Why not Choose a Better Job?

Flexibility, Social Norms, and Gender Gaps in Japan

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Japan ranks 116th in 2022 gender gap, worst in East Asia, Pacific

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GENEVA – Japan ranked 116th among 146 countries in the gender gap rankings this year, at the bottom of the East Asia and Pacific group, and the Group of Seven major economies, a Swiss-based think tank said Wednesday.

The report by the World Economic Forum showed women's participation in the political and economic arenas remains particularly low in Japan. The country, however, attained high scores in access to education and health.

Japan ranked 120th among 156 countries in last year's rankings.

Female Workers in Japan

Gap in Median Earnings of Full-time Workers in 2019



Fraction of Part-time in Female Workers in 2019



- Large gap in earnings and high ratio of part-time jobs
- Female participation is not low

Female Laborforce Participation in 2019

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	0%	20%	40%	60%	80%

Why is the gender wage gap large in Japan? Why is the fraction of part-time workers large for women in Japan?

What Do I Do?

Document Female Employment in Japan

- Large gender diff. in participation, occupations, working hours, and wage
- Regular vs Non-regular job & Social norms on gender roles

Build a model

- Choices on occupations and working hours
 - \rightarrow Occupations differ in the way hours map into earnings (linear vs. convex)
- Utility cost associated to *social norms*
 - \rightarrow Wives earnings more than husbands

Model explains

- All gender gaps in participation
- 33% in occupational choices, 74% in labor hours, and 34% in wage



Data

Japan Panel Study of Employment Dynamics (JPSED)

- 57,284 men and women older than 15 in Japan
- Panel data 2015-2019
- Earnings, working hours, housework, labor contracts
- Use samples aged 25-59

Survey on Dual-Income Couples' Household Economy and Attitudes

- 2200 couples, women (men) aged 35-49 (30-55), in the Greater Tokyo Area
- One-year survey in 2014
- Earnings, working hours, housework, types of contracts

Regular and Non-regular Jobs

In Japanese statistics, a definition is used: Regular and Non-regular jobs

- Based on "how their occupations are classified in the company"
- There is no precise definition, but *typically*,

	Regular	Non-Regula
Contract	Permanent	Temporary
Hours (week)	40/40+	Lower and D
Wage	High	Low

In JPSED,

- 92 % (91 %) of male (female) regular workers have permanent contracts
- 13 % (14 %) of male (female) non-regular workers have permanent contracts

Dispersed

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Weekly Working Hours



Hourly Wage



Occupational Choices of Married Men and Women



Regular Non-regular Not-work



Why Do Women Choose Non-regular Jobs?

Flexibility of the Job





Reasons for Choosing Non-regular Job, Women

Job Flexibility and Convex Earning

Goldin (2014) defines the two types of jobs by earning schedule

- Linear jobs are lower wages and high flexibility
- Non-linear (convex) jobs are high wage and low flexibility



These characteristics correspond to **Regular** and **Non-regular** jobs! Regression







Social Norms

Bertrand, Kamenica, and Pan (2015)

- A gap in the density of the wife's share of earnings at 50% in US
- Interpreted as the existence of social norms

Japanese Data

- A stark gap is seen in Japanese data
- Rising pattern just before 50%



Before Going to the Model...

Key Features

- 1. Job Flexibility (Regular vs. Non-regular)
- 2. Social Norm on Wife's Earnings Cross-country Coparison

Gender Gaps

	Description	Gap	Men	Women
Partcipation	Participation rate	0.27	98%	70%
Ocuupation	Fraction of regular workers	0.59	89%	32%
Labor Hours	Mean of log weekly working hours	0.49	44.2h	20.3h
Wage	Mean of log hourly wage	0.76	2958 JPY	1534 JPY
Data: married, 25-59 a	aged in JPSED2016-2020			



