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# The quantity-quality tradeoff: a cross-country comparison of market and nonmarket investments per child in relation to fertility

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# Project Background

- National Transfer Accounts
  - Disaggregate national accounts by age
  - Understand how societies transfer resources to dependent age groups
- What is missing?
  - National accounts do not include non-market care time production/consumption
  - Inadequate to measure dependency
- Why does it matter?
  - Misestimate economic concepts
  - Leave out much of what women contribute to economies
- Solution: **National Time Transfer Accounts**
  - NTA framework applied to “household production” satellite accounts
  - Wage imputation on a replacement basis

## **Example of NTTA contribution: examining evidence of quantity-quality tradeoff**

- Quantity-quality tradeoff hypothesis by Becker: fertility decisions not just about number of children to have, but of “quality” as well, and quality costs money
  - Lower fertility would be associated with higher quality
- When the hypothesis is tested on country-level macro data, quality is usually operationalized as:
  - Only educational investments (Barro and Lee 2010)
  - Education + health investments in children (Lee and Mason 2010, Lee and Donehower 2011, Prettner et al. 2013)
  - Consumption of children less their income (Ogawa et al. 2016)
- Extended QQ theory incorporates time costs of children, care provided at home is part of human capital investment

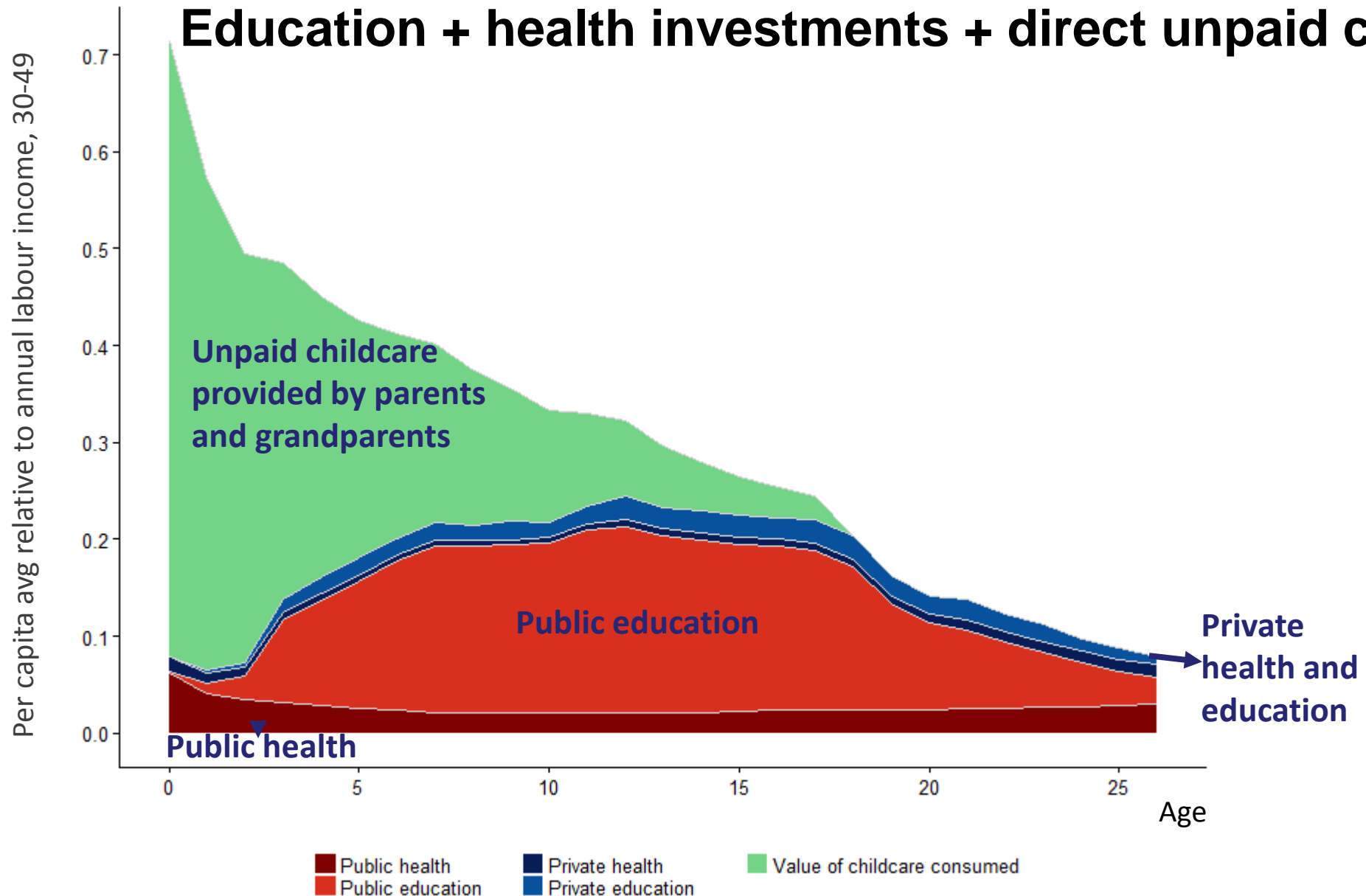
# Objective

- Incorporate the unpaid time costs of children into measures of child quality
  - Monetary basis, consistent with market measures
  - Across a diverse set of countries
- Using time use surveys and replacement wage imputation, we quantify the value of childcare in 25 countries, including direct care and children's share of general household services
- Combine NTA market expenditures per child with NTTA measures of unpaid care time inputs, and explore their relation to fertility in a cross-national comparative context

