Policy Brief

The Research Council of Norway

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POPULATION AND POVERTY RESEARCH NETWORK

APRIL 2017

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ECONPOP: RESULTS FOR SUSTAINABLE DEVELOPMENT

66%

The share of global maternal deaths attributed to sub-Saharan Africa.

The risk of long-term mortality is much higher in women who survive severe complications during delivery compared to women with uncomplicated deliveries.

Over

25%

The share of under-five child mortality in sub-Saharan Africa and South Asia due to reproductive health issues.

Population dynamics are inextricably linked to some of the world's greatest challenges, including poverty and environmental sustainability. And at the root of population dynamics are individual choices and opportunities—or lack of choices and opportunities.[1] Results from the ECONPOP research program provide additional insight into how social and health policies can affect population growth and migration. Such policies also shape education and health of the future labor force.

From 2009 through 2015, the Research Council of Norway supported research on how poverty, economic growth, and cultural conditions interact with reproductive health and population dynamics in low-income settings, particularly in sub-Saharan Africa (see Box 1). Research conducted in Benin, Burkina Faso, The Gambia, Kenya, Nepal, Senegal, and Tanzania also supported students or researchers from these countries, thereby building local capacity to address population and reproductive health challenges.

Results Matter

Fertility and child mortality determine how many young people will be competing for jobs in the near future, as surviving children reach working age. In high-fertility countries, not only will more people need more jobs, they will need more water, food, clothing, energy, housing, infrastructure, health, and education. For low-resource countries, increased demands on government services will strain government finances.

Social, economic, and other policies that affect choices and opportunities can influence future population growth. For example, land policies and economic policies can change the push or pull factors that affect migration. Universal access to health services, including family planning and reproductive health services, can prevent unplanned pregnancies and improve

BOX 1

ECONPOP

In 2009 as part of the Norway-Global Partner (NORGLOBAL) Initiative, the Research Council of Norway (RCN) launched ECONPOP. This research program was co-funded with the William and Flora Hewlett Foundation of the United States as part of its Population and Poverty (PopPov) Research Initiative. The remaining funding came from the RCN fund for supplementing private grants (Gaveforsterkningsfondet) and the Norwegian Agency for Development Cooperation (Norad).

ECONPOP supported study of how poverty, economic growth, and cultural conditions interact with reproductive health and population dynamics in low-income settings, particularly in sub-Saharan Africa. The program supported field work in Benin, Burkina Faso, The Gambia, Kenya, Nepal, Senegal, and Tanzania as well as statistical analysis of pooled Demographic and Health Survey (DHS) data from sub-Saharan African countries and Living Standards Measurement Survey (LSMS) data in Nepal. The first call for proposals was in 2009, followed by a second one in 2010. A third and final call was made in 2012 jointly with the Population Reference Bureau in the United States, the Netherlands Organisation for Scientific Research, Science for Global Development Division (NWO-WOTRO) in the Netherlands, and the Economic and Social Research Council in the United Kingdom. Six projects were financed under ECONPOP. These projects produced results relevant to future population and development policies. In addition, by supporting Ph.D., master's, and medical students from these countries, ECONPOP built local capacity to address population and reproductive health challenges in these countries.

maternal health, which in turn increases chances of giving birth to healthy babies who survive and thrive later in life. Increasing chances of child survival might shift preferences towards smaller families, as could fiscal and child care policies. In addition, identifying and reforming practices that infringe on the sexual and reproductive rights of women, such as sex-selective abortion and forced marriage, can change population dynamics.

Research projects in the ECONPOP portfolio examined:

- Maternal mortality.
- Unintended pregnancy and unsafe abortion.
- Child well-being.
- Ties between fertility, migration, and economic well-being.
- The relationship between fertility and education.
- Links between gender inequality and reproductive behavior in households.
- Reproductive health policy.

Through these projects, the research program contributed new knowledge relevant to achieving universal primary education; promoting gender equality and women's economic empowerment; reducing child mortality; and improving reproductive and maternal health—reflecting the United Nations' Millennium Development Goals (MDGs) 2, 3, 4, and 5. Further, results from these projects provide some insight into how addressing reproductive health and population dynamics may relieve some remaining inequalities and uneven progress in poverty alleviation.

Research results suggest that:

- Challenges facing West African health systems, such as lack of resources and poor quality of care, increase the risk of maternal mortality, and these risks are in some cases exacerbated by practices that delay women's seeking treatment.[2]
- High fertility and migration continue to play substantial roles in household risk management in communities in rural West Africa, rural Kenya, and rural Nepal.
- Girls continue to face significant obstacles to education in Nepal and sub-Saharan Africa, especially girls in households with a greater number of younger siblings.
- In the absence of control over land and other assets, women opt to have many children to bind themselves to men and/or for old-age security in Senegal and rural Kenya.
- Business training, alone or in combination with reproductive health training, shows promise as a means of increasing women's income and influence in the household.

This brief reviews research results that speak to targets in the Sustainable Development Goals (SDGs) adopted by the United Nations in 2015—namely, eradicating poverty through elimination of barriers to healthy lives, decent work, and gender equality and economic empowerment.

Healthy Lives

ELIMINATING MATERNAL DEATHS

In 2000, as part of the MDGs, United Nations member states pledged to reduce the maternal mortality ratio to 75 percent of the ratio as measured in 1990 and to achieve universal access to reproductive health care. (Figure 1, page 3, shows maternal mortality ratios in countries where ECONPOP supported research, comparing 1990 ratios with those in 2015.) Now, as part of their commitment to the SDGs, countries will build on momentum around maternal health and strive to eliminate deaths from complications of pregnancy, childbirth, and unsafe abortion.

