Children: quantity vs quality trade-off:
(ref: 1. Ermisch, ch. 6

Observations (Becker):
1. over time, income has grown and fertility declined;

2. cross section data: inverse correlation between income and fertility

Why? Are children inferior goods?

Ans: Preferences for both number of children, and quality per child: children are normal good, but multi-dimensional.

What is "quality"?
- children a durable; quality is increasing in expenditure/child
- expenditures on human capital - time, money, level of education

Simple static model:

- unitary household
- assumption: quality same per child

- \( \max_{n,q,s} U(n,q,s) \) subject to \( I = \pi_c nq + \pi_s s \)

where

- \( n = \) number of children
- \( q = \) quality per child
- \( s = \) composite commodity reflecting parents' standard of living

\( I = \) total household income
\( \pi_c = \) price index of g & s for children
\( \pi_s = \) price index of g & s for adults

Note: budget constraint non-linear in \( n \) and \( q \):

\[ nq = \frac{I - \pi_s s}{\pi_c} \]
if children are normal goods, then sum of income elasticities of n and q must $> 0$ (rather than each)
- allows $\varepsilon_n < 0$, if $\varepsilon_q$ high enough

- as n ↑, additional quality/child more expensive (MC of quality, $p_q, \uparrow$ with n)

- as q ↑, additional child more expensive (MC of child, $p_n, \uparrow$ with q)

- optimal choice may lead to n↓ as income ↑

  - depending on income and substitution effects - income elasticities

Paper by Lundholm & Ohlsson:

- extend the model to incorporate both parental and other child care.

- results:
  - if parents use both, effect of income increase on n is ambiguous
- if parents use only own care, quality quantity tradeoff is different: depends on degree of complementarity with other goods (lifestyle…)

Children, part 2: expenditure on children
Source: *Handbook*, ch 4: pp 126-142

- parents determine human capital investment in children, and direct transfers

- are parental choices efficient?

- how are these divvied up between siblings? Possibilities:
  - equally
  - to compensate for inequality
  - to reinforce inequality

Unitary family

- parental utility function depends on
  a) own consumption,
  b) cons’m. by children,
c) adult earnings of each child, and
d) transfers given to each child

- separable in own utility and welfare of children
- "equal concern"

Model #1: Becker and Tomes' (1976) wealth model: parents care about each child's total wealth, not about source - indifferent between earnings and transfers

- given sufficient resources, invest in each child's human capital until marginal return = return available on financial investments
- if any child gets more from parents, comes as transfer

- diagram:
  1. axes: wealth of child 1, child 2
  2. 45° line: equal concern - parent's IC's symmetric about this
  3. \( Y_1^n, Y_2^n \): earnings level if no investment in human capital
  4. \( Y_1^*, Y_2^* \): earnings if wealth-max'g human capital investment
Wealth possibility frontier for children, and parent's choice of investment, transfer

- with equal concern, and ass'm that child 1 receives higher payoff from human k investment than does child 2, parents invest more in human capital of 1, and give more transfers to child 2 - to equate wealth
- in region b, both receive wealth-max'g human k, and transfers

Results?
- parents' investments reinforce endowment differences
- investments are socially efficient
- transfers counter earnings differences

- with fewer resources, wealth frontier moves in; linear region disappears (less left after human k investment)

- then, more educable child has higher wealth

- human capital investments in at least one child too low for efficiency
Model #2: Behrman et al SET (separable earnings-transfers) model: preferences among earnings indep. of distribution of transfers, and vice versa

- why? Dollar earned in labour market valued differently than dollar earned from assets
- coincides with wealth model when transfers are zero
- tradeoff between productivity and equity? - no necessary link between "equal concern"(parental preferences) and "concern with equity" (tradeoff)
- maximizing result **not** in general equal earning
- results dependent on functional form
Cost of children – evidence?
1. Manitoba Agriculture: estimates on raising a child to age 18 (average; not calculated after 2004):
   - costs vary by sex:
     - daughter $166,549
     - son $166,972 (higher food costs)
   - costs non-linear in age:
     - first yr most expensive (over $10,000)
     - lowest at 12 yrs ($7000)
     - increasing through teen age yrs

2. Canada’s federal child support guidelines:
   amount varies with
   - income (of payer)
   - province of residence
   - number of children

Research on family spending shows there is no single fixed cost of raising a child. Families spend more on their children as family income increases, with the proportion of family income devoted to children remaining the same across all levels of income. So the "cost of raising a child" depends on how much income, and how many children the family has. The paying parent’s contribution is set in accordance with the average proportion of income that parents at that income level spend on their children.

The receiving parent is presumed to contribute to the children in proportion to own income.

(Canada, Department of Justice, FAQS on child support guidelines)
Angrist *et al*:

- “…study effect of third and higher births on first and second born children’s completed schooling, adult earnings, and on marital status and fertility.” (p. 2)

- Data from Israeli census

- “..an exogenous increase in family size at second and higher births appears to have little effect on first and second born children, with the possible exception of an increase in the likelihood that female children will marry.” (p. 3)

Why no trade-off?

- parents adjust on margins other than quality inputs – personal consumption
- mothers more likely to stay at home – better quality childcare?
- What is reduced? – private vs public school; sharing a room; females marry earlier – how much do these differences affect outcomes?

Consumption or investment?