{uv}{(u^\alpha + v^\alpha)^{\frac{1}{\alpha}}}$ with market tightness $\theta = \frac{v}{u}$

Worker:

- Find job at rate $f(\theta) = \frac{M(u,v)}{u}$
- Provide individual-specific productivity ϵ to the firm
- Earn wage as an after-tax share of output: $w = (1 - \tau)\phi\epsilon$
  - Proportional tax on output finances unemployment benefit

Firm:

- Hire worker at rate $q(\theta) = \frac{M(u,v)}{v}$ after paying posting cost κ_p
- Match is destroyed in each subsequent period with probability δ

Search Equilibrium

Worker's Problem (Age < 65)

$$U(j, a, \epsilon) = \max_{\phi, a', d_h} \frac{c^{1-\sigma}}{1-\sigma} + d_h \chi$$

s.t.

$$f(\theta(j, \epsilon, \phi))[1-\tau]\epsilon\phi + [1 - f(\theta(j, \epsilon, \phi))]b + (1+r)a = c + a' + d_h \kappa_h$$

Where:

- j: age
- ϵ: individual-specific productivity
- ϕ: match piece-rate
- $f(\theta(j, \epsilon, \phi))$: job-finding rate
- τ: proportional labour income tax
- b: unemployment benefit
- d_h: coresidence status; $d_h = 1$ if consumer lives independently, 0 otherwise
- κ_h: cost of housing
- χ: independence utility

Retiree's problem

Firm's Problem

$$\Pi(j, \epsilon, \phi) = \max_{\epsilon, \phi} q(\theta(j, \epsilon, \phi))(1 - \tau)(1 - \phi)\epsilon - \kappa_p$$

Where:

- $q(\theta(j, \epsilon, \phi))$: job-filling rate
- κ_j: cost of posting a vacancy

Government's Problem

Choose τ such that:

$$\int \tau\epsilon\phi \; d\omega_e(j, a, \epsilon, \phi) = \int b \; d\omega_u(j, a, \epsilon) + \int SS \; d\omega_r(j, a)$$

Where $\omega_e, \omega_u, \omega_r$ are the distributions for employed, unemployed, and retired consumers

Value Functions - Worker (Age < 65)

Value of search for a worker:

$$V^s(j,a,\epsilon) = \max_{\phi} \left\{ f(\theta(\epsilon,\phi)) V^e(j,a,\epsilon,\phi) + [1 - f(\theta(\epsilon,\phi))] V^u(j,a,\epsilon) \right\}$$

Value for an unemployed worker:

$$V^u(j,a,\epsilon) = \max_{a' \geq 0, d_h \in \{0,1\}} \left\{ \frac{[b + (1+r)a - a' - d_h \kappa_h]^{1-\sigma}}{1-\sigma} + d_h \chi + \beta V^s(j+1, a', \epsilon) \right\}$$

Value for an employed worker:

$$V^e(j,a,\epsilon,\phi) = \max_{a' \geq 0, d_h \in \{0,1\}} \left\{ \frac{[(1-\tau)\phi\epsilon + (1+r)a - a' - d_h \kappa_h]^{1-\sigma}}{1-\sigma} + d_h \chi + \beta[(1-\delta) V^e(j+1, a', \epsilon, \phi) + \delta V^s(j+1, a', \epsilon)] \right\}$$

Retiree Problem Firm Problem

Equilibrium

Given initial distributions of assets and productivity there is an equilibrium such that:

1. Workers solve their problem by choosing a submarket and coresidence arrangement
2. Firms face zero expected profits for each submarket in which they post
3. Government funds an unemployment benefit via a proportional income tax

