

Original Scholarship

Identifying Causal Effects of Reproductive Health Improvements on Women's Economic Empowerment Through the Population Poverty Research Initiative

JOCELYN E. FINLAY* and MARLENE A. LEE†

**Harvard T.H. Chan School of Public Health*; †*Population Reference Bureau*

Policy Points:

- Improvements in reproductive health lead to improvements in women's economic empowerment.
- Contraceptive use improves women's agency, education, and labor force participation; higher maternal age at first birth (reducing adolescent childbearing) increases the likelihood of school completion and participation in the formal labor market; and having fewer children increases labor market participation.
- Reproductive health is not just a benefit to a woman's individual rights, but her gateway for breaking free from her poverty trap and improving the welfare of herself, her children, and her household.

Context: Women's access to employment, business opportunities, and financial resources is critical to achieving the United Nations Sustainable Development Goals over the next 15 years. With increased attention to women's economic empowerment among donors and policymakers across the globe, this moment is a pivotal one in which to review the current state of the research on this topic.

Methods: We reviewed the Population and Poverty (PopPov) Research Initiative results from the past 10 years with attention to the causal link between reproductive health improvements and women's economic empowerment, in addition to seminal research that informed our understanding of the link.

Findings: Our review of PopPov findings revealed that improvements in reproductive health do lead to improvements in women's economic empowerment;

expanding contraceptive use improves women's agency, education, and labor force participation; higher maternal age at first birth (reducing adolescent childbearing) increases the likelihood of school completion and participation in the formal labor market; and having fewer children increases labor force participation.

Conclusions: Gaps remain in measuring women's work and in the full exploration of women's economic empowerment. More research is needed regarding the long-term impact of reproductive health improvements on women's economic empowerment, as some studies have shown that at times unintended negative consequences occur after early positive improvements.

Keywords: empowerment, contraceptive use, labor force participation, wages, education.

FROM 2000 TO 2015, THE PRIORITIES SET BY THE MILLENNIUM Development Goals (MDGs) and agreed to by all 191 United Nations member countries helped to focus international, regional, and country-level efforts on the reduction of poverty. While these efforts realized some success in lowering poverty rates, there is widespread recognition that not all segments of the population benefited equally during this press for poverty reduction. As a result, the successor international effort to the MDGs—the Sustainable Development Goals (SDGs)—calls attention to achieving gender equality and empowerment for all women and girls, one of the steps toward eradication of extreme poverty. Women's employment, business opportunity, and access to financial resources are widely seen as critical to achieving the SDG targets embedded within each goal. Academic research can provide needed information on what works to achieve women's economic advancement. The Population and Poverty (PopPov) Research Initiative is one source of research on the causal effect of improvements in reproductive health on women's economic empowerment.

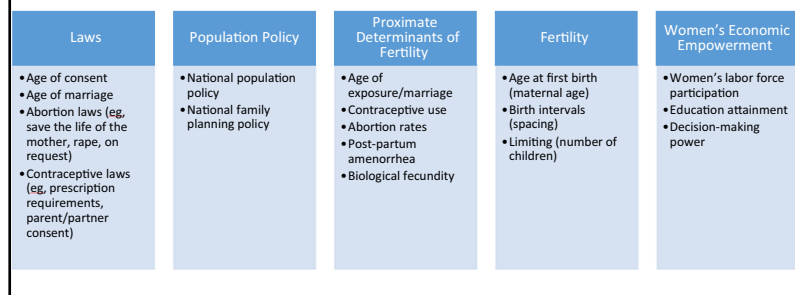
Today, the agenda of women's empowerment occupies a prominent place among the 17 global goals and 169 indicators adopted by the UN General Assembly in 2015, as part of the 2030 agenda for sustainable development. The primary goal of the SDGs is to end extreme poverty. Goal 5, "Achieve gender equality and empower all women and girls," targets the barriers to reproductive health, including gender-based violence, early marriage and childbearing, female genital cutting, and limited access to reproductive health care and reproductive rights.

Goal 5 also addresses gender discrimination, unpaid work, equal rights to economic resources, access to technology, and legal frameworks that promote gender equality and empowerment for all women and girls. The targets embedded in the SDGs, particularly in Goal 5, point to the behavioral links among women's reproductive health, human capital, labor force participation, productivity, and poverty.

Since 2006, through PopPov, the William and Flora Hewlett Foundation; the Population Reference Bureau; and partners in Europe and sub-Saharan Africa, including the Research Council of Norway, the UK's Economic and Social Research Council, the Netherlands' Organisation for Scientific Research-Science for Global Development, Agence Française de Développement, Institut de Recherche pour le Développement, and the World Bank, have supported the design, funding, and dissemination of research examining the linkages between population, reproductive health, and economic development in low- and middle-income countries to inform the MDGs and now the SDGs. The Hewlett Foundation and its partners have supported research to improve the evidence base on how population growth affects economic development and to inform medium-term policy issues, based on a research agenda outlined by the Center for Global Development expert working group in 2005. The Population Reference Bureau, the Institute for International Education, and the African Economic Research Consortium were implementing partners. Through PopPov, the Hewlett Foundation sought to increase understanding of how demographic changes and reproductive health impact economic development, particularly in sub-Saharan Africa, with the hope that these interactions might be considered in the design of policies and programs to reduce poverty and spur economic growth, as well as improve women's economic empowerment.

