

Economic Factors Influencing the Costs and Benefits of Breastfeeding

NASEM Open Session

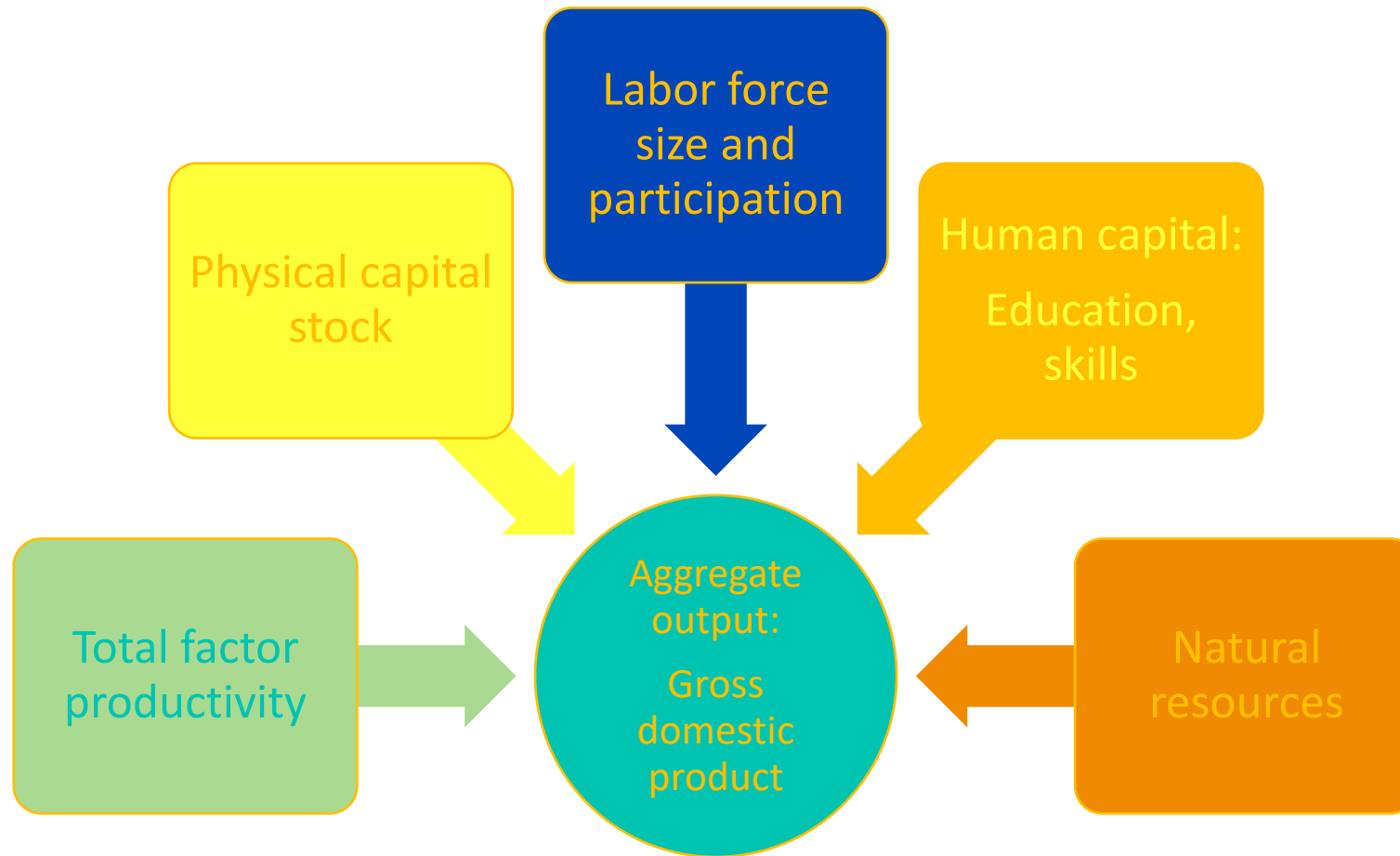
Committee on Understanding Breastfeeding Promotion, Initiation and Support Across the United States

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Macroeconomic growth



Macro growth accounting framework

$$Y = A \cdot f(K, L, H, N)$$

- Y: aggregate output (GDP)
- A: total factor productivity
- K: physical capital stock
- L: labor force
- H: human capital
- N: natural resources

L: Labor force size and participation

- Birth rate
- Infant mortality
- Parental health and mortality
- Absence to care for sick infant or child

L (babies): BF and the size of the future labor force

Infants who are breastfed have reduced risk of (CDC):

- Sudden infant death syndrome (SIDS)
 - About 1500 deaths/yr
 - Breastfeeding can reduce risk by 50%
- Necrotizing enterocolitis (NEC)
 - About 9,000 cases/yr
 - 10.4% of U.S. births are preterm, higher for Black, Hispanic mothers
 - 15-50% mortality rate, complications in many survivors
 - Breastfeeding reduces risk by >50%

L (parents): Personal health

Breastfeeding associated with lower risk of (CDC):

- High blood pressure.
- Type 2 diabetes.
- Ovarian cancer.

