# Work-life balance and the gender differences in self-employment income during the start-up stage in Japan

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# Outline

1. Introduction
2. Literature
3. Conceptual Framework and Hypotheses
4. Data and Empirical Models
5. Estimation Results and Discussion
6. Conclusion

# 1. Introduction (1): Gender and childcare

- **Various reasons to switch from employment to self-employment** by starting up new businesses:
  - Women tend to select self-employment because they seek flexible work to balance career and family.
- It is reasonable for female workers engaged in childcare to prefer self-employment that provides higher **flexibility of work**, even though they expect **lower income**.
  - Occupational choice model by Lucas (1978) and Evans and Jovanovic (1989)
  - In fact, Kawaguchi (2008) finds that self-employed workers are more satisfied with their work than employees.

# 1. Introduction (2): Institutional change

- With regard to **gender equality and childcare support**, some major legal and institutional changes have been introduced in Japan since the 1990s:

- **Clear trend of household structure**:

  - Households with both husbands and wives working drastically increased in the 1980s and have exceeded the other type of households since 1997.

- However, **few empirical studies have been conducted in Japan** on the determinants of self-employment and self-employment income, **focusing on gender differences and considering these institutional changes**.

1 　　　　　　岡室 博之, 2011/11/04

# 1. Introduction (3): Aims of the study

- To investigate **the determinants of the self-employment income during the start-up stage**
  - Based on micro data of Japanese official statistics with three cohorts from 1992 to 2001
  - Comparing the income levels
    - between male and female self-employed workers, and
    - between female workers in self-employment and paid employment
- Special attention paid to the effects of **gender** and **pre-school children**
- To check the changes in the 1990s

# 2. Literature (1): Self-employment income

- Besides survival and growth, income has been regarded as an important performance measure of start-up firms.

- Previous studies mainly address the effects of owners' human capital, especially formal education and job experience (e. g. Robinson and Sexton 1994; Parker and van Praag 2006; Van Praag et al. 2009).

- Empirical studies on **the effect of gender and household structure on self-employment income are relatively scarce**, compared to rich literature on gender gap in wage and salary among employees (e.g. Blau and Kahn 1997; Hersch and Stratton 1997; Stratton 2001; Blau and Kahn 2006).

# 2. Literature (2): Gender gap in income

- Hundley (2000) provides the first systematic analysis of the gender gap in self-employment income in comparison with that in wage and salary income.

- In a similar line, Hundley (2001) shows that the number of young children and housework hours are negatively correlated with average hourly earnings of female self-employed (but not males).

- In contrast to Hundley's argument, Walker (2009) demonstrates that housework effort of self-employed women, rather than their housework hours, contributes to lower income compared to their male counterpart.

# 2. Literature (3): Contribution of the study

- To focus more directly on the effect of childcare than Hundley (2000)

- To target at the founders of new start-ups

- To compare the results between three different cohorts in the period of 1987-2001

- To extend the representative empirical research by Hundley (2000) to the Japanese labor market and to apply it to the Japanese context

# 3. Conceptual Framework and Hypotheses (1): Incentives of female to become self-employed

- Several studies suggest that women select self-employment because they seek **flexible work** to **balance career and family** (e.g. Macpherson 1988; Lombard 2001).

- The income gap between male and female self-employed workers may be attributed to their **different commitments to household and market work** (Hundley , 2000).

- Burden of childcare on female workers (around 2000)
    - M-form curve of the female labor force participation
    - 70% of female workers retire when the first child is born.
    - 64% of mothers in paid employment take childcare leave.
    - 86% of working mothers main players of childcare.

# 3. Conceptual Framework and Hypotheses (2):
# Hypothesis 1 and 2

- Regarding the choice of self-employment, therefore, we postulate the following hypotheses for the empirical analyses.

  – H1: **Female workers with pre-school children** are **more likely to start up** their businesses than **male workers** with pre-school children.

