Estimating the impact of marriage on child development

Claire Crawford, Alissa Goodman, Ellen Greaves, Rob Joyce
Overview

• Introduction:
  – Motivation
  – Previous literature
  – MCS Data
  – Methodology

• Findings:
  – The outcomes of children born to married and cohabiting parents
  – The characteristics of married and cohabiting parents
  – Outcome gaps controlling for observed differences
  – Support from BCS Data

• Conclusions
Introduction
Births outside marriage

- All outside marriage live births
- Cohabitants (Jointly registered at same address)
- Lone parents (Sole registration, or jointly registered at different addresses)
Motivation

• Is marriage a better environment to bring up children, compared to cohabitation?

➢ This is a very live issue in the UK policy debate:
  – "I want us to recognise marriage in the tax system so as a country we show we value commitment." (David Cameron)
  – “Marriage is a personal and private decision for responsible adults, with which politicians should not interfere” (Labour)

• But it is a very difficult question to answer
• We try to inform the policy debate but cannot provide a definitive answer
Previous literature (1)

- Children of married parents have better education and behavioural outcomes compared to children of cohabiting parents
  - Wide literature, but mainly from the USA
  - Bumpass and Lu (2000); Acs and Nelson (2004); Manning and Brown (2006); Kiernan and Mensah (2009)
- Cohabiting relationships are more prone to break-down, which is associated with negative outcomes for children
  - Ermisch and Pronzato (2008); Kiernan and Mensah (2009); Andersson (2002)
- But is this a causal effect of marriage? Or does it simply reflect the different sorts of people who decide to get married (selection)?
Previous literature (2)

- Theoretical benefits of marriage (relative to cohabitation):
  - Marriage involves greater legal and social commitment:
    - Fosters more co-operative behaviour between parents? (Nordblom, 2004)
    - Gives more bargaining power to women? (Rangel, 2006)
    - Reduces stress within relationships? (Artis, 2007)

- The ‘selection’ issue
  - Couples choose whether to cohabit and/or get married
  - They differ in observable and unobservable characteristics
    - Observable ones are easier to deal with
    - Unobservable ones are much more difficult
Previous literature (3)

• Most of the previous literature does not deal with selection on unobservable characteristics (e.g. degree of love and commitment)

• One exception (Bjorklund et al, 2007)
  – Looked at effect of parental marriage over cohabitation on Swedish children’s education outcomes
  – Swedish couples were induced into marriage through financial incentive (1989 Widow’s pension reforms)
  – Temporary increase in marriage rates
  – No causal effect on children’s outcomes
Our research

• What would we ideally *like* to?
  – Provide an estimate of the *causal impact* of marriage compared to cohabiting on children’s outcomes
  – But this requires a natural experiment that doesn’t exist in the UK

• What *can* we do?
  – Set out outcomes for current cohort of UK children
  – Provide our *best estimate* of the causal impact
  ➢ Control for characteristics of the parents that reflect selection into marriage
  ➢ Try not to over-control for characteristics that are caused by marriage
  ➢ Use BCS data to corroborate our findings
Methodology: simplest case

\[ y_{it} = \alpha + \beta_1 cohab_i + \varepsilon_{it} \]

- Simple methodology
- \( y_{it} \): outcome of assessment for child \( i \) at age \( t \)
- \( cohab_i \): binary indicator equal to 1 if parents were cohabiting when child \( i \) was born, 0 if married
- \( \varepsilon_{it} \): unobservable error term
- \( \beta_1 \): coefficient of interest
Methodology: preferred specification

\[ y_{it} = \alpha + \beta_1 \text{cohab}_i + \beta_2' x_i + \epsilon_{it} \]

- Simple methodology
- \( y_{it} \) : outcome of assessment for child \( i \) at age \( t \)
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- \( \epsilon_{it} \) : unobservable error term
- \( \beta_1 \) : coefficient of interest
- \( x_i \) : vector of background characteristics of parents for pupil \( i \)

- Which \( x_i \) are exogenous?
Finding the causal impact of marriage

- How much of the gap between children of married and cohabiting parents is a causal effect?
  - Selection: how much of the gap is due to the sorts of people that are likely to get married?
  - Pathway: how much of the gap is caused by marriage itself?

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Data (1) Our sample

- Millennium Cohort Study (born around 2000)
- Sample of ~9,000 children, born to married or cohabiting couples
  - Those with non-missing marital status at birth
  - Those with non-missing child outcomes at age 3, 5 and 7

- Parental marital status measured at birth: Cohabiting vs. formally

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<th>Proportion of births to couples:</th>
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<th>ONS birth statistics</th>
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<td>Married and living together</td>
<td>70%</td>
<td>71%</td>
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<td>Cohabiting</td>
<td>30%</td>
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Data (2): Measuring child outcomes

- **Cognitive development at ages 3, 5 and 7:**
  - British Ability Scales
    - Age 3: vocabulary
    - Age 5: vocabulary, picture similarity and pattern construction
    - Age 7: word reading, pattern construction and maths

- **Social and emotional development at ages 3, 5 and 7**
  - Strength and Difficulties Questionnaire

- **Age adjusted and standardised scores:**
  - Units expressed in standard deviations (mean of 0 and standard deviation of 1)
Findings
Difference in outcomes between children born to married and cohabiting parents in the MCS

The graph shows the difference in outcomes between children born to married and cohabiting parents in the MCS, measured in standard deviations for BAS and SDQ. The differences are indicated at various ages (Age 3, Age 5, Age 7) and highlight the variations in outcomes across these categories.
How do the married-cohabiting gaps compare to other gaps?