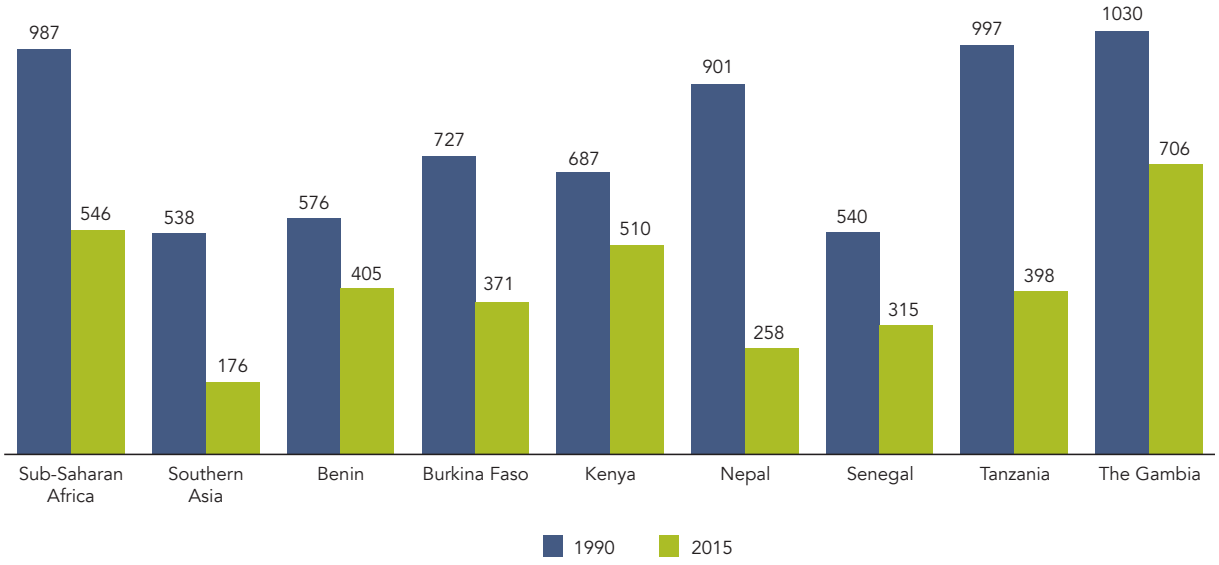
In 2015, sub-Saharan Africa accounted for roughly 66 percent (201,000) of all maternal deaths globally, followed by Southern Asia (66,000).[3] World Health Organization (WHO) systematic analysis estimates that approximately 10 percent of all maternal deaths in Africa from 2003 to 2009 were due to abortion, including spontaneous or induced abortions and ectopic pregnancies (see Table 1, page 4).[4] Hemorrhaging accounts for the largest portion of maternal deaths in both Africa and Southern Asia. ECONPOP researchers studied emergency obstetric events in The Gambia and unsafe abortion in Burkina Faso, looking at both costs and challenges in the health system. In collaboration with a project co-funded by the United Kingdom's Economic and Social Research Council (ESRC) and the William and Flora Hewlett Foundation in the United States, some of these researchers also examined long-term survival after obstetric complications in Burkina Faso.[5]

Emergency Obstetric Care

In The Gambia, Johanne Sundby, Mamady Cham, and their colleagues investigated emergency obstetric care, examining both women's experiences and the health system as part of ECONPOP and earlier research programs.[6] They found that despite the Gambian efforts focused on maternal and child mortality, health policymakers in Gambia face major challenges to the elimination of maternal deaths,

FIGURE 1

Maternal Mortality Ratios (Deaths per 100,000 Live Births),1990 and 2015



Source: ICF International, STATcompiler, 2012, accessed at www.statcompiler.com, on March 3, 2017.

including high out-of-pocket costs for services and a need for stable financing of health services. Since 2010, maternal and child health services have been free at the point of care but as Sundby notes, "… without any supplementary alternative funding for health staff,…it is unclear if some women still may have to pay for certain services in a less 'official' scheme."

Disease-focused international initiatives have shifted donor attention away from the whole health system, creating pockets of well-resourced programs within the health system while outcomes such as maternal survival—which depend on the work of the whole system—advance more slowly.[8] Three urban and two rural hospitals in The Gambia deliver comprehensive emergency obstetric care, though they experience service interruptions because of power breaks, lack of blood, or lack of essential medicines. One study of access to emergency care in rural areas finds that women seeking care for obstetric emergencies encounter a variety of problems that often delay appropriate care. Obstacles include underestimation of the severity of the complication, a prior bad experience with the health care system, a delay in reaching an appropriate medical facility, lack of transportation, prolonged transportation, seeking care at more than one medical facility, and delays in receiving prompt and appropriate care after reaching the hospital.[9]

To handle emergency obstetric care in rural areas, increased training of rural health and community workers, better transportation options and infrastructure, and adequately equipped and staffed medical facilities are required. In the Brikama region of The Gambia, one effort to put all elements in place to improve management of emergencies started in 2006.[10] The hospital in Brikama was renovated and training was provided for health and medical professionals in obstetric, neonatal, and pediatric emergency management. As of 2010, an emergency ambulance service linked the community with the hospital through a mobile telephone system, and a more efficient system was in place for providing emergency medicines. One assessment suggested that these changes strengthened the "emergency chain of care," but there is still a need for more trained healthcare staff.[11] The hospital renovation overlooked staff lodgings. Better accommodations for hospital staff and better working conditions such as reduced workloads would likely improve staff retention.