  – H2: **Female workers with pre-school children** are **more likely to start up** their businesses than **other female workers**.

- This is because female workers with pre-school children have to devote themselves to **childcare** and thus are more likely to **seek flexibility in work** as compared to their male counterpart and female workers without pre-school children.

# 3. Conceptual Framework and Hypotheses (3): Hypothesis 3 and 4

- Female self-employed workers with pre-school children devote themselves more to childcare (resulting in lower income) than those without pre-school children.

  - H3: **Female self-employed workers with (more) pre-school children** tend to achieve **lower income** than **female self-employed** workers without (with less) pre-school children.

- Female self-employed workers with pre-school children are more family-oriented and thus devote less effort to market work than those in paid employment who are more career-oriented.

  - H4: **Female self-employed workers with pre-school children** tend to achieve **lower income** than female workers with pre-school children in **paid employment**.

# 3. Conceptual Framework and Hypotheses (4):
# Hypothesis 5

- Female workers have **comparative advantage in childcare**.

- They can **adjust their working hours and intensity more flexibly** to their need for childcare in self-employment than in paid employment.

- Thus, we can predict that the gender income difference in self-employment increases with the number of pre-school children to a larger extent than among employees:

  - H5: **Male/female income difference** among self-employed workers is **more sensitive to the number of pre-school children** than among employees.

# 4. Data and Empirical Models (1): Data

- Anonymous micro data of the *Employment Status Survey*
  - **Japanese official statistical survey**.
  - Three cohorts: **1992, 1997, and 2002**.
  - Random sample of 1% of the entire population in Japan

- Final dataset comprises both:
  - **New self-employments** (up to five years since start-up)
  - **Employees** (not previously self-employed)

