How taxes and benefits redistribute income and affect work incentives: a lifecycle perspective
What we do

• Two questions about UK tax and benefit system:
  1. How does it affect work incentives?
  2. How much redistribution does it do?

• Lifecycle approach

• Focus on
  – Women and their families
  – Working life (ages 19-59)
  – Personal taxes and benefits
How we do it

• Based on simulated data
• Women assumed to behave according to forward-looking decision-making model
  – Make choices over education, labour supply and savings
  – Experience gained through working
  – Evolving family circumstances
• Model estimated to replicate behaviour of real individuals in Great Britain
How does the current UK tax and benefit system affect work incentives?
Work incentives: the story in one slide

- Work incentives vary lots by family circumstances
- Family circumstances vary lots across life
- Work incentives vary lots across life
- Forward-looking measure gives a different impression of incentives, particularly for lone parents
Measuring static work incentives

- Marginal effective tax rate (METR):
  *The fraction of a small rise in earnings that is lost to extra taxes and lower benefits*

- Participation tax rate (PTR):
  *When moving into work, the fraction of the rise in earnings that is lost to extra taxes and lower benefits*
Work incentives vary by family circumstances

METR (working women)

PTR (all women)

Childless single
Childless couple
Lone mother
Mother in couple

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Work incentives vary by family circumstances

METR (working women)

PTR (all women)

Cumulative proportion

Childless single  Childless couple  Lone mother  Mother in couple
Work incentives vary by family circumstances

[Graph showing cumulative proportion of different family types in METR and PTR (working women and all women) categories. The x-axis represents METR and PTR values, ranging from 0 to 100. The y-axis represents the cumulative proportion, ranging from 0 to 1. The graph includes lines for childless single, childless couple, lone mother, and mother in couple, each in different colors.]

- Childless single
- Childless couple
- Lone mother
- Mother in couple
Changing family circumstances mean work incentives vary across life

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And individuals are not permanently stuck with weak work incentives

25-29 year olds: percentage with METR/PTR above 60% who are still above that level some years later

<table>
<thead>
<tr>
<th>Number of years ahead</th>
<th>1 year</th>
<th>5 years</th>
<th>10 years</th>
<th>20 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>METR</td>
<td>74%</td>
<td>47%</td>
<td>38%</td>
<td>22%</td>
</tr>
<tr>
<td>PTR</td>
<td></td>
<td></td>
<td></td>
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</table>

Notes: METR is for working women, PTR is for all women
25-29 year olds: percentage with METR/PTR above 60% who are still above that level some years later

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<tr>
<td>1 year</td>
<td>74%</td>
<td>78%</td>
</tr>
<tr>
<td>5 years</td>
<td>47%</td>
<td>49%</td>
</tr>
<tr>
<td>10 years</td>
<td>38%</td>
<td>36%</td>
</tr>
<tr>
<td>20 years</td>
<td>22%</td>
<td>25%</td>
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Notes: METR is for working women, PTR is for all women
A dynamic measure of work incentives

- Why does the future matter for work incentives?
  - Higher wage tomorrow treated differently by tax and benefit system
  - Higher wage and savings tomorrow may affect work decisions
A dynamic measure of work incentives (2)

• Forward-looking participation tax rate (FLPTR):

  When moving into work today, the fraction of the rise in current and future earnings that is lost to extra taxes and lower benefits

• FLPTR is a weighted average of:
  – Today’s PTR
  – Future METRs and PTRs
Dynamic and static measures are different

<table>
<thead>
<tr>
<th>Difference between FLPTR and static PTR</th>
<th>Across all ages</th>
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<td>Mean</td>
<td>1.5ppt</td>
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Dynamic and static measures are different

### Difference between FLPTR and static PTR

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<tr>
<td><strong>Mean</strong></td>
<td>1.5ppts</td>
</tr>
<tr>
<td><strong>% of women:</strong></td>
<td></td>
</tr>
<tr>
<td>Larger than 5ppts (absolute)</td>
<td>21%</td>
</tr>
<tr>
<td>Larger than 10ppts (absolute)</td>
<td>11%</td>
</tr>
</tbody>
</table>
Differences are particularly large for lone mothers

Difference between FLPTR and static PTR:
- FLPTR >10ppts higher
- FLPTR 5-10ppts higher
- PTR and FLPTR within 5ppts
- PTR 5-10ppts higher
- PTR >10ppts higher
Because of patterns in static work incentives

- METR (working women)
- PTR (all women)

Legend:
- Childless single
- Childless couple
- Lone mother
- Mother in couple
How much redistribution does the tax and benefit system do?
Why do we look at lifetime inequality and redistribution?

