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**The Effects of Gender Mainstreaming on Maternal and Child Health:
A Cross-National Analysis of Sub-Saharan Africa**

A Dissertation Presented

by

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Abstract of the Dissertation

**The Effects of Gender Mainstreaming on Maternal and Child Health:
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A substantive body of sociological literature has found that women's status is correlated with improved maternal and child health outcomes in developing countries, and accordingly, proposes policy recommendations for ending discrimination against women. Yet, the sociological literature has not engaged adequately with policy models for improving women's status. I address this gap in the literature by conducting the first cross-national quantitative analysis of gender mainstreaming –the global strategy adopted in 1995 by United Nations member countries for fostering gender equality. Specifically, the dissertation uses two-way fixed effects ordinary least squares regression to estimate the effects of gender-mainstreamed bilateral health aid, national women's machineries (NWM), and state commitment to the Convention on All Forms of Discrimination against Women (CEDAW) on maternal, infant, and child mortality in Sub-Saharan Africa from 1995 to 2010. In doing so, I aim to answer the following research question: is gender mainstreaming an effective policy model for improving women's and children's health?

First, I test the hypothesis that interventions which fail to mainstream gender may erode well-being or at best fail to improve it. I find that while gender-absent health aid to Sub-Saharan Africa does not adversely affect women's and children's health, neither is it associated with

reductions in maternal, infant, and child mortality. In contrast, higher levels of gender-mainstreamed health aid *are* associated with lower levels of maternal, infant, and child mortality. Second, I examine whether the institutional location of NWMs is an important predictor of their efficacy and find that, regardless of where they are located, NWMs do not improve women's and children's health. Finally, I explore the relationship between state commitment to CEDAW and maternal and child health, finding that higher levels of commitment correspond with lower levels of maternal mortality but not infant or child mortality.

While a growing consensus has emerged among feminists that gender mainstreaming has failed to improve the well-being of women and children, this dissertation provides evidence that gender mainstreaming is effective when stakeholders are committed to its implementation. However, because gender mainstreaming is often implemented weakly, greater attention should be paid to resistance to gender mainstreaming among stakeholders.

Table of Contents

List of Figures.....	vi
List of Tables.....	vii
List of Abbreviations.....	viii
Acknowledgements.....	ix
Introduction to the Dissertation.....	1
Chapter 1: Does Mainstreaming Gender into Health Aid Matter? Bilateral Development Assistance and Maternal and Child Health.....	9
Chapter 2: A Ministry of One’s Own? National Women’s Machineries and Maternal, Infant, and Child Mortality.....	58
Chapter 3: Estimating the Effects of State Commitment to the Convention on the Elimination of All Forms of Discrimination against Women on Maternal and Child Health.....	98
Conclusion to the Dissertation.....	140
Bibliography.....	145

List of Figures

Figure 1 Components of Bilateral Health Aid Flows to Sub-Saharan Africa.....	13
Figure 2.0 Percentage of Bilateral Health Aid Allocated to Health Policy & Administrative Management and Percentage of Aid to Health Policy & Administrative Management that Mainstreams Gender.....	19
Figure 2.1 Percentage of Bilateral Health Aid Allocated to Health Infrastructure and Percentage of Aid to Health Infrastructure that Mainstreams Gender.....	19
Figure 2.2 Percentage of Bilateral Health Aid Allocated to Basic Health Care and Percentage of Aid to Basic Health Care that Mainstreams Gender.....	20
Figure 2.3 Percentage of Bilateral Health Aid Allocated to STDs and HIV/AIDS and Percentage of Aid to STDs and HIV/AIDS that Mainstreams Gender.....	20
Figure 2.4 Percentage of Bilateral Health Aid Allocated to Reproductive Health Care and Percentage of Aid to Reproductive Health Care that Mainstreams Gender.....	21
Figure 2.5 Percentage of Bilateral Health Aid Allocated to Family Planning and Percentage of Aid to Family Planning that Mainstreams Gender.....	21
Figure 2.6 Percentage of Bilateral Health Aid Allocated to Basic Nutrition and Percentage of Aid to Basic Nutrition that Mainstreams Gender.....	22

List of Tables

Table 1 Number and Percentage of Bilateral Health Interventions in Sub-Saharan Africa that Mainstream Gender.....	17
Table 2 Fixed Effects Health Aid Regression Estimates of Maternal Mortality in Sub-Saharan Africa, 1995-2010.....	34
Table 3 Fixed Effects Health Aid Regression Estimates of Infant Mortality in Sub-Saharan Africa, 1995-2010.....	36
Table 4 Fixed Effects Health Aid Regression Estimates of Child Mortality in Sub-Saharan Africa, 1995-2010.....	37
Table 5 List of CRS Purpose Codes for Health Sector and Population Policies, Programs, and Reproductive Health Sector.....	54
Table 6 Sample Descriptive Statistics: Bilateral Health Aid Flows to Sub-Saharan Africa.....	56
Table 7 Fixed Effects NWM Regression Estimates of Maternal Mortality in Sub-Saharan Africa, 1995-2010.....	78
Table 8 Fixed Effects NWM Regression Estimates of Infant Mortality in Sub-Saharan Africa, 1995-2010.....	80
Table 9 Fixed Effects NWM Regression Estimates of Child Mortality in Sub-Saharan Africa, 1995-2010.....	81
Table 10 National Women’s Machineries in Sub-Saharan Africa.....	93
Table 11 Sample Descriptive Statistics: National Women’s Machineries.....	96
Table 12 Fixed Effects CEDAW Regression Estimates of Maternal Mortality in Sub-Saharan Africa, 1995-2010.....	118
Table 13 Fixed Effects CEDAW Regression Estimates of Infant Mortality in Sub-Saharan Africa, 1995-2010.....	119
Table 14 Fixed Effects CEDAW Regression Estimates of Child Mortality in Sub-Saharan Africa, 1995-2010.....	121
Table 15 Ratification of CEDAW by Sub-Saharan African Nations.....	135
Table 16 CEDAW Provisions Related to Maternal and Child Health	136
Table 17 Descriptive Statistics: CEDAW.....	138

List of Abbreviations

AfDB: African Development Bank

BPFA: Beijing Platform for Action

CCT: Conditional Cash Transfer

CEDAW: The Convention on the Elimination of All Forms of Discrimination against Women

CIRI: Cingranelli-Richards Human Rights Dataset

CRS: Creditor Reporting System database

CSW: Commission on the Status of Women

DAC: Development Assistance Committee

GAD: Gender and Development

GDI: Gender-related Development Index

GDP: Gross domestic product

HDI: Human Development Index

IWRAW: International Women's Rights Action Watch

MDGs: Millennium Development Goals

NGO: Non-governmental organization

NWM: National Women's Machinery

OECD: Organization for Economic Co-operation and Development

ODA: Official Development Assistance

UN: United Nations

UNECA: United Nations Economic Commission for Africa

WHO: World Health Organization

WID: Women in Development

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INTRODUCTION TO THE DISSERTATION

A substantive body of sociological literature has examined the relationship between women's status and health in developing countries. Much of this work has drawn on gender stratification theory, which attempts to explain the causes and consequences of inequalities resulting from socially constructed gender roles (Mason 1986). For example, in a cross-national quantitative analysis of less developed countries, Shen and Williamson (1997) find that women's status, as measured by education, health, and reproductive autonomy, is an important predictor of child mortality. Extending their analysis to women's health, Shen and Williamson (1999) also find that women's status, as measured by age at first marriage, reproductive autonomy and level of education relative to men's, has significant effects on maternal mortality. In societies where women have low status, Royston and Armstrong (1989) find that women begin having children at a young age, do not adequately space births, and end childbearing at a late age, all of which are associated with higher rates of maternal mortality. And Burroway (2012) applies gender stratification theory to sex-specific HIV prevalence rates and finds that women's access to property, bank loans, and education are negatively correlated with HIV prevalence in low-and-middle-income countries.

In concert, this body of work provides strong support for the notion that advancing the status of women yields important health gains for both women and children and accordingly, the literature makes several recommendations for ending discrimination against women and improving their status. In the short term, governments and international donors are called on to invest in health care services, including improving women's access to trained birth attendants emergency obstetric care and basic healthcare (Burroway 2012; Shen and Williams 1999). In the long term, governments and international donors are encouraged to invest in women's primary and secondary education because women's access to education is regarded as one of the most important determinants of women's empowerment and improved health outcomes for children (Burroway 2012; Longwe 1998; Nussbaum 2004; Royston and Armstrong 1989; Shen and Williams 1997; Shen and Williams 1999; Smith and Haddad 2000). Yet, despite these policy suggestions, the sociological literature has not engaged with policy models for improving women's status. More specifically, there have been no quantitative analyses, to the best of my

knowledge, that analyze the effects of gender mainstreaming on women's empowerment and gender equality.

In 1995, gender mainstreaming was systematically adopted in the Beijing Platform for Action (BPFA) by United Nations member countries as the policy model for assessing how all development policies and programs differently affect men and women due to their different roles, responsibilities and preferences. As defined by the Economic and Social Council of the United Nations (1997):

Mainstreaming a gender perspective is the process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated. The ultimate goal is to achieve gender equality.

Like prior strategies to advance women's status, gender mainstreaming can be understood as a corrective to western development interventions that assumed men to be the normative agents of development (True 2003). Gender mainstreaming differs conceptually from prior strategies to advance women's status because its unit of analysis is the relations between women and men, not women alone. Whereas gender mainstreaming's predecessor, Women in Development, aimed to integrate women into existing development policies and projects in order to advance their economic wellbeing, gender mainstreaming emerged from feminist analyses of inequality as a structural phenomenon (Daly 2005). It is a more radical strategy rooted in Gender and Development, a theoretical framework which maintains that gender equality can be achieved only via an analysis of the unequal power relations between women and men and a reorganization of the policy process across all levels and sectors (True and Minstrom 2001). In practice, gender mainstreaming advocates a twin-track approach of integrating a gender analysis into all policies and programs and designing policies and programs specifically to advance women's rights and increase their access to resources. This approach should improve both women's well-being and the well-being of their children given the positive relationship between women's status and children's welfare.

Yet, despite nearly 20 years-if not longer-of global efforts to mainstream gender into international development interventions, and growing anecdotal consensus that gender

mainstreaming has failed to improve the welfare of women and their families, very little empirical work has systematically examined the effects of gender mainstreaming on women's and children's well-being (Brouwers 2013; James-Sebro 2005; Moser and Moser 2005). This is surprising given that, as Daly (2005: 441) notes, gender mainstreaming has become "part of the accepted wisdom about what modern gender equality architecture should look like – it has become a symbol of modernity." At the project level, evaluations of programs that mainstream gender are piecemeal, and gender and development practitioners commonly cite a dearth of gender-disaggregated baseline data to explain the absence of more systematic empirical testing. At the national level, a small body of literature has analyzed the effectiveness of gender mainstreaming as a strategy for influencing policy processes, but has not examined the outcomes of these processes on women's and children's welfare.

My dissertation addresses this gap in the literature by conducting the first cross-national quantitative analysis of gender mainstreaming. Specifically, I measure the effects of gender mainstreaming on women's and children's health in Sub-Saharan Africa for four time points (1995, 2000, 2005, and 2010) using the following independent variables: gender-mainstreamed bilateral health aid flows; national women's machineries (NWM); and the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW). As a proxy for gender equality in health, I use an indicator of maternal mortality because it reflects the status of women in society, their access to maternal and basic health care, and the ability of national health systems to respond to the specific health care needs of women and adolescent girls (Shen and Williamson 1999). As proxies for children's well-being, I use indicators of infant and child mortality, which reflect both the health of children and the overall health of a population (Mishra and Newhouse 2009).

While gender equality is a multidimensional, complex concept, I choose to analyze the effects of gender mainstreaming on one dimension –health–for several reasons. First, extant national-level indices of gender equality suffer from both technical and conceptual limitations. For example, the Gender-related Development Index, perhaps the most widely known gender index, uses a simple arithmetic mean of four sex-disaggregated indicators (life expectancy, adult literacy, school enrollment and per capita income), resulting in the gender gap in income accounting for more than 85 percent of the final GDI score. Further, because the GDI is an adjusted Human Development Index (HDI), it can only be interpreted in reference to the HDI

although it is often interpreted erroneously as an independent measure of gender equality (for a review of several gender equality indices see Biström 2010).¹ More broadly, gender equality indexes may mask the differential effects of interventions on distinct aspects of women's empowerment (see Biström 2010 for a review). Put another way, a development intervention that mainstreams gender may result in positive gains for women in one dimension of gender equality, but not in another, and using an index to assess the efficacy of the intervention would muddle an analysis of the areas in which the intervention is more or less effective. For these reasons, using indices of gender equality are not ideal choices for measuring the effects of gender mainstreaming.

Second, the collection of reliable sex-disaggregated data across multiple dimensions of gender equality is limited at the national level, especially across time points (Malhotra, Schuler and Boender 2012). However, data on women's and children's health is available for most Sub-Saharan African nations because the data is used to monitor progress toward the Millennium Development goals. Third, investments in women's and children's health have been prioritized, historically, over investments in other dimensions of gender equality (United Nations 2008). Thus, it should follow that if gender mainstreaming has an impact on gendered outcomes, these effects should be most observable in the health sector. Fourth, and related, although the methodology of gender mainstreaming conceptualizes gender as a crosscutting issue and aims to integrate a gender perspective into all development sectors, few bilateral donors consistently indicate whether projects outside of the health sector have been screened for attention to gender. For example, between 2007 and 2008, only six percent of official development assistance (ODA) to Agriculture, Forestry and Fishing and only four percent of ODA to General Environment Protection had been screened against the gender equality marker in the Organization for Economic Co-operation and Development's (OECD) Creditor Reporting System Database (OECD 2010). Finally, as discussed above, a substantive body of sociological literature has found that women's status is associated with improved health outcomes for women and children. Thus, it should follow that gender mainstreaming should be associated with these same improvements if it is an effective policy model for fostering gender equality.

¹Due in large part to these critiques, in 2010 the United Nations Development Program replaced the GDI with the Gender Inequality Index, which measures reproductive health, empowerment, and labor market participation, but data are not available for earlier time points in my analysis.

I focus on Sub-Saharan Africa for two main reasons. First, while it is common for cross-national quantitative research to include dummy variables for regions of the world to account for findings that may be due to geographical or historical circumstances, focusing on a specific region, as I do here, enables the analysis to move beyond hypothesizing why regional differences exist to examining the factors specific to the phenomenon in a given region (Shandra et al. 2010). This may be particularly important in the case of gender mainstreaming because the strategies and interventions that work in one part of the world to foster gender equality may not work in another due to regional variation in gender norms and levels of gender discrimination. Second, Sub-Saharan Africa suffers from the highest rates of maternal and child mortality in the world and is not on track to meet the Millennium Development Goals of reducing maternal mortality by three quarters and child mortality by two thirds between 1990 and 2015 (World Health Organization 2010). Thus, the policy implications from an analysis of the efficacy of gender mainstreaming on maternal and child health outcomes is likely to be greatest for Sub-Saharan Africa.

The dissertation is organized into chapters that are stand-alone articles examining a different research question pertaining to the efficacy of gender mainstreaming. Chapter 1 tests the hypothesis that interventions which fail to mainstream gender may erode women's well-being or at best fail to improve it. Specifically, I use two-way fixed effects ordinary least squares (OLS) regression to demonstrate that while gender-absent health aid flows to Sub-Saharan Africa do not adversely affect women's and children's health, they are not associated with reductions in maternal, infant, or child mortality. In contrast, gender-mainstreamed health aid *is* an important predictor of maternal, infant, and child mortality. Chapter 2 also uses two-way fixed effects OLS regression to test the hypothesis that the institutional location of national women's machineries is an important predictor of their efficacy. Despite a long history of NWMs in Sub-Saharan Africa, I find that the institutional location of gender machineries is not associated with improvements in maternal and child health. Chapter 3 uses the same techniques to explore the relationship between state commitment to the Convention on the Elimination of all Forms of Discrimination against Women and maternal, infant, and child mortality in Sub-Saharan Africa. I find that stronger commitment to the CEDAW corresponds with lower levels of maternal mortality but not with lower levels of infant and child mortality, thus providing only partial support for the

hypothesis that state commitment to the CEDAW's provisions should lead to improved health outcomes for women and children.

Thus, while each of the chapters examines a different vehicle for gender mainstreaming, together they seek to answer the following research question: is gender mainstreaming an effective policy instrument for fostering improvements in women's and children's health? Answering this question is important for both theoretical and empirical reasons. First, the dissertation contributes to the nascent literature theorizing gender mainstreaming (Hankivsky 2005). While a small body of work has theorized impediments to the adoption and implementation of gender mainstreaming as a policy model (e.g. True 2003; Daly 2005; Hankivsky 2005; Moser and Moser 2005; Swiss 2012), very little research has theorized the actual pathways by which gender mainstreaming, once adopted, should translate into improvements in women's and children's welfare. Second, in providing the first cross-national, quantitative analysis of gender mainstreaming, the dissertation answers the call for evidence of whether gender mainstreaming is an effective policy model for fostering women's and children's well-being. More broadly, this dissertation contributes to the sociological literature on gender and health in developing countries by analyzing an understudied topic in sociology –the efficacy of policy prescriptions for improving women's and children's health outcomes.

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CHAPTER 1: DOES MAINSTREAMING GENDER INTO HEALTH AID MATTER?

BILATERAL DEVELOPMENT ASSISTANCE AND MATERNAL AND CHILD

HEALTH

Despite more than 20 years of donor mandates to mainstream gender into international development interventions, there has been little quantitative analysis of the effects of gender-mainstreamed aid on social and human development outcomes. A small cross-national body of research examining the effects of sectoral aid allocations on social and human development outcomes finds positive, but moderate, gains in health and education in developing countries. For example, Mishra and Newhouse (2009) find that doubling per capita health aid is associated with a two percent reduction in the infant mortality rate. Gebhard et al. (2008) find that health aid is positively correlated with improvements in child health, but conclude that its impact is almost negligible compared to the effect of gross domestic product (GDP). In the education sector, Michaelowa and Weber (2006) find a positive effect of education aid on primary enrollment and completion rates, conditional on good governance. And Pickbourn and Ndikumana (2013) find that health and education aid are associated with reductions in maternal mortality and the gender gap in youth literacy, respectively.

However, none of these studies-and to my knowledge, no cross-national research that considers the effects of foreign aid on human and social development outcomes- distinguishes between gender-mainstreamed aid and gender-absent aid; i.e. aid that funds interventions in which gender equality is promoted and aid that funds interventions in which gender equality is not promoted. This is surprising for several reasons. First, a large body of literature has documented the relationship between gender equality and improvements in a number of social and human development outcomes, including health, nutrition, food security, education, and women's own well-being. For example, a higher share of women's assets is associated with better health outcomes for girls in Bangladesh (Hallman 2000). In Bangladesh, Ethiopia, Indonesia, and South Africa, the greater a woman's asset holdings at marriage, the larger the share the household spends on children's education (Quisumbing and Maluccio 2003). And a cross-national study using data from 36 Demographic and Health Surveys conducted between 1990 and 1998 in Sub-Saharan Africa, South Asia and Latin American and the Caribbean on the intergenerational gains to investing in women's human capital finds that increases in women's

education contribute significantly more (43 percent) to reducing the rate of child malnutrition than improvements in food availability (26 percent) (Smith and Haddad 2000).

Second, gender and development theorists and practitioners have long argued that development interventions which do not integrate gender inadvertently may worsen women's status or at best, fail to improve it (Boserup 1970; Rathgeber 1990; Moser and Moser 2005; Molyneux 1985). For example, land titling programs have, in many cases, decreased women's tenure security by strengthening the claims of men without recognizing the rights women have had over land under customary systems (Lastarria-Cornhiel 1997; Mwangi 2007). A well-known example comes from The Gambia, where women lost rights to grow swamp rice on communal plots when an irrigation project gave control of the land to male heads of households (Carney 1988).

Third, after years of "policy evaporation," in which international donors loosely adhered to their policy commitments to mainstream gender (Aasen 2006; Sparr 2008), donors have reaffirmed their commitments to mainstreaming gender into policies and programs across all sectors. This renewed interest is, in part, a response to the global community's adoption of the United Nations Millennium Development Goals (MDGs) in 2000 (Ransom and Bain 2011). Two of the goals – to promote gender equality and empower women (MDG 3) and to improve maternal health (MDG 5) – explicitly focus on gender, and it is now commonly acknowledged that none of the MDGs can be achieved without improving gender relations and the status of women. Much of this renewed attention from donors has focused on the health sector in Sub-Saharan Africa, which suffers from the highest rates of maternal and child mortality in the world. Although maternal mortality has nearly been halved worldwide since 1990, Sub-Saharan Africa accounts for 56 percent of maternal deaths and is not on track to meet the MDG target of reducing maternal mortality by three quarters between 1990 and 2015 (United Nations Economic Commission for Africa 2013). While Sub-Saharan Africa has reduced its under-five mortality rate by 39 percent since 1990, one in nine children in Sub-Saharan Africa still dies before age five, and the continent also is not on track to meet the MDG target of reducing the under-five mortality rate by two thirds between 1990 and 2015 (United Nations 2013). Moreover, there is great variation on the continent, with Southern, East and West Africa reducing their child mortality rates by over 40 percent and Central Africa experiencing more absolute under-five deaths now than in 1990 (Economic Commission for Africa 2013).

Fourth, in countdown toward the Millennium Development Goals target date of 2015, there has been a collective effort to assess the impact of development assistance by making data on aid, including gendered aid, more transparent and accessible to a wide range of stakeholders.

Initiatives include the Organization for Economic Cooperation and Development's Creditor Reporting System and AidData: Tracking Development Finance, previously a joint partnership between Brigham Young University and the College of William and Mary. Thus, longitudinal data on bilateral gender-mainstreamed aid in the health sector is available and easily accessible online, enabling analysis of whether mainstreaming gender into official development assistance is associated with improved social and human development outcomes in developing countries.

Thus, I seek to address the gaps in the literature on the effectiveness of foreign aid and the literature on gender mainstreaming by conducting a cross-national, longitudinal study that examines the impact of bilateral gender-mainstreamed health aid on maternal, infant and child mortality in Sub-Saharan Africa. I begin with a discussion of bilateral lending in the health sector to Sub-Saharan Africa and describe why health aid should be associated with reductions in maternal, infant, and child mortality. Next, I discuss why bilateral health aid flows that do not mainstream gender may fail to reduce mortality rates. I go on to elaborate upon other factors that may influence maternal, infant and child mortality when I describe my independent variables. This is followed by a description of my methodology. Finally, I conclude by discussing the findings and the theoretical and policy implications of my research.

Bilateral Health Aid to Africa and Its Impacts on Maternal, Infant and Child Mortality

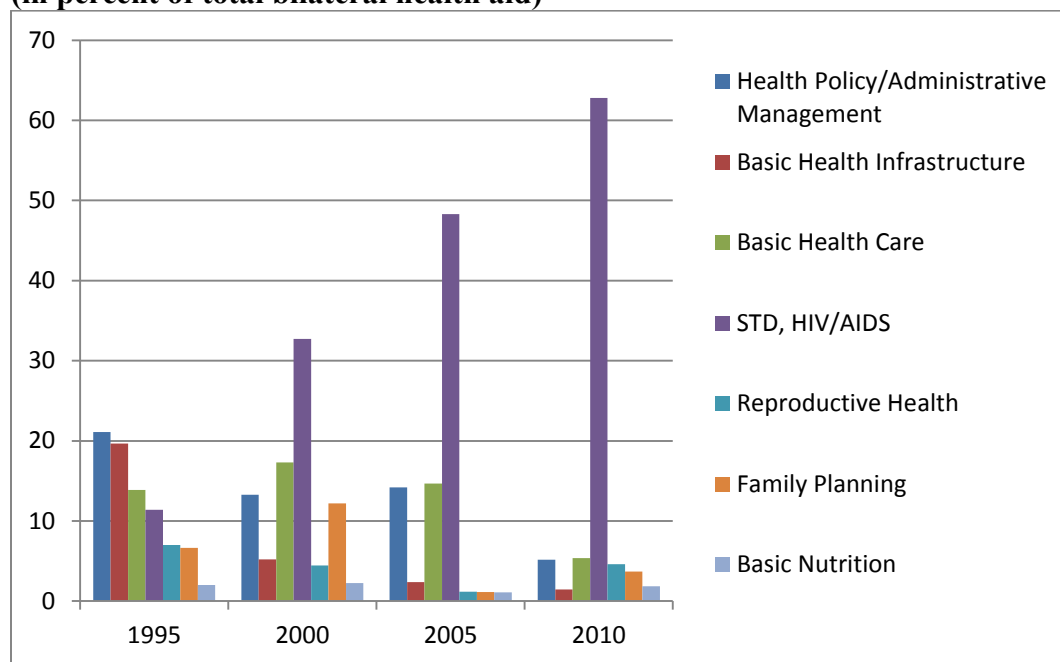
Bilateral health aid to Africa has more than doubled since the adoption of the Millennium Development Goals in 2000, standing at over seven billion US constant dollars in 2010 (Organization for Economic Co-operation and Development 2013).² However, between 2000 and 2009, half of the additional health aid flows to Africa have targeted HIV/AIDS and malaria (Van de Maele, Evans, and Tan-Torres 2013). While there are no standard mechanisms for tracking private aid to developing countries, over the past decade private foundations, such as the Bill and Melinda Gates Foundation, have increased their funding for health interventions in Sub-Saharan Africa. Still, Official Development Assistance (ODA) currently comprises roughly 70 percent of

² All aid flows are presented in US 2010 constant dollars.

health aid flows to the continent (Van de Maele, Evans, and Tan-Torres 2013). ODA is defined as “flows of official financing administered with the promotion of the economic development and welfare of developing countries as the main objective” (Organization for Economic Cooperation and Development 2013). It comprises both bilateral and multilateral aid, although only the 23 Development Assistance Committee (DAC) bilateral donors are required to report their lending amounts under the Organization for Economic Cooperation and Development’s (OECD) obligations.

Health aid funds many types of interventions that should influence maternal, infant and child mortality rates, either directly through on-the-ground health projects or indirectly through budget assistance to government health ministries. Figure 1 shows that in 1995, health policy and administrative management received the largest allocation (21 percent) of bilateral health aid flows to Sub-Saharan Africa followed by basic health infrastructure (nearly 20 percent) and basic health care (nearly 14 percent). In 2000, health policy and administrative management and basic health care still were among the three largest components of bilateral health aid (13.27 percent and 17.30 percent, respectively), but funding for STDs, including HIV/AIDS, received the largest share of health aid (32.71 percent). Funding for HIV/AIDS continued to increase throughout the decade, comprising 48.30 percent and 62.81 percent of bilateral aid to Sub-Saharan Africa in 2005 and 2010, respectively. Although funding for basic health care and health policy and administrative management dropped steeply from 2005 (14.69 percent and 14.19 percent, respectively) to 2010 (5.36 percent and 5.15 percent, respectively), they received the second and third largest shares of aid for both years.

Figure 1. Components of Bilateral Health Aid Flows to Sub-Saharan Africa (in percent of total bilateral health aid)



Source: Organization for Economic Co-operation and Development Creditor Reporting System Database, 2013

Investments in health policy and administrative management include direct aid to health ministries, as well as assistance in institutional capacity strengthening, policy design and strategic planning. Budget assistance to health ministries should influence maternal, infant and child mortality rates by loosening constraints on public expenditures, thus enabling governments to invest in social safety nets and health infrastructure (Pickbourn and Ndikumana 2013). Support in institutional capacity strengthening, policy design and strategic planning should help governments design coherent strategies for improving maternal and child health, including putting in place effective and implementable protocols and procedures. Investments in basic health infrastructure and basic health care, such as building hospitals, clinics and dispensaries and stocking them with needed medical equipment, medicines and vaccines, should reduce mortality rates by strengthening the capacity of governments to provide health services to their populations and to treat diseases (e.g., malaria, cholera, and tuberculosis) that contribute to maternal, infant and child mortality (Baker 2010; Ismi 2004).