# Data on child quality

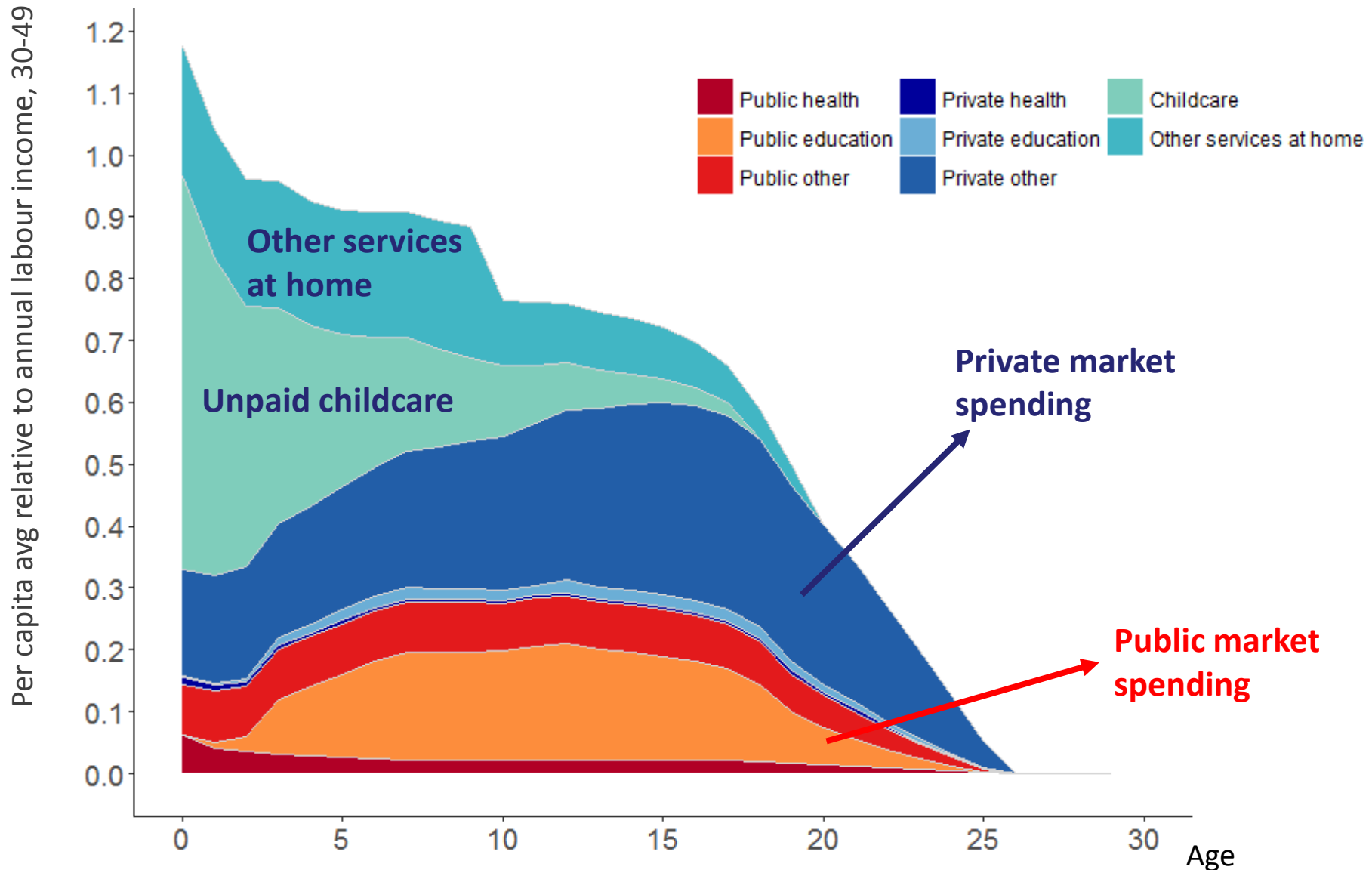
- 25 countries, 2000-2010
    - Low and middle-income countries (Africa, Europe, Latin-America): BG, CR, EE, GH, HU, LV, LT, MX, PL, SN, UY, ZA
    - High income countries (Europe, US): AT, BE, DE, DK, ES, FI, FR, IT, NL, SE, SI, UK, US
  - Two child quality proxies:
    - Human capital investments per child
      - Public and private market-based education and health costs (NTA)
      - Value of unpaid direct childcare received at home per child (NTTA)
    - Total spending per child
      - Total public and private market-based spending (NTA)
      - Value of unpaid direct childcare and children's share of general unpaid household services, up to self-supporting age (NTTA)
- ( All values normalized by average market labor income age 30-49 )

# Human capital investment per child: Education + health investments + direct unpaid childcare



Note: Average of 25 countries around 2000-2010. Source: Authors' calculations using NTA estimates from ntaccounts.org & AGENTA and NTTA estimates from AGENTA and CWW.