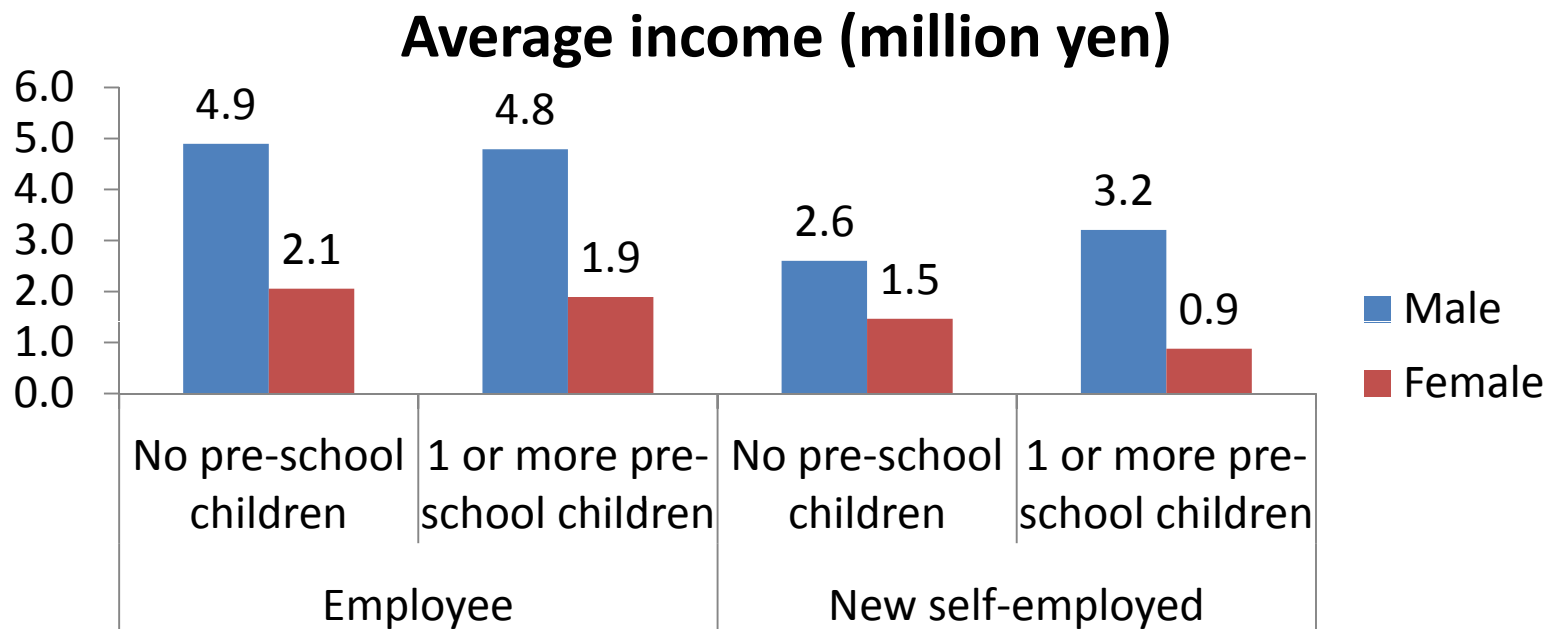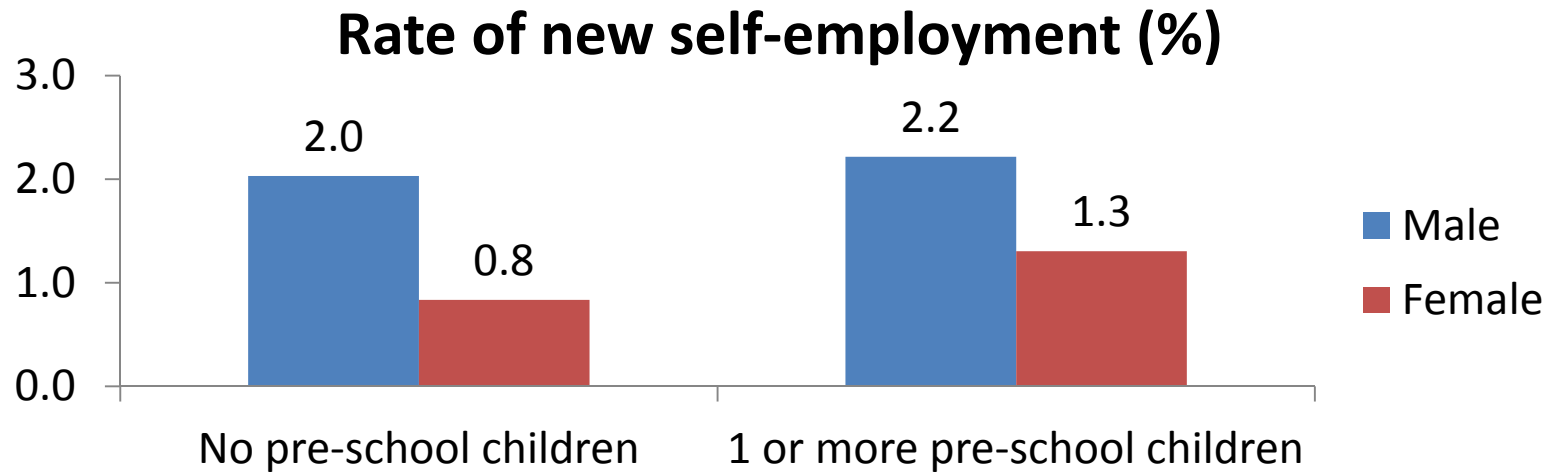- Sample size: Approximately **one million** people

# 4. Data and Empirical Models (2): Empirical model

- 1st stage: Employees decide whether to become self-employed or continue to be employees (employment mode choice).

  - Dependent variable: *Self* (dummy variable: 1 for new self-employed, 0 for employees)

  - Binary probit model

- 2nd stage: The income level of workers is determined.

  - Dependent variable: *Income*

  - Ordered probit model

    - Information on annual income is not available as absolute values, but only as categories in the dataset.

