Urbanization effects on job search decision

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2022年4月8日

東京労働経済学研究会

Background

- *Agglomeration economies* in labor markets
  - Urban agglomeration = population size of regional labor market
  - Urban wage premium is confirmed by many researchers
  - Some studies also show the agglomeration economies in job search and matching

- *Agglomeration diseconomies* in labor markets
  - Urban agglomeration also induces costs of congestion
    - e.g., higher price of local service, traffic congestion
  - However, little is known about the negative effects of urban agglomeration (i.e., agglomeration diseconomies) in labor markets

Motivation

- Main issue
  - **The urban agglomeration effects in labor markets can be heterogeneous across individual attributes**
    - Some individuals find the *agglomeration economies*,
    - while others find the *agglomeration "dis"economies*
  - This study aims to theoretically and empirically reveal such effects by focusing on **job search decision** and **socio-economic status**

- Research questions
  1. How does the urban agglomeration affect the decision of a non-working individual to search for a job?
  2. Are the agglomeration effects heterogeneous across female life events, such as marriage and childbirth?

Why this study focuses on:

- Job search decision
  - Whether a non-working individual searches for a job depends on:
    - **Expected offer wages**
    - **Opportunity costs of job search**
  - Urban agglomeration determines their size

- Female life events
  - Life events (e.g., marriage and childbirth) can change the **opportunity costs of job search**
  - Gender and educational differentials induce a gap in the **expected offer wages**
  - Such gaps in life events, genders, and education might cause the heterogeneity of agglomeration effects on job search decision

主な結果

- 理論的な予測
  - 非就業の個人が職探しを行うという決定は、
    - 期待されるオファー賃金が高い、金銭的なサーチコストが低いような人的資本の属性（男性、高学歴）で促される
    - 家計生産の価値を高めるような社会経済的な属性（既婚・子持ち女性）であるほど、抑制される

- 実証分析
  - 大卒未満の女性：未婚はpositive、既婚・子無しはinsignificant、既婚・子有りはnegativeな集積効果
  - 男性や大卒以上女性にはこのような結果は見られない
  - 結婚や子育てというライフイベントの影響を受けやすい属性で集積の経済の非対称性が存在

Related literature

- Agglomeration *economies* in job search and matching
  - Higher likelihood of finding a job
    - (de Blasio and Di Addario, 2005; Di Addario, 2011)
  - Higher matching quality
    - (Wheeler, 2001, 2008; Bleakley and Lin, 2012; Andini et al., 2013; Abel and Deitz, 2015)
  - Higher matching quality, resulting in higher wages
    - (Dauth et al., 2022)
- Heterogeneity across individual attributes
  - Little is known
    - Exceptionally, Phimister (2005) shows that urban premium of participation and wage are larger for women than those for men

Related literature

- 労働供給モデル
  - Black et al. (2014)は、米国のデータを用いた実証分析により、通勤時間の増加は既婚女性の就業率を下げ、子供がいるほどその傾向が顕著になることを示した
    - collective modelに基づく夫婦の効用最大化により説明
  - 本研究との関連：
    - 就業の前段階として求職者が減ると考えられる
    - 本研究は異なる理論から説明している