Cognitive development at age 3

- Mother high vs low education
- White vs non-white
- Top vs bottom income quintile
- Father professional vs routine occupation
- Lone parents vs any couple
- Married vs cohabiting

Gaps in cognitive development between different groups.
How do the married-cohabiting gaps compare to other gaps?

Social and emotional development at age 3

Gap (sds)

- Education
- Income
- Occupation
- Lone parenthood
- Married vs cohabiting
- White vs non-white
Characteristics that are very likely to be exogenous (group 1)

- Ethnicity
- Immigrant status
- Religion
Who decides to get married? Ethnicity

- White
- Black Caribbean
- Black African
- Indian
- Pakistani
- Bangladeshi
- Other Asian background
- Mixed any background

Cohabiting at birth of child | Married at birth of child
---|---
0% | 100%
20% | 80%
40% | 60%
60% | 40%
80% | 20%
100% | 0%
Who decides to get married? Immigrant status and religion

- Mother born in the UK
  - Couples that are married at birth
  - Couples that are cohabiting at birth
- No religion
- Christian: any denomination
Characteristics that will reflect selection, but also could be affected by marriage (group 2)

- Education
- Occupational status
- Household income early in the child’s life
- Housing tenure
- Mother’s age at her first birth
- Length of relationship
- Planned pregnancy
- (Early) relationship quality

- These can all be debated...
Who decides to get married? Education and occupational status

- Mum has a degree
- Dad has professional occupation

- Couples that are married at birth
- Couples that are cohabiting at birth

Graph showing percentages of couples with different educational backgrounds and occupational statuses.
Who decides to get married? Income and housing tenure when the child is 9 months old

- Highest income quintile
  - Couples that are married at birth: 20%
  - Couples that are cohabiting at birth: 0%

- Lowest income quintile
  - Couples that are married at birth: 20%
  - Couples that are cohabiting at birth: 40%

- Own/mortgage house
  - Couples that are married at birth: 40%
  - Couples that are cohabiting at birth: 60%

- Rent from Local Authority
  - Couples that are married at birth: 40%
  - Couples that are cohabiting at birth: 80%
Who decides to get married? Family structure and age of the mother at her first child

- Teen mother with 1st child
- Lived together for more than 6 years
- Lived together for less than 2 years
- Planned pregnancy

0% 20% 40% 60% 80% 100%

- Couples that are married at birth
- Couples that are cohabiting at birth
What are the characteristics of married couples? Relationship quality

- Partner usually sensitive and aware of needs
- Wish there was more warmth and affection
- Suspect on the brink of separation

Couples that are married at birth
Couples that are cohabiting at birth
Cohabiting parents are more likely than married couples to be:

- White or Black Caribbean
- No religion
- A child of separated parents
- Low qualified
- Home renters rather than homeowners
- Teenager at birth of first child
- Lived together for short time (e.g. less than two years)
- Report the pregnancy was unplanned
- Lower relationship quality (when baby is 9 months old)
- Poorer maternal mental health (when baby is 9 months old)
- Less likely to have lower paternal involvement with baby (at 9 months)
- Less likely to set regular bedtimes (at the age of 3)
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A controls for the child’s month and year of birth
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C also controls for mother’s background (ever in care, own parents separated, children from a previous relationship)
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<td>-0.113***</td>
<td>-0.062*</td>
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<td>-0.270***</td>
<td>-0.242***</td>
<td>-0.162***</td>
<td>-0.104***</td>
<td>-0.064*</td>
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<tr>
<td>SDQ (age 7)</td>
<td>-0.274***</td>
<td>-0.264***</td>
<td>-0.230***</td>
<td>-0.154***</td>
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Conclusions: married versus cohabiting at birth

- **Cognitive ability**
  - Small gap in cognitive development at ages 3, 5 and 7
  - This is largely explained by the fact that cohabiting parents:
    - Have lower education
    - Have lower occupational status
    - Have lower income
    - More likely to live in social housing
  - Than married parents
Conclusions: married versus cohabiting at birth

- **Social and emotional development**
- Larger gap in social and emotional development at ages 3, 5 and 7
- This is largely explained by the fact that cohabiting parents:
  - *Have lower education*
  - *Have lower socio-economic status*
  - *More likely to have unplanned pregnancies*
  - *Are likely to report lower relationship quality when their child is 9 months*
- Than married parents
But . . .