To develop the PopPov research agenda, before PopPov's inception in 2006, a team of experts articulated a set of potential pathways linking demographic behaviors to economic outcomes that needed further research to elaborate the causal link from reproductive health to economic well-being, including various aspects of women's economic empowerment. Work by Bloom, Canning, and Sevilla was influential in articulating pathways to explain links between health and economic productivity,¹ and it underscores how reproductive health improvements can stimulate economic growth. The overview outlined in Figure 1 draws on theories of the demographic dividend,¹ the qualitative-quantity trade-off of investments in children,² the opportunity cost for

Figure 1. Overview of the Causal Pathways From Reproductive Health Improvements to Women's Economic Empowerment [Color figure can be viewed at wileyonlinelibrary.com]



women of child care and labor force participation,³ and the link of health to productivity.⁴ Figure 1 illustrates possible pathways of how changes in reproductive health impact women's economic empowerment. Changes in laws and family planning policy can impact the proximate determinants of fertility such as contraceptive use, and this can then impact the timing and number of births. The maternal age at which children are born, the space between births, and the number of children can then impact women's economic empowerment as measured by women's labor force participation, education attainment, and decision-making power.

The PopPov research relevant to women's economic empowerment that followed over the next 10 years elaborated the causal mechanisms behind these pathways. Social determinants of fertility change, education and wealth, may be mediators to the outcomes of women's economic empowerment, and thus a defining goal of the PopPov Research Initiative was to account for this reverse causality.

In this paper, we do not review the large literature that looks at the effect of economic empowerment on reproductive health and fertility outcomes. Instead, we summarize results from PopPov research that draws the causal link *from* reproductive health improvements *to* women's economic empowerment. Some researchers in the PopPov Research Network have conducted related work that was supported through other sources during the 10 years in which the PopPov Research Initiative was active. Because it would be a misrepresentation of the literature not to,

we also draw upon causal analysis from these members of the network even though the work is part of a research program that may have only been partially PopPov-supported.

Our review of the PopPov literature finds proof of reproductive health's causal effect on economic empowerment. For example, contraceptive access and use increase women's decision-making power over the timing and number of children,⁵ education attainment,^{6,7} labor force participation,⁸ and job quality.⁹ Higher maternal age at first birth (or reduced chances of childbearing during adolescence) increases the likelihood of school completion^{6,7,10} and participation in the formal labor market.⁹ Having fewer children increases labor market participation.^{8,11} In related qualitative work outside the PopPov body of research, longer birth intervals also present as a reason for increased labor market participation.¹² Each result showed the positive effect of reproductive health improvements on components of economic empowerment through these channels. However, related research (supported outside of the PopPov Research Initiative) on the Matlab, Bangladesh, intervention found that in several cases there were unintended negative outcomes of reproductive health improvements for women.¹³ Also, in one experiment in Zambia, couples experienced negative psychosocial outcomes of wives' concealing contraceptive use from husbands.⁵ In another study, in Malawi, girls who delayed marriage to a later age tended to have limited marriage market options.¹⁴ Thus, our review provides strong positive evidence but also suggests a need for more research on how to ensure long-term positive effects on women's economic empowerment.

To elaborate on the theoretical framework linking reproductive health improvements to women's economic empowerment, we also drew on 4 seminal papers from authors outside the PopPov Network in the 2006-2016 time frame.¹⁵⁻¹⁸ While work on the Matlab site had been conducted within the network,^{19,30} a complementary study conducted in Navrongo, Ghana, was one of the few early papers to use quasi-experimental research design to examine the causal link between reproductive health and women's economic empowerment.¹⁸ Goldin and Katz's work in 2002 provided a novel causal pathway linking reliable contraception to college completion.¹⁶ The pill enabled women to *plan* their college education and careers and not live in a world of uncertainty of unplanned pregnancies. Miller's¹⁵ and Bailey's¹⁷ work informed the agenda directly by examining the causal impact of nationwide policies on women's economic empowerment. While others outside the PopPov Network

have also examined the causal impact of reproductive health on women's economic empowerment, these 4 rigorous and high quality papers met statistical standards to which the PopPoV Network aspired.

Methods

In this paper we aimed to provide a comprehensive synthesis of PopPov studies that explored the causal effect of reproductive health on women's economic empowerment. We began with the research output generated by the PopPov Research Initiative. The Population Reference Bureau kept a record of this work and archived lists of research outputs by each project (www.poppov.org). We originally selected only papers that were publicly available (peer review, working papers, and conference papers) after 2006, had women's economic empowerment indicators (women's work, women's education, women's agency) as an outcome, and used a statistical method to inform the causal effect of reproductive health improvements on women's economic empowerment. In framing the synthesis of the work, we considered national-level policies as well as subnational programs designed to impact reproductive health and contraceptive use and their effect on the 3 components of fertility: maternal age at first birth, birth intervals, and the total number of children. Of the 287 identified working papers, journal articles, book chapters, dissertation papers, and reports from the PopPov Research Initiative as of June 2016, 11 papers causally linked the effects of reproductive health (or the subsequent fertility changes) to women's economic outcomes and met statistical rigor. In addition, we included 3 papers that examined the impact of fertility differences on women's economic empowerment without the first stage of reproductive health policy or programs^{7,9,11} and 2 papers that were supported by funders outside the PopPov Research Network but that were closely linked to the PopPov-supported work being conducted by the researchers from 2006 to 2016.^{13,20} As noted, we also included 4 seminal papers that influenced the work by the PopPov Network members.¹⁵⁻¹⁸