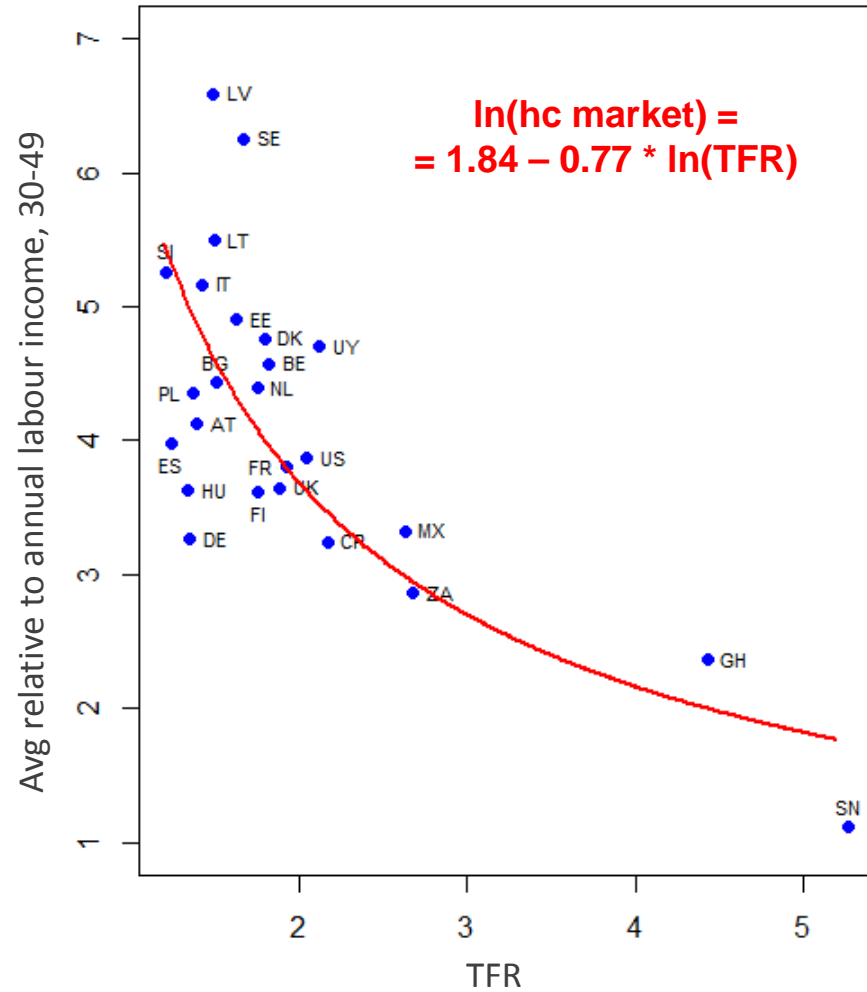
# Total spending per child



Note: Average of 25 countries around 2000-2010. Source: Authors' calculations using NTA estimates from ntaccounts.org & AGENTA and NTA estimates from AGENTA and CWW.

# Human capital investment per child vs fertility

Education + health investments per child & fertility, replicating Mason et al. (2016)



$R^2=0.60$ , \*\*\*  $p < 0.001$

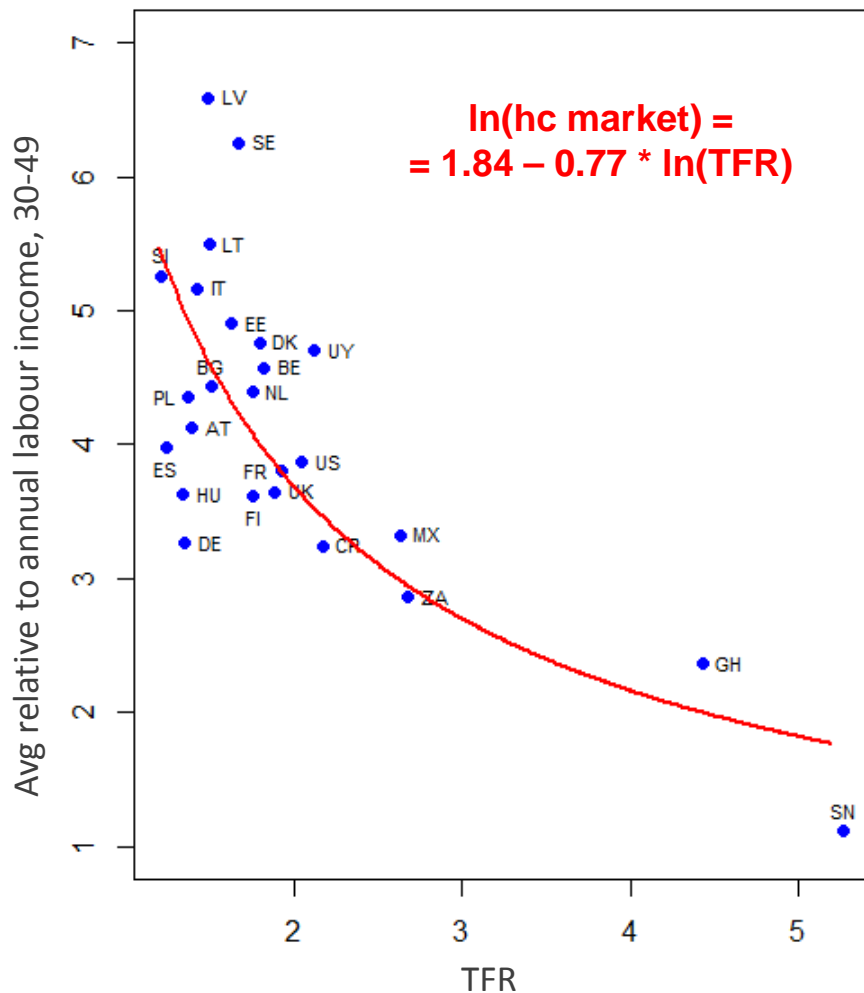
Standard error for the coefficient estimate: 0.127

