Impact of Foreign Aid on Sexual and Reproductive Health and Rights (SRHR) Outcomes in Low and Middle-Income Countries

해외원조가 저개발도상국의 성생식보건 및 권리에 미치는 영향

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Gohtbyeol Kim

Department of Health Care Management and Policy

Graduate School of Public Health

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지도 교수 김선영

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부위원장   조성일   (인)

위   원   김선영   (인)

Abstract

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Gohtbyeol Kim

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Background: Achievement of sexual and reproductive health and rights (SRHR) is an on-going global public health challenge. Around 4.3 billion people of reproductive age do not have adequate access to sexual and reproductive health services, more than 30 million women do not give birth in a health facility, and more than 350 million men and women are infected with sexually transmitted infections (STIs), which are treatable (Starr et al., 2018). Discussions to address the challenge has been carrying on since 1970s through population related conferences such as the World Population Conference at Bucharest in 1974, and the recent International Conference on Population and Development (ICPD) in 2019, which was held to revise the program of action of ICDP 1994, and to accelerate the progress of achieving SRHR. Moreover, components of SRHR have been both included as part of the millennium development goals (MDGs), and sustainable development goals (SDGs). Despite global discussions on addressing challenges in achieving SRHR, financing measures to improve SRHR continues to remain limited. Therefore, this study aims to examine the relationship between SRHR outcomes and foreign aid by exploring whether foreign aid has a positive impact in improving SRHR related

health indicators.

Methodology: In order to examine the relationship between SRHR outcomes and foreign aid, this study performed a country-level panel data regression with observations from 132 low and middle-income countries (LMICs) from years 2002 to 2017. SRHR related health indicators selected for the study were maternal mortality ratio (per 100,000 live births), adolescent fertility rate (births per 1,000 women ages 15-19), births attended by skilled staff (% of total), contraceptive prevalence (% of women ages 15-49 who are practicing or whose sexual partners are practicing contraception), prevalence of HIV (% of population ages 15-49 infected with HIV), and women who experienced violence by an intimate partner (% of total). All the SRHR indicators were collected from the World Bank's World Development Indicators, and Institute for Health Metrics and Evaluation (IHME) database. Foreign aid was defined as amount of official development assistance (ODA) towards population policies/programs and reproductive health (CRS Code 130) as well as private sector funds from the Bill and Melinda Gates Foundation and corporate donations in form of private sector in-kind contributions to NGOs. ODA data was collected from OECD's Creditor's Reporting System (CRS) while private sector fund was collected from IHME's development assistance for health (DAH) database. Education level, urbanization and number of physicians were selected as control variables.

Results: Descriptive analysis reveal that the total amount of foreign aid is steadily increasing from 2002 to 2017. Regarding ODA, most of its share is disbursed to social infrastructure and services sector, in which health related topics such as health in general, population polices and reproductive health, and WASH receive most of the ODA. In addition, proportion of ODA and private funds towards reproductive health care and family planning projects are continuously increasing since 2002 although most of the aid are channeled towards STD and HIV control.

Analysis from fixed-effects regression shows that that foreign aid does have a positive impact on some SRHR indicators even though it is minimal. On a global level, results reveal that ODA is the only source of foreign aid that shows effectiveness, especially when lagged by one or two years. ODA is effective on maternal mortality ratio, births attended by skilled staff and contraceptive prevalence, and percentage of women who have experienced IPV but private sector funds are not effective even if lagged by one or two years. When results are grouped by income levels, foreign aid is effective especially in low income and lower-middle-income economies. Maternal mortality ratio, births attended by skilled staff, and prevalence of IPV decreases with statistical significance especially in low-income economies. In addition, private sector fund are the only source of aid that had a stronger impact on reducing adolescent fertility rate in both low-income and lower-middle-income economies than ODA. Despite the fact that most of the foreign aid is disbursed to HIV/AIDS projects, HIV prevalence was the only indicator that actually presented opposite direction. In other words, percentage of HIV infections actually increased when foreign aid is disbursed. One of the main reasons behind this result is that there is not enough variance in the percentage of HIV infections within countries.

Conclusion: Although results reveal that effectiveness of foreign aid does show statistical significance in maternal mortality ratio, adolescent fertility rate, births attended by skilled staff, contraceptive prevalence, and IPV prevalence, actual numbers confirm to have a very minor impact. For example, the strongest impact of foreign aid was in the area of contraceptive prevalence on a global level (1% increase in the amount of ODA disbursed to contraception related projects, contraceptive prevalence increased by 0.213% without years lagged (years fixed), and by 0.081% with years lagged (years fixed)). The weakest impact of foreign aid was in the area of adolescent fertility on a global level (1% increase in total amount of ODA to

population polces and reproductive health programs, adolescent fertility rate decreased by 0.013% without years fixed and by 0.008% with years fixed when years are not lagged). Furthermore, foreign aid was mostly effective when lagged by one or two years, indicating that effectiveness of foreign aid takes place at least one year after disbursements are made. In short, this study points out that SRHR is crucial in achieving human capabilities and value of life of all individuals but low and middle-income countries face strong financial challenges in improving their SRHR outcomes. As foreign aid shows statistical significance in improving certain SRHR outcomes, this study suggests that foreign aid is one of the many factors that can foster long term human development in resource poor low and middle-income countries.

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Chapter 1. Introduction

1.1. Background

Achievement of sexual and reproductive health and rights (SRHR) is one on-going global public health challenge. Recent statistics show that that 4.3 billion people of reproductive age have inadequate access to sexual and reproductive (SRH) services, more than 30 million women do not give birth in a health facility, more than 45 million have either inadequate access to or no antenatal care, more than 200 million women have unmet contraceptive needs, 25 million unsafe abortions take place each year worldwide, more than 350 million men and women need treatment for sexually transmitted infections (STIs), which are treatable, and at least 1/3 of women experience intimate partner violence (IPV) at some point in their lives (Starr et al., 2018).

Global discourse on sexual and reproductive health issues dates back to 1970s when population related conferences such as the World Population Conference at Bucharest in 1974 and the International Conference on Population at Mexico City in 1984 was launched to discuss the matters of sexual and reproductive health as a population and economics issue (UNFPA, 2014). However, the International Conference on Population and Development (ICDP) in 1994 shifted the perspective of sexual and reproductive issues from that of economics to public health and human rights, in which the term SRHR evolved (Yamin & Boulanger, 2013). ICPD's Program of Action (PoA), which was adopted by 179 countries, emphasized that access to sexual and reproductive health is a universal human right. In addition, the PoA highlighted the importance of international funding towards population development and health, requesting donor countries to meet their 0.7% of official development assistance (ODA)/gross national income (GNI) to increase the share of funding towards population development and health, and

specifically indicated the need for $5.7 billion by 2000, $6.1 million by 2005, $6.8 billion by 2010, and $7.2 billion by 2015 to support population health programs in general (UNFPA, 2014).

Recently in 2019, the Nairobi Summit on ICDP25 was held to accelerate progress in achieving SRHR. One of their main objective was to "build political and financial momentum to fulfill the unfinished business of ICPD Program of Action" (UNFPA, 2020, p.6). This implies that financial gaps continue to remain despite 25 years have passed since the establishment of ICPD PoA in 1994. In addition, UNFPA along with Johns Hopkins, University of Washington, Victoria University, and Avenir Health presented estimates on the global resources needed to achieve three main results at the conference. In order to achieve i) zero preventable maternal deaths, ii) zero unmet need for family planning, and iii) zero GBV and harmful practices against women and girls by 2030, financial support is strongly required especially in low-income countries that are unable to meet the needs solely through domestic funds (UNFPA, 2020).

Moreover, components of SRHR have been included in the millennium development goals (MDGs), and is also included in the current sustainable development goals (SDGs). Reducing the maternal mortality ratio was one of the main goals of MDGs while achievement of SRHR components are reflected across goal 3 related to health and well-being, and goal 5 related to gender equality and empowerment of women. Target 3.1 of SDG3 aims to reduce global maternal mortality ratio to less than 70 per 100,000 live births by 2030; target 3.2 aims to end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases, and other communicable diseases; and target 3.7 aims to ensure universal access to sexual and reproductive health-care services, including family planning, information and education, and the integration of reproductive health into national strategies and programs by 2030. Regarding gender-related targets, target 5.2 of SDG5 aims to eliminate all forms of violence against women and girls in the public and private spheres, including

trafficking and sexual and other types of exploitation; and target 5.6 aims to ensure universal access to SRH and reproductive rights as agreed in accordance with the Program of Action of the ICPD and the Beijing Platform of Action and the outcome documents of their review conferences (UN, 2016).

Despite the fact that discussion on SRHR achievement has been in place for decades and continues to be reflected in internationally agreed goals of SDGs, financing measures to improve SRHR still remains limited. Therefore, this study explores the role of foreign aid in achieving SRHR outcomes, and provide evidence to support the importance of the financial aspect, especially foreign aid, in improving SRHR outcomes in low and middle-income countries (LMICs).

1.2. Research Objectives

The main objective of this study is to examine the relationship between SRHR outcomes and foreign aid. In other words, this study aims to answer the following question: does the amount of foreign aid improve health indicators related to SRHR? If foreign aid is effective, it should have a positive association with SRHR outcomes.

This study defines foreign aid as ODA provided by all official donors listed in OECD, which includes DAC countries, non-DAC countries and multilaterals, and private sector funds provided by the Bill and Melinda Gates Foundation, corporate donations to NGOs and private sector financial contributions. Since the changing environment of global health includes private sector contributions and public-private partnerships, the study includes private sector funds as part of foreign aid. To capture the nature of SRHR situation, the study explores the following SRHR indicators: maternal mortality ratio per 100,000 live births, adolescent fertility rate (births per 1,000 women ages 15-19), percentage births attended by skilled staff, percentage of usage of contraception by women ages 15-19, number of new HIV infections per 1,000

uninfected population, and percentage of women ages 15 and older who have experienced physical or sexual violence from their intimate partner in the past year. Findings from this study hopes to contribute to policy evidence to support the importance for foreign aid in improving SRHR outcomes in LMICs.

Chapter 2. Literature Review

2.1. Definition of Main Concepts

The two main concepts explored in this study are SRHR and foreign aid. According to Starrs et al. (2018), SRHR is defined as "a state of physical, emotional, mental, and social wellbeing in relation to all aspects of sexuality and reproduction, not merely the absence of disease, dysfunction or infirmity. Therefore, a positive approach to sexuality and reproduction should recognize the part played by pleasurable sexual relationships, trust, and communication in the promotion of self-esteem and overall wellbeing" (p. 2646). Furthermore, achievement of SRHR relies on regarding sexual and reproductive health as a human right, and that all individuals should have access to sexual and reproductive health services, which meet the public health and human rights standard.

Foreign aid refers to "the international transfers of capital, good and services from a country or international organization for the benefit of the recipient country or its population" (Williams, 2020, para.1). The most common type of foreign aid is ODA, which comes from national governments for economic and welfare development of developing countries. ODA can be either in a form of loan or grant, planned or provided for emergency purposes, can be provided through bilateral or multilateral channels, and can be either tied or untied. Another source of foreign aid is private sector funds provided by philanthropies, charities, NGOs and civil society organizations such as the Gates Foundation and Oxfam. Moreover, foreign aid can also come from non-OECD DAC countries such as the Arab World or BRICS (Brazil, Russia, India, China, and South Africa) who are newly emerging donors of aid (Keeley, 2012).

2.2. Determinants and Measurements of SRHR

Starrs et al. (2018) provides an overview of global trends and factors affecting SRHR,

which are as follows: i) size and composition of populations, as needs are concentrated among women and men of reproductive age; ii) displacement and conflict, especially where women and girls in emergency situations are in need for SRH services due to increased risk of STIs, HIVs, unwanted pregnancy, maternal death and illness, as well as GBV; iii) socioeconomic and cultural determinants such as higher education, proportion of people living in poverty, urbanization; iv) gender norms and unequal power distribution, resulting in poor communication between partners in negotiating reproductive decision making; v) laws, policies and programs either suppressing or promoting SRHR.

WHO (2010) report also outlines several social determinants of SRHR. First of all, poverty can lead to poor reproductive health as women living in LMICs experience higher levels of morbidity and mortality caused by sexual reproductive health than women living in developed countries. Secondly, central-level policy makers and foreign donors strongly influence availability of sexual and reproductive health services as they are the ones who often decide the amount and source of sexual and reproductive health service, and to which population group the services should be mainly provided to. Thirdly, role of school and education promotes SRHR, especially among adolescent groups because girls attending schools are less likely to engage in premarital sexual activities or experience gender-related violence or have more access to contraceptive knowledge than their peers who are not attending school.

Measurements that can capture the sexual and reproductive health aspect of SRHR include maternal mortality ratio (per 100,000 live births), skilled birth attendance (% of total), incidence of HIV per 1,000 uninfected adults, proportion of women of reproductive age (aged 15-49 years) who have their needs met for family planning, and adolescent birth rate (per 1,000 women aged 15-19). Measurements that can capture the rights aspect of SRHR are violence against women from intimate partner (% of women aged 15 years or older who have

experienced physical or sexual violence by an intimate partner in previous 12 months), violence against women from person other than intimate partner (% of women aged 15 years or older who have experienced physical or sexual violence by non-intimate partner in previous 12 months), early marriage (percentage of women married before age 15 or 18), female genital mutilation (% of women aged 15-49), women decision making on contraceptive use and healthcare (% of women aged 15-49), and guarantee of equal access to sexual and reproductive health care (number of countries with laws and regulations regarding sexual and reproductive health care, information and education). Unfortunately, data on a global level is incomplete for all indicators except violence against women from intimate partner. In other words, the closest indicator that can capture the rights related to SRHR was percentage of women ages 15 and up who have experienced physical or sexual violence from their intimate partners. Although this indicator is not directly related to laws and policies, it provides an indication of women's rights in addressing IPV as an act that should be punished and hold perpetrators under the law.

2.3. Effectiveness of Foreign Aid on Health

In regards to literature on effectiveness of foreign aid on health outcomes, there is a mixed discussion. Some argue that foreign aid improves health outcomes, especially when aid is specifically tailored to the health sector. Others claim that foreign aid is ineffective and argue that discussion on effectiveness of foreign aid should emphasize effective use of foreign aid based on the five principles of the Paris Declaration, which are defined as ownership, alignment, harmonization, managing for results and mutual accountability.

According to an empirical study by Afridi and Ventelou (2013), foreign aid towards health channeled by both government and private sectors has a significant impact on adult mortality. The researchers assume non-cooperative interaction between donor and recipient government in their study and conclude that private sector funds are more effective in reducing

adult mortality rate. Mishra and Newhouse (2009) also argue that foreign aid towards health sector is positively correlated with infant mortality. Their study reveals that "doubling per capita health aid is associated with a 2 percent reduction in the infant mortality rate, implying that increasing per capita health aid from US\$1.60 to \$3.20 per year will lead to roughly 1.5 fewer infant deaths per thousand births" (p. 856). Furthermore, they emphasize the "micro-macro paradox" where aid is effective in specific health issues but not in health in general.

On the other hand, Williamson (2008) strongly argues that foreign aid to the health sector is ineffective in improving health outcomes even when GDP and quality of institutions based on Fraser freedom index and political freedom index are controlled. Aid reported to OECD's CRS is used to explore its relationship with five of the health indicators, which are infant mortality, life expectancy, death rate and immunizations, revealing that foreign aid does not have a positive impact on health. Wilson (2011)'s study also reveal that development assistance for health has no effect on mortality when economic growth has a negative effect. He further claims that there is no effectiveness of DAH despite the fact DAH has been increasing overtime, strongly arguing that "DAH appears to be following success, rather than causing it" (Wilson, 2011, p. 2032).

2.4. Global Trend in Foreign Aid and SRHR

Dieleman et al. (2016) reveal that from 1990 to 2015, a total of \$502.7 billion of DAH disbursed, in 2015 \$36.4 billion provided, which is a major increase from 1990 (\$7.2 billion), and 2000 (\$11.7 billion). Since 2010 DAH has been stable for around \$35.0 billion, and predicts that it will remain stable until 2040 at around \$64.1 billion. The authors also expect stagnation of DAH for the next 25 years, especially newly emerging actors such as the Global Fund, Gavi, PEPFAR could enter a period of constrained resources and donors may prioritize social sectors other than health. Moreover, the authors highlight that MDG-related DAH (ie. HIV/AIDS,

tuberculosis, malaria, child and newborn health, maternal health) increased the most compared to non-MDG related DAH (ie. other infectious diseases, non-communicable diseases, sector-wide approaches, and other), and along the same lines, DAH for maternal health and newborn and child health has continued to increase since 2010. Authors also reveal that across low-income countries in 2013, $0.71 of DAH was provided for every $1 of domestic government financing on average, making it a critical resource.

Claeys and Wuyts (2005) illustrate the trend in ODA allocated to SRHR and concludes that ODA has increased in SRHR sector since the ICPD in 1994 but political and financial support is uneven between donor countries. The authors also notes constraints in monitoring SRHR funding flows such as difficulty in disaggregating SRHR components, especially with increased use of SWAPs making it difficult to tract level of funding for SRHR issues within the general health sector; underreporting of SRH funds and programs, and large proportion of funds tailored specifically towards HIV/AIDs sector, stealing away from the total amount SRHR funds.

Taylor et al. (2013) conducted a systematic review on the with a focus on the impact of ODA on maternal and reproductive health outcomes. The authors reviewed literatures on impact of general aid and aid delivered under the Paris principles on MDG5 outcomes. Overall findings reveal that aid interventions may be associated with small improvements in maternal and reproductive health outcomes. In addition, there was a strong lack of evidence regarding target 5.4 (adolescent birth rate) and 5.6 (unmet need for family planning) indicators.

Grollman et al. (2017) provides estimates of ODA and grants from Bill and Melinda Gates Foundation, collectively calling it ODA+, to reproductive, maternal, newborn and child health (RMNCH) for 2013 and complete trends in RMNCH support between 2003-2013. Overall findings reveal that total ODA+ reached US$14 billion in 2013 of which 48% supported child health, 34% supported SRH, and 18% supported maternal and newborn health.

ODA+ also increased by 225% in real terms between 2003-2013. Child health received the most substantial increase followed by SRH. In 2013, bilateral donors disbursed 59% of all ODA+ to RMNCH.

Schäferhoff et al. (2019) reveal that there has been a decrease in funding allocated to SRHR in 2016 and 2017 (42% of overall health funding to SRHR) when compared to 2011 (52%). In 2017, most of the funding towards SRHR sector was allocated to HIV (70%) while other key reproductive sectors such as antenatal and postnatal care only accounted for 16%, family planning for only 9%. In addition, the authors predict that SRHR donor investments beyond 2020 will not increase because SRHR supporters have been maintaining or increasing SRHR budgets at relatively high levels in the first place, making it difficult to further increase the amount; and SRHR funding would have to compete with newly emerging challenges such as climate change. They also mention that only 2 of 31 countries in LICs will be able to self-fund SRH programs and thus donor funding is crucial to finance SRH especially in LICs.

2.5. SDG Targets and Indicators Related to Achieving SRHR Outcomes

In the SDGs, targets related to SRHR are reflected in Goal 3: Ensure healthy lives and promote well-being for all at all ages, and Goal 5: Achieve gender equality and empower all women and girls. The global community is making great efforts to achieve the target and the details of the target and current achievement at the global level is shown in Table 1 below.

Table 1. SDG Targets and Indicators Related to SRHR Outcomes

Goal 3: Ensure healthy lives and promote well-being for all at all ages		Current achievement (global)
3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births	3.1.1 maternal mortality ratio 3.1.2 proportion of births attended by skilled health personnel	3.1.1 216 persons (2015) 3.1.2 81.1% (2018)
3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases	3.3.1 number of new HIV infections per 1,000 uninfected population, by sex, age and key populations	3.3.1 0.3 person (both sexes, 2017)
3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programs	3.7.1 proportion of women of reproductive age (aged 15-49 years) who have their need for family planning satisfied with modern methods 3.7.2 adolescent birth rate (aged 10-14 years; aged 15-19 years) per 1,000 women in that age group	3.7.1 75.7% (2019) 3.7.2 43.9% (2018)
Goal 5: Achieve gender equality and empower all women and girls		
5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation	5.2.2 proportion of women and girls aged 15 years and older subjected to physical and/or sexual violence by persons other than an intimate partner in the previous 12 months, by age and place of occurrence	5.2.2 17.8% (age 15-49, 2017)
5.6 Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform of Action and the outcome documents of their review conferences	5.6.1 Proportion of women aged 15-49 years who make their own informed decisions regarding sexual relations, contraceptive use and reproductive health care. 5.6.2 number of countries with laws and regulations that guarantee women aged 15-49 years access to sexual and reproductive health care, information and education	5.6.1 56.7% (2014) 5.6.2 --

Source: UN SDGs, and UNWomen (2020), reorganized by author

Chapter 3. Methods

3.1. Study Design

In order to examine the relationship between SRHR outcomes and foreign aid, this study constructed a country-level panel dataset with observations from 132 countries from years 2002 to 2017. Because the year 2017 was the most recent and consistent data collected for the three of the five main SRHR indicators and information on which country foreign aid disbursed by the private sector was unavailable for 2018, year 2018 are excluded from this study. Details of the study sample, variables and methodology are explained below.

3.2. Study Sample Size

Out of 135 LMICs as defined by the World Bank in 2019, 132 countries were selected as the sample. Three countries (American Samoa, Dominica, and Kosovo) were excluded due to data unavailability. Table 2 below provides a list of 132 countries used as the study sample: 29 countries are classified as low-income economies, 50 countries as lower-middle-income economies, and 53 countries as upper-middle-income economies.