Infant death associated with:

- Increased mental and physical health problems for parents 2 decades later

L (parents): Missed work to care for child

Infants who are breastfed have reduced risk of (CDC):

- Asthma and severe lower respiratory disease
- Obesity
- Type 1 diabetes
- Acute otitis media (ear infections)
- Gastrointestinal infections, which can cause diarrhea and vomiting

H: Human capital

- Education
- Skills
- Overall ability to work productively given particular tasks and equipment

H: Impact of breastfeeding on human capital (babies)

Infants who are breastfed have reduced risk of (CDC):

- Asthma and severe lower respiratory disease
- Obesity
- Type 1 diabetes
- Acute otitis media (ear infections), which can lead to early use of antibiotics and speech delays

These conditions in childhood are associated with chronic health conditions in later life that can affect worker productivity and labor force participation

H: Impact of breastfeeding on human capital (babies)

- Interventions increasing breastfeeding causally linked with 0.5 st.dev. increase in cognitive development for children through age 5, especially verbal skills
 - Associative links breastfeeding to increases in cognitive development between 0.25 and 1.5 st.dev.
- Higher test scores in high school associatively linked with breastfeeding in infancy
- 1 st dev improvement in some measures of cognitive development associated with higher worker productivity and lifetime income

H: Breastfeeding protects human capital in parents

Breastfeeding associated with lower maternal risk of:

- High blood pressure.
- Type 2 diabetes.
- Ovarian cancer.

May help avoid adverse outcomes in preterm and other vulnerable infants

- Long-term implications for parent workplace productivity
- Infant death associated with increased mental and physical health problems for parents even 2 decades later