# 4. Data and Empirical Models (3): Independent variables in the 1$^{st}$ stage

- *Fem* : Dummy variable: 1 for females and 0 for males
- *Child* : The number of pre-school children (under 6 years old)
- *Self* : Dummy variable for the new self-employment
- All possible interaction terms of *Self* with *Fem* and *Child*

- Control variables:
  - Annual working days and hours (11 categories)
  - Individual characteristics
  - Regional characteristics
  - Current and previous job characteristics
  - Survey year (cohort) dummies

# 4. Data and Empirical Models (4):

## Rate of new self-employment (%)



| | No pre-school children | 1 or more pre-school children |
|---|---|---|
| Male | 2.0 | 2.2 |
| Female | 0.8 | 1.3 |

## Average income (million yen)



| | Employee | | New self-employed | |
|---|---|---|---|---|
| | No pre-school children | 1 or more pre-school children | No pre-school children | 1 or more pre-school children |
| Male | 4.9 | 4.8 | 2.6 | 3.2 |
| Female | 2.1 | 1.9 | 1.5 | 0.9 |

16

# Estimation results of 1ˢᵗ stage model

| Dependent variable | (1) *Self* |
|---|---|
| **Independent variables** | **(binary probit)** |
| Female (*Fem*) | −0.19*** [0.011] |
| # of pre-school children (*Child*) | 0.032*** [0.007] |
| *Fem * Child* | 0.122*** [0.012] |

H1: (Partially) supported.

Female workers with 2 pre-school children or more are more likely to start up their businesses than male workers with 2 pre-school children or more.

H2: Supported.

Female workers with pre-school children are more likely to start up their businesses than other female workers.

Notes: Standard errors are in brackets. ***p<0.01, **p<0.05 and *p<0.1. Coefficients of other control variables are not displayed for simplification.

# Estimation results of 2<sup>nd</sup> stage model

| Dependent variable / Independent variables | (2) *Income* (ordered probit) | (3) *Income* (ordered probit) |
|---|---|---|
| New self-employment (Self) | −1.579*** | −1.267*** |
| Female (Fem) | −0.73*** | −0.704*** |
| # of pre-school children (Child) | −0.039*** | −0.046*** |
| Self * Fem | 0.353*** | 0.509*** |
| Self * Child | 0.086*** | 0.057*** |
| Fem * Child | −0.02*** | 0.032*** |
| Self * Fem * Child | −0.249*** | −0.19*** |
| Weekly working hours | - | Included |

Notes: ***p<0.01, **p<0.05 and *p<0.1. Coefficients of other control variables are not displayed for simplification.
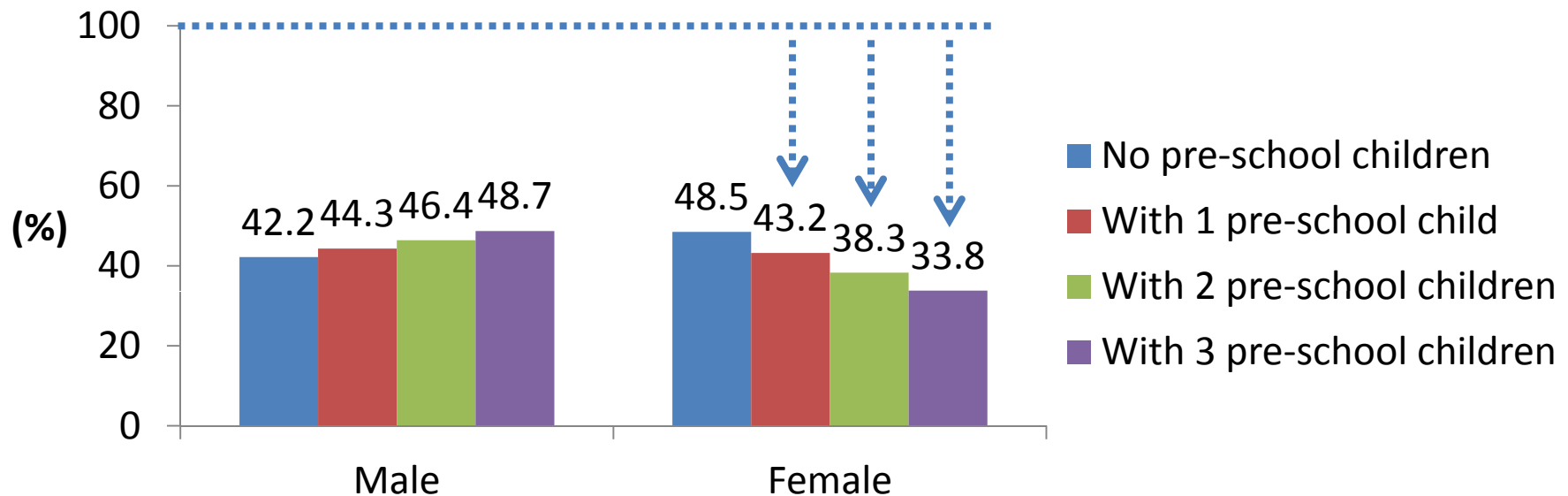
# Predicted income ratios with/without pre-school children