ECONPOP researchers Katerini Storeng, Seydou Drabo, and Johanne Sundby examined long-term survival of women who have experienced near-death pregnancy-related complications in Burkina Faso, in collaboration with researchers in an ESRC/ Hewlett funded project.[12] This was the first such

follow-up study conducted in sub-Saharan Africa. It showed that the risk of long-term (four years) mortality was much higher in women surviving severe complications compared to women who had uncomplicated deliveries in the same health facilities. Accounts given by women's relatives about the circumstances surrounding deaths suggest that the high cost and poor quality of health care, a lack of follow-up care, and unmet need for contraception contributed to the greater number of deaths among women who had previously survived near-death pregnancy-related complications. The study highlighted the limitations of focusing safe motherhood programs narrowly on pregnancy and delivery care, indicating the need for a continuum of care that addresses not just emergencies, but also the indirect and social causes of death.

Unsafe Abortions

In Burkina Faso, ECONPOP researchers Katerini Storeng, Fatoumata Ouattara, Patrick Ilboudo, Ramatou Ouédraogo, Seydou Drabo, Johanne Sundby, and their colleagues examined the social and economic aspects of unsafe abortions.[13] In Burkina Faso, abortion is legally restricted and socially stigmatized, yet abortions are frequent.

Unsafe abortions remain a significant public health challenge and an obstacle to reducing maternal deaths. As Fatoumata Ouattara and Katerini Storeng have shown, the country has a policy of providing postabortion care (PAC) to avert deaths from abortion complications, but there is very little public debate about the legal status of abortion or women's reproductive rights.[14] Moreover, it is difficult for women to access postabortion care, and those who do, often experience stigma and discrimination from healthcare providers.[15]

Patrick Ilboudo and his co-authors found that among women in Ouagadougou, Burkina Faso, who sought post-abortion care, those who had had induced abortions were more likely to have identified their pregnancy as unplanned, to live with their parents, or to be widowed or divorced.[16] Treating complications from unsafe abortions consumed a substantial amount of hospital resources (up to US$22,473 in 2010) in the two Ouagadougou hospitals studied, diverting resources from delivery of other health care services. Providing safe abortion care services instead would have cost just one-tenth the cost of postabortion care.[17] A body of work suggests that in addition to saving lives, safe abortion reduces both government and individuals' medical and social costs.[18]

TABLE 1

Causes of Maternal Death, 2003-2009

	World (%)	Sub-Saharan Africa (%)	Southern Asia (%)
Abortion	8	10	6
Embolism	3	2	2
Hemorrhage	27	25	30
Hypertension	14	16	10
Sepsis	11	10	14
Other Direct Causes			
Complications of Delivery	3	3	2
Obstructed Labor	3	2	3
Other Direct Causes	4	4	4
Other Indirect Causes			
HIV-Related	6	6	5
Pre-Existing Conditions	15	13	18
Other Indirect Causes	7	9	6

Sources: L. Saye et al., "Global Causes of Maternal Death: A WHO Systematic Analysis, " *Lancet Global Health* 2 (2014): e323-33.

Contrasting the case of two women with different resources, Ouédraogo and Sundby find that although poor women may not be able to afford the fees for a safe abortion, in the end they "pay" more because of the additional costs in time and risks associated with unsafe abortions.[19] Preventing abortions through improved access to contraception and providing access to safe abortion can lead to cost savings for governments and individuals.

PREVENTING LOW BIRTH WEIGHT AND STUNTING

According to the WHO, maternal and child undernutrition account for more than 10 percent of the global burden of disease.[20] Low birth weight is one consequence of maternal undernutrition in combination with other factors. Infants born with low birth weight are more susceptible to infections.[21] Stunting in children—very low height for age—is one result of poor childhood nutrition and repeated infections. Both low birth weight and stunting can have adverse long-term effects, including decreased cognitive function and poorer school performance that culminate in lower wages as an adult.

Public health and medical research show that short birth intervals increase odds of low birth weight, which is one predictor of stunting.[22] Demographic and other social science studies find associations between family size and undernutrition, and between birth order, siblings' gender, and nutrition.[23] These and other findings suggest that using family planning to increase spacing between births to more optimal levels or limiting the number of children can improve nutrition outcomes in early childhood.[24]

ECONPOP researchers Øystein Kravdal and Ivy Kodzi contribute to the assessment of potential impacts of family planning on nutrition-related child outcomes.[25] Based on analysis of pooled DHS data from countries in sub-Saharan Africa, they find that children living in a province with a higher current child-dependency ratio had higher chances of being stunted.[26] This result provides weak support for the idea that a child's stunting risk may be raised by high fertility—high child dependency ratios—at the societal level.

Consistent with previous research, Kravdal and Kodzi's examination of how birth order affects the risk of low birth weight in the African context shows a pattern of high risks in first and second births.[27] Risks of low birth weight decrease with future births until very high parity—in this case increased risk occurs after the eighth birth. The authors note that while high fertility may well lead to various adverse outcomes for African families and societies, it does not appear to be associated with low birth weight. Early childbearing and insufficient access to adequate prenatal care (particularly in rural areas and among the urban poor) appear to be of more concern as risk factors for low birth weight.[28] Improved reproductive health services for adolescents can help prevent early and unintended pregnancies, and free transportation services can extend the geographic area served. These improvements could mitigate risks associated with early childbearing and limited access to prenatal care.

