

April 2019

Defying Intuition: bigger families have no significant negative effect on children's schooling in Sub-Saharan Africa

Many family planning programs are based on the idea that “a small family is a happy family”, or that a reduction in family size enables families to raise investments per child. Intuitively this makes sense: dividing scarce resources among less children, leaves each child with more resources. We prove this intuition wrong.

‘Resource-dilution’ theory

Countries worldwide have devoted much effort and resources to family planning programs. Most of these programs have been voluntary, but some have left little choice to parents, such as China’s one-child program and India’s sterilization camps. A major assumption underlying these programs is that a reduction in family size enables families to raise investments in human capital per child, leading in its turn to a stronger economy.

This assumption found support in well-known social science research. Judith Blake (1989), studying U.S. families, famously concluded that children from one- and two-child families are better educated and more successful than children in larger families because their parents have more time and money to invest in them. This ‘resource dilution model’ was backed up in a theory by Nobel prize laureate Gary Becker (1960), in which the quantity and quality of children are modelled as substitutes from the parents’ point of view.

Positive causal effect? Economies of scale

However, there also exist theories that support a positive causal effect of family size on children’s schooling. These theories break with Blake’s and Becker’s assumptions that children only imply a cost to parents, and that more children imply higher costs. As such, the quantity-quality trade-off need no longer hold when allowing for part-time child work, with children self-financing their schooling, or when allowing for economies of scale in raising children, with children sharing clothes, text books, transport to

Marijke Verpoorten

Institute of Development Policy,
University of Antwerp
marijke.verpoorten@uantwerpen.be

Sahawal Alidou

Institute of Development Policy,
University of Antwerp
sahawal.alidou@uantwerpen.be

Institute of Development Policy
University of Antwerp
iob@uantwerpen.be
+32 3 265 57 70

uantwerp.be/iob

Parents' characteristics determine preferences both for the number of children and their years of schooling

school, or knowledge and skills. Economies of scale can also be present in household chores, such that the time each child spends on chores reduces with the number of siblings, thus freeing up time for school.

Big families correlate with levels of schooling

Despite the diversity of theoretical predictions, it is hard to shake off the idea of a negative causal relation. An important reason for its stickiness lies in the strong negative correlation between family size and children's schooling, and the difficulty to empirically distinguish this correlation from the actual causal effect of family size on schooling. To make this distinction, one needs to purge the correlation of confounding factors.

Most importantly, parents' characteristics determine preferences both for the number of children and their years of schooling. For instance, mothers who enjoyed more years of schooling generally prefer smaller families and at the same time are likely to give more importance to their children's schooling. To the extent that the confounding factors are not perfectly observed and controlled for, the estimated relation between family size and children's schooling cannot be interpreted as causal.

The twin instrument

Ideally, we need to focus on the variation in household size that is randomly allocated to household, like in a lottery. In a recent study, we do just that by focusing on twin birth. The birth of twins can be used to isolate the causal effect of family size on the educational outcomes of children born prior to the twin birth. The same does not apply for children born after the twins, because their birth can be the result of parental choice.

Several other studies have relied on twin births to empirically unearth the quantity-quality trade-off, but none have looked specifically at Sub-Saharan African countries. We fill this gap. We study a sample of children from close to 208,729 households across 34 Sub-Saharan African countries. In 3,844 of these households twins were born, causing a quasi-random increase in household size.

Looking at Sub-Saharan Africa

There are various reasons why SSA provides an interesting setting for such analysis. First, in SSA, the majority of households face tight budget constraints, schooling is barely compulsory, and children's participation in the labor market and in time-consuming household chores is socially still largely accepted. Combined, these features make it very likely that a household's decision to invest in children's formal education involves important trade-offs. Second, in most African cultures, family members are bound to act for the benefit of the collective, be it the nuclear family or the extended family, the clan or ethnic group. Regarding the decision to invest in schooling, this implies that the benefits of schooling are expected to be shared – giving for instance way to the so-called 'chain arrangement' in which earlier-born children are sent to school and use their wage earnings to invest in their younger siblings later on, rendering a quantity-quality trade-off superfluous. Third, SSA still is the region with the highest fertility and lowest educational enrolments and attainments, increasing the relevance of research on these issues.

Result: ‘zero-effect’ of family size on schooling

Overall, we find no significant effect of family size on children’s schooling. Our results indicate that bigger families send some children early on to school, together with older siblings, in an attempt to benefit from economies of scale in schooling inputs. Especially better off families are however equipped to reap the economies of scale. We also find that the ‘zero-effect’ of family size does not vary substantially across time. This in sharp contrast to the role of other factors - wealth, parental education, gender, residence area (urban/rural) – that significantly decreased over time, in line with the “democratization” of education.

Limitations and future research

Our research suffers from at least two important limitations. First, the data that we analysed provides only a snapshot in time of children whose mothers are of childbearing age (15-49). The number of children observed as well as their schooling attainment reflect therefore only an intermediate situation, not the final one. This leaves open the possibility that, in the longer run, the zero-effect makes way for a positive or negative one. Second, the available data are not well suited to distinguish between explanations for our findings.

These gaps should be filled by future research, relying on other types of data such as pooled census data in which families and their split-offs are traced over time, and micro-economic surveys that provide detailed information on household members’ consumption of schooling inputs and their time allocation. A more open line of questioning, in qualitative research, could also reveal the reasoning underlying parent’s decision making.

For the full article on which this Policy Brief is based, please see

Alidou, S. & Verpoorten, M. J
Popul Econ (2019).

<https://doi.org/10.1007/s00148-019-00730-z>