Contributions

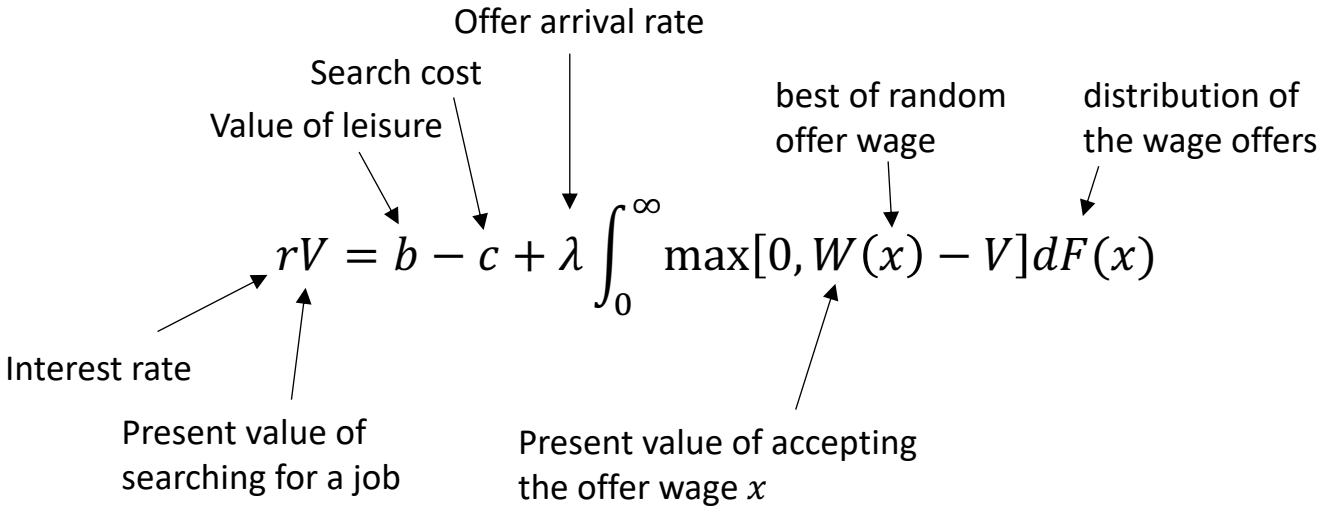
- This study contributes to the literature by focusing on:
  - The heterogeneity of agglomeration effects
  - The life events as factors determining socio-economic status

  - Offers the heterogeneity of agglomeration economies in labor market

- Another contribution
  - 人口減少が始まっているか、今後始まると予測され、労働力不足に直面すると考えられる国（日本、東アジア、EUの地域）に対する政策的含意を導く