LINKING CHILD MORTALITY, FERTILITY, AND WELL-BEING

Demographic research has long since demonstrated an association between a decline in child mortality rates and a decline in total fertility rates at the country level.[29] Demographers and others have also argued that stark realities of household economies suggest a quantity-quality tradeoff in childrearing. That is, households with fewer children can invest more in each child's health and education.[30]

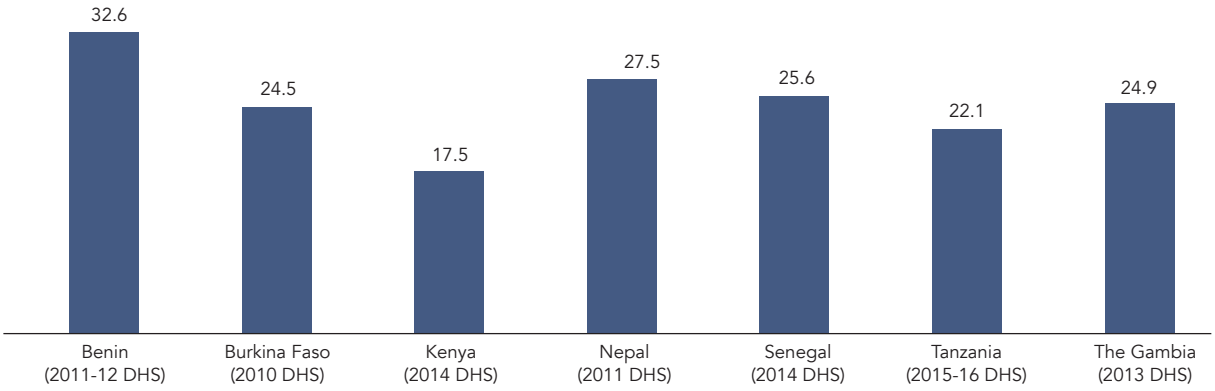
In many African countries, the fertility decline that was expected to follow declines in infant and child mortality rates has not been as rapid as anticipated. Analyses suggest that child deaths are followed by additional births, short birth intervals, and hence, higher total births.[31] In Kenya, a rapid fertility decline was witnessed by the end of the 1980s and early 1990s. However, Kenya's fertility decline temporarily stalled and remained high in the late 1990s. Further, decline in fertility was uneven across provinces. For example, in the Western province, the total fertility rate remained over 5 between 1998 and 2003, even increasing slightly, while in the Coast province fertility declined modestly. Access to modern contraceptives plays an important role in fertility decline (see Figure 2 and Figure 3, page 6) but is not the only factor.

ECONPOP researchers An-Magritt Jensen, Anne A. Khasakhala, George Odwe, and Salome Wawire investigated links between poverty, culture, child mortality, and reproductive patterns in two rural and poor villages in Kenya—one in the Western province and one in the Coast province. Case studies (1989-90 and 2011) were combined with analyses of Kenyan Demographic and Health Survey (DHS) data for the two provinces (1989 to 2008/09).[32]

An-Magritt Jensen analyzed changes over time in female autonomy and fertility. While in the Western villages (1989) the cost of education was a motive to reduce childbearing, in the Coast villages (1990) education was rejected. In both areas child deaths were the most important factor pushing fertility up, but in the Coast province many women had fewer children than they wanted due to reproductive health problems. By 2011 there was a sharp increase in female education across areas. In the

FIGURE 2

Percent of Married Women Ages 15-49 With an Unmet Need for Family Planning Services



Note: The Demographic Health Surveys (DHS) program defines unmet need as the percentage of women who do not want to become pregnant but are not using contraception.

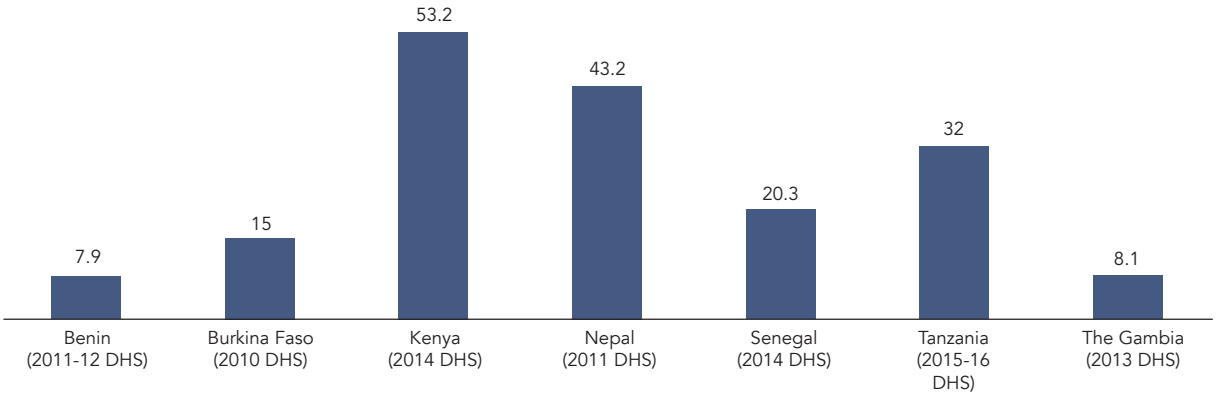
Source: ICF International, STATcompiler, 2012, accessed at www.statcompiler.com, on March 3, 2017.