Solution Algorithm | Consumer Value Functions | Firm Value Function

Calibration

Internal Parameters

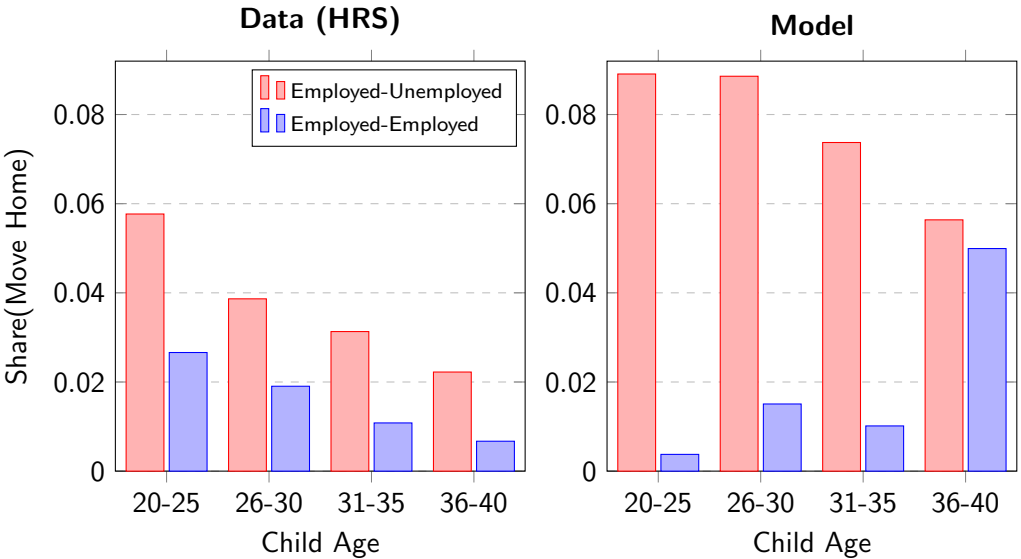
Parameter		Value	Target	Model	Data
κ_h	Cost of Housing	0.073	Rent-to-Income Ratio[1]	*0.126*	*0.120*
χ	Independence Utility	0.029	Coresidence Share	*0.110*	*0.104*
κ_p	Cost of Posting	1.271	Unemployment Share[3]	*0.048*	*0.042*
b	UI Benefit	0.139	Replacement Rate[2]	*0.416*	*0.430*
S	Social Security Benefit	0.237	SS-to-Income Ratio[4]	*0.354*	*0.347*
σ_ϵ	St. Dev. Productivity	0.216	SD Log Earnings[5]	*1.488*	*1.500*

External Parameters

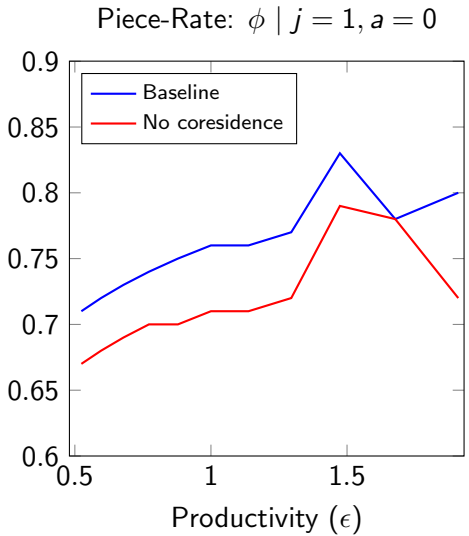
Parameter		Value	Source
α	Match Elasticity	1.270	Den Haan (2000)
δ	Destruction Rate	0.020	Share E-U (HRS)

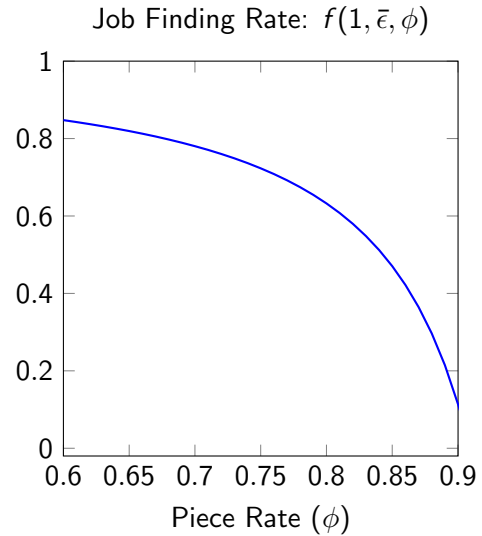
[1] American Community Survey (2023)
[2] Minneapolis Fed (2025)
[3] Bureau of Labor Statistics (2025)
[4] Social Security Administration (2025)
[5] Kuhn & Ríos-Rull (2013)