Households' Problem

- Economy consists of couples, including husbands (g=m) and wives (g=f)
- choose an occupation j_q from regular R, non-regular NR, not-working NW
- Endowed one unit of time, and choose working hours h_m, h_f , home hours T_m, T_f , and leisure $1-h_m-T_m, 1-h_f-T_f$

$$\max_{h_m,h_f,T_m,T_f,j_m,j_f} U = \log c + \gamma \log H(1-h_m-T_m,1-h_m)$$

subject to

$$egin{aligned} c &= e(h_m, j_m) + e(h_f, j_f) \ T &= T_m + T_f \end{aligned}$$

 $H(\cdot)$: Joint leisure function e(h, j) : Earning T : Home hours requirement δ : Utility cost es (g=f)king NWe hours T_m, T_f , and leisure

 $(e_f - T_f) - \delta 1 \{e_m < e_f\}$

Productivity

Each husband and wife is endowed **job specific** productivity:

$$egin{pmatrix} a_{m,R}\ a_{f,R}\ a_{m,NR}\ a_{f,NR} \end{pmatrix} \sim \log \mathcal{N} \left(egin{pmatrix} 0\ 0\ \mu_{NR}\ \mu_{NR} \end{pmatrix}, egin{pmatrix} \sigma^2 &
ho_{mf}\sigma^2 &
ho_{R,NR}\sigma^2\ \cdot & \sigma^2 &
ho_{R,NR}
ho_{mf}\sigma^2\ \cdot & \sigma^2 &
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ho_{R,NR}
ho_{mf}\sigma^2 &
ho_{R,NR}
ho$$

- $\mu_{NR} < 0 \Rightarrow$ Non-regular workers earns less than regular worker
- $ho_{mf} > 0 \Rightarrow$ Assortative Mating
- $ho_{R,NR} > 0 \Rightarrow$ Regular and Non-regular abilities are linked

No Gender Difference in Productivity

 $\left(egin{array}{ccc} &
ho_{R,NR}
ho_{mf}\sigma^2 \ &
ho_{R,NR}\sigma^2 \ &
ho_{mf}\sigma^2 \ &
ho_{mf}\sigma^2 \ &
ho^2 \end{array}
ight)
ight)$

Convex Wage Schedules

Regular Jobs

$$e(h,R) = egin{cases} a_R h^{1+ heta} & h < ar{h} \ a_R \left(ar{h}^{1+ heta} + \lambda_R ar{h}^ heta(h - ar{h})
ight) & h > ar{h} \end{cases}$$

Non-regular Jobs

$$e(h,NR) = egin{cases} a_{NR}h & h \leq ar{h}\ a_{NR}\left(ar{h} + \lambda_{NR}(h-ar{h})
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0



Leisure Function

$$H = (\nu(1 - h_m - T_m)^{\xi} + (1 - \nu)(1 - h_f)^{\xi})$$

u : share parameter. Each household is endowed $u \sim Beta(lpha_
u, eta_
u)$ ξ : complementarity. $\xi < 0 \Rightarrow$ complement Home Hours Requirement

$$T = T_m + T_f
onumber \ rac{1}{2} T \sim Beta(lpha_T, eta_T)$$

- Households has a home hours requirement $T\in[0,2]$
- T does not increase the utility
- captures the heterogeneity of home hours requirements (children)

 $(-T_f)^{\xi})^{1/\xi}$

Calibration Strategy

15 Parameters



Method of Simulated Moments

- 1. Model produces occupations, working hours, and wages of household
- 2. Compute 15 moments (e.g. ratio of regular workers, mean of working hours, gender correlation of wage...)
- 3. Minimize the distance between moments from data and model