Western province, persistent poverty has triggered risky behavior in terms of excessive drinking and exchanging sex for money, both of which are likely to push up fertility. Fertility has declined in response to enduring motives to have fewer children but remains high. Because women perceive limiting births to be a risk, their dependence on men remains strong. In the Coast province, medical improvements have increased women's ability to have more children. The gap between desired and actual fertility has declined. Unlike women in the Western province, women in the Coast province have gained more economic resources through the bride price. Across areas, and unlike 20 years ago, women have a vision of having less dependence on a husband.[33]

In both the Western and Coast provinces, Anne A. Khasakhala's analysis of DHS data shows that more child deaths are found among the poor than the nonpoor. Results also indicate that the decline in child deaths in the Coast province have been much faster than in the Western province, both among the poor and non-poor. Women who experience high child mortality are more likely to have short birth intervals and hence higher fertility. In terms of the factors that predict child deaths in the two regions, the results show that they are similar; however, the magnitude varies by region and poverty status. The determinants of child loss are education, age, marital status, and the multiple risks of high birth order and short birth intervals. What appears to be emerging

FIGURE 3

Percent of Married Women Ages 15-49 Currently Using Modern Contraception



Source: ICF International, STATcompiler, 2012, accessed at www.statcompiler.com, on March 3, 2017.

from the analysis is that the fertility stall in the two regions may have been fueled by the high mortality among the children of poor women in both the Coast and Western regions.[34]

George Odwe used the Kenya DHS to examine fertility trends among poor and non-poor women in the Western and Coast provinces.[35] Results show that during the period of fertility decline from 1989-1998, the gap in the fertility rate of poor and non-poor women narrowed. This suggests that fertility of poor women declined faster than that of non-poor women. From 1998 to 2008/9, the gap in fertility between poor and nonpoor women widened because of increased fertility among poor women. Poverty status and whether women experience the death of a child under five are both associated with women having higher fertility, and indeed poverty is likely to increase the chances of losing a child. Economic assistance to poor households would likely both reduce child mortality and decrease fertility.

Salome Wawire finds that gender roles, traditional practices, and changing economies interact in ways that affect fertility outcomes and hence children's prospects.[36] Women in the Coast province enjoy certain freedoms not available to women in the Western province as reflected in marriage systems and payment of bride prices. While women in the Coast province are paid bride wealth directly, in the Western province the bride has no ownership of bride wealth. The prominence of polygymy in both villages creates competition, encouraging higher fertility. While men do not feel that there is any fertility pressure on the women, women think their husbands want more children. Marriage processes are fast changing, favoring pragmatic unions, commonly called "come we stay," often driven by premarital pregnancies and lack of resources required for formal marriage. "Come we stay" unions are common and increasingly acceptable but temporary, a factor associated with higher fertility. Despite increases in education in rural Kenya, poverty and cultural traditions continue to exert upward pressure on fertility as do improvements in women's reproductive health.[37]

Factors that slow the pace of fertility decline, when combined with improvements in reproductive health and health care, mean that poor women may have a high number of surviving children. Other ECONPOP research by Kodzi in Senegal shows an association between the number of surviving children and older women's access to food, suggesting that more living children provide familial social security for older women.[38] The reliance on family and extended networks is a traditional means of household risk management as discussed in the next section.

Connecting Migration and Poverty

PROTECTING VULNERABLE CHILDREN

Circulating children among households in West Africa is a traditional practice that has come to be seen as a source of child vulnerability over the last decade, exposing them to greater health risks and exploitation. Despite continued policy interventions to curb this practice, it continues.

Researchers Anne Keilland and Gilberte Hounsounou look at the role of risk perception in the decision to foster children in Benin and the policy implications.[39] In West Africa, fostering children in other households helps to strengthen ties that families use for assistance in hard times. Children can also learn skills and trades that may not be taught in their own homes. In addition to the factors above, household heads consider not only their current poverty status but also their expectations about economic security in the future. A greater perception of future risk is associated with a higher chance of fostering children to another household. The researchers suggest that long-term and predictable social protection programs would help reduce the worries of the household heads, making them less likely to use child fostering as a type of insurance strategy.

In a study of child mobility in rural Senegal, Anne Keilland and Ibrahima Gaye look at the relationship of child mobility to events that lead to a serious reduction in assets, a drastic fall in household income, or a strong reduction in consumption. These rigorous analyses suggest that events associated with household economic shocks do not encourage child mobility but do seem to motivate adult migration.[40]

FERTILITY AND MIGRATION AS SOCIAL INSURANCE

Mobility of both children and adults creates a type of social insurance in Nepal where households are connected to a larger social network. ECONPOP researchers François Libois and Vincent Somville investigate the effects of fertility on household size and on remittances from migrants.

Libois and Somville find that households with fewer children take in more people than do households with more children. The result is that fertility hardly affects the size of a household and thus hosting rarely changes a household's poverty status. Only if population policy reduces fertility across all households, effectively reducing average household size, would it be likely to affect poverty (as measured by income per capita) in Nepal.[41]

Because migrants send money back to their homes (also known as sending remittances), migration streams can be a source of income at the household level and a source of capital for nations. At the household level, high fertility might mean increased numbers of migrants from the same household, raising the potential of higher total remittances. Such remittances have implications for parents' economic security later in life in rural countries such as Nepal where people depend more on families than on government to provide social safety nets.

However, in their data analyses, Libois and Somville find that an additional migrant actually decreases the total remittances (per head in the household receiving funds) by 2000-11,000 rupees.[42] They also find that a household's number of sons ages 10 to 16 in 2000 is a strong indicator of the current number of migrants from the household and that more migrants are associated with lower total remittances. The researchers explain this with the concept of free-riding: With many migrants from a single family, each migrant relies on the others to send money home.