- Individual (family) income varies across individuals and over time
  - Fluctuations over time can be partly smoothed by individuals

- Taxes and benefits reduce variation in income
  - Both between individuals
  - And over time

Snapshot assessments may overstate the ability of taxes and benefits to reduce true economic disparities
What we do in this part of the project

• Look at lifetime **inequality** in income among women in families
  – Measures dispersion in income – we use the Gini coefficient

• And the **lifetime redistribution** properties of the UK tax and benefits system
  – Measures how taxes and benefits reduce inequality, moderating persistent differences between individuals
The story in one slide

1. The UK tax and benefits system redistributes most significantly where disparities are larger
   – Among women with basic education
   – During the main child-rearing years

2. Particularly successful at ensuring that lone motherhood does not lead to persistent inequalities in lifetime income

3. Reforms since 2000 strengthened its ability to reduce lifetime inequalities
   – In-work benefits for low-income families with children - WFTC
   – Effect largely driven by responses in employment
The tax and benefits system reduces annual inequality

<table>
<thead>
<tr>
<th></th>
<th>Annual inequality</th>
<th>Lifetime inequality</th>
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<tbody>
<tr>
<td></td>
<td>Gross earnings</td>
<td>Net income</td>
</tr>
<tr>
<td>All women</td>
<td>0.37</td>
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<td>By education</td>
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<tr>
<td>Basic</td>
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Gini coefficients for gross and net annual and lifetime income.
And it also reduces lifetime inequality

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Gini coefficients for gross and net annual and lifetime income.
The impact is particularly strong where disparities are larger: for women with basic education

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Gini coefficients for gross and net annual and lifetime income.
Over the life-cycle, taxes and benefits are more redistributive when differences are more marked.
Particularly for those exposed to greater disparities

Gini coefficients for gross and net income by age.
Decompose lifetime inequality in its main building blocks

<table>
<thead>
<tr>
<th>Initial wealth and education</th>
<th>Family history</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Partner</td>
</tr>
<tr>
<td>Gross income</td>
<td>34.1%</td>
</tr>
<tr>
<td>Net income</td>
<td>39.5%</td>
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Share of variation in lifetime income explained by each factor.
Largest share of lifetime inequality established early in adult life

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<tr>
<td>Gross income</td>
<td>34.1%</td>
<td>3.4%</td>
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<tr>
<td>Net income</td>
<td>39.5%</td>
<td>3.1%</td>
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Share of variation in lifetime income explained by each factor.
But tax and benefits system ensures the impact of lone-motherhood does not persist

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<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Partner</strong></td>
<td><strong>Children</strong></td>
<td><strong>Lone mother</strong></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>Gross income</td>
<td>34.1%</td>
<td>3.4%</td>
<td>6.0%</td>
<td><strong>8.7%</strong></td>
<td>18.1%</td>
</tr>
<tr>
<td>Net income</td>
<td>39.5%</td>
<td>3.1%</td>
<td>7.2%</td>
<td><strong>1.1%</strong></td>
<td>11.4%</td>
</tr>
</tbody>
</table>

Share of variation in lifetime income explained by each factor.
In-work benefits for low income families with children reduce lifetime inequality

Effects on Gini coefficient: 2002 version of WFTC and IS versus pre-WFTC 1999 tax and benefits system
Particularly for women with basic education

Effects on Gini coefficient: 2002 version of WFTC and IS versus pre-WFTC 1999 tax and benefits system
And response largely driven by its impact on moving women into work

Effects on Gini coefficient: 2002 version of WFTC and IS versus pre-WFTC 1999 tax and benefits system
Income support for families out of labour market reduces importance of employment responses

Effects on Gini coefficient: 2002 version of WFTC and IS versus pre-WFTC 1999 tax and benefits system
Summary of findings

On work incentives - changing family circumstances mean
1. Work incentives vary a lot
   And vary a lot across the lifecycle
2. Forward-looking measure gives a different impression of incentives, particularly for lone parents

On lifetime inequality and redistribution
1. The UK tax and benefits system ensures that the consequences of lone-motherhood on inequality do not persist
2. Reforms to in-work benefits during the 2000s contributed significantly to reduce lifetime inequality
   With effects largely driven by employment responses
Thank you!