Model Validation: Share who Move Home



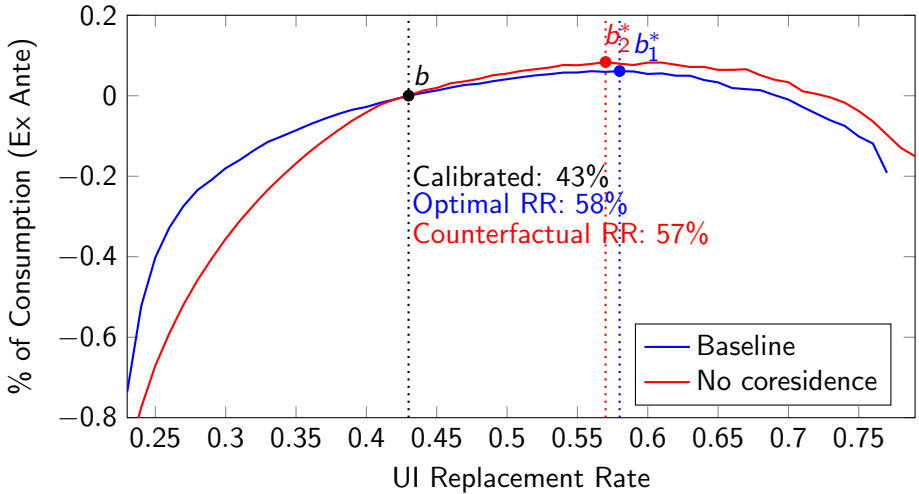
Coresidence Option and Job Search: New Consumers





- Coresidence option results in higher piece-rates and lower job finding rates

Optimal UI Replacement Rate: Consumption Equivalent Variation



Tax Rate

- Welfare benefits of coresidence are largest at low replacement rates

Conclusion

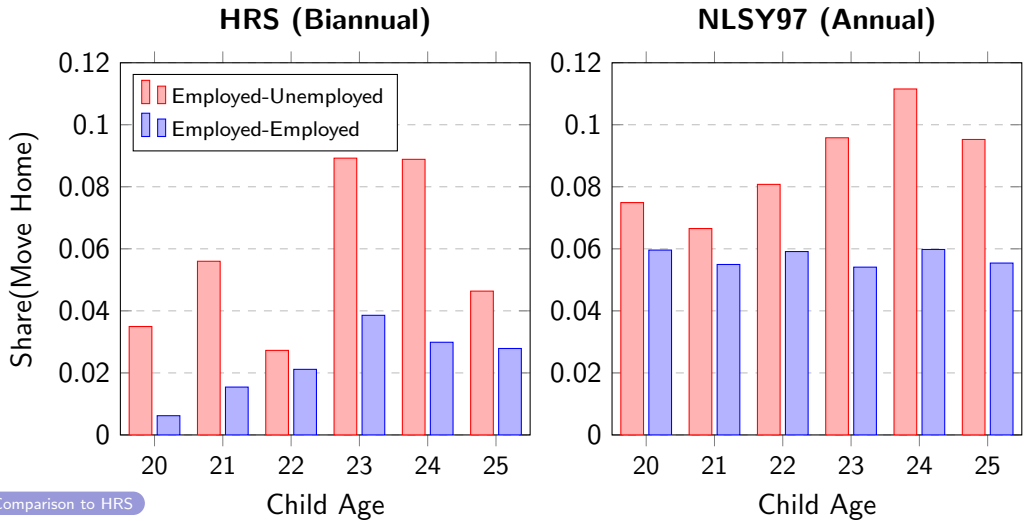
Empirical observation: E-U children are more likely to enter coresidence

Structural model:

1. Children who can coreside search in submarkets with lower job-finding rates
   - Relative cost of unemployment is lower due to the coresidence option
   - Coresidence allows children to avoid housing cost κ_h
2. Welfare benefits of coresidence are largest at lower unemployment benefits
   - Suggests coresidence and UI are complementary insurance mechanisms

Thank you

HRS v. NLSY97: E-U young adults are more likely to move home



Comparison to HRS
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HRS v. NLSY97

Health and Retirement Study (1998-2018):

- Biannual frequency, ages 18-45
- Categorical child income, no unemployment benefits
- Coresidence and transfers in all years

NLSY97 (1998-2021):

- Annual frequency, ages 18-42
- Child income, employment, and unemployment benefits
- **Key variables:**
  1. Coresidence: available until 2009 (age 26)
  2. Transfers: available until 2002 (22); extensive margin until 2011 (age 32)