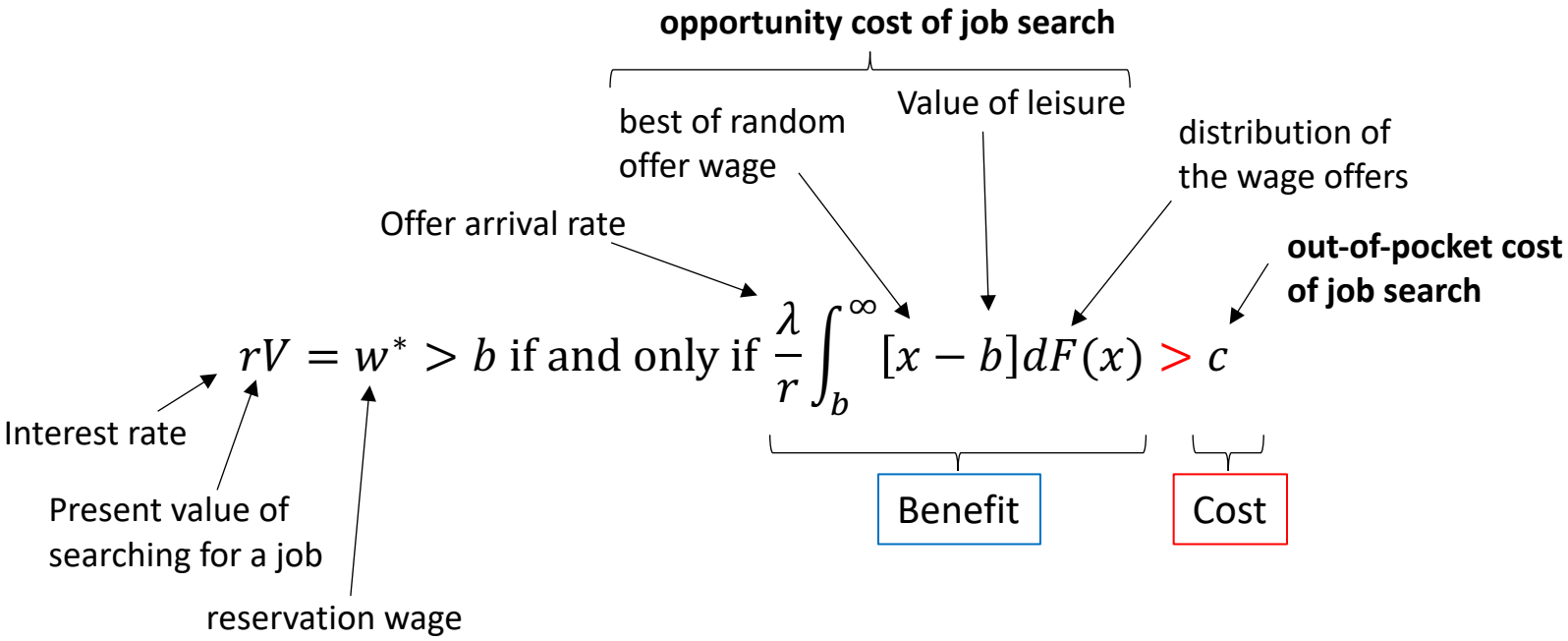
Theoretical background

- A non-working individual's decision problem
  - Bellman equation regarding a value of search (Mortensen, 1986)
  - "Participate as an unemployed worker" vs. "do nothing"



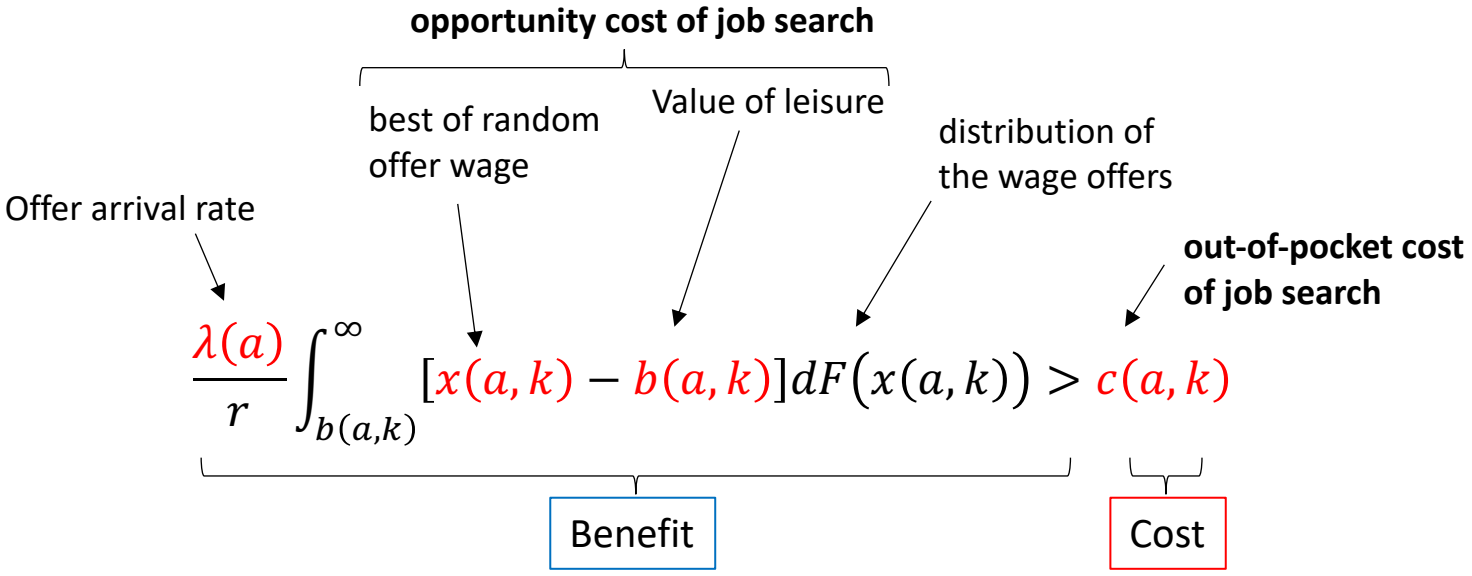
Baseline model

- Mortensen's (1986) participation condition
  - Benefit > cost $\Longrightarrow$ a non-working individual participates as an unemployed searching worker