Table 2. List of Countries Used as Study Sample Classified into Income Groups

LOW-INCOME ECONOMIES ($1,035 OR LESS) = 29 countries		
Afghanistan	Guinea-Bissau	Sierra Leone
Burkina Faso	Haiti	Somalia
Burundi	Korea, Dem. People's Rep.	South Sudan
Central African Republic	Liberia	Sudan
Chad	Madagascar	Syrian Arab Republic
Congo, Dem. Rep	Malawi	Tajikistan
Eritrea	Mali	Togo
Ethiopia	Mozambique	Uganda
Gambia, The	Niger	Yemen, Rep.
Guinea	Rwanda	
LOWER-MIDDLE INCOME ECONOMIES ($1,036 TO $4,045) = 50 countries		
Angola	Honduras	Papua New Guinea
Algeria	India	Philippines
Bangladesh	Kenya	São Tomé and Principe

Benin	Kiribati	Senegal
Bhutan	Kyrgyz Republic	Solomon Islands
Bolivia	Lao PDR	Sri Lanka
Cabo Verde	Lesotho	Tanzania
Cambodia	Mauritania	Timor-Leste
Cameroon	Micronesia, Fed. Sts.	Tunisia
Comoros	Moldova	Ukraine
Congo, Rep.	Mongolia	Uzbekistan
Côte d'Ivoire	Morocco	Vanuatu
Djibouti	Myanmar	Vietnam
Egypt, Arab. Rep.	Nepal	West Bank and Gaza
El Salvador	Nicaragua	Zambia
Eswatini	Nigeria	Zimbabwe
Ghana	Pakistan	
UPPER-MIDDLE INCOME ECONOMIES ($4,046 TO $12,535) = 53 countries		
Albania	Gabon	Namibia
Argentina	Georgia	North Macedonia
Armenia	Grenada	Paraguay
Azerbaijan	Guatemala	Peru
Belarus	Guyana	Russian Federation
Belize	Indonesia	Samoa
Bosnia and Herzegovina	Iran, Islamic Rep.	Serbia
Botswana	Iraq	South Africa
Brazil	Jamaica	St. Lucia
Bulgaria	Jordan	St. Vincent and the Grenadines
China	Kazakhstan	Suriname
Colombia	Lebanon	Thailand
Costa Rica	Libya	Tonga
Cuba	Malaysia	Turkey
Dominican Republic	Maldives	Turkmenistan
Equatorial Guinea	Marshall Islands	Tuvalu
Ecuador	Mexico	Venezuela, RB
Fiji	Montenegro	

Source: The World Bank (2019), reorganized by author

3.3. Data Collection and Variables

3.3.1. Dependent Variables

In order to capture the SRHR status in LMICs, this study selected five SRHR indicators as dependent variables, which include i) maternal mortality ratio per 100,000 live births, ii) adolescent fertility rate (births per 1,000 women ages 15-19), iii) percentage of births attended by skilled staff, iv) contraceptive prevalence among women ages 15-49, v) percentage of people ages 15-49 infected with HIV, and vi) percentage of women ages 15 years and older

who experience physical or sexual violence from an intimate partner. These indicators were selected based on the components of SRHR provided by Starr et al. (2018), which are maternal and newborn health, contraception, GBV, reproductive cancers, HIV/AIDS and other STIs, abortion and infertility, as well as SDG targets and indicators. Data on SRHR indicators were collected from the World Bank's World Development Indicators.

Table 3. Dependent Variables and its Sources

SRHR Component	Indicator	Unit	Source
Maternal Health	Maternal mortality ratio (per 100,000 live births)	number of women who die from pregnancy-related causes while pregnant or within 42 days of pregnancy termination per 100,000 live births	World Bank, World Development Indicators (2002-2017)
	Adolescent fertility rate (births per 1,000 women ages 15-19)	number of births per 1,000 women ages 15-19	
	Births attended by skilled staff (% of total)	% of deliveries attended by personnel trained to give the necessary supervision, care, and advice to women during pregnancy, labor, and the postpartum period; to conduct deliveries on their own; and to care for newborns	
Contraception	Contraceptive prevalence, any methods (% of women ages 15-49)	% of women who are practicing, or whose sexual partners are practicing, any form of contraception. It is usually measured for women ages 15-49 who are married or in union	
HIV/AIDS/STIs	HIV prevalence (% of people ages 15-49)	% of people ages 15-49 who are infected with HIV	
Violence against women	Experience of physical and sexual violence from an intimate partner (% of women aged 15 and older)	% of women, aged 15 years and older, who experienced physical or sexual violence from an intimate partner in the past year	IHME

Source: World Bank and IHME, reorganized by author

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3.3.2. Explanatory Variables

Explanatory variables of this study are ODA and aid from private sector funds. ODA data were collected from OECD's Creditor Reporting System (CRS) while private sector funds were collected from IHME's Development Assistance for Health (DAH) database. Just as a footnote, IHME DAH data includes both public and private source of health aid but this study isolated private sources and public sources from DAH database. One of the reasons why the study used OECD CRS instead of IHME DAH to capture the amount public source of foreign aid is because the program sectors where the aid is disbursed to were divided in more detail in the OECD CRS database than IHME DAH. Furthermore, this study was unable to include humanitarian aid as another source of foreign aid because the data available through UNOCHA Financial Tracking System (FTS) database provided information on destination organization of the humanitarian aid rather than the destination of country at the time of study.

Table 4. Explanatory Variables and its Sources

Variable	Component	Unit	Source
ODA	ODA towards Population policies/ programs & reproductive health	Constant 2018 US$, million (gross disbursement)	OECD CRS (2002-2017)
Private Sector Fund	Contribution from the Bill and Melinda Gates Foundation	Constant 2018 US$, thousand	IHME DAH (2002-2017)
	Corporate donations in form of private sector in-kind contributions to NGOs	Constant 2018 US$, thousands	

Source: OECD CRS and IHME DAH Database, reorganized by author

3.3.3. Control Variables

Control variables such as education level, urbanization and number of physicians were collected from both the World Bank and UNDP database. These variables were selected based

on previous studies on aid effectiveness and health (Afridi and Ventelou, 2013; Mishra and Newhouse, 2009; Williamson, 2008; Wilson, 2011) and social determinants of SRHR. For instance, education level is included because more attending schools can help build knowledge on the importance of sexual and reproductive health, living in urban areas increase access to health services, and the number of physicians can reflect the overall health status of a country.

Table 5. Control Variables and its Sources

Variable	Indicator	Unit	Source
Education Level	Education Index (mean years of schooling and expected years of schooling)	0-1 (0 = low, 1 = high)	UNDP (2002-2017)
Urbanization	Urban population (people living in urban areas as defined by national statistical offices)	% of total population	World Bank, World Development Indicators (2002-2017)
# of Physicians	# of Physicians (Physicians include generalist and specialist medical practitioners)	Per 1,000 people	

Source: UNDP and the World Bank World database, reorganized by author

3.4. Method of Analysis

To examine whether foreign aid has an impact on SRHR outcomes in LMICs between year 2002 and 2017, panel regression analysis with fixed-effects was conducted using STATA 14.0. Fixed-effects was selected for this model after running the Hausman test. In all tests conducted, Prob>chi2 = 0.0000. The regression model used in this study is specified as:

$$Y_{it} = \alpha_i + \beta X_{it} + \gamma Z_{it} + \epsilon_{it} \text{ where,}$$

i = countries, t = year, α_i = country (fixed) effect, β = regression coefficient of explanatory variables, γ = regression coefficient of control variables, Z = control variables, ϵ = error term.

There are a few methodological details to be discussed for this model. First of all, this

study employed logarithmic transformation on all of the variables because the relationship between the dependent variables and the explanatory variables presented a non-linear relationship (see Appendix A), which is a similar strategy employed by Mishra and Newhouse (2009). The authors log their dependent variable, infant mortality, to fit a curved relationship and interpreted the results in percentage change. Secondly, the model uses lagged aid, lagging aid by both one and two years to explore when foreign aid actually takes effect. As many of the previous study mentions, the main reason for using lagged aid is to capture the influence of past aid on current health indicators and the long-term interest of donors (Afridi & Ventelou, 2013; Mishra and Newhouse, 2009; Williamson, 2008). Lastly, this study adds year dummy to control for time specific events as in Afridi & Ventelou (2013) and Williamson (2008) 's research.

Chapter 4. Results

4.1. Descriptive Analysis: Overall Trend in Health and Foreign Aid

Before exploring the relationship between SRHR indicators and foreign aid, this section provides a general overview of both ODA and private sector fund trend as well as an overall situation SRHR indicators from 2002 to 2017. This will provide a glimpse of changes in total amount of aid, compare how much aid health sector receives as opposed to other sectors, composition of population and reproductive health related aid, and changes in SRHR indicators by both globally and by three different income groups.

4.1.1. General ODA Trend

Figure 1 shows that the total amount of ODA provided by all official donors is constantly increasing between 2002 and 2018 despite a big downfall in 2007 when the global financial crisis has occurred. In terms of rate of increase, the highest rate of increase occurred in 2005 (38.83% increase from 2004) while the sharpest decrease occurred in 2007 (decreased to -31.81% from 2006). Disbursement of ODA does rise back up in 2008 and remains fairly constant until 2018.
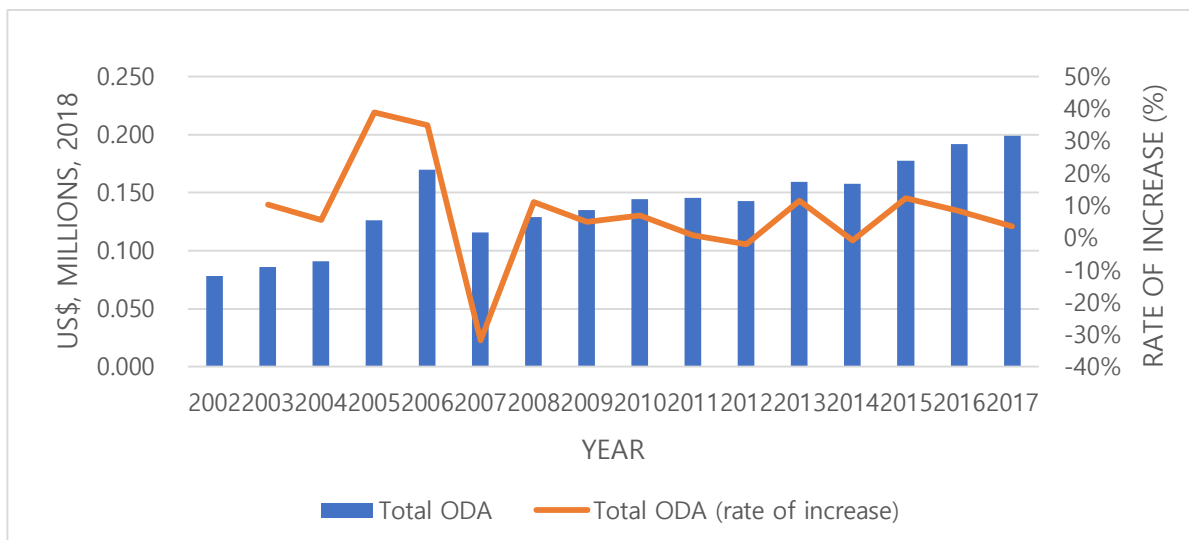
Figure 1. Total ODA Trend from 2002-2017

When the total amount of ODA disbursement is broken down into income groups, low-income and lower-middle income countries receive the largest share of ODA (see Figure 2 below).
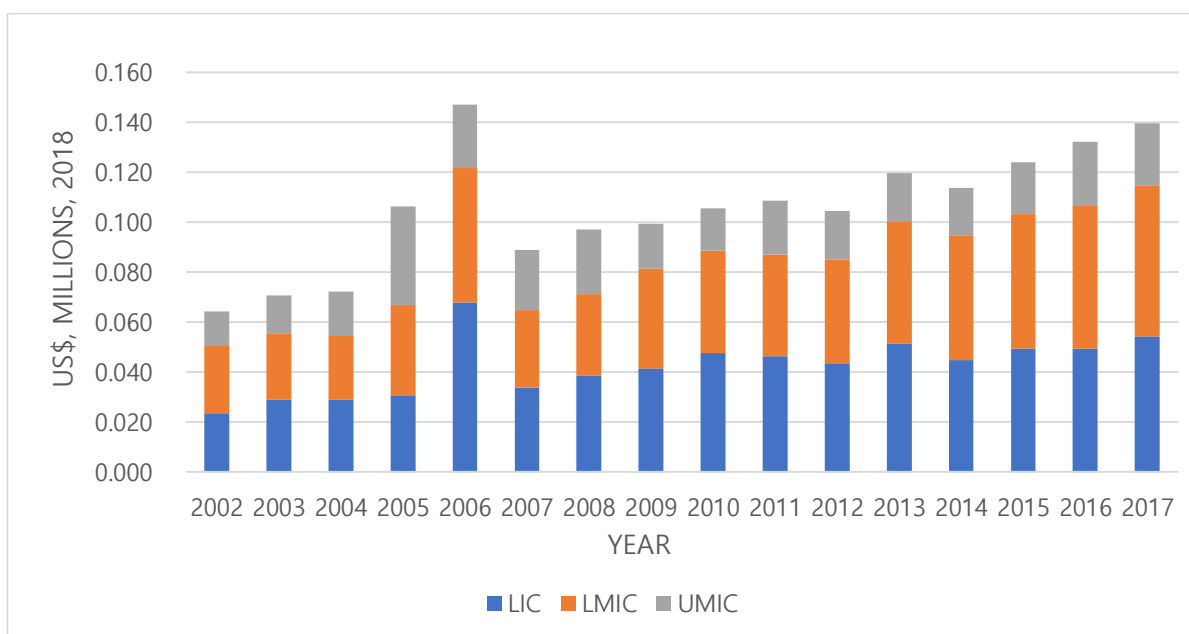
Figure 2. Total amount of ODA Disbursed by Income Group from 2002-2017

Figure 3 provides a general overview of the total amount of ODA disbursement by each sector. Largest amount of ODA is disbursed towards the social sector, which includes education, general health, population policies and reproductive health, water supply and sanitation (WASH), government and civil society, and other. For example, 41.13% of total ODA was disbursed to social infrastructure and services in 2017.
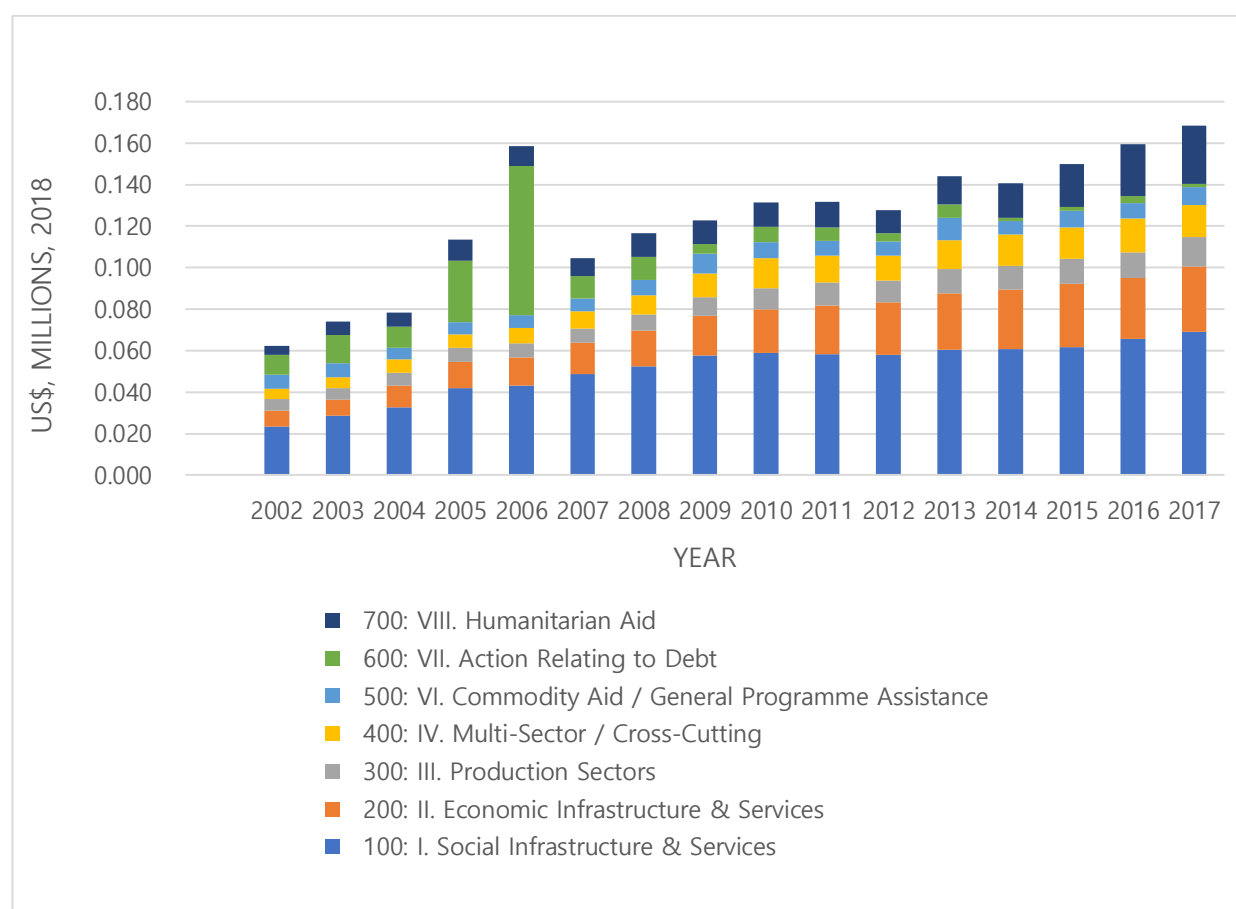
Figure 3. Total ODA Trend from 2002-2017 (by sector)

When the total amount of ODA disbursed by each sector is further divided into income groups, social infrastructure and services sector receives the largest share of ODA in low-income economies (see Figure 4). For instance, 45.83% of ODA is channeled towards social infrastructure and services sector in low-income economies in 2017.
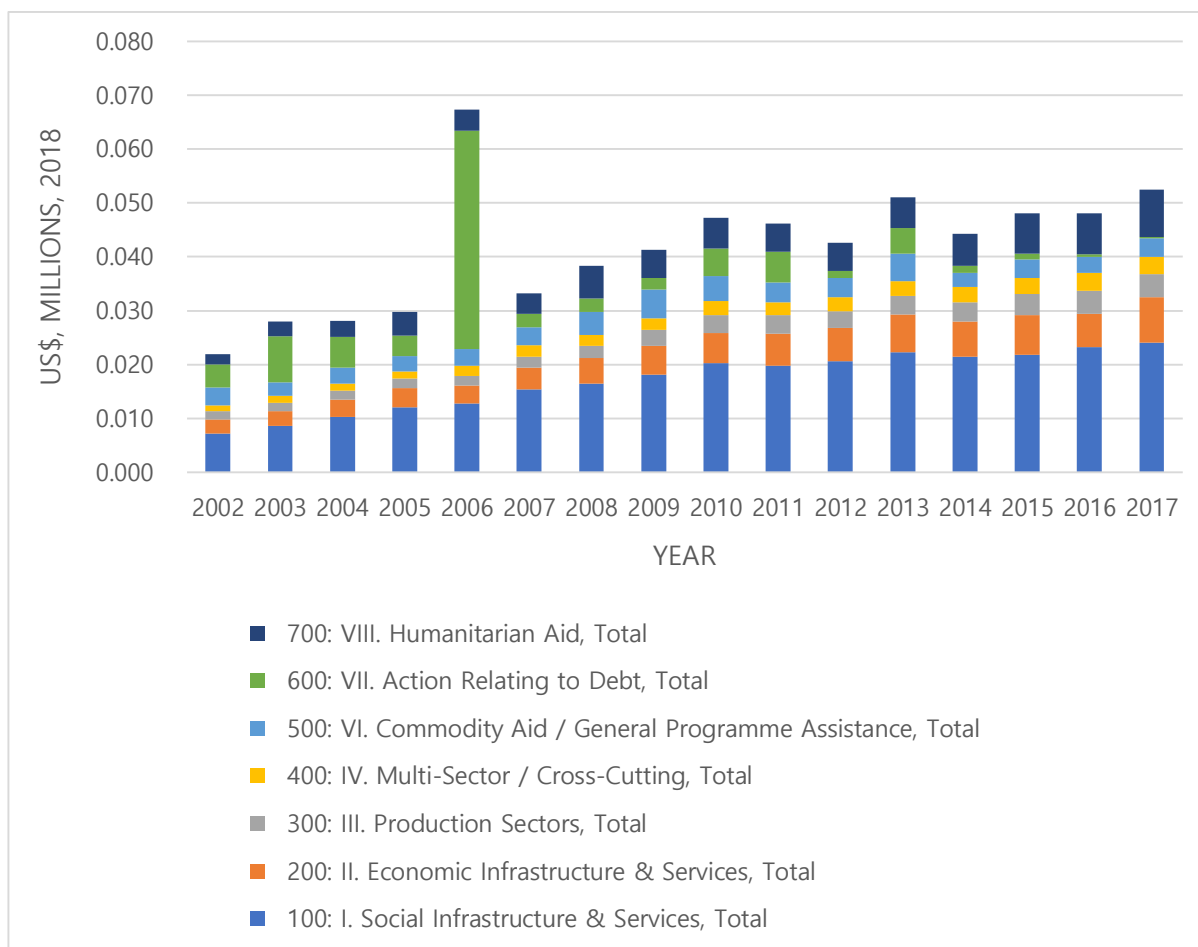
Figure 4. Total ODA Trend in Low-Income Economies from 2002-2017 (by sector)