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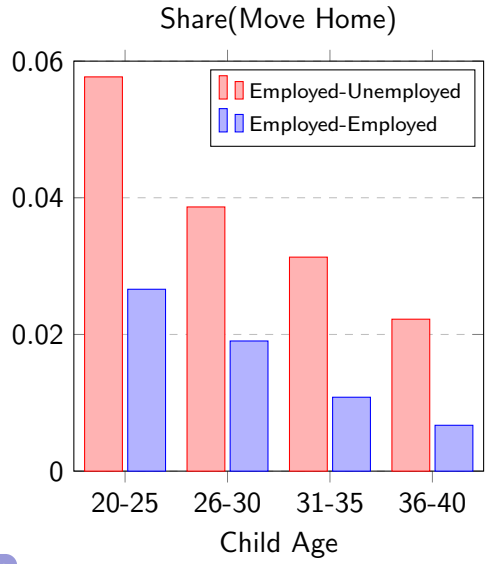
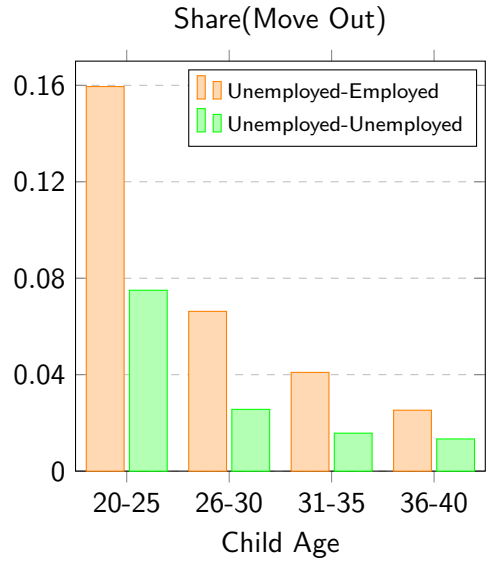
Counterfactual: U-E children are more likely to move out





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HRS: Coresidence

- 8% of adult children (excluding students) live with their parents
- In any individual wave, 1.3% of adult children move home
  - 0.71% move in with parents
  - 0.15% host parents
  - 0.44% are ambiguous
- Children who move home tend to be younger and have less education
- Parents of children who move home have lower incomes but higher wealth

	Move home	Stay independent
Child age	36.2	42.1
Child education (years)	12.4	13.8
Parent income	$89,357	$79,104
Parent assets	$465,707	$578,635

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HRS: Transfers

Parents transfer choices and co-residence depend on child employment outcomes

- Children who have recently lost their jobs are more likely to receive transfers relative to those who stay employed
- The quantity of these transfers is also larger in both the unconditional average and intensive margin
- Job-losing children are also approximately 3.5 times more likely to move home

	E-U	E-E
Extensive margin	0.1932	0.1672
Intensive margin	\$10,336	\$9,740
Average transfer	\$1,997	\$1,628
Share(Move home)	0.03773	0.01354
Share(MH & Transfer)	0.00683	0.00214

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Model

$$U(w, a, a', d_h) = \frac{(w + (1 + r)a - a' - d_h\kappa_h)^{1-\sigma}}{1 - \sigma} + d_h\chi$$

Child moves out ($d_h = 1$) when:

$$\tilde{U} = U(w, a, a', 1) - U(w, a, a', 0) = \frac{[w + (1 + r)a - a' - \kappa_h]^{1-\sigma}}{1 - \sigma} - \frac{[w + (1 + r)a - a']^{1-\sigma}}{1 - \sigma} + \chi \geq 0$$

$$\frac{\partial \tilde{U}}{\partial w} > 0 \Rightarrow \text{higher wages} \rightarrow \text{move out}$$

$$\frac{\partial \tilde{U}}{\partial \kappa_h} < 0 \Rightarrow \text{higher housing costs} \rightarrow \text{stay home}$$

$$\frac{\partial \tilde{U}}{\partial \chi} > 0 \Rightarrow \text{higher independence utility} \rightarrow \text{move out}$$

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Search Equilibrium

Value for a firm with a match:

$$V^f(j,\epsilon,\phi) = (1-\tau)(1-\phi)\epsilon + \beta(1-\delta)V^f(j+1,\epsilon,\phi)$$