H: Breastfeeding-friendly policies in the workplace

- Positively associated with parents' productivity as workers

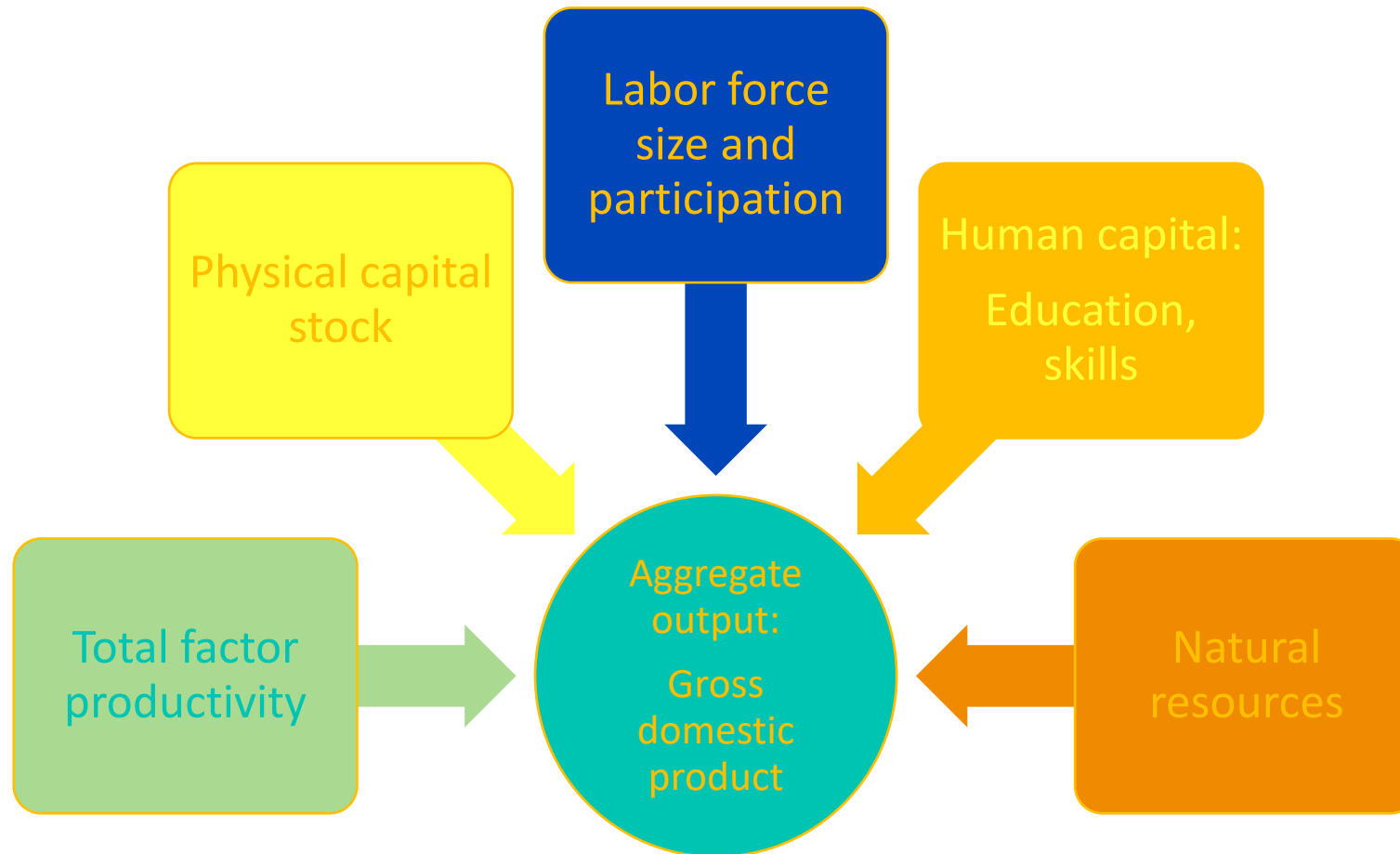
K: Physical capital stock

- Accumulates through investment, which is financed by household and government savings
- Americans spend more than \$2 Billion a year on infant formula

N: Net impact of breastfeeding for natural resources

- Does breastfeeding prevent help conserve natural resources and protect the environment?
 - Carbon footprint, air pollution
 - Breastfeeding for six months saves an estimated 95-153 kg CO₂ equivalent per baby compared with formula feeding
 - Use of infant formula increases plastic and other waste
 - Pumping may also be associated with plastic waste
 - Most infant formula is dairy-based
 - Carbon- and water-intensive

Macroeconomic assessment



Precautionary approach

Challenges associated with dose-specific RCTs mean it is important to incorporate robust associations and quasi-experimental results into models of costs and benefits of policies to support breastfeeding, much as one would for smoking or environmental issues.

- In some cases, mechanisms for healthful effects are known
- In other cases, mechanisms are not known, but positive associations with health outcomes are found repeatedly in the literature

Misalignment with current focal metrics

- GDP
 - Point-in-time labor force participation vs lifecycle labor force participation
 - Current vs expected future human capital and productivity growth
- Lack of commensurate emphasis on releases of infant health data, including preterm births, as a focal point for policy
 - Ex: CEA tweets about GDP data releases but not infant and maternal health data releases—health is also a macroeconomic issue

Scoring of costs

- Scoring of program costs and returns by the Office of Management and Budget and the Congressional Budget Office may overlook long-term benefits to child and parental health, workforce participation, labor productivity, and environmental goals
- Calculator tools (not just health-cost-focused) exist that model ways of accounting for fuller picture of costs and benefits, could provide lessons for OMB and CBO scoring

Fiscal issues

- Healthcare-cost focus is too narrow
- Regressive vs. progressive policies
 - Unpaid leave less progressive than paid leave

Paid parental leave

- Associated with ↑L, ↑H, improved health & enviro outcomes
 - higher rates of return to work after childbirth
 - longer duration of breastfeeding
 - fewer preterm births and other adverse outcomes that can present barriers to breastfeeding and parental health
 - reduced stress levels and improved mental health in mothers
 - Greater adherence to prenatal checkups and child immunization schedules
 - Reduced need to pump (plastic use, contamination risks)
- Estimated cost to reach 40-50% of the population via means-based paid family leave: \$4-6 Billion (2017 US dollars).

Quantitative analyses of BF support

- Infant formula industry marketing and lobbying has been very strong in the United States since the mid-20th century
- Formula-feeding is now the cultural norm in the United States, presenting challenges for discourse
 - Economists and policymakers may consult their own family and friend's experience rather than scientific evidence when designing studies or reports
 - Industry sponsorship sometimes colors input from healthcare professional organizations

➔ *Quantitative analyses conducted without formal partnership in multidisciplinary teams including experts in neonatal intensive care and lactation research screened for conflicts of interest may not be reliable*