In addition, Figure 5 and Figure 6 respectively show that social infrastructure and services sector continues to receive the largest share of ODA in lower-middle-income economies (37.09% in 2017) as well as upper-middle income countries (37.21% in 2017). However, ODA towards economic infrastructure and services sector is also increasing at the same time. This seems to imply that the social development such as health and education is emphasized in low-income economies whereas economic development is emphasized as countries become more economically developed.
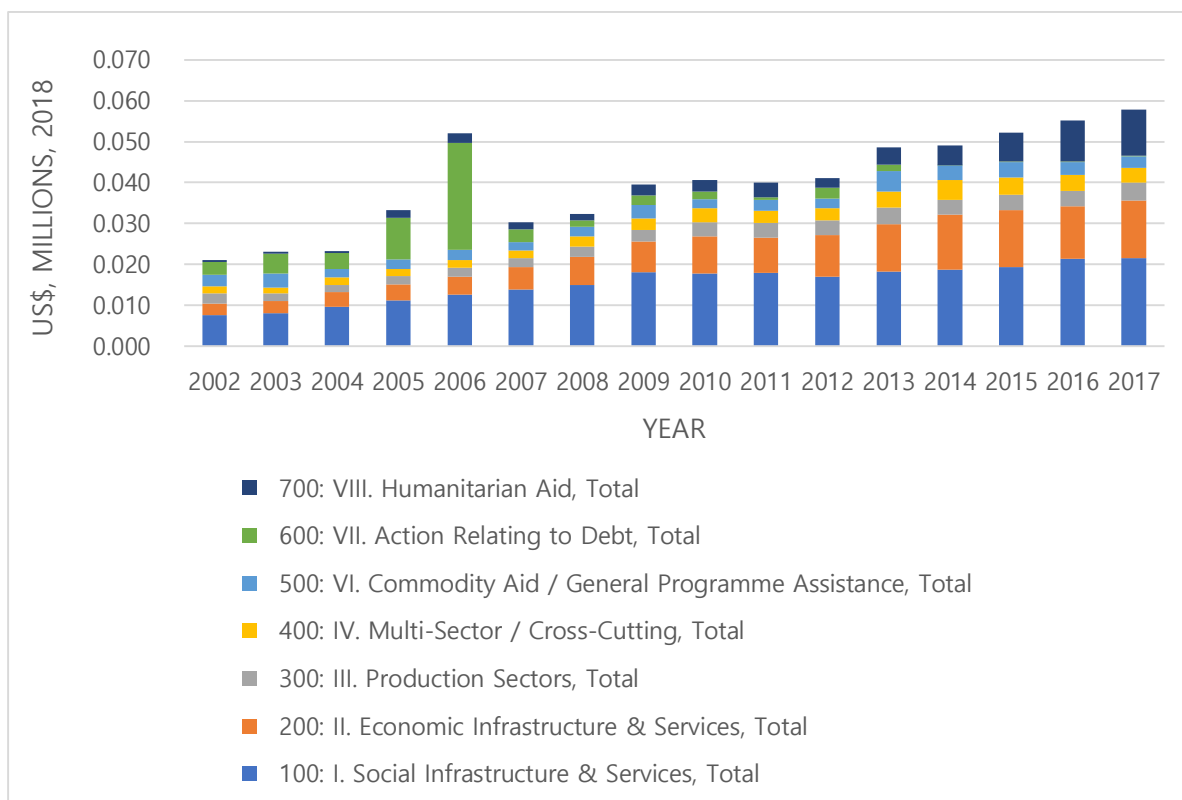
Figure 5. Total ODA Trend in Lower-Middle Income Economies from 2002-2017 (by sector)
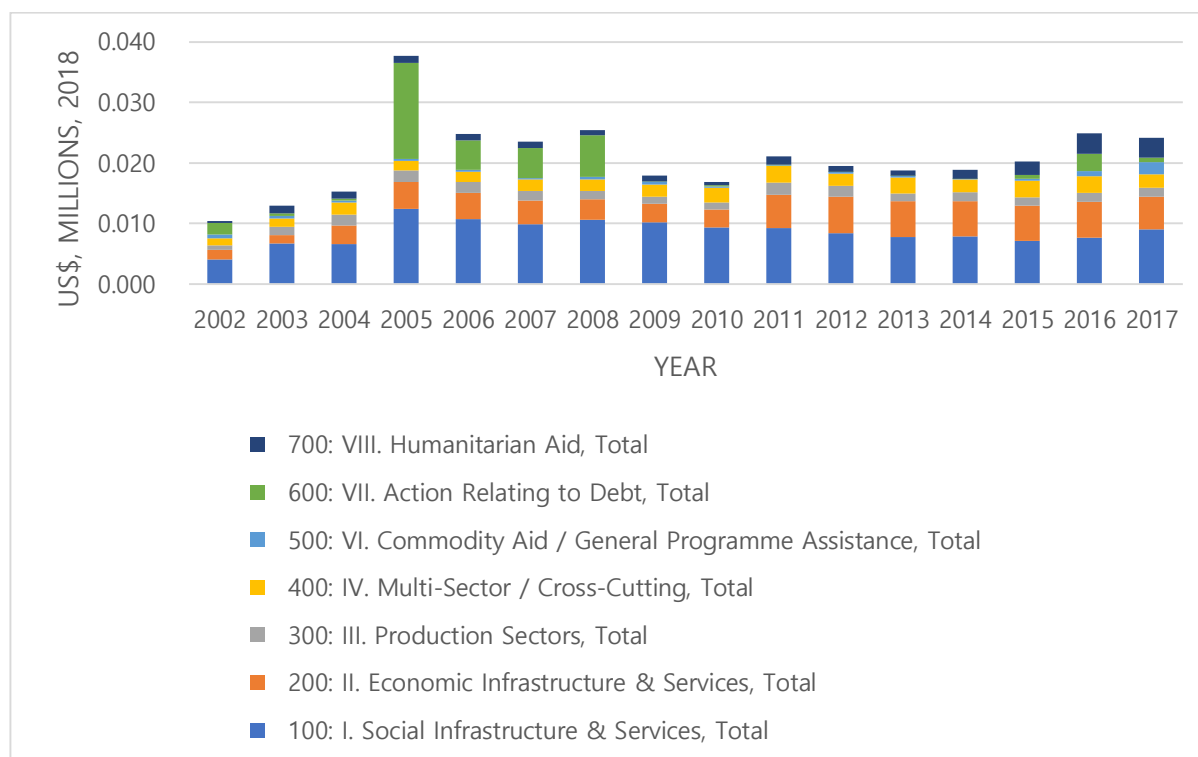
Figure 6. Total ODA Trend in Upper-middle Income Economies from 2002-2017 (by sector)

Figure 7 displays the total amount of ODA disbursed within social and infrastructure

and services. Most of the ODA is channeled towards health related sectors including population policies and reproductive health, and WASH, revealing the importance of health in development of developing countries. In 2017, 23.41% of ODA towards social infrastructure and services were disbursed to health related programs while only 9.39% was channeled to education, 13.41% to government and civil society and 3.79% to other programs.
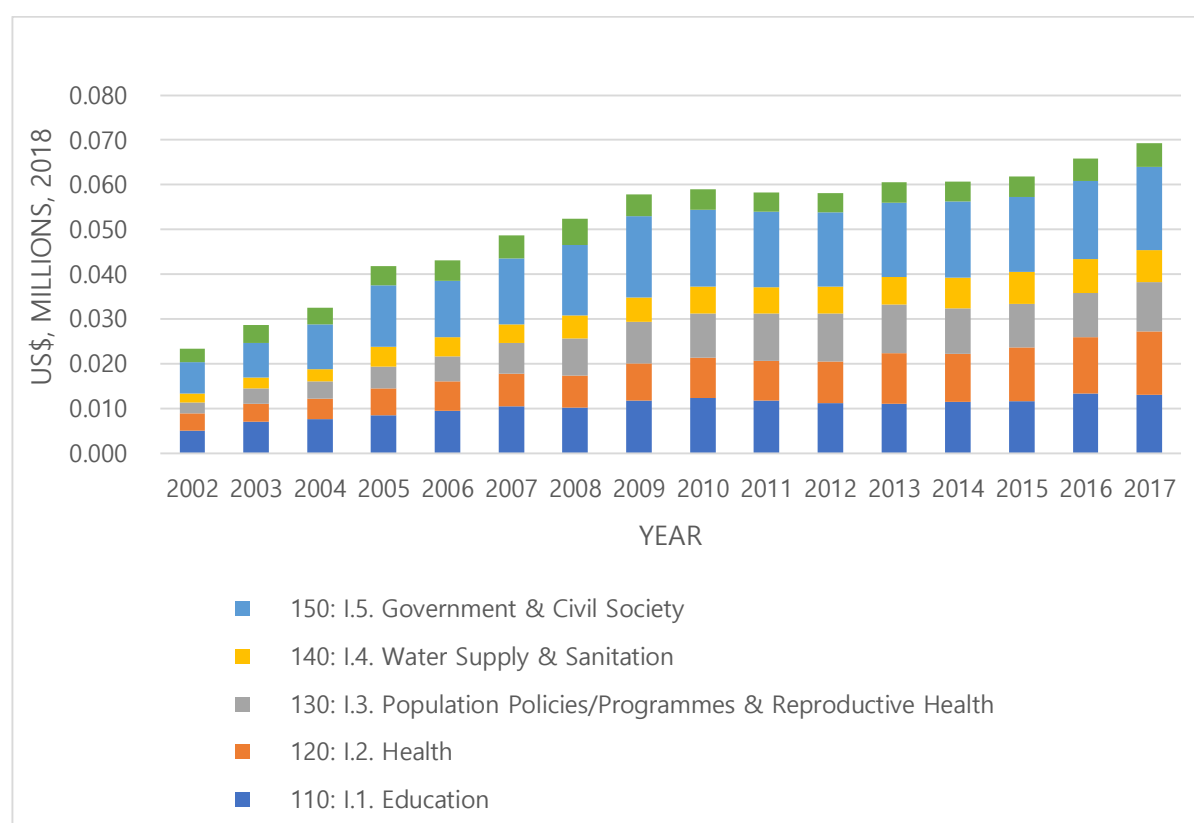
Figure 7. Total ODA trend within I. Social Infrastructure & Services Sector from 2002-2017

When the total amount of ODA disbursed within the social infrastructure and services sector is further divided into income groups, all health related sectors including health in general, population policies and reproductive health, and WASH is increasing in low income economies (see Figure 8). In lower-middle income economies, ODA disbursement towards all health sectors seems to remain stable (see Figure 9) whereas government and civil society sector receives largest portion of ODA in upper-middle income economies. This once again

seems to reveal that development is focused on human development such as health and education issues in least developed countries while the focus shifts towards economic and government related development as the country's economic growth expands (see Figure 10).
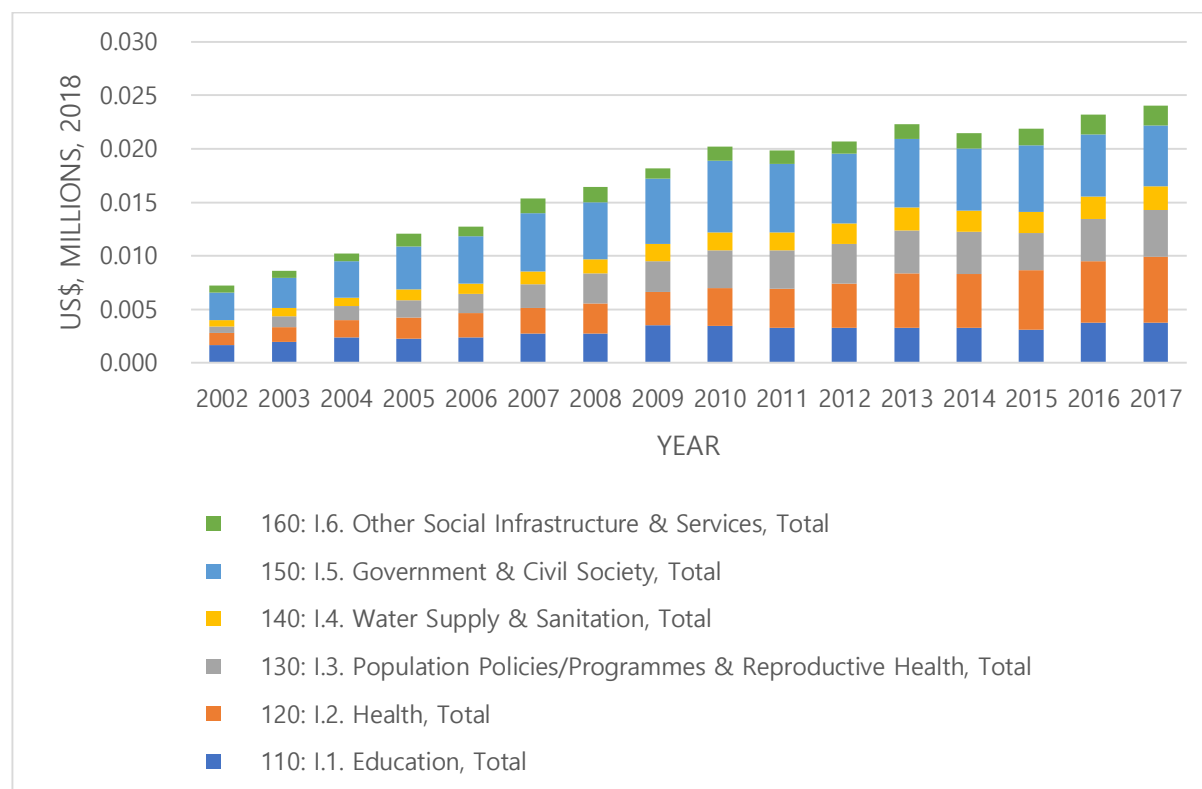
Figure 8. Total ODA trend within Social Infrastructure & Services Sector in Low-income Economies from 2002-2017
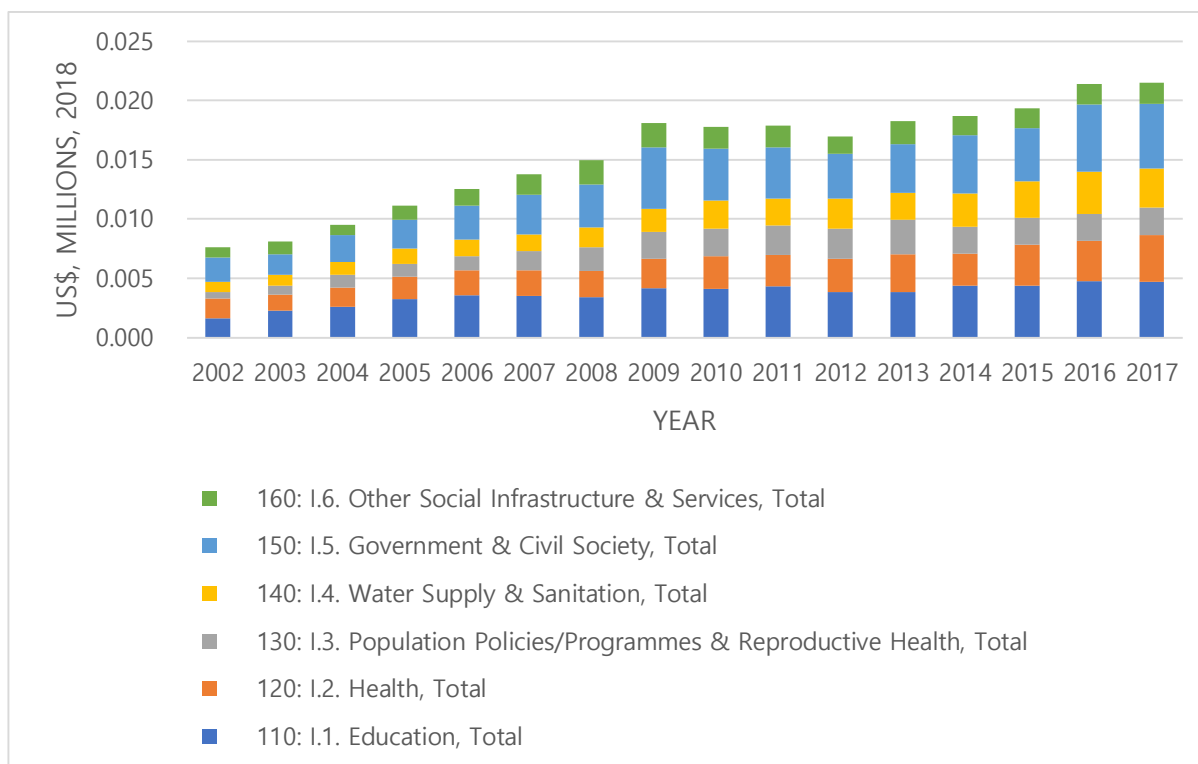
Figure 9. Total ODA trend within Social Infrastructure & Services Sector in Lower-Middle Income Economies from 2002-2017
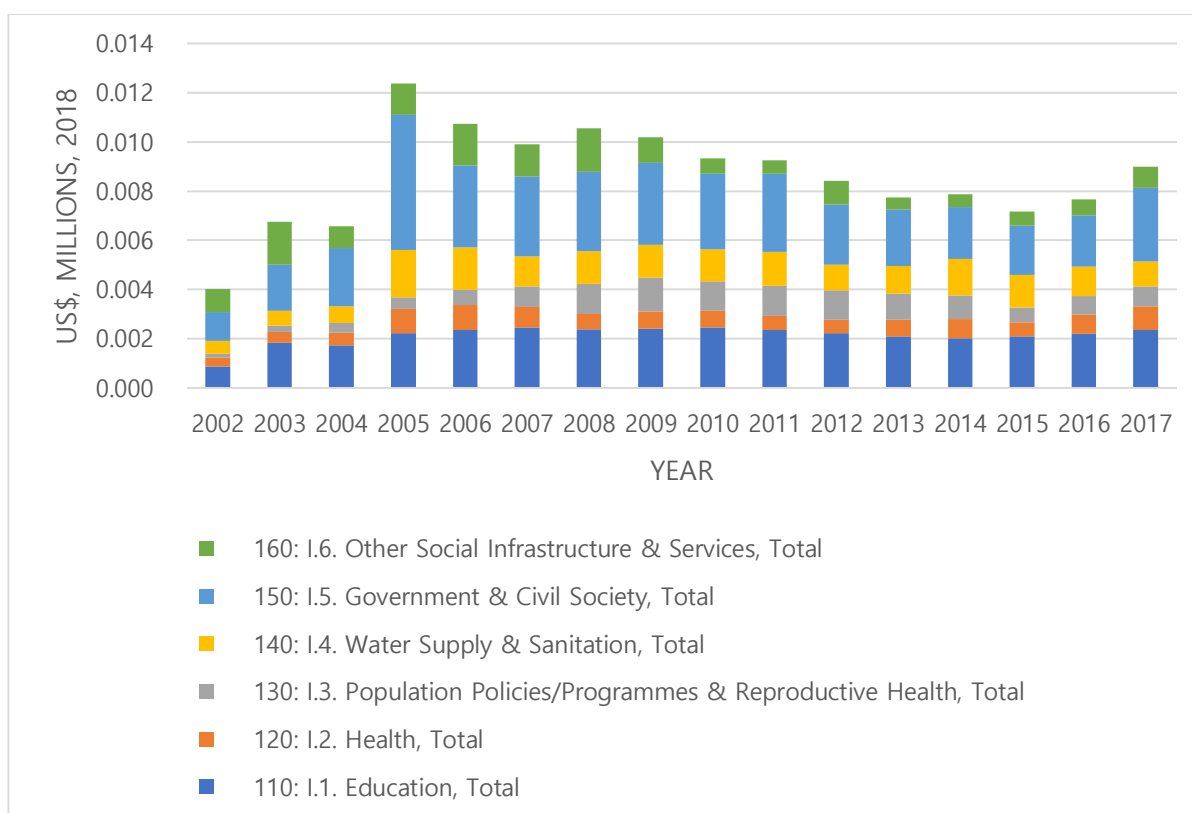
Figure 10. Total ODA trend within Social Infrastructure & Services Sector in Upper-Middle Income Economies from 2002-2017

ODA disbursed towards population policies and reproductive health can be further divided into five subsectors, which are i) population policy and administrative management, ii) reproductive health care, iii) family planning, iv) STD control including HIV/AIDs, v) personnel development for population and reproductive health. Figure 11 shows that large amount of ODA within population policies and reproductive health is continuously disbursed to STD control including HIV/AIDS whereas personnel development for population and reproductive health receives the least amount of ODA. In 2017, STD control including HIV/AIDS received 71.60% of ODA disbursed to population policies whereas population policy and administrative management receives 3.16%, reproductive health care 16.28%, family planning 7.58%, and personnel development for population and reproductive health 1.38%. Although the amount is relatively small compared to that disbursed towards STD control, the amount of ODA towards reproductive health care and family planning constantly increases since 2002.
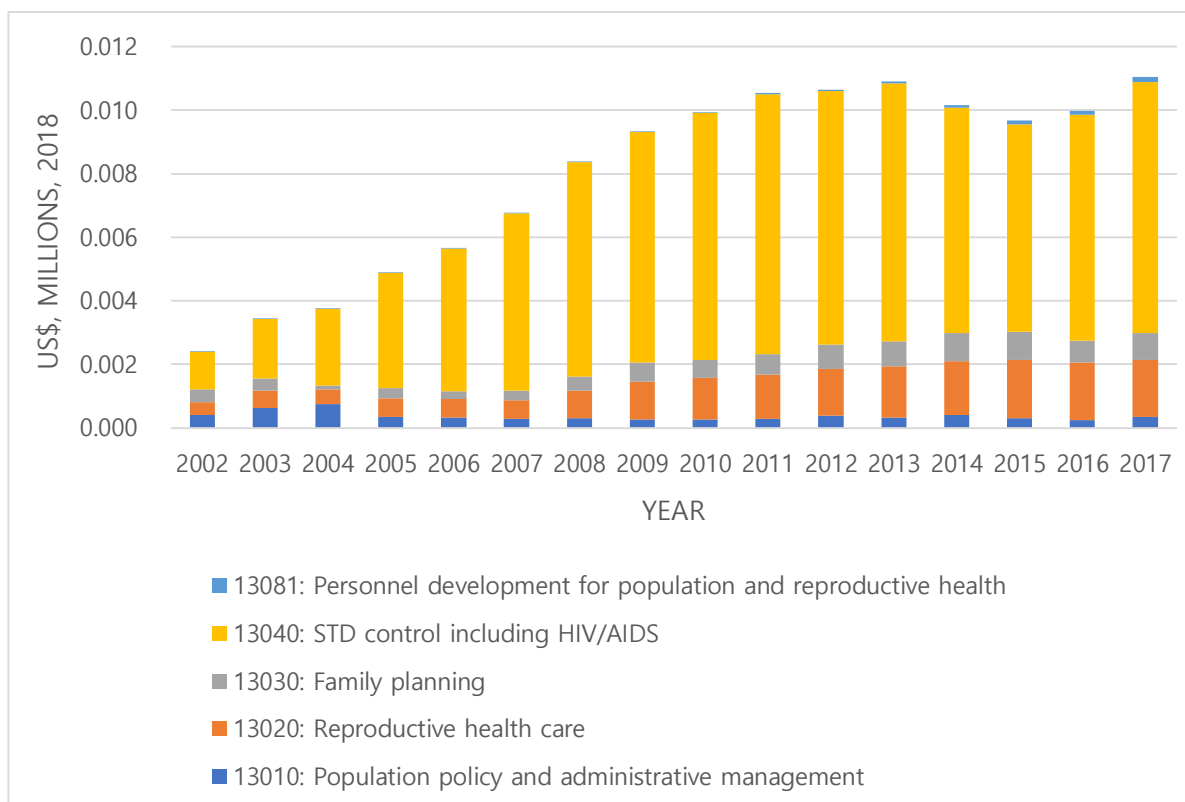
Figure 11. ODA towards Population Polices/Programs and Reproductive Health Sector from 2002-2017 (by subsector)