Findings about remittances and migration in Nepal have implications beyond the household level. The Communist Party of Nepal (Maoist) launched the people's war in 1996, an armed conflict against the state that lasted until 2006. Over the 10 years of conflict, Nepal's economy evolved and became increasingly dependent on remittances. Remittances account for 25 percent of GDP and play an important role in decreasing the level of poverty in Nepal. Going forward as migration expands and more people leave the country, Libois and Somville anticipate that remittances will not rise in tandem. They find that additional migrants decrease the remittances to the household receiving funds. They suggest that to keep remittances increasing in the future, migrants' education and skills would likely need to improve, and migrants would need to migrate to destinations with higher average wages or with more business opportunities. Households with fewer children could potentially invest more in their children's education and skills so that migrants would be competitive in migration-destination labor markets.

Gender Inequality and Economic Empowerment

Sustainable development cannot be achieved without gender equity. Gender-based disparities that disadvantage women impede their development and their potential contribution to economic growth. In many countries, despite progress in women's representation at high levels of government, they are still underrepresented at other levels of government and in other decisionmaking domains—at work and at home. Lack of power contributes to higher levels of female poverty, lower levels of female education, vulnerability to violence, and poorer health.[43] Conversely, women who are economically empowered have shown improvements in reproductive health-seeking behaviors and reproductive health outcomes.

ELIMINATING HOUSEHOLD GENDER DISCRIMINATION

ECONPOP researchers Magnus Hatlebakk, Yogendra B. Gurung, Vincent Somville, François Libois, Jyoti Manandhar, and Njård Håkon Gudbrandsen explore the nexus of fertility behavior, cultural practices, and economic outcomes in Nepal.[44] They examine how gender and female empowerment affect education and occupation outcomes. They also explore the connections between female empowerment and fertility, and the effect of fertility on household size and poverty.

Sex Preference

Gender-biased sex selection favoring boys is a common practice in many parts of South, East, and Central Asia. Nepali couples seem to exercise sex preference by ending childbearing with the birth of a son rather than through sex-selective abortion.[45] As a result, Nepali women appear to have more children if the first-born child is a girl and to exercise more influence in the household if the first-born is a boy rather than a girl.[46] Sex preference can pose risks because while trying to have a son, women may not optimally space pregnancies and may endanger their health. There is also the danger that sex-selective abortion will become an accepted practice as access to technology becomes easier and desired family size declines.

Hatlebakk finds that in rural Nepal, boys with first-born sisters receive more education than boys with first-born brothers.[47] Thus boys benefit from having a first-born sister, independently of how many siblings they have. This finding appears to contradict the notion of a tradeoff between the number of children and their health and education.

Hatlebakk surmises that first-born girls, more often than first-born boys, must work at home instead of going to school and that it is her brothers who benefit from her household work. A variation of this explanation is that first-born girls are more likely to live in families with a greater number of younger siblings than are first-born boys, thus increasing the first-born girls' workload at home. This explanation is consistent with findings from another ECONPOP research team: in sub-Saharan Africa, Kravdal and Kodzi find that while just having a larger family is not an obstacle to

a child's education, a child (especially a girl) living with younger siblings has a lower chance of going beyond primary school than one living with older siblings.[48]