Extending the model

- Our model incorporates:
  - agglomeration effect (a)
  - individual attribute (k)



opportunity cost of job search

$$\underbrace{\frac{\lambda(a)}{r}\int_{b(a,k)}^{\infty}[x(a,k)-b(a,k)]dF\big(x(a,k)\big)}_{\text{Benefit}} > \underbrace{c(a,k)}_{\text{Out-of-pocket cost}}$$

Variable	Agglomeration effects (a)	Heterogeneity across individual attributes (k)	Effects on search benefit and cost
Offer wage $x(a,k)$	$+$ (urban wage premium)	**human capital** • men > women • less educated < highly educated	**Benefit** ambiguous (effect on [x-b] depends on individual attributes)
Value of leisure/HH production $b(a,k)$	$+$ (market price is high; disutility of longer commuting time)	**socio-economic status** • married women with child > married women > unmarried women > men	
Out-of-pocket cost of job search $c(a,k)$	$-$ $\left(c(a)=\frac{\psi(k)}{\lambda(a)}\right)$	**human capital** • less educated > highly educated	**out-of-pocket cost** $-$

Offer wage

- Assumption
  - It is determined by the level of agglomeration and the individual attribute
  - $x(a,k) = x_1(a)x_2(k) + x_3(k)$

    $where\ \frac{\partial x_1(a)}{\partial a} > 0$ (urban wage premium)

- Wage gap between individual attribute k
  - Individual attributes concerning human capital

  - **Genders**: $x_j(Men) > x_j(Women)$
  - **Education**: $x_j(Less\ educated) < x_j(Highly\ educated)$

Value of "leisure"

- The value of leisure
  - The value of time other than is spent searching for a job
  - It contains the value of "household production" (e.g., housework and childcare) as well as leisure activities
    - Hereafter, I label the value as the "**value of leisure/HH production**"

- What determines the value of leisure/HH production
  - Women tend to engage in household production
  - Life events (e.g., marriage and childbirth)

  - These factors might make the female value of leisure/HH production high

Value of leisure/HH production

- Assumption
  - $b(a,k) = b_1(a)b_2(k) + b_3(k)$
  - $where\ \frac{\partial b_1(a)}{\partial a} > 0$
    - Market prices of services concerning household production might be high in urban areas
      - e.g., housekeeping service and childcare facilities
    - Disutility of longer commuting time
- Gap between individual attributes k
  - Life events (i.e., marriage and childbirth) might raise female value of leisure/HH production
    - $b_j(married\ women\ with\ children) > b_j(married\ women) > b_j(unmarried\ women) = b_j(men)$

Out-of-pocket cost of job search

- Assumption
  - It is the function of urban agglomeration, following Wheeler (2001)
    - $c(a) = \frac{\psi}{\lambda(a)}$
  - Individuals can meet potential vacancies more often in more agglomerated areas
    - $\frac{\partial \lambda(a)}{\partial a} > 0$
  - In more agglomerated areas, the individual can receive more offers by paying a certain fixed cost ψ
    - $\frac{\partial c(a)}{\partial a} < 0$

Out-of-pocket cost of job search

- Gap between individual attributes k
  - It is also determined by an individual attributes k through the fixed search cost ψ
    - $c(a,k) = \frac{\psi(k)}{\lambda(a)}$
  - 学歴によって異なり、求人情報を手に入れる能力差を反映していると考える
    - $\psi(Less\ educated) > \psi(Highly\ educated)$
  - 結婚や子育てといったsocio-economic要因は影響しない

opportunity cost of job search

$$\underbrace{\frac{\lambda(a)}{r}\int_{b(a,k)}^{\infty}[x(a,k)-b(a,k)]dF\big(x(a,k)\big)}_{\text{Benefit}} > \underbrace{c(a,k)}_{\text{Out-of-pocket cost}}$$