When the total amount of ODA disbursed within population policies and reproductive health sector is further divided into income groups, STD control still receives the largest amount of ODA in all three income groups. However, ODA disbursed towards reproductive health care and family planning increases in low-income economies whereas it remains quite stable in lower-middle income economies (See Figure 12 and Figure 13 respectively). However, share of ODA towards reproductive health care and family planning decreases in upper-middle income economies (See Figure 14).
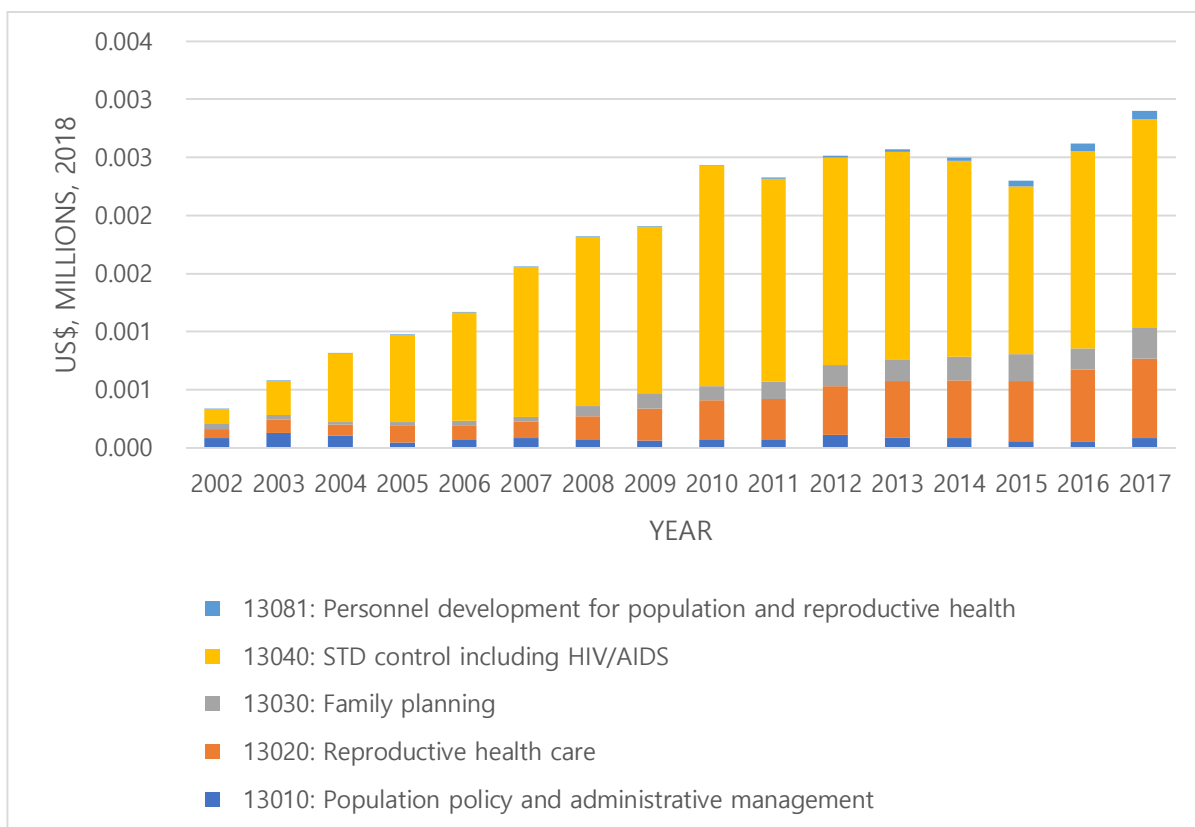
Figure 12. ODA towards Population Polices/Programs and Reproductive Health Sector in Low Income Economies from 2002-2017
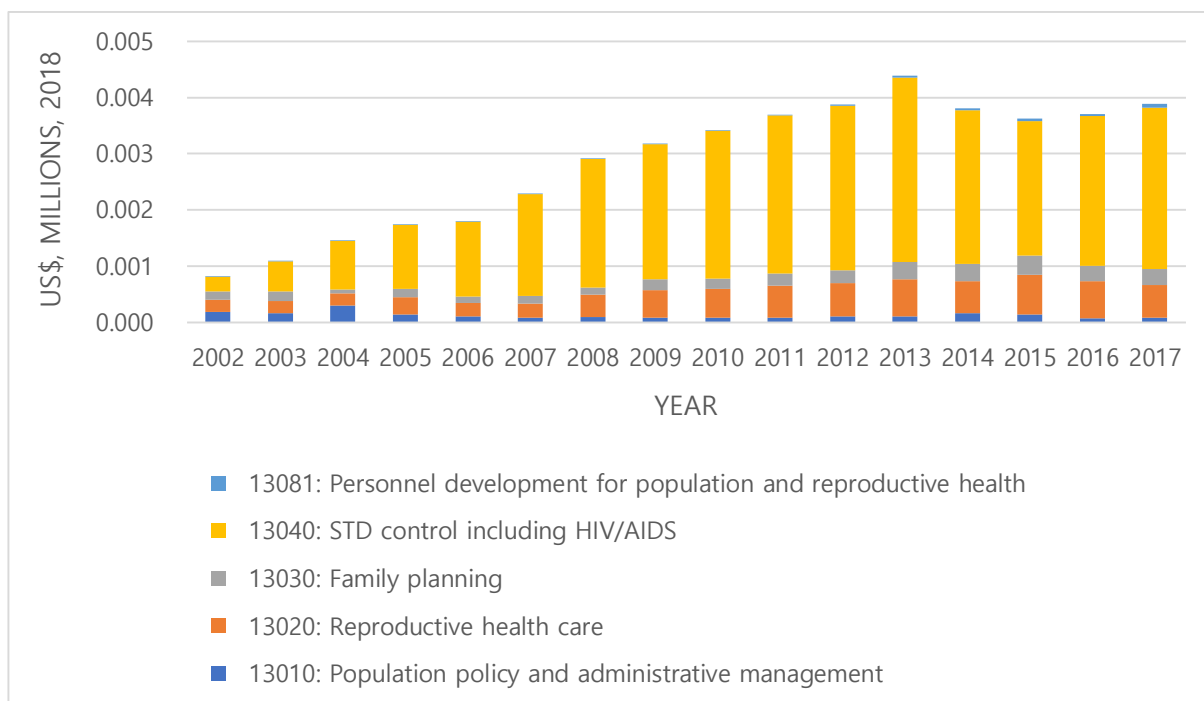
Figure 13. ODA towards Population Polices/Programs and Reproductive Health Sector in Lower-Middle Income Economies from 2002-2017
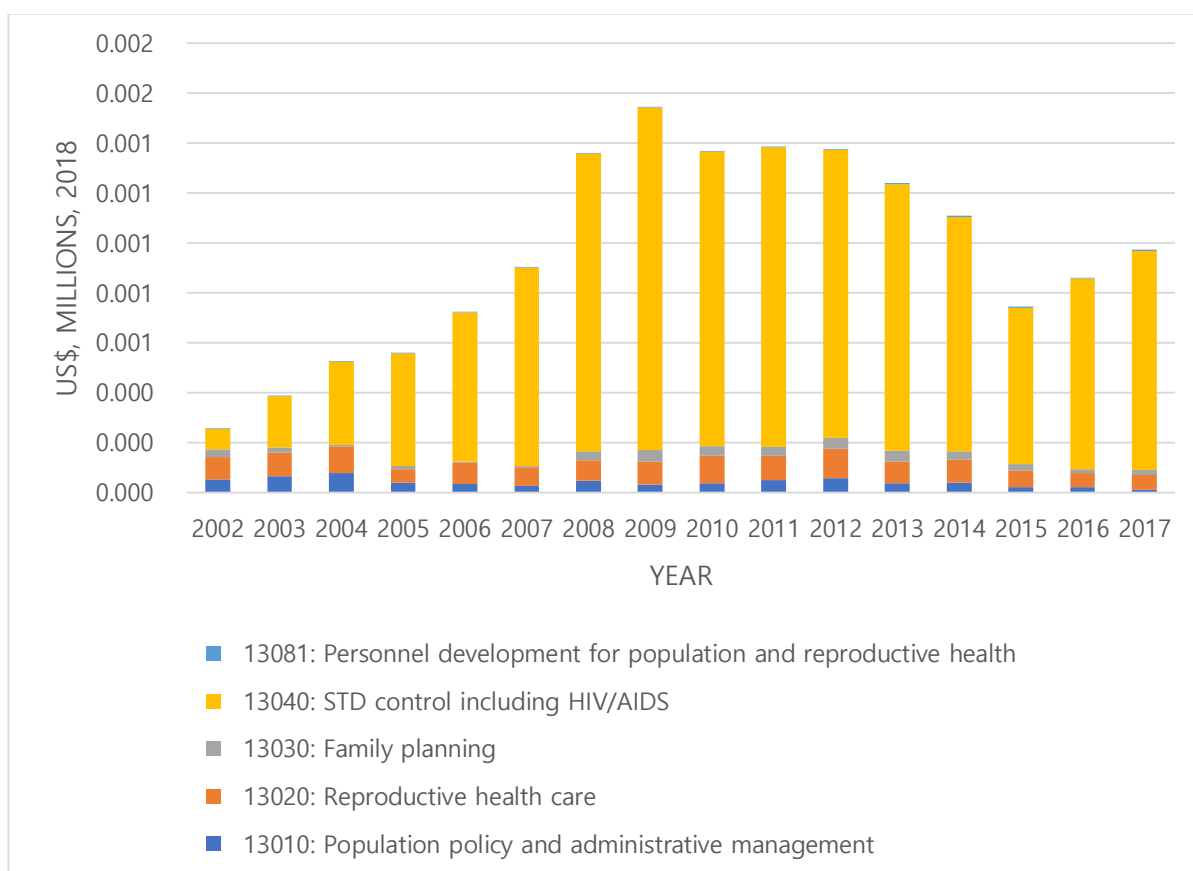
Figure 14. ODA towards Population Polices/Programs and Reproductive Health Sector in Upper-Middle Income Economies from 2002-2017

4.1.2. Trend in Private Sector Fund towards Health

As seen in ODA trend in population policies and reproductive health, share of private sector fund towards HIV/AIDS is larger than that of reproductive and maternal health. When divided into three income groups, share of reproductive and maternal health seems to increase in both low-income and lower-middle-income economies (see Figure 15 and Figure 16), whereas it sharply decreases in upper-middle income countries in 2017 (see Figure 17). This implies that improvement of reproductive and maternal health is mostly focused in low income and lower-middle income economies rather than upper-middle income economies.
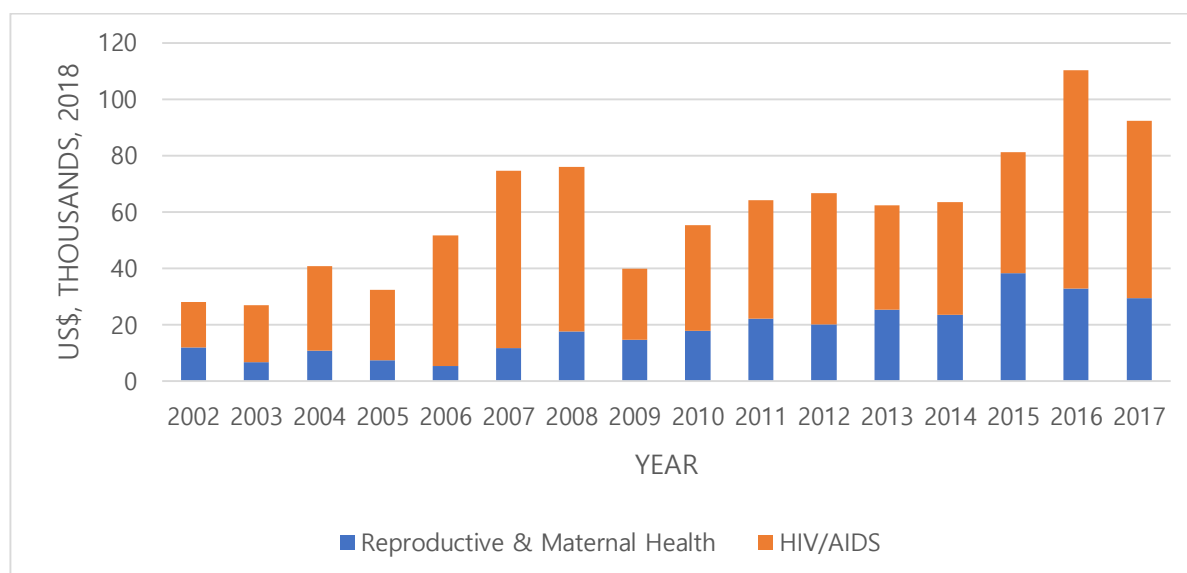
Figure 15. Private Sector Funds towards Reproductive Health and HIV/AIDs in Low-income Economies from 2002-2017
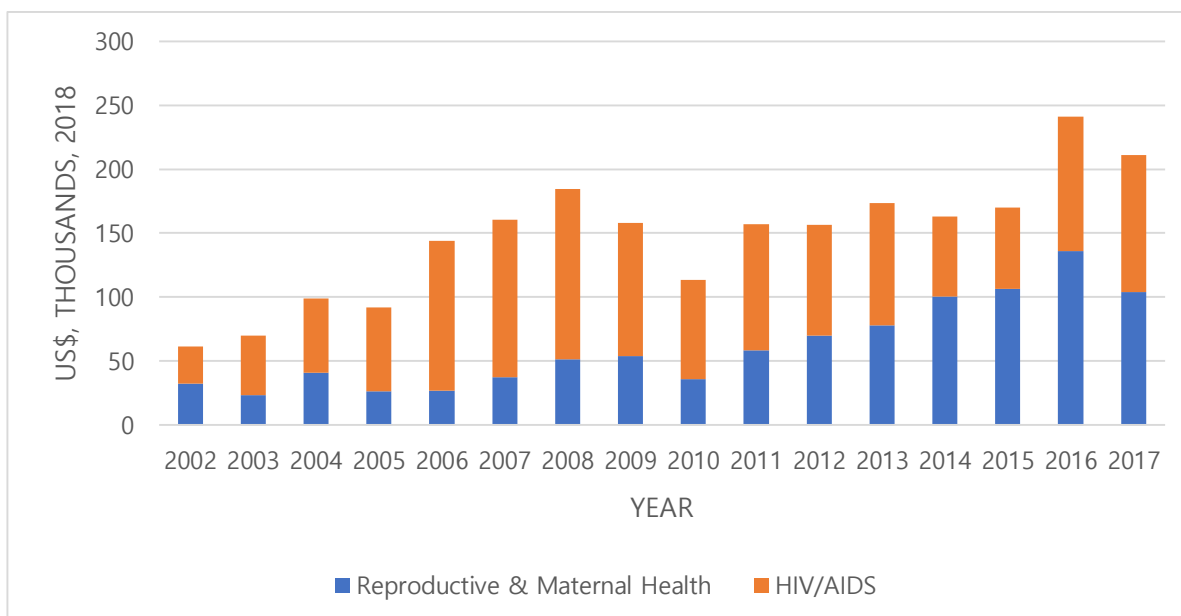
Figure 16. Private Sector Funds towards Reproductive Health and HIV/AIDs in Low and Middle-income Economies from 2002-2017
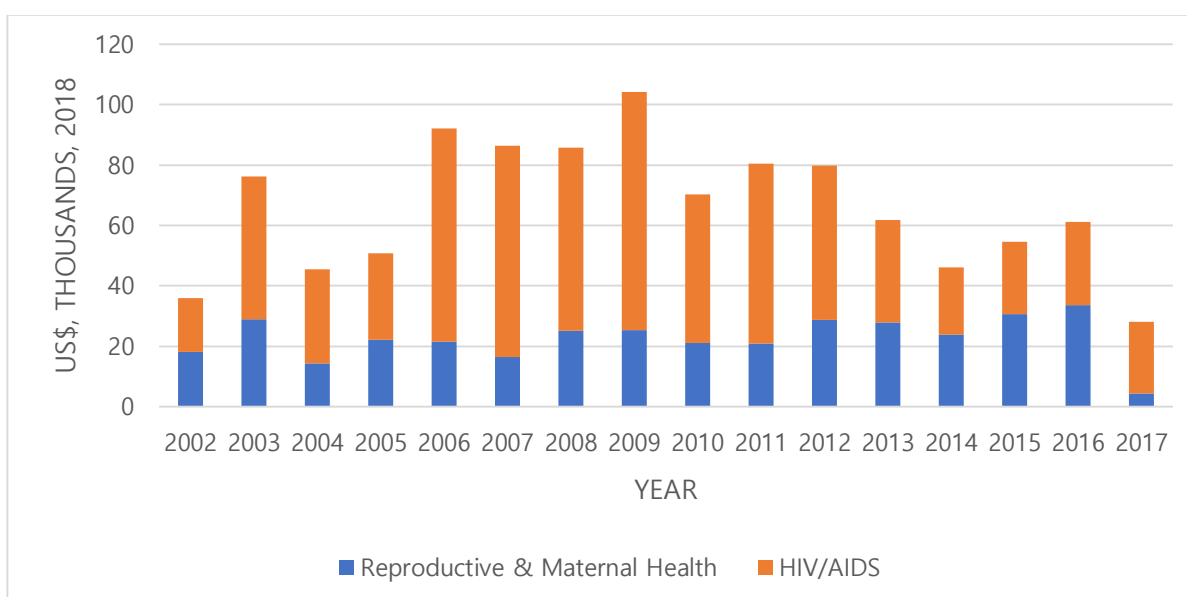
Figure 17. Private Sector Funds towards Reproductive Health and HIV/AIDs in Upper-Middle income Economies from 2002-2017

4.1.3. Trend in SRHR Indicators

As mentioned previously, five main SRHR indicators explore in this study are i) maternal mortality ratio, ii) adolescent fertility ratio, iii) percentage of births attended by skilled staff, iv) percentage of women aged 15-49 using contraceptives, v) percentage of HIV

infections, vi) percentage of women aged 15 and older who have experienced intimate partner violence. Overall picture shows that maternal mortality ratio, adolescent fertility ratio, percentage of HIV infections, and women experiencing intimate partner violence are declining (see Figure 18, Figure 19, Figure 22, Figure 23 respectively) whereas births attended by skilled staff (see Figure 20) and contraceptive prevalence (see Figure 21) shows mixed results. Births attended by skilled staff remains quite stable in upper-middle income economies, a decrease is observed as of 2015 in lower-middle income economies and shows steady increase only in low-income economies. Contraceptive prevalence shows strong ups and downs for all income groups from 2002 to 2017.
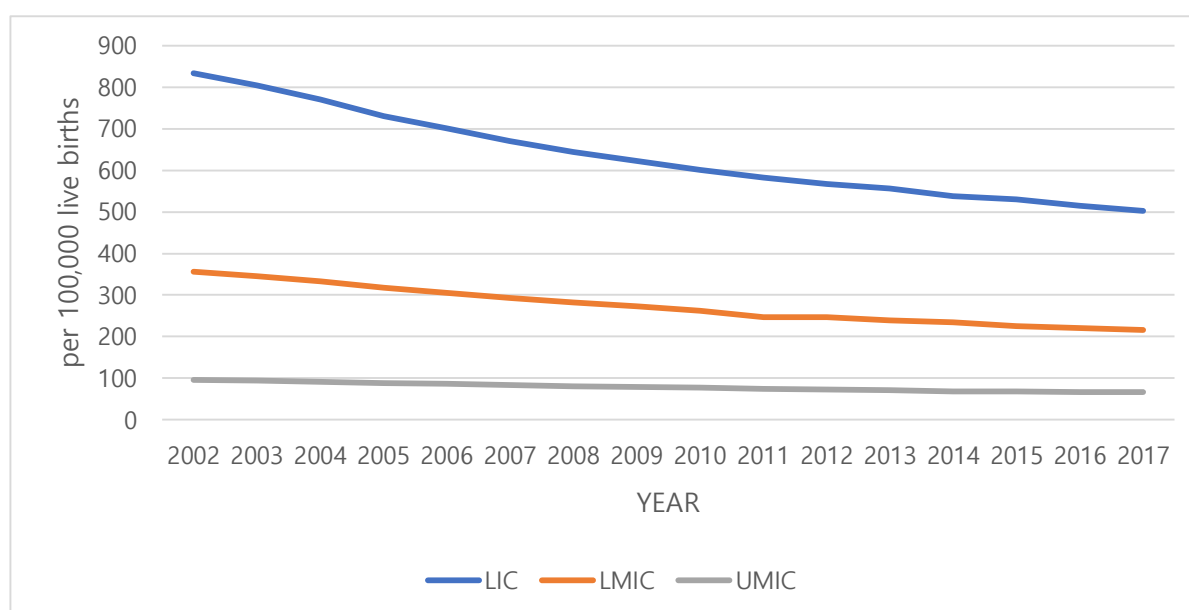
Figure 18. Trend in Maternal Mortality Ratio from 2002-2017
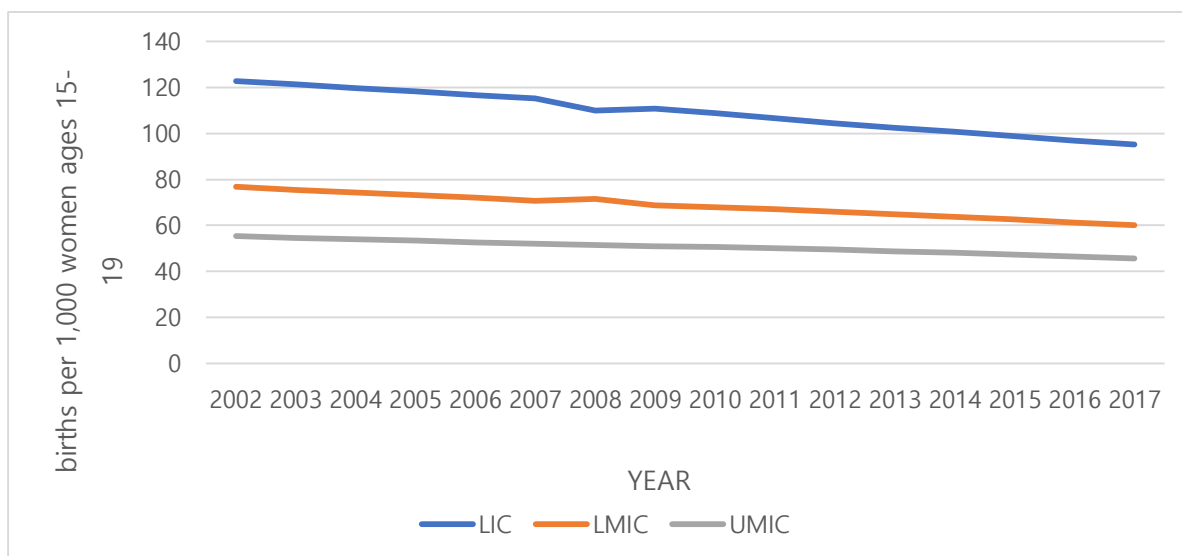
Figure 19. Trend in Adolescent Fertility Ratio from 2002-2017
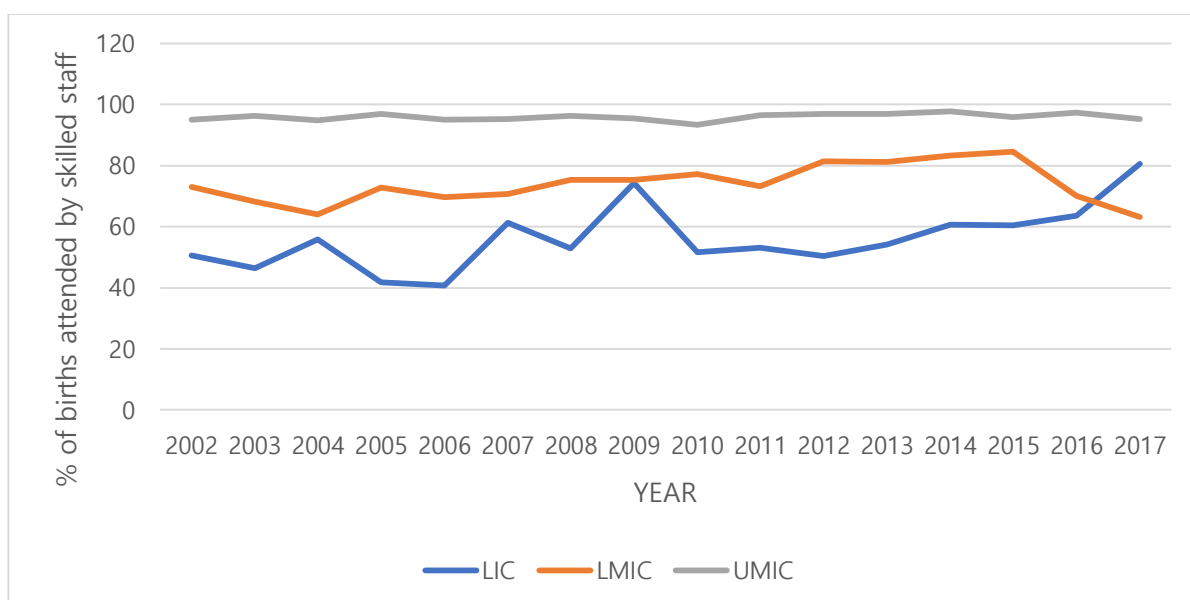
Figure 20. Trend in Births Attended by Skilled Staff from 2002-2017
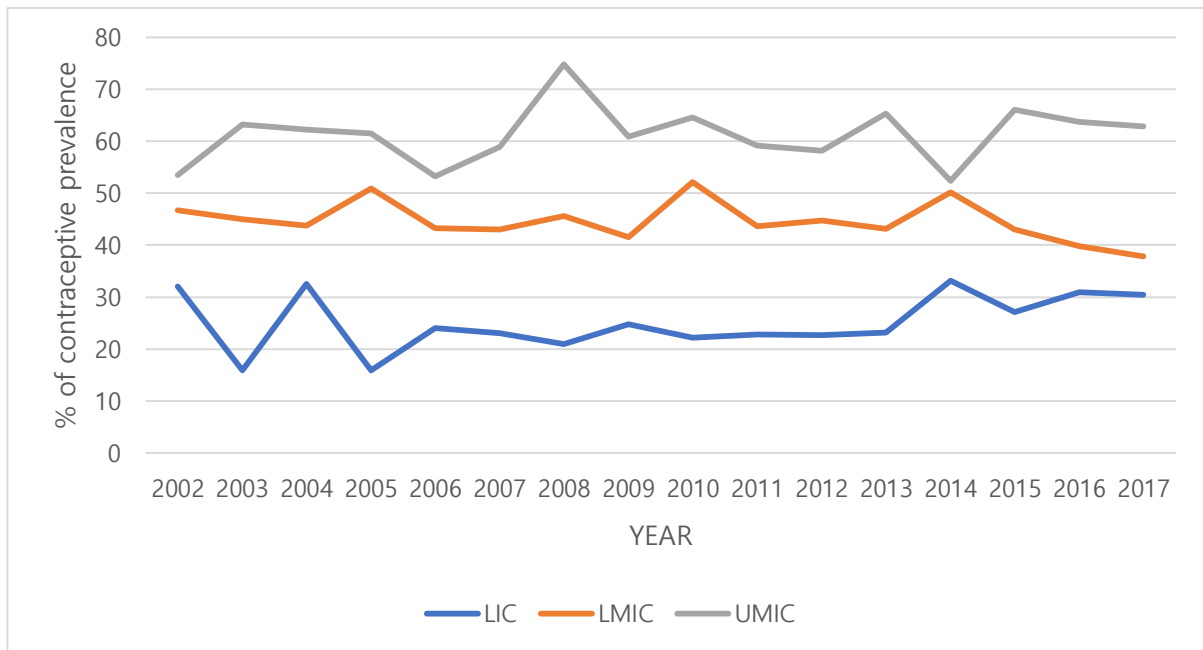
Figure 21. Trend in Contraceptive Prevalence from 2002-2017
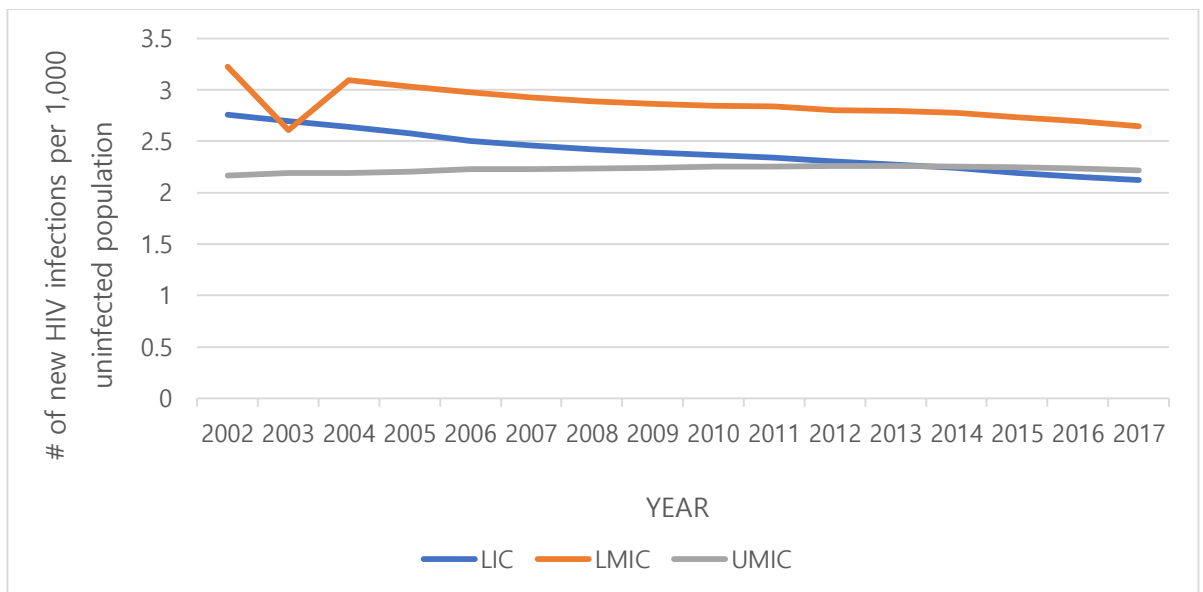
Figure 22. Trend in HIV Prevalence from 2002-2017
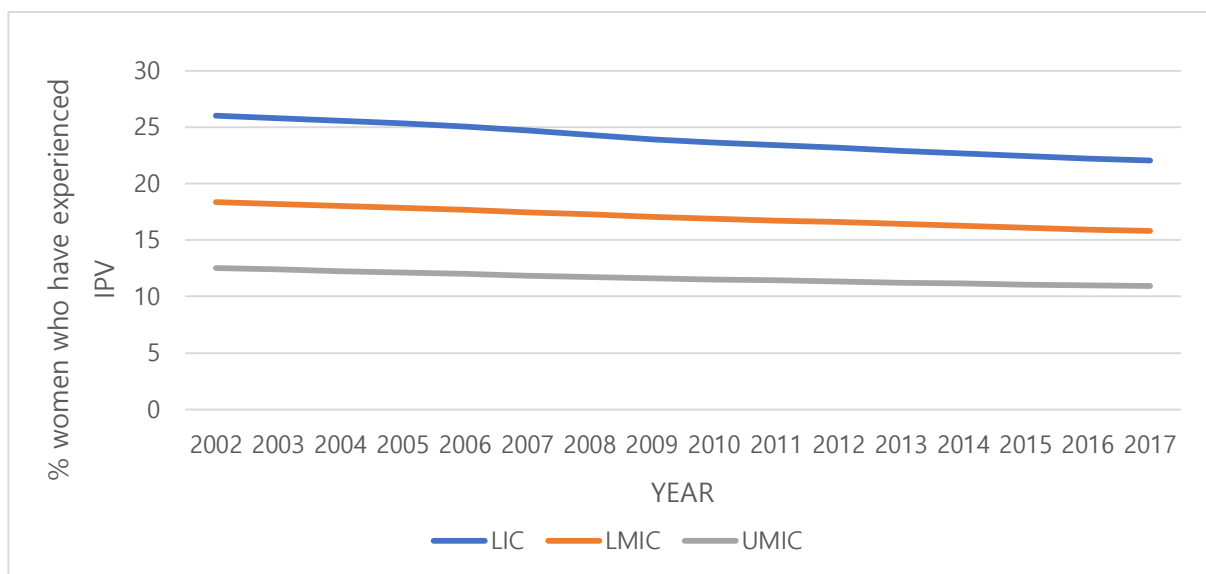
Figure 23. Trend in Female Intimate Partner Violence

