Parenthood and labour market outcomes

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Kabir Dasgupta
Gail Pacheco

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This research was funded by the Ministry for Women
Motivation: Is parenthood to blame for the gender wage gap?

- Women in New Zealand earn less on average than men
- 9.4% lower median hourly pay in June quarter 2017 (SNZ)
- Difference can’t be explained by:
  - Observable characteristics (age, education, skills etc)
  - Productivity (Sin, Stillman, and Fabling, 2017)
- What is the role of parenthood in this gender wage gap?
Motivation: Is parenthood to blame for the gender wage gap?

Statistics New Zealand has combined data in a way that allows us a view over time how labour market outcomes evolve when men and women become parents.

Our goal: To describe the data...
- What changes when men or women have children?
- How persistent are the changes?
- For whom are they biggest?

... not (yet) to conclude why we see the patterns we see
Research questions

• How long are first-time mothers and fathers out of paid employment?

• How do their hours worked, monthly earnings, and hourly earnings change when they return to work after becoming parents?

• How do these changes differ by pre-parenthood income?
• By time out of employment?
• By age, ethnicity, and other characteristics?
Preview of findings

• Women’s employment falls when they become parents, and those employed work fewer hours

• Monthly wage income of employed women falls with parenthood, especially among the high-income women who return more slowly to work

• Even high-income women who return to work quickly experience slower growth in monthly wage income after childbearing

• Hourly wages fall when women have children, more so for those out of work longer
Preview of findings

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• Hourly wages fall when women have children, more so for those out of work longer

• Men experience none of these effects
New Zealand setting

• Government-funded paid parental leave
  • since 2002
  • currently 18 weeks (~4 months)
  • can be taken by mother or other primary carer

• Free early childcare education
  • since 2007
  • 20 hours per week
  • all 3- and 4-year-olds eligible

• Working for Families tax credits
  • since 2004
  • families with dependent children aged 18 or under
  • some elements only available to working households
SNZ data confidentiality

Access to the data presented was managed by Statistics New Zealand under strict micro-data access protocols and in accordance with the security and confidentiality provisions of the Statistic Act 1975.

Our findings are not Official Statistics. The opinions, findings, recommendations, and conclusions expressed are those of the authors, not Statistics NZ, the Ministry for Women, Motu Economic and Public Policy Research, Te Pūnaha Matatini, New Zealand Work Research Institute, or AUT.
Data

Monthly wage earnings from tax data

Birth records

Survey data (HLFS) on hours worked and hourly wages

IDI
Data

Monthly wage earnings from tax data

Birth records

All first-time parents

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15-year series of employment and earnings for everyone

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Sample of current and future parents and never-parents

Survey data (HLFS) on hours worked and hourly wages
Data: Pre-parenthood income

- Possible to construct because data on monthly wage income are available for each individual over a long time period
- Measure of skill/earning potential
- Income quartile based on monthly wage earnings within gender and single year of age in second year before parenthood
  - Use average earnings in months worked only
  - Those who worked <4 months assigned to separate group
Employment:
Who works and when?

A combination of choice and necessity
Employment considerations

1. Do I look for a job?
   - How much time do I want to spend working and how much with my child?
   - Who will look after my child?
     - My partner or relatives? If one of us stays home with the child, who should it be?
     - A paid carer? Will I make enough money for working to be worthwhile?
   - Can I afford not to work?
   - Repercussions for my skills and career

2. Can I find a job?
   - Skills, experience, location, networks, required conditions
Women’s return to paid employment after the birth of their first child
Women’s return to paid employment after the birth of their first child

61% of women have worked in at least one month by their child’s first birthday.
Women’s return to paid employment after the birth of their first child

69% of women have worked in at least one month by their child’s second birthday.
Men’s return to paid employment after the birth of their first child
Men’s return to paid employment after the birth of their first child

Few men are out of paid work for long when they have children.
Mothers’ return to paid work by pre-parenthood income

Monthly income quartile for age and gender in 2003
- Worked <4 months
- 1st quartile
- 2nd quartile
- 3rd quartile
- 4th quartile
Mothers’ return to paid work by pre-parenthood income

Mothers with higher incomes pre-parenthood return more quickly to work

Monthly income quartile for age and gender in 2003

- Worked <4 months
- 1st quartile
- 2nd quartile
- 3rd quartile
- 4th quartile
Do women who return to work quickly stay there?
Mothers’ employment rates by pre-parenthood income