Empowerment Consists of Process, Advancement, and Power

For this review, we selected the definition of women's economic empowerment that resonated most clearly with the types of outcomes analyzed

as part of the PopPov research agenda. In a recent attempt to define women's economic empowerment, the International Center for Research on Women (ICRW) determined that "a woman is economically empowered when she has both the ability to succeed and advance economically and the power to make and act on economic decisions."²¹ In Box 1 we outline the definitions of women's economic empowerment and reproductive health that we apply in this paper.

Box 1. Defining Reproductive Health and Women's Economic Empowerment

The World Health Organization (WHO) offers a definition of reproductive health²²:

Within the framework of WHO's definition of health as a state of complete physical, mental and social well-being. . . . Reproductive health, therefore, implies that people are able to have a responsible, satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when and how often to do so.

The International Center for Research on Women offers a definition of women's economic empowerment²¹:

A woman is economically empowered when she has both the ability to succeed and advance economically and the power to make and act on economic decisions.

The ICRW definition of economic empowerment and the proposed measurement of these concepts fit well with the PopPov focus on education, labor force participation, income, and assets as indicators of economic well-being. The PopPov research agenda did not encompass the breadth of outcomes envisioned in the broader concept of women's empowerment, and the measurement of empowerment indicators has been contested. (We discuss this in the limitations section later in the article.) However, the PopPov Network did attempt to capture indicators of women's economic empowerment, particularly in labor force participation and education attainment, advancing our understanding of women's economic empowerment while considering the limitations that come with empirical indicators of empowerment. That is, the theoretical definition of women's economic empowerment had advanced to a more

nanced state than the empirical representation of women's economic empowerment due to limitations in measurement of women's work and education.

The broad term *empowerment* has been defined in many ways; most definitions draw on ideas developed by Sen²³ and include references to "a process of change," "ability," and "choice."^{24,25} In line with earlier thought, Kabeer defines women's empowerment as "[a] process of change during which those who have been denied the ability to make choices acquire such an ability."²⁶ According to Narayan, the mechanisms through which empowerment increases are access to information, inclusion and participation, accountability, and local organizational capacity.²⁵ Extending this definition of women's empowerment to women's *economic* empowerment, Narayan argues that capabilities evolve in times of economic expansion and with an increase in assets. This focus on economic opportunity and the means to participate in the economy creates a discussion of economic empowerment distinct from empowerment through participation in the political process.

Assessing Strategies for Causal Analysis

To identify a causal effect of reproductive health on women's economic empowerment, the PopPov Network researchers relied on rigorous statistical methods, typically from applications in economics. In the early years of the network, an instrumental variables approach was applied. For example, twins were used as a proxy for fertility in order to identify the causal effect of fertility on investments in children's education.²⁷ (Note that while T. Paul Schultz was an active member of the PopPov Network, this paper was not attributed to the network.) Similarly, reproductive health policy was used as a proxy for fertility to ascertain the effect of fertility on women's labor market participation.⁸ Other studies outside the PopPov Network used natural experiments to identify the effect of family planning policies on women's education attainment.¹⁵ Quasi-experimental designs provide some of the strongest evidence for the link. The Matlab experiment,¹⁹ in which there were treatment and control groups but not randomization, showed that improvements in contraceptive access and use led to improved women's economic empowerment. Ashraf and her colleagues used a randomized controlled trial to identify the causal effect of contraceptive use on women's

empowerment (not women's *economic* empowerment) and decision making over fertility preferences.⁵

Better Reproductive Health Enables Women's Economic Empowerment

Reviewing the papers resulting from our search, we identified 5 key relationships that address the causal link between reproductive health and economic empowerment:

- (1) The effect of family planning policies on elements of women's economic empowerment as captured by education, labor force participation, and agency
- (2) The effect of contraceptive use on women's economic empowerment, including decision-making power within the household
- (3) The effect of maternal age at first birth (and early marriage) on women's economic empowerment, including education attainment and labor market opportunities
- (4) The effect of birth intervals on women's economic empowerment
- (5) The effect of the total number of children on women's economic empowerment as seen through labor market opportunities

Effects of Family Planning Policies on Women's Economic Empowerment

Studies of family planning programs carried out at the national level showed that reducing the costs of contraception,¹⁵ liberalizing laws,^{8,16} and implementing national family planning initiatives¹⁷ increased contraceptive use. Furthermore, the increase in contraceptive use led to a delay in first birth and an increase in women's economic empowerment through increased education attainment,¹⁶ labor force participation,¹⁷ and wages.¹⁷

In Miller's example of Profamilia in Colombia,¹⁵ and in Goldin and Katz's and Bailey's examples of the US reduction in the age of majority and mature minor laws,^{16,17} these national-level policies led to significant improvements in education as access to contraception through these programs enabled education attainment and, in the US case, reliable completion of college degrees for women.