4.2. Regression Analysis: Relationship between SRHR and Foreign Aid

For this regression analysis, total amount of ODA disbursed specifically to population polices/programs and reproductive health sector (CRS code 130) and the total amount of private sector funds disbursed to reproductive and maternal health, and HIV/AIDs was used. The amount of ODA disbursed specifically to code 130 was used for this analysis since most of the projects related to SRHR were funded by this ODA. Private sector funds channeled to only reproductive and maternal health, and HIV was used to conduct the analysis. Because aid is effective in a certain health issue rather than health in general as argued by Mishra and Newhouse (2009), this study specifically uses OECD CRS code 130 to calculate the amount of ODA to SRHR related projects, and privates funds towards reproductive and maternal health and HIV.

Table 6. Details of OECD CRS Code 130 and Private Sector Funds to Reproductive and Maternal Health, and HIV

CODE	Population policies/ programmes & Reproductive Health	
13010	Population policy and administrative management	Population/development policies; demographic research/analysis; reproductive health research; unspecified population activities.
13096 (voluntary code)	Population statistics and data	Collection, production, management and dissemination of statistics and data related to Population and Reproductive Health. Includes census work, vital registration, migration data collection, demographic data, etc.
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 counselling; 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.
CODE	IHME DAH	
rmh_dah_18	Funds for health disbursed from source to channel to recipient country for reproductive and maternal health, disaggregated by family planning, other health system strengthening, human resources, other maternal health, and other	
rmh_fp_dah_18		
rmh_hss_other_dah_18		
rmh_hss_hrh_dah_18		
rmh_mh_dah_18		
rmh_other_dah_18		
hiv_dah_18	Funds for health disbursed from source to channel to recipient country for HIV/AIDS, disaggregated by care and support, counseling & testing, other health system strengthening, human resources, treatment, orphans & vulnerable children, prevention of mother to child transmission, prevention, drug resistance, and other.	
hiv_care_dah_18		
hiv_ct_dah_18		
hiv_hss_other_dah_18		
hiv_hss_hrh_dah_18		
hiv_treat_dah_18		
hiv_ovc_dah_18		
hiv_pmtct_dah_18		
hiv_prev_dah_18		
hiv_amr_dah_18		
hiv_other_dah_18		

Source: OECD CRS, IHME DAH, reorganized by author

4.2.1. Maternal Mortality Ratio and Foreign Aid (all countries)

Results reveal that the total amount of ODA disbursed to population polices/programs and reproductive health has a significant effect especially when it is lagged by 2 years. With 1% increase in total amount of ODA, maternal mortality ratio decreases by 0.035% (standard error= 0.008, p-value< 0.001) when years are not fixed, and by 0.020% (standard error=0.008, p-value< 0.001) when years are fixed for 1 year lag. When years are lagged for 2 years, 1% increase in total amount of ODA reduces maternal mortality ratio by 0.041% (standard error=0.008, p-value< 0.001) with non-fixed years and by 0.025% (standard error=0.009, p-value<0.05) with years fixed. Moreover, when the total amount of ODA disbursed to population polices/programs and reproductive health is further divided into sub-sectors, results show that amount of ODA towards reproductive health care sector has a significant effect when lagged by 2 years. With 1% increase in amount of ODA for reproductive health care sector, maternal mortality ratio decrease by 0.036% (standard error= 0.012, p-value<0.05) without years fixed, and by 0.034% (standard error = 0.011, p-value<0.05) with years fixed. Unfortunately, private sector fund towards reproductive and maternal health do not have an effect on improving maternal mortality ratio, even when the funds are lagged by one or two years.

Table 7. Estimated effect of ODA on Maternal Mortality Ratio (all countries), 2002-2017

Variables	Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log ODA total (code 130)	-0.016** (0.008)	-0.010 (0.008)	-0.035*** (0.008)	-0.020** (0.008)	-0.041*** (0.008)	-0.025** (0.009)
Log education	-1.323*** (0.095)	-0.488*** (0.113)	-1.217*** (0.0102)	-0.445*** (0.112)	-1.127*** (0.108)	-0.442*** (0.125)
Log urbanization	-0.551*** (0.138)	-0.066 (0.136)	-0.632*** (0.149)	-0.093 (0.149)	-0.688*** (0.158)	-0.133 (0.160)
Log number of physicians	-0.073*** (0.017)	-0.043* (0.017)	-0.064*** (0.017)	-0.033** (0.166)	-0.049** (0.017)	-0.022 (0.017)
Constant	5.891 (0.558)	4.799 (0.532)	6.329 (0.605)	4.943 (0.586)	6.627 (0.648)	5.127 (0.628)
Number of observations	1,008		961		920	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

Table 8. Estimated effect of Private Fund on Maternal Mortality Ratio (all countries), 2002-2017

Variables	Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log Private Fund to reproductive and maternal health sector	0.006 (0.005)	-0.004 (0.005)	0.009 (0.005)	0.003 (0.005)	0.007 (0.006)	0.002 (0.005)
Log education	-1.382*** (0.099)	-0.409*** (0.120)	-1.314*** (0.106)	-0.425*** (0.125)	-1.295*** (0.0115)	-0.317** (0.138)
Log urbanization	-0.540*** (0.149)	0.078 (0.147)	-0.566*** (0.158)	-0.006 (0.157)	-0.726*** (0.170)	-0.095 (0.171)
Log number of physicians	-0.076*** (0.018)	-0.053** (0.017)	-0.086*** (0.019)	-0.061*** (0.018)	-0.055** (0.019)	-0.031* (0.018)
Constant	5.800 (0.603)	4.401 (0.573)	5.913 (0.637)	4.622 (0.612)	6.554 (0.689)	5.074 (0.669)
Number of observations	950		916		880	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

4.2.2. Adolescent Fertility Rate and Foreign Aid (all countries)

The relationship between adolescent fertility rate and the total amount of ODA disbursed towards population policies and reproductive health only has a significant effect when years are not lagged. Results show that with 1% increase in total amount of ODA, adolescent fertility rate decreases by 0.013% (standard error= 0.005, p-value <0.05) when years are not fixed, and by 0.008% (standard error=0.008, p-value <0.1) when years are fixed. Results are also not significant even when the total amount of ODA is further broken down into subsectors. Moreover, private sector funds toward reproductive and maternal health do not have a significant effect on improving adolescent fertility rate.

Table 9. Estimated effect of ODA on Adolescent Fertility Rate (all countries), 2002-2017

Variables	Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log ODA total (code 130)	0.013** (0.005)	0.008* (0.005)	0.00006 (0.0047)	-0.0016 (0.0049)	0.0002 (0.0047)	-0.0003 (0.0050)
Log education	-0.645*** (0.055)	-0.410*** (0.069)	-0.634*** (0.058)	-0.412*** (0.071)	-0.579*** (0.0598)	-0.3762*** (0.0717)
Log urbanization	-0.123 (0.079)	0.082 (0.083)	-0.172** (0.085)	0.060 (0.088)	-0.2574** (0.0873)	-0.000039 (0.092)
Log number of physicians	-0.044*** (0.010)	-0.031* (0.010)	-0.042*** (0.010)	-0.030** (0.010)	0.04533*** (0.0095)	-0.0334*** (0.0096)
Constant	3.902 (0.322)	3.338 (0.324)	4.133 (0.344)	3.450 (0.349)	4.488 (0.354)	3.705 (0.362)
Number of observations	1,008		961		920	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

Table 10. Estimated effect of Private Fund on Adolescent Fertility Rate (all countries), 2002-2017

Variables	Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log Private Fund to reproductive and maternal health sector	0.0003 (0.0028)	-0.0020 (0.003)	-0.003 (0.003)	-0.002 (0.003)	-0.004 (0.003)	-0.003 (0.003)
Log education	-0.570*** (0.055)	-0.444*** (0.072)	-0.609*** (0.058)	-0.445*** (0.073)	-0.583*** (0.060)	-0.440*** (0.077)
Log urbanization	-0.155* (0.082)	-0.002 (0.088)	-0.175** (0.086)	0.022 (0.092)	-0.243** (0.088)	-0.057 (0.096)
Log number of physicians	-0.034*** (0.010)	-0.277** (0.010)	-0.033*** (0.010)	-0.023** (0.010)	-0.039*** (0.010)	-0.032*** (0.010)
Constant	4.134 (0.332)	3.671 (0.341)	4.200 (0.349)	3.610 (0.359)	4.462 (0.359)	3.883 (0.374)
Number of observations	950		916		880	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

4.2.3. Births Attended by Skilled Staff and Foreign Aid (all countries)

Impact of ODA on births attended by skilled staff provides a more positive situation than maternal mortality ratio or adolescent fertility rate. The amount of ODA disbursed towards projects related to births attended by skilled staff has a significant effect on increasing the percentage of births attended by skilled staff when years are both lagged and not lagged. When years are not lagged, births attended by skilled staff increases by 0.052% with 1% increase in amount of ODA (standard error=0.016, p-value<0.05) with years not fixed, and by 0.046% (standard error= 0.017, p-value<0.05) when years are fixed. With one year lag, the percentage of births attended by skilled staff increase by 0.048% (standard error=0.016, p-value<0.05) with 1% increase in amount of ODA when years are not fixed, and by 0.046% (standard error=0.016, p-value<0.05) when years are fixed. In addition, with 1% increase in the amount of ODA, percentage of births attended by skilled staff increases by 0.043% (standard error= 0.017, p-value< 0.018) with years not fixed, and by 0.039% (standard error=0.018, p-value<0.05) with years fixed. Regarding the impact of private sector funds, results reveal that

it does not have a significant effect on increasing the percentage of births attended by skilled staff.

Table 11. Estimated effect of ODA on Births Attended by Skilled Staff (all countries), 2002-2017

Variables	Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log ODA to births attended by skilled staff (sum)	0.052**	0.046**	0.048**	0.046**	0.043**	0.039**
	(0.016)	(0.017)	(0.016)	(0.016)	(0.017)	(0.018)
Log education	0.964***	1.562***	1.084***	1.694***	1.097***	1.635***
	(0.229)	(0.320)	(0.246)	(0.336)	(0.269)	(0.362)
Log urbanization	0.773**	0.852**	0.909**	1.068**	0.959**	1.150**
	(0.287)	(0.298)	(0.319)	(0.335)	(0.351)	(0.372)
Log number of physicians	0.081**	0.101**	0.074*	0.096**	0.081*	0.101**
	(0.041)	(0.042)	(0.042)	(0.043)	(0.044)	(0.046_
Constant	1.888	2.078	1.432	1.291	1.259	0.932
	(1.189)	(1.218)	(1.315)	(1.363)	(1.449)	(1.519)
Number of observations	477		453		428	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

Table 12. Estimated effect of Private Funds on Births Attended by Skilled Staff (all countries), 2002-2017

Variables	Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log Private Fund to reproductive and maternal health sector	0.013	0.007	0.008	0.004	-0.002	-0.005
	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)	(0.010)
Log education	1.134***	1.637***	1.078***	1.789***	1.158***	1.627***
	(0.223)	(0.317)	(0.248)	(0.351)	(0.251)	(0.345)
Log urbanization	0.690**	0.571*	1.006**	1.158***	1.056**	0.961**
	(0.293)	(0.301)	(0.323)	(0.341)	(0.333)	(0.355)
Log number of physicians	0.072*	0.088**	0.082*	0.098**	0.082**	0.095**
	(0.039)	(0.039)	(0.047)	(0.048)	(0.040)	(0.041)
Constant	2.316	3.216	1.085	1.057	0.988	1.710
	(1.202)	(1.219)	(1.325)	(1.377)	(1.369)	(1.435)
Number of observations	473		454		430	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

4.2.4. Contraceptive Prevalence and Foreign Aid (all countries)

In regards to contraceptive prevalence, results show mixed results. The amount of ODA disbursed to projects related to contraception does have a significant effect when years are not lagged and when it is lagged by two years. However, results show opposite direction when ODA is lagged by one year. When years are not lagged, 1% increase in amount of ODA increases contraceptive prevalence by 0.211% (standard error=0.042, p-value<0.001) with years not fixed, and by 0.213% (standard error=0.045, p-value<0.001) with years fixed. When ODA is lagged by two years, 1% increase in the amount of ODA increases contraceptive prevalence by 0.074% (standard error=0.020, p-value<0.001) with years not fixed, and by 0.081% (standard error=0.023, p-value<0.001) with years fixed. Surprisingly, when ODA is lagged by one year, 1% increase in the amount of ODA actually decreases contraceptive prevalence by 0.078% (standard error=0.040, p-value<0.1) with years not fixed, and by 0.08% (standard error=0.044, p-value<0.1) with years fixed. Moreover, results show that private sector funds do not have significant effect on improving contraceptive prevalence.

Table 13. Estimated effect of ODA on Contraceptive Prevalence (all countries), 2002-2017

Variables	Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log ODA to contraceptive prevalence (sum)	0.211*** (0.042)	0.213*** (0.045)	-0.078* (0.040)	-0.080* (0.044)	0.074*** (0.020)	0.081*** (0.023)
Log education	0.295 (0.574)	-0.027 (0.787)	. 0.716 (0.629)	0.387 (0.859)	0.280 (0.298)	0.299 (0.398)
Log urbanization	0.611 (0.739)	0.383 (0.855)	0.558 (0.827)	0.685 (0.960)	0.760** (0.381)	0.647 (0.445)
Log number of physicians	-0.131 (0.101)	-0.122 (0.106)	-0.062 (0.112)	-0.031 (0.119)	-0.077 (0.052)	-0.090 (0.055)
Constant	0.998 (3.028)	1.568 (3.300)	2.345 (3.381)	1.638 (3.724)	0.852 (1.558)	1.355 (1.726)
Number of observations	256		245		238	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

Table 14. Estimated effect of Private Funds on Contraceptive Prevalence (all countries), 2002-2017

Variables	Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log Private Fund to reproductive and maternal health sector	0.034 (0.028)	0.021 (0.031)	-0.0005 (0.0294)	-0.003 (0.033)	0.018 (0.033)	0.025 (0.037)
Log education	0.397 (0.620)	0.416 (0.864)	0.4252 (0.6400)	0.501 (0.890)	0.705 (0.707)	0.556 (0.971)
Log urbanization	0.772 (0.795)	0.792 (0.915)	0.7689 (0.841)	0.729 (0.973)	0.585 (0.916)	0.585 (1.052)
Log number of physicians	-0.063 (0.107)	-0.036 (0.112)	-0.0394 (0.1264)	0.002 (0.132)	-0.072 (0.123)	-0.062 (0.129)
Constant	0.950 (3.265)	0.979 (3.561)	1.1746 (3.4278)	1.486 (3.768)	1.923 (3.728)	1.808 (4.090)
Number of observations	252		243		233	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

4.2.5. HIV prevalence and Foreign Aid (all countries)

Impact of both ODA and private sector funds on new HIV infections reveal surprising results. Total amount of ODA disbursed to projects related to HIV/AIDs do not show significant effect. When the amount of ODA is further broken down into subcategories, the amount of ODA towards STDs including HIV/AIDS actually increases the number of new HIV infections. With 1% increase in the amount of STDs/HIV/AIDs related ODA, number of new HIV infections increase by 0.066% (standard error=0.020, p-value<0.05) with years not fixed, and by 0.037% (standard error=0.017, p-value<0.05) with years fixed. However, when the amount of ODA towards family planning and reproductive health is lagged by two years, results reveal that the amount of ODA reduces number of new HIV infections. With 1% increase in amount of ODA for family planning, number of new HIV infections decrease by 0.015% (standard error=0.009, p-value<0.1) with years not fixed, and by 0.018% (standard error= 0.009, p-value<0.05) with years fixed. In addition, the number of new HIV infections decrease by 0.044%

(standard error=0.024, p-value<0.1) when years are not fixed, and by 0.039% (standard error=0.024, p-value<0.1) when years are fixed with 1% increase in the amount of ODA towards projects related to reproductive health care. Interestingly, private sector funds significantly affect the number of new HIV infections in an opposite direction. Results reveal that amount of private sector funds towards HIV issues increase the number of new HIV infections. With 1% increase in private sector funds, number of new HIV infections increase by 0.036% (standard error=0.006, p-value<0.001) with years not fixed, and by 0.021% (standard error=0.007, p-value<0.05) with years fixed. When private sector funds are lagged by both one and two years, results show that 1% increase in private sector funds increase the number of new HIV infections by 0.038% (standard error=0.006, p-value<0.001) when years are not fixed and by 0.016% (standard error=0.007, p-value<0.05) when years are fixed for funds lagged by one year. When funds are lagged by two years, 1% increase in private sector funds increase HIV infections by 0.038% (standard error=0.006, p-value<0.001) when years are not fixed, and by 0.019% (standard error=0.007, p-value<0.05) when years are fixed.