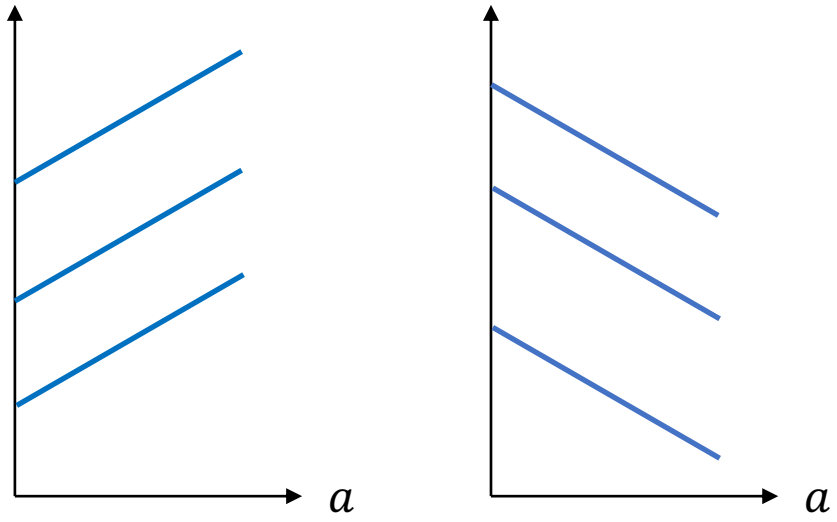
Variable	Agglomeration effects (a)	Heterogeneity across individual attributes (k)	Effects on search benefit and cost
Offer wage $x(a,k)$	+ (urban wage premium)	**human capital** • men > women • less educated < highly educated	**Benefit** ambiguous (effect on [x-b] depends on individual attributes)
Value of leisure/HH production $b(a,k)$	+ (market price is high; disutility of longer commuting time)	**socio-economic status** • married women with child > married women > unmarried women > men	
Out-of-pocket cost of job search $c(a,k)$	− $\left(c(a)=\frac{\psi(k)}{\lambda(a)}\right)$	**human capital** • less educated > highly educated	**out-of-pocket cost** −

Participation condition

opportunity cost of job search

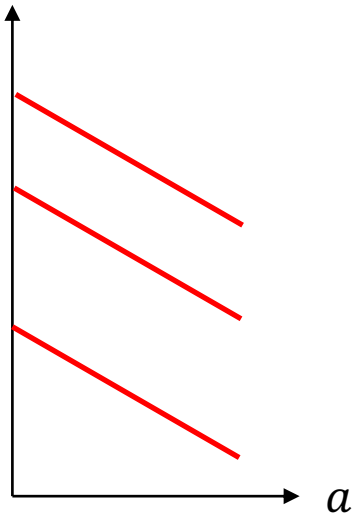
$$\frac{\lambda(a)}{r}\int_{b(a,k)}^{\infty}[x(a,k)-b(a,k)]dF\big(x(a,k)\big) > c(a,k)$$