- H3: Supported.
  - Female self-employed workers with (more) pre-school children tend to achieve **lower income** than female self-employed workers **without (with less) pre-school children**.



Note: Predicted income of workers with no pre-school children = 100(%)

# Predicted self-employed/employee income ratios

- H4: Supported.
  - Female self-employed workers with pre-school children tend to achieve **lower income** than female workers with pre-school children in **paid employment**.
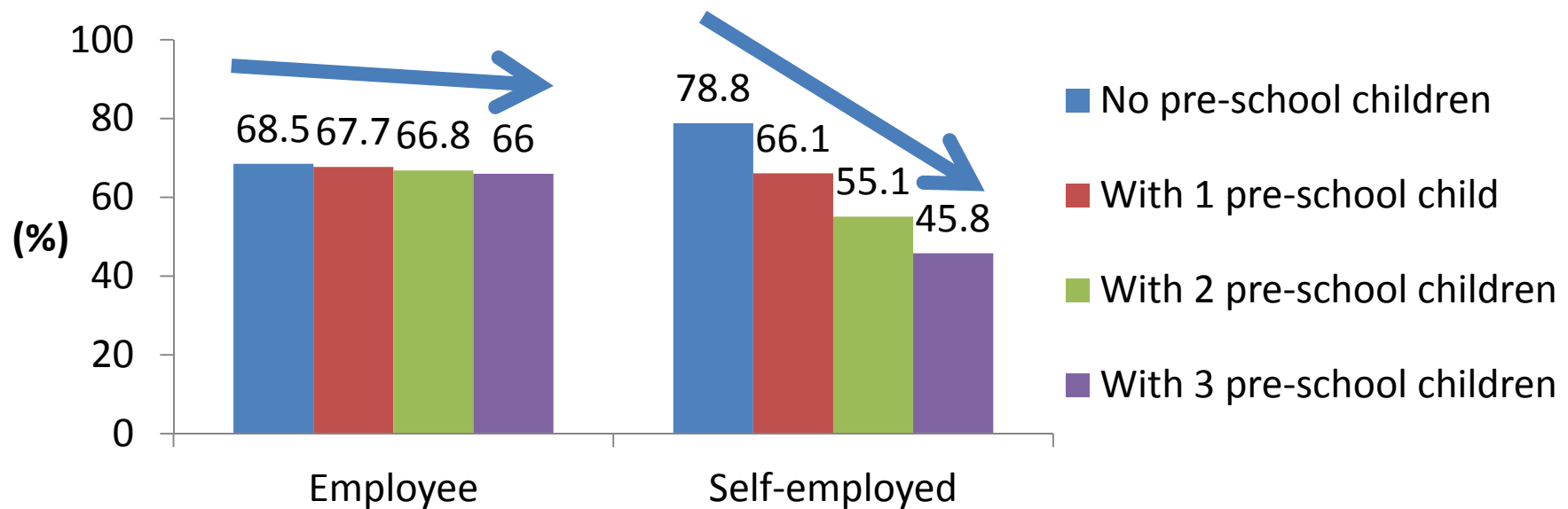