Residual standard error: 0.224



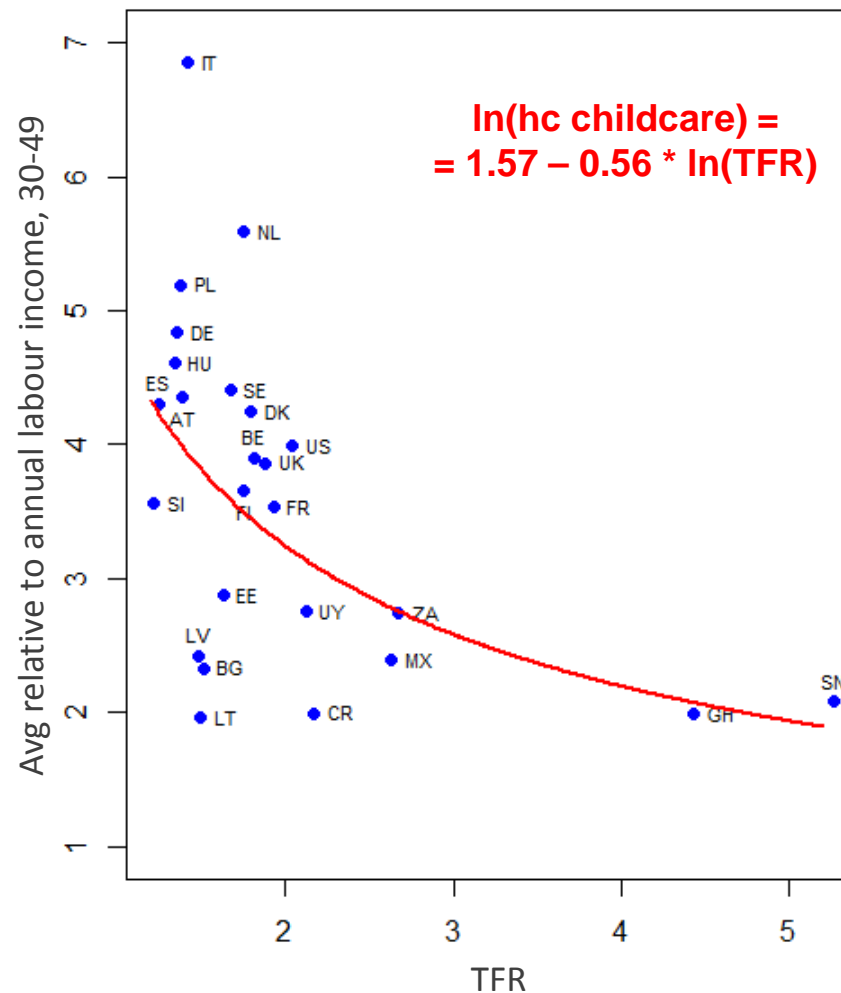
# Human capital investment per child vs fertility

Education + health investments per child & fertility, replicating Mason et al. (2016)



