COVID-19 pandemic and human fertility: a global perspective

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Arnstein Aassve, Nicolò Cavalli, Letizia Mencarini, Samuel Plach, Seth Sanders, Early assessment of the impact of the COVID-19 pandemic in high-income countries, mimeo
Historical evidence
Pandemics as a key driver of human population change

In the Malthusian era recurrent mortality and fertility crises typical: mortality peaks due to adverse external shocks

- birth troughs within 9 to 12 months
- (usually) followed by surpluses in conceptions once mortality fell back either at or below pre-crisis levels
Short-term fertility consequences of natural disasters, such as earthquakes and hurricanes =>
- peaks in mortality are generally followed by birth troughs within a year;
- from 1 to 5 years following the event, increased fertility (Nandi et al. 2018).

Drivers of these medium-term rebounds are:
- the desire of parents to replace lost children
- structural shifts in expectations on the survival probability of offspring
- fertility may also take on a symbolic meaning, as new births become a positive reframing mechanism, signaling a return to normality.
Limitations of historical comparisons
COVID-19 pandemic affects older people more

- Very low mortality and morbidity of potential parents
  - this is not a viable mechanism for negative short-run fertility change today

- Child mortality has been negligible
  - there is not replacement of the “lost children” effect
Fertility levels and fertility control

- Today very different from the past (i.e. a century ago)
- Very different stage of **fertility transition** across countries
- Limited examples of recent reactions of fertility to pandemics
Three recent fertility reactions to (limited) epidemics

**Pregnant pause**
Birth rate, change from seasonal average, %

- **SARS** (Hong Kong, 2002)
  - Months after start of epidemic: 9 months
  - Range: 0 to -40

- **Zika** (Brazil, 2015)
  - Months after start of epidemic: 9 months
  - Range: 0 to -20

- **Ebola** (West Africa, 2016)
  - Months after start of epidemic: 9 months
  - Range: 0 to -40

Source: Institute for Family Studies

The Economist
Models for fertility reaction to COVID-19?

- SARS  ➔ *immediate drop and recuperation*
  BUT short epidemic
- Zika  ➔ *a first drop in the short term, followed by a sharp rise in the next couple of years*
  BUT the virus particularly affected women in reproductive age and hampered fetal development (microcephaly cases): -> significant birth decline following the outbreak.
- Ebola  ➔ *2 year increase of fertility*
  disruptions in terms of staffing shortages, quarantines, health facility closures and fear of health
  family planning services returned to pre-Ebola levels rather soon
  BUT the risk of unintended pregnancies and maternal death during the epidemic spiked

Comparable case to assess the possible impacts of Covid-19 in LDCs?
Short term consequences
Possible post-pandemic fertility trajectories according to regional income level
Low and middle income countries

Estimated impact of COVID-19 pandemic on family planning

<table>
<thead>
<tr>
<th>Region</th>
<th>Girls at risk of adolescent pregnancy before COVID-19</th>
<th>Additional girls at risk of adolescent pregnancy* Year 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Asia and the Pacific</td>
<td>2,409,000</td>
<td>118,000</td>
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<tr>
<td>East and Southern Africa</td>
<td>7,233,000</td>
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<td>Europe and Central Asia</td>
<td>614,000</td>
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<td>Latin America and the Caribbean</td>
<td>4,865,000</td>
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<td>Middle East and North Africa</td>
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<td>South Asia</td>
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<td>West and Central Africa</td>
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<td>World</td>
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<td>1,041,000</td>
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</table>

Preliminary empirical results for low fertility countries
How to understand the implication of COVID-19 on fertility in developed countries

Eurofound (panel) survey on 27 European countries ➔

Women and young people worst off in terms of:
- economic resources,
- job loss,
- mental wellbeing
COVID baby boom turns into baby bust; here's why people aren't having kids

Press and mass media

BROOKINGS

FAMILY PLANNING & THE PANDEMIC
HOW COVID HAS CAUSED A BABY BUST ONE YEAR INTO LOCKDOWN

COVID-19

Hopes fade for EU baby boom after Covid lockdown

Adam Sage, Paris | Tom Kingon, Rome | Oliver Moody, Berlin
Monday March 15 2021, 12.00pm GMT, The Times

European countries fear that their “demographic winter” will grow icier still as a result of a slump in births linked to the pandemic.