Free entry condition:

$$q(\theta(j,\epsilon,\phi))V^f(j,\epsilon,\phi) = \kappa_p \quad \forall j,\epsilon,\phi$$

If $V^f(j,\epsilon,\phi) < \kappa_j \rightarrow \theta = 0$ since the firm does not post in submarket (j,ϵ,ϕ)
Otherwise:

$$q(\theta) = \frac{\kappa_p}{J} = \frac{M(u,v)}{v} = \frac{u}{(u^\alpha + v^\alpha)^{\frac{1}{\alpha}}}$$

$$u = \frac{\kappa_p}{J}(u^\alpha + v^\alpha)^{\frac{1}{\alpha}} \Rightarrow \frac{u^\alpha}{u^\alpha + v^\alpha} = \left(\frac{\kappa_p}{V^f}\right)^\alpha$$

$$1 + \theta^\alpha = \left(\frac{V^f}{\kappa_p}\right)^\alpha \Rightarrow \theta^\alpha = \left(\frac{V^f}{\kappa_p}\right)^\alpha - 1 \Rightarrow \theta = \left[\left(\frac{V^f}{\kappa_p}\right)^\alpha - 1\right]^{\frac{1}{\alpha}} \quad \forall \epsilon,\phi$$

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Retiree's Problem (Age ≥ 65)

$$U(j, a) = \max_{a'} \frac{[S + (1 + r)a - a']^{1-\sigma}}{1 - \sigma}$$

Where S is the social security benefit

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Retiree Problem (Age ≥ 65)

Value for a retiree:

$$V^r(j,a) = \max_{a'} \left\{ \frac{[S + (1+r)a - a']^{1-\sigma}}{1-\sigma} + \beta \psi_j V^r(j+1, a') \right\}$$

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Firm's Problem

Value of posting for a firm:

$$V^p(j,\epsilon,\phi) = \max_{\epsilon,\phi}\{q(\theta(j,\epsilon,\phi))V^f(j,\epsilon,\phi) - \kappa_p, 0\}$$

Value for a matched firm:

$$V^f(j,\epsilon,\phi) = (1-\tau)(1-\phi)\epsilon + \beta[(1-\delta)V^f(j+1,\epsilon,\phi) + \delta V^p(j+1,\epsilon,\phi)]$$

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Solution Algorithm

Assuming independence utility (χ), cost of housing (κ_h), unemployment benefit (b), cost of posting (κ_p), and distribution of consumers (ω) at $j = 1$ $\forall a, \epsilon$

(1) Guess labour income tax rate $\tau \in \{0, 1\}$

(2) Firm: solve for $V^f(j, \epsilon, \phi)$ via backwards induction where $V^f(J, \epsilon, \phi) = 0$ $\forall \epsilon, \phi$
   - Using $V^f(j, \epsilon, \phi)$, compute market tightness θ

(3) Worker: using $V^r(J, a) = 0$ $\forall a$, compute
   - $V^r(j, a)$ $\forall a$ and $j \in \{47, ..., J-1\}$
   - $V^u(j, a, \epsilon)$ and $V^e(j, a, \epsilon, \phi)$ $\forall a, \epsilon, \phi$ and $j \in \{0, ..., 46\}$
   - $V^s(j, a, \epsilon)$ $\forall a, \epsilon$ and $j \in \{0, ..., 46\}$

(4) Compute distribution of consumers $\omega(j, a, \epsilon)$ for $j \in \{2, ..., J-1\}$