$R^2=0.60$ , \*\*\*  $p < 0.001$   
 Standard error for the coefficient estimate: 0.127  
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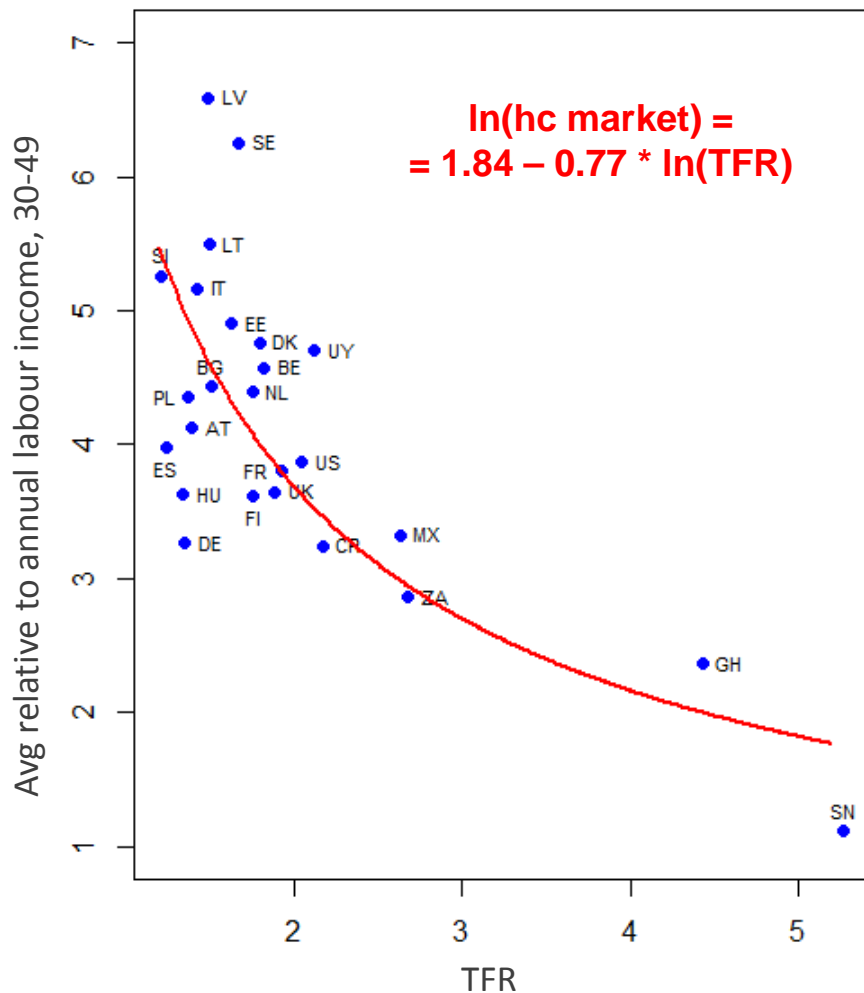
Unpaid childcare received at home per child & fertility



$R^2=0.30$ , \*\*  $p < 0.01$   
 Standard error for the coefficient estimate: 0.169  
 Residual standard error: 0.299

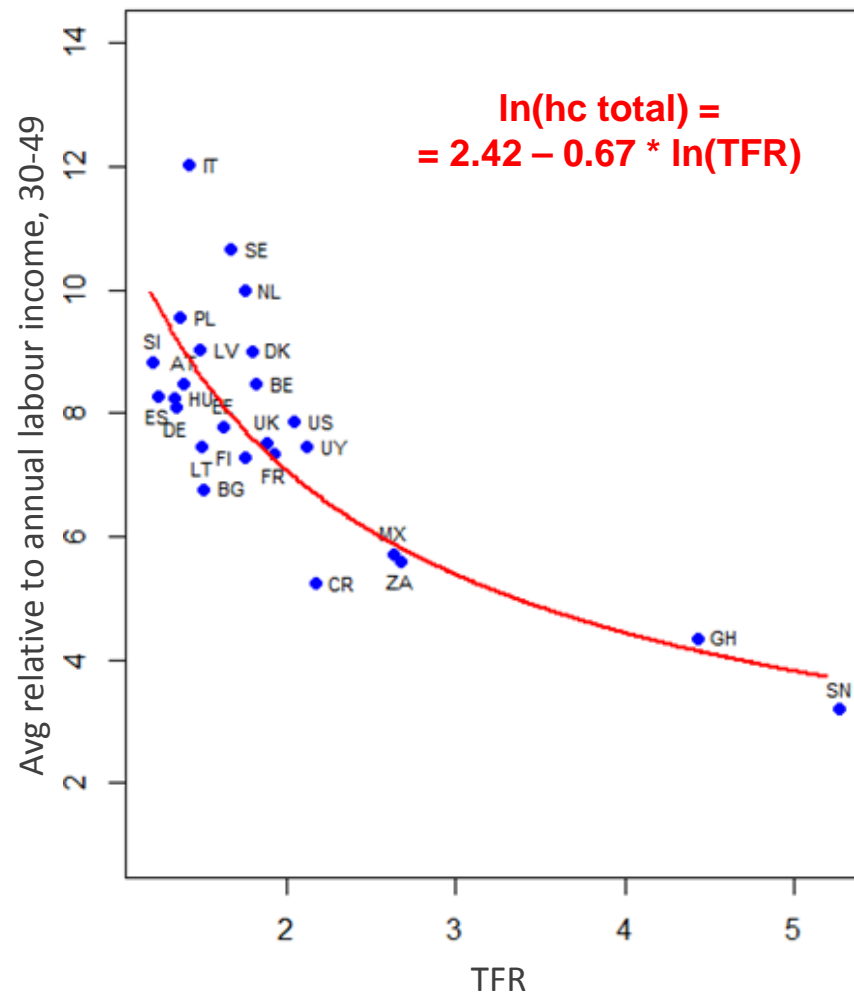
# Human capital investment per child vs fertility

Education + health investments per child & fertility, replicating Mason et al. (2016)