Table 15. Estimated effect of ODA on HIV Prevalence (all countries), 2002-2017

Variables	Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log ODA to STD/HIV	0.009	-0.005	0.010	-0.012	0.009	-0.014
	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)
Log education	-0.228	-0.964***	-0.237**	-0.915***	-0.334**	-0.920***
	(0.112)	(0.128)	(0.117)	(0.131)	(0.115)	(0.127)
Log urbanization	-0.246	-0.849***	-0.260	-0.838***	-0.232	-0.790***
	(0.170)	(0.174)	(0.178)	(0.182)	(0.175)	(0.182)
Log number of physicians	0.014	-0.011	0.016	-0.005	0.010	-0.004
	(0.022)	(0.021)	(0.021)	(0.021)	(0.020)	(0.020)
Constant	0.130	1.732	0.187	1.712	0.037	1.627
	(0.694)	(0.680)	(0.726)	(0.713)	(0.713)	(0.712)
Number of observations	856		820		786	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

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Table 16. Estimated effect of Private Funds on HIV Prevalence (all countries), 2002-2017

Variables	Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log Private Fund to HIV sector	0.036***	0.021**	0.038***	0.016**	0.038***	0.019**
	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)
Log education	-0.290**	-0.973***	-0.261**	-0.871***	-0.353**	-0.880***
	(0.112)	(0.127)	(0.118)	(0.132)	(0.117)	(0.131)
Log urbanization	-0.216	-0.810***	-0.307*	-0.885***	-0.193	-0.775***
	(0.171)	(0.176)	(0.181)	(0.187)	(0.180)	(0.192)
Log number of physicians	0.016	-0.008	0.016	-0.007	0.005	-0.013
	(0.022)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Constant	-0.245	1.449	0.11	1.795	-0.366	1.446
	(0.699)	(0.694)	(0.742)	(0.021)	(0.737)	(0.758)
Number of observations	877		843		807	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

4.2.6. Intimate Partner Violence (IPV) experience and Foreign Aid (all countries)

In regards to IPV, ODA has a statistically significant effect on reducing the percentage of women who have experienced IPV. With 1% increase in ODA, IPV decreases by 0.002% (standard error=0.001, p-value<0.05) without lag year, by 0.003% (standard error=0.001, p-value<0.05) with one-year lag, and by 0.004% (standard error=0.001, p-value<0.05) when lagged by two years with fixed years. Private sector funds also have positive impact in reducing percentage of women who have experienced IPV when analyzed without year dummies. With 1% increase in private sector funds, IPV decreases by 0.004% (standard error=0.001, p-value<0.05) without lag year, by 0.006% (standard error=0.001, p-value<0.001) with one-year lag, and by 0.006% (standard error=0.001, p-value<0.001) when lagged by two years.

Table 17. Estimated effect of ODA on IPV experience (all countries), 2002-2017

Variables	Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log ODA total (code 130)	-0.004**	-0.002**	-0.008***	-0.003**	-0.010***	-0.004**
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Log education	-0.288***	0.003	-0.276***	0.000	-0.256***	-0.001
	(0.018)	(0.017)	(0.020)	(0.018)	(0.020)	(0.018)
Log urbanization	-0.278***	-0.101***	-0.283***	-0.088***	-0.288***	-0.081***
	(0.027)	(0.021)	(0.028)	(0.022)	(0.029)	(0.023)
Log number of physicians	-0.017***	-0.007**	-0.016***	-0.007	-0.014***	-0.006**
	(0.003)	(0.003)	(0.003)	(0.002)**	(0.003)	(0.002)
Constant	3.469	3.060	3.506	3.009	3.550	2.992
	(0.108)	(0.082)	(0.115)	(0.088)	(0.118)	(0.091)
Number of observations	993		947		908	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

Table 18. Estimated effect of Private Funds on IPV experience (all countries), 2002-2017

Variables	Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log total private SRH (both reproductive-maternal and HIV)	-0.004**	-0.001	-0.006***	-0.001	-0.006***	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Log education	-0.287***	-0.006	-0.273***	-0.007	-0.259***	-0.009
	(0.018)	(0.017)	(0.019)	(0.018)	(0.019)	(0.017)
Log urbanization	-0.268***	-0.114***	-0.282***	-0.111***	-0.298***	-0.090***
	(0.025)	(0.019)	(0.027)	(0.021)	(0.028)	(0.022)
Log number of physicians	-0.018***	-0.007**	-0.017***	-0.007**	-0.015***	-0.007**
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
Constant	3.438	3.088	3.518***	3.072	3.593***	2.994
	(0.102)	(0.077)	(0.110)	(0.085)	(0.115)	(0.088)
Number of observations	1,033		989		943	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

4.2.7. Maternal Mortality Ratio and Foreign Aid (by income group)

Relationship between ODA and maternal mortality ratio shows strong significance in

low-income economies when lagged by both one and two years. When the amount of ODA increase by 1%, maternal mortality ratio decreases by 0.123% (standard error=0.032, p-value<0.001) with years not fixed, and by 0.090% (standard error=0.037, p-value<0.05) with year fixed for one year lag. When ODA is lagged by two years in low-income economies, 1% increase in amount of ODA decrease maternal mortality ratio by 0.137% (standard error=0.031, p-value<0.001) with years not fixed, and by 0.116% (standard error=0.038, p-value<0.05) with years fixed. Lower-middle income economies and upper-middle economies only show significant results when years are not fixed. When ODA is lagged by one year, 1% increase in amount of ODA decreases maternal mortality ratio by 0.028% (standard error=0.014, p-value<0.05) for low-income economies, and by 0.033% (standard error=0.10, p-value<0.05) for upper-middle economies. When ODA is lagged by two years, 1% increase in amount of ODA decreases maternal mortality ratio by 0.034% (standard error=0.014, p-value<0.05) for lower-middle income economies and by 0.035% (standard error=0.010, p-value<0.001) for upper-middle income economies. In regards to private sector funds, it only has a significant effect in low-income economies when private sector funds to reproductive and maternal health sector is lagged by one year. With 1% increase in private sector funds, maternal mortality ratio decreases by 0.035% (standard error=0.020, p-value<0.1) when years are not fixed, and by 0.037% (standard error=0.021, p-value<0.1) when years are fixed. Interestingly, private sector funds affect maternal mortality ratio in an opposite direction in upper-middle income economies when lagged by one year. If private funds increase by 1%, maternal mortality ratio actually increases by 0.015% (standard error=0.008, p-value<0.05) when years are not fixed, and by 0.013% (standard error=0.007, p-value<0.001) when years are fixed.

Table 19. Estimated effect of ODA on Maternal Mortality Ratio (by income group), 2002-2017

	Low Income Economies						Lower Middle Income Economies						Upper Middle Income Economies					
	Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years	
Variables	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log ODA total (code 130)	-0.085** (0.033)	-0.042 (0.039)	-0.123*** (0.032)	-0.090** (0.037)	-0.137*** (0.031)	-0.116** (0.038)	-0.016 (0.013)	-0.005 (0.013)	-0.028** (0.037)	-0.016 (0.014)	-0.034** (0.014)	-0.020 (0.014)	-0.016* (0.010)	-0.008 (0.010)	-0.033** (0.010)	-0.013 (0.011)	-0.035*** (0.010)	-0.017 (0.011)
Log education	-0.926*** (0.033)	-0.409* (0.223)	-0.765*** (0.221)	-0.444*** (0.240)	-0.674** (0.0226)	-0.439* (0.245)	-1.420** (0.158)	-0.405* (0.223)	-1.304*** (0.165)	-0.333 (0.230)	-1.241*** (0.182)	-0.296 (0.246)	-1.889*** (0.176)	-0.779*** (0.238)	-1.824*** (0.185)	-0.793*** (0.243)	-1.763*** (0.198)	-0.862*** (0.247)
Log urbanization	-0.207 (0.372)	0.688* (0.408)	-0.254 (0.402)	0.679 (0.442)	-0.028 (0.411)	0.97* (0.448)	-0.685** (0.219)	-0.416* (0.217)	-0.823*** (0.231)	-0.486** (0.232)	-0.846*** (0.253)	-0.481* (0.256)	-0.382** (0.192)	-0.102 (0.188)	-0.484** (0.206)	-0.072 (0.208)	-0.635** (0.216)	-0.215 (0.222)
Log number of physicians	-0.043 (0.045)	-0.013 (0.046)	-0.015 (0.045)	0024 (0.046)	-0.0017 (0.044)	0.029 (0.046)	-0.072*** (0.020)	-0.054** (0.020)	-0.068*** (0.021)	-0.054 (0.020)	-0.062** (0.021)	-0.052** (0.021)	-0.072** (0.036)	-0.034 (0.036)	-0.062* (0.034)	-0.014 (0.034)	-0.023 (0.032)	0.021 (0.032)
Constant	5.896 (1.363)	3.645 (1.414)	6.417 (1.494)	3.806 (1.555)	5.805 (1.504)	3.449 (1.570)	6.576 (0.883)	6.560 (0.852)	7.203 (0.929)	6.779 (0.903)	7.356 (1.022)	6.839 (1.001)	4.522 (0.819)	3.962 (0.788)	4.995 (0.877)	3.821 (0.867)	5.631 (0.922)	4.379 (0.923)
Number of observations	198		191		185		391		375		359		419		395		376	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

Table 20. Estimated effect of Private Fund on Maternal Mortality Ratio (by income group), 2002-2017

Variables	Low Income Economies						Lower Middle Income Economies						Upper Middle Income Economies					
	Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log Private Fund to Reproductive and Maternal Health	-0.016 (0.020)	-0.027 (0.020)	-0.035* (0.020)	-0.037* (0.021)	-0.008 (0.020)	-0.021 (0.020)	-0.010 (0.007)	-0.012* (0.007)	0.004 (0.007)	-0.002 (0.007)	-0.004 (0.008)	-0.007 (0.008)	0.013** (0.007)	0.007 (0.007)	0.015* (0.008)	0.013*** (0.007)	0.012 (0.008)	0.011 (0.007)
Log education	-1.017*** (0.027)	-0.122 (0.240)	-0.904*** (0.232)	-0.309 (0.253)	-1.027*** (0.240)	0.160 (0.284)	-1.454*** (0.152)	-0.505** (0.220)	-1.334*** (0.149)	-0.382* (0.211)	-1.394*** (0.172)	-0.388 (0.239)	-2.019*** (0.201)	-0.703** (0.267)	-1.999*** (0.216)	-0.712** (0.283)	-1.941*** (0.240)	-0.756** (0.292)
Log urbanization	-0.384 (0.374)	0.822 (0.401)	-0.443 (0.415)	0.632 (0.448)	-0.451 (0.436)	1.033** (0.454)	-0.680** (0.216)	-0.437** (0.216)	-0.634** (0.216)	-0.328 (0.217)	-0.831*** (0.252)	-0.523** (0.253)	-0.155* (0.234)	0.271 (0.228)	-0.430* (0.240)	-0.055 (0.242)	-0.660** (0.254)	-0.139 (0.261)
Log number of physicians	-0.050 (0.046)	-0.018 (0.044)	-0.024 (0.047)	0.013 (0.046)	-0.018 (0.048)	0.006 (0.045)	-0.065*** (0.020)	-0.052** (0.020)	-0.106*** (0.020)	-0.094*** (0.020)	-0.064** (0.021)	-0.054** (0.020)	-0.142** (0.046)	-0.116** (0.044)	-0.090** (0.042)	-0.055 (0.042)	-0.036 (0.046)	0.009 (0.045)
Constant	6.166 (1.401)	3.621 (1.395)	6.624 (1.556)	4.068 (1.581)	6.445 (1.622)	3.259 (1.556)	6.558 (0.865(	6.499 (0.843)	6.365 (0.863)	6.094 (0.840)	7.119 (1.012)	6.899 (0.991)	3.546 (0.994)	2.550 (0.947)	4.641 (1.022)	3.595 (1.006)	5.587 (1.090)	4.098 (1.089)
Number of observations	196		189		180		390		374		364		364		353		336	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

4.2.8. Adolescent Fertility Rate and Foreign Aid (by income group)

Concerning adolescent fertility rate and foreign aid, private sector funds have a stronger effect than ODA. Results show that the amount of ODA only has a significant effect on low-income economies when lagged by one year with years not fixed. If the amount of ODA increases by 1%, adolescent fertility rate decreases by 0.020% (standard error=0.011, p-value<0.1). In addition, the amount of private sector funds increase by 1%, adolescent fertility rate decreases by 0.035% (standard error=0.020, p-value<0.1) when years are not fixed, and by 0.37% (standard error=0.021, p-value<0.1) when years are fixed in low-income economies, given the fact that the funds are lagged by one year. Interestingly, private sector funds show opposite direction in upper-middle-income economies. When private sector funds to reproductive and maternal health increases by 1%, adolescent fertility rate increases by 0.015% (standard error=0.008, p-value<0.1) with years not fixed, and by 0.013% (standard error=0.007, p-value<0.001) with years fixed.

Table 21. Estimated effect of ODA on Adolescent Fertility Rate (by income group), 2002-2017

Variables	Low Income Economies						Lower Middle Income Economies						Upper Middle Income Economies					
	Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log ODA total (code 130)	0.006 (0.011)	0.021 (0.013)	-0.020* (0.011)	-0.011 (0.013)	-0.017 (0.011)	-0.001 (0.013)	0.018* (0.010)	0.007 (0.010)	0.006 (0.010)	0.001 (0.010)	0.004 (0.010)	-0.002 (0.010)	0.009** (0.006)	0.007 (0.006)	-0.001 (0.006)	-0.002 (0.006)	0.001 (0.006)	0.003 (0.006)
Log education	-0.256*** (0.068)	-0.063 (0.075)	-0.201** (0.079)	-0.068 (0.083)	-0.186** (0.082)	-0.030 (0.085)	-0.763*** (0.120)	-0.819*** (0.177)	-0.752*** (0.120)	-0.783*** (0.175)	-0.735*** (0.127)	-0.745*** (0.180)	-1.033*** (0.099)	-0.653*** (0.141)	-1.014*** (0.105)	-0.685*** (0.142)	-0.936*** (0.110)	-0.611*** (0.141)
Log urbanization	-0.727*** (0.128)	-0.336** (0.138)	-0.666*** (0.144)	-0.220 (0.154)	-0.642*** (0.149)	-0.191 (0.155)	-0.098 (0.165)	-0.081 (0.172)	-0.207 (0.167)	-0.168 (0.177)	-0.256 (0.176)	-0.195 (0.187)	0.246** (0.109)	0.400*** (0.111)	0.165 (0.116)	0.384** (0.122)	0.063 (0.120)	0.309** (0.127)
Log number of physicians	-0.014 (0.016)	0.004 (0.016)	-0.011 (0.016)	0.012 (0.016)	-0.014 (0.016)	0.008 (0.016)	-0.057*** (0.015)	-0.058*** (0.016)	-0.056*** (0.015)	-0.057*** (0.016)	-0.059*** (0.015)	-0.60*** (0.015)	-0.033 (0.020)	-0.009 (0.021)	-0.025 (0.019)	-0.005 (0.020)	-0.028 (0.018)	-0.008 (0.019)
Constant	6.704 (0.470)	5.713 (0.479)	6.564 (0.533)	5.422 (0.540)	6.582 (0.545)	5.316 (0.542)	3.658 (0.666)	3.504 (0.676)	4.108 (0.674)	3.922 (0.690)	4.309 (0.712)	4.088 (0.731)	2.138 (0.463)	1.715 (0.466)	2.488 (0.496)	1.762 (0.507)	2.932 (0.513)	2.095 (0.527)
Number of observations	198		191		185		391		375		359		419		395		376	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

Table 22. Estimated effect of Private Fund on Adolescent Fertility Rate (by income group), 2002-2017

	Low Income Economies						Lower Middle Income Economies						Upper Middle Income Economies					
	Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years	
Variables	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log Private Fund to Reproductive and Maternal Health	0.018** (0.006)	0.022*** (0.007)	0.011 (0.007)	0.018** (0.007)	0.012*** (0.006)	0.021** (0.007)	-0.012** (0.006)	-0.012** (0.006)	-0.015** (0.006)	-0.012** (0.006)	-0.018*** (0.006)	-0.016** (0.006)	0.005 (0.003)	0.003 (0.003)	0.001 (0.004)	0.002 (0.003)	0.002 (0.004)	0.003 (0.004)
Log education	-0.318*** (0.065)	-0.207** (0.080)	-0.292*** (0.079)	-0.135 (0.084)	-0.350*** (0.350)	-0.227** (0.093)	-0.729*** (0.119)	-0.973*** (0.178)	-0.732*** (0.119)	-0.889*** (0.178)	-0.350*** (0.350)	-0.227** (0.093)	-0.727 (0.096)	-0.339** (0.136)	-0.843*** (0.100)	-0.462*** (0.137)	-0.745*** (0.114)	-0.321** (0.144)
Log urbanization	-0.726*** (0.118)	-0.363** (0.133)	-0.730*** (0.142)	-0.249* (0.149)	-0.671*** (0.133)	-0.337** (0.149)	-0.037 (0.169)	-0.079 (0.174)	-0.211 (0.172)	-0.205 (0.183)	-0.671*** (0.133)	-0.337** (0.149)	0.174 (0.112)	0.328** (0.116)	0.202* (0.112)	0.398*** (0.117)	0.102 (0.121)	0.388** (0.129)
Log number of physicians	-0.009 (0.015)	0.008 (0.015)	-0.011 (0.016)	0.011 (0.015)	-0.006 (0.015)	0.014 (0.015)	-0.050** (0.015)	-0.056*** (0.016)	-0.046** (0.016)	-0.051** (0.017)	-0.006 (0.015)	0.014 (0.015)	-0.004 (0.022)	0.006 (0.022)	-0.016 (0.020)	0.007 (0.020)	-0.020 (0.022)	0.004 (0.022)
Constant	6.557 (0.442)	5.564 (0.463)	6.658 (0.532)	5.312 (0.527)	6.408 (0.493)	5.463 (0.511)	3.562 (0.677)	3.440 (0.681)	4.225 (0.689)	4.041 (0.709)	6.408 (0.493)	5.463 (0.511)	2.598 (0.476)	2.200 (0.484)	2.457 (0.465)	1.856 (0.485)	2.787 (0.518)	1.919 (0.537)
Number of observations	196		189		180		390		374		364		364		353		336	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

4.2.9. Births Attended by Skilled Staff and Foreign Aid (by income group)

Births attended by skilled staff and ODA reveals a positive situation whereas private sector funds show a negative picture. Births attended by skilled staff increases by 0.143% (standard error=0.048, p-value<0.05) when years are not fixed, and by 0.156% when years are fixed, if the amount of ODA increases by 1% in low-income economies, given the fact that ODA is not lagged. If the amount of ODA is lagged by one year, births attended by skilled staff increases by 0.144% (standard error=0.041, p-value<0.001) with years not fixed, and by 0.131% (standard error=0.062, p-value<0.05) with years fixed, when the amount of ODA increases by 1% in low-income economies. Births attended by skilled staff also has a significant effect on upper-middle-income economies. Given the fact that the amount of ODA is lagged by two years, 1% increase in ODA results in 0.033% increase (standard error=0.019, p-value<0.01) in births attended by skilled staff with years not fixed, and by 0.045% (standard error=0.019, p-value<0.05) with years fixed. However, private sector funds actually decreases the percentage births attended by skilled staff in upper-middle-income economies. When private sector funds are lagged by two years, births attended by skilled staff decreases by 0.020% (standard error=0.009, p-value<0.05) for both years not fixed and fixed, if funds increase by 1%.