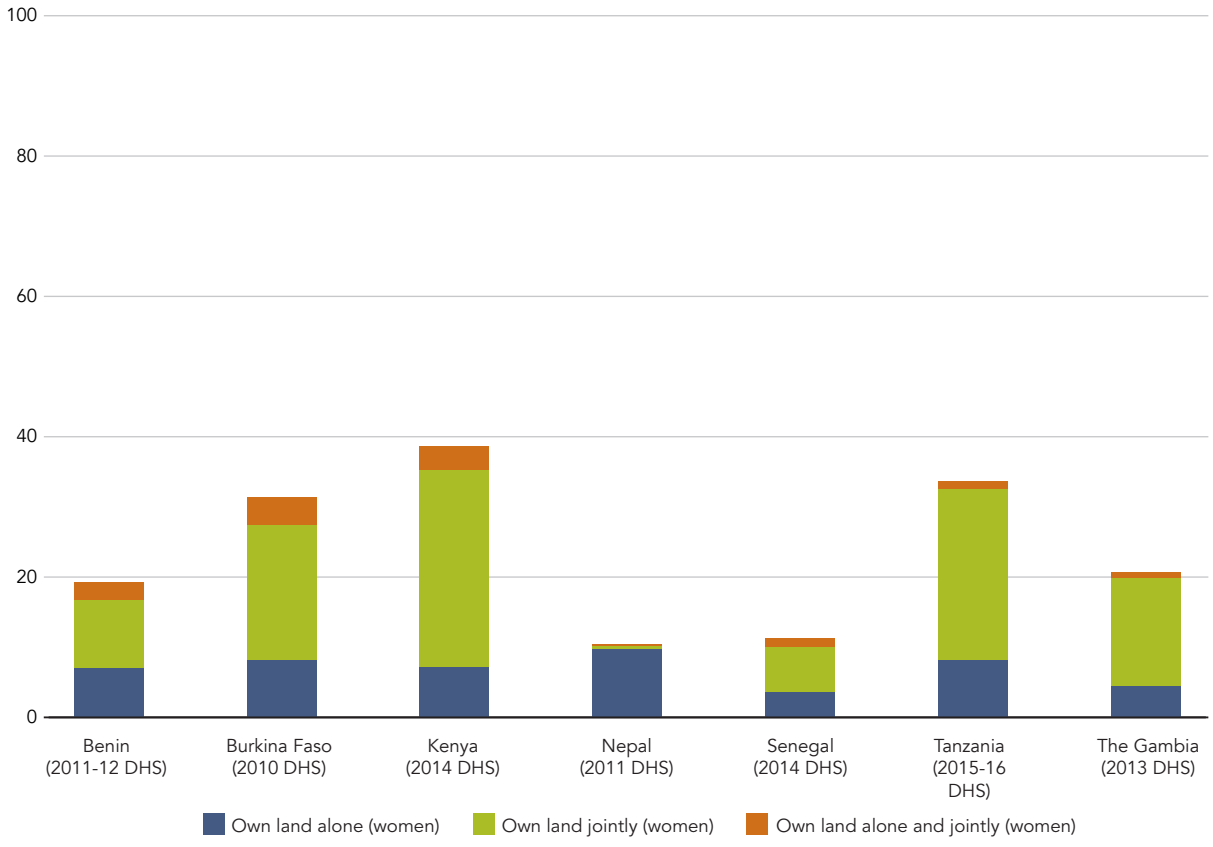
Ownership

In Nepal, gender inequality has roots in traditional sociocultural norms that define the formal and informal rules for women's marital prospects, education, decisionmaking power over resources, and actual control of resources (see Figure 4).[49] According to Hindu sayings, a father protects a woman in her childhood, a husband protects her in adulthood, and her son protects her during her old age. This suggests that at no time in her life should a woman be on her own. A strong patriarchal structure ingrained in the society predetermines the status of women.

In an agricultural society like Nepal, land is a key means of identifying power, wealth, and political access. Ownership of land means economic security and status particularly in the rural part of the country. Landed property can be the basis for the financial independence necessary to start a new business and can enhance confidence and self-esteem. It is not possible for parents with lower levels of initial assets to make large asset transfers to their children. Also, women's rights to property in Nepali society remains strictly patriarchal. A daughter is not entitled to parental property, especially land, after her marriage. While a son is considered a permanent member of the household, a daughter is considered only a transient family member who stays until she is married. She has moral rights to periodic gifts but is largely denied an inheritance.[50] Changing ownership laws could potentially increase women's power and wealth in Nepal. However, the wealth effects could be smaller than anticipated if all children inherit equal shares of land and if there are also potential adverse effects on women's marital prospects.

FIGURE 4

Percent of Women Who Own Land in These Countries



Source: ICF International, STATcompiler, 2012, accessed at www.statcompiler.com, on March 3, 2017.

Jyoti Manandhar looks at the effect of a wife's parents' land ownership on her decisionmaking power in the Nepali household. Although wives with wealthier parents have higher levels of education, more membership in local organizations, and more exposure to the media, the wealth of a wife's parents has little effect, on average, on household decisionmaking power. The majority of women report that they make decisions jointly with their husband. Women whose husband's parents have no landed property are slightly more likely to have gotten married at younger ages and to have more children, and are less likely to use contraceptives.

Wealth makes a difference in fertility of women, perhaps because more children can substitute for lack of other resources. Children can help with agricultural work and can take care of their siblings. In Nepal where governmental programs for old-age security are absent, more children could provide economic security to poorer parents during their old age. However, this old-age insurance effect of children ultimately depends on the adult child's own resources. Being a member of a large household can mean having more younger siblings. These circumstances can diminish health and education opportunities and the adult child's income. In fact, more children may not actually increase parents' old-age security except in the presence of high child mortality.

Hatlebakk and Gurung find that in the eastern plains of Nepal, girls receive less education than boys, no matter how much wealth there is in the extended families.[51] These researchers measure land ownership of the paternal and maternal sides of the extended family and use it as a proxy for female decisionmaking power in the family. When a woman's extended family is wealthier, both boys and girls are more likely to be in school. Boys are prioritized if the paternal side of the family has less wealth. The importance that men and women assign to different levels of education for children of different genders varies with social group. Overall, the emerging picture of factors that influence parents' aspirations for their children's education is complex. Efforts to change biases against girls' education will need to target interventions by social group and gender.

EMPOWERING GIRLS' INCOME GENERATION

Early childbearing and lifelong dependence on family and spouses or sexual partners may prevent many women in sub-Saharan Africa and South Asia from achieving higher levels of education and financial autonomy. Lack of knowledge about the consequences of frequent childbearing and about modern methods for delaying child birth is one underlying cause for early childbearing and associated high fertility. Lack of economic opportunities is another.

ECONPOP researchers Lars Ivar Oppedal Berge, Kjetil Bjorvatn, Linda Helgesson Sekei, Tausi Kida, Vincent Somville, and Bertil Tungodden implemented an empowerment program for adolescent girls in rural Tanzania, then tested effects of the intervention over the short and medium term.[52] The program involved two training modules, one on reproductive health and the other on entrepreneurship. Effects of the two modules were evaluated separately and in combination, so that researchers could assess the relative effectiveness of the approaches and any complementarity between them.

The reproductive health training provided information on sexuality and how to promote gender equality, and the business training focused on good business strategies and self-employment promotion. Only girls in the final year of school received training. Girls in 20 randomly selected schools received only reproductive health training; those in another 20 randomly selected schools got only business training; girls in another 20 schools received both; and finally, girls in a control group of 20 schools got no training.

A survey conducted just a few weeks after the training, but before girls finished school, shows that the business training and the combined business and health training had the largest impact. Reproductive health training by itself had limited effects. In the short term, business training increased the chances that girls would express an interest in planning their own business. The reproductive health intervention affected girls' attitudes toward wife beating and participation in family economic activities.

One year after the interventions, girls were re-interviewed to assess the effect on family, occupation, and economic status. Effects of the reproductive health training had vanished after one year. However, the effects of business training appeared to be even stronger. The probability that a woman has her own income-generating activity one year after she finishes school almost doubled among those who received business training and those who received both types of training, compared to the control group. Girls from these training groups also have income-generating activities with higher sales and made larger investments. All groups that received training also report larger values on happiness indices.