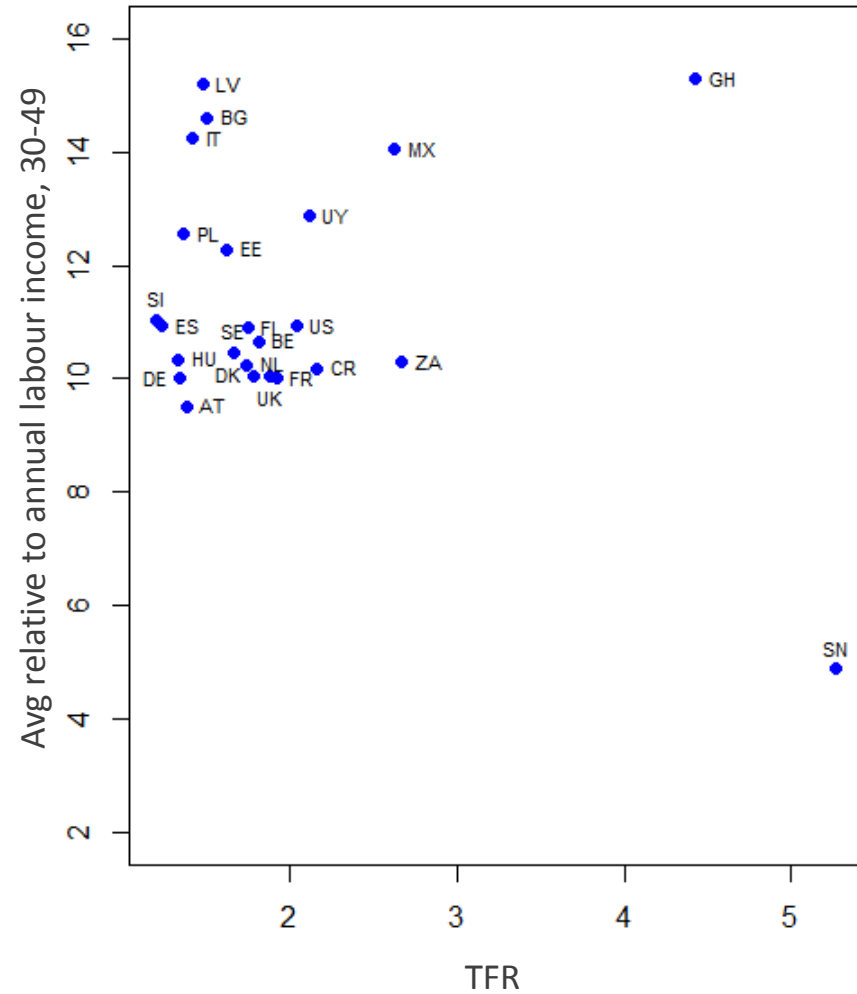
**R<sup>2</sup>=0.60**, \*\*\* p < 0.001  
 Standard error for the coefficient estimate: 0.127  
 Residual standard error: 0.224

Education + health investments + childcare received at home per child & fertility



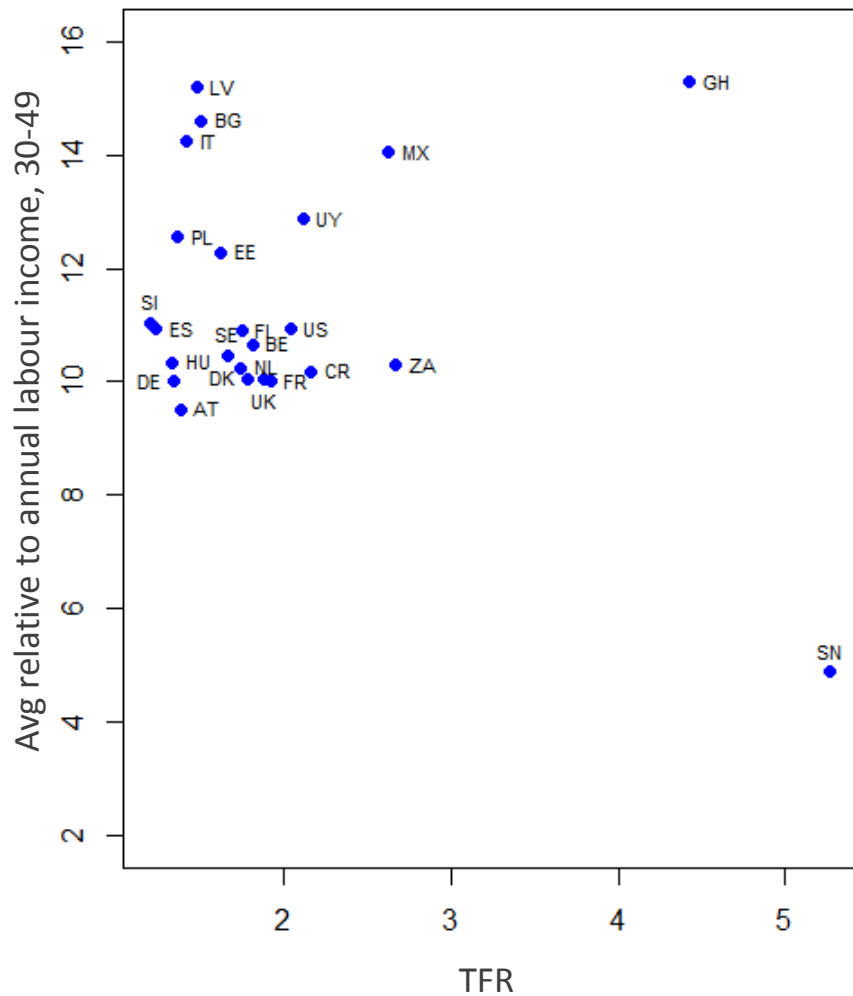
# Total spending per child vs fertility

Spending through market (public + private) per child & fertility, replicating Ogawa et al. (2016)