Benefit



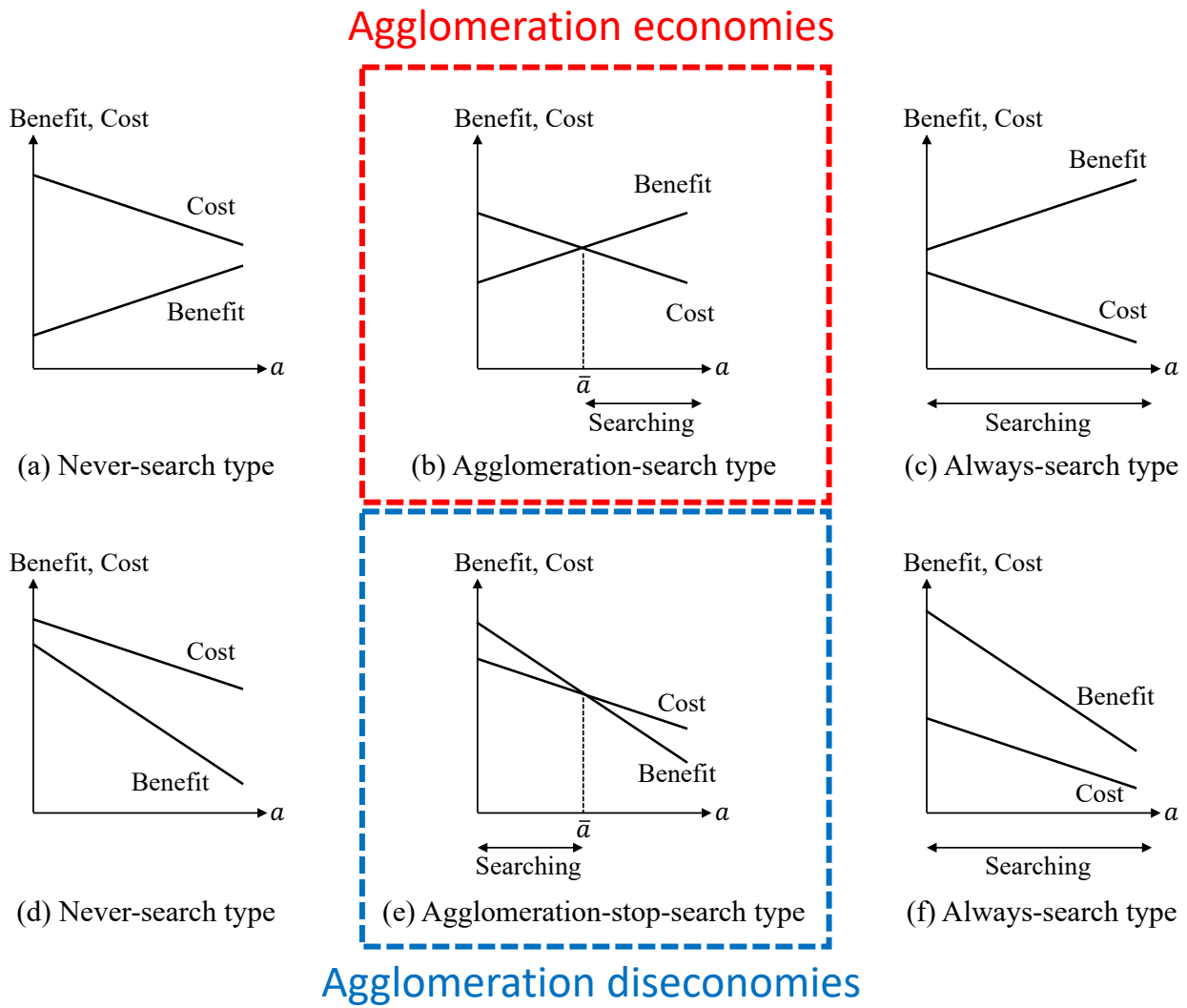
Slope and intercept depend on the individual attributes

Out-of-pocket cost



Downward sloping

Heterogeneous agglomeration effects



Empirical model

- Probability of searching for a job
  - Pooling cross-sectional microdata from Japan
  - Estimations of probit model by subsample of attribute k

$$\mathrm{P}(s_i = 1) = \Phi\left(\alpha + \beta \ln A_{r(i),t(i)} + X_i\gamma + Y_{r(i)}\delta + Z_{t(i)}\eta\right)$$

$s_i = 1$ if a non-working individual i is searching for a job

Level of agglomeration (employment density in region r)

Individual and household characteristics

Regional block dummies

Survey year dummies

- Interest parameter
  - $\beta > 0$: agglomeration economies
  - $\beta < 0$: agglomeration diseconomies

Identification

- Endogenous problem
  - The individual job search and residential location choice exhibit simultaneity
  - The level of agglomeration ($A_{r(i),t(i)}$) may be endogenous

- Instrument
  - In this study, the log of population density in 1920
  - **Long lagged values of agglomeration variables** are valid (Combes et al., 2011; Combes and Gobillon, 2015)
    - **Relevance**: stock of facilities last over time, resulting in persistence in regional patterns of agglomeration
    - **Exclusion restriction**: current individuals' job search behaviors should be quite different from past ones

Data

- Individual microdata
  - Pooled cross-sectional data (# of obs.=1,004,967)
  - Individuals who answer not working, working-age (15-64), not students
  - Source: Japanese Employment Status Survey (8 waves, 1982–2017)