Interventions to test and prevent HIV/AIDS and to treat and care for persons living with AIDS should improve maternal and child health outcomes as approximately 10 percent of

maternal deaths in Sub-Saharan Africa are due to HIV (World Health Organization 2010). Women with HIV/AIDS may experience complications during pregnancy or birth leading to death as a result of opportunistic infections (e.g., tuberculosis, pneumonia, and malaria) resulting from weakened immune systems (Foster and Williamson 2000). Moreover, children may contract the infection from their mothers during pregnancy, birth, or breastfeeding and subsequently die from opportunistic infections. There also are indirect effects of HIV/AIDS. For example, when mothers fall sick from the disease or die from associated illnesses, children assume the burden of earning money. Because children tend to earn less than adults, there generally are fewer resources (e.g., food, water) available for the family and their health suffers (Scanlan 2010). Girls are also more likely to be pulled from school to compensate for their mothers' absence, which may erode the positive benefits of educational attainment on maternal and child health outcomes (Scanlan 2010).

As shown in Figure 1, interventions in reproductive health care, family planning, and basic nutrition have received much less bilateral funding, historically. In 1995, reproductive health care accounted for seven percent of all bilateral health aid to Sub-Saharan Africa, but in 2010, accounted for just under five percent of aid. Funding for family planning interventions almost doubled from 6.6 percent in 1995 to just over 12 percent in 2005, but fell to under four percent in 2010. Aid for basic nutrition never topped 2.27 percent in 1995, 2000, 2005 or 2010.

Interventions in reproductive health care, family planning and basic nutrition should contribute to lower maternal, infant, and child mortality rates, as well. Reproductive health care interventions that train birth attendants and provide pregnant women with prenatal and postnatal care should lower maternal mortality rates because the direct leading causes of maternal deaths are hemorrhage, infection, obstructed labor, and hypertensive disorders in pregnancy (Buor and Breem 2004; World Health Organization 2010). Moreover, reproductive health care interventions should lower infant mortality rates because pre-term births, birth asphyxia and infections are the leading causes of infant mortality (United Nations 1995). Family planning interventions that provide contraceptives and counseling also should reduce maternal and infant mortality rates because high levels of fertility often correspond with women having children too early or too late (Royston and Armstrong 1989) and not appropriately spacing births (United Nations 1995). These factors put women and infants at greater risks of complications from pregnancy (Shen and Williamson 1999).

Finally, interventions in basic nutrition, such as activities to promote household food security and maternal and child feeding programs, should improve maternal, infant, and child health. Malnutrition and anemia increase women's susceptibility to illness and pregnancy complications—both factors that contribute to maternal mortality in Sub-Saharan Africa (Buckingham-Hatfield 2000). Mothers' nutritional deficiencies also contribute to low birth weight babies, which are 20 percent more likely to die in infancy (United Nations 2010). Moreover, the United Nations estimates that at least 20 percent of the burden of disease in children below the age of five is related to poor maternal health and nutrition. School feeding programs that successfully keep girls in school can indirectly affect maternal mortality rates because female education tends to be associated with lower rates of child marriage (United Nations 2001), lower rates of fertility (Boerma 1987), and wider use of health services including prenatal care, immunizations, and nutritional counseling (Shen and Williamson 2001).

The preceding discussion explicates why health aid flows to Sub-Saharan Africa should be associated with reductions in maternal, infant, and child mortality rates. However, in the next section, I discuss why health aid actually may fail to improve maternal and child health unless the interventions it funds mainstream gender.

Mainstreaming Gender into Health Aid

Since the field of Women in Development (WID) emerged in the early 1970s, gender and development theorists and practitioners have argued that development interventions which do not target women and integrate gender inadvertently may worsen the well-being of women and their children or at best, fail to improve it (Boserup 1970; Molyneux 1985; Rathgeber 1990). A wide-ranging body of literature on systematic gender differences in the processes, determinants and outcomes of development interventions would appear to support this claim. At the household level, there is now substantial empirical evidence that contradicts the unitary model of the household as a group of individuals who share the same preferences and fully pool their resources (Haddad, Hoddinott, and Alderman 1997; Sen 1990; Strauss and Thomas 1995). An alternative to the unitary model, the collective model of the household allows for differences of opinion regarding resource allocation decisions among household members, raising the

possibility that when there is disagreement -for example, regarding how to allocate project benefits- how it is resolved may depend on the relative bargaining power of individuals within the household (Manser and Brown 1980). In this regard, gender is an important determinant of the distribution of rights, resources, and responsibilities within the household (Agarwal 1997; Quisumbing 2003).

A related body of research finds that women's and men's livelihood preferences, priorities and resource constraints often differ due to the gender division of labor and women's triple role in reproductive, productive and community activities (Agarwal 2000; Kabeer 1994; Lind 1997; Moser 1993). At the community level, for example, men and women often have different motivations for participating in collective action which are linked to the productive tasks they undertake (Pandolfelli, Meinzen-Dick and Dohrn 2008). Moreover, women often have less incentive to participate in development projects because they have a higher opportunity cost of time than men and thus, face greater transaction costs (Meinzen-Dick and Zwartveen 1998).

These research findings have important implications for both policy and program design because they suggest that the outcomes and impacts of development interventions will differ depending on *whom* within a household or a community is targeted. They also suggest that in addition to targeting women, development interventions need to assess women's preferences for participating, analyze specific gender-based constraints to their participation and design programmatic features to alleviate those constraints (King and Mason 2001; Quisumbing and Pandolfelli 2010). Yet, historically, development policies and programs have failed to recognize -or chosen to ignore- these gender differentials and instead, tailored policy and program prescriptions across all sectors toward male beneficiaries, who were assumed to be the normative agents of development (True 2003).

Facing pressures from feminist theorists and practitioners to shift this paradigm, bilateral donors began to integrate women into development interventions in the early 1970s. In 1973, for example, the United States Congress adopted the Percy Amendment to the Foreign Assistance Act, requiring all US bilateral assistance programs to integrate the advancement of women into national economies. In the 1990s, following the adoption of the Beijing Platform for Action by United Nations member countries, the focus of bilateral donors shifted from merely targeting women for inclusion in development interventions to assessing how all policies and programs affect men and women differently and designing interventions to foster women's empowerment

and gender equality (True 2003). This means that interventions which mainstream gender focus on the gender roles, relations, needs and interests of both women and men, not on women in isolation. For example, maternal and child health care interventions that mainstream gender would engage both women and men in the promotion of healthy household behaviors, such as encouraging men to take on more domestic responsibilities so that women have sufficient time to breastfeed. Today, most OECD-DAC member countries have gender equality policies that recipient countries must adhere to in order to receive Official Development Assistance.

Since the adoption of the Beijing Platform for Action, gender-mainstreamed health aid to Sub-Saharan Africa has increased (see Table 1). As reported in the OECD Creditor Reporting System database, the number of interventions that mainstream gender has grown from 88 projects in 1995 to 4,287 projects in 2010.³ This represents an increase in committed bilateral, gender-mainstreamed aid from US\$136,386, 900 in 1995 to US\$1,213,476,000 in 2010 (OECD 2013). However, as a percentage of total bilateral health aid flows to the continent, gender-mainstreamed aid has remained fairly stagnant and minimal over time. In 1995, it comprised only 16.48 percent of total bilateral health aid to Africa. In 2000, gender-mainstreamed health aid increased to just shy of 29 percent, but in 2005 and 2010, it fell again to 16.98 percent and 16.40 percent, respectively.⁴

Table 1 Number and Percentage of Bilateral Health Interventions in Sub-Saharan Africa that Mainstream Gender

Year	Number of gender-absent projects	Number of gender-mainstreamed Projects	Total gender-mainstreamed aid in \$US	Percentage of total bilateral health aid that is gendered
1995	672	88	136,386,900	16.48
2000	937	295	438,132,800	28.95
2005	1725	1146	536,545,800	16.98
2010	3504	4287	1,213,476,000	16.40

Source: OECD Creditor Reporting System Database, 2013

³ A project is classified as mainstreaming gender if it, “is intended to advance gender equality and women’s empowerment or reduce discrimination and inequalities based on sex” (Organization for Economic Co-operation and Development 2012).

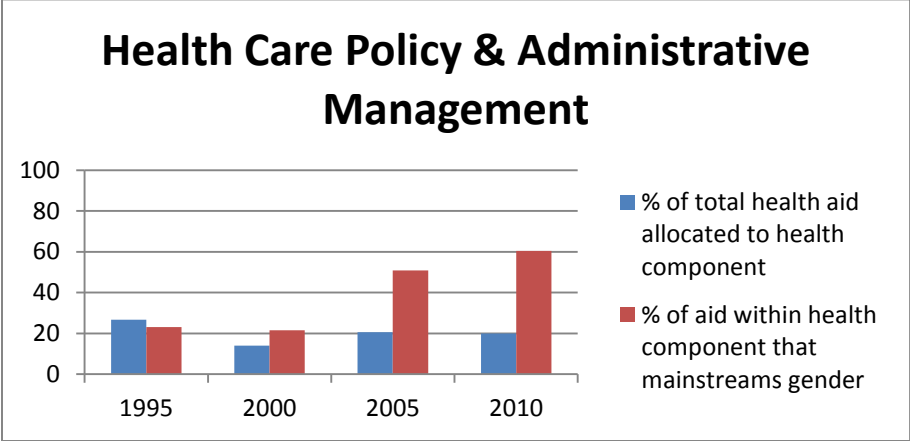
⁴ Total bilateral health aid to Sub-Saharan Africa includes aid that has not been screened against the gender marker in the OECD Creditor Reporting System Database. It is possible that some of this aid does mainstream gender.

Figures 2.0-2.7 show two series of data to illustrate the extent to which each health component, or type of intervention, discussed in the previous section mainstreams gender. The blue columns indicate the percentage of total bilateral health aid screened for gender that is allocated to each health component while the red columns reveal the percentage of that aid that has mainstreamed gender.⁵ For example, health care policy and administrative management accounted for approximately 26 percent and 14 percent of total bilateral health aid screened for gender, respectively, in 1995 and 2000, while less than 25 percent of bilateral aid allocated to health care policy and administrative management mainstreamed gender in either year. Notably, the percentage of screened aid designated for health care policy and administrative management remained at similar levels in 2010, at 20 percent, but the proportion that mainstreamed gender increased sharply to 60 percent. Similarly, the percentage of total aid allocated to basic health care grew slightly from 15 to 20 percent between 2005 and 2010 while the percentage of basic health care aid that mainstreamed gender doubled from 40 percent to more than 80 percent over this same period.

In fact, all health components saw an increase in the percentage of screened aid that mainstreamed gender between 1995 and 2010. As might be expected, family planning had the largest percentage of gender-mainstreamed aid at over 99 percent in 2005 and 2010, yet aid to family planning interventions accounted for less than two percent of total health aid flows screened for gender to Sub-Saharan Africa in both 2005 and 2010. Notably, while nearly 75 percent of aid for reproductive health care mainstreamed gender in 2010, only 38 percent and 51 percent did so in 1995 and 2010, respectively. Further, reproductive health care aid accounted for only 2.3 percent and 6.4 percent of total screened health aid flows to the continent during these same years.

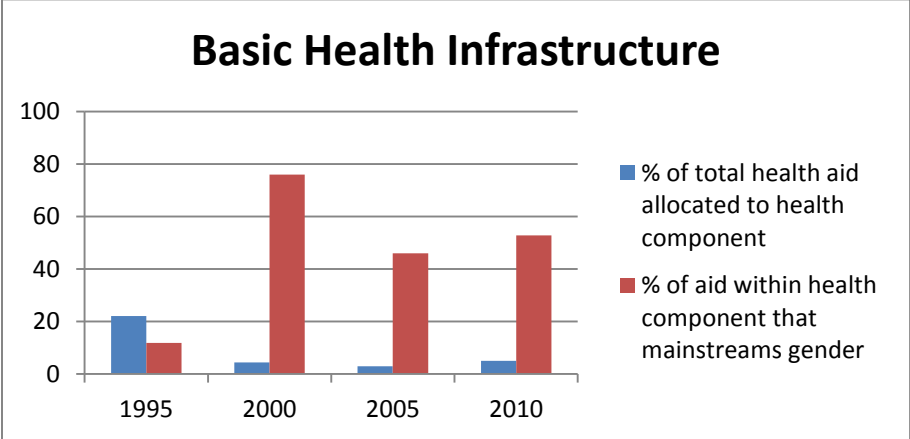
⁵ Not all aid reported in the OECD Creditor Reporting System Database has been screened for gender. Because it is not possible to determine whether this aid has mainstreamed gender, it is excluded from the percentages presented in Figures 2.0-2.7.

Figure 2.0 Percentage of Bilateral Health Aid Allocated to Health Policy & Administrative Management and Percentage of Aid to Health Policy & Administrative Management that Mainstreams Gender



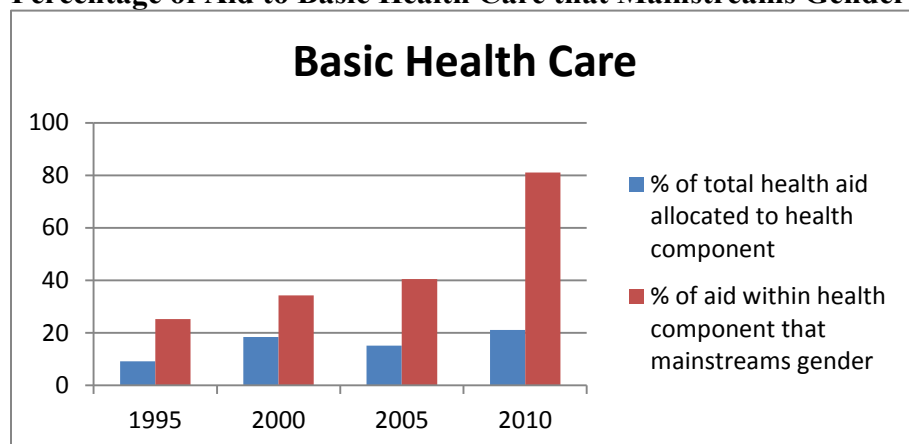
Source: OECD Creditor Reporting System Database, 2013

Figure 2.1 Percentage of Bilateral Health Aid Allocated to Health Infrastructure and Percentage of Aid to Health Infrastructure that Mainstreams Gender



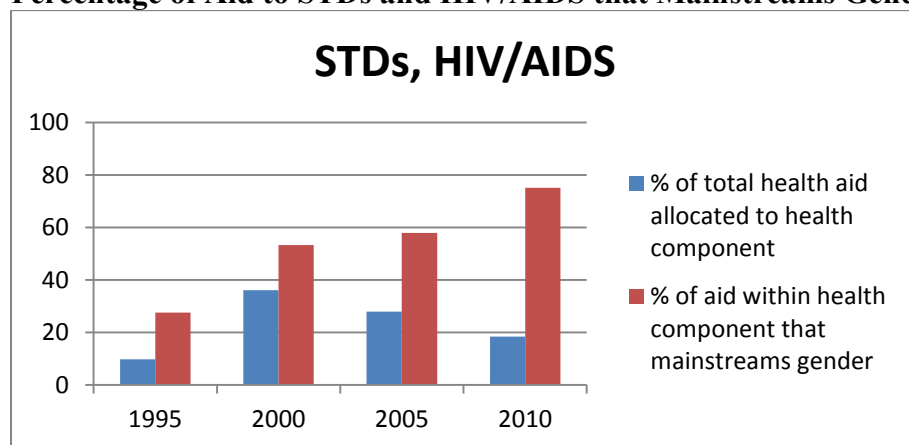
Source: OECD Creditor Reporting System Database, 2013

Figure 2.2 Percentage of Bilateral Health Aid Allocated to Basic Health Care and Percentage of Aid to Basic Health Care that Mainstreams Gender



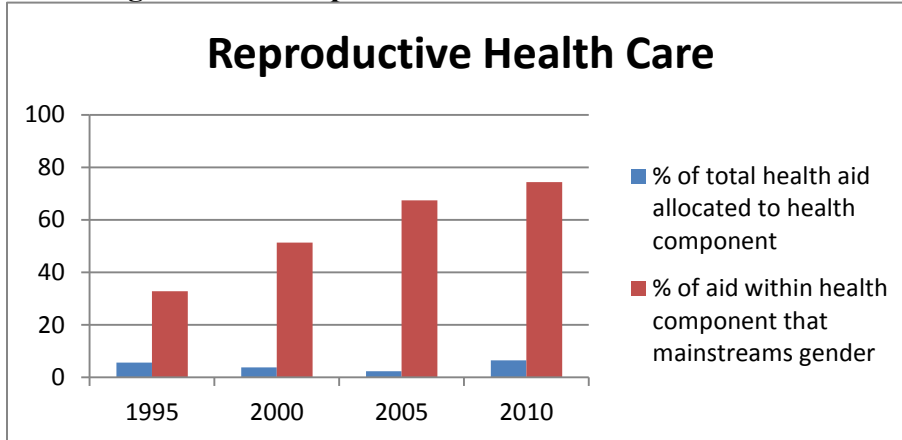
Source: OECD Creditor Reporting System Database, 2013

Figure 2.3 Percentage of Bilateral Health Aid Allocated to STDs and HIV/AIDS and Percentage of Aid to STDs and HIV/AIDS that Mainstreams Gender



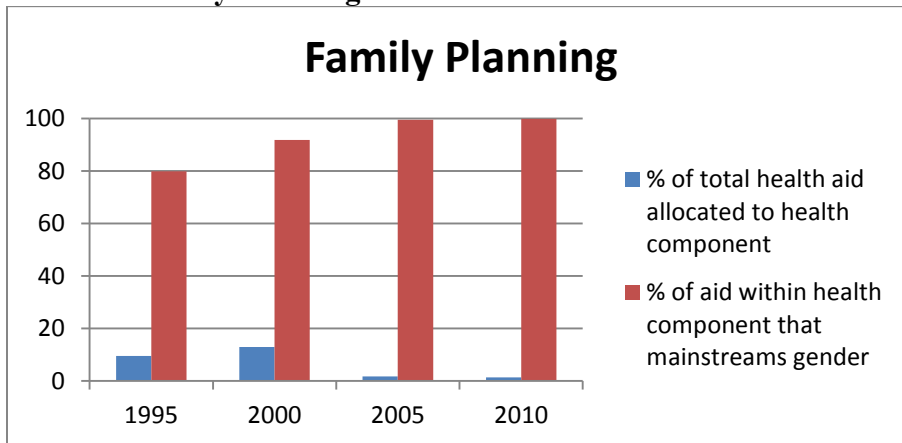
Source: OECD Creditor Reporting System Database, 2013

Figure 2.4 Percentage of Bilateral Health Aid Allocated to Reproductive Health Care and Percentage of Aid to Reproductive Health Care that Mainstreams Gender



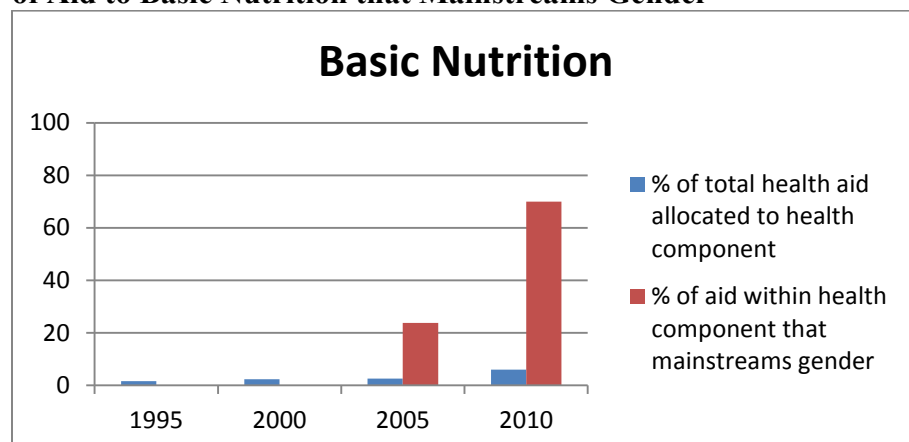
Source: OECD Creditor Reporting System Database, 2013

Figure 2.5 Percentage of Bilateral Health Aid Allocated to Family Planning and Percentage of Aid to Family Planning that Mainstreams Gender



Source: OECD Creditor Reporting System Database, 2013

Figure 2.6 Percentage of Bilateral Health Aid Allocated to Basic Nutrition and Percentage of Aid to Basic Nutrition that Mainstreams Gender



Source: OECD Creditor Reporting System Database, 2013

There are many ways in which health interventions that do not mainstream gender may fail to improve maternal and child health. I briefly discuss seven examples here. First, reproductive health care interventions that train male health workers in obstetric care but do not provide them with gender-sensitivity training or redress shortages of female health workers may be ineffective if male health workers do not deliver services in a gender-sensitive manner appropriate to rural, often illiterate women or if women prefer to forego prenatal care and deliver at home due to cultural preferences for female birth attendants (Montagu et al. 2011). Second, investments in basic health infrastructure and basic health care, including the building of hospitals and clinics, that do not include measures to promote rural women’s access may not benefit women and children if women lack the means and time to travel to health facilities, the money to pay user fees or the negotiating power to obtain permission from their husbands to take sick children, or themselves, to hospital (Parsitua 2008).

Third, interventions that attempt to target undernourished mothers or children in basic nutrition programs without analyzing how gender influences the intrahousehold allocation of resources may be inefficient or even inaccurate if household-level food- consumption indicators are used to target households or if supplements for pregnant women and children are reallocated to male household members due to gender norms which mandate that men eat first (Haddad and Kanbur 1990; Quisumbing and McClafferty 2006). Fourth, interventions to strengthen the institutional capacity of health ministries that do not include measures to strengthen capacity in

gender analysis, strategic planning, and programming may fail to equip health ministries with the organizational capacity and technical skills needed to respond to the health care needs of women and children, including putting in place effective standards, policies, and protocols to reduce maternal, infant, and child mortality and allocating financial and human resources, accordingly (Rogo, Oucho and Mwalali 2006).

Fifth, HIV/AIDS interventions that do not consider the myriad ways that gender and HIV/AIDS interact in different sociocultural contexts to render women more susceptible to contracting the disease and more responsible for caring for people suffering from it risk exacerbating women's and girls' vulnerabilities to the pandemic (Mannell 2010). Further, the imposition of user fees for HIV services disproportionately affects women's and girls' ability to access HIV/AIDS treatment (Gender Action 2012). Sixth, family planning interventions that distribute contraceptives to women, but do not address patriarchal norms that preclude women from negotiating family planning risk being ineffective (Shen and Williamson 1999) and may even exacerbate violence against women, which itself is a risk factor for child mortality (Åsling-Monemi et al. 2003). Finally, health interventions of all types that do not analyze and monitor the impact of project participation on women's and girls' time use or invest in infrastructure to reduce their workloads inadvertently may increase women's and girls' time burdens and jeopardize improved health outcomes. For example, women may lack the time to adequately breastfeed or girls may be kept home from school to substitute for their mothers' domestic labor, thus mitigating the health gains of educating girls (Glick 2002).

Despite the claim that development interventions which do not mainstream gender inadvertently may worsen the well-being of women and their children or at best, fail to improve it, no cross-national, quantitative research empirically evaluates this hypothesis so I seek to address this gap in the literature. Nevertheless, I must include other factors that have been found to affect maternal, infant, and child mortality. In the next section, I provide a brief discussion of these factors in my description of the control variables used in this study, but first review the dependent variables.⁶

Dependent Variables

⁶ The descriptive statistics for the variables used in this analysis are contained in Table 6 at the end of the chapter.

Maternal Mortality:

The first dependent variable in my dissertation is the maternal mortality ratio for a Sub-Saharan African nation. The variable measures the annual number of deaths from pregnancy related causes per 100,000 live births. A maternal death is defined as the death of a woman while pregnant or within 42 days of the termination of a pregnancy from any cause related to or aggravated by pregnancy (World Health Organization 2010). The data are available online from the World Bank's *World Development Indicators* portal for 1995, 2000, 2005 and 2010. Please note that all data are obtained from the World Development Indicators portal unless otherwise noted.

Maternal mortality is one of the best aggregate-level proxies of gender equality in health for two main reasons. First, maternal mortality ratios reflect women's access to primary health care resources (Buchman 1996). Second, the quality of women's health is influenced by social institutions and cultural norms that discriminate against women (Lyons 1985).

Infant Mortality:

The second dependent variable in my dissertation measures the probability of a child dying between birth and the age of one, expressed per 1,000 live births. In Africa, approximately 65 percent of child deaths occur before the child's first birthday (United Nations Development Programme 2012). Infant mortality is considered to be one of the strongest indicators of a nation's wellbeing because it reflects both the health of children and the overall health of a population (Mishra and Newhouse 2009).

Child Mortality:

The third dependent variable in my dissertation measures the probability of a child under five years of age dying, expressed per 1,000 live births. Shen and Williamson (1997) argue that child mortality is a better indicator of the general level of well-being of children in developing countries than infant mortality because the latter indicator underestimates the hardship of

children given that many children –in Africa, approximately 35 percent (United Nations Development Programme 2012) - die between the ages of one and five.

Independent Variables

Gender-mainstreamed health aid:

The data on health aid flows come from the Organization for Economic Cooperation and Development's (OECD) Creditor Reporting System (CRS) Database, in which Development Assistance Committee (DAC) bilateral donors are required to annually report committed and disbursed amounts of funding for development projects by sector and purpose code. (The purpose codes corresponding to the health sector are presented in Table 5 at the end of the chapter).

The CRS reporting directives require donors to screen their projects against a gender marker and self-report the level of gender mainstreaming included in each project. They state that an activity should be classified as “gender-equality focused” if “it is intended to advance gender equality and women’s empowerment or reduce discrimination and inequalities based on sex” (Organization for Economic Co-operation and Development 2012). Gender equality must be explicitly promoted in the project through specific measures that, “reduce social, economic or political power inequalities between women and men, girls and boys; ensure that women benefit equally with men from the activity; compensate for past discrimination; or develop or strengthen gender equality or anti-discrimination policies, legislation or institutions” (OECD 2012). Moreover, donors must indicate whether gender equality is: 1) a principal component of the project aid, i.e. an explicit objective of the activity and fundamental to its design; 2) a significant component, i.e. an important but secondary objective of the activity; or 3) not an objective of the activity, i.e. absent from the project.

From the CRS reporting directives, examples of activities that could be marked as having a principal gender equality objective include legal literacy for women and girls; male networks against gender violence; social safety net projects focused on women and girls; and capacity building of Ministries of Finance and Planning to incorporate gender equality objectives in national poverty reduction or comparable strategies. Examples of activities that could be marked

as having a significant gender equality objective include social safety net projects focused on the community as a whole that ensure women and men and girls and boys benefit equally; and interventions with principal objectives of providing drinking water to communities while ensuring that women and girls have safe and easy access to the infrastructure (OECD 2012). While the data do not permit an exact quantification of the amount of aid allocated to gender equality objectives since these objectives may comprise only a portion of a given intervention, they do reflect gender-mainstreamed aid flows and by extension, the extent to which donors support gender mainstreaming (Grown 2014).

However, it should be noted that the data suffer from three limitations. First, data on disbursements are not available prior to 2002 when annual coverage was below 60 percent. Thus, I use commitments to construct my variable for this study. This should not be a substantial issue because data on commitments and disbursements are strongly correlated.⁷ Second, because donors self-report the level of gender mainstreaming included in each project, they could inflate the number of projects that mainstream gender.⁸ However, there is no penalty for donors that fail to mainstream gender, and gender is absent from a substantial number of projects for each time point, both of which suggest that donors are likely to be accurately reporting the level of gender mainstreaming in the projects screened against the gender marker. Third, donors do not screen all projects against the gender marker, and there is no way to determine whether the projects that have not been screened do or do not mainstream gender. Notably, while the number of projects that mainstreamed gender increased from 1995 to 2010, so did the number of projects which were not screened against the gender marker. Thus, my dataset does not include all bilateral health aid flows to Sub-Saharan Africa because I exclude from the analysis aid flows that have not been screened against the gender marker.

To measure bilateral, gender-mainstreamed health aid flows, I create a ratio-level variable that measures the summed amount of all gender-mainstreamed aid (significant or primary) committed to each recipient country as a percentage of that country's GDP in US 2010 constant dollars. I log this variable because it is skewed. From above, I hypothesize that bilateral,

⁷ Data on health aid disbursements is available for 2005 and 2010, and the correlation coefficient between disbursements and commitments for these time points is .60 and .84, respectively. Mishra and Newhouse (2009) also find strong correlation between health aid disbursements and commitments.