- Many of the factors used to account for these differences are observed after marriage decisions have been taken.
- We cannot rule out the fact that these characteristics may have been affected by marriage and so cannot perfectly distinguish between selection and possible pathways.
- We can overcome these issues using the BCS data, as it provides us with very rich information about one of the child’s parents from their own childhood, long before marriage decisions were taken.
- The inclusion of such characteristics in our model ensures that we are capturing selection into marriage rather than ‘controlling away’ any effects of marital status on child development.
British Cohort Study data

- BCS sampled all individuals born in GB in one week in April 1970
- Eight waves to date: age 5, 10, 16, 26, 29, 34 and 38
- Children of half of the remaining cohort members were randomly selected for interview at the age 34 wave
- For these children we have rich measures of cognitive ability, social skills, attitudes and behaviours and family background characteristics from one of the child’s parents to add to our set of exogenous “group 1” characteristics
  - Factors that influence child development (such as cognitive ability)
  - Factors that proxy for characteristics that may influence child development (such as household income as a child)
BCS data: problems

1. Non-random attrition
2. Limited age range of parents
3. Sample only those that live with the BCS parent

Implications of data problems

- Results are not nationally representative
  - More affluent sample than MCS
- Children of male members of the BCS that have separated from their partner will be less likely to be included. Will bias results if these children are systematically different from those included.
  - Reassuringly, results hold for the female BCS subsample
BCS: measuring child development

• BAS: different tests for children of different ages
  – Age 3 to 5: vocabulary and early number concepts
  – Age 6 to 16: word reading, spelling and number skills

• SDQ: available for children aged 3 to 16

• Standardising by age is complicated
  – Large range in ages
  – Age of child at survey is non-random – determined by their parents’ choice about when to have children
  – Use nationally representative average scores within narrowly defined age bands and SDs from BCS sample (similar to MCS sample) to standardise our sample as best we can
Difference in outcomes between children born to married and cohabiting parents in the BCS

- BAS (age 3 to 16)
- SDQ (age 5 to 15)
Characteristics that are unlikely to be affected by marriage (group 1)

- Parent’s socio-economic circumstances as a child
- Parent’s cognitive ability
- Parent’s behaviour at age 10
- Grandmother very interested in parents education
- Religion
- Parent was in care as a child
- Grandparents separated when parent was a child
Who decides to get married? Grandparents’ background

- Grandparents were homeowners
- Neighbourhood had ‘poor’ social rating
- Grandmother smoked
- Grandparents had separated by age 10
- Grandmother was teenage mother

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Who decides to get married? Parents’ childhood ability

- Moderate/severe behaviour problems (10)
- Grandmother expected child to leave school at 16
- Highest quintile of cognitive ability (10)
- Lowest quintile of cognitive ability (10)

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Explaining the differences in development between children born to cohabiting and married couples using the BCS

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<th>2</th>
<th>3</th>
</tr>
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<tbody>
<tr>
<td>BAS, ages 3 to 16 (N=3020)</td>
<td>-0.152**</td>
<td>-0.144**</td>
<td>-0.032</td>
</tr>
<tr>
<td>SDQ, ages 5 to 15 (N=2291)</td>
<td>-0.177**</td>
<td>-0.167**</td>
<td>-0.052</td>
</tr>
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Note: * p < 0.05, ** p < 0.01

1 controls for no characteristics of the parents
2 controls for characteristics of the child and parents that closely match those exogenous variables available in the MCS. Child: gender, ethnicity. Parent: religion, in care as child, own parents separated, mother/father born outside UK, height
3 controls for characteristics of the parent additionally available in the BCS. Parent: socio-economic circumstances as a child, cognitive ability, behaviour during childhood, mother’s interest in education, expectations of education, age of mother when born, stammer/stutter as child, smoking by age 16, overweight as child

- Differences in cognitive and socio-emotional development between children born to cohabiting and married parents seem to largely reflect selection, rather than pathways through which marriage might affect child development
Decomposition of the gap in cognitive development (BAS, age 3 to 16)

- Residual gap: 21%
- Parent's mental and physical health: 10%
- Parent's education: 11%
- Parent's socio-economic background: 13%
- Basic demographics: 3%
- Parent's family background: 3%
- Parent's cognitive ability: 19%
- Parent's behaviour: 7%
- Missing data: 13%
Decomposition of the gap in socio-emotional development (SDQ, age 5 to 15)
Conclusions

• Our findings using the MCS suggest that the differences in child outcomes between married and cohabiting couples largely reflect differential selection rather than a causal effect of marriage.

• Arguments against our conclusion must show that marriage itself leads to very significant improvements in:
  – parents’ socio-economic status and
  – relationship quality

• Characteristics in the BCS data pre-date the marriage decision.
• Findings from BCS corroborate findings from MCS.
Policy implications

- Marriage / cohabitation “gap” is relatively small, without accounting for selection
- Marriage itself seems not to drive differences in outcomes
- Many factors influence children’s development
- Other areas should be the focus for policy?
  - Education
  - Cognitive skills
  - Planned pregnancy