Miller¹⁵ explains that it is important to examine the mechanism by which reproductive health policies impact women's economic empowerment—through changes in fertility. "Fertility" can represent the maternal age at first birth, the intervals between births, or the total number of children a woman has in her reproductive years. Miller showed that Profamilia had very little impact on the total fertility rates and contributed little to the ongoing demographic transition in Colombia, but it did have a big impact on facilitating the delay of the first birth and, consequently, enabling girls and women to extend their education.

Goldin and Katz's work has shown that access to contraception, specifically the pill, enables women in the United States to delay marriage, increasing age at first birth and lowering the cost of investing in their professional education. The mechanism is nuanced and has a few conditions for this effect to take place.¹⁶ For there to be a positive impact of delaying first birth on women's economic empowerment, Goldin and Katz assert 2 conditions. One is that the time gained from delaying first birth is used for investment in professional education. The second is that there is social momentum so that men in the marriage market with these women value the increase in lifetime earnings the women can bring to the marriage, and thus the men also delay their marriage. This then ensures that those women who do marry later (and have children later) make good matches in the marriage market. When women use the delayed time for something other than education, or social momentum does not take place, women can lose out from the delayed first birth and become matched with less desirable partners. In the PopPov Network, we saw that these conditions became important results in an African context.^{6,14}

Enabling access to contraception did not just impact the beneficiary generation, but also the children of those women. Bailey shows that access to modern contraception in the United States reliably reduced sibship size, enabling parents to invest more time in each child and in each child's education so that the adult children then went on to benefit in the form of greater education attainment and wage earnings.¹⁷ The intergenerational impacts of family planning policies were also seen in the PopPov Network in the Bangladesh context.²⁸

These papers supported outside PopPov Network research,^{16,17} and the mechanisms they evidence show the impact of family planning on the timing of first births, the number of children, and women's education, as well as the impact on the education attainment of beneficiaries children in the US context. In the developing country context,

which was PopPov's focus, Baird and colleagues'¹⁴ results mirror those of Goldin and Katz¹⁶ remarkably closely. Furthermore, globally, Bloom and colleagues⁸ used an instrumental variable approach to show that the liberalization of abortion laws led to a decline in fertility, and that 1 less child increased female labor force participation by 2 years, on average.⁸ In their paper, the researchers digitized information from the United Nations regarding abortion laws in each country from 1960 to 2009, the year of the writing of the paper. They found that abortion laws, and the reasons for which abortion was legal, varied across countries and across the years within a country. In some countries, abortion was illegal on all grounds, in others legal to save the life of the mother, and in others for mental health. In a few countries, abortion was legal for economic reasons or on request. Using this variation in abortion laws, the authors found that countries and eras with more restrictive laws had higher fertility rates on average. Further, the variation in fertility rates around the world and across time, from 1960 to 2009, explained by the variation in abortion laws, had a causal impact on women's labor force participation. The inverse relationship between the number of children a woman has and her labor force participation is explained by the fact that women do not have enough time to both care for children and work, on average around the globe.

The laws and national policies were shown to have an impact on contraceptive use and fertility. Fertility was affected through the timing of first births birth intervals or the number of children. In turn, these changes in fertility affected women's economic empowerment as measured by their own education attainment, labor force participation, or their children's education attainment.

Effects of Contraceptive Use on Women's Economic Empowerment

Programs—as distinct from policies—may directly affect the uptake of contraception by targeting either the demand or supply side of the contraception market. In theory, over the long term, improvements in the uptake of contraception will lower fertility and lead to higher education attainment and labor force participation.

To evaluate the long-term female economic empowerment outcomes of programs designed to increase contraceptive use, studies have drawn on the Matlab experiment initially rolled out in the 1970s, in

Bangladesh. In the district of Matlab, Bangladesh, families in 71 of the 141 villages were part of a treatment area in which trained community health workers visited households to provide contraceptives as well as maternal and child health services and supplies.²⁰ The control areas within the district received the family planning services that were available nationwide. In a recent follow-up in a PopPov paper, Schultz found that more educated women (ages 25-55) reported higher wage earnings or total income in program villages compared to those in the control villages.²⁹ Furthermore, households in the program villages where women reside had proportionally more assets and more consumer durables and jewelry than households with women in the control villages.

While Schultz found a positive connection between increased contraceptive use and women's long-run economic empowerment in Matlab,^{27,29,30} Peters found that the long-term impact of improved contraceptive access in this same context did not always lead to increases in women's economic empowerment.¹³ For example, Peters found that women paid 14% higher dowries to obtain husbands with access to the family planning program. Geographic location determines eligibility for the program, and in Bangladesh, wives typically move in with their husbands' families once they are married. This cultural norm means that the husband's residence determines access to the program and, thus, those in the program area attracted higher dowries so that women could have access to the program.

Again in the same Matlab context, most recently Barham and colleagues found positive intergenerational effects in education attainment of the children of the mothers from the Matlab treatment area²⁸; however, they also found that the now-adult children (now 24-29 years old) were less likely to migrate out of the study area and more likely to have semiprofessional jobs than the children of mothers who were in the control areas.

Overall in Matlab, women living in the program treatment areas did improve their economic empowerment through their education attainment and wage earnings.^{20,27,29,30} However, over the long run the Matlab program has become very popular, and the work by Peters¹³ and Barham and colleagues²⁸ shows that women (and their adult children) essentially pay a premium to enter or stay in the treatment area.