⁸ Donors are not required to include narrative descriptions of the projects they fund, thus rendering my own gender evaluations of the projects impossible.

gender-mainstreamed, health aid should be positively associated with lower levels of maternal, infant, and child mortality.

Gender-absent health aid:

Using the CRS data, I create a ratio-level variable that measures the summed amount of committed bilateral health aid to each recipient country as a percentage of that country's GDP in US 2010 constant dollars for projects in which gender equality is not an objective of the activity. I log this variable to correct for its skewed distribution. Because interventions that do not mainstream gender may fail to improve women's and children's well-being for the reasons discussed above, I hypothesize that gender-absent health aid should not be associated with reductions in maternal, infant or child mortality and may in fact, adversely affect women's and children's health.

GDP per capita:

In cross-national research, it is necessary to take into account a nation's level of development in order to make sure that any observed effects of health aid flows are independent of a nation's level of wealth (London and Ross, 1995). Thus, I include a measure of gross domestic product per capita in purchasing power parity constant U.S. dollars and log the variable because of its highly skewed distribution. I expect that higher levels of gross domestic product per capita should correspond with lower levels of maternal, infant, and child mortality within Sub-Saharan African nations. This is because wealthier countries should have higher standards of living and advanced medical technology to care for mothers and children, and more people should be able to afford health care (Gebhard et al. 2008; Shandra, Shandra, and London 2011; Shen and Williamson, 1999).

Democracy:

I use the average of Freedom House's political rights and civil liberties scales to measure the level of democracy within a nation. The data may be obtained online from Freedom House. According to Freedom House (2005), political rights refer to the degree to which a nation is governed by democratically elected representatives and has fair, open, and inclusive elections. The civil liberties scale measures the level of freedom of press, freedom of assembly, general personal freedom, freedom of private organizations, and freedom of private property within a nation (Freedom House 2005). The variables have the following coding: free (1-2), partially free (3-5), and not free (6-7). I multiply the index by negative one so that high scores correspond with high levels of democracy. I hypothesize that higher levels of democracy should correspond with lower levels of maternal, infant, and child mortality within a Sub-Saharan African nation. This is most likely the case because freely elected and open governments respond to popular demands for health services due to political activism and electoral accountability (Wickrama and Mulford 1996). For example, Shiffman (2007) notes that when Nigeria transitioned to a democratic political system in 1999, the government faced increased pressure to prioritize social issues, including safe motherhood, leading to the creation of a National Economic Empowerment and Development Strategy that lists reduction in maternal mortality among its objectives. Moreover, democratic regimes, which are electorally accountable to their citizens, have more incentive to ensure that foreign health aid reaches its intended beneficiaries (Gebhard et al. 2008).

Human Immunodeficiency Virus Prevalence:

I include the prevalence of the human immunodeficiency virus (HIV) for each Sub-Saharan African nation. This variable measures the percentage of a country's population ages 15 to 49 that are infected with HIV, whether or not they have developed symptoms of acquired immune deficiency syndrome, alive at the end of the year specified. I hypothesize that higher levels of HIV prevalence should be associated with higher levels of maternal, infant, and child mortality. As noted earlier, this is because mothers may experience complications during pregnancy or birth as a result of opportunistic infections (e.g., tuberculosis, pneumonia, and malaria) resulting from a weakened immune system (Foster and Williamson 2000). Further, children may contract the infection from their mothers during pregnancy, birth, or breastfeeding and subsequently die from opportunistic infections (Scanlan 2010).

Female secondary schooling:

To examine the impact of girls' schooling on maternal, infant, and child mortality, I use female secondary school gross enrollment, measured as the total enrollment, regardless of age, expressed as a percentage of the female population of official secondary education age. I log this variable to correct for its skewed distribution. I hypothesize that higher levels of female secondary school enrollment should be related to lower levels of maternal, infant, and child mortality within Sub-Saharan African nations because female education is associated with wider use of health services, especially prenatal care, and may reduce child marriage and adolescent birth. It also tends to improve access to information about nutrition, birth spacing, reproductive health, and immunizations (Filmer and Pritchett 1999). Since the effects of girls' schooling are likely to be lagged rather than immediate, I also consider a lag structure of five years for the variable.⁹

Contraceptive Prevalence:

I also examine the effect of contraceptive prevalence on women's and children's health outcomes. This variable measures the percentage of women, ages 15 to 49, who are practicing, or whose sexual partners are practicing, any form of contraception. The data are obtained from Facilitating Green Growth in Africa: Perspectives from the African Development Bank (African Development Bank 2012). I hypothesize that higher levels of contraceptive prevalence should be associated with lower levels of maternal, infant, and child mortality within Sub-Saharan African nations because women who use contraceptives are more likely to have fewer children, appropriately space births, and refrain from having children too young or too old (Royston and Armstrong 1989; United Nations 1995), thus reducing the risks to women and children of complications from pregnancy (Shen and Williamson 1999).

Immunization Prevalence:

⁹ Ten year lag structures are also common in cross-national research, but because data on female secondary schooling in 1995 is available for only 23 countries, the sample size would be too small for a 10-year lag structure. Since lagged female secondary schooling is not statistically significant, it is not reported in the findings.

I include immunizations as a proxy for public health expenditures, independent of foreign aid, on primary health care.¹⁰ This variable measures the average percentage of children one year of age or younger who receive vaccines against tuberculosis, polio, measles, and diphtheria. The data may be obtained online from the World Bank's Health, Nutrition and Population Statistics database. I expect that higher levels of immunization prevalence should correspond with lower levels of maternal, infant, and child mortality in Sub-Saharan Africa. This is because government rollouts of large immunization campaigns facilitate linkages between health services and families, enabling pregnant women to access primary health care for themselves, thus reducing the likelihood that they will die during pregnancy (Buchman 1996). Moreover, as children become immune to these diseases through vaccinations, mortality rates should fall.

Access to an Improved Water Source:

This variable measures the percentage of the country's population that has access to an improved water source. According to the United Nations (2010), an improved water source includes any of the following types of water sources: household connections, public standpipes, boreholes, protected dug wells, protected springs, and rainwater collection. An unimproved water source may include an unprotected well, surface water, vendor provided water, tanker provided water, and bottled water. I hypothesize that higher levels of access to an improved drinking water source should be related to lower levels of maternal, infant, and child mortality in Sub-Saharan Africa. This is because polluted water often contains microbes that cause diarrheal diseases, which can complicate pregnancies, leading to maternal deaths (Rice 2008). Further, diarrhea is one of the leading causes of death in children under five years of age (World Health Organization 2010).

Access to an Improved Sanitation Source:

I also include the percentage of a country's population that has access to an improved sanitation facility. An improved sanitation facility includes a connection to a public sewer,

¹⁰ Because all measures of public health expenditures include foreign health aid, I do not include a public health expenditure variable in my models.

connection to a septic tank, pour flush latrine, simple pit latrine, ventilated pit latrine, pit latrine with slab toilet, and composting toilet (World Resources Institute 2010). An improved sanitation facility is more likely to be sanitary than an unimproved facility. An unimproved sanitation facility includes an open pit latrine, public latrines, bucket latrines, hanging latrines, flush to elsewhere (e.g., street, yard, river, ditch, etc.), and no facility (World Resources Institute 2010). I expect that higher levels of access to an improved sanitation facility should correspond with lower levels of maternal, infant, and child mortality in Sub-Saharan Africa. This is because a lack of proper sanitation has the potential to increase various diarrheal diseases that complicate pregnancies and cause death in children under five years of age (Rice 2008).

Analytic Strategy

To examine the relationship between gender-mainstreamed health aid flows and maternal, infant, and child mortality in Sub-Saharan African nations, I estimate two way fixed effects ordinary least squares regression models.¹¹ This model allows me to address heterogeneity bias, or the impact of unmeasured time-invariant variables that are omitted from a regression model (Halaby 2004). To correct for potential problems with heterogeneity bias, fixed effects models control for omitted variables that are time invariant and do not vary across cases. This is done by estimating unit-specific intercepts, which are the fixed effects for each case, and is similar to including dummy variables for $n - 1$ nations (Pandolfelli and Shandra 2013). A fixed effects approach is appropriate for cross-national analysis because time invariant unmeasured factors, such as climate or geography, could affect maternal, infant, and child mortality. Moreover, baseline levels of gender segregation that are particular to each country and which do not change during the time points in my analysis, could affect women's and children's health outcomes. Thus, a fixed effects approach should provide an efficient assessment of the relationship between gender-mainstreamed health aid flows and mortality rates because the associations between the variables are estimated net of unmeasured between country effects (Brady, Kaya, and Beckfield 2007). Generally, this modeling strategy is robust against missing

¹¹ The sample includes 40 Sub-Saharan African nations. These are: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Comoros, Congo (Republic), Cote d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, South Africa, Swaziland, Tanzania, Togo, Uganda, and Zimbabwe.

control variables and closely approximates experimental conditions (Hsiao 2003).¹² The notation for the two way fixed effects model is as follows:

$$y_{it} = a + B_1x_{it1} + B_2x_{it2} + \dots + B_kx_{itk} + u_i + w_t + e_{it}$$

i = each country in the analysis,

t = each time period in the analysis,

y_{it} = dependent variable for each country at each time period,

a = the constant,

B_k = coefficients for each independent variable,

x_{itk} = independent variables for each country at each time point,

u_i = country-specific disturbance terms that are constant over time,

w_t = period-specific disturbance terms that are constant across all countries,

and,

e_{it} = disturbance terms specific to each country at each time point.

In performing the analysis, I conducted diagnostic statistics to guard against potential violations of ordinary least square regression (OLS) assumptions. First, no Cook's d residuals are above 1.0, indicating that there appear to be no problems with influential outliers. Second, the coefficients for Breusch–Pagan tests are statistically significant, indicating heteroscedasticity is present in the models. Thus, I use robust standard errors to correct for this.

Findings

In Tables 2, 3, and 4, I present the two way fixed effects estimates of maternal mortality, infant mortality, and child mortality, respectively, in Sub-Saharan Africa. In equations 2.1 to 2.4, 3.1 to 3.4, and 4.1 to 4.4, I show fully specified models that include gender-absent health aid flows, gender-mainstreamed health aid flows, GDP per capita, democracy, HIV prevalence, and

¹² The chi square coefficients for Hausman tests were statistically significant for the infant and child mortality models, indicating that fixed effects models are more appropriate than random effects models because the country-specific error terms are correlated with the independent models used in the models. Although the chi square coefficients for Hausman tests were not statistically significant for the maternal mortality models, I use fixed effects models for consistency. However, the effects are the same for the maternal mortality models using random effects.

immunization prevalence. In equations 2.1/2.2/3.1/3.2/4.1/4.2, I include female secondary schooling while in equations 2.3/2.4/3.3/3.4/4.3/4.4, I include contraceptive prevalence. I include these variables in separate equations to avoid potential problems with multicollinearity between the variables. Likewise, in equations 2.1/2.3/3.1/3.3/4.1/4.3, I include access to an improved water source while in equations 2.2/2.4/3.2/3.4/4.2/4.4, I include access to an improved sanitation source to avoid potential problems with multicollinearity between these variables.¹³ To increase the reliability of the findings, in equations 2.5/3.5/4.5, I remove female secondary schooling, HIV prevalence, contraceptive prevalence, immunization prevalence, access to an improved water source, and access to an improved sanitation source since health aid flows could be operating primarily through these variables to effect maternal, infant, and child mortality. In equations 2.6/3.6/4.6, I also remove gender-mainstreamed health aid flows to estimate the effects of gender-absent health aid independent of all but two baseline variables-GDP and democracy.

I begin by discussing the findings pertaining to bilateral health aid flows. First, I find that gender-absent health aid flows do not reduce maternal, infant, or child mortality in Sub-Saharan Africa; however, they also do not increase maternal, infant, or child mortality. While the coefficient is positive in all equations except 2.5 and 2.6, it never reaches a level of statistical significance in either the fully specified models or the models that include only the baseline controls of GDP per capita and democracy. This is in contrast to Mishra and Newhouse's (2009) overall finding that health aid flows reduce infant mortality, but notably, their study does not separate out gender-mainstreamed aid. Second, I find that gender-mainstreamed health aid flows *do* reduce maternal, infant, and child mortality in Sub-Saharan Africa. In all three tables, gender-mainstreamed health aid flows have a robust negative effect across all equations in which the variable is included. Indeed, equations 2.5/3.5/4.5 demonstrate that this effect is net of a wide range of control variables, including HIV prevalence and contraceptive prevalence. Taken together, these results lend support to the hypothesis that interventions must mainstream gender in order to improve women's and children's well-being. However, they do not lend support to the proposition that gender-absent health aid will harm women and children.

¹³ Variance inflation factor scores for female secondary schooling and contraceptive prevalence as well as for access to an improved water source and access to an improved sanitation source were above 2.5, suggesting potential multicollinearity problems (Allison 2005).

Comparing the magnitude of the coefficients of the gender-mainstreamed health aid variables in the differently specified equations allows me to speculate on the ways in which gender-mainstreamed health aid flows may be working to reduce maternal, infant, and child mortality. Specifically, the size of the coefficients of the gender-mainstreamed health aid variables in equations 2.5/3.5/4.5 remain relatively unchanged, or become only slightly attenuated, when additional control variables are added to the fully specified models (equations 2.1 to 2.4, 3.1 to 3.4, and 4.1 to 4.4).¹⁴ For example, in Table 2, the standardized beta coefficient is -.17 in equation 2.5 and -.15 in equation 2.4 when HIV prevalence, contraceptive prevalence, immunizations prevalence, and access to an improved sanitation source are added to the model. In Table 3, the standardized beta coefficient decreases slightly from -.25 in equation 3.5 to -.21 in equation 3.4. And in Table 4, the magnitude of the effect only decreases from -.23 in equation 4.5 to -.21 in equation 4.4. This suggests that mainstreaming gender into interventions to reduce HIV prevalence and increase contraceptive prevalence (the only two statistically significant variables added to equations 2.4/3.4/4.4) accounts for only a small part of the way in which gender-mainstreamed health aid flows may reduce maternal, infant, and child mortality.

The descriptive statistics presented above on the percentage of funding for STDs/HIV/AIDS and family planning would appear to substantiate this claim. For example, while 75 percent of STDs/HIV/AIDS funding mainstreamed gender in 2010, only 18 percent of total health aid screened for gender was allocated to STDs/HIV/AIDS programming in Sub-Saharan Africa in 2010. Likewise, while nearly 100 percent of aid for family planning interventions mainstreamed gender in 2010, aid for family planning comprised less than two percent of total bilateral health aid screened for gender in Sub-Saharan Africa the same year (OECD Creditor Reporting System Database 2013). Taken together, this data suggests that mainstreaming gender into other components of the health sector has an effect on women’s and children’s health independent of HIV/AIDS and family planning interventions that mainstream gender.

Table 2 Fixed Effects Health Aid Regression Estimates of Maternal Mortality in Sub-Saharan Africa, 1995-2010

Independent Variables	Equation 2.1	Equation 2.2	Equation 2.3	Equation 2.4	Equation 2.5	Equation 2.6
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¹⁴ Additionally, I sequenced the models to examine possible mediating effects of HIV prevalence and contraceptive prevalence but do not present these models here since no substantial mediating effects were observed.

Gender-absent health aid	29.71 .02 (43.25)	22.98 .02 (39.77)	26.04 .02 (42.50)	16.01 .01 (42.62)	-18.11 -.02 (57.99)	-40.26 -.03 (69.01)
Gender-mainstreamed health aid	-183.83* -.16 (96.32)	-190.01* -.17 (103.33)	-172.97* -.15 (73.57)	-168.78* -.15 (78.57)	-190.23* -.17 (89.53)	
Gross domestic product per capita	-226.57* -.79 (133.90)	-193.43 -.68 (140.39)	-217.34 -.76 (137.15)	-190.13 -.66 (139.69)	-114.76 -.40 (136.75)	-111.32 -.39 (139.46)
Democracy	-13.99 -.08 (32.23)	-5.29 .03 (31.11)	-15.46 .08 (29.20)	-9.34 -.05 (27.48)	-9.47 -.05 (26.98)	-4.98 -.03 (27.65)
HIV prevalence	27.90*** .63 (7.38)	29.30*** .67 (7.99)	31.17*** .71 (6.85)	31.90*** .72 (7.04)		
Female secondary schooling	-18.49 -.05 (76.00)	3.63 .01 (83.34)				
Contraceptive prevalence			-3.58* -.22 (1.97)	-4.12* -.26 (2.00)		
Immunization prevalence	-1.68 -.10 (1.75)	-1.66 -.01 (1.75)	-2.03 -.12 (1.76)	-2.05 -.12 (1.74)		
Access to improved water source	-3.6 -.22 (2.34)		-2.82 -.17 (2.17)			
Access to improved sanitation source		-1.66 (1.75) -.08		-1.00 -.08 (1.24)		
Constant	2186.66* (93.39)	1788.30 (960.09)	2105.93 (868.58)	1852.37* (858.49)	1314.72 (875.54)	1346.11 (897.07)
Year = 2000	-38.85	-69.61	-46.15	-63.73	-25.82	-42.95

	(48.53)	(45.02)	(45.08)	(40.31)	(34.80)	(36.09)
Year = 2005	-41.26 (85.78)	-101.71 (79.05)	-42.49 (73.67)	-75.08 (61.93)	-84.10* (48.01)	-106.96* (48.52)
Year = 2010	-53.28 (106.79)	-138.03 (101.68)	-49.12 (84.41)	-91.07 (67.80)	-161.29 (51.04)	-112.93*** (50.54)
R-square	.74	.73	.75	.75	.63	.57
Number of observations	99	99	99	99	99	99
Number of countries	40	40	40	40	40	40

*p < 0.05, **p < 0.01, and ***p < .001 for a one-tailed test. +In each cell, the first number is the unstandardized coefficient, the second number is the standardized beta coefficient, and the number in parentheses is the robust standard error.

Table 3 Fixed Effects Health Aid Regression Estimates of Infant Mortality in Sub-Saharan Africa, 1995-2010

Independent Variables	Equation 3.1	Equation 3.2	Equation 3.3	Equation 3.4	Equation 3.5	Equation 3.6
Gender-absent health aid	7.29 .07 (5.06)	6.63 .06 (4.61)	6.03 .06 (4.28)	5.27 .05 (3.99)	3.87 .04 (5.17)	0.95 .01 (6.39)
Gender-mainstreamed health aid	-25.45** -.25 (8.81)	-25.23** -.25 (8.79)	-22.22** -.22 (7.48)	-21.68** -.21 (7.42)	-25.11** -.25 (7.85)	
Gross domestic product per capita	-32.51** -.90 (11.17)	-32.73** -.90 (10.83)	-29.80* -.90 (12.45)	-31.03** -.91 (11.88)	-25.80** -.90 (9.29)	-25.35* -.90 (13.78)
Democracy	-.57 -.03 (2.39)	-.43 -.03 (2.44)	-.75 -.05 (2.04)	-.80 -.05 (2.14)	-.75 -.05 (2.30)	-1.16 -.07 (2.70)
HIV prevalence	1.81* .46 (.98)	1.84* .46 (1.00)	1.96* .49 (.89)	1.99* .50 (.90)		
Female secondary schooling	3.64 .10 (8.90)	3.97 .11 (8.94)				

Contraceptive prevalence			-.46*	-.48*		
			-.32 (.26)	-.33 (.25)		
Immunization prevalence	.02 .01 (.13)	.02 .01 (.13)	-.02 -.01 (.13)	-.02 -.01 (.13)		
Access to improved water source	-.12 -.08 (0.22)		-.08 -.05 (.19)			
Access to improved sanitation source		-.09 -.08 (.10)		-.11 -.09 (.09)		
Constant	268.23* (81.23)	264.94*** (73.42)	269.02*** (75.69)	275.21*** (68.53)	240.51*** (55.09)	244.65 (85.13)
Year = 2000	-5.59 (5.42)	-6.36 (5.10)	-4.21 (3.05)	-4.48 (2.79)	-2.48 (2.88)	-4.74 (3.19)
Year = 2005	-11.36 (9.99)	-12.65 (9.30)	-7.24 6.23	-7.64 (4.55)	-8.48** (4.22)	-11.50** (4.47)
Year = 2010	-13.92 (14.00)	-15.38 (12.75)	-7.24 (6.23)	-6.95 (5.14)	-12.10** (5.12)	-18.93** (5.73)
R-square	.76	.76	.78	.78	.73	.65
Number of observations	99	99	99	99	99	99
Number of countries	40	40	40	40	40	40

*p < 0.05, **p < 0.01, and ***p < .001 for a one-tailed test. +In each cell, the first number is the unstandardized coefficient, the second number is the standardized beta coefficient, and the number in parentheses is the robust standard error.

Table 4 Fixed Effects Health Aid Regression Estimates of Child Mortality in Sub-Saharan Africa, 1995-2010

Independent Variables	Equation 4.1	Equation 4.2	Equation 4.3	Equation 4.4	Equation 4.5	Equation 4.6
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Gender-absent health aid	11.57 .06 (8.59)	11.03 .05 (7.94)	10.74 .05 (7.86)	10.25 .05 (7.60)	5.53 .03 (9.55)	.36 .01 (11.98)
Gender-mainstreamed health aid	-43.03** -.22 (16.76)	-43.05** -.22 (16.72)	-40.66** -.21 (14.20)	-40.25** -.21 (14.27)	-44.42** -.23 (14.96)	
Gross domestic product per capita	-41.80* -.85 (20.03)	-41.12* -.84 (19.22)	-39.79* -.81 (21.45)	-41.50* -.85 (20.05)	-33.15* -.68 (14.31)	-32.34 -.66 (21.18)
Democracy	-1.44 -.05 (4.11)	-1.14 -.04 (4.15)	-1.72 -.05 (3.45)	-1.89 -.06 (3.54)	-2.25 -.07 (3.86)	-1.12 -.04 (4.53)
HIV prevalence	3.71* .49 (1.59)	3.76* .50 (1.61)	4.29** .57 (1.39)	4.31** .57 (1.39)		
Female secondary schooling	-2.64 -.04 (15.11)	-1.92 -.03 (15.11)				
Contraceptive prevalence			-.69 -.25 (.44)	-.69 -.25 (.43)		
Immunizations prevalence	-.09 -.03 (.25)	-.09 -.03 (.25)	-.15 -.05 (.25)	-.15 -.05 (.24)		
Access to improved water source	-.16 -.06 (.43)		-.01 -.05 (.38)			
Access to improved sanitation source		-.08 -.03 (.21)		-.08 -.04 (.19)		
Constant	395.21** (136.64)	383.70** (119.29)	381.38** (132.21)	392.44** (114.34)	336.58*** (84.87)	343.91** (130.12)
Year = 2000	-8.54 (9.78)	-9.74 (9.33)	-9.72* (5.77)	-9.61* (5.43)	-4.37 (5.64)	-8.37 (5.95)

Year = 2005	-18.82 (17.73)	-21.01 (16.36)	-18.44* (9.59)	-17.91* (8.22)	-17.77** (7.49)	-23.11** (7.92)
Year = 2010	-24.97 (24.56)	-27.88 (22.11)	-23.24* (12.86)	-22.09* (10.29)	-29.45** (9.20)	-41.51*** (10.01)
R-square	.77	.77	.78	.78	.73	.65
Number of observations	99	99	99	99	99	99
Number of countries	40	40	40	40	40	40

*p < 0.05, **p < 0.01, and ***p < .001 for a one-tailed test. +In each cell, the first number is the unstandardized coefficient, the second number is the standardized beta coefficient, and the number in parentheses is the robust standard error.

While mainstreaming gender into health interventions improves maternal and child health outcomes, there are other factors that explain maternal, infant, and child mortality in Sub-Saharan Africa. First, I find that gross domestic product per capita is an important predictor of infant and child mortality within a Sub-Saharan African nation. The coefficient for this variable is negative and significant in all equations in Tables 3 and 4. Notably however, gross domestic product per capita is not a robust predictor of maternal mortality in Sub-Saharan Africa as the variable is only statistically significant in equation 2.1 of Table 2. These results suggest that while economic growth fosters higher standards of living and enables more people to afford healthcare, it may be less successful at eroding the social institutions and cultural norms that curtail women's access to health care (Lyons 1985). Second, and not surprisingly, higher levels of human immunodeficiency virus prevalence within a Sub-Saharan African nation correspond with higher levels of maternal, infant, and child mortality. The coefficients for this variable are positive and significant across all models which include HIV prevalence. Third, contraceptive prevalence has a negative, statistically significant effect on maternal and infant mortality within a Sub-Saharan African nation.

Moreover, a comparison of the standardized beta coefficients in Tables 2-4 reveals that gross domestic product per capita, HIV prevalence, and contraceptive prevalence all have larger effects on women's and children's health in Sub-Saharan Africa than gender-mainstreamed health aid flows. Gross domestic product per capita is the most important predictor of infant and

child mortality within a Sub-Saharan African nation. For example, a one standard deviation increase in GDP decreases the infant and child mortality rates by .91 and .85 standard deviations, respectively, in equations 3.4 and 4.4. The largest predictor of maternal mortality, and the second largest predictor of infant and child mortality, is HIV prevalence. In Table 2, equation 2.4, a one standard deviation increase in HIV prevalence increases the maternal mortality rate by .72 standard deviations. In Tables 3 and 4, for a one standard deviation increase in HIV prevalence, the infant and child mortality rates are expected to increase by .50 and .57 standard deviations, respectively, in equations 3.4 and 4.4.

Finally, a one standard deviation increase in contraceptive prevalence reduces the maternal mortality rate by .26 standard deviations in equation 2.4 of Table 2 and the infant mortality rate by .33 standard deviations in equation 3.4 of Table 3. In comparison, the size of the effect of the gender-mainstreamed health aid variable is much smaller. A one standard deviation increase in gender-mainstreamed health aid as a percentage of GDP per capita only decreases the maternal mortality rate by .17 standard deviations as demonstrated in equation 2.5 of Table 2. The magnitude of the effect is slightly larger on infant mortality and child mortality. For a one standard deviation increase in gender-mainstreamed health aid, the infant mortality rate is expected to decrease by .25 standard deviations (Table 3, equation 3.5) and the child mortality rate is expected to decrease by .23 standard deviations (Table 4, equation 4.5).

I conclude this section by discussing several of the remaining non-significant findings. Female secondary schooling, democracy, access to an improved water source, access to an improved sanitation source, and immunization prevalence are statistically insignificant across all models.¹⁵ The insignificance of female secondary schooling is perhaps the most surprising finding given that previous cross-national research on gender and health finds female education to be an important predictor of health outcomes (Burroway 2010; Filmer and Pritchett 1999; McGuire 2006; Shen and Williamson 1997; Shen and Williamson 1999; Shandra, Shandra and London 2010).¹⁶ The finding that democracy is not associated with improvements in maternal,

¹⁵ Following Burroway (2012), because GDP could presumably be correlated with the non-significant independent variables in the models, I also estimate models that include only female secondary schooling, democracy, access to an improved water source, access to an improved sanitation source, and immunization prevalence. None of the variables reach a level of statistical significance in these models.

¹⁶ Following Burroway (2012) and Jorgenson and Rice (2005), I also regressed female secondary school enrollment on gross domestic product per capita and used the residuals as a measure of female secondary school enrollment since the variable is often highly correlated with economic development. The variable never reaches a level of statistical significant in any of these models and thus, is not reported. In separate models, I also lagged female

infant, or child mortality substantiates a growing body of literature which finds that democracy does not lead to positive health outcomes in developing countries (Burroway 2012; Gebhard et al. 2008; Pandolfelli and Shandra 2013; Ross 2006; Shandra, Shandra, and London 2011). In fact, authoritarian governments may be able to exert more pressure on subnational governments to prioritize maternal and child health than democratic governments (Shiffman 2007) although the findings of the analysis do not lend support to this hypothesis, either. Finally, it should be noted that the indicator on access to an improved water source is not a direct measure of safe drinking water, and recent estimates accounting for microbial water quality and sanitary risk using nationally representative water quality data suggest that measuring the percentage of the population with access to an improved water source significantly overestimates the percentage of the population using safe drinking water (Onda, LoBuglio, and Bartram 2012).¹⁷ This may explain why access to an improved water source is not associated with improvements in maternal or child health in the models presented here.