That business training for girls encourages them to participate in income-generating activities is particularly important in light of other recent evidence linking women's economic activity to improved reproductive health outcomes.[53] Other researchers

Recommendations for Action

ECONPOP research investigated key concerns in the Millennium Development Goals (MDGs) and suggests ways forward for achieving the inclusive agenda of the Sustainable Development Goals (SDGs) established in 2015. Addressing these recommendations will continue progress in reducing maternal deaths, accelerate progress in reducing early and unintended pregnancies, empower women and girls to make decisions about their health and the health of their families, and ultimately impact fertility and population dynamics.

INVEST IN HEALTH SYSTEMS.

- Adequately equip and staff medical facilities.
- Increase training of health and community workers.
- Develop better transportation options connecting communities and health facilities.
- Provide free emergency mobile communication options for communities.
- Improve accommodations and working conditions for health and medical workers.
- Develop financing mechanisms for a sustainable health system.

ENSURE ACCESS TO QUALITY REPRODUCTIVE HEALTH SERVICES.

- Improve the quality of reproductive health services.
- Continue or adopt free reproductive, maternal, and child health services for all adolescents and women.
- Integrate family planning information into health services.
- Provide access to safe abortions and post-abortion care, including free services and transportation for poor women.

TEST AND IMPLEMENT SOCIAL INSURANCE SCHEMES.

- Provide economic assistance to poor households.
- Make old-age pensions accessible to rural and agricultural workers.

ADOPT AND ENFORCE POLICIES TO ADDRESS GENDER DISCRIMINATION.

- Customize interventions by social group and gender.
- Reform country ownership laws governing inheritance and dowries (bride payments) to increase women's right to own land and other forms of wealth, considering the country's marital practices and broader implications for women's well-being.
- Enforce country laws that give women, including unmarried women, rights to ownership and control over land and other assets.

PROVIDE ENTREPRENEURSHIP TRAINING FOR ADOLESCENT GIRLS.

- Adapt secondary school curricula to teach applied business skills.
- Maintain safe school facilities and staff to encourage girls' school attendance.

have shown that economically active rural women in northern Tanzania visit health centers for antenatal care checkups more frequently than economically inactive women. Also, women who contribute to household income are less likely to deliver at home. Further, the effects of a woman's economic activity and income contributions to the household do not vary with a woman's bargaining power within the household. Given the complexity of gender roles in most societies, the direct effect of economic activity rather than through changes in bargaining power suggests that business training might be relatively cost effective in alleviating extreme poverty and improving reproductive health.

Conclusion

In sub-Saharan Africa and South Asia, great strides have been made in reducing extreme poverty and maternal deaths. Yet clearly more needs to be done to ensure that poor individuals and women reap the benefits of economic growth. Reproductive health care continues to be an area in need of significant advancement: the most recent estimates show that over 10 percent of maternal deaths globally and over 25 percent of under-five child mortality in sub-Saharan Africa and South Asia may still be attributed to reproductive health issues.[54] Both health system challenges and traditional belief systems contribute to this state of affairs, through lack of adequate emergency care access and gender relations and cultural practices that encourage early childbearing, closely spaced pregnancies, and high fertility. Lack of social insurance systems also means that households rely on family and social networks to manage risk, some of which put children's health and safety in jeopardy or encourage high fertility.

Gender discrimination and obstacles to girls' education are factors that limit choice and opportunity. Confronted with these limiting factors, a girl may marry at an early age, begin childbearing, and have a large family. With limited resources for her children, this girl may encourage her own female child to marry early, perpetuating a cycle of high fertility. Indeed, early marriage can be one of girls' responses to a lack of economic opportunities. It can also be a response to unintended pregnancies. Respectful and effective reproductive health care for adolescent girls can prevent unintended pregnancies and keep girls in school. Gender equality would mean girls' having equal access to quality education that prepares them for employment or entrepreneurial opportunities. Business training for girls is one intervention that shows promise not only in reducing poverty, but also in the potential for directly affecting reproductive health behaviors.

Acknowledgments

This brief and the research summarized was made possible through the support of the William and Flora Hewlett Foundation and the Research Council of Norway. The authors wish to thank Jan Monteverde Haakonsen, the Population Reference Bureau (PRB) editors, and study authors for their review comments. The Population Reference Bureau currently acts as the Secretariat for the Population and Poverty Research Network, a group of researchers, funders, and stakeholders studying the ways in which population dynamics affects economic outcomes. The Hewlett Foundation and the Population Reference Bureau developed the network as part of the Foundation's Population and Poverty (PopPov) Research Initiative that co-funded ECONPOP research projects. Marlene Lee is a senior program director at PRB, and Meredith Pierce is a policy analyst.

BOX 2

The Population and Poverty (PopPov) Research Initiative

The William and Flora Hewlett Foundation began the Population and Poverty Research (PopPov) Initiative more than a decade ago when population funding declined. A working group of experts, convened to assess the evidence base, called for expanded research on the effects of population and reproductive health outcomes at both the societal and individual/household levels. Since then, PopPov partners have funded more than 100 research grants and dissertation fellowships that have resulted in more than 200 publications and hosted ten research conferences at which researchers presented findings.

The Foundation's Population and Poverty (PopPov) Research Initiative, in partnership with other funders and partners, has supported a global group of researchers looking at how population dynamics affect economic outcomes. Research funded through the PopPov Initiative sheds light on pathways through which fertility, health, and population growth affect economic growth, providing insights and an evidence base relevant to achieving the Sustainable Development Goals (SDGs). Findings show that investing in women's health, education, and empowerment improves economic well-being for individuals and households, and contributes to economic growth.

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