Using a measure of women's empowerment and not women's economic empowerment per se, PopPov-supported research by Ashraf and colleagues highlighted an important nuance to the realization of

empowerment.⁵ Ashraf and colleagues showed in a randomized controlled trial that increasing contraceptive access to women increased the likelihood of women realizing their fertility preferences, thus increasing their decision-making power within the couple dynamics. However, when this increase in contraceptive use was achieved by concealing it from the husband, Ashraf and colleagues found that there were negative effects on the woman's psychosocial outcomes. Thus, Ashraf and colleagues' intervention increased women's access to concealable contraceptives⁵, and when given the opportunity, the women did increase their contraceptive use and decrease fertility to match their own preferences, which as a first step looks as though they were able to exercise power and control over their household decision on the timing and number of children. However, 2 and a half years after the intervention the women who concealed their contraceptive use from their husbands had lower levels of overall happiness. This outcome of reduced happiness when exercising individual decision-making power over fertility preferences highlights an important aspect of women's empowerment. That is, an increase in agency needs to be accompanied by recognition. A concealed increase in power within the couple causes mistrust and brings ill will into the relationship. For the increase in decision-making power within the couple to be truly empowering, there needs to be openness and recognition of this decision-making power: a power with, and a power within, that is recognized. (This phenomenon has been written about in liberalism theory.³¹)

Effects of Maternal Age at First Birth on Women's Economic Empowerment

The policy studies highlighted the positive impact family planning policies and laws can have on delaying first birth and increasing women's education attainment.^{15,16} However, other studies show the direct causal effect of early childbearing on women's economic empowerment as measured through education attainment, labor market participation, and job quality. (As opposed to the change in the age of first birth brought about from a family planning policy, in these studies it is brought about by some other conditions.)

In the context of rural KwaZulu-Natal, South Africa, PopPov-supported research by Ardington and colleagues found that teen mothers (younger than age 20) had worse educational and health outcomes than

their peers who did not have a teen birth.¹⁰ Moreover, they found that fertility timing matters, with first birth in earlier teen years (under age 17) having more pronounced negative effects on educational outcomes than in later teen years (ages 17-19). Similarly, Herrera and Sahn show that for young women in Madagascar, teenage pregnancy increased the likelihood of dropping out of school and reduced their cognitive skills.⁷ In South Africa, teen motherhood is also associated with the child's education attainment (the child of the teen mother), and children of teen mothers—particularly young teen mothers—had lower education attainment than children born to women older than 20.³²

Beyond the positive educational outcomes of delayed marriage and first birth, in Madagascar, Herrera and colleagues found that teen mothers were 60% more likely to participate in the labor market than young women who were not yet mothers⁹ but that these teen mothers were working in the informal sector where they did not receive protection through taxation and social security benefits, which presumably allowed them to meet the demands of motherhood while satisfying economic necessities. Herrera and colleagues found that a 1-year postponement in the age at which a teen mother had her first child yielded an 8% decrease in her chances of working in the informal sector. This effect of age at first birth on teen mothers' employment varied by their level of school attainment, suggesting that it is interruption of schooling that affects the mother's labor market outcomes.

Thus, there is much evidence of the positive impact of delayed first birth on educational attainment and labor market opportunities. However, as Goldin and Katz's paper warns, not all women in the population win from the delay in first birth.¹⁶

Baird's early work on the short-term effects of a cash transfer program in Malawi, in which never-married females aged 13-22 and their parents were provided financial support in the form of monthly cash transfers, showed the impact of delaying first birth on increasing education attainment.³³ Baird examined the impact of an unconditional cash transfer and a conditional cash transfer (conditional on school attendance) on teenage pregnancy, school dropout rates, and test scores. Within the 2-year follow-up time frame, Baird's study showed that the conditional cash transfer outperformed the unconditional cash transfer in terms of school enrollment and test scores. The unconditional cash transfer did have an impact on keeping girls in school and improving their test scores, but not as great in magnitude as the conditional cash

transfer. In terms of early childbearing, however, it was only those who received the unconditional cash transfer—and were out of school—who opted to delay childbearing.

But then Baird and colleagues conducted a second follow-up study in Malawi,¹⁴ which offers a caution that, in some contexts, the delay in marriage and first birth may hinder marriage market options and lower women's economic empowerment in the long run as they enter a household with lower education attainment of the head of household and lower household asset wealth. This result echoes the theoretical framework Goldin and Katz mapped out in their work on the power of the pill in the United States.¹⁶

Baird and colleagues' research on cash transfers highlighted that delaying first birth needs to be for the purpose of accumulating capital (human, physical, or social) for there to be a positive impact of delayed marriage and first birth on women's long-term economic empowerment.^{6,14} Interventions such as the cash transfers or vouchers that are designed to encourage behavior change (eg, delayed first birth) are used because researchers (or cash transfer providers) assume that the delay in the first birth will free up time for the woman to substantially increase her human or physical capital and break free of the poverty trap. But Baird and colleagues' work showed that (1) encouraging behavior change is difficult, although not impossible; (2) the implicit assumption that women will use their time or resources to invest in their physical or human capital is not a good one; and (3) for there to be any real long-term change, the investments in physical, human, and social capital need to be substantial.