home hours social norm

Parmeter	Value Target	Data	Model
λ _R	0.57 mean of h _f for regular workers	0.50	0.48
λ_{NR}	0.63 mean of h _f for NR workers	0.30	0.27
θ	2.96 share of regular workers, females	0.32	0.37
μ _{NR}	-3.15 share of NR workers, females	0.38	0.28
σ	1.03 s.d. of In w _f for R workers	0.72	0.72
ρ _{r, nr}	0.14 mean diff. of In $w_{f_{\!\!\!,}R}$ and In $w_{f_{\!\!\!,}NR}$	0.62	0.62
ρ _{mf}	0.01 corr. of log wages, R×R couples	0.49	0.50
γ	0.84 s.d. of h _f for regular workers	0.11	0.11
ξ	–8.29 s.d. of h _f for NR workers	0.14	0.15
av	13.04 mean of T _m for regular workers	0.14	0.13
β _ν	1.15 mean of T _m for NR workers	0.13	0.14
α _T	1.59 mean of T _f for regular workers	0.28	0.21
β _T	3.57 mean of T _f for NR workers	0.32	0.37
αδ	0.59 share of couples with e _m < e _f	0.07	0.08
βδ	11.81 corr. of working hours, couples	0.19	0.18

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• Leisure by husband and wife is complement

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• $E[\nu] = 0.92 > 0.5$

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• $E[\nu] = 0.92 > 0.5$

$\alpha_T =$ 1.59, $\beta_T =$ 3.57

• Home hours requirement is 49 hours per week

Occupational Choices (Not-Targeted)



16%	28%
11%	6%
2%	0%

Regular Non-regular Not-work

Time Allocations (Not-Targeted)

Hours Worked



Home Hours











Gender Gaps

	Data	Model Model / Data	Pct.
Participation	0.27	0.27	99%
Occupation	0.59	0.19	33%
Labor Hours	0.49	0.36	74%
Wage	0.76	0.26	34%

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Model explains

• Almost all the gap in the **participation rate**

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Model explains

- Almost all the gap in the participation rate
- Significant proportion of other gender gaps



Roles of Job Inflexibility & Social Norms

1. Inflexibility of Regular Job θ

Given a large amount of housework, women might not choose regular jobs

2. Social Norms δ

Social norms might lead wives to work less or not

To verify these arguments, I conduct experiments of heta=0 and $\delta=0$



Flexible Regular Job: Occupational Choices

	Baseline				$\theta = 0$			
75	Regular	26%	16%	28%		68%	2%	21%
Husband	Non-regular	5%	11%	6%		2%	0%	0%
-	Not-work	6%	2%	0%		7%	0%	0%
		Regular I	Non-regula	rNot-work V	Vife	Regular N Ə	Non-regula	rNot-work

Eliminating inflexibility encourages wives to have regular jobs



No Social Norm: Occupational Choices



- More wives choose **regular job**
- More husbands choose **not to work**



8%	25%
4%	6%
L 0 %	0%

Regular Non-regularNot-work

Mechanism

	Baseline	θ = 0.0	δ = 0.0
Participation	0.27	0.14	-0.04
Occupation	0.19	0.01	0.18
Labor Hours	0.36	0.64	0.17
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Job inflexibility θ

- The main element prevents women from having regular jobs
- Wage gap comes from occupational differences



Mechanism

	Baseline	θ = 0.0	δ = 0.0
Participation	0.27	0.14	-0.04
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Job inflexibility θ

- The main element that prevents women from having regular jobs
- Wage gap comes from occupational differences

Social Norms δ

Explains intensive and extensive margin of male and female participation



Conclusion

Build a Model

- Regular (inflexible, high wage) vs. Non-Regular (flexible, low wage)
- Social Norms (wives' higher earnings)

Model Explains the Gender Gaps

- Almost all of participation rate
- 33% in occupational choices, 74% in labor hours, and 34% in wage

Mechanism

- Job flexibility and social norm play an important role in gender gaps
- Housework services could reduce the gaps under job inflexibility and social **NORM** > Appendix

Outsourcing of Housework



Outsourcing of Housework

Outsourcing housework could increase women's labor supply

Raz-Yurovich and Marx (2019), Halldén and Stenberg (2014)

Also discussed as the impact of **low-skilled immigrants**

Cortés and Tessada (2011), Barone and Mocetti (2011), Farré, González, and Ortega (2011)

However, those housework services are *rarely* used in Japan

- Japan has a restrictive policy on immigration
- 2+ member households pay 7.3 EUR per YEAR on average