Monthly income quartile for age and gender in 2003

- Blue: Worked <4 months
- Dotted black: 1st quartile
- Red: 2nd quartile
- Dotted red: 3rd quartile
- Blue: 4th quartile
Fathers’ employment rates by pre-parenthood income
### Employment rates of mothers by ethnicity

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The largest percentage decrease is seen in the European category, from 79% to 48%.
Monthly wage income

- Combines hourly wages, hours worked per week, stability of work
- Matters for ability to support family and lifetime earnings
Monthly earnings of employed women by pre-parenthood income

![Graph showing monthly earnings of employed women by pre-parenthood income. The graph displays the total wages among employed women over months relative to the birth of their first child. Different lines represent income quartiles and the duration of employment before childbirth.]
Monthly earnings of employed men by pre-parenthood income

Monthly income quartile for age and gender in 2003

- Worked <4 months
- 1st quartile
- 2nd quartile
- 3rd quartile
- 4th quartile
Does how long women are out of employment matter for their earnings when they return?
Why might time out of employment matter?

• Loss/obsolescence of employment-relevant skills
• Missing out on experience and on-the-job training

• Employer prejudice about long break from work

• Indicator of lower investment in skills, ambition, or career-orientation
Monthly earnings of employed women by time out of employment

-60 -48 -36 -24 -12 0 12 24 36 48 60 72 84 96 108 120

Month relative to birth of first child

First month back earning wages after child's birth

- month 1-6  
- month 7-12  
- month 13-24  
- month 25-60  
- not by month 61
Monthly earnings of employed women by time out of employment

Modest gap

First month back earning wages after child's birth

- Blue: month 1-6
- Dashed: month 7-12
- Red: month 13-24
- Dash-dotted: month 25-60
- Blue: not by month 61
Monthly earnings of employed women by time out of employment

Modest gap

Larger gap

First month back earning wages after child's birth

- month 1-6
- month 7-12
- month 13-24
- month 25-60
- not by month 61
Monthly earnings of employed women by time out of employment

First month back earning wages after child's birth

- month 1-6
- month 7-12
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- month 25-60
- not by month 61
Fast growth

First month back earning wages after child's birth

- month 1-6
- month 7-12
- month 13-24
- month 25-60
- not by month 61
Fast growth

Slower growth

First month back earning wages after child's birth:
- **month 1-6**
- **month 7-12**
- **month 13-24**
- **month 25-60**
- **not by month 61**
Large drop

First month back earning wages after child's birth

- month 1-6
- month 7-12
- month 13-24
- month 25-60
- not by month 61
Slow growth
Slow growth

(Slightly less) slow growth

First month back earning wages after child's birth

- month 1-6
- month 7-12
- month 13-24
- month 25-60
- not by month 61
Large(r) drop

First month back earning wages after child's birth

- month 1-6
- month 7-12
- month 13-24
- month 25-60
- not by month 61
Women who return to work quickly earn more as parents, but they also earned more before becoming parents.

What if we compare women with similar pre-parenthood earnings but who stayed out of work for different lengths of time?
Monthly earnings of employed women by time out of employment: **lowest** income quartile

First month back earning wages after child's birth

- **Month 1-6**
- **Month 7-12**
- **Month 13-24**
- **Month 25-60**
- **Not by month 61**
Monthly earnings of employed women by time out of employment: second income quartile

First month back earning wages after child's birth

- month 1-6
- month 7-12
- month 13-24
- month 25-60
- not by month 61
Monthly earnings of employed women by time out of employment: **third** income quartile

First month back earning wages after child's birth

- **Blue line**: month 1-6
- **Dashed line**: month 7-12
- **Red line**: month 13-24
- **Dotted line**: month 25-60
- **Blue line**: not by month 61
Monthly earnings of employed women by time out of employment: highest income quartile

First month back earning wages after child's birth

- Blue: month 1-6
- Dashed black: month 7-12
- Red: month 13-24
- Dotted gray: month 25-60
- Solid blue: not by month 61
Monthly earnings of employed women by time out of employment: highest income quartile

Fast growth

First month back earning wages after child's birth

- month 1-6
- month 7-12
- month 13-24
- month 25-60
- not by month 61
Monthly earnings of employed women by time out of employment: highest income quartile

Fast growth

Slow growth

First month back earning wages after child's birth

- month 1-6
- month 7-12
- month 13-24
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Time out of work and monthly earnings

• Time out of employment matters for income for all women...
• ... but more so for high-income women
• Maybe because they have more specialised skills that depreciate (go stale) when they’re not working?
• Or because they don’t work long hours after return to work?