Effects of Birth Intervals on Women's Economic Empowerment

While outside of the PopPov Network Conde-Agudelo and colleagues have written much seminal work on the impact of short birth intervals on maternal and child health,^{34,35} when considering the effect of longer birth intervals on women's economic empowerment outcomes, we found no relevant PopPov studies.

As one of the only quasi-experimental family planning interventions in Africa, Binka and colleagues' work in Navrongo, Ghana, was of particular interest for PopPov researchers,¹⁸ given the initiative's interest in supporting research in Africa and Asia. Binka and colleagues found

that all the survey respondents who adopted family planning in the Navrongo experiment did so for the purpose of timing the birth intervals and not for limiting the total number of children. The Navrongo project highlighted the importance of including men in the family planning decision process, at the couple and community levels. In this Ghanaian context, family planning was used by married couples, thus the focus on birth intervals and limiting, and not on the timing of first birth or the issues of adolescent childbearing. Being able to space births is important for the woman's—and family's—welfare, as the birth interval can impact a mother's ability to return to work.

One qualitative study conducted by Finlay, a PopPov-supported researcher with funds from outside the initiative, was connected to adverse household economic outcomes.¹² Finlay and colleagues found that women in Burundi wanted to space their births 3-5 years apart. Women explained that when the children are born too close together, it is too difficult for the mother to simultaneously care for the children and work. If a woman had 1 infant or child under the age of 3, she could continue her informal work of trading or farming. But if the woman had 2 children under the age of 3, implying a birth interval of less than 2 years, she could not work and care for the children. Having the extra mouth to feed, and not being able to work, had devastating consequences for women who already lived in poverty.

Effects of Total Number of Children on Women's Economic Empowerment

In the policy literature, Miller found that there was little impact of family planning policies on the total number of children, and the effect of reproductive health improvements on women's economic empowerment was from delaying first birth and improving school completion rates for women.¹⁵ However, some studies show there is an impact of reductions in the total fertility rate (or total number of children) on women's economic empowerment. There is a direct effect of a change in fertility on women's economic empowerment, even when the fertility decline is not triggered by a change in family planning policy that increases contraceptive use.

Looking at data from 26 sub-Saharan African countries, de Jong, Smits, and Longwe used twins as an instrumental variable to assess the impact of an additional child on women working.¹¹ The researchers found that the additional child to care for meant that a woman was

6% less likely to work and that effects were particularly strong on older, educated women. This study used a large data set by combining the surveys from the Demographic and Health Surveys program³⁶ and asked the deeper question of whether women with young children preferred to be out of the workforce and caring for their children or whether these women were involuntarily out of the workforce because they had no control over having children. The results from de Jong and colleagues' study suggest that women are involuntarily out of the labor market. The suggested policy response to this is to offer child care that enables women to combine having small children with working in the formal labor market.

In the South Asian context, Hatlebakk found no impact of an extra child on women's labor force participation in Nepal.³⁷ The study did, however, find that the gender and birth order make a difference in the intergenerational attainment of education. Firstborn girls have an impact on the education attainment of later-born boys (but not later-born girls), independent of the number of children in the family. In this case, the number of children has no impact on women's economic empowerment, but the gender within the birth order has an impact on boys' education attainment. This may have a positive impact on household welfare, but not on women or girls directly.

Bloom and colleagues found, using an instrumental variable approach with abortion laws as the instrument for fertility in the labor force participation equation, that a reduction in 1 child for a woman would lead to an increase in labor force participation by 2 years.⁸ This result represented global aggregate-level data, rather than a household decision within a low-income-country community. However, the result provided support to the theory of the time trade-off women face in terms of child care and labor force participation.

Looking more closely at the relationship between fertility and female labor force participation in sub-Saharan Africa, Canning and Finlay found a positive relationship between the two: women with more children worked more.³⁸ In this case, women needed to provide for their children and thus worked more, rather than substituting their time away from work to care for the extra child. This finding is consistent with qualitative work conducted by Finlay and colleagues, who found that women in Burundi were responsible for the variable costs of the family, while the husbands were responsible for housing.¹² With an extra child, the woman's financial responsibility changed and demands increased as

she had an extra child to feed, clothe, and educate. But for the husband, the cost of housing did not change.

The need for women to work, rather than their choosing to work, calls into question female labor force participation being used as a measure of empowerment. More nuanced definitions of work—formal sector, paid, full-time—help us understand whether work is empowering or not. This is demonstrated by the work of Finlay and colleagues¹² and Herrera and colleagues,⁹ which showed that women in Africa increased their labor force participation as fertility increased and that this increase in labor force participation was in the informal sector.⁹ Care needs to be taken to not always interpret a woman's increased probability of working or increased hours of work as a signal of her increased empowerment.

Critical Gaps Remain

Following 10 years of research, both within and outside of the PopPov Network, several critical gaps remain in the women's economic empowerment research sphere. Furthermore, labor force participation as an indicator of economic empowerment has been contested, as women often work out of duress.³⁹ Also, even when the more highly educated can qualify for better jobs, education attainment without subsequent job opportunities challenges the context in which education is a relevant indicator of economic empowerment. To assess a greater range of programmatic options, there needs to be expansion of the reproductive health indicators studied. While contraception and fertility are often used as indicators of reproductive health, little research has been conducted on obstetric health and the link to women's economic empowerment. Lastly, agency as an outcome has been used rarely, except in the analysis of child marriage on agency, and more studies examining this element of women's economic empowerment would complement those that focus on education and female labor force participation.