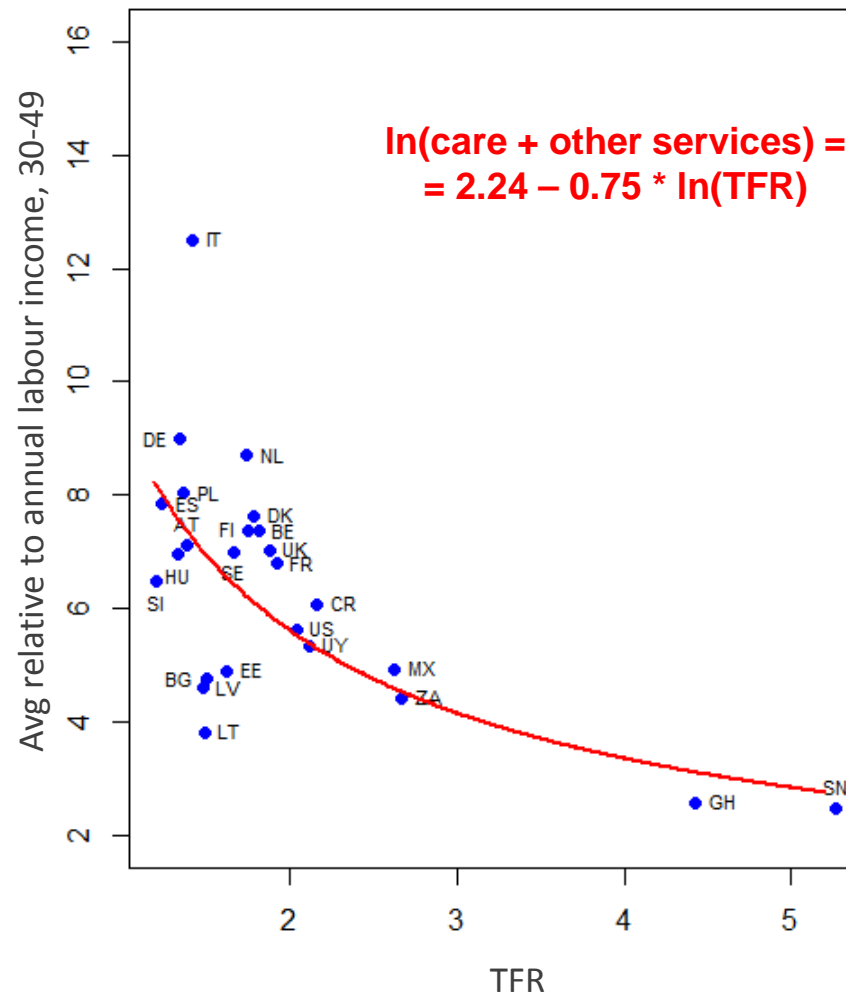


# Total spending per child vs fertility

Spending through market (public + private) per child & fertility, replicating Ogawa et al. (2016)