• High-income women who return quickly to work experience (lower income and) slower income growth after parenthood
  • Implications for lifetime earnings
  • Helps explain why gender wage gap is larger among high-income earners
## Monthly earnings of employed mothers by ethnicity

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<td>$2,000</td>
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<tr>
<td>Pasifika</td>
<td>$2,300</td>
<td>$2,400</td>
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<td>European</td>
<td>$3,300</td>
<td>$2,600</td>
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<tr>
<td>Māori/European</td>
<td>$2,700</td>
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<tr>
<td>Asian</td>
<td>$3,100</td>
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<tr>
<td>Other</td>
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Monthly income of employed women

• Falls less for women with lower income before parenthood

• Some possible explanations
  • They worked part-time before parenthood
  • Their hourly wages can’t fall below minimum wage
  • They have fewer specialised skills to lose
  • They need to work long hours even when parents to support their families
Hours worked

Paid work in the labour market or unpaid work in the home?
Implications of reducing hours worked

• More time with kids!

• Lower weekly/monthly wage earnings
• Slower accumulation of skills on the job?
• Limited job options
• Less opportunity for career advancement?

• Signal less commitment to labour market
Average hours worked among those employed
Average hours worked among those employed

Median hours worked:
- Males: 41
- Females: 27

Chart showing the average hours worked over time, with median values indicated for males and females.
Do women who are out of work for longer work fewer hours when they return?
Employed women’s hours worked by time out of employment

Median:
- 1-6 months: 30
- 7-12 months: 27
- 13+ months: 22

Return to work in month:
- 1-6
- 7-12
- 13+
Hourly wages

The reward for an hour’s labour
Question 1: How much of the observed gender gap in hourly wages in the population results from differences between men and women who are parents?

How much from differences between those who are not parents?

(Not the predicted effect of parenthood on an individual’s hourly wages)
Regressions of hourly wages on gender and parenthood

Regress log hourly wages on:

- gender
- whether a parent... differently for men and women
- other characteristics (age quadratic, education...)
- year
## Regressions of log hourly earnings

<table>
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<td>Year FE</td>
<td>Yes</td>
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<tr>
<td>Education FE</td>
<td>Yes</td>
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<tr>
<td>Observations</td>
<td>43,854</td>
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In our sample, women earn 6.8% less than men of same age and education.

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*Women without children earn 5.7% less than men.*
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**Education FE**  Yes                        Yes
**Observations**  43,854                    43,854
**R-squared**     0.225                      0.228

Women without children earn 5.7% less than men without children.
Mothers earn 12.5% less than fathers.

Women without children earn 5.7% less than men without children.
Question 2: Does having children cause a woman’s hourly wages to decrease?

How much?

Comparison between what a mother earns and what she would have earned if she had not had children
Why might mothers earn lower hourly wages?

• Human capital (skills and knowledge) depreciate during parental leave and are gained more slowly by mothers working part-time

• Mothers who return to work are distracted, don’t work in high-powered jobs requiring very long hours, or have different priorities, and so are less productive

• Mothers receive benefits such as flexible hours and to compensate accept lower wages

• Employers are biased or discriminate against mothers, or take advantage of mothers’ low bargaining power
Two main challenges

Comparing hourly wages of employed men and women of the same age and education with/without children won’t tell us the effect of parenthood on wages because:

• Women who have children may differ systematically from those who don’t, e.g. more family-oriented

• Women who work (more) after having children may differ systematically from those who don’t, e.g. more ambitious, enjoy their careers more
Our solution

• Use DIA births data to classify women (and men) by whether they will ever become parents, and allow wages of future parents to differ from wages of never-parents (differently by gender)

• Use IDI earnings data to classify women into earnings quartiles preparenthood and control for earnings quartile

• Allows us to isolate how a parent’s wages differ from what he/she would have earned without children
Regressions of log hourly earnings

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Observations: 42,597  
R-squared: 0.248

Robust standard errors in parentheses. Asterisks denote: *** p<0.01, ** p<0.05, * p<0.1.
### Regressions of log hourly earnings

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When men become parents, their hourly wages are not significantly affected.
### Regressions of log hourly earnings

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When women become parents, their hourly wages decrease by 4.4% (statistically significant).
Do these impacts vary with how long the woman is out of work?
**Regressions of log hourly earnings: Difference in motherhood penalty with time out of work**

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# Regressions of log hourly earnings: Difference in motherhood penalty with time out of work

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Mothers who return to work within six months experience an insignificant 2.3% decrease in hourly wages.
**Regressions of log hourly earnings: Difference in motherhood penalty with time out of work**

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Discussion

• There is a gender pay gap even before men and women have children

• But motherhood imposes a significant earnings penalty, while fatherhood does not

• This is strongly related to women taking time away from work or working reduced hours when they have children—women who are out of work longer experience a larger fall in hourly pay

Consider:

• Are mothers’ skills undervalued? Are mothers discriminated against?