Note: Predicted income of employees = 100(%)

# Predicted female/male income ratios

- H5: Supported.
  - Male/female income difference among **self-employed workers is more sensitive to the number of pre-school children** than among employees.



Note: Predicted income of male workers = 100(%)

## 5. Estimation Results and Discussion (6):
## Structural change of the income model (2ⁿᵈ stage) :
## Dependent variable = *Income*

- No distinct differences across three cohorts.

| Cohort<br>Independent variables | 1992 | 1997 | 2002 |
|---|---|---|---|
| New self-employment (Self) | −1.121*** | −1.307*** | −1.312*** |
| Female (Fem) | −0.745*** | −0.705*** | −0.65*** |
| # of pre-school children (Child) | −0.065*** | −0.036*** | −0.032*** |
| Self * Fem | 0.458*** | 0.444*** | 0.616*** |
| Self * Child | 0.008 | 0.056 | 0.093** |
| Fem * Child | 0.01 | 0.03*** | 0.066*** |
| Self * Fem * Child | −0.177*** | −0.153** | −0.259*** |
| Weekly working hours | Included | Included | Included |

Notes: Standard errors are in brackets. ***$p<0.01$, **$p<0.05$ and *$p<0.1$.
Coefficients of other control variables are not displayed for simplification.

22

# 6. Conclusion: Summary

- Results are mostly consistent with the hypotheses:
  - Self-employment may provide working mothers with pre-school children with flexibility in work and opportunities of achieving better work-life balance.
  - No significant structural changes across three cohorts.
- Limitations:
  1. **Most variables are available only as categories**.
  2. **Panel data analysis** is impossible.
  3. **Neglecting endogeneity** of selecting self-employment
  4. **Ignoring the choice of retiring** from the labor market
  5. **Difficulty to identify the reason for lower income** of female self-employed with pre-school children.

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# Appendix (1): Control variables

- Variables for individual characteristics
  - *UnivGrad* : Dummy variable for university graduates
  - *Age* : Dummy variables for ten age groups
  - *HeadHH* : Dummy variable for the household head
  - *Marriage* : Dummy variable for the married
  - *Spouse* : Dummy variable for the spouse of household head
- Characteristics of previous jobs of the new self-employments
  - Tenure (9 categories),
  - Employment status (5 types),
  - Firm size of (11 categories),
  - Industries (10 sectors).
  - Dummy variable which takes 1 if the industries of current and previous jobs is same and 0 otherwise

# Appendix (2):

## Structural change of the job mode choice model (1st stage) : Dependent variable : *Self*

- No significant differences across three cohorts.

| Independent variables / Cohort | 1992 | 1997 | 2002 |
|---|---|---|---|
| Female (Fem) | −0.157*** | −0.131*** | −0.275*** |
| # of pre-school children (Child) | 0.05*** | 0.048*** | −0.007 |
| Fem * Child | 0.047** | 0.132*** | 0.202*** |
| University graduates dummy | −0.211*** | −0.229*** | −0.177*** |
| Head of household dummy | 0.33*** | 0.209*** | 0.264*** |
| Spouse of head of household dummy | −0.052** | −0.008 | −0.027 |
| Marriage dummy | −0.021 | 0.008 | −0.042*** |
| Metropolitan dummy | −0.068*** | −0.059*** | −0.078*** |
| Age dummies | yes | yes | yes |

Notes: ***$p<0.01$, **$p<0.05$ and *$p<0.1$.