Childcare + general household services received at home per child & fertility



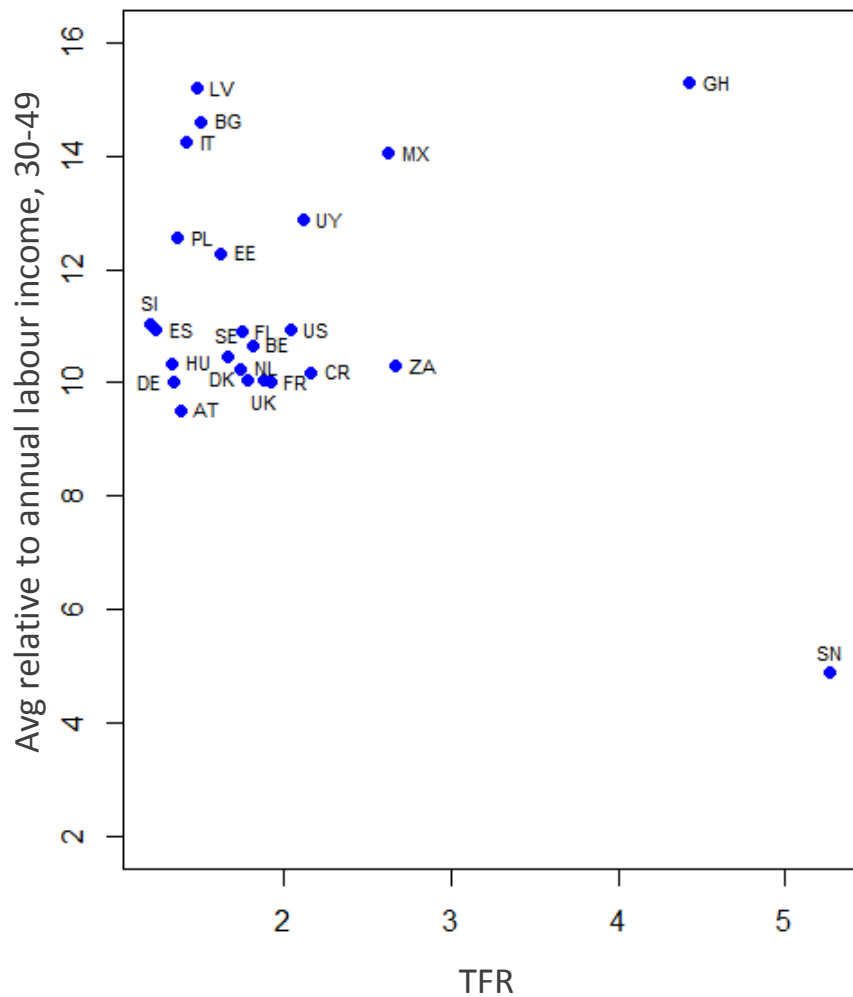
$R^2=0.53$ , \*\*\*  $p < 0.001$

Standard error for the coefficient estimate: 0.146

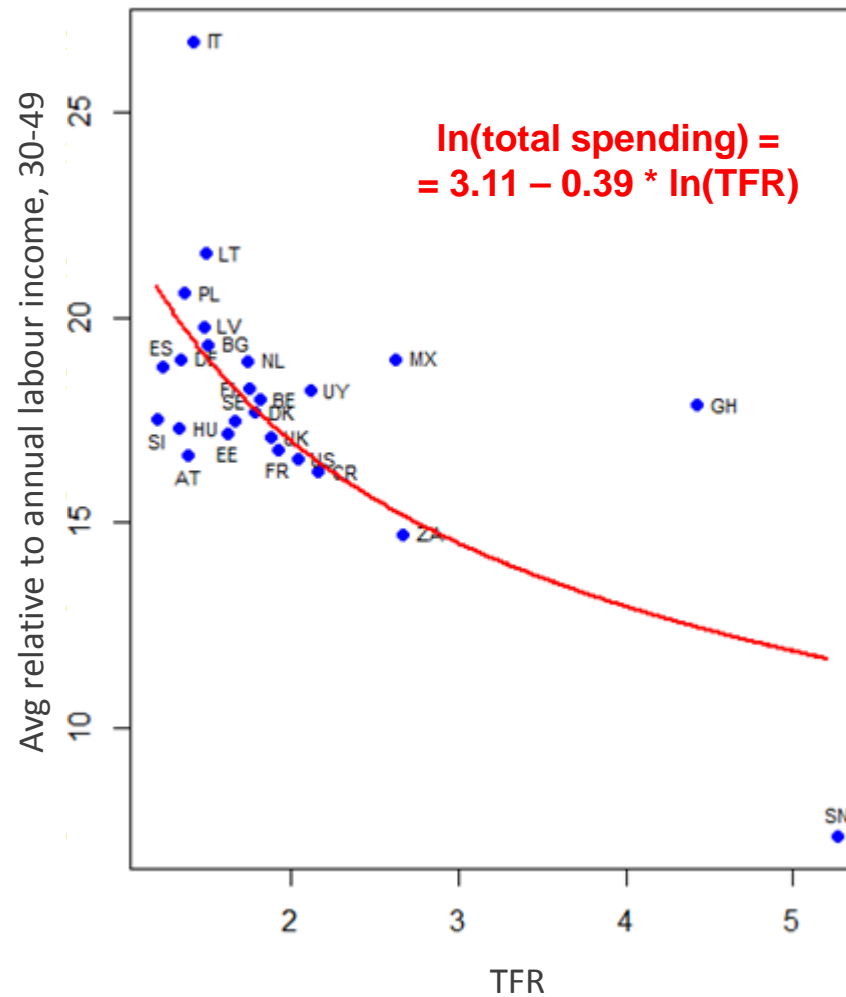
Residual standard error: 0.259

# Total spending per child vs fertility

Spending through market (public + private) per child & fertility, replicating Ogawa et al. (2016)



Total spending per child & fertility



$R^2=0.44$ , \*\*\*  $p < 0.001$

Standard error for the coefficient estimate: 0.093

Residual standard error: 0.164

# Summary

- **Unpaid childcare** received at home is an important and significant part of human capital investments
- Education and health investment measures **combined with** direct childcare, and total market + nonmarket spending per child support the quantity-quality tradeoff hypothesis on the country-level
- Quantity-quality tradeoff operates via both market and nonmarket channels
- Results relate to policy issues in many areas
  - Demographic dividends and the “burden of dependency” when changing population age structures change
  - Costs of childbearing and who pays them
  - Gender equity



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