New Zealand

New Zealand's Covid baby boom: where familiarity didn't breed contempt

3/15/2021

News Opinion Sport Culture Lifestyle
Predictions and intentions

- Survey data on fertility intentions, collected online during the early stages of the COVID-19 outbreak in Germany, France, Spain, and the United Kingdom, indicate that 73% of those planning to have a child in 2020 either decided to delay or abandon their plans entirely (Luppi, Arpino, Rosina 2020).

- Data from Google searches during the COVID-19 pandemic predict changes in aggregate fertility rates in the United States, and suggest that, between November 2020 and February 2021, monthly US births may drop by approximately 15% - an effect much bigger than what was seen in the aftermath of the Great Recession of 2008-2009 and comparable to that of the Spanish Flu (Wilde, Chen and Lohmann 2020).
Early Assessment of the Impact of the COVID-19 Pandemic on Births in High-Income Countries

- Birth data from January 2016 to February 2021, which corresponds to conceptions in the time from April 2015 to May 2020
- 11 high-income countries accounting for 35% COVID-19 reported cases and 31% reported deaths
- On average, Crude Birth Rates fell from 9.62 per 1,000 in the January to October 2020 period to 8.77 per 1,000 from November 2020: a **11.3% decline**
Early Assessment of the Impact of the COVID-19 Pandemic on Births in High-Income Countries

- Regression analysis taking into account confounding factors ➔ **-2.6% decline compared pre-pandemic period**
- Conceptions are a function of time trend, a dummy when the pandemic started, and the interaction between the time trend and the pandemic time period
- The pandemic dummy indicates if there is a downward jump in fertility
- The interaction term, would indicate an acceleration in the downward fertility trend

### The Pandemic’s Impact on CBRs

<table>
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<th>(1)</th>
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<tbody>
<tr>
<td>Pandemic</td>
<td>-1.256***</td>
<td>-0.775**</td>
<td>-0.244**</td>
<td>-0.253***</td>
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<td>(0.310)</td>
<td>(0.325)</td>
<td>(0.109)</td>
<td>(0.0732)</td>
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*Notes: Pre-pandemic data includes CBRs from January 2016 to October 2020. For details on included during-pandemic data see notes of Table 1. Standard errors in parenthesis. *p<0.10, **p<0.05, ***p<0.01.*

\[
\text{Conceptions}_{c,t} = \beta T_{i} + \gamma P_{i} + \delta T_{i} \times P_{i} + \alpha_{c,m} + \epsilon_{c,t}
\]
Early Assessment of the Impact of the COVID-19 Pandemic on Births in High-Income Countries

- In **Spain**, the pandemic is associated to a -0.85-point reduction in CBRs (an **11.5%** drop compared to the 2020 pre-pandemic mean)
- In **France** (-0.68 points or **-6.3%**)
- In the **United States** (-0.51 points or **-4.6%**)

At the moment we can only capture the very early stages of the epidemiological curve. Estimates are lower bounds of the overall effects of the pandemic, which are typically assessed 9-12 months after peak death rates.
Some elements to consider for the medium run

(uncertainty about duration of global pandemic: Definitions of short run/post pandemic vs medium run)
Fertility trends surrounding the Great Recession

Total Fertility Rate 2000-2013

Source: Eurostat data
Fertility trends surrounding the economic recession

Relative changes in TFR five years before (2003-8) and five years into the recession (2008-13)
It is not only a modern economic crisis

Possible stronger negative effect on fertility

- Catastrophic events that increase mortality may have independent effects beyond the economic disruption they cause
- New regime of uncertainty? ➔ crucial role of (global) mass-media
- Increasing inequality = fertility differential within countries
- Lost generation - a scarring effect of Great Recession for youth?

Possible lower negative effect on fertility

- Possible socio-psychological uncertainty reduction? ➔ children as a strategy to reduce uncertainty (Friedman)
- Different policy response with respect Great Recession ➔ no austerity
- If pandemic is overcome, sense of relief and social optimism ➔ total recuperation (e.g. marriages postponed)
Grazie

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