Discussion and Conclusion

In this article, I contribute to both the literature on foreign aid and the literature on gender mainstreaming in a novel way. First, as I note previously, cross-national research considering the effectiveness of foreign aid on social and human development outcomes has not examined the differential effects of gender-absent aid and gender-mainstreamed aid. Second, although gender and development theorists and practitioners have long argued that interventions which fail to mainstream gender inadvertently may harm women or fail to improve their well-being, there has been very little empirical work –and no cross-national research- that has examined the efficacy of gender mainstreaming on development outcomes.

I address these gaps in the literature by constructing cross-national models that examine the impact of bilateral gender-absent and gender-mainstreamed aid on maternal, infant, and child mortality in Sub-Saharan Africa. I find that gender-absent health aid flows do not reduce maternal, infant, or child mortality within Sub-Saharan African nations. The coefficients for this variable do not reach a level of statistical significance in any equation of Tables 2, 3, or 4.

secondary schooling by five years, but likewise, the variable never reaches a level of statistical significance and is not reported.

¹⁷ This data is only available for a few countries and thus could not be used in my models.

Moreover, I find that gender-mainstreamed health aid flows *do* reduce maternal, infant, and child mortality in Sub-Saharan Africa. Although the effects are small, the coefficients for the gender-mainstreamed health aid variable are negative and significant in every equation in which the variable is included in Tables 2, 3, and 4. While this set of findings does not indicate that gender-absent health aid harms maternal and child health, it does lend support to the hypothesis that development interventions must mainstream gender in order to realize improvements in women's and children's well-being. This is most likely the case because first, households do not always equitably allocate their resources and second, women's and men's livelihood preferences, priorities and constraints to accessing resources often differ.

There are important theoretical and methodological implications that correspond to these findings. First, the historical relationship between feminists and development bureaucracies has been ambivalent, at best. While most bilateral donors have adopted the language of gender mainstreaming in the decade and a half since the Beijing Platform for Action was adopted, feminists have worried that the goals of women's empowerment and gender equality have been coopted and depoliticized in the process of institutionalizing them in large bureaucracies, leading some feminists to conclude that gender mainstreaming has failed (see Ransom and Bain 2011 for an overview). The findings of this study provide evidence that despite these obstacles, gender mainstreaming has met with some success at fostering improvements in maternal and child health. While gender-mainstreamed health aid has a smaller impact on maternal, infant, and child mortality than economic growth, HIV prevalence, and contraceptive prevalence, its impact relative to gender-absent health aid is striking. Thus, the findings further suggest that feminist theoretical insights into the inefficacy of gender-absent development interventions are accurate for the health sector and should inform the design of donor-funded policies and programs on a larger scale. Second, collective efforts to render data on gender-mainstreamed aid flows more transparent and accessible online mean that researchers now have the ability to incorporate this detailed data into their analyses of the efficacy of foreign aid. Although no other studies have employed this data, future research on official development assistance should not neglect it. Otherwise, we may reach inaccurate conclusions about the type of aid driving progress in social and human development outcomes.

Accordingly, I offer specific policy recommendations that follow from the main findings. Although donors have expressed renewed commitment to gender mainstreaming since the

adoption of the United Nations Millennium Development Goals (MDGs) in 2000, gender-mainstreamed health aid has remained stagnant over time, comprising less than 20 percent of total bilateral health aid to Sub-Saharan Africa in 2010. Moreover, the continent –which has the highest rates of maternal and child mortality in the world (World Health Organization 2010) –is not on track to meet the MDG targets of reducing maternal mortality by three quarters and under-five child mortality by two thirds by 2015 (United Nations Economic Commission for Africa 2013). At the same time, since the adoption of the Paris Declaration of Aid Effectiveness in 2000, bilateral donors have begun offering more general budgetary support to governments in place of program and project support (United Nations Economic Commission for Africa 2013) while reducing total official development assistance to Sub-Saharan Africa. In fact, according to preliminary data from the Organization for Co-operation and Economic Development, bilateral aid to the continent fell by 5.6 percent in 2013 (Organization for Co-operation and Economic Development 2014).

Yet, the findings of this study suggest that bilateral donors can help Sub-Saharan African nations accelerate progress toward meeting the MDG health goals by prioritizing investments in health programs and projects that mainstream gender. While the effects of gender-mainstreamed health aid flows are small, the biggest gains from gender mainstreaming may be realized by integrating gender into all donor-funded HIV/AIDS interventions because HIV prevalence is one of the strongest predictors of women’s and children’s health in Sub-Saharan Africa and the findings suggest that aid for HIV/AIDS is not associated with reductions in maternal, infant, and child mortality unless it mainstreams gender. Further, although family planning interventions are controversial to fund (Nanivazo and Scott 2012), the results of this analysis suggest that donors should increase funding for family planning projects that mainstream gender because women’s contraceptive use is an important predictor of maternal and infant mortality. However, donor investments in both HIV/AIDS and family planning interventions that mainstream gender should not come at the expense of mainstreaming gender into other components of the health sector, such as health policy and basic health care, since the findings indicate that gender-mainstreamed health aid has a negative effect on maternal, infant, and child mortality independent of its ability to reduce HIV prevalence and increase contraceptive prevalence. This aid should fund interventions that move beyond simply targeting women to assessing women’s preferences for participation, analyzing specific gender-based constraints to their participation and designing

programmatic features to alleviate those constraints. Moreover, health aid interventions should monitor impacts on women's and girls' time use to ensure that they are not increasing their work burdens and jeopardizing intended health outcomes.

I conclude with some possible directions for future research. First, because gender norms and levels of gender discrimination vary across cultures, the effects of gender-mainstreamed health aid on maternal and child health may differ in different regions of the world. For example, due to the documented gains of conditional cash transfer (CCT) programs in parts of Latin America and South Asia (Ahmed and del Ninno 2002; Behrman and Hoddinott 2005; Schultz 2004), these programs are now being implemented in other areas, including Sub-Saharan Africa and the Middle East. However, an evaluation of a CCT program in Turkey that was modeled on a popular Mexican CCT program found that the intervention did not realize the same education and health benefits because staunch sociocultural norms against schooling girls in the eastern part of Turkey outweighed economic incentives, in the form of transfers, for sending girls to school (Adato et al. 2007). Thus, future research should examine whether the maternal and child health benefits of gender-mainstreamed health aid flows to Sub-Saharan Africa also are observed in other regions of the world. Second, this study estimates the effects of health aid flows to Sub-Saharan African countries, not the specific types of interventions designed to improve maternal and child health. As more health aid data becomes available via the CRS database or similar initiatives, it will become possible to disaggregate gender-absent and gender-mainstreamed health aid by type of intervention in order to better determine the relative effectiveness of the various health interventions that mainstream gender.

Third, while this study provides cross-national evidence that gender mainstreaming matters, more robust impact evaluations of development projects that mainstream gender are needed to develop a nuanced understanding of the mechanisms responsible for improving maternal and child health in developing countries. Finally, bilateral donors are one stakeholder in the gender mainstreaming project. To convincingly answer the question of whether gender mainstreaming is an effective policy instrument for fostering improvements in maternal and child health, research must assess the efficacy of other mechanisms for mainstreaming gender. In chapter two, I turn to an analysis of national women's machineries, the state apparatus for mainstreaming gender. This is followed, in chapter 3, by an examination of state ratification of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW),

the United Nations treaty that legally binds countries to advance women's rights and gender equality. Together, these analyses will provide a more comprehensive assessment of gender mainstreaming's ability to realize improvements in maternal and child health in Sub-Saharan Africa.

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Table 5 List of CRS Purpose Codes for Health Sector and Population Policies, Programs, and Reproductive Health Sector

CRS Purpose Code	Title	Description
12110	Health policy and administrative management	Health sector policy, planning and programs; aid to health ministries, public health administration; institution capacity building and advice; medical insurance programs; unspecified health activities.
12181	Medical education/training	Medical education and training for tertiary level services.
12182	Medical research	General medical research (excluding basic health research)
12191	Medical services	Laboratories, specialized clinics and hospitals (including equipment and supplies); ambulances; dental services; mental health care; medical rehabilitation; control of non-infectious diseases; drug and substance abuse control [excluding narcotics traffic control (16063)].
12220	Basic health care	Basic and primary health care programs; paramedical and nursing care programs; supply of drugs, medicines and vaccines related to basic health care.
12230	Basic health infrastructure	District-level hospitals, clinics and dispensaries and related medical equipment; excluding specialized hospitals and clinics (12191).
12240	Basic nutrition	Direct feeding programs (maternal feeding, breastfeeding and weaning foods, child feeding, school feeding); determination of micro-nutrient deficiencies; provision of vitamin A, iodine, iron etc.; monitoring of nutritional status; nutrition and food hygiene education; household food security.
12250	Infectious disease control	Immunization; prevention and control of infectious and parasite diseases, except malaria (12262), tuberculosis (12263), HIV/AIDS and other STDs

		(13040). It includes diarrheal diseases, vector-borne diseases (e.g. river blindness and guinea worm), viral diseases, mycosis, helminthiasis, zoonosis, diseases by other bacteria and viruses, pediculosis, etc.
12261	Health education	Information, education and training of the population for improving health knowledge and practices; public health and awareness campaigns.
12262	Malaria control	Prevention and control of malaria.
12263	Tuberculosis control	Immunization, prevention and control of tuberculosis.
12281	Health personnel development	Training of health staff for basic health care services.
13010	Population policy and administrative management	Population/development policies; census work, vital registration; migration data; demographic research/analysis; reproductive health research; unspecified population activities.
13020	Reproductive health care	Promotion of reproductive health; prenatal and postnatal care including delivery; prevention and treatment of infertility; prevention and management of consequences of abortion; safe motherhood activities.
13030	Family planning	Family planning services including counseling; information, education and communication (IEC) activities; delivery of contraceptives; capacity building and training.
13040	STD control, including HIV/AIDS	All activities related to sexually transmitted diseases and HIV/AIDS control e.g. information, education and communication; testing; prevention; treatment, care.
13081	Personnel development for population and reproductive health	Education and training of health staff for population and reproductive health care services.

Table 6 Sample Descriptive Statistics: Bilateral Health Aid Flows to Sub-Saharan Africa

Variable	Mean	Standard Deviation	Minima	Maxima
N=99				
Maternal mortality (per 100,000 live births)	546.05	259.01	28	1300
Infant mortality (per 1,000 live births)	75.87	25.08	13	137.50
Child mortality (per 1,000 live births)	122.87	47.02	15.20	234.70
Gender-absent health aid, logged (percentage of GDP, 2010\$)	.18	.22	0	.97
Gender-mainstreamed health aid, logged (percentage of GDP, 2010\$)	.18	.27	0	1.17
Gross domestic product per capita, logged (2010 US\$)	6.11	.97	4.74	8.55
Democracy (not free: 1-2; partially free: 3-5; free: 6-7)	4.15	1.57	1	7
HIV prevalence (percentage of population ages 15-49)	5.89	7.17	.1	26.8
Female secondary schooling, logged (percentage of female population of secondary school age)	3.19	.72	1.40	4.57
Contraceptive prevalence rate (percentage of women 15-49)	24.02	18.78	1.7	76
Immunization prevalence (percentage of children 1 year of age or younger)	73.80	18.23	26.25	99
Access to improved water	64.38	18.03	20	99

source (percentage of population)

Access to improved sanitation (percentage of population)	33.16	22.52	4	99
Year	2002.93	5.05	1995	2010

CHAPTER 2: A MINISTRY OF ONE'S OWN? NATIONAL WOMEN'S MACHINERIES AND MATERNAL, INFANT, AND CHILD MORTALITY

National women's machineries (NWMs), or gender machineries, serve as states' apparatus for advancing women's interests through gender mainstreaming. As defined by the United Nations, NWMs are "a single body or complex organised system of bodies, often under different authorities, but recognised by the Government as the institution dealing with the promotion of the status of women" (cited in Bell 2002). The first impetus for the establishment of national women's machineries was the 1975 UN International Women's Year conference held in Mexico City, at which delegates determined that all nations should establish institutional mechanisms at the national level to improve the status of women. The second impetus came during the 1995 UN Fourth World Conference on Women held in Beijing, at which member countries pledged to establish or strengthen national women's machineries to mainstream gender, as outlined in the Beijing Platform for Action (BPFA). Between 1975 and 1997, NWMs were established in more than 120 countries around the world (True and Minstrom 2001). In Sub-Saharan Africa, nearly all countries had set up an institutional mechanism at the national level to promote women's advancement by the early 1990s (Tripp et al. 2009). This was an unprecedented phenomenon in a postwar era characterized by a reduced policymaking role for the state (True and Minstrom 2001).

A significant literature on national women's machineries in the developing world has accompanied the rapid proliferation of state mechanisms to mainstream gender. For example, in their review of published research on gender machineries in developing nations, McBride and Mazur (2011) note that a first round of studies on NWMs was published at the end of the 1990s in response to the momentum created by the BPFA and in preparation for the Beijing +5 conference in 2000, at which delegates took stock of progress made toward gender equality. The bulk of this work provided an overview of the activities undertaken by national women's machineries since their establishment. Since then, the research on NWMs has tended to focus on: the strategic approaches women's machineries adopt and the activities they undertake to mainstream gender throughout government agencies; (Byrne et al. 1997; Tripp et al. 2009; Franceschet 2007); the structural determinants of NWMs' abilities to influence wider

government policy (Goetz 2003; Kardam and Acuner 2003; Rai 2003); the relationships between women's machineries and national women's movements as allies or adversaries (Tripp et al. 2009; Tsikata 2001; Vega Ugalde 2003); and whether national women's machineries can be effective vehicles for advancing women's interests given their embeddedness in bureaucratic structures (Rai 2003; Tsikata 2000).

Much of this scholarship has focused on Sub-Saharan Africa (McBride and Mazur 2011). For example, Byrne et al. (1996) identify strategies used by NWMs in Cameroon, Ethiopia, Namibia, Uganda and Zambia to mainstream gender into development policy and planning, concluding that these machineries have achieved limited degrees of success due to pervasive political, institutional, and financial constraints. Tripp et al. (2009) examine the ways in which women's movements have both collaborated with and struggled against national women's machineries in African nations to shape state policies on gender, characterizing the relationships as highly politicized sources of tension and mutual distrust. And Third World Network-Africa commissioned an eight-country study of the constraints experienced by national women's machineries in Botswana, Ghana, Morocco, Nigeria, Tanzania, Uganda, Zambia and Zimbabwe, including donor dependency and the growing depoliticization of gender equality work (Chisala and Nkonkomalimba 2000; Mama 2000; Tiskata 2001).

While this substantive body of research has contributed important insights about the dynamics and determinants of the performance of national women's machineries (McBride and Mazur 2011), most notably regarding their ability to influence policy (e.g. Stetson and Mazur 1995), none of it has gone a step further and examined the effects of NWMs on gender equality outcomes for a nation's citizens, despite gender equality being the ultimate goals of gender mainstreaming. For example, in True and Minstrom's (2001) cross-national analysis of the factors accounting for the global diffusion of national women's machineries -which is one of the few quantitative studies of NWMs in developing nations- the authors note that they have not grappled with questions concerning the effectiveness of these mainstreaming institutions. Moreover, although True and Minstrom (2001) employ a longitudinal analysis of the period between 1975 and 1998, most studies of national women's machineries have not analyzed these institutional mechanisms over time (McBride and Mazur 2011). Finally, in their review of the published research on gender machineries, McBride and Mazur (2011) note a tendency in the literature to assume, *a priori*, the ineffectiveness of NWMs while simultaneously failing to

define how effectiveness is measured. They note that although there is no one way to measure the effectiveness of NWMs given the wide range of functions they undertake, “there is a general predilection in much of the literature on gender machineries in developing countries to show how machineries fail...Seldom do studies ask what...effectiveness means, and if, how and why they are effective” (McBride and Mazur 2011: 23-24).

Thus, I seek to address these gaps in the literature on gender mainstreaming and national women’s machineries by conducting a cross-national, longitudinal study that examines the effectiveness of NWMs in Sub-Saharan Africa on women’s and children’s health. I begin with a discussion of national women’s machineries in Sub-Saharan Africa, including their history and the evolution of their mandate to mainstream gender. Next, I discuss why NWMs should be associated with improvements in maternal and child health and then describe the structural characteristics that may limit their efficacy. I go on to elaborate upon other factors that may influence maternal, infant and child mortality, including (from the prior chapter) gender-mainstreamed health aid, when I describe my independent variables. This is followed by a description of my methodology. Finally, I conclude by discussing the findings and the theoretical and policy implications of my research.

National Women’s Machineries in Sub-Saharan Africa

Many national women’s machineries in Sub-Saharan Africa were established in the post-independence period of the 1970s, many by undemocratic governments, including *coup d’état* regimes, one-party state regimes, and military governments (Tsikata 2001). NWMs were formed in response to the mandate agreed upon at the UN International Women’s Year conference held in Mexico City in 1975 that all nations should establish institutional mechanisms at the national level to advance women’s status. Because this mandate gave governments the flexibility to determine the structure and location of machineries, a wide range of institutions took shape in Sub-Saharan Africa. Some nations, such as Cote d’Ivoire and Togo, established stand-alone women’s ministries while other nations, such as Ghana and Uganda, formed women’s departments, bureaus or commissions within an existing ministry (Tripp et al. 2009). Tsikata (2001) argues that the undemocratic process by which governments could decide the fate of NWMs resulted in many machineries becoming entangled in the vagaries of government

bureaucracies. Both Kwesiga (2003) and Tripp et al. (2009) argue, for example, that the UN mandate provided the military government of Idi Amin the opportunity to ban all extant women's organizations and replace them with new women's associations affiliated with the newly-formed Uganda Council of Women so that the regime could retain a strong hold on all women's groups.

Like the global development community of the 1970s, national women's machineries in Sub-Saharan Africa adopted a "Women in Development" (WID) approach to promote women's rights. The WID framework, which emerged in the early 1970s following the publication of Esther Boserup's seminal work, *Women's Role in Economic Development* (1970), focused on integrating individual women into extant economic systems so that they could benefit equally from increasingly modernized, industrialized societies. Unlike its theoretical successors, WID did not question the structural sources of women's subordination (Rathgeber 1990). But by the 1990s, critiques began to emerge that the WID approach had marginalized national women's machineries. For example, Staudt (2003) argues that WID advocates within NWMs remained at the margins, housed in women's offices or at women's desks with budgets that were too small to affect change in the gendered power structures of governments. Bell (2002) notes that the marginalization of women's issues within governments, combined with the slow pace of change in women's status, called into question the top-down strategy of creating NWMs and the efficacy of using the WID approach to advance women's rights.

By the mid-1990s, the global development community had abandoned WID in favor of GAD (Gender and Development). The GAD framework highlights the role of discriminatory social institutions in perpetuating gender inequality, expects the state to assume a key role in emancipating women, and emphasizes the need for women to organize themselves as agents of change for a more effective political voice (Rathgeber 1990). Gender mainstreaming surfaced in the early 1990s as a global strategy for applying the theoretical insights of GAD theory to development policy formulation and implementation. It represented a shift away from focusing on traditional "women's issues" toward assessing how *all* policies and programs differently affect men and women due to their (presumably) different roles, responsibilities and preferences, even if at first glance those policies and programs appear gender-neutral. In 1995, gender

mainstreaming was systematically adopted in the Beijing Platform for Action (BPFA), which identified 11 substantive areas of concern to women, including the health of women and girls.¹⁸

The BPFA also codified the national women's machinery as the state vehicle for mainstreaming gender, describing it as "the central policy coordinating unit inside the government. Its main task is to support government-wide mainstreaming of a gender-equality perspective in all policy areas" (United Nations 1995 para 201 as cited in Bell). Further, it states that, "In order for the Platform for Action to be implemented, it will be necessary for governments to establish or improve the effectiveness of national machineries for the advancement of women at the highest political level" (United Nations 1995 para 296 as cited in Bell). Thus, NWMs must ensure that governments promote the status of women in the 11 identified substantive areas by mainstreaming gender across all government sectors and domains so that policies and programs reflect the needs of women and promote gender equality.

Impacts on Maternal and Child Health

While across Sub-Saharan Africa, national women's machineries are located at different levels of government, a review of the literature on the multiple functions undertaken by NWMs (e.g. Byrne et al. 1997; Tsikata 2001; Rai 2003) suggests that there are three pathways by which national women's machineries should foster improvements in maternal and child health: policy influence; legislative influence, and project implementation.

NWMs adopt many strategies to influence policy. First, they draft gender policy and lobby for the inclusion of gender in other government policy. Bell (2002) notes that NWMs are responsible for preparing National Plans of Action on Gender/Women that delineate how nations will achieve progress in women's rights in the 11 substantive areas identified in the BPFA, including improvements in women's and girls' health. For example, in The Gambia, the Ministry of Women's Affairs drafted the Gender and Women Empowerment Policy, 2010-2020, which prioritizes eight of the 11 critical issues defined in the BPFA, among them women's health and HIV/AIDS. One of the objectives listed in the policy is ensuring that the Ministry of Health's "Road map for accelerating maternal mortality, neo-born morbidity and mortality reduction are

¹⁸ The other areas are poverty, education, violence, armed conflict, the economy, decision-making, human rights, the media, the environment and the girl child (United Nation 1995).

implemented and monitored through a gender lens, and that adequate resources are allocated for their implementation by 2015” (MWA 2010). In Senegal, the national women’s machinery developed a framework to guide the effective integration of gender into the nation’s third Poverty Reduction Strategy Proposal, including formal commitments and performance indicators to measure national progress toward health objectives (UN Women Senegal 2009).

Second, NWMs establish cross-departmental linkages, such as interministerial gender task forces and focal points, to facilitate the consistent application of gender mainstreaming in all ministries. In Uganda, for example, in the early 1990s, the WID department implemented a cross-ministerial planning exercise in conjunction with the Ministry of Finance and Economic Planning to establish procedures for gender-oriented policy development in each ministry (Byrne et al. 1993). Third, NWMs develop a variety of gender guidelines and checklists that are used to promote gender analysis in program planning and evaluation in the health sector (Byrne et al. 1993). In The Gambia, these tools are used to review health protocols, norms and standards to ensure their gender sensitivity (MWA 2010). Fourth, national women’s machineries provide capacity building in gender analysis to government health officers to equip them with the skills needed to mainstream gender into policy processes and design coherent strategies for improving maternal and child health. For example, to achieve the objective of reducing maternal and infant mortality, the Ministry of Women’s Affairs in The Gambia provides “capacity building for policy makers, planners, programmers and health professionals in health sector gender analysis, and for mainstreaming gender concerns in planning and programming processes” (MWA 2010). In Uganda, the Women in Development (WID) department conducts gender trainings for senior civil servants in all ministries, including the Ministry of Health.

National machineries are increasingly using legislation to influence legal reforms in support of women’s rights and gender equality (UNECA 2013). In Uganda and Ethiopia, the NWMs were involved in the passage of laws on female genital cutting and harmful traditional practices that affect maternal and child health. In Rwanda, South Africa, Mozambique, and Uganda, they collaborated on laws imposing penalties for gender-based violence. And in Lesotho, Namibia, and Zimbabwe, NWMs helped pass laws that criminalize marital rape (UNECA 2013). While legislative reform will influence maternal and child health only to the extent that it is implemented, laws that ban discriminatory social institutions should have indirect effects on maternal and child health (Lyons 1985).

Finally, in conjunction with government ministries and/or bilateral or multilateral donors, national women's machineries implement projects that should impact maternal and child health. Although direct involvement in project implementation was meant to comprise a smaller portion of machineries' portfolios since they shifted from the project-focused WID approach to the policy-focused GAD approach, NWMs still continue to implement projects as a means of gaining visibility and credibility for their work (Bell 2002; Rai 2003).

In the prior chapter, I discussed the many types of health interventions that should influence maternal, infant and child mortality rates. Here, I briefly provide examples of NWM involvement in some of these types of interventions. First, reproductive health care interventions that train birth attendants and provide pregnant women with gender-sensitive prenatal and postnatal care should lower maternal mortality rates because the direct leading causes of maternal deaths are hemorrhage, infection, obstructed labor, and hypertensive disorders in pregnancy (World Health Organization 2010). In The Gambia, the National Women's Council implements programs to expand maternal, child, and neonate care services countrywide and to improve measures for the motivation and retention of midwives, nurses, public health officers, village health workers and traditional birth attendants (MWA 2010).

Second, interventions that redress the ways in which gender renders women and girls in Sub-Saharan Africa more susceptible to contracting HIV/AIDS should reduce their vulnerabilities to the pandemic and by extension, reduce maternal mortality rates since approximately 10 percent of maternal deaths in Sub-Saharan Africa are due to AIDS (World Health Organization 2010). In Ethiopia and Mozambique, the national women's machineries launched interventions to raise the profile of groups of women living with HIV and involve them in efforts to curb new infections among women (UN Women 2006). Finally, interventions in basic nutrition that promote appropriate health care and caregiving practices while addressing women's time constraints should be associated with improved maternal and child health. In the Gambia, the National Women's Council assists the National Nutrition Agency with implementing the Baby-Friendly Community Initiative, a national multi-sectoral program integrating nutrition, health, agriculture, hygiene, and sanitation in a community-driven project that enables female farmers to function in their dual roles as agricultural producers and caregivers. Some communities have reestablished traditional baby-friendly rest houses where women can breastfeed while working their fields and instituted a local law relieving women of

hard work during the three months before and six months after delivery (Jallow 2005 as cited in Quisumbing and Pandolfelli 2010).

Limitations of NWMs

I cull from the literature on national women's machineries three pathways by which national women's machineries are hypothesized to improve maternal and child health. Yet, an even larger literature documents a number of structural constraints that may impede the ability of NWMs to effectively mainstream gender. These studies tend to focus on five factors put forth during the UN Fourth World Conference on Women in Beijing when the status of NWMs was reviewed and nations agreed to strengthen their institutional mechanisms for mainstreaming gender (McBride and Mazur 2011; Rai 2003). The five factors are: location, resources, role and function, links with civil society, and accountability.

While the 1975 UN mandate to establish NWMs gave governments the flexibility to determine their location and structure, the Beijing Platform for Action (BPFA) attempted to strengthen NWMs by mandating that they be located at the highest levels of government, where they can influence planning processes and budgetary allocations (Tsikata 2001). However, as Tsikata (2001) notes in a review of an eight-country study of national women's machineries in Africa, "highest level of government means something different from country to country." For example, in Zimbabwe, the Planning Commission is thought to be the most effective location for the women's machinery because it enables all ministries' programs-which must pass through the Planning Commission- to be screened by the NWM, while in Ghana, the National Development and Planning Commission is perceived as the location where issues and careers stagnate (Tsikata 2000). Moreover, while high-level locations may garner visibility for machineries, they also may compromise their ability to operate independently of the ruling political party (Rai 2003).

Despite the BPFA mandate to locate women's machineries at the highest levels of government, the majority of countries in Sub-Saharan Africa have established separate women's/gender ministries. (See Table 10 at the end of the chapter). Although activists in countries without ministries tend to think they would be the most effective type of machinery for advancing gender equality (Tsikata 2000), most of the literature on gender machineries critiques women's/gender ministries for further marginalizing gender issues by "creating a situation where

all issues concerning women would be passed on to an institution without the capacity, resources or power to address them” (UNECA 2013: 7). This is because women’s ministries tend to have small budgets and limited influence over sectoral policy making (UNECA 2013; Tripp et al. 2009).¹⁹ Thus, their ability to influence health policy and legislation and to implement interventions in support of maternal and child health is hypothesized to be limited.

Most of the literature on gender machineries also finds that NWMs are poorly resourced. Despite momentum for the establishment of NWMs in the 1970s, economic liberalization in the 1980s required deep cuts in government spending, including the downsizing of civil services, to correct for budgetary imbalances (Rich 1994). Thus, many NWMs were established during a period of weakened political support for social welfare and development-oriented interventions (UNECA 2013). Today, NWMs in Sub-Saharan Africa continue to be under-resourced. In Gabon in 2007, for example, the budget for the Women’s Ministry was only 0.17 percent of the general state budget (UNECA 2013). And in a survey of African UN Member states, financial constraints was the single most mentioned problem faced by NWMs (UNECA 2013). This suggests that gender machineries may not have the resources required to effectively foster improvements in women’s and children’s health.