- Regional agglomeration data
  - Employment density (# of regions=222 UEAs)
  - Regional unit follows the Urban Employment Area (UEA), proposed by Kanemoto and Tokuoka (2002)
  - Source: Establishment and Enterprise Census (6 waves, 1981–2006) and the Economic Census for Business Frame (2009 and 2014)

Fractions

	Less than university degree			University degree or higher		
	Unmarried	Married		Unmarried	Married	
		No children	With children		No children	With children
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Men						
Non-working/Total	0.162	0.073	0.031	0.087	0.040	0.007
Searching/Non-working	0.380	0.341	0.422	0.518	0.289	0.580
Panel B: Women						
Non-working/Total	0.213	0.355	0.541	0.099	0.330	0.486
Searching/Non-working	0.304	0.170	0.127	0.431	0.135	0.094

Note: Pooled data across eight waves of the ESS between 1982–2017. Sample of the working individuals is restricted to those who have no missing values of the same variables which are used for the estimations for the non-working individuals.

- Life events (i,e., marriage and childbirth) seem to make women stop working and searching
- This tendency might cause the heterogeneity of agglomeration effects across life events for women

Results: probit

	Less than university degree			University degree or higher		
	Unmarried	Married		Unmarried	Married	
		No children	With children		No children	With children
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Men						
ln(Employment density)	0.0049*	0.0254***	0.0209***	0.0003	0.0184***	0.0541***
	(0.0030)	(0.0040)	(0.0067)	(0.0068)	(0.0070)	(0.0172)
Observations	82754	69293	8350	13071	11928	778
Panel B: Women						
ln(Employment density)	0.0141***	0.0014	-0.0074***	0.0071	0.0107***	-0.0006
	(0.0026)	(0.0018)	(0.0018)	(0.0085)	(0.0036)	(0.0042)
Observations	124134	448214	188121	7777	30283	20174

Notes: Standard errors clustered at the regional level are in parentheses. ***, **, and * represent statistical significance at 1%, 5%, and 10% level, respectively. All models contain a constant, individual and household characteristics, cohort group dummies, regional block dummies, and the survey year dummies.

結婚をきっかけに働くための
location choiceの影響である可能性
（内生性）

Results: IV probit

	Less than university degree			University degree or higher		
	Unmarried	Married		Unmarried	Married	
		No children	With children		No children	With children
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Men						
ln(Employment density)	0.0094**	0.0287***	0.0367***	0.0077	0.0204*	0.0246
	(0.0044)	(0.0059)	(0.0097)	(0.0092)	(0.0108)	(0.0280)
Observations	82754	69293	8350	13071	11928	778
Panel B: Women						
ln(Employment density)	0.0135***	0.0005	-0.0059**	0.0094	0.0077	-0.0061
	(0.0037)	(0.0023)	(0.0027)	(0.0125)	(0.0049)	(0.0053)
Observations	124134	448214	188121	7777	30283	20174

- **Life events make their value of leisure/HH production higher**
  - First, unmarried women find the **agglomeration economies**
  - Finally, married women with children find the **agglomeration diseconomies**

What we can see

- Effects of life events to women's job search decision
  - The wives tend to specialize in household production (e.g., housework and childcare) in Japan
    - The husbands tend to specialize in the paid work in the labor market
  - **Life events (i.e., marriage and childbirth) make the female value of leisure/HH production high, especially in urban areas**
    - Due to supply shortages of childcare facilities in urban areas
- Low and highly educated women
  - Highly educated women find higher expected offer wages
  - Their benefit of job search is enough high
  - Thus, life events do not change the agglomeration effects for highly educated women

Conclusion

- Main findings
  1. Urban agglomeration can both positively and negatively affect job search decision
  2. Life events (i.e., marriage and childbirth) remarkably change the female response of job search decisions to the agglomeration level

- Policy implications to utilize inactive women
  - Solving shortages of childcare facilities in urban areas to reduce their value of leisure/HH production
  - Decreasing gender wage gap