(5) Compute tax rate to balance the government's budget constraint; update guess

(6) Iterate on (2) – (5) until convergence

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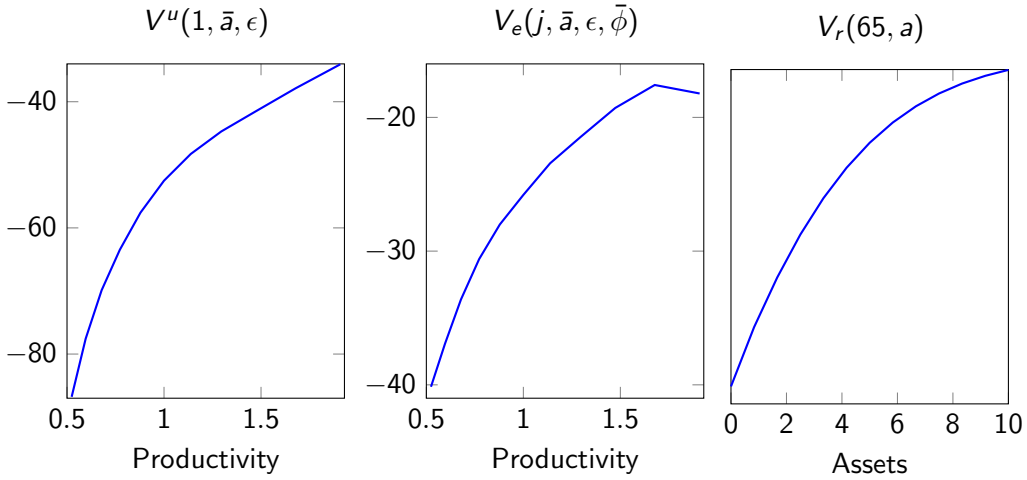
Consumer Value Functions



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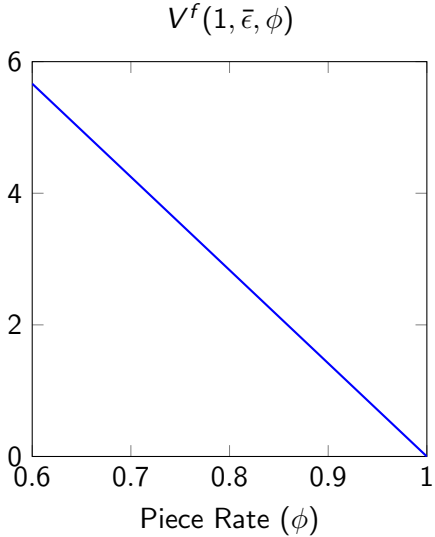
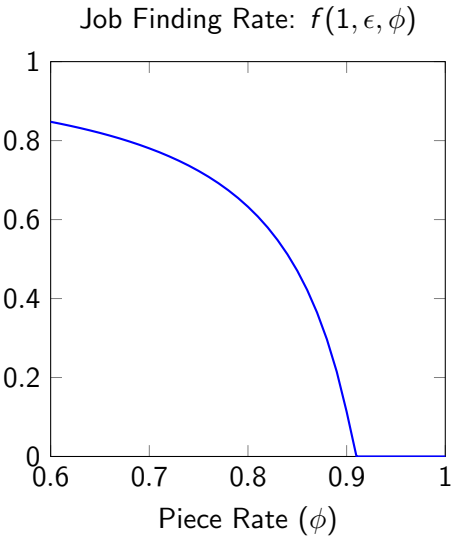
Firm Value Function





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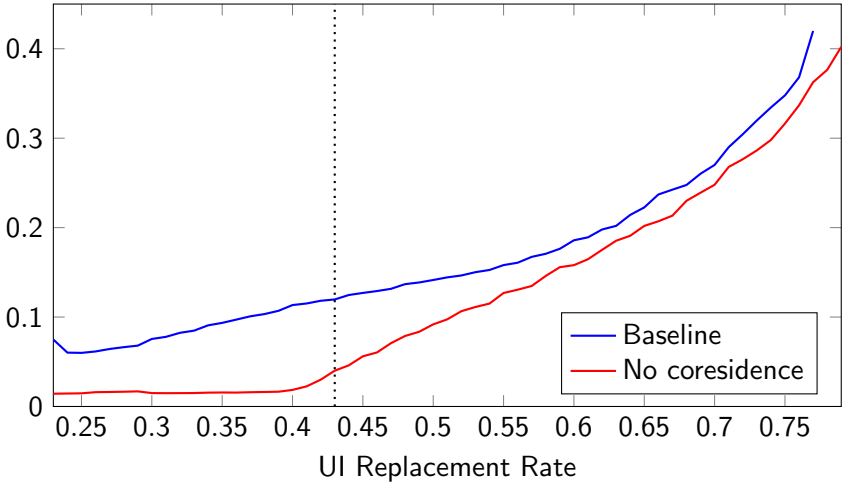
Optimal UI Replacement Rate: GE Tax Rate



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