Moreover, many national women’s machineries in Sub-Saharan Africa rely on donor funding to operate. In fact, because most African countries do not allocate their own budgetary resources for gender issues at the national level, donors largely have driven the agenda of NWMs, calling into question the role and function of gender machineries and their ability to promote gender equality (UNECA 2013). The literature on gender machineries has heavily criticized NWM’s dependency on donors, finding that it compromises the sustainability, coherence, and continuity of NWM programming (Tsikata 2001); undermines the autonomy of NWMs (Ofei-Aboagye, 2000); and homogenizes the agendas of NWMs in favor of donor priorities, not national interests (Chisala and Nkonkomalimba 2000; Wangusa, 2000). For example, in an eight-country study of Botswana, Ghana, Morocco, Nigeria, Tanzania, Uganda, Zambia and Zimbabwe, all of the countries were found to engage in the implementation of donor-funded projects to shore up their financial base at the expense of policymaking (Tsikata

¹⁹ In their study of the global diffusion of gender machineries, True and Minstrom (2001) categorize women’s/gender ministries as high-level machineries along with offices within heads of states’ departments and quasi-autonomous state agencies, such as national commissions, but this classification is in contrast to most of the literature on women’s machineries.

2001). A focus on project implementation instead of policymaking may lead to the further depoliticization of gender equality work, which has characterized the national machineries of some Sub-Saharan African nations (Tsikata 2001). Thus, donor dependency may compromise the role of NWMs and limit their ability to influence policy and legislation in support of maternal and child health and related gender equality outcomes. However, to the extent that donor priorities in Sub-Saharan Africa focus on HIV/AIDS and maternal and child health in response to the health-focused Millennium Development Goals (MDGs), a donor-driven agenda could foster the ability of gender machineries to affect maternal, infant, and child mortality rates.

The scholarship on gender machineries also cites conflicted relations with civil society, including NGOs and women's movements, as a constraint limiting the efficacy of national women's machineries in Sub-Saharan Africa. Tripp et al. (2009) note that one of the main debates concerning the application of gender mainstreaming in African nations centers on the relationship between women's movements and national women's machineries and their respective roles in shaping gender policy. National machineries have the authority to draft gender policy, but women's NGOs often have stronger capacity to develop policy and articulate agendas for advancing women's rights (Tripp et al. 2009). Women's movements across the continent have criticized states for using gender machineries to signal to the international community that they take gender issues seriously without equipping them with the institutional resources to substantively advance gender equality (Tripp et al. 2009).

In some contexts, however, NWMs and NGOs have been able to work together, for example, in preparation for the UN Beijing conference in 1995. Yet, in certain countries, such as Zambia, Tanzania, and Ghana, the relationship between machinery and civil society is more acrimonious, with both sides contesting the gender-equality goals and strategies of the other (Tripp et al. 2009). Exacerbating these tensions is the competition for donor funds that NWMs and NGOs engage in (Tsikata 2001). Thus, the better established and resourced women's NGOs in Africa tend to work independently of national machineries, especially in countries with a history of government cooptation and repression of civil society (Tsikata 2001). Without the input of women's NGOs and women's movements, however, national women's machineries may lack the needed capacity to successfully develop policy and programming and to influence legislation in support of maternal and child health and related gender-equality outcomes.

Finally, the conflicted relations between national women's machineries and civil society have implications for the accountability of national machineries, or the notion that they credibly represent the interests of women and respond to their needs (McBride and Mazur 2011). To achieve accountability among civil society, machineries must engage with internal state accountability systems, such as audits of government expenditures, or gender risks being disappeared (Goetz 2013). For example, Goetz (2013) finds that gender-sensitive policy proposals often are not linked to actual budgets and gender mainstreaming often fails to inform the primary instrument for national development planning, the public expenditure planning process. Thus, to the extent that accountability mechanisms are not in place to advance gender mainstreaming, the ability of national women's machineries to influence policy, legislation and programming in support of maternal and child health and related gender equality outcomes may be constrained.

In the prior section, I discuss three pathways by which national women's machineries may reduce maternal, infant, and child mortality. I then discuss five factors which may impede their ability to do so. I am not aware of any cross-national, quantitative research that empirically evaluates the effectiveness of NWMs and so I seek to address this gap in the literature. Nevertheless, I must include other factors that have been found to affect maternal mortality. I provide a brief discussion of these factors below in my description of the independent variables, used in the study but first I review the dependent variables.²⁰

Dependent Variables

Maternal mortality:

The first dependent variable in my study is the maternal mortality ratio for a Sub-Saharan African nation. The variable measures the annual number of deaths from pregnancy related causes per 100,000 live births. A maternal death is defined as the death of a woman while pregnant or within 42 days of the termination of a pregnancy from any cause related to or aggravated by pregnancy (World Health Organization 2010). The data are available for 1995, 2000, 2005, and 2010 and are available online from the World Bank's *World Development*

²⁰ The descriptive statistics for the variables used in this analysis are contained in Table 11 at the end of the chapter.

Indicators portal. Please note that all data are obtained from the World Development Indicators portal unless otherwise noted.

Maternal mortality is one of the best aggregate-level proxies of gender equality in health for two main reasons. First, maternal mortality ratios reflect women's access to primary health care resources (Buchman 1996). Second, the quality of women's health is influenced by social institutions and cultural norms that discriminate against women (Lyons 1985).

Infant mortality:

This variable measures the probability of a child dying between birth and the age of one, expressed per 1,000 live births. In Africa, approximately 65 percent of child deaths occur before the child's first birthday (United Nations Development Programme 2012). Infant mortality is considered to be one of the strongest indicators of a nation's wellbeing because it reflects both the health of children and the overall health of a population (Mishra and Newhouse 2009).

Child mortality:

The third dependent variable in my study is the child mortality rate. This variable measures the probability of a child under five years of age dying, expressed per 1,000 live births. Shen and Williamson (1997) argue that child mortality is a better indicator of the general level of well-being of children in developing countries than infant mortality because the latter underestimates the hardship of children given that many children –in Africa, approximately 35 percent (United Nations Development Programme 2012) - die between the ages of one and five.

Independent Variables

National women's machineries:

Because all but one Sub-Saharan African nation in my sample adopted national women's machineries prior to 1995, the first time point in my analysis, I create a dummy variable that measures the institutional location of the lead national women's machinery (NWM) responsible

for gender mainstreaming. Countries are coded with a value of 1 if they have ministries for women and children or ministries whose primary portfolio includes women and children in addition to other mandates (e.g. social development) in 1995, 2000, 2005, or 2010. Countries are coded with a value of 0 if they do not have a ministry during one of these years and the lead national women's machinery is located within another unit of government, such as a ministry of health or a department of planning. It is important to note that this variable measures not whether a Sub-Saharan African nation has adopted a national women's machinery but whether the institutional location of the machinery influences women's and children's health outcomes- and therefore, should be interpreted accordingly.²¹ The data were collected by Tripp et al. (2009) for their analysis of approaches to gender mainstreaming used by national women's machineries in Sub-Saharan Africa and are supplemented by information from country responses to the Beijing plus 15 Questionnaire (2009).

From above, the institutional location of national women's machineries should be an important predictor of women's and children's health outcomes. Specifically, national ministries for women and children may be associated with higher levels of, or no improvements in, maternal, infant, and child mortality if maternal and child health issues are relegated to these ministries and they lack the ability to influence legislation, policy and programs in support of women and children. In contrast, national women's machineries located within the branches of government should be better able to exert influence over legislation, policy and programs in support of women's and children's health and by extension, should be associated with reductions in maternal, infant, and child mortality. However, if NWMs are ineffective at mainstreaming gender, regardless of their location, neither institutional location should be associated with women's and children's health outcomes.

Gender-mainstreamed health aid:

Gendered health aid flows also are a proxy for gender mainstreaming. Using data from the Organisation for Economic Cooperation and Development's (OECD) Creditor Reporting

²¹ In analyses not shown, I also created a duration variable that measures the number of years since a Sub-Saharan African nation established a national women's machinery and ran the fully specified models with random effects to avoid multicollinearity between the duration variable and the time points in fixed effects models. The duration variable was never significant.

System (CRS) Database,²² I create an ratio-level variable that measures the summed amount of all gender-mainstreamed aid committed to each recipient country as a percentage of that country's GDP in US 2010 constant dollars. I log this variable because it is skewed. In the previous chapter, I found support for the hypothesis that gender-mainstreamed health aid is associated with reductions in maternal, infant, and child mortality because interventions must mainstream gender in order to improve women's well-being.²³

Gender-absent health aid:

Using the CRS data, I create an ratio-level variable that measures the summed amount of committed bilateral health aid to each recipient country as a percentage of a nation's GDP in US 2010 constant dollars for projects in which gender is not an objective of the activity. I log this variable to correct for its skewed distribution. In the previous chapter, I found support for the hypothesis that gender-absent health aid is not associated with reductions in maternal, infant or child mortality because interventions that do not mainstream gender fail to improve women's and children's well-being.

GDP per capita:

As is standard in such analyses, it is necessary to take into account a nation's level of development in order to make sure any observed effects of national women's machineries are independent of a nation's level of wealth (London and Ross, 1995). Thus, I include a measure of gross domestic product per capita and log the variable because of its highly skewed distribution. I expect that higher levels of gross domestic product per capita should correspond with lower levels of maternal, infant, and child mortality within Sub-Saharan African nations. This is because wealthier countries should have higher standards of living and advanced medical

²² See chapter 1 for a discussion of the data, including its limitations.

²³ In analyses not presented, I test the interaction between gender-mainstreamed health aid and the institutional location of a nation's national women's machinery (NWM) because the literature on gender machineries suggests that their effectiveness may depend on the amount of donor funding they receive, as discussed above. The interaction is never significant, but this may be due to the limitations of the gender-mainstreamed health aid measure since the OECD Creditor Reporting System database does not indicate whether this aid is indeed being channeled through national women's machineries.

technology, and more people should be able to afford health care (Gebhard et al. 2008; Shandra, Shandra, and London 2011; Shen and Williamson 1999).

Democracy:

I use the average of Freedom House's political rights and civil liberties scales to measure the level of democracy within a nation. The data may be obtained online from Freedom House. According to Freedom House (2005), political rights refer to the degree to which a nation is governed by democratically elected representatives and has fair, open, and inclusive elections. The civil liberties scale measures the level of freedom of press, freedom of assembly, general personal freedom, freedom of private organizations, and freedom of private property within a nation (Freedom House 2005). The variables have the following coding: free (1-2), partially free (3-5), and not free (6-7). I multiply the index by negative one so that high scores correspond with high levels of democracy.

I hypothesize that higher levels of democracy should correspond with lower levels of maternal, infant, and child mortality within a Sub-Saharan African nation. This is most likely the case for two reasons. First, freely elected and open governments are more likely to respond to popular demands for health services due to political activism and electoral accountability (Wickrama and Mulford 1996). For example, Shiffman (2007) notes that when Nigeria transitioned to a democratic political system in 1999, the government faced increased pressure to prioritize social issues, including safe motherhood, leading to the creation of a National Economic Empowerment and Development Strategy that lists reduction in maternal mortality among its objectives. Second, issues concerning women's well-being and gender equality are more likely to be addressed by democratic governments. True and Minstrom (2001), for example, find that democratic regimes are an important determinant of the establishment of national women's machineries.

Human Immunodeficiency Virus Prevalence:

I include the prevalence of the human immunodeficiency virus for each Sub-Saharan African nation. This variable measures the percentage of a country's population ages 15 to 49 that are infected with human immunodeficiency virus (HIV), whether or not they have developed

symptoms of acquired immune deficiency syndrome, alive at the end of the year specified. I hypothesize that higher rates of HIV prevalence should be associated with higher levels of maternal, infant, and child mortality. As noted earlier, this is because mothers may experience complications during pregnancy or birth as a result of opportunistic infections (e.g., tuberculosis, pneumonia, and malaria) due to a weakened immune system (Foster and Williamson 2000). Further, children may contract the infection from their mothers during pregnancy, birth, or breastfeeding and subsequently die from opportunistic infections (Scanlan 2010).

Female secondary schooling:

To examine the impact of girls' schooling on maternal, infant, and child mortality, I use female secondary school gross enrollment, measured as the total enrollment, regardless of age, expressed as a percentage of the female population of official secondary education age. I log this variable to correct for its skewed distribution. I hypothesize that higher levels of female secondary school enrollment should be related to lower levels of maternal, infant, and child mortality within Sub-Saharan African nations because female education is associated with wider use of health services, especially prenatal care, and may reduce child marriage and adolescent birth. It also tends to improve access to information about nutrition, birth spacing, reproductive health, and immunizations (Filmer and Pritchett 1999). Since the effects of girls' schooling are likely to be lagged rather than immediate, I also consider a lag structure of five years for the variable.²⁴

Contraceptive Prevalence:

I also examine the impact of contraceptive prevalence on women's and children's health outcomes. This variable measures the percentage of women, ages 15 to 49, who are practicing, or whose sexual partners are practicing, any form of contraception. The data are obtained from *Facilitating Green Growth in Africa: Perspectives from the African Development Bank* (African Development Bank 2012). I hypothesize that higher levels of contraceptive prevalence should be associated with lower levels of maternal, infant, and child mortality within Sub-Saharan African

²⁴ Ten year lag structures are also common in cross-national research, but because data on female secondary schooling in 1995 is available for only 23 countries, the sample size would be too small for a 10-year lag structure.

nations because women who use contraceptives are more likely to have fewer children, appropriately space births, and refrain from having children too young or too old (Royston and Armstrong 1989; United Nations 1995), thus reducing the risks to women and infants of complications from pregnancy (Shen and Williamson 1999).

Immunization Prevalence:

I include immunizations as a proxy for public health expenditures, independent of foreign aid, on primary health care.²⁵ This variable measures the average percentage of children one year of age or younger who receive vaccines against tuberculosis, polio, measles, and diphtheria. The data may be obtained online from the World Bank's Health, Nutrition and Population Statistics database. I expect that higher levels of immunization prevalence should correspond with lower levels of maternal, infant, and child mortality in Sub-Saharan Africa. This is because government rollouts of large immunization campaigns facilitate linkages between health services and families, enabling pregnant women to access primary health care for themselves, thus reducing the likelihood that they will die during pregnancy (Buchman 1996). Moreover, as children become immune to these diseases through vaccinations, mortality rates should fall.

Access to an Improved Water Source:

This variable measures the percentage of the country's population that has access to an improved water source. According to the United Nations (2010), an improved water source includes any of the following types of water sources: household connections, public standpipes, boreholes, protected dug wells, protected springs, and rainwater collection. An unimproved water source may include an unprotected well, surface water, vendor provided water, tanker provided water, and bottled water. I hypothesize that higher levels of access to an improved drinking water source should be related to lower levels of maternal, infant, and child mortality in Sub-Saharan Africa. This is because polluted water often contains microbes that cause diarrheal diseases, which can complicate pregnancies, leading to maternal deaths (Rice 2008). Also,

²⁵ Because all measures of public health expenditures include foreign health aid, I do not include a public health expenditure variable in my models.

diarrhea is one of the leading causes of death in children under five years of age (World Health Organization 2010).

Access to an Improved Sanitation Source:

I also include the percentage of a country's population that has access to an improved sanitation facility. An improved sanitation facility includes a connection to a public sewer, connection to a septic tank, pour flush latrine, simple pit latrine, ventilated pit latrine, pit latrine with slab toilet, and composting toilet (World Resources Institute 2010). An improved sanitation facility is more likely to be sanitary than an unimproved facility. An unimproved sanitation facility includes an open pit latrine, public latrines, bucket latrines, hanging latrines, flush to elsewhere (e.g., street, yard, river, ditch, etc.), and no facility (World Resources Institute 2010). I expect that higher levels of access to an improved sanitation facility should correspond with lower levels of maternal, infant, and child mortality in Sub-Saharan Africa. This is because a lack of proper sanitation has the potential to increase various diarrheal diseases that complicate pregnancies and cause death in children under five years of age (Rice 2008).

Analytic Strategy

To examine the relationship between national women's machineries and maternal, infant, and child mortality in Sub-Saharan African nations, I estimate two way fixed effects ordinary least squares regression models.²⁶ This model allows me to address heterogeneity bias, or the impact of unmeasured time-invariant variables that are omitted from a regression model (Halaby 2004). To correct for potential problems with heterogeneity bias, fixed effects models control for omitted variables that are time invariant and do not vary across cases. This is done by estimating unit-specific intercepts, which are the fixed effects for each case, and is similar to including dummy variables for $n - 1$ nations (Pandolfelli and Shandra 2013). A fixed effects approach is appropriate for cross-national analysis because time invariant unmeasured factors, such as climate or geography, could affect maternal, infant, and child mortality. Moreover, baseline

²⁶ The sample includes 40 Sub-Saharan African nations. These are: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Comoros, Congo (Republic), Cote d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, South Africa, Swaziland, Tanzania, Togo, Uganda, and Zimbabwe.

levels of gender segregation that are particular to each country and which do not change during the time points in my analysis, could affect women's and children's health outcomes. Thus, a fixed effects approach should provide an efficient assessment of the relationship between national women's machineries and mortality rates because the associations between the variables are estimated net of unmeasured between country effects (Brady, Kaya, and Beckfield 2007). Generally, this modeling strategy is robust against missing control variables and closely approximates experimental conditions (Hsiao 2003).²⁷ The notation for the two way fixed effects model is as follows:

$$y_{it} = a + B_1x_{it1} + B_2x_{it2} + \dots + B_kx_{itk} + u_i + w_t + e_{it}$$

i = each country in the analysis,

t = each time period in the analysis,

y_{it} = dependent variable for each country at each time period,

a = the constant,

B_k = coefficients for each independent variable,

x_{itk} = independent variables for each country at each time point,

u_i = country-specific disturbance terms that are constant over time,

w_t = period-specific disturbance terms that are constant across all countries,

and,

e_{it} = disturbance terms specific to each country at each time point.

In performing the analysis, I conducted diagnostic statistics to guard against potential violations of ordinary least square regression (OLS) assumptions. First, no Cook's d residuals are above 1.0, indicating that there appear to be no problems with influential outliers. Second, the coefficients for Breusch–Pagan tests are statistically significant, indicating heteroscedasticity is present in the models. Thus, I use robust standard errors to correct for this.

²⁷ I used I use fixed effects models over random effects models based on the results of Hausman tests. The coefficients for these chi-square tests were statistically significant, indicating that fixed effects models are more appropriate than random effects models because the country-specific error terms are correlated with the independent variables used in the models (Halaby 2004).

Findings

In Tables 7, 8, and 9, I present the two way fixed effects estimates of maternal mortality, infant mortality, and child mortality, respectively, in Sub-Saharan African nations. In equations 7.1 to 7.4, 8.1 to 8.4, and 9.1 to 9.4, I add the national women's machinery variable to the fully specified health aid models from chapter 2, which include gender absent health aid flows, gender mainstreamed health aid flows, GDP per capita, democracy, HIV prevalence, and immunization prevalence. In equations 7.1/7.2/8.1/8.2/9.1/9.2, I include female secondary schooling while in equations 7.3/7.4/8.3/8.4/9.3/9.4, I include contraceptive prevalence. Likewise, in equations 7.1/7.3/8.1/8.3/9.1/9.3, I include access to an improved water source while in equations 7.2/7.4/8.2/8.4/9.2/9.4, I include access to an improved sanitation source. I structure the analysis in this way to avoid potential problems with multicollinearity.²⁸ To increase the reliability of the findings, in equations 7.5/8.5/9.5, I estimate the effects of the national women's machinery variable independent of all but two baseline variables—GDP and democracy.

I begin by discussing the findings pertaining to gender mainstreaming. First, I find that the institutional location of national women's machineries is not a predictor of maternal, infant, or child mortality in Sub-Saharan Africa as the coefficient for this variable never reaches a level of statistical significance in any of the models. Although, as discussed above, women's rights advocates in African nations lacking women's ministries tend to believe they would be the most effective type of machinery for advancing gender equality, ministry-level machineries are not associated with improvements in women's and children's health outcomes, most likely because they are too marginalized to influence legislation, policy, and programs in support of gender equality. However, non-ministry machineries fare no better at fostering improvements in maternal and child health even though the scholarship on gender machineries in Sub-Saharan Africa hypothesizes that non-ministry machineries are better situated to influence national planning processes and budgetary allocations. The lack of significance of the national women's machinery variable may indicate that regardless of where they are located, gender machineries endure too many structural constraints to advance gender equality. This finding concurs with the

²⁸ Variance inflation factor scores for female secondary schooling and contraceptive prevalence as well as for access to an improved water source and access to an improved sanitation source were above 2.5, suggesting potential multicollinearity problems (Allison 2005).

majority of case studies of gender machineries in Sub-Saharan Africa, which find them to be ineffective vehicles for mainstreaming gender.

Turning to the findings on bilateral health aid flows, I find that gender-absent health aid is not associated with maternal, infant, or child mortality in Sub-Saharan Africa. As in the prior chapter, while the coefficient is positive in all equations in which the variable is included in Tables 7, 8, and 9, it fails to reach a level of statistical significance. However, gender-mainstreamed health aid flows *are* associated with reductions in maternal, infant, and child mortality. In all equations in which the variable is included in Tables 7, 8, and 9, the coefficient is negative and statistically significant. These findings lend further support to the hypothesis tested in chapter 2 that health interventions need to mainstream gender in order to improve women's and children's well-being.

Table 7 Fixed Effects NWM Regression Estimates of Maternal Mortality in Sub-Saharan Africa, 1995-2010

Independent Variables	Equation 7.1	Equation 7.2	Equation 7.3	Equation 7.4	Equation 7.5
National women's machinery institutional location (1= ministry)	15.87 .02 (56.46)	2.60 .01 (57.86)	25.50 .04 (49.60)	14.66 .02 (48.25)	15.90 .03 (74.17)
Gender-absent health aid	33.43 .03 (48.09)	31.78 .03 (45.51)	25.60 .02 (45.50)	21.23 .02 (46.51)	
Gender-mainstreamed health aid	-188.16* -.17 (98.77)	-191.23* -.17 (106.52)	-171.59* -.15 (72.98)	-167.34* -.15 (78.21)	
Gross domestic product	-200.31 -.70 (140.46)	-155.34 -.54 (145.55)	-182.52 -.64 (137.02)	-147.59 -.51 (141.02)	-77.09 -.27 (151.43)
Democracy	-16.10 -.09 (140.46)	-7.15 -.04 (29.36)	-18.93 -.10 (27.06)	-12.36 -.07 (24.76)	2.43 .01 (25.95)
HIV prevalence	28.71*** .65	30.26*** .69	31.70*** .72	32.67*** .74	

	(7.30)	(7.66)	(7.10)	(7.04)	
Female secondary schooling	-5.88 -.01 (81.23)	10.33 .03 (89.77)			
Contraceptive prevalence			-4.27* -.27 (1.79)	-4.66* -.29 (1.90)	
Immunization prevalence	-1.85 -.48 (1.68)	-1.88 -.48 (1.69)	-2.31 -.60 (1.66)	-2.36 -.61 (1.66)	
Access to improved water source	-3.18 -1.14 (2.41)		-2.39 -.86 (2.05)		
Access to improved sanitation source		-.57 -.21 (1.27)		-.58 -.22 (1.10)	
Constant	1972.82* (976.12)	1541.83 (991.56)	1890.10* (867.20)	1606.70* (871.65)	1125.92 (946.30)
Year = 2000	-59.09 (48.96)	-86.48* (47.55)	-66.27 (42.84)	-81.79* (39.80)	-58.58 (39.85)
Year= 2005	-72.22 (83.56)	-124.37 (81.18)	-67.14 (65.80)	-95.81 (57.07)	- 127.43** (49.58)
Year = 2010	-91.49 (109.23)	-168.17 (108.06)	-73.79 (79.01)	-114.27* (65.46)	- 236.35** * (51.55)
R-square	.75	.74	.77		.58
Number of observations	99	99	99	99	99
Number of countries	40	40	40	40	40

*p < 0.05, **p < 0.01, and ****p < .001 for a one-tailed test. +In each cell, the first number is the unstandardized coefficient, the second number is the standardized beta coefficient, and the number in parentheses is the robust standard error.

Table 8 Fixed Effects NWM Regression Estimates of Infant Mortality in Sub-Saharan Africa, 1995-2010

Independent Variables	Equation 8.1	Equation 8.2	Equation 8.3	Equation 8.4	Equation 8.5
National women's machinery institutional location (1= ministry)	-.50 -.01 (5.20)	-.72 -.01 (5.09)	-.11 -.01 (4.35)	.02 .01 (4.01)	-1.97 -.04 (5.65)
Gender-absent health aid	7.92 .07 (5.32)	7.46 .07 (4.90)	6.48 .06 (4.44)	5.97 .06 (4.19)	
Gender-mainstreamed health aid	-25.29** -.25 (9.42)	-24.99** -.25 (9.54)	-21.67** -.21 (7.55)	-21.34** -.21 (7.51)	
Gross domestic product	-28.96* -.90 (12.17)	-29.52** -.90 (11.54)	-25.45* -.91 (12.46)	-27.48* .91 (12.12)	-22.43 -.87 (14.10)
Democracy	-.53 -.03 (2.13)	-.45 -.03 (2.18)	-.73 -.04 (1.81)	-.86 -.05 (1.89)	1.09 .07 (2.44)
HIV prevalence	1.92* .48 (.90)	1.94* .49 (.91)	2.09** .53 (.83)	2.09** .53 (.84)	
Female secondary schooling	4.13 .11 (9.99)	4.11 .11 (10.22)			
Contraceptive prevalence			-.51* -.35 (.26)	-.51* -.35 (.26)	
Immunization prevalence	.01 .01 (.12)	.01 .02 (.12)	-.05 -.14 (.12)	-.04 -.13 (.12)	
Access to improved water source	-.06 -.26 (.23)		-.01 -.03 (.19)		

Access to improved sanitation source					
Constant	243.76** (86.32)	245.69** (77.93)	242.13** (76.23)	255.16*** (70.30)	228.55** (84.32)
Year = 2000	-7.19 (6.18)	-7.40 (6.16)	-6.04* (3.11)	-5.81* (3.14)	-5.32 (3.46)
Year= 2005	-13.72 (10.82)	-14.02 (10.75)	-9.78* (4.64)	-9.13* (4.66)	-12.10** (4.89)
Year = 2010	-17.08 (15.08)	-17.28 (14.53)	-10.05 (6.16)	-8.77 (5.31)	-20.01** (6.39)
R-square	.77	.77	.79	.79	.65
Number of observations	99	99	99	99	99
Number of countries	40	40	40	40	40

*p < 0.05, **p < 0.01, and ***p < .001 for a one-tailed test. +In each cell, the first number is the unstandardized coefficient, the second number is the standardized beta coefficient, and the number in parentheses is the robust standard error.

Table 9 Fixed Effects NWM Regression Estimates of Child Mortality in Sub-Saharan Africa, 1995-2010

Independent Variables	Equation 9.1	Equation 9.2	Equation 9.3	Equation 9.4	Equation 9.5
National women's machinery institutional location (1= ministry)	.29 (9.59)	.10 (8.46)	2.06 (8.07)	2.60 (7.77)	.70 (0.24)
Gender-absent health aid	12.57 .06 (9.06)	12.53 .06 (8.46)	11.09 .05 (8.07)	11.05 .05 (7.82)	
Gender-mainstreamed health aid	-43.10* -.22 (18.01)	-43.13* -.22 (18.26)	-39.94** -.21 (14.37)	-39.98** -.21 (14.60)	

Gross domestic product	-35.63* -.72 (21.06)	-35.03* -.71 (19.61)	-32.25 -.66 (20.74)	-34.70* -.71 (19.67)	-28.03 -.57 (22.64)
Democracy	- 1.40 -.04 (3.72)	-1.28 -.04 (3.80)	-1.92 -.06 (3.17)	-2.27 -.07 (3.19)	.89 .03 (4.16)
HIV prevalence	3.93** .52 (1.44)	3.95** .52 (1.46)	4.48** .59 (1.32)	4.44** .59 (1.35)	
Female secondary schooling	-.92 -.01 (16.95)	-.70 -.01 (17.11)			
Contraceptive prevalence			-.80* -.29 (.42)	-.78* -.29 (.44)	
Immunization prevalence	-.13 -.19 (.23)	-.13 -.19 (.23)	-.21 -.32 (.23)	-.21 -.31 (.23)	
Access to improved water source	-.05 -.10 (.44)		.10 .21 (.37)		
Access to improved sanitation source		-.01 -.02 (.19)		-.01 -.01 (.16)	
Constant	350.48** (141.47)	344.65** (123.13)	335.29** (128.57)	353.58** (113.47)	318.27* (134.99)
Year = 2000	-12.27 (10.79)	-12.65 (10.72)	-13.54** (5.55)	-12.75* (5.63)	-10.51* (6.20)
Year= 2005	-24.02 (18.86)	-24.74 (18.40)	-22.94** (8.76)	-21.39** (8.13)	-25.56** (8.35)
Year = 2010	-31.79 (26.17)	-32.84 (24.74)	-28.30* (12.64)	-25.95** (10.37)	-44.49*** (11.06)

R-square	.78	.78	.79	.79	.66
Number of observations	99	99	99	99	99
Number of countries	40	40	40	40	40

*p < 0.05, **p < 0.01, and ****p < .001 for a one-tailed test. +In each cell, the first number is the unstandardized coefficient, the second number is the standardized beta coefficient, and the number in parentheses is the robust standard error.