Table 23. Estimated effect of ODA on Births Attended by Skilled Staff (by income group), 2002-2017

Variables	Low Income Economies						Lower Middle Income Economies						Upper Middle Income Economies					
	Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log ODA to births attended by skilled staff (sum)	0.143** (0.048)	0.156* (0.085)	0.144*** (0.041)	0.131** (0.062)	0.153** (0.054)	0.158 (0.112)	0.037 (0.042)	0.007 (0.046)	0.038 (0.037)	0.042 (0.038)	0.008 (0.043)	-0.004 (0.047)	0.017 (0.017)	0.012 (0.017)	0.022 (0.017)	0.017 (0.017)	0.033* (0.019)	0.045** (0.019)
Log education	1.639*** (0.469)	1.533* (0.825)	1.617*** (0.456)	1.047 (0.795)	1.691*** (0.483)	0.857 (0.868)	1.113* (0.571)	1.594* (0.870)	1.162** (0.577)	1.477* (0.871)	1.153* (0.652)	1.369 (0.938)	-0.293 (0.277)	0.254 (0.374)	-0.279 (0.318)	0.335 (0.421)	-0.488 (0.374)	0.192 (0.466)
Log urbanization	0.376 (0.858)	-0.024 (1.302)	0.566 (0.837)	0.775 (1.314)	0.008 (0.893)	0.409 (1.354)	1.912** (0.653)	2.139** (0.689)	2.127** (0.674)	2.460*** (0.715)	2.129** (0.767)	2.453** (0.840)	0.134 (0.292)	0.331 (0.292)	0.105 (0.347)	0.444 (0.355)	0.390 (0.390)	0.867** (0.391)
Log number of physicians	0.020 (0.076)	0.025 (0.101)	0.018 (0.074)	0.033 (0.097)	0.021 (0.078)	0.028 (0.106)	0.021 (0.067)	0.064 (0.071)	0.013 (0.067)	0.064 (0.071)	0.013 (0.071)	0.064 (0.076)	0.247*** (0.071)	0.405*** (0.077)	0.255 (0.075(	0.407*** (0.081)	0.328*** (0.083)	0.511*** (0.091)
Constant	3.970 (3.316)	5.353 (4.740)	3.340 (3.080)	2.307 (4.802)	5.219 (3.230)	3.085 (5.022)	-2.168 (2.718)	-2.341 (2.868)	-2.935 (2.796)	-3.878 (2.948)	-2.877 (3.196)	-3.770 (3.443)	3.742 (1.252)	3.161 (1.239)	3.857 (1.486)	2.735 (1.499)	2.599 (1.681)	0.861 (1.668)
Number of observations	63		62		61		152		146		137		262		245		230	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

Table 24. Estimated effect of Private Fund on Births Attended by Skilled Staff (by income group), 2002-2017

Variables	Low Income Economies						Lower Middle Income Economies						Upper Middle Income Economies					
	Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log Private Fund to Reproductive and Maternal Health	-0.006 (0.033)	-0.045 (0.047)	-0.012 (0.034)	-0.008 (0.042)	-0.001 (0.029)	-0.026 (0.037)	0.005 (0.019)	0.023 (0.022)	-0.004 (0.018)	0.002 (0.020)	0.031 (0.020)	0.035 (0.024)	0.008 (0.008)	0.003 (0.008)	0.001 (0.011)	-0.004 (0.011)	-0.020** (0.009)	-0.020** (0.009)
Log education	2.144*** (0.514)	1.493 (0.893)	2.176*** (0.503)	1.277 (0.904)	2.158*** (0.509)	1.279 (0.857)	1.211** (0.523)	1.488* (0.774)	1.198** (0.541)	1.641** (0.798)	1.117* (0.57)	1.027 (0.842)	-0.024 (0.239)	0.051 (0.381)	-0.304 (0.328)	0.314 (0.466)	-0.476 (0.308)	-0.155 (0.433)
Log urbanization	0.463 (0.951)	-0.115 (1.380)	0.485 (0.972)	0.099 (1.389)	0.411 (0.973)	0.101 (1.375)	1.791** (0.614)	2.100*** (0.640)	2.114*** (0.646)	2.430*** (0.682)	2.203** (0.709)	2.553*** (0.767)	-0.364 (0.293)	-0.385 (0.296)	0.234 (0.361)	0.560 (0.376)	0.514 (0.336)	0.438 (0.355)
Log number of physicians	0.069 (0.083)	0.074 (0.102)	0.069 (0.083)	0.078 (0.103)	0.070 (0.084)	0.067 (0.104)	0.017 (0.063)	0.053 (0.066)	0.010 (0.079)	0.017 (0.084)	0.013 (0.065)	0.059 (0.069)	0.283*** (0.063)	0.270*** (0.067)	0.234 (0.078)	0.352*** (0.084)	0.324*** (0.067)	0.316*** (0.069)
Constant	4.586 (3.493)	6.122 (5.102)	4.582 (3.520)	5.038 (5.057)	4.772 (3.571)	5.039 (4.999)	-1.574 (2.511)	-2.387 (2.600)	-2.749 (2.632)	-3.559 (2.765)	-3.266 (2.902)	-4.534 (3.129)	5.861 (1.231)	6.010 (1.239)	3.350 (1.545)	2.315 (1.571)	2.165 (1.439)	2.614 (1.492)
Number of observations	63		62		61		159		153		146		251		239		223	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

4.2.10. Contraceptive Prevalence and Foreign Aid (by income group)

Concerning contraceptive prevalence, ODA has a significant effect in lower-middle income economies when ODA is not lagged. With 1% increase in the amount of ODA to contraception related projects, contraceptive prevalence increases by 0.744% (standard error=0.098, p-value<0.001) when years are not fixed, and by 0.760% (standard error=0.131, p-value<0.001) when years are fixed. However, when ODA is lagged by one year it shows an opposite direction in lower-middle income economies. Contraceptive prevalence decreases by 0.575% (standard error=0.109, p-value<0.001) with years not fixed, and by 0.596% (standard error=0.109, p-value<0.001) with years fixed, if the amount of ODA increases by 1%. In relationship to private sector funds, 1% increase in funds results in 0.120% increase (standard error=0.062, p-value<0.1) in contraceptive prevalence in low-income economies when funds are lagged by one year, and when years are fixed. However, 1% increase in private sector funds actually decrease contraceptive prevalence by 0.020% (standard error=0.010, p-value<0.1) in upper-middle-income economies when years are fixed, and funds are lagged by one year.

Table 25. Estimated effect of ODA on Contraceptive Prevalence (by income group), 2002-2017

Variables	Low Income Economies						Lower Middle Income Economies						Upper Middle Income Economies					
	Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log ODA to contraceptive prevalence	0.057 (0.067)	0.055 (0.111)	0.080 (0.060)	0.120 (0.094)	0.067 (0.053)	0.139 (0.094)	0.744*** (0.098)	0.760*** (0.131)	-0.575*** (0.109)	-0.596*** (0.109)	0.078 (0.055)	0.147** (0.059)	0.003 (0.025)	-0.004 (0.031)	0.027 (0.020)	0.009 (0.028)	0.056** (0.021)	0.042 (0.030)
Log education	-0.113 (0.568)	-0.588 (0.998)	-0.207 (0.567)	-0.648 (0.960)	-0.232 (0.579)	-0.502 (0.953)	0.012 (1.331)	2.347 (2.211)	2.158 (1.600)	3.055 (2.347)	0.372 (0.594)	1.042 (0.874)	0.181 (0.430)	-0.633 (0.767)	0.379 (0.427)	-0.757 (0.762)	0.367 (0.487)	-0.605 (0.835)
Log urbanization	2.300** (0.814)	2.472 (1.449)	2.261** (0.802)	2.620* (1.401)	2.185** (0.819)	2.572* (1.378)	-1.302 (1.541)	-0.719 (1.677)	1.167 (1.876)	2.443 (1.811)	0.232 (0.681)	0.045 (0.695)	-0.512 (0.538)	-0.318 (0.686)	-0.297 (0.557)	-0.029 (0.675)	-0.096 (0.574)	0.147 (0.727)
Log number of physicians	0.038 (0.138)	0.206 (0.213)	0.041 (0.133)	0.226 (0.206)	0.047 (0.133)	0.245 (0.204)	-0.472** (0.158)	-0.494** (0.182)	0.188 (0.192)	0.246 (0.192)	-0.101 (0.065)	-0.134* (0.070)	-0.008 (0.094)	-0.062 (0.118)	-0.058 (0.093)	-0.147 (0.120)	-0.124 (0.106)	-0.208 (0.145)
Constant	-4.567 (3.031)	-5.317 (4.751)	-4.603 (2.980)	-5.868 (4.587)	-4.311 (3.008)	-5.541 (4.512)	5.580 (6.344)	5.941 (6.682)	3.242 (7.680)	-0.752 (7.230)	2.832 (2.777)	3.905 (2.767)	6.256 (2.291)	5.023 (2.798)	5.467 (2.368)	3.819 (2.782)	4.604 (2.438)	3.352 (2.975)
Number of observations	57		57		56		103		98		94		96		90		88	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

Table 26. Estimated effect of Private Fund on Contraceptive Prevalence (by income group), 2002-2017

Variables	Low Income Economies						Lower Middle Income Economies						Upper Middle Income Economies					
	Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log Private Fund to Reproductive and Maternal Health	0.123** (0.057)	0.133* (0.075)	0.071 (0.047)	0.120* (0.062)	0.087* (0.046)	0.104 (0.071)	0.047 (0.076)	-0.016 (0.102)	0.071 (0.047)	0.120* (0.062)	0.014 (0.070)	-0.083 (0.088)	-0.001 (0.009)	-0.005 (0.011)	-0.020* (0.010)	-0.021 (0.013)	-0.019 (0.018)	-0.018 (0.020)
Log education	-0.798 (0.636)	-1.471 (1.040)	-0.463 (0.617)	-1.438 (1.008)	-0.206 (0.548)	-0.744 (0.952)	0.857 (1.813)	2.998 (2.787)	-0.463 (0.617)	-1.438 (1.008)	1.014 (2.119)	4.308 (3.236)	0.013 (0.281)	-0.099 (0.572)	-0.210 (0.294)	-0.317 (0.584)	0.741 (0.519)	-0.604 (0.998)
Log urbanization	2.089 (0.776)	2.294 (1.341)	2.308** (0.794)	2.503* (1.327)	2.005** (0.807)	1.829 (1.424)	0.121 (2.110)	0.896 (2.196)	2.308** (0.794)	2.503* (1.327)	-0.126 (2.540)	0.969 (2.522)	-0.094 (0.337)	-0.149 (0.453)	0.094 (0.368)	0.116 (0.491)	-0.527 (0.545)	0.062 (0.752)
Log number of physicians	0.154 (0.132)	0.290 (0.203)	0.094 (0.132)	0.218 (0.196)	0.037 (0.130)	0.132 (0.210)	-0.156 (0.209)	-0.132 (0.222)	0.094 (0.132)	0.218 (0.196)	-0.168 (0.234)	-0.170 (0.241)	0.073 (0.056)	0.094 (0.079)	0.067 (0.066)	0.081 (0.104)	0.119 (0.109)	0.021 (0.158)
Constant	-4.755 (2.860)	-6.087 (4.147)	-4.962 (2.979)	-6.699 (4.418)	-3.960 (2.932)	-3.899 (4.541)	3.580 (8.748)	3.203 (9.025)	-4.962 (2.979)	-6.699 (4.418)	4.762 (10.466)	4.303 (10.317)	4.501 (1.450)	4.630 (1.863)	3.740 (1.566)	3.577 (2.202)	6.665 (2.331)	3.646 (3.200)
Number of observations	57		57		56		106		100		98		89		86		79	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

4.2.11. HIV Prevalence and Foreign Aid (by income group)

HIV prevalence reveals an unanticipated situation. ODA disbursed to STDS/HIV/AIDS projects do not show significant effect on reducing the percentage of HIV infections. When considering private sector funds, results show that funds significantly affect HIV infections in an opposite direction. If private sector funds are lagged by one year, percentage of HIV infections actually increase by 0.032% (standard error=0.011, p-value<0.05) when years are not fixed, and by 0.025% (standard error=0.014, p-value<0.1) when years are fixed in low-income economies. The situation is identical in lower-middle income economies too. If amount of private sector funds increase by 1%, percentage of HIV infections increase by 0.027% (standard error=0.008, p-value<0.001) with years not fixed, and by 0.019% (standard error=0.009, p-value<0.001) with years fixed, given the fact that funds are lagged by one year. Even if funds are lagged by two years in lower-middle-income economies, percentage of HIV infections still increases by 0.030% (standard error=0.009, p-value<0.001) with years not fixed, and by 0.032% (standard error=0.010, p-value<0.05) with years fixed, if the amount of private sector funds increase by 1%.

Table 27. Estimated effect of ODA on HIV Prevalence (by income group), 2002-2017

Variables	Low Income Economies						Lower Middle Income Economies						Upper Middle Income Economies					
	Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log ODA STDs/HIV	0.031** (0.015)	-0.008 (0.018)	0.040** (0.015)	0.005 (0.018)	0.019 (0.013)	-0.010 (0.016)	0.004 (0.014)	-0.001 (0.015)	0.007 (0.014)	-0.0058 (0.016)	0.006 (0.014)	-0.006 (0.015)	0.018 (0.014)	0.018 (0.014)	0.011 (0.014)	-0.002 (0.014)	0.012 (0.013)	-0.006 (0.014)
Log education	-0.747*** (0.111)	-0.998*** (0.128)	-0.721*** (0.125)	-0.891*** (0.138)	-0.696*** (0.124)	-0.865*** (0.136)	-0.061 (0.162)	-0.221 (0.239)	-0.048 (0.160)	-0.172 (0.235)	-0.095 (0.166)	-0.176 (0.232)	1.388*** (0.305)	-0.371 (0.402)	1.194*** (0.325)	-0.561 (0.408)	0.963** (0.342)	-0.659* (0.393)
Log urbanization	-0.331 (0.211)	-0.433 (0.234)	-0.429* (0.228)	-0.443* (0.254)	-0.415* (0.224)	-0.376 (0.248)	-0.359* (0.215)	-0.368* (0.221)	-0.419* (0.219)	-0.433* (0.228)	-0.434* (0.225)	-0.416* (0.236)	-0.598 (0.373)	-1.809 (0.405)	-0.330 (0.389)	-1.573*** (0.423)	-0.160 (0.394)	-1.546*** (0.426)
Log number of physicians	-0.028 (0.026)	-0.023 (0.026)	-0.023 (0.025)	-0.018 (0.026)	-0.016 (0.025)	-0.009 (0.025)	-0.028 (0.024)	-0.038 (0.024)	-0.020 (0.023)	-0.028 (0.024)	-0.019 (0.023)	-0.021 (0.024)	0.132** (0.064)	0.105 (0.063)	0.115** (0.064)	0.080 (0.064)	0.072 (0.062)	0.040 (0.061)
Constant	0.121 (0.776)	0.204 (0.811)	0.477 (0.846)	0.313 (0.893)	0.554 (0.827)	0.286 (0.870)	0.579 (0.878)	0.478 (0.888)	0.800 (0.891)	0.690 (0.902)	0.848 (0.918)	0.734 (0.937)	1.972 (1.606)	6.094 (1.672)	0.821 (1.677)	5.058 (1.750)	0.061 (1.702)	4.962 (1.769)
Number of observations	198		191		185		342		328		317		316		301		284	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

Table 28. Estimated effect of Private Fund on HIV Prevalence (by income group), 2002-2017

Variables	Low Income Economies						Lower Middle Income Economies						Upper Middle Income Economies					
	Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log Private Fund to HIV	0.017 (0.011)	0.016 (0.013)	0.032** (0.011)	0.025* (0.014)	0.022** (0.011)	0.005 (0.015)	0.026** (0.008)	0.025** (0.009)	0.027*** (0.008)	0.019*** (0.009)	0.030*** (0009)	0.032** (0.010)	0.023** (0.011)	0.019 (0.013)	0.027** (0.011)	0.012 (0.013)	0.033** (0.010)	0.008 (0.013)
Log education	-0.711*** (0.109)	-0.969*** (0.129)	-0.702*** (0.123)	-0.874*** (0.137)	-0.659*** (0.120)	-0.837** (0.139)	-0.089 (0.161)	-0.362 (0.235)	-0.015 (0.162)	-0.285 (0.238)	-0.094 (0.168)	-0.260 (0.241)	1.242*** (0.325)	-0.325 (0.401)	1.068** (0.338)	-0.363 (0.400)	0.788** (0.352)	-0.439 (0.390
Log urbanization	-0.263 (0.209)	-0.369 (0.239)	-0.304 (0.225)	-0.327 (0.259)	-0.308 (0.218)	-0.359 (0.263)	-0.358 (0.218)	-0.373* (0.222)	-0.465** (0.229)	-0.486** (0.235)	-0.461 (0.243)	-0.461* (0.252)	-0.519 (0.375)	-1.679*** (0.411)	-0.457 (0.401)	-1.663 (0.439)	-0.120 (0.398))	-1.513*** (0.451)
Log number of physicians	-0.021 (0.026)	-0.021 (0.026)	-0.018 (0.025)	-0.016 (0.026)	-0.022 (0.024)	-0.016 (0.026)	-0.035 (0.024)	-0.046* (0.025)	-0.029 (0.024)	-0.038 (0.024)	-0.030 (0.025)	-0.042 (0.025)	0.163** (0.064)	0.125* (0.064)	0.141** (0.064)	0.099 (0.064)	0.109* (0.063)	0.054 (0.063)
Constant	-0.057 (0.782)	-0.061 (0.837)	0.022 (0.854)	-0.155 (0.924)	0.139 (0.829)	0.197 (0.934)	0.373 (0.888)	0.217 (0.889)	0.816 (0.924)	0.651 (0.930)	0.738 (0.985)	0.607 (0.997)	1.419 (1.633)	5.447 (1.716)	1.073 (1.737)	5.391 (1.838)	0.419 (1.725)	4.812 (1.890)
Number of observations	198		191		184		351		336		324		328		316		299	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

4.2.12. Intimate Partner Violence (IPV) experience and Foreign Aid (by income group)

The relationship between percentage of women who have experienced intimate partner violence and foreign aid shows an optimistic picture. Both ODA and private sector funds reduce percentage of IPV experience, although ODA seems to have a stronger effect. Total amount of ODA disbursement to population polices/programs and reproductive health has a significant effect, especially when lagged by one and two years, and a stronger effect in low income economies than lower-middle income economies. Percentage of women who have experience IPV decreases by 0.029% (standard error=0.005, p-value<0.001) with 1% increase in ODA in low income economies whereas it decreases by 0.010% (standard error=0.003, p-value<0.001) in lower-middle income economies without years fixed. When years are fixed, IPV decreases by 0.013% (standard error=0.005, p-value<0.05) in low income economies and by 0.004% (standard error=0.002, p-value<0.05) in lower-middle income economies when lagged by one-year period. Private sector funds also show effect on low income economies and upper-middle economies when years are not fixed. In low income economies, 1% increase in private sector funds decreases IPV experience by 0.016% (standard error=0.004, p-value<0.001) when years are not lagged, decreases by 0.014% (standard error=0.005, p-value<0.05) with one year lag, and by 0.020%(standard error=0.005, p-value<0.001) when lagged by two years. In upper-middle income economies, IPV experience decreases by 0.005% (standard error=0.001, p-value<0.001) with 1% increase in private sector funds for both one year and two years lag period.

Table 29. Estimated effect of ODA on IPV experience (by income group), 2002-2017

Variables	Low Income Economies						Lower Middle Income Economies						Upper Middle Income Economies					
	Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log total ODA (code 130)	-0.024*** (0.006)	-0.007 (0.005)	-0.029*** (0.005)	-0.013** (0.005)	-0.033*** (0.005)	-0.016*** (0.005)	-0.006** (0.003)	-0.003 (0.002)	-0.010*** (0.003)	-0.004** (0.002)	-0.009*** (0.003)	-0.006** (0.002)	-0.003* (0.02)	0.000 (0.002)	-0.006** (0.002)	0.001 (0.002)	-0.007*** (0.002)	0.000 (0.002)
Log education	-0.129*** (0.034)	0.058** (0.028)	-0.111** (0.038)	0.036 (0.029)	-0.080** (0.037)	0.049* (0.029)	-0.424*** (0.034)	-0.022 (0.039)	-0.419*** (0.034)	-0.016 (0.038)	-0.396*** (0.036)	-0.021 (0.038)	-0.415*** (0.032)	-0.024 (0.036)	-0.379*** (0.033)	-0.024 (0.037)	-0.368*** (0.034)	-0.038 (0.036)
Log urbanization	-0.306*** (0.064)	0.028 (0.051)	-0.288*** (0.069)	0.073 (0.054)	-0.246*** (0.068)	0.076 (0.054)	-0.121** (0.046)	0.000 (0.037)	-0.131** (0.047)	0.021 (0.038)	-0.161*** (0.049)	0.013 (0.039)	-0.283*** (0.035)	-0.188*** (0.029)	-0.323*** (0.037)	-0.201*** (0.031)	-0.323*** (0.038)	-0.189*** (0.032)
Log number of physicians	-0.010 (0.008)	0.000 (0.006)	-0.007 (0.008)	0.003 (0.006)	-0.010 (0.007)	0.002 (0.006)	-0.015*** (0.004)	-0.010** (0.003)	-0.013** (0.004)	-0.010** (0.003)	-0.011** (0.004)	-0.009** (0.003)	-0.019** (0.007)	-0.005 (0.005)	-0.021*** (0.006)	-0.007 (0.005)	-0.020*** (0.006)	-0.007 (0.005)
Constant	4.014 (0.234)	3.163 (0.176)	3.986 (0.255)	2.993 (0.191)	3.883 (0.248)	2.988 (0.188)	2.878 (0.186)	2.776 (0.147)	2.936 (0.191)	2.712 (0.148)	3.061 (0.198)	2.746 (0.153)	3.263 (0.149)	3.094 (0.120)	3.454*** (0.156)	3.143 (0.131)	3.465*** (0.161)	3.100 (0.134)
Number of observations	198		191		185		386		370		355		409		386		368	

Standard errors in parentheses.

*P-value <0.10; **P-value <0.05; ***P-value<0.001

Table 30. Estimated effect of Private Fund on IPV experience (by income group), 2002-2017

Variables	Low Income Economies						Lower Middle Income Economies						Upper Middle Income Economies					
	Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years		Without Lag Year		Lag 1 Year		Lag 2 Years	
	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)	Year Dummy (NO)	Year Dummy (YES)
Log total private SRH	-0.016*** (0.004)	0.000 (0.003)	-0.014** (0.005)	0.000 (0.004)	-0.020*** (0.005)	0.003 (0.004)	-0.003 (0.002)	-9.500 (0.002)	-0.005 (0.002)	-0.001 (0.002)	-0.002 (0.002)	0.002 (0.002)	-0.002 (0.001)	0.001 (0.001)	-0.005*** (0.001)	-0.002 (0.001)	-0.005*** (0.001)	2.390 (0.001)
Log education	-0.137*** (0.034)	0.060** (0.028)	-0.130*** (0.040)	0.040 (0.030)	-0.115** (0.039)	0.061** (0.030)	-0.423*** (0.003)	-0.055 (0.038)	-0.422 (0.034)	-0.057 (0.039)	-0.422*** (0.035)	-0.074* (0.038)	-0.403*** (0.031)	-0.002 (0.032)	-0.358*** (0.032)	-0.022 (0.034)	-0.334*** (0.033)	-0.022 (0.031)
Log urbanization	-0.359*** (0.064)	0.020 (0.052)	-0.354*** (0.072)	0.062 (0.057)	-0.368*** (0.069)	0.062 (0.057)	-0.126** (0.045)	-0.020 (0.037)	-0.136 (0.047)	-0.004 (0.039)	-0.159*** (0.049)	-0.004 (0.041)	-0.265*** (0.032)	-0.174*** (0.024)	-0.320*** (0.034)	-0.202*** (0.028)	-0.325*** (0.035)	-0.166*** (0.029)
Log number of physicians	-0.014* (0.008)	-0.001 (0.006)	-0.011 (0.008)	0.001 (0.006)	-0.010 (0.008)	-0.003 (0.006)	-0.015*** (0.004)	-0.011*** (0.003)	-0.015 (0.004)	-0.012*** (0.003)	-0.013** (0.004)	-0.011*** (0.003)	-0.021*** (0.005)	-0.004 (0.004)	-0.024*** (0.005)	-0.008* (0.004)	-0.021*** (0.005)	-0.005 (0.004)
Constant	4.193 (0.240)	3.173 (0.187)	4.173 (0.274)	2.994 (0.206)	4.273 (0.266)	2.979 (0.205)	2.903*** (0.182)	2.807 (0.148)	2.953 (0.189)	2.751 (0.154)	3.021*** (0.198)	2.729 (0.161)	3.201 (0.137)	3.038 (0.104)	3.469*** (0.145)	3.148 (0.118)	3.505*** (0.151)	3.000 (0.120)
Number of observations	198		191		184		398		382		367		437		416		392	

Standard errors in parentheses.
*P-value <0.10; **P-value <0.05; ***P-value<0.001

Chapter 5. Discussion

5.1. Discussion

Achieving SRHR is important because SRHR is one health aspect directly linked to realizing full capabilities, and value of life for all individuals. As Nussbaum (2003) mentions in her list of human capabilities, efforts to achieve SRHR allows one to live a fulfilling life without dying prematurely due to preventable deaths, supports bodily health and bodily integrity. Maternal mortality is a preventable global health issue. Efforts to reduce maternal mortality ratio allows pregnant women to live a fulfilling life equally as others. One of the main barriers to safe delivery lack of resources. A qualitative research by Solnes Miltenburg et al. (2016) reveals that pregnant women living in rural Tanzania face hardships during delivery due to limited health resources. Women are required to bring necessarily medical supplies such as gloves and syringes when giving birth, and those who are unable to bring the supplies would have to wait long hours to be taken care of. Due to shortage of medical staffs, Tanzanian women also preferred to go under labor in a room with multiple others because that is the only way they can be attended by a medical professional. Therefore, financial resources are essential to improve health system of low and middle-income countries Results of this study shows that maternal mortality ratio is especially high in low income economies in comparison to lower-middle and upper-middle income economies, and low-income economies are countries that face financial challenges in strengthening their health systems. At the same time, this study reveals that foreign aid has a significant effect on reducing maternal mortality ratio in low income economies. Maternal mortality ratio decreases with statistical significance when ODA is lagged by both one and two years. For example, 1% increase in the total amount of ODA decreases maternal mortality ratio by 0.090% when lagged by 1 year, and by 0.116% when lagged by 2 years (years fixed). Private sector funds also show effectiveness in reducing

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maternal mortality ratio in low income economies. It decreases by 0.037% with 1% increase in the total amount of private funds to reproductive and maternal health sector. Despite the fact that foreign aid has a minimal impact, it does show statistical significance in reducing maternal mortality ratio, and thus, foreign aid should continue to be disbursed.