Conclusions

The PopPov Network (2006-2016) researchers brought us through the era of the Millennium Development Goals (2000-2015) and into the era of the Sustainable Development Goals (2016-2030). Now with SDG 5,

to achieve gender equality and empower all girls and women, understanding the mechanism by which reproductive health improvements impact women's economic empowerment is of importance so that we can develop programs and policies that effectively improve women's economic empowerment. With the evidence gathered from the PopPov Network and others reviewed here, we can say that investments in reproductive health do have a positive impact on women's economic empowerment. This can work through increased contraceptive use delaying first birth and enabling school completion or professional education attainment. It can happen through family planning programs that enable control of the timing of children. Delaying first birth, increasing birth intervals, and reducing the total number of children then have a positive impact on women's decision-making power within the household,⁵ women's education attainment,^{7,9} women's labor force participation,^{8,11} and women's wages.^{20,29}

The research conducted within the PopPov Network also highlighted some important caveats in the impact that reproductive health improvements have on women's economic empowerment. Long-term outcomes in Matlab have shown that a reproductive health program can come with a costly premium that negatively influences women's economic empowerment measures of assets and wages.^{13,30} Furthermore, Baird and colleagues' follow-up work showed that the time gained from delaying first birth must be invested in accumulating significant amounts of human, social, or physical capital to ensure that this delay does lead to women's economic empowerment in the future.¹⁴ A third caveat was revealed through work by Ashraf and colleagues,⁵ which indicated that women's increase in decision-making power must come with household and community recognition and that concealing family planning decisions from husbands can have a negative impact on women's welfare in the long run.

As the PopPov Network comes to a close and the SDGs now set the platform for research priorities, we see that more work is still to be done in measuring women's economic empowerment, understanding the complexities of women's work and women's preferences for work, and enabling young women to invest in their future. From our analysis in this paper, we can say that the research from the PopPov Network indicates that improvements in reproductive health do increase women's economic empowerment and that reproductive health is not just a benefit to a woman's individual rights, but a gateway for breaking free from her

poverty trap and improving the welfare of herself, her children, and her household.

References

1. Bloom DE, Canning D, Sevilla J. *The Demographic Dividend: A New Perspective on the Economic Consequences of Population Change*. Population Matters Monograph MR-1274. Santa Monica, CA: RAND; 2003.
2. Galor O, Weil DN. From Malthusian stagnation to modern growth. *Am Econ Rev*. 1999;89(2):150-154.
3. Galor O, Weil DN. The gender gap, fertility, and growth. *Am Econ Rev*. 1996;86(3):374-387.
4. Bloom DE, Canning D, Fink G. Disease and development revisited. *J Polit Econ*. 2014;122(6):1355-1366.
5. Ashraf N, Field E, Lee J. Household bargaining and excess fertility: an experimental study in Zambia. *Am Econ Rev*. 2014;104(7):2210-2237.
6. Baird S, Chirwa E, De Hoop J, Özler B. Girl power: cash transfers and adolescent welfare; evidence from a cluster-randomized experiment in Malawi. In: *African Successes: Human Capital*. Vol. 2. Chicago, IL: University of Chicago Press; 2014.
7. Herrera Almanza C, Sahn DE. Early childbearing, school attainment, and cognitive skills: evidence from Madagascar. *Demography* [published online March 21, 2018]. <https://doi.org/10.1007/s13524-018-0664-9>.
8. Bloom DE, Canning D, Fink G, Finlay JE. Fertility, female labor force participation, and the demographic dividend. *J Econ Growth*. 2009;14(2):79-101.
9. Herrera Almanza C, Sahn D, Villa K. Early fertility and labor market segmentation: evidence from Madagascar. Paper presented at: 2016 Agricultural and Applied Economics Association Annual Meeting, July 31-August 2, 2016, Boston, MA.
10. Ardington C, Menendez A, Mutevedzi T. Early childbearing, human capital attainment and mortality risk: evidence from a longitudinal demographic surveillance area in rural KwaZulu-Natal, South Africa. *Econ Dev Cult Change*. 2015;63(2):281-317.
11. de Jong E, Smits J, Longwe A. Estimating the causal effect of fertility on women's employment in Africa using twins. *World Dev*. 2017;90(C):360-368.
12. Finlay JE, Efevbera Y, Karra M, Ndikubagenzi J, Canning D. Reframing the measurement of women's work in the sub-Saharan