However, there are other factors associated with maternal, infant, and child mortality in Sub-Saharan Africa that have considerably larger effects than gender-mainstreamed health aid flows on women’s and children’s health outcomes. First, gross domestic product per capita is the most important predictor of infant and child mortality in Sub-Saharan African nations. Whereas a one standard deviation increase in gender-mainstreamed health aid flows only decreases infant and child mortality rates by .25 and .22 standard deviations in equations 2.2 and 2.3, respectively, a one standard deviation increase in GDP decreases the infant mortality rate by .90 standard deviations in equation 2.3 and the child mortality rate by .71 standard deviations in equation 3.3. Notably however, gross domestic product per capita is not a predictor of maternal mortality in Sub-Saharan Africa. Although the coefficient is negatively signed, it never reaches a level of statistical significance in any of the equations presented in Table 7. This finding lends further support to the hypothesis that unless policies and programs target women, economic development alone is insufficient for advancing women’s rights (Dufflo 2012; Shen and Williamson 1997).

Second, I find that human immunodeficiency virus prevalence is a robust predictor of maternal, infant, and child mortality within Sub-Saharan African nations as the coefficient for this variable is positive and significant in all equations in which it is included in Tables 7, 8, and 9. This substantiates the findings of Shandra et. al (2010) and Mishra and Newhouse (2009), among others. Further, as demonstrated in Table 7, HIV prevalence has the largest effect on maternal mortality. A one standard deviation increase in HIV prevalence, for example, increases the maternal mortality rate by .72 standard deviations in equation 7.3. Finally, I find that contraceptive prevalence is negative and statistically significant across all equations in Tables 7, 8, and 9. The effects of contraceptive prevalence are slightly larger than the effects of gender-

mainstreamed health aid flows on maternal and infant mortality and similar to the effects of gender-mainstreamed health aid flows on child mortality.

I conclude this section by discussing the remaining non-significant findings. First, I find that female secondary schooling is not associated with improvements in women's and children's health.²⁹ While this is in contrast to most previous cross-national studies on women's status and health, Pandolfelli, Shandra and Tyagi's (2014) recent study of structural adjustment and maternal mortality in Sub-Saharan Africa also finds that female secondary school enrollment does not explain significant variation in maternal mortality. Further, democracy, access to an improved water source, access to an improved sanitation source, and immunization prevalence never reach levels of statistical significance in any of the models.³⁰

Discussion and Conclusion

In this article, I contribute to the literature on national women's machineries in a novel way. First, as I previously note, while there is a substantive body of research on national gender machineries that has examined their ability to mainstream gender, none of it has examined the effects of NWMs on gender equality outcomes for a nation's citizens, despite the advancement of women and gender equality being the ultimate goals of gender mainstreaming. Moreover, this research tends to assume, *a priori*, the ineffectiveness of NWMs while failing to define how effectiveness is measured (McBride and Mazur 2011).

I address these gaps in the literature by constructing cross-national models that examine the effectiveness of national women's machineries on women's and children's health in Sub-Saharan Africa since gender mainstreaming should improve the well-being of both women and their children. I find that the institutional location of national women's machineries is not associated with maternal, infant, and child mortality within Sub-Saharan African nations.

²⁹ Following Burroway (2012) and Jorgenson and Rice (2005), I also regressed female secondary school enrollment on gross domestic product per capita and used the residuals as a measure of female secondary school enrollment since the variable is often highly correlated with economic development. The variable never reaches a level of statistical significance in any of these models and thus, is not reported. In separate models, I lagged female secondary schooling by five years, but likewise, the variable never reaches a level of statistical significance and is not reported.

³⁰ Following Burroway (2012), because GDP could presumably be correlated with the non-significant independent variables in the models, I also estimate models that include only female secondary schooling, democracy, access to an improved water source, access to an improved sanitation source, and immunization prevalence. None of the variables reach a level of statistical significance in these models.

Further, the length of time since a nation established a gender machinery is not a predictor of women's and children's health outcomes.³¹ Accordingly, regardless of where they are located, or how long they have been operational, national women's machineries do not appear to be effective instruments for fostering improvements in women's and children's health. This is most likely the case because NWMs in Sub-Saharan Africa face too many structural constraints, as documented by the qualitative literature discussed above, to adequately mainstream gender into policy, legislation and programming in support of improved health outcomes for women and children. This analysis suggests that in order for gender mainstreaming to be effective, obstacles to its implementation must be alleviated.

There are important methodological implications that correspond with this study. First, there is no one way to measure the effectiveness of national machineries (McBride and Mazur 2011). Rather than assuming, *a priori*, the ineffectiveness of NWMs across all sectors, studies on national machineries need to treat as a central question of research, whether NWMs are effective and delineate clearly how effectiveness is being measured (Madsen 2010). While I have demonstrated that NWMs are not effective in Sub-Saharan Africa at fostering improvements in women's and children's health, the Beijing Platform for Action identified 10 other substantive areas of concern to women, and it is plausible that NWMs may be more effective at realizing gains in some of these areas despite the structural constraints that hinder their ability to mainstream gender. Second, there is a need for more comprehensive data that measures the specific strategies NWMs employ as well as the constraints they face in order to better understand the conditions under which NWMs may be effective. While a substantive body of scholarship has contributed important insights about the dynamics and determinants of the performance of national women's machineries in Sub-Saharan Africa (e.g. Byrne et al. 1996; Chisala and Nkonkomalimba 2000; Mama 2000; Tiskata 2001; Tripp et al. 2009), this information does not exist systematically for all nations, for even one time point.

I offer specific policy suggestions that follow from the main findings. First, the institutional location of national women's machineries appears to matter less than whether machineries have the financial and human resources to implement gender mainstreaming policies adopted by the state. Because mainstreaming gender into health-related interventions is

³¹ As noted above, the models using a duration variable to measure national women's machineries are not presented, but the coefficients were not statistically significant in any of the models.

associated with improvements in women's and children health, as demonstrated in chapter 1, states should alleviate obstacles to the implementation of gender mainstreaming. This should include strengthening the mandate and authority of NWMs to undertake programmatic, policy and legal analysis across sectors, particularly health, as well as creating internal accountability systems so that NWMs can monitor state progress toward gender equality goals. To meet these objectives, Sub-Saharan African nations should allocate more of their own budgetary resources for NWMs and draft specific guidelines for gender equality in state budgets. For example, in 2006, when the Cameroonian Parliament determined that any budget that failed to address HIV/AIDS and gender equality would not be passed, more than 20 departments included a specific line for HIV/AIDS and gender equality (UNECA 2013). Further, to the extent that donors continue to fund NWMs, they should ease the reporting burdens, conditionalities and problems of absorptive capacity related to the use of donor funds that has been well-documented in the literature (Ofei-Aboagye 2000; UNECA 2013).

Second, both Sub-Saharan African nations and donors should continue to invest in gender-mainstreamed health interventions that reduce HIV/AIDS and treat those suffering from the disease given the large effect that HIV prevalence has on mortality rates in Sub-Saharan Africa. Finally, more resources should be targeted to increasing women's access to contraceptives since contraceptive prevalence is associated with lower levels of maternal, infant, and child mortality.

I conclude with some possible directions for future research. First, the effects of national women's machineries on maternal and child health may differ in different regions of the world.³² This is because the political, economic and cultural contexts, including gender norms and levels of gender discrimination, in which national machineries operate tend to vary by region. Further, the structural constraints influencing the efficacy of machineries may assume varying degrees of importance in different regions. For example, strategic partnerships between civil society and national machineries have been identified as a critical element of NWMs success in Latin America and the Caribbean (Franceschet 2007; Lycklama a Nijeholt, Vargas, and Wieringa 1998) whereas the findings on their relevance is more mixed in Sub-Saharan Africa (Tripp et al. 2009; Tsikata 2001). Thus, future research should examine whether national women's

³² True and Minstrom (2001) found no regional significance in their longitudinal analysis of gender machineries, but they were examining the global diffusion of gender machineries, not their effectiveness, on gender equality outcomes.

machineries in other parts of the world are a predictor of maternal, infant, and child mortality. Second, assuming better data availability, there is a need for future research to disentangle the structural constraints that impede the ability of NWMs to implement gender mainstreaming. In the next chapter, I turn to an analysis of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) as a third measure of gender mainstreaming in order to assess whether state commitment to its implementation is associated with improvements in maternal and child health.

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Table 10 National Women’s Machineries in Sub-Saharan Africa

Country	Year NWM Established	Current Designation
Angola	1991	Ministry of Family, Development & Gender Promotion
Benin	1993	Ministry of Social Protection & Women’s Affairs
Botswana	1981	Women’s Affairs Department in Ministry of Labour and Home Affairs
Burkina Faso	1993	Ministry for the Advancement of Women
Burundi	1967	Ministry of Social Action and Advancement of Women
Cameroon	1975	Ministry of Women’s Empowerment and the Family
Cape Verde	1994	Institute for Gender Equality & Equity
Chad	1982	Ministry for the Promotion of Women & Social Affairs
Comoros	1990	Ministry of Public Health, Women & Population
Congo (Rep.)	1990	Ministry for the Promotion of Women & Integration of Women in Development
Cote d’Ivoire	1976	Ministry of Family & Social Affairs
Djibouti	1999	Ministry of Women’s, Family & Social Affairs
Equatorial Guinea	1980	Ministry of Women’s Affairs
Eritrea	1979	National Union of Eritrean Women
Ethiopia	1992	Ministry of Women’s Affairs
Gabon	1983	Ministry for Family, Protection of Children & Promotion of Women
Gambia	1980	Women’s Bureau, Office of Vice President
Ghana	1975	Ministry for Women & Children’s Affairs
Guinea	1991	Ministry of Social Affair & Promotion of Women & Children

Guinea-Bissau	1985	Ministry of Social Affairs & Women's Empowerment
Kenya	1976	Ministry of Gender, Children & Social Development
Lesotho	1976	Ministry of Gender, Youth, Sports & Recreation
Liberia	1984	Ministry of Gender & Development
Madagascar	1976	Ministry of Population, Social Protection & Leisure
Malawi	1984	Ministry of Gender, Child Welfare & Community Services
Mali	1975	Ministry for the Promotion of Women, Child & Family
Mauritania	1964	Secretary for the Promotion of Women
Mauritius	1982	Ministry of Women's Rights, Child Development, Family Welfare & Consumer Protection
Mozambique	1973	Ministry for Women & Social Action Coordination
Namibia	1990	Ministry of Gender Equality & Child Welfare
Niger	1975	Ministry for the Promotion of Women & Protection of Children
Nigeria	1974	Federal Ministry of Women's Affairs & Social Development
Rwanda	1975	Ministry of Gender & Family Promotion
Senegal	1972	Ministry of Women, Family, Social Development & Entrepreneurism
South Africa	1994	Department of Women, Youth, Children & People with Disabilities
Swaziland	1975	Department of Gender & Family Issues
Tanzania	1985	Ministry of Community Development, Gender & Children
Togo	1977	Ministry of Social Action, Promotion of Women & Protection of Infants and Elderly
Uganda	1975	Equal Opportunities Commission

Zimbabwe 1984 Ministry of Women's Affairs, Gender & Community
Development

Source: Tripp et al. 2009; UN Women's Directory of National Mechanisms for Gender Equality 2013

Table 11 Sample Descriptive Statistics: National Women's Machineries

Variable	Mean	Standard Deviation	Minima	Maxima
N=99				
Maternal mortality (per 100,000 live births)	546.05	259.01	28	1300
Infant mortality (per 1,000 live births)	75.87	25.08	13	137.50
Child mortality (per 1,000 live births)	122.87	47.02	15.20	234.70
National women's machinery (institutional location)	.66	.47	0	1
Gender-absent health aid, logged (percentage of GDP, 2010\$)	.18	.22	0	.97
Gender-mainstreamed health aid, logged (percentage of GDP, 2010\$)	.18	.27	0	1.17
Gross domestic product per capita, logged (2010 US\$)	6.11	.97	4.74	8.55
Democracy (not free: 1-2; partially free: 3-5; free: 6-7)	4.15	1.57	1	7
HIV prevalence (percentage of population ages 15-49)	5.89	7.17	.1	26.8
Female secondary schooling, logged (percentage of female population of secondary school age)	3.19	.72	1.40	4.57
Contraceptive prevalence rate (percentage of women ages 15-49)	24.02	18.78	1.7	76
Immunization prevalence	73.80	18.23	26.25	99

(percentage of children 1 year
of age or younger)

Access to improved water source (percentage of population)	64.38	18.03	20	99
Access to improved sanitation (percentage of population)	33.16	22.52	4	99
Year	2002.93	5.05	1995	2010

CHAPTER 3: ESTIMATING THE EFFECTS OF STATE COMMITMENT TO THE CONVENTION ON THE ELIMINATION OF ALL FORMS OF DISCRIMINATION AGAINST WOMEN ON MATERNAL AND CHILD HEALTH

Introduction

Adopted by the United Nations General Assembly in 1979 during the UN Decade for Women, the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) sets international standards for the equal rights of women and men and establishes an agenda for national action to end discrimination against women and girls. The CEDAW defines discrimination as “any distinction, exclusion or restriction made on the basis of sex which has the effect or purpose of impairing or nullifying the recognition, enjoyment or exercise by women, irrespective of their marital status, on a basis of equality of men and women, of human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field” (United Nations 1981: CEDAW Article 1). The CEDAW entered into force on September 2, 1981, thirty days after the twelfth UN member state had ratified it –and more quickly than any other international human rights treaty that preceded it (WHO 2007). To date, 187 out of 194 countries worldwide have ratified the CEDAW, including all countries in Africa except for Somalia, Sudan and South Sudan (UN Women 2013), and the Convention has become a critical instrument used by national women’s machineries and women’s organizations for mainstreaming gender (IWRAW Asia Pacific et al. 2008).

Yet, despite the CEDAW being the “global legal centerpiece for guaranteeing women’s equality,” (Simmons 2009: 212) as well as a substantial literature examining whether international legal regimes affect state behavior (e.g. Camp-Keith 1999; Hasenclever, Mayer, and Rittberger 1997; Hathaway 2002; Leeds 2003; Neumayer 2005; von Stein 2005), very few cross-national, quantitative studies have examined the efficacy of the CEDAW (Cho 2010; Simmons 2009). Moreover, two methodological issues limit our ability to ascertain the effectiveness of the Convention from these studies. First, at least one analysis neglects the mandate of the CEDAW and examines its efficacy on outcomes independent of gender equality and women’s empowerment. More specifically, in their assessment of the international human rights regime on governments’ human rights practices, Hafner-Burton and Tsutsui (2005)

examine the efficacy of the CEDAW on state repression of the security of the person, using an ordinal scale that measures a state's level of murder, torture, forced disappearance, and political imprisonment. Although they find a negative effect on signatories' behaviors, it is not clear why ratification of the CEDAW should be associated with state behavior in this context given CEDAW's legal mandate to promote a distinctly different set of rights.

Second, all but one of the remaining studies that assess the efficacy of the CEDAW (Cho 2010; Cole 2012; Hill 2010) use indices of women's social, political, and economic rights from the Cingranelli-Richards (CIRI) Human Rights Dataset (Cingranelli and Richards 2008), which has been critiqued methodologically for using the United States State Department's annual Country Reports on Human Rights Practices to code human rights violations. For example, Poe, Carey and Vasquez (2001) note that the Country Reports continue to be a source of controversy on the grounds that US self-interest influences its assessment of human rights.³³ Bracketing issues of data reliability, the literature's reliance on one set of indices to measure the efficacy of the CEDAW provides a limited understanding of its effectiveness due to the multidimensional nature of women's empowerment and gender equality (Malhotra, Schuler and Boender 2002).³⁴ None of the CIRI indices, for example, measure the health dimension of women's empowerment yet the CEDAW contains 10 articles that are either directly or indirectly related to women's health rights.

Further, qualitative research suggests that governments selectively respond to the CEDAW's provisions, (IWRAW Asia Pacific et al. 2008; Centre for Feminist Research 2000) so it is plausible that state ratification of the CEDAW will have different effects on different aspects of women's empowerment contingent upon which provisions governments opt to pursue. For these reasons, additional studies are needed to assess the efficacy of the CEDAW on specific dimensions of women's rights. Simmons (2004) contributes to this effort by analyzing the impact

³³The authors find evidence of bias related to strategic and political interests in country reports from the 1970s and early 1980s and bias related to US trading partners in newer reports. In addition, Dai (2013) questions the consistency of the CIRI coding over time, and Clark and Sikkink (2010 as cited in Dai 2013) suggest that better access to information about state practices and increased awareness about the full scope of human rights may contribute to more demanding coding over time, in effect rendering it more difficult for improvements in human rights to be registered in the CIRI data set.

³⁴ Understanding of the effectiveness of the CEDAW is further muddled by the authors' contrasting findings. Hill (2010) finds a positive relationship between ratification of the CEDAW and women's political rights, only. Cho (2010) finds a positive association between state ratification of the CEDAW and women's social rights, only, conditional on democracy. And Cole (2012), who merges the individual indices, finds a statistically significant relationship between CEDAW membership and women's rights only for those countries that ratified the treaty with reservations.

of the Convention on three of the most tangible rights it accords to women- equality in education, equality in employment opportunities, and access to modern forms of birth control – finding associations between CEDAW ratification and improvement in the ratio of girls to boys in primary and secondary education and between CEDAW ratification and access to birth control.

Likewise, I contribute to this nascent literature by conducting the first cross-national, longitudinal study that examines the effects of state commitment to the CEDAW on maternal, infant, and child mortality in Sub-Saharan Africa. I begin with a discussion of the history of the Convention and then discuss why state compliance with the CEDAW should be associated with improvements in maternal and child health. Next, I draw upon the literature on international legal regimes and treaty ratification to describe why ratification of the CEDAW may in fact, not lead to improved health outcomes for women and children. I proceed by elaborating upon other factors that may influence maternal, infant and child mortality, including (from the prior chapters) national women's machineries and gender-mainstreamed health aid, when I describe my independent variables. This is followed by a description of my methodology. Finally, I conclude by discussing the findings and the policy and methodological implications of my research.

History of the CEDAW

While the preamble to the United Nations Charter, adopted in 1945, as well as the human rights treaties that followed it, ostensibly protect and promote the equal rights of women, critiques began to emerge as early as the 1960s that the international legal regime thus far was failing women (Committee on the Elimination of Discrimination against Women 1995). The Commission on the Status of Women (CSW) was established in 1946 as a subcommission of the Commission on Human Rights but was quickly elevated to the status of a full commission due to pressure exerted by women's rights activists. Between 1952 and 1965, the CSW elaborated three conventions and one recommendation in areas in which the CSW considered women's rights to be particularly vulnerable.³⁵ However, because no comprehensive framework existed for

³⁵ These are the Convention on the Political Rights of Women, adopted by the UN General Assembly in 1952; the Convention on the Nationality of Married Women, adopted in 1957; the Convention on Consent to Marriage,

promoting the full range of women's rights, in 1965 the UN General Assembly invited the CSW to prepare a draft declaration that would combine in a single instrument, international standards delineating the equal rights of men and women across all sectors (Committee on the Elimination of Discrimination against Women 1995). The Declaration on the Elimination of Discrimination against Women was adopted in 1967, but since it lacked the contractual force of a treaty, UN member countries were not legally obligated to it.

In the 1970s, as the field of Women in Development (WID) began to coalesce, gender theorists and practitioners began to argue that development interventions which do not target women explicitly, may inadvertently worsen the well-being of women and children or at best fail to improve it (Boserup 1970; Molyneux 1985; Rathgeber 1990). Applying this analysis to the international human rights regime, participants at the World Conference of the International Women's Year held in Mexico City in 1975 formally called for the drafting of a legally binding convention on the elimination of discrimination against women. The text of the Convention was drafted by the CSW in 1976 and extensively debated by the UN General Assembly for the next three years. Consisting of a preamble and 30 articles articulating the full rights of women and girls and an agenda for national action to respect, protect and fulfill them, the CEDAW was adopted in 1979 by a vote of 130 to none, with 10 abstentions (Committee on the Elimination of Discrimination against Women 1995).

While the CEDAW entered into force more rapidly than any prior treaty, it is also one of the most heavily reserved human rights treaties, with Muslim countries entering the largest –and most sweeping– number of reservations against the Convention (Cole 2012; Neumayer 2007).³⁶ For example, Mauritania, which did not ratify the CEDAW until 2001, entered a reservation that it is legally bound only to those provisions which are not contrary to Islamic Sharia. Yet, only five other Sub-Saharan African countries –Ethiopia, Lesotho, Malawi, Mauritius, and Niger – entered reservations upon ratification of the CEDAW, and Malawi later withdrew its reservation. Further, with the exceptions of Mauritania and Swaziland, all Sub-Saharan African nations that

Minimum Age for Marriage and Registration of Marriages, adopted in 1962; and the Recommendation on Consent to Marriage, Minimum Age for Marriage and Registration of Marriages adopted in 1965.

³⁶ When ratifying a convention, states can enter reservations that they will not be legally bound to certain provisions. As cited in Cole (2012), the Vienna Convention on the Law of Treaties defines a treaty reservation as “a unilateral statement, however phrased or named, made by a State . . . whereby it purports to exclude or to modify the legal effect of certain provisions of the treaty in their application to that State” (art. 2[1][d]).

have ratified the Convention did so in the 1980s and the 1990s. (See Table 15 at the end of the chapter).

The task of monitoring states' compliance with their obligations under the CEDAW belongs to the Committee on the Elimination of All Forms of Discrimination against Women, which was established under Article 17 of the Convention. The Committee consists of 23 members with expertise in international women's human rights, who are meant to serve in their personal capacity, not as representatives of their governments (World Health Organization 2007). The capacity of the Committee to monitor state compliance with their obligations under the CEDAW is contingent upon the self reporting of states. Within one year of ratification, and thereafter every four years, states are obligated to submit national reports to the Committee detailing their efforts to implement the Convention and progress made toward achieving women's rights. In the health sector, states must report on legislation and policies to improve women's health and present sex-disaggregated health data.

Prior to its formal evaluation of a country, the CEDAW Committee also considers input from nongovernmental organizations (NGOs) in the form of "shadow reports" (International Women's Rights Action Watch 2009). For example, in 2012, in a shadow report submitted to the Committee, the Center for Economic and Social Rights et al. (2013: 2) raised concerns about Angola's maternal mortality rate, noting that "a third of female mortality in Angola is linked with maternity" and calling upon the country to allocate more resources to curbing maternal mortality and addressing its underlying determinants.

At a formal meeting following the submission of a country's report, the Committee discusses the content of the report with country representatives and then issues concluding comments to the reporting government, which are compiled in an annual report and sent to the United Nations General Assembly (World Health Organization 2007). However, the Committee has no authority to enforce the submission of state reports. As such, although both Chad and Cote d'Ivoire ratified the CEDAW in 1995, neither state submitted their initial report until 2010 and without sanction (Purvis 2012).

To strengthen the CEDAW Committee's ability to monitor state compliance with the CEDAW, and at the behest of women's rights activists, a 21-article Optional Protocol to the Convention was adopted in 1999 by the UN General Assembly, acting without a vote, and entered into force in 2000 (IWRAW Asia Pacific et al. 2008). The Protocol provides two

additional mechanisms for holding states accountable to their obligations under the CEDAW. First, a communications procedure gives individuals and groups the right to lodge complaints against states for violations of women's rights with the CEDAW Committee. Second, an inquiry procedure enables the Committee to conduct inquiries into serious or systematic state abuses of women's rights (World Health Organization 2007). To date, 104 states worldwide have ratified the Optional Protocol, including 22 states in Sub-Saharan Africa.³⁷

Impacts on Maternal and Child Health

Access to health care services, including reproductive health care, by women and girls is a basic right enshrined in the Convention on the Elimination of All Forms of Discrimination against Women. Specifically, Article 12 on health requires states to eliminate discrimination against women in access to health care throughout the lifecycle and to ensure that women receive appropriate services in connection with pregnancy, confinement and the post-natal period (CEDAW 1979). Women's reproductive rights are a core focus of the Convention and accordingly, maternal and child health provisions are incorporated into five additional Articles, including those on education, employment and marriage and the family. For example, Article 16 on marriage and the family requires states to ensure that women have access to family planning and the ability to determine the number and spacing of children. (See Table 16 at the end of the chapter for specific Articles of the CEDAW related to health).

In 1999, at its twentieth session, the Committee on the Elimination of Discrimination against Women issued General Recommendation No. 24 to elaborate on state obligations to eliminate gender discrimination in health.³⁸ The Committee interpreted, in part, non-discrimination in health on the basis of the Beijing Platform for Action adopted at the 1995 Fourth World Conference on Women (World Health Organization 2007). Thus, even though the CEDAW predates the official adoption of gender mainstreaming, General Recommendation No.

³⁷ All Sub-Saharan African nations which have ratified the Optional Protocol did so too recently for systematic analysis of its effects on maternal and child health. See Table 15 at the end of the chapter for year of ratification.

³⁸ Article 21 of CEDAW grants the Committee on the Elimination of Discrimination against Women the authority to make General Recommendations about specific provisions in the Convention. As of 2004, the Committee had adopted 25 General Recommendations. In addition to General Recommendation No. 24, the following General Recommendations address women's health issues: No. 14 on female circumcision, No. 15 on women and HIV/AIDS, No. 19 on violence against women, No. 21 on marriage and family relations (World Health Organization 2007).

24 requires governments to “Place a gender perspective at the centre of all policies and programmes affecting women’s health and...involve women in the planning, implementation and monitoring of such policies and programmes” in order to ensure women and girls equality of health (Paragraph 30 1999).

Moreover, General Recommendation No. 24 calls upon states to implement legislative, policy and budgetary measures to protect, promote, and fulfil women’s and girls’ rights to health care that should be associated with reductions in maternal, infant, and child mortality. I briefly discuss key measures here. First, the CEDAW requires states to reduce maternal mortality rates through safe motherhood services and prenatal and postnatal assistance, providing free services where needed, and to report on the rates at which these measures have reduced maternal mortality. Second, states are required to prioritize the prevention of unwanted pregnancy through family planning and sex education, with a particular focus on adolescent girls. As discussed in the prior chapters, family planning interventions that provide contraceptives and counseling should reduce maternal and infant mortality rates because high levels of fertility often correspond with women having children too early or too late (Royston and Armstrong 1989) and not appropriately spacing births (United Nations 1995), factors which put women and infants at greater risks of complications from pregnancy (Shen and Williamson 1999).

Third, states must remove barriers that impede women’s and girls’ access to health care. These include high fees for health care services, requirements that women must obtain authorization from a spouse, parent or hospital authority before receiving care, as well as the need to travel far distances to health facilities in the absence of convenient and affordable public transport. Facilitating access to basic health care should improve maternal and child health outcomes by enabling women to seek treatment for diseases (e.g., malaria, cholera, and tuberculosis) that contribute to maternal, infant and child mortality (Baker 2010; Ismi 2004). Fourth, states must adhere to the enactment and enforcement of laws which prohibit traditional practices that have a deleterious effect on women’s and girls’ health, such as laws banning child marriage and female genital cutting. The practice of child marriage, in particular, is strongly associated with maternal mortality, as girls aged 10-14 are five times more likely to die in pregnancy or childbirth than women aged 20-24. This is because adolescent girls are not physically ready for childbearing and may lack the means and negotiating power to access reproductive healthcare (United Nations 2010; 2001).