Baseline Model with Housework Service

$$\max_{h_m,h_f,j_m,j_f} U = \log c + \gamma \log H - \delta 1(e_m$$

subject to

$$egin{aligned} c+pt &= e(h_m, j_m) + e(h_f, j_f) \ H &= (
u(1-h_m-T_m)^{\xi} + (1-
u)(1-h_f - T_m)^{\xi}) \ T &= T_m + T_f + t \end{aligned}$$

t: housework service

p: price of housework service

Experiment

- Fix parameters in the baseline model
- Set price as the median wage of **non-regular** job $(p = \exp(\mu_{a_{NR}}))$



$< e_{f}$)

$(T_f)^\xi)^{1/\xi}$

Outsourcing T: Home Hours



Workers use outside services to do most of the home work

Outsourcing T: Gender Gaps

	Base	Outsourcing t Gap remained	Pct.
Participation	0.27	-0.02	-7%
Occupation	0.19	0.03	15%
Labor Hours	0.36	0.06	17%
Wage	0.26	0.25	97%

Given social norms, housework services

Outsourcing *T*: **Gender Gaps**

	Base	Outsourcing t Gap rem
Participation	0.27	-0.02
Occupation	0.19	0.03
Labor Hours	0.36	0.06
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Given social norms, housework services

• Reduce gender gaps in participation, occ. choices, and labor hours



Outsourcing T: Gender Gaps

	Base	Outsourcing t Gap rem
Participation	0.27	-0.02
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Given social norms, housework services

- Reduce gender gaps in participation, occupational choices, and labor hours
- Do not reduce wage gap

▶ back to main



Appendix

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Related Literature

Home Hours and Gender Gaps

- Erosa et al. (2022)
 - \rightarrow Models couples' decisions on occupations with different job flexibility
- Cubas, Juhn, and Silos (2019)

 \rightarrow Women are penalized for the lack of work in the peak hours (8am-5pm)

Social Norms and Occupational Choices

- Bertrand, Kamenica, and Pan (2015)
 - \rightarrow A sharp gap in the wife's earnings relative to the husband's earnings

Gender Gaps in Japan

Kitao and Mikoshiba (2022)

 \rightarrow Role of fiscal policies on female labor force participation and occ. choices

Job Flexibility and Convex Earning

To see the convex and linear wage schedules, run

$$y_{it} = a_i + \lambda_t + \left(\sum_{h \in H, h
eq 40} eta_h I_{ith}
ight) + \gamma X_i$$

 y_{it} : yearly earnings of individual i at time t a_i : individual fixed effect λ_t : time fixed effect X_{it} : age, age-square, educational attainment, industry $H = \{20-24, 25-29, \dots, 60-64\}$: 5 hour bins for weekly working hours I_{ith} : indicator if i's working hours in the bin $h \in H$ at time t

This is in the line of **Bick**, **Blandin**, and **Rogerson** (2022)

 $X_{it} + \varepsilon_{it}$

Earning Curves



• Regular Jobs

- \rightarrow Convexity before 40 hours \Rightarrow Concentration at 40 hours
- \rightarrow After 40 hours, the slope is different from the below-40-hour
- Non-regular Jobs
 - → Almost linear relationship



Marriage Penalty

If there are social norms regarding wives earning more than husbands, after the marriage, women might choose: lower working hours or changing/quitting jobs

Using JPSED2016-2020, I see

- Men and Women married at 2018
- Change in market outcomes in 2017
- Child Penalty as in Kleven et al. (2019)
- Female earnings decline by 4600€ 1year after the marriage



Yearly Earnings (JPY)

Marriage Penalty



Weekly Working Hours

Hourly Wage (JPY)



Key Features

1. Job Flexibility (Regular vs. Non-regular)

2. Social Norm on Wife's Earnings

Persons in employment by level of difficulty to take one or two days of leave at short notice.





1. Job Flexibility (Regular vs. Non-regular)

2. Social Norm on Wife's Earnings

If a woman earns more money than her husband, it's almost certain to cause problems.



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