- African context [published online May 22, 2018]. *Work, Employment and Society*. <https://doi.org/10.1177/0950017018774245>.
13. Peters C. Effects of family planning and health services on women's welfare: evidence on dowries and intra-household bargaining in Bangladesh. *Rev Econ Household*. 2011;9(3):327-348.
 14. Baird S, Chirwa E, McIntosh C, Özler B. What happens once the intervention ends? The medium-term impacts of a cash transfer programme in Malawi. *3ie Impact Evaluation Report*. 2015;27.
 15. Miller G. Contraception as development? New evidence from family planning in Colombia. *Econ J*. 2010;120(545):709-736.
 16. Goldin C, Katz LF. The power of the pill: oral contraceptives and women's career and marriage decisions. *J Polit Econ*. 2002;110(4):730-770.
 17. Bailey MJ. Fifty years of family planning: new evidence on the long-run effects of increasing access to contraception. *Brookings Pap Eco Ac*. 2013:341-409.
 18. Binka FN, Nazzar A, Phillips JF. The Navrongo community-health and family-planning project. *Stud Family Plann*. 1995;26(3):121-139.
 19. Joshi S, Schultz TP. Family planning and women's and children's health: long-term consequences of an outreach program in Matlab, Bangladesh. *Demography*. 2013;50(1):149-180.
 20. Canning D, Schultz TP. The economic consequences of reproductive health and family planning. *Lancet*. 2012;380(9837):165-171.
 21. Golla AM, Malhotra A, Nanda P, Mehra R. *Understanding and Measuring Women's Economic Empowerment: Definition, Framework and Indicators*. Washington, DC: International Center for Research on Women; 2011.
 22. Reproductive health. World Health Organization website. http://www.who.int/topics/reproductive_health/en/. Accessed December 12, 2016.
 23. Sen A. Development as capabilities expansion. *J Dev Plann*. 1989;19:41-58.
 24. Ibrahim S, Alkire S. Agency and empowerment: a proposal for internationally comparable indicators. OPHI working paper 04. <http://ophi.org.uk/working-paper-number-04/>. Published May 2007. Accessed March 15, 2018.
 25. Narayan D. *Empowerment and Poverty: A Sourcebook*. Washington, DC: World Bank; 2002.
 26. Kabeer N. Women's economic empowerment and inclusive growth: labour markets and enterprise development. IDRC discussion paper. 2012;29(12).

27. Schultz TP. Population policies, fertility, women's human capital, and child quality. In: Schultz TP, Strauss JA, eds. *Handbook of Development Economics*. Vol 4. Atlanta, GA: Elsevier; 2008:3249-3303.
28. Barham T, Kuhn R, Turner P. *Long-Term Effects of Early Childhood Interventions on Migration and Labor Market Outcomes: Evidence from a Quasi-Random Child Health and Family Planning Program in Bangladesh*. <http://www.sole-jole.org/17735.pdf>. Working Paper. Published October 14, 2016. Accessed May 4, 2018.
29. Schultz T. How does family planning promote development? Evidence from a social experiment in Matlab, Bangladesh, 1977-1996. Paper presented at: Population Association of America Annual Meeting, April 30, 2009, Detroit, MI.
30. Joshi S, Schultz TP. Family planning and women's and children's health: long term consequences of an outreach program in Matlab, Bangladesh. IZA discussion paper 6551. <http://ftp.iza.org/dp6551.pdf>. Published May 2012. Accessed March 15, 2018.
31. Anderson JH, Honneth A. Autonomy, vulnerability, recognition, and justice. In: Christman J, Anderson J, eds. *Autonomy and the Challenges to Liberalism: New Essays*. Cambridge, UK: Cambridge University Press; 2005:127-149.
32. Branson N, Ardington C, Leibbrandt M. Trends in teenage childbearing and schooling outcomes for children born to teens in South Africa. Southern Africa Labour and Development Research Unit working paper 98. <http://www.mmoho.co.za/wp-content/uploads/2016/02/Teen-child-bearing-and-schooling-outcomes-in-RSA.pdf>. Published 2013. Accessed March 15, 2018.
33. Baird S. Cash or condition? Evidence from a cash transfer experiment. *Q J Econ*. 2011;126(4):1709-1753.
34. Conde-Agudelo A, Rosas-Bermudez A, Castano F, Norton MH. Effects of birth spacing on maternal, perinatal, infant, and child health: a systematic review of causal mechanisms. *Stud Family Plann*. 2012;43(2):93-114.
35. Conde-Agudelo A, Rosas-Bermudez A, Kafury-Goeta AC. Birth spacing and risk of adverse perinatal outcomes: a meta-analysis. *JAMA*. 2006;295(15):1809-1823.
36. The DHS Program. Demographic and Health Surveys website. <https://www.dhsprogram.com/>. Accessed March 29, 2018.
37. Hatlebakk M. Son preference, number of children, education and occupational choice in rural Nepal. *Rev Develop Econ*. 2017;21(1):1-20.

38. Canning D, Finlay JE. *The Relationship Between Fertility and Female Labor Force Participation in Low- to Middle-Income Countries: Uncovering the Heterogeneity Across and Within Countries*. San Francisco, CA: Population Association America; 2012.
39. Kabeer N, Mahmud S. Measuring women's work—more vexing than you might think. In: Bank TW, ed. *Let's Talk Development*. Vol 2017. Washington, DC: World Bank; 2016.

Funding/Support: Jocelyn Finlay received a small consultancy payment from the Population Reference Bureau to write this paper. Marlene Lee was supported for related work under William and Flora Hewlett Foundation Grant 2014-1029.

Conflict of Interest Disclosures: Both authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Lee's employer, the Population Reference Bureau, acts as the Secretariat for the Population and Poverty (PopPov) Research Network with funding from the William and Flora Hewlett Foundation.

Address correspondence to: Jocelyn Finlay, 1635 Tremont St, Boston MA 02120 (email: jfinlay@hsph.harvard.edu).