Fifth, the CEDAW requires states to monitor private health care institutions for non-discrimination and quality of care when states outsource health care services, including implementing measures to curb violations of women's health rights by third parties. Increasing quality access to privatized health care services, which have become more prevalent under economic liberalization reforms requiring deep cuts to government spending (Rich 1994), should be associated with improvements in maternal and child health since women can more readily access basic and reproductive health care. Finally, sixth, in support of these measures, the CEDAW directs states to allocate adequate budgetary, human and administrative resources to ensure that the share of the overall health budget allocated to women is comparable to the share allocated to men, taking into account their different health needs.

In addition to prompting states to willingly modify their behaviour to advance women's rights, ratification of the CEDAW creates a normative foundation for non-state actors to petition states to fulfill their obligations under the CEDAW (Cook 2013; Hafner-Burton and Tsutsui 2005). Deere and Leon (2001) note, for example, that women's international NGOs in Latin America drew on the rights enshrined in the CEDAW to successfully appeal to governments to grant women property rights during the region's transition to democracy. And True (2003) reports that local women's NGOs in India were able to secure the arrest of a group of social workers for gang-raping a colleague, despite the lack of a local sexual assault law, by calling on the state to adhere to its ratification of the Convention.

Moreover, human rights litigation has emerged as a strategy for accelerating state action to reduce maternal mortality under the rationale articulated in General Recommendation No. 24 that maternal deaths are preventable so when governments fail to take appropriate measures to prevent them, they are in violation of women's rights (Cook 2013). States, such as Uganda and India, have pursued public interest litigation, claiming that the constitutional rights of women who died in childbirth have been violated (Cook 2013). And in a landmark case brought to the CEDAW Committee in 2011 under the Optional Protocol,³⁹ the Committee held the government of Brazil legally responsible for the preventable maternal death of Alyne da Silva Pimentel Teixeira, a young Afro-Brazilian woman who died of postpartum hemorrhage following the still birth of a 27-week old fetus (Cook 2013). While the decision is still too recent for its full effects (if any) to be observed, Cook argues that the decision has laid the normative foundation for the

³⁹ Alyne da Silva Pimentel Teixeira (deceased) v. Brazil, CEDAW/ C/49/D/17/ 2008, August 10, 2011

legal application of human rights to improve women's access to maternal care and by extension, will lead to the reduction of maternal mortality rates in the long term (Cook 2013).

State Compliance and Limitations of the CEDAW

Questions remain, however, about the efficacy of international human rights treaties, including the CEDAW. World society theorists argue that states ratify international human rights treaties as a symbolic gesture to garner legitimacy in the world polity and predict that states will decouple their practices from treaty obligations, and potentially 'radically decouple' them if governments use treaty ratification to hide increasingly repressive practices (Boli and Thomas 1997; Hafner-Burton, Tsutsi, and Meyer 2008; Hafner-Burton and Tsutsi 2005; Meyer and Rowan 1977). International relations scholars in the rationalist tradition also expect state noncompliance, but argue that states are motivated by power and self-interest, not legitimacy. Because international human rights treaties reflect the interests of powerful liberal states, not global consensus, states will ratify them but not comply with their provisions because they do not reflect domestic interests (Hafner-Burton 2009; Simmons 2008). For example, the extension of rights to women has been historically contentious, and thus compliance with the CEDAW may present a cost to states, domestically (Cole 2012).

In either view, states are able to decouple their practices from the obligations they are bound to under international law because weak institutional mechanisms exist to enforce state compliance (Goldsmith and Posner 2005; Hafner-Burton and Tsutsui 2005). Treaty monitoring committees, like the CEDAW Committee, rely on states to self-report their compliance, and states clearly have little incentive to report transgressions. Further, monitoring committees have little ability to punish violators (Hill 2010). For example, even though the CEDAW Committee found the Brazilian government legally responsible for the maternal death of Aylene da Silva Pimentel Teixeira under the Optional Protocol, the Brazilian government is only required to "give due consideration to the views of the Committee" and "submit to the Committee, within six months, a written [confidential] response" to its decision (*Aylene da Silva Pimentel Teixeira (deceased) v. Brazil*, CEDAW/ C/49/D/17/ 2008, 2011 as cited in Cook 2013).

However, scholars of international law argue that treaties are in fact, the products of extensive negotiations between states that reflect national interests; otherwise, states would not bother to adopt them (Chayes and Chayes 1995). According to this view, non-compliance with

human rights treaties is usually due to ambiguous directives in treaties, an inability to comply, or a lag between ratification and implementation as countries try to make sense of the directives mandated in the treaties. In the context of the CEDAW, improving women's and children's access to health care and reducing mortality rates requires a complex combination of policy and programmatic interventions, and historically there has been disagreement over which health interventions states should concentrate scarce resources on (Shiffman 2007). Thus, states indeed may lack the capacity to meet their obligations under the CEDAW and may receive little guidance from the Convention, which directs states to "take all appropriate measures to eliminate discrimination against women in the field of health care," (CEDAW 1979: Article 14) but does not provide detailed guidance on how to do so. Accordingly, states may require time to make sense of, and operationalize, the broad directives mandated in the CEDAW (Chayes and Chayes 1993). By extension, the lack of strong institutional mechanisms to enforce state compliance is not germane because states do not intentionally violate treaties and so there is no need to punish them (Chayes and Chayes 1993). Similarly, constructivist scholars of international relations argue that state interests are defined vis-à-vis international norms, and socialization –not enforcement mechanisms- prompts states to internalize, over time, the values espoused in human rights treaties (Finnemore and Sikkink 1998; Hawkins 2004; Keck and Sikkink 1998).

In the prior section, I describe why state compliance with the CEDAW should be associated with improvements in women's and children's health. In this section, I draw on the human right literature to discuss why states that ratified the CEDAW may not comply with its provisions. I note that no cross-national studies have examined the effectiveness of the CEDAW on women's and children's health outcomes even though access to health care services is a basic right enshrined in the Convention. Thus, I seek to address this gap in the literature by empirically evaluating the effects of Sub-Saharan African nations' commitment to the CEDAW on maternal, infant, and child mortality.

Dependent Variables⁴⁰

Maternal Mortality:

⁴⁰ The descriptive statistics for the variables used in this analysis are contained in Table 17 at the end of the chapter.

The first dependent variable in my study is the maternal mortality ratio for a Sub-Saharan African nation. The variable measures the annual number of deaths from pregnancy related causes per 100,000 live births. A maternal death is defined as the death of a woman while pregnant or within 42 days of the termination of a pregnancy from any cause related to or aggravated by pregnancy (World Health Organization 2010). The data are available for 1995, 2000, 2005, and 2010 and can be found online in the World Bank's *World Development Indicators* portal. Please note that all data are obtained from the World Development Indicators portal unless otherwise noted.

Maternal mortality is one of the best aggregate-level proxies of women's status for two main reasons. First, maternal mortality ratios reflect women's access to primary health care resources (Buchman 1996). Second, the quality of women's health is influenced by social institutions and cultural norms that discriminate against women (Lyons 1985).

Infant Mortality:

This second dependent variable in my study is that infant mortality rate. This variable measures the probability of a child dying between birth and the age of one, expressed per 1,000 live births. In Africa, approximately 65 percent of child deaths occur before the child's first birthday (United Nations Development Programme 2012). Infant mortality is considered to be one of the strongest indicators of a nation's wellbeing because it reflects both the health of children and the overall health of a population (Mishra and Newhouse 2009).

Child Mortality:

The third dependent variable in my study is the child mortality rate. This variable measures the probability of a child under five years of age dying, expressed per 1,000 live births. Shen and Williamson (1997) note that child mortality is a better indicator of the general level of well-being of children in developing countries than infant mortality because the latter indicator underestimates the hardship of children given that many die between the ages of one and five.

Independent Variables

CEDAW

As a proxy for gender mainstreaming, I create a composite indicator that measures a nation's commitment to implementing the CEDAW. The index sums the standard (Z) scores of the following three variables: the number of years since a nation has ratified the Convention on the Elimination of All Forms of Discrimination against Women; the number of reservations a nation entered upon ratifying the CEDAW-multiplied by negative one so that higher scores correspond to fewer reservations; and the cumulative number of progress reports a nation has submitted to the CEDAW committee. Because variance inflation factor scores of 4.7 suggest potential multicollinearity with gender-mainstreamed health aid flows (Allison 2005), I regress the CEDAW index on gender-mainstreamed health aid and use the residuals as a measure of a nation's commitment to the CEDAW in order to test the effect of state commitment to the CEDAW independent of gender-mainstreamed health aid.⁴¹ The data are available online from the United Nations Treaty Collection.

From above, length of membership in the CEDAW is used as a measure of commitment to the treaty because over time states should internalize the values espoused in the Convention and devote more resources to operationalizing its directives (Chayes and Chayes 1993; Finnemore and Sikkink 1998). The number of reservations a nation enters upon ratifying the CEDAW is used as a measure of commitment to the treaty because reservations indicate that a state will not be legally bound to certain provisions and thus, the fewer reservation a country enters, the more committed they should be to implementing the full scope of the treaty (Cole 2012). Finally, the number of reports a nation submits to the CEDAW committee should indicate a state's commitment to the treaty because although states are obligated to submit the reports, they are not penalized for failing to do so and thus, not all states submit reports (Cho 2010; Den Boer 2008). I hypothesize that higher levels of state commitment to the CEDAW should correspond with lower levels of maternal, infant, and child mortality because committed states are more likely to implement gender mainstreaming in order to achieve the health-related provisions of the Convention.

⁴¹ It is plausible that states which receive more gender-mainstreamed health aid flows are more committed to the CEDAW because the aid may be used to implement the provisions of the Convention although this is not tracked in the OECD's Creditor Reporting System database.

National Women's Machineries:

As an additional proxy for gender mainstreaming, I use data collected by Tripp et al. (2009) to create a dummy variable that measures the institutional location of the lead national women's machinery (NWM) responsible for gender mainstreaming.⁴² In the previous chapter, I found no support for the hypothesis that the institutional location of national women's machineries should be an important predictor of maternal, infant, and child mortality in Sub-Saharan Africa.

Gender-mainstreamed health aid:

Gendered health aid flows also are a proxy for gender mainstreaming. Using data from the Organization for Economic Cooperation and Development's (OECD) Creditor Reporting System (CRS) Database,⁴³ I create an ratio-level variable that measures the summed amount of all gender-mainstreamed aid (significant or primary) committed to each recipient country as a percentage of that country's GDP in US 2010 constant dollars. I log this variable because it is skewed. In chapter 1, I found support for the hypothesis that gender-mainstreamed health aid should be positively associated with lower levels of maternal, infant, and child mortality because interventions must mainstream gender in order to improve women's well-being.

Gender-absent health aid:

Using the Organisation for Economic Co-operation and Development's Creditor Reporting System data, I create an ratio-level variable that measures the summed amount of committed bilateral health aid to each recipient country as a percentage of a nation's GDP in US 2010 constant dollars for projects in which gender is not an objective of the activity. I log this variable to correct for its skewed distribution. In chapter 1, I found support for the hypothesis that gender-absent health aid should not be associated with reductions in maternal, infant or child mortality because interventions that do not mainstream gender fail to improve women's and children's well-being.

⁴² See chapter 2 for further discussion of this variable.

⁴³ See chapter 1 for a discussion of the data, including its limitations.

GDP per capita:

In cross-national research, it is necessary to take into account a nation's level of development in order to make sure any observed effects of the ratification of the CEDAW are independent of a nation's level of wealth (London and Ross, 1995). To do so, I include a measure of gross domestic product per capita and log the variable because of its highly skewed distribution. I expect that higher levels of gross domestic product per capita should correspond with lower levels of maternal, infant, and child mortality within Sub-Saharan African nations. This is because wealthier countries should have higher standards of living and advanced medical technology, and more people should be able to afford health care (Gebhard et al. 2008; Shandra, Shandra, and London 2011; Shen and Williamson, 1999).

Democracy:

I use the average of Freedom House's political rights and civil liberties scales to measure the level of democracy within a nation. The data may be obtained online from Freedom House. According to Freedom House (2005), political rights refer to the degree to which a nation is governed by democratically elected representatives and has fair, open, and inclusive elections. The civil liberties scale measures the level of freedom of press, freedom of assembly, general personal freedom, freedom of private organizations, and freedom of private property within a nation (Freedom House 2005). The variables have the following coding: free (1-2), partially free (3-5), and not free (6-7). I multiply the index by negative one so that high scores correspond with high levels of democracy. I hypothesize that higher levels of democracy should correspond with lower levels of maternal, infant, and child mortality within a Sub-Saharan African nation. This is most likely the case for two reasons. First, freely elected and open governments respond to popular demands for health services due to political activism and electoral accountability (Wickrama and Mulford 1996). Second, democracies are more likely to comply with the obligations of international human rights treaties, including the provisions for nondiscrimination in access to health services enshrined in the CEDAW. Cho (2009), Hathaway (2002), and Keck and Sikkink (1998) all find support for this line of reasoning.

Human Immunodeficiency Virus Prevalence:

I also include the prevalence of the human immunodeficiency virus (HIV) for each Sub-Saharan African nation. This variable measures the percentage of a country's population ages 15 to 49 that are infected with HIV, whether or not they have developed symptoms of acquired immune deficiency syndrome, alive at the end of the year specified. I hypothesize that higher rates of HIV prevalence should be associated with higher levels of maternal, infant, and child mortality. This is because mothers may experience complications during pregnancy or birth as a result of opportunistic infections (e.g., tuberculosis, pneumonia, and malaria) resulting from a weakened immune system (Foster and Williamson 2000). Further, children may contract the infection from their mothers during pregnancy, birth, or breastfeeding and subsequently die from opportunistic infections (Scanlan 2010).

Female secondary schooling:

To examine the impact of girls' schooling on maternal, infant, and child mortality, I use female secondary school gross enrollment, measured as the total enrollment, regardless of age, expressed as a percentage of the female population of official secondary education age. I log this variable to correct for its skewed distribution. I hypothesize that higher levels of female secondary school enrollment should be related to lower levels of maternal, infant, and child mortality within Sub-Saharan African nations because female education is associated with wider use of health services, especially prenatal care, and may reduce child marriage and adolescent birth. It also tends to improve access to information about nutrition, birth spacing, reproductive health, and immunizations (Filmer and Pritchett 1999). Since the effects of girls' schooling are likely to be lagged rather than immediate, I also consider a lag structure of five years for the variable.⁴⁴

Contraceptive Prevalence:

⁴⁴ Ten year lag structures are also common in cross-national research, but because data on female secondary schooling in 1995 is available for only 23 countries, the sample size would be too small for a 10-year lag structure. Since lagged female secondary schooling is not statistically significant, it is not reported in the findings.

I also examine the impact of contraceptive prevalence on women's and children's health outcomes. This variable measures the percentage of women, ages 15 to 49, who are practicing, or whose sexual partners are practicing, any form of contraception. The data are obtained from *Facilitating Green Growth in Africa: Perspectives from the African Development Bank* (AfDB 2012). I hypothesize that higher levels of contraceptive prevalence should be associated with lower levels of maternal, infant, and child mortality within Sub-Saharan African nations. This is because contraceptive use should be associated with women having fewer children too young or too old (Royston and Armstrong 1989) and appropriately spacing births (United Nations 1995), thus reducing the risks to women and infants of complications from pregnancy (Shen and Williamson 1999).

Immunization Prevalence:

I include immunizations as a proxy for public health expenditures, independent of foreign aid, on primary health care.⁴⁵ This variable measures the average percentage of children one year of age or younger who receive vaccines against tuberculosis, polio, measles, and diphtheria. The data may be obtained online from the World Bank's Health, Nutrition and Population Statistics database. I expect that higher levels of immunization prevalence should correspond with lower levels of maternal, infant, and child mortality in Sub-Saharan Africa. This is because government rollouts of large immunization campaigns facilitate linkages between health services and families, enabling pregnant women to access primary health care for themselves, thus reducing the likelihood that they will die during pregnancy (Buchman 1996). Moreover, as children become immune to these diseases through vaccinations, mortality rates should fall.

Access to an Improved Water Source:

This variable measures the percentage of the country's population who has access to an improved water source. According to the United Nations (2010), an improved water source includes any of the following types of water sources: household connections, public standpipes,

⁴⁵ Because all measures of public health expenditures include foreign health aid, I do not include a public health expenditure variable in my models.

boreholes, protected dug wells, protected springs, and rainwater collection. An unimproved water source may include an unprotected well, surface water, vendor provided water, tanker provided water, and bottled water. I hypothesize that higher levels of access to an improved drinking water source should be related to lower levels of maternal, infant, and child mortality in Sub-Saharan Africa. This is because polluted water often contains microbes that cause diarrheal diseases, which can complicate pregnancies, leading to maternal deaths (Rice 2008). Also, diarrhea is one of the leading causes of death in children under five years of age (World Health Organization 2010).

Access to an Improved Sanitation Source:

I also include the percentage of a country's population that has access to an improved sanitation facility. An improved sanitation facility includes a connection to a public sewer, connection to a septic tank, pour flush latrine, simple pit latrine, ventilated pit latrine, pit latrine with slab toilet, and composting toilet (World Resources Institute 2010). An improved sanitation facility is more likely to be sanitary than an unimproved facility. An unimproved sanitation facility includes an open pit latrine, public latrines, bucket latrines, hanging latrines, flush to elsewhere (e.g., street, yard, river, ditch, etc.), and no facility (World Resources Institute 2010). I expect that higher levels of access to an improved sanitation facility should correspond with lower levels of maternal, infant, and child mortality in Sub-Saharan Africa. This is because a lack of proper sanitation has the potential to increase various diarrheal diseases that complicate pregnancies and cause death in children under five years of age (Rice 2008).

Analytic Strategy

To examine the relationship between state commitment to the Convention on the Elimination of All Forms of Discrimination against Women and maternal, infant, and child mortality in Sub-Saharan African nations, I estimate two way fixed effects ordinary least squares regression models.⁴⁶ This model allows me to address heterogeneity bias, or the impact of

⁴⁶ The sample includes 40 Sub-Saharan African nations. These are: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Comoros, Republic of the Congo, Cote d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar,

unmeasured time-invariant variables that are omitted from a regression model (Halaby 2004). To correct for potential problems with heterogeneity bias, fixed effects models control for omitted variables that are time invariant and do not vary across cases. This is done by estimating unit-specific intercepts, which are the fixed effects for each case, and is similar to including dummy variables for $n - 1$ nations (Pandolfelli and Shandra 2013). A fixed effects approach is appropriate for cross-national analysis because time invariant unmeasured factors, such as climate or geography, could affect maternal, infant, and child mortality. Moreover, baseline levels of gender segregation that are particular to each country and which do not change during the time points in my analysis, could affect women's and children's health outcomes. Thus, a fixed effects approach should provide an efficient assessment of the relationship between national women's machineries and mortality rates because the associations between the variables are estimated net of unmeasured between country effects (Brady, Kaya, and Beckfield 2007). Generally, this modeling strategy is robust against missing control variables and closely approximates experimental conditions (Hsiao 2003).⁴⁷ The notation for the two way fixed effects model is as follows:

$$y_{it} = a + B_1x_{it1} + B_2x_{it2} + \dots + B_kx_{itk} + u_i + w_t + e_{it}$$

i = each country in the analysis,

t = each time period in the analysis,

y_{it} = dependent variable for each country at each time period,

a = the constant,

B_k = coefficients for each independent variable,

x_{itk} = independent variables for each country at each time point,

u_i = country-specific disturbance terms that are constant over time,

w_t = period-specific disturbance terms that are constant across all countries,

Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, South Africa, Swaziland, Tanzania, Togo, Uganda, and Zimbabwe.

⁴⁷ Hausman tests are statistically significant for only the infant mortality models that include female secondary schooling. This indicates that the country-specific error terms are not correlated with the independent variables included in the other models and thus, either fixed effects or random effects models are appropriate to estimate. For consistency across models, I present fixed effects for all equations, although the main effects are the same for the maternal and child mortality models using random effects.

and,

e_{it} = disturbance terms specific to each country at each time point.

In performing the analysis, I conducted diagnostic statistics to guard against potential violations of ordinary least square regression (OLS) assumptions. First, no Cook's *d* residuals are above 1.0, indicating that there appear to be no problems with influential outliers. Second, the coefficients for Breusch–Pagan tests are statistically significant, indicating heteroscedasticity is present in the models. Thus, I use robust standard errors to correct for this.

Findings

In Tables 12, 13, and 14, I present the two way fixed effects estimates of maternal mortality, infant mortality, and child mortality, respectively, in Sub-Saharan African nations. In equations 12.1 to 12.4, 13.1 to 13.4, and 14.1 to 14.4, I add the CEDAW commitment variable to the fully specified models from chapter 2, which include the dummy variable for the institutional location of national women's machineries, gender-absent health aid flows, gender-mainstreamed health aid flows, GDP per capita, democracy, HIV prevalence, and immunization prevalence. In equations 12.1/12.2/13.1/13.2/14.1/14.2, I include female secondary schooling while in equations 12.3/12.4/13.3/13.4/14.3/14.4, I include contraceptive prevalence. Likewise, in equations 12.1/12.3/13.1/13.3/14.1/14.3, I include access to an improved water source while in equations 12.2/12.4/13.2/13.4/14.2/14.4, I include access to an improved sanitation source. I structure the analysis in this way to avoid potential problems with multicollinearity.⁴⁸ To increase the reliability of the findings, in equations 12.5/13.5/14.5, I estimate the effects of the CEDAW variable independent of all but two baseline variables- gross domestic product per capita and democracy.

I begin by discussing the findings pertaining to gender-mainstreaming. First, I find that state commitment to the Convention on the Elimination of All Forms of Discrimination against Women is an important predictor of maternal mortality in Sub-Saharan African nations. In Table

⁴⁸ Variance inflation factor scores for female secondary schooling and contraceptive prevalence as well as for access to an improved water source and access to an improved sanitation source were above 2.5, suggesting potential problems with multicollinearity (Allison, 2005).

12, the coefficient for this variable is negative and statistically significant in both the fully-specified equations (12.1 to 12.4) and the partial equation (12.5) estimating the effects of state commitment to the CEDAW net of the other gender mainstreaming variables. Thus, greater state commitment to the provisions espoused in the Convention corresponds with lower levels of maternal mortality in Sub-Saharan African nations. However, this commitment does not translate into improvements in infant and child mortality in Sub-Saharan Africa. While the coefficient for the CEDAW index is negative in every equation in Tables 13 and 14, it fails to reach a level of statistical significance in any of the equations. Taken together, these findings lend only partial support to the hypothesis that state commitment to the CEDAW should be associated with improvements in both women's and children's health.⁴⁹

Second, as in chapters 1 and 2, I find that gender-mainstreamed health aid flows also reduce maternal, infant, and child mortality in Sub-Saharan Africa. The coefficient for this variable is negative and significant in every fully-specified equation in Tables 12, 13, and 14. Notably, a comparison of the standardized beta coefficients in Table 12 for gender-mainstreamed health aid flows and state commitment to the CEDAW indicates that commitment to the Convention has a substantially larger effect on maternal mortality than receipt of gender-mainstreamed, bilateral health aid in a Sub-Saharan African nation. For example, a one standard deviation increase in a state's commitment to the CEDAW decreases maternal mortality by .40 and .43 standard deviations, respectively, in equations 12.2 and 12.4, while a one standard deviation increase in gender-mainstreamed health aid only decreases maternal mortality by .16 and .12 standard deviations, respectively, in these equations. This suggests that a country's "ownership" or internalization of gender mainstreaming may be a more important predictor of its efficacy than donor directives to mainstream gender.

Third, as in chapters 1 and 2, I find that gender-absent health aid flows are not associated with maternal, infant or child mortality. The coefficient for this variable, while positive, fails to reach a level of statistical significance in any equation in which the variable is included in Tables 12, 13, or 14. Fourth, as in the prior chapter, I find that the institutional location of national women's machineries is not associated with women's and children's health outcomes in Sub-

⁴⁹ In alternative models not presented here, I substituted female child mortality for child mortality. Results were also not statistically significant.

Saharan African nations. The coefficient for the machineries variable also fails to reach a level of statistical significant in any equation in which the variable is included in Tables 12, 13, or 14.

Table 12 Fixed Effects CEDAW Regression Estimates of Maternal Mortality in Sub-Saharan Africa, 1995-2010

Independent Variables	Equation 12.1	Equation 12.2	Equation 12.3	Equation 12.4	Equation 12.5
CEDAW	-62.23** -.38 (24.03)	-64.34** -.40 (23.93)	-67.07** -.41 (25.04)	-70.31** -.43 (25.64)	-59.52* -.37 (33.01)
National women's machinery institutional location (1= ministry)	8.54 .01 (65.61)	-5.26 -.01 (66.37)	32.54 .05 (55.34)	20.81 .03 (53.34)	
Gender-absent health aid	34.62 .03 (50.88)	29.69 .02 (47.15)	22.02 .02 (44.92)	14.68 .01 (45.74)	
Gender-mainstreamed health aid	-173.92* -.15 (95.68)	-178.11* -.16 (101.78)	-139.29* -.12 (64.41)	-135.61* -.12 (69.74)	
Gross domestic product per capita	-275.14* -.95 (138.10)	-251.06* -.87 (140.56)	-246.90* -.86 (126.62)	-228.63* -.80 (129.40)	-191.19 -.67 (143.88)
Democracy	-15.91 -.09 (30.26)	- 7.78 -.04 (30.42)	- 19.17 -.10 (24.77)	-12.60 -.07 (23.44)	2.90 .02 (29.06)
HIV prevalence	27.75*** .63 (7.80)	29.05*** .66 (7.89)	30.25*** .69 (8.65)	31.07*** .71 (8.43)	
Female secondary schooling	-11.89 -.03 (72.23)	2.56 .01 (78.74)			
Contraceptive prevalence			-5.65** -.35 (1.90)	-5.94** -.37 (2.16)	

Immunization prevalence	-.37 -.10 (1.31)	-.41 -.11 (1.28)	-.68 -.17 (1.32)	-.70 -.18 (1.29)	
Access to improved water source	-3.30 -.90 (2.10)		-2.55 -.92 (1.56)		
Access to improved sanitation source		-1.14 -.43 (1.16)		-1.10 -.41 (.94)	
Constant	2355.14* * (940.33)	2065.57* (944.89)	2204.79* * (800.25)	2027.30* * (804.80)	1826.01* (938.64)
Year = 2000	-51.64 (48.72)	-80.90* (47.79)	-56.19 (42.98)	-74.03* (43.27)	-56.28 (52.24)
Year= 2005	-63.98 (80.70)	-112.45 (77.58)	-60.37 (58.00)	-88.37 (54.41)	-114.52* (61.64)
Year = 2010	-78.48 (107.11)	-144.23 (101.35)	-63.30 (71.21)	-98.48 (61.47)	-203.14** (62.87)
R-square	.77	.76	.80	.80	.64
Number of observations	93	93	93	93	93
Number of countries	40	40	40	40	40

*p < 0.05, **p < 0.01, and ***p < .001 for a one-tailed test. +In each cell, the first number is the unstandardized coefficient, the second number is the standardized beta coefficient, and the number in parentheses is the robust standard error.