• To what extent is time away from work a choice, to what extent a necessity, to what extent culturally dictated? Why do more men not choose to be the primary caregiver?

• What can employers/policymakers do to lower the barriers to mothers working?
Policy forum – 29 May 2018
- Parenthood and labour market outcomes
- Fertility trends in New Zealand
Fertility trends and mothers in NZ

Bridget Snodgrass
Population statistics
Stats NZ
Outline:

• Trends in fertility
• What are the drivers?
• What about the future?
Total fertility rate (TFR), 1921-2017

Births per woman

December year

NZ

Replacement level
Cohort (completed) fertility rate

Births per woman

Year of birth of woman

Replacement level

Cohort fertility rate
TFR – international comparison

Births per woman

December year

- Replacement level
- NZ
- Canada
- UK
- OECD average
Māori mothers

Total fertility rate,
For Māori/Total NZ women,
1962-2017
NZ female population, mean year ended December, selected age groups

Live births, by age of mother, December years

- 15-19 Years
- 20-24 Years
- 25-29 Years
- 30-34 Years
- 35-39 Years
- 40-44 Years

- 2010 births
- 2017 births
In 2013:

- Most women aged 15-45 who had had biological children, were in a parenting role in a family nucleus.

But:

- About 2% of female parents in these age groups had not had children.
- Around 6% of women in these age groups who’d had children, weren’t currently in a parenting living arrangement.
Percent mothers in NZ female population, by selected 5 year age group, 1981, 2013
Mother’s age at first birth, by 5th, 25th, 50th, 75th, and 95th percentiles, 1980-2017

Year ended December

Age of mother
Fertility patterns by age

Age specific fertility rates, 1962-2017

Births per 1,000 women

December year


15 to 19  20 to 24  25 to 29 years  30 to 34  35 to 39  40 to 44
Childlessness

- Around 30% of women over the age of 15 are childless.
- This proportion has remained about the same for 40 years.
Proportion of women who remained childless by year of birth

Source: childlessness in New Zealand 1976-2013, Dideham 2016
Looking forward – projected fertility

**Period total fertility rate**

- **1948–2068**

Births per woman:
- 95th percentile
- 75th percentile
- 50th percentile
- 25th percentile
- 5th percentile

June year:
- 1948
- 1968
- 1988
- 2008
- 2028
- 2048
- 2068

Source: Statistics New Zealand

**Period fertility rates at selected ages**

- **1962–2042**

Births per 1,000 women

Age (years):
- 15
- 20
- 25
- 30
- 35
- 40
- 45

June year:
- 1962
- 1982
- 2002
- 2022
- 2042

Note: These figures are estimated up to 2016. From 2017, figures are the assumed 50th percentile.

Source: Statistics New Zealand
Thank you for listening!

Bridget.snodgrass@stats.govt.nz
Looking forward – family composition

Projected female parents in by family type,
Selected age groups
Proportion childless by age

Figure 3: Percentage childless by age, all women aged 15 years and over, 1981, 1996, 2006, 2013

Source: Childlessness in New Zealand 1976-2013, Didham 2016
Births
1948–2068

Source: Statistics New Zealand
Childlessness by age: European and Asian

European only

European and other

Asian only

Asian and other
Childlessness by age: Māori and Pacific

Māori only

Māori and other

Pacific only

Pacific and other
Childlessness by education

Percent childless of NZ women, 2013,
By select age groups and grouped highest qualification

- No Qualification
- Level 1 Certificate - Level 3 Certificate
- Bachelor Degree and Level 7 Qualification
- Level 4 Certificate - Level 6 Diploma
- Post-graduate and Honours Degrees - Doctorate Degree
Māori fertility

Total fertility rate,
For Māori/Total NZ women,
1962-2017

[Graph showing the total fertility rate for Māori and total NZ women from 1962 to 2017.]
Timing of births

Chart Title

- No Children
- One Child
- Two Children
- Three Children
- Four Children