Table 13 Fixed Effects CEDAW Regression Estimates of Infant Mortality in Sub-Saharan Africa, 1995-2010

Independent Variables	Equation 13.1	Equation 13.2	Equation 13.3	Equation 13.4	Equation 13.5
CEDAW	-1.54 -.11 (2.04)	-1.63 -.11 (1.96)	-2.57 -.18 (2.33)	-2.74 -.19 (2.37)	-1.03 -.07 (2.52)
National women's	2.74 .05	2.48 .04	4.45 .08	4.40 .08	

machinery institutional location (1= ministry)	(5.63)	(5.58)	(4.04)	(3.71)	
Gender-absent health aid	9.71 .10 (6.18)	9.48 .09 (5.83)	7.16 .07 (4.79)	6.83 .06 (4.73)	
Gender- mainstreamed health aid	-20.75* -.20 (9.92)	-20.72* -.20 (9.83)	-13.27* -.13 (6.22)	-13.11* .13 (6.21)	
Gross domestic product	-26.30* -.90 (13.47)	-26.31* -.90 (13.37)	-19.94 -.77 (12.08)	-20.96* -.81 (11.73)	-19.04 -.74 (14.03)
Democracy	-1.18 -.07 (2.37)	-1.04 -.06 (2.45)	-1.27 -.08 (1.78)	-1.25 -.08 (1.80)	.47 .03 (2.83)
HIV prevalence	2.41** .61 (.77)	2.42** .61 (.77)	2.58*** .65 (.68)	2.57*** .65 (.67)	
Female secondary schooling	5.96 .16 (9.86)	6.10 .17 (9.65)			
Contraceptive prevalence			-.76** -.53 (.23)	-.76** -.53 (.24)	
Immunization prevalence	.13 .36 (.14)	.13 .36 (.14)	.09 .26 (.14)	.09 .26 (.14)	
Access to improved water source	-.06 -.24 (.23)		-.02 -.10 (.17)		
Access to improved sanitation source		-.04 -.15 (.08)		-.05 -.19 (.07)	

Constant	206.97* (85.61)	205.10** (78.08)	197.70** (71.61)	203.85** (65.16)	204.38** (82.31)
Year = 2000	-8.55 (6.03)	-9.01 (5.76)	-5.93* (3.15)	-6.03* (2.92)	-4.78 (4.75)
Year= 2005	-17.89* (10.29)	-18.58* (9.74)	-12.07** (4.56)	-12.04** (4.10)	-13.23* (6.36)
Year = 2010	-23.75* (13.92)	-24.56* (12.61)	-13.92* (5.96)	-13.59** (4.53)	-21.78** (7.37)
R-square	.78	.78	.83	.83	.67
Number of observations	93	93	93	93	93
Number of countries	40	40	40	40	40

*p < 0.05, **p < 0.01, and ****p < .001 for a one-tailed test. +In each cell, the first number is the unstandardized coefficient, the second number is the standardized beta coefficient, and the number in parentheses is the robust standard error.

Table 14 Fixed Effects CEDAW Regression Estimates of Child Mortality in Sub-Saharan Africa, 1995-2010

Independent Variables	Equation 14.1	Equation 14.2	Equation 14.3	Equation 14.4	Equation 14.5
CEDAW	-1.30 -.05 (4.42)	-1.16 -.04 (4.41)	-2.59 -.09 (4.91)	-2.51 -.09 (5.08)	-1.72 -.06 (4.43)
National women's machinery institutional location (1= ministry)	7.16 .07 (10.41)	6.98 .06 (10.48)	11.30 .10 (8.14)	11.63 .11 (7.84)	
Gender-absent health aid	15.35 .07 (10.26)	15.64 .07 (9.66)	12.11 .06 (8.29)	12.31 .06 (8.10)	
Gender-mainstreamed health aid	-35.76* -.18 (19.36)	-36.11* -.19 (19.21)	-26.55* -.14 (13.32)	-26.65* -.14 (13.46)	

Gross domestic product per capita	-27.34 -.56 (24.62)	-25.80 -.52 (24.28)	-19.67 -.40 (22.52)	-20.26 -.41 (21.58)	-21.99 -.45 (23.67)
Democracy	-2.04 -.07 (4.38)	-1.90 -.06 (4.49)	-2.51 -.08 (3.34)	- 2.70 -.09 (3.22)	.63 .02 (4.72)
HIV prevalence	4.48*** .59 (1.26)	4.52* .60 (1.28)	4.91*** .65 (1.10)	4.88*** .65 (1.13)	
Female secondary schooling	2.35 .03 (16.54)	2.91 .04 (16.15)			
Contraceptive prevalence			-1.20** -.44 (.37)	-1.19** -.44 (.38)	
Immunization prevalence	.02 .03 (.29)	.02 .03 (.28)	-.04 -.06 (.30)	-.04 -.06 (.30)	
Access to improved water source	-.05 -.10 (.47)		.07 .15 (.36)		
Access to improved sanitation source		.03 .06 (.19)		.03 .06 (.16)	
Constant	275.18* (143.95)	261.86* (130.45)	250.19* (130.01)	255.67* (116.43)	283.45* (137.17)
Year = 2000	-16.47 (9.96)	-17.09* (9.55)	-15.34** (5.07)	-14.83** (4.88)	-10.47 (8.51)
Year= 2005	-33.45* (17.56)	-34.70* (16.28)	-29.23*** (8.32)	-28.41*** (6.86)	-28.64** (11.18)
Year = 2010	-45.57* (23.98)	-47.60* (21.25)	-37.30** (11.97)	-36.26*** (8.65)	-48.62*** (13.17)
R-square	.79	.79	.82	.82	.69

Number of observations	93	93	93	93	93
Number of countries	40	40	40	40	40

*p < 0.05, **p < 0.01, and ****p < .001 for a one-tailed test. +In each cell, the first number is the unstandardized coefficient, the second number is the standardized beta coefficient, and the number in parentheses is the robust standard error.

It is important to note that there are other factors that explain maternal, infant, and child mortality in Sub-Saharan Africa. First, I find that gross domestic product per capita is a strong predictor of maternal, infant and child mortality in Sub-Saharan African nations. For every one standard deviation increase in GDP per capita, the maternal, infant, and child mortality rates decrease by .80, .81, and .41 standard deviations, respectively, in equations 12.4, 13.4, and 14.4. While several prior studies substantiate the relationship between economic development and improved health outcomes for women or children (Burroway 2012; Pandolfelli and Shandra 2013; Shandra et al. 2010), this finding is in contrast to chapters 1 and 2, which find no association between GDP per capita and maternal mortality.⁵⁰ Second, I find that the prevalence of human immunodeficiency virus has a robust positive effect on maternal, infant, and child mortality in Sub-Saharan Africa as the coefficient for this variable is positive and significant in all equations in which the variable is included in Tables 12, 13, and 14. Unsurprisingly, the effect is large across all three dependent variables. For example, a one standard deviation increase in HIV prevalence increases the maternal mortality rate by .71 standard deviations in equation 12.5 and the infant and child mortality rates by .65 standard deviations in equations 13.5 and 14.5, respectively.

Finally, I find that higher rates of contraceptive prevalence also are associated with reductions in maternal, infant, and child mortality in Sub-Saharan Africa. While this is consistent with the findings in chapters 1 and 2, it is notable that the effects on maternal mortality of contraceptive prevalence are slightly lower than the effects of state commitment to the CEDAW. For example, in equation 12.3, a one standard deviation increase in state commitment to the CEDAW decreases the maternal mortality rate by .41 standard deviations, whereas a one

⁵⁰ Low variance inflation factor scores do not indicate multicollinearity between GDP per capita and CEDAW.

standard deviation increase in contraceptive prevalence decreases the maternal mortality rate by .35 standard deviations.

I conclude this section by noting the remaining non-significant findings. As in chapters 1 and 2, female secondary schooling, democracy, immunization prevalence, and access to improved water and sanitation sources do not significantly affect maternal, infant, or child mortality in Sub-Saharan African nations.⁵¹ The coefficients for these variables do not reach a level of statistical significance in any of the equations in Tables 12, 13, or 14.

Discussion and Conclusion

In this article, I contribute to the literature on the efficacy of international human rights treaties and gender mainstreaming in a novel way. As I note previously, while a considerable body of literature examines whether international legal regimes affect state behavior, very few empirical studies have examined the efficacy of the CEDAW on gender equality outcomes. Moreover, the conclusions that can be drawn from these studies are limited because they rely on one set of indices to measure gender equality. Because women's empowerment is a multidimensional phenomenon and governments may respond selectively to the CEDAW's provisions, additional studies are needed to further our understanding of how the CEDAW may affect specific dimensions of women's and children's rights. Further, because the CEDAW is the only international human rights treaty to employ the framework of gender mainstreaming, empirical analysis of its effects on women's and children's health outcomes provides insight into the ability of gender mainstreaming to improve the well-being of women and their children.

To test the effects of the CEDAW, I construct cross-national models that examine the relationship between state commitment to the Convention and women's and children's health outcomes in Sub-Saharan Africa. I find that stronger commitment to the CEDAW is associated with lower levels of maternal mortality, but notably, not with lower levels of infant or child mortality. This may be because national maternal and child health initiatives in the developing

⁵¹ Following Burroway (2012) and Jorgenson and Rice (2005), I also regressed female secondary school enrollment on gross domestic product per capita and used the residuals as a measure of female secondary school enrollment since the variable is often highly correlated with economic development. The variable never reaches a level of statistical significance in any of these models and thus, is not reported. In separate models, I also lagged female secondary schooling by five years, but likewise, the variable never reaches a level of statistical significance and is not reported.

world traditionally have focused on the needs of infants and young children rather than on the needs of mothers (Rosenfield and Maine 1985). Even though the causes of maternal death differ from the causes of child death, and thus the interventions to prevent them also differ, state health policy and programming have tended to assume that “whatever is good for the child is good for the mother” (Rosenfield and Maine 1985: 83). Therefore, state commitment to the CEDAW may not have a significant effect on infant and child mortality because child health is already accorded priority in national health programs in Sub-Saharan Africa whereas countries with stronger commitment to the CEDAW are more likely to internalize the values of maternal health espoused in the Convention and focus on the distinct healthcare needs of mothers in addition to the needs of infants and young children. To begin to test this proposition, qualitative case studies comparing the national health priorities of countries with low and high commitment to implementing the provisions of the CEDAW would be needed.

I also find that state commitment to the CEDAW is a more important predictor of maternal mortality in Sub-Saharan Africa than gender-mainstreamed bilateral health aid flows. This finding concurs with much of the theoretical literature and case study analysis of gender mainstreaming, which finds that while donor mandates tied to the allocation of funding drive the diffusion of gender mainstreaming as a policy model, gender mainstreaming is more successful when organizations internalize and commit to the principles of gender mainstreaming and take ownership of the policy process (Daly 2005; James-Sebro 2005; Meitzen-Dick and Pandolfelli unpublished).

Accordingly, I offer specific policy suggestions based on these findings. As noted in the prior chapters, Sub-Saharan Africa has the highest rates of both maternal and child mortality in the world (World Health Organization 2010) and moreover, is not on track to meet the MDG target rates of reducing maternal mortality by three quarters and under-five child mortality by two thirds by 2015 (Economic Commission for Africa 2013). Because this study finds that state commitment to the CEDAW is a strong predictor of maternal mortality, civil society should petition states weakly committed to the CEDAW to strengthen their obligations to the Convention. For example, non-governmental organizations (NGOs) can lobby governments to withdraw their reservations to the CEDAW and to submit the required national reports to the CEDAW Committee detailing concrete measures they are taking to mainstream gender in order to foster women’s and children’s health rights. At the same time, NGOs can submit their own

shadow reports to the CEDAW Committee requesting that state maternal and child health initiatives are designed –and resourced –to address the needs of mothers in addition to infants and young children. Moreover, because the findings point to the importance of stakeholders taking ownership of the gender mainstreaming project, femocrats –or gender mainstreaming advocates within the state –should continue to promote gender mainstreaming as a policy model for improving the welfare of women and families, independent of donor directives to mainstream gender.

There is an important methodological implication that corresponds with this research. Prior studies' reliance on the Cingranelli-Richards (CIRI) women's rights indices to model the effects of the CEDAW provide a valuable, but limited, understanding of the Convention's effectiveness. Since prior qualitative research suggests that states may elect to implement certain sectoral provisions of the CEDAW over others, it follows that analyses of the efficacy of the Convention should be modeled for specific dimensions of women's rights (e.g. health, education, political participation). I have contributed to this effort by modeling the relationship between commitment to the CEDAW and women's and children's health rights. However, the Convention may be more or less effective at fostering women's rights in other sectors of development.

I conclude with some possible directions for future research. First, the effects of state commitment to the CEDAW on maternal and child health may differ in different regions of the world. This is because it may be more or less contentious for states in other areas to extend rights to women and girls, and thus the costs of compliance with the CEDAW's provisions on health may be higher or lower depending on regional variations in gender norms and extant levels of gender discrimination. Thus, future research should assess the relationship between state commitment to the CEDAW and maternal and child health outcomes, regionally. Second, as more individuals and groups make use of the Optional Protocol to the CEDAW by lodging complaints against states for violations of women's rights, it will become possible to examine whether the Protocol is an effective mechanism for holding states accountable to their obligations to improve maternal and child health.⁵² Third, as noted previously, the key finding presented in this chapter that state commitment to the CEDAW is associated with reductions in

⁵² The CEDAW Committee has considered 12 complaints against eight countries, one of which focused on maternal mortality (UN Women 2013).

maternal mortality, but not with reductions in infant and child mortality, signals the need for qualitative case studies that map state commitment levels to the CEDAW with national health policy priorities in order to disentangle the pathways that may account for this discrepancy. Finally, while this study furthers our understanding of how the CEDAW affects women's and children's health rights, additional studies on other dimensions of gender equality are needed so that we may develop a richer understanding of the CEDAW's usefulness as a gender-mainstreaming policy instrument for fostering the full range of women's rights.

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Table 15 Ratification of the CEDAW by Sub-Saharan African Nations

Country	Year CEDAW Ratified	Year Optional Protocol Ratified
Angola	1986	2007
Benin	1992	-
Botswana	1996	2007
Burkina Faso	1987	2005
Burundi	1992	-
Cameroon	1994	2005
Cape Verde	1980	2011
Chad	1995	-
Comoros	1994	-
Congo (Rep.)	1982	-
Cote d'Ivoire	1995	2012
Djibouti	1998	-
Equatorial Guinea	1984	2009
Eritrea	1995	-
Ethiopia	1981	-
Gabon	1983	2004
Gambia	1993	-
Ghana	1986	2011
Guinea	1982	-
Guinea-Bissau	1985	2009
Kenya	1984	-
Lesotho	1995	2004
Liberia	1984	-
Madagascar	1989	-
Malawi	1987	-
Mali	1985	2000
Mauritania	2001	-
Mauritius	1984	2008
Mozambique	1997	2008
Namibia	1992	2000
Niger	1999	2004
Nigeria	1985	2004
Rwanda	1981	2008
Senegal	1985	2000
South Africa	1995	2005
Swaziland	2004	-
Tanzania	1985	2006
Togo	1983	-
Uganda	1985	-
Zimbabwe	1991	-

Table 16 CEDAW Provisions Related to Maternal and Child Health

Provision	Text	CEDAW Source
Health	<p>States Parties shall take all appropriate measures to eliminate discrimination against women in the field of health care in order to ensure, on a basis of equality of men and women, access to health care services, including those related to family planning.</p> <p>States Parties shall ensure to women appropriate services in connection with pregnancy, confinement and the post-natal period, granting free services where necessary, as well as adequate nutrition during pregnancy and lactation.</p>	Article 12
Sex role stereotyping and prejudice	<p>States Parties shall take all appropriate measures:</p> <p>--To ensure that family education includes a proper understanding of maternity as a social function and the recognition of the common responsibility of men and women in the upbringing and development of their children, it being understood that the interest of the children is the primordial consideration in all cases.</p>	Article 5
Education	<p>States Parties shall take all appropriate measures to eliminate discrimination against women in order to ensure to them equal rights with men in the field of education and in particular to ensure, on a basis of equality of men and women:</p> <p>--The reduction of female student drop-out rates and the organization of programmes for girls and women who have left school prematurely;</p> <p>--Access to specific educational information to help to ensure the health and well-being of families, including information and advice on family planning.</p>	Article 10
Employment	<p>In order to prevent discrimination against women on the grounds of marriage or maternity and to ensure their effective right to work, States Parties shall take appropriate measures:</p> <p>To provide special protection to women during pregnancy in types of work proved to be harmful to them.</p>	Article 11
Rural women	<p>States Parties shall take all appropriate measures to eliminate discrimination against women in rural areas in order to ensure, on a basis of equality of men and women, that they participate in and benefit from rural development and, in particular, shall ensure to such women the right:</p> <p>--To have access to adequate health care facilities, including information, counseling and services in family planning;</p> <p>--To enjoy adequate living conditions, particularly in relation to</p>	Article 14

housing, sanitation, electricity and water supply, transport and communications.

Marriage and family life

Bearing in mind the great contribution of women to the welfare of the family and to the development of society, so far not fully recognized, the social significance of maternity and the role of both parents in the family and in the upbringing of children, and aware that the role of women in procreation should not be a basis for discrimination but that the upbringing of children requires a sharing of responsibility between men and women and society as a whole.

Preamble,
Article 16

States Parties shall take all appropriate measures to eliminate discrimination against women in all matters relating to marriage and family relations and in particular shall ensure, on a basis of equality of men and women:

- The same right to enter into marriage;
- The same right freely to choose a spouse and to enter into marriage only with their free and full consent;
- The same rights and responsibilities during marriage and at its dissolution;
- The same rights and responsibilities as parents, irrespective of their marital status, in matters relating to their children; in all cases the interests of the children shall be paramount;
- The same rights to decide freely and responsibly on the number and spacing of their children and to have access to the information, education and means to enable them to exercise these rights.

The betrothal and the marriage of a child shall have no legal effect, and all necessary action, including legislation, shall be taken to specify a minimum age for marriage and to make the registration of marriages in an official registry compulsory.

Source: Convention on the Elimination of all Forms of Discrimination against Women; Available at <http://www.un.org/womenwatch/daw/cedaw/text/econvention.htm#intro>

Table 17 Sample Descriptive Statistics: CEDAW

Variable N=93	Mean	Standard Deviation	Minima	Maxima
Maternal mortality (per 100,000 live births)	546.44	262.40	28	1300
Infant mortality (per 1,000 live births)	75.49	24.87	13	122.40
Child mortality (per 1,000 live births)	122.85	47.37	15.20	234.70
CEDAW Index (residuals)	1.14e-08	1.80	-5.83	3.20
National women's machinery (institutional location)	.69	.47	0	1
Gender-absent health aid, logged (percentage of GDP, 2010\$)	.18	.22	0	.97
Gender-mainstreamed health aid, logged (percentage of GDP, 2010\$)	.19	.27	0	1.17
Gross domestic product per capita, logged (2010 US\$)	6.09	.97	4.74	8.55
Democracy (not free: 1-2; partially free: 3-5; free: 6-7)	4.12	1.58	1	7
HIV prevalence (percentage of population ages 15-49)	5.77	7.03	.1	26.8
Female secondary schooling, logged (percentage of female population of secondary school age)	3.21	.71	1.40	4.57
Contraceptive prevalence rate (percentage of women ages 15-49)	24.54	18.94	1.7	76
Immunization prevalence (percentage of children 1 year)	73.86	18.49	26.25	99

of age or younger)

Access to improved water source (percentage of population)	65.25	17.55	20	99
Access to improved sanitation source (percentage of population)	33.59	22.79	4	99
Year	2003.33	4.91	1995	2010

CONCLUSION TO THE DISSERTATION

As discussed in the introduction to this dissertation, the positive relationship between women's status and maternal and child health outcomes in developing countries is well documented in the sociological literature. Accordingly, it recommends that states enact policies to end gender discrimination and foster women's empowerment. Since the Fourth World Conference on Women held in Beijing in 1995, gender mainstreaming has been employed as *the* global policy model for transforming gender relations and advancing the wellbeing of women and children. Advocating a twin-track approach of integrating a gender analysis into all policies and programs and designing specific interventions to improve women's and girls' status, gender mainstreaming has become "a central pillar of development discourse, policy and practice" (Parpart 2014: 382).

However, despite this prominence, very little research has examined the effectiveness of gender mainstreaming on women's and children's outcomes. As Moser and Moser (2005: 19 as cited in Van Eerdewijk and Davids 2014) find in a global review of gender mainstreaming among bilateral donors, international agencies and NGOs, "the outcomes and impact of implementation in terms of gender equality are still largely unknown." Or as Brouwer (2003: 4) emphasizes, "Evaluation studies (of gender mainstreaming) have been pre-occupied with the strategy of mainstreaming itself, failing to address the results thereof for women and gender equality." In this dissertation, I address this gap in the literature by conducting the first cross-national quantitative analysis of gender mainstreaming on maternal and child health.

Specifically, the dissertation uses two-way fixed effects ordinary least squares regression analysis to estimate the effects of gender-mainstreamed bilateral health aid flows, national women's machineries (NWM), and state commitment to the Convention on All Forms of Discrimination against Women (CEDAW) on maternal, infant, and child mortality in Sub-Saharan Africa from 1995 to 2010. In doing so, I aim to answer the following research question: is gender mainstreaming an effective policy model for improving women's and children's health?

In chapter 1, I test the hypothesis that interventions which fail to mainstream gender may erode women's well-being or at best fail to improve it. I find that while gender-absent health aid to Sub-Saharan Africa does not adversely affect women's and children's health outcomes,

neither is it associated with reductions in maternal, infant, or child mortality. In contrast, higher levels of gender-mainstreamed health aid *are* associated with lower levels of maternal, infant, and child mortality. Although the effects are small, their impact relative to gender-absent health aid is striking. Taken together, the results support feminist claims that development interventions must mainstream gender in order to realize improvements to women's and children's well-being.

In chapter 2, I examine whether the institutional location of national women's machineries is an important predictor of their efficacy. The literature on gender machineries hypothesizes that stand-alone national ministries for women and children are less effective than national women's machineries integrated into units of the government because ministries for women and children are marginalized and lack the ability to adequately mainstream gender into legislation, policy and programs. However, I find no evidence of an association between the institutional location of national women's machineries and maternal and child health outcomes in Sub-Saharan Africa.

In chapter 3, I explore the relationship between state commitment to the CEDAW, and maternal, infant, and child mortality. Measuring state commitment as a composite of the number of years since a nation ratified the Convention; the number of reservations a nation entered upon ratification; and the cumulative number of progress reports a nation has submitted to the CEDAW committee, I find that higher levels of state commitment to the provisions espoused in the Convention correspond with lower levels of maternal mortality in Sub-Saharan African nations. Moreover, the magnitude of the effect is larger than the effect of gender-mainstreamed, bilateral, health aid flows. However, commitment to the CEDAW does not translate into improvements in infant and child mortality in Sub-Saharan Africa.

Before discussing the implications of these findings, two important limitations need to be considered. First, while fixed effects models control for unobserved country-specific and time-invariant factors that affect maternal, infant, and child mortality, they do not control for unobserved time-varying determinants of maternal and child health. Consequently, the estimated coefficients of the gender mainstreaming variables presented in this analysis may be biased if the variables are correlated with the error terms in the models. For example, if countries tend to receive more gender-mainstreamed health aid as women's access to basic health infrastructure declines over time within a country, the positive effects of gender-mainstreamed health aid on maternal and child health would be underestimated (Mishra and Newhouse 2009). Conversely, if

donors reward countries with more gender-mainstreamed health aid for improving women's access to healthcare, the beneficial effects of gender-mainstreamed health aid on women's and children's health outcomes would be overestimated. However, a recent analysis of need-based and reward-based allocation of aid by bilateral donors finds that donors tend to allocate health aid based on need rather than reward (Dreher, Gehring, Klasen 2013), suggesting that if the coefficients for the gender-mainstreamed health aid variables are biased, they are likely to have underestimated the beneficial effect of gender-mainstreamed, bilateral, health aid flows on maternal, infant, and child mortality.

Second, it is possible that the statistically significant relationship observed between state commitment to the CEDAW and maternal mortality may be due to reverse causality. For example, a Sub-Saharan African nation may be more likely to commit to the CEDAW when its levels of maternal health are high because the cost of compliance is low (Cole 2012; Cho 2010). While the use of panel data over cross-sectional data minimizes this issue (Berrington, Smith, and Sturgis 2006), in order to fully address reverse causality, instrumental variables exogenous to maternal, infant, and child mortality but correlated with state commitment to the CEDAW would need to be employed. Given the difficulty of finding cross-national data available for multiple time points that strictly meet these conditions, the analysis follows most prior studies on human right treaties and does not test for reverse causality. While future research should identify appropriate instrumental variables, there is reason to believe that the relationship between state commitment to the CEDAW and maternal mortality occurs in the direction hypothesized. Namely, if a state's commitment to the CEDAW is a function of its levels of maternal health, then it should follow that a state's commitment to the CEDAW should also be a function of its levels of children's health since the CEDAW directs nations to improve the wellbeing of children, particularly the girl child. Thus, a state also should be more likely to commit to the CEDAW when its levels of children's health are higher because the cost of compliance is lower. Yet, there is no statistically significant relationship between state commitment to the CEDAW and infant and child mortality, suggesting that a state is not more likely to commit to the CEDAW based on its maternal and child health indicators.

Returning to the central research question of this dissertation, the findings suggest that gender mainstreaming has led to improvements in maternal and child health outcomes in Sub-Saharan Africa. First, when integrated into bilateral health aid interventions, gender

mainstreaming yields improvements in maternal, infant, and child mortality. Further, the analysis presented in chapter 1 suggests that gender mainstreaming has an effect on maternal and child health outcomes independent of HIV/AIDS and family planning interventions that mainstream gender. While future research should disaggregate *all* gender-absent and gender-mainstreamed health aid by *type of* intervention as more data are screened against the gender marker in order to determine the relative effectiveness of the various health components that mainstream gender, the findings presented in chapter 1 point to the need to integrate gender into all components of the health sector. Second, when states commit to the Convention on All Forms of Discrimination against Women, gender mainstreaming yields improvements in maternal mortality. While commitment to the Convention does not explain variation in infant or child mortality, this may be because child health is typically accorded more priority in national health programs in Sub-Saharan Africa than maternal health, and thus state commitment to the CEDAW may reflect a focus on the distinct healthcare needs of mothers in addition to the needs of infants and young children.

Third, although the institutional location of national women's machineries is not associated with improvements in maternal, infant or child mortality in Sub-Saharan Africa, these findings may indicate that the specific strategy of gender mainstreaming is necessary for realizing health gains for women and children. Otherwise, if *any* policy targeting women was sufficient for improving health outcomes, one would expect NWMs in Sub-Saharan Africa, some of which mainstream gender and some of which adopt a traditional focus on "women's issues," to explain some variation in maternal and child health outcomes. This interpretation about the importance of the specific strategy of gender mainstreaming is further corroborated by the findings in chapter 1 since the gender-absent health aid flows measured in the models include funding for interventions that target women but do not mainstream gender and these flows are not associated with reductions in maternal, infant or child mortality. For example, of the health aid that was screened for gender in the OECD Creditor Reporting System database, more than 60 percent and 50 percent of reproductive health aid did not mainstream gender in 1995 and 2000, respectively. Taken together, these findings support feminist claims that development policies and programs that merely target women are not sufficient for improving the wellbeing of women and children; they must also mainstream gender in order to ensure that gender equality is explicitly promoted.

However, an alternative interpretation of the findings on national women's machineries is that the specific strategy of gender mainstreaming may matter less than the ability of NWMs to implement *any* policy promoting the wellbeing of women and children. Although interventions targeting traditional "women's issues" may be more palatable politically than gender mainstreaming interventions, and thus more likely to be implemented by NWMs in Sub-Saharan Africa, it also is possible that NWMs adopting a traditional Women in Development approach suffer the same structural constraints, such as a lack of financial and human resources, as NWMs adopting a gender mainstreaming approach. In this view, implementation obstacles, not the specific type of women/gender policy pursued, would explain the absence of an association between NWMs and maternal and child health outcomes. This interpretation is supported by recent qualitative assessments of gender mainstreaming which find that although there is a clear theoretical distinction between gender mainstreaming and its predecessor WID, in practice the distinction is more muddled among development stakeholders (Parpart 2014).

Moreover, the finding in chapter 3 that state commitment to the CEDAW is an important predictor of maternal health underscores the importance of the implementation, not merely the adoption, of gender mainstreaming policy since states that are more committed to the CEDAW are more likely to implement its provisions. The fact that the magnitude of the effect of the CEDAW variable is larger than that of the gender-mainstreamed health aid variable also suggests that while donor funding for gender mainstreaming is critical to improving women's and children's health outcomes, gender mainstreaming is most effective when states take ownership of gender mainstreaming policy and commit to its implementation.

In sum, although qualitative assessments of gender mainstreaming suggest that it has failed to transform gender relations and advance women's rights, and recent debate has focused on whether gender mainstreaming should be abandoned as a policy model (Van Eerdewijk and Davids 2014), the findings of this study provide evidence that gender mainstreaming has met with some success in Sub-Saharan Africa at improving maternal and child health outcomes and accordingly, should not be abandoned. However, feminists' concerns that gender mainstreaming has not been implemented adequately are warranted. Greater attention should thus be paid to addressing the sources of resistance to gender mainstreaming among development stakeholders. This dissertation may aid in that endeavor by providing quantitative cross-national evidence of the efficacy of gender mainstreaming.

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