Moreover, giving births attended by skill staff is directly linked to the issue of decrease in maternal mortality ratio. Births attendants are health personnel who can address any unexpected complications during birth in a timely manner. However, low and middle income countries face financial challenges in increasing the number of skilled birth attendants. In Nigeria, for example, the government is unable to pay adequate salaries and benefits to midwives. Although some midwives perceive their jobs as rewarding, others do not have the incentive to continue their work due to irregular payments (Okeke et al., 2017). Hence, foreign aid can serve as a mean to alleviate financial constraints of low and middle-income countries, and according to findings from this study, ODA is the only source of foreign aid that has a significant impact on increasing births attended by skilled staff. On a global level, it increases by 0.046% with 1% increase in the total amount of ODA disbursed to population policies and reproductive health when lagged by one year (fixed years) and by 0.039% when lagged by two years (fixed years). When analyzed by income level, births attended by skilled staff increases in low income economies when the amount of ODA is lagged by one year.

Adolescent fertility is also a preventable health issue, and negative consequences on pregnant adolescents can deprive their future potentials in living a fulfilling life. Young pregnant women are more likely to face health risks during delivery, drop out of school than their non-pregnant peers, and face social stigma. According to a longitudinal study by Ardington, Menendez, and Mutevedzi (2015), the authors find that early pregnancy of young women residing in rural South Africa is associated with low education level and high mortality risk. Youngest mothers within the study were more likely to receive 2.8 years less of education

than older mothers, and young mothers giving birth before the age of 20 years old have 40% higher risk of dying than those giving birth after the age of 20 years old. Furthermore, Ruzibiza (2020) highlights how Burundian refugee teenage girls residing in Rwandan camps tries to isolate oneself from their family members and the community when stigmatized for being pregnant at a young age. As adolescent fertility deprives young women from exercising their full potentials, programs and policies to prevent adolescent fertility should receive continuous financial support. Findings from this study show that both ODA and private sector funds have a positive impact in reducing adolescent fertility ratio. In particular, ODA has a positive impact on low income economies only whereas private sector funds have a positive impact in lower-middle income economies. Adolescent fertility ratio decreases by 0.020% when ODA increases by 1% when lagged by one-year (without fixed years) in low income economies. On the other hand, 1% increase in the total amount of private sector funds towards reproductive and maternal health programs to lower-middle income economies decreases adolescent fertility ratio by 0.012% with one-year lag, and by 0.016% when lagged by two years. Therefore, foreign aid should continue to be disbursed to programs working to reduce adolescent fertility rate, especially to low income and lower-middle income economies.

In regards to practicing modern contraceptive methods, this issue is part of achieving bodily integrity, allowing for "opportunities for sexual satisfaction and for choice in matters of reproduction" (Nussbaum, 2003, p.41). Being able to use contraceptives as part of family planning to achieve one's desired number of family is a choice and decision that should be made by all individuals. As highlighted in the 1995 Beijing Declaration and Platform for Action, use of contraceptives especially enables women to "have control over and decide freely and responsibly on matters related to their sexuality, including sexual and reproductive health" (p. 36). Furthermore, use modern contraceptives can help reduce unwanted pregnancy and transmission of sexually transmitted diseases and HIV/AIDS. Edouard (2009) mentions that

access to contraceptive services is a right, and thus, need to increase physical access to contraception, and contraception should be free of charge. However, when public resources are limited, individuals would either turn to private care or not use contraceptives leading to unmet contraceptive needs, suggesting that unmet contraceptive needs would prevail among the poor who are unable to turn to private care. Hence, sustainable financial funding should be in place so that all individuals have universal access to modern contraceptives for their sexual satisfaction and family planning. Findings from this study reveal that both ODA and private sector funds increase contraceptive use with statistical significance, especially in low income and lower-middle income economies. Use of contraceptives increase by 0.760% with 1% increase of ODA in lower-middle income economies when years are not lagged, and by 0.147% when years are lagged by two-year period (years fixed) whereas 1% increase in private sector funds increase use of contraceptives by 0.133% without lag year, and by 0.120% with one-year lag period (years fixed) in low income economies.

Reducing intimate partner violence is also part of realizing bodily integrity in terms of "securing against violence assault, including sexual assault and domestic violence" (Nussbaum, 2003, p.41). All individuals should be able to have full control over their body, and should be empowered to say no to any external coercion over their body. Literature on IPV and health consequences reveal that IPV has a major impact on mental health of victims. For example, 16.8% of married women living in rural Bangladesh faced major depressive disorders due to IPV, and severity of IPV had positive correlation with increased depressive disorders (Esie et al., 2019). Mental health issues deprive one from not only being able to think and reason but also from fully participating in society, and affiliating with others. Thus, continuous efforts should be made to alleviate financial constraints faced by program designers and policy makers addressing the issue of IPV through foreign aid. Both ODA and private sector funds seem to reduce IPV with statistical significance. ODA disbursement to population polices/programs

and reproductive health has a stronger effect especially in low income economies (0.013% decrease with 1% increase in ODA with one-year lag period) than lower-middle income economies (0.004% decrease with 1% increase in ODA with one-year lag period). Regarding private sector funds, 1% increase in private sector funds decrease IPV experience by 0.016% in low income economies, and by 0.005% in upper-middle income economies when years are lagged by one year for both income levels.

Lastly, individuals living with HIV reduces quality of life as they have to live in the state of morbidity, which relates to attaining bodily health in Nussbaum's list of capabilities. In addition, increase in new HIV patients can also drain limited health resources. Within the sexual and reproductive health sector, continuous discussions are made on how majority of the health resource are diverted towards HIV/AIDS. Descriptive results from this study also reveals that large portion of foreign aid is channeled to HIV/AIDS programs within the sexual and reproductive health sector despite increases in the reproductive health care sector. Unfortunately, percentage of new HIV infections was the main indicator that actually presented an opposite direction. Despite the fact that HIV/AIDS take up most share of foreign aid, the HIV prevalence increased when either ODA or private sector funds were disbursed to HIV related projects. One of the reasons to this situation is that there is not enough variance in the percentage of HIV infections within countries. In other words, HIV prevalence remained quite the same each year for most of the countries in the sample.

In short, achieving SRHR is associated with realizing full capabilities and value of life for all individuals. Everyone should enjoy their life without dying prematurely due to preventable deaths, maintain good physical and mental well-being, and have full control over one's body. However, one of the challenges faced by low and middle-income countries in achieving SRHR is limited financial resources. Therefore, alleviating financial constraints of low and middle-income countries through foreign aid can be one of the many means to improve

SRHR outcomes.

5.2. Limitation of Study

One of the main limitation of this study is the data availability for SRHR indicators. For example, the only data available that can capture the contraception issue was contraceptive prevalence rate collected from married women only. As Thanenthrian (2014) mentions, this does not provide a full description of unmet need for all women both married and unmarried, nor does it capture unmet needs for men. In addition, the closest indicator that can capture the rights aspect of SRHR for this study was percentage of women who have experienced IPV, and this was the only indicator with enough data that can be analyzed on a global level. Despite the fact that IPV data is relatively systematic compared to other indicators, IPV is an issue that is often underreported. Palermo, Bleck, and Peterman (2014) finds that out of 40% of women who have experienced any form of gender-based violence, only 7% of women seek formal legal support, and reveal that report of violence can be underestimated by at least 11-fold to a maximum of 128-fold. Moreover, there was not enough variance within HIV data to show effectiveness of foreign aid in HIV sector despite the fact that a large portion of population polices and reproductive health aid is disbursed to HIV programs.

Furthermore, capturing the effectiveness of foreign aid is complex due to external influences such as unexpected changes in economic and political environment, or evaluating the application of Paris Declaration on Aid Effectiveness. Political and financial support for foreign aid, especially to SRHR related area, can be uneven depending on the characteristics of donor countries. As Claeys and Wuyts (2005) mentions, Ireland and Luxembourg do not have open SRHR policies within their countries but are increasingly providing funds for issues related to population assistance. In addition, Roseman and Reichenbach (2010) notes that during Bush's administration in early 2000s, the Global Gag Rule was re-enacted, which

prohibited organizations from receiving US foreign aid if any activities were related to abortion but was repealed during Obama's administration. This implies that funding may not be stable due to changing political situation. Furthermore, aid effectiveness also strongly depends on the 5 principles of the Paris Declaration, which includes ownership, alignment, harmonization, managing for results and mutual accountability. Foreign aid recipient countries should have the capacity to design their own development goals, strengthen their governance and make sure to produce effective development results while donor countries should align their support to local needs of recipient countries (OECD, n.d). Hence, this study suggest future studies to focus on either examining the barriers and facilitators that plays a role in aid effectiveness or collecting measurable data that can fully capture SRHR situation globally.

Chapter 6. Conclusion

In this study, panel regression analysis was conducted to examine the relationship between SRHR outcomes and foreign aid with observations from 132 countries from years 2002 to 2017. This study points out that SRHR is a global public health challenge and that achieving SRHR is crucial to fully realize human capabilities and value of life. Unfortunately, low and middle-income countries face financial challenges in improving their SRHR outcomes, and thus, the role of foreign aid should have a positive impact on SRHR outcomes of low and middle-income countries.

Although findings from this study reveal that effectiveness of foreign aid does show statistical significance in certain SRHR indicators, actual numbers confirm to have minor impact. On a global level, the strongest impact of foreign aid was in the area of contraceptive prevalence. With 1% increase in the amount of ODA disbursed to contraception related projects, contraceptive prevalence increased by 0.213% without years lagged (years fixed), and by 0.081% with years lagged (years fixed). The weakest impact of foreign aid was in the area of adolescent fertility when analyzed on a global level. With 1% increase in total amount of ODA to population polices and reproductive health programs, adolescent fertility rate decreased by 0.013% without years fixed and by 0.008% with years fixed when years are not lagged. When divided into income groups, foreign aid to contraception related programs also revealed to have strongest impact, particularly in lower-middle income economies when years are not lagged. With 1% increase in the amount of ODA disbursed to contraception related projects, contraceptive prevalence increased by 0.760% when years are not lagged (years fixed). The weakest impact of foreign aid was in the area of adolescent fertility, especially in lower-middle income economies. Adolescent fertility decreased by 0.012% when lagged by one year (years fixed) with 1% increase in total amount of ODA disbursed to population polices and

reproductive health programs. Overall, foreign aid was mostly effective when lagged by one or two years, indicating that effectiveness of foreign aid takes place at least one year after disbursements are made. As Radelet (2017) mentions in his article, the findings from this study also explain that foreign aid may not be the major source that drives development but can be regarded as one of the many tools that can foster long term development of developing countries. In other words, other factors such as good governance and economic policies, and civil society participation, etc… can also play a role in improving human development of developing countries (World Bank, 1998). In general, findings from this study hopes to contribute to the literature of aid effectiveness in health and provide evidence when designing foreign aid policies related to SRHR outcomes.

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portal/sdg?tab=map&annex=Good%20Health%20and%20Well-

being&fiac%5BSH_HIV_INCD%5D%5B%5D=ALLAGE&findc%5BSH_DTH_RN

COM%5D%5B%5D=CAN&finic%5B%5D=SH_FPL_MTMM&fyr%5B%5D=Late

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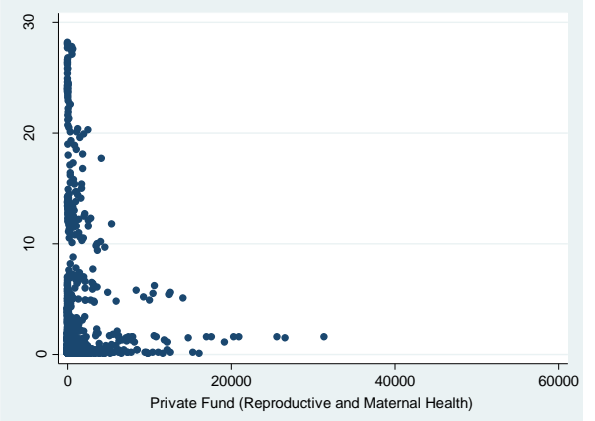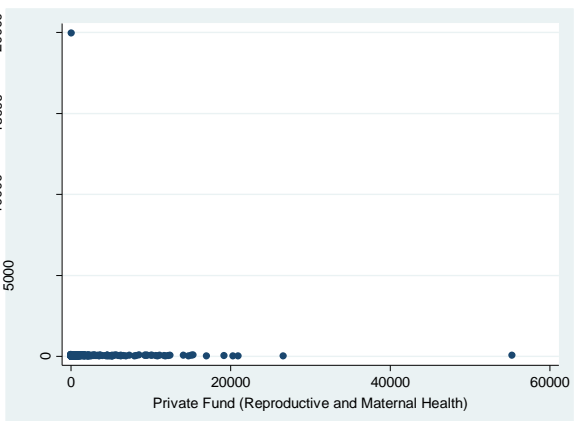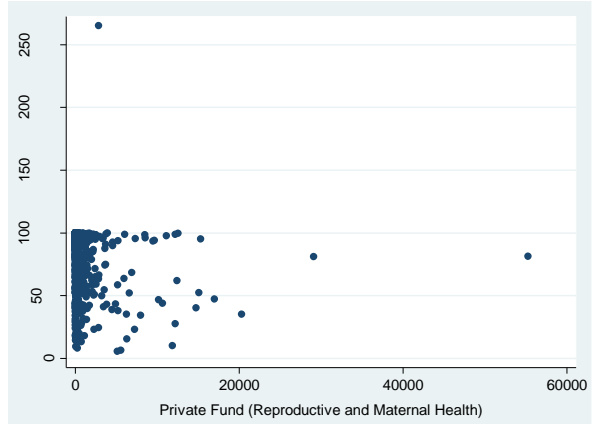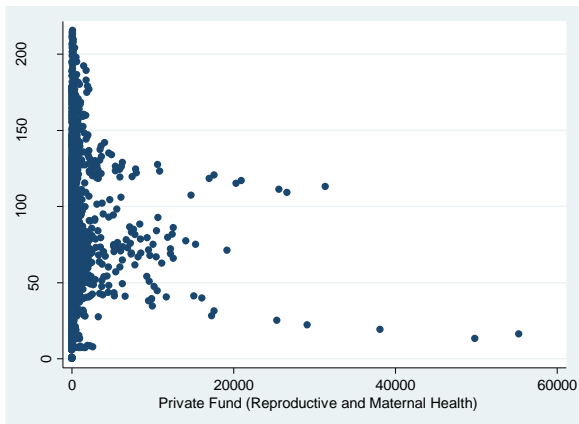to the Health Sector. *Southern Economic Journal, 75*(1): 188-207.

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Appendix A.

Scatter Plot of Dependent and Independent Variables
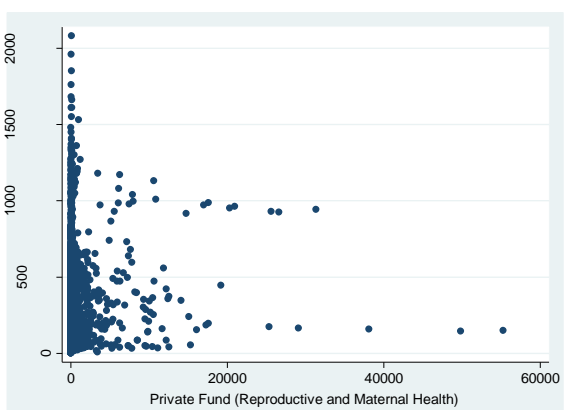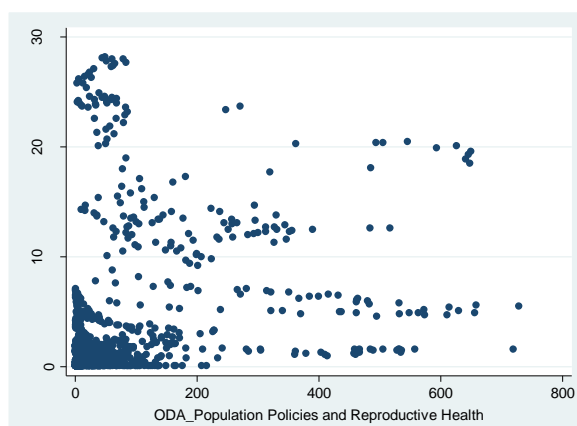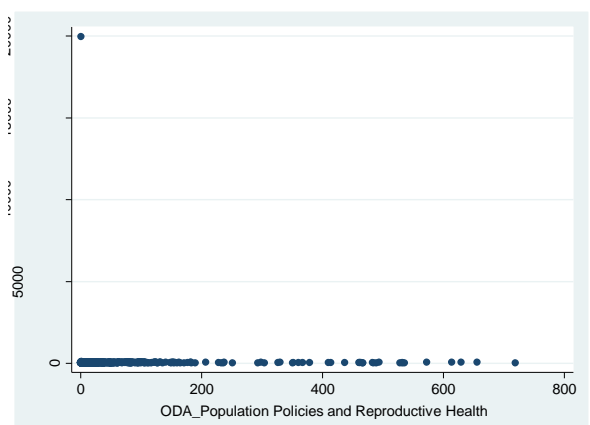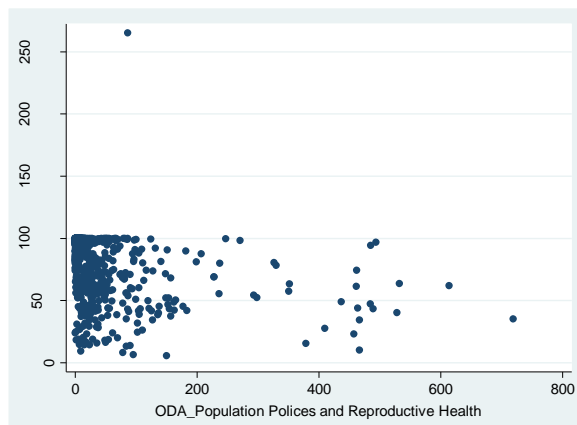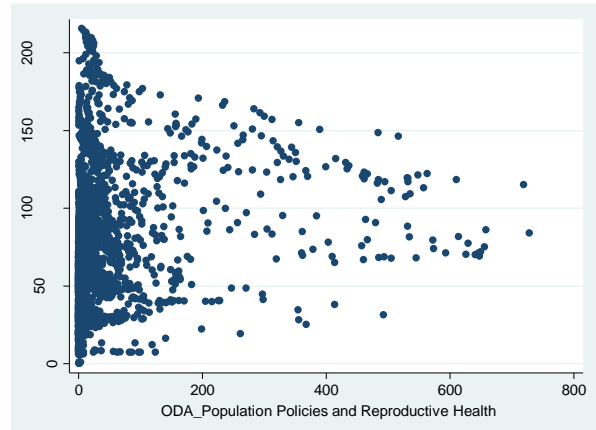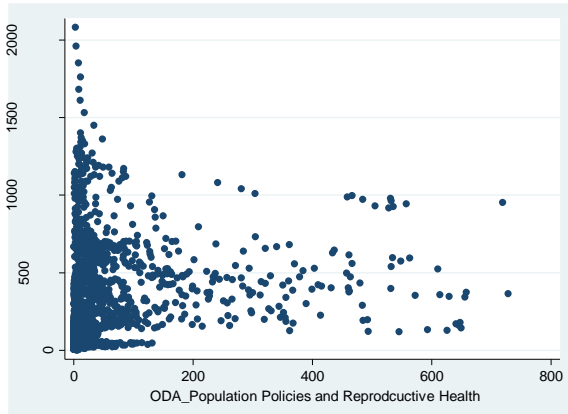
Abstract in Korean

국문 초록

해외원조가 저개발도상국의 성생식보건 및 권리에 미치는 영향

<div align="right">

김꽃별

서울대학교 보건대학원

보건학과 보건정책관리학 전공

</div>

배경 및 목적: 성생식보건 및 권리 (Sexual and reproductive health and rights, SRHR)의 달성은 국제보건사회의 도전과제 중 하나이다. SRHR 관련 전세계 질병부담율의 현황을 살펴보면 약 43 억명의 사람들이 성생식보건 서비스를 이용하지 못하고 있으며, 약 3 천만명 이상의 여성이 의료시설에서 출산을 하지 못하고, 2 억명 이상의 여성이 현대적인 피임도구를 사용하고 있지 못하고 있다 (Starr et al., 2018). SRHR 에 관한 논의는 1970 년대부터 이루어지고 있는데, 26 년 전인 1994 년 국제인구개발회의 (International Conference on Population and Development, ICPD)때부터 본격적으로 논의가 되었다고 볼 수 있다. 당시 성생식 이슈가 경제적인 이슈가 아닌 보건학적 그리고 인권의 이슈로 대두가 되며, 성생식보건 서비스를 접근하기 위해서 인권기반이여야 한다는 점이 강조되고 있다. 더불어, 2019 년에는 1994 ICPD 의 이행을 점검하기 위해 ICPD25 회의가 나이로비에서 개최되었으며, ICDP 의 주요 목적인 예방 가능한 모성 사망률 감소, 가족계획에 관한 미충족 욕구 감소, 젠더기반폭력과 여성 및 소녀에 대한 유해한 관습

감소를 달성하기 위해 국제 재정 지원이 매우 필요하다는 점이 논의되었다. 또한, SRHR 의 구성요소는 새천년개발목표(MDGs) 그리고 지속가능한개발목표(SDGs)의 일부로 포함되어 있다. 하지만 SRHR 의 중요성과 SRHR 달성을 위한 국제사회의 지속적인 노력에도 불구하고 SRHR 을 개선하기 위한 자금조달은 매우 제한되어 있는 상황이다. 따라서, 본 연구는 해외원조가 SRHR 관련 건강지표 개선에 긍정적인 영향을 미치는지를 확인하기 위해 이 둘의 관계를 살펴보고자 한다.

방법: 해외원조가 SRHR 지표 개선에 효과가 있는지 살펴보기 위해 본 연구는 2002 년부터 2017 년까지 132 개의 저개발도상국 대상으로 국가수준의 패널 데이터를 구축하여 회귀분석을 수행했다. SRHR 관련 건강 지표는 모성 사망률, 청소년 출산율, 출산 시 의료인이 상주하는 비율, 여성 피임율, HIV 감염 비율과 친밀한 관계에서의 폭력 (intimate partner violence, IPV)를 살펴보았다. 해외원조는 인구정책 및 성생식보건 분야에 투입되는 공적개발원조와 게이츠재단과 같은 민간부문 원조를 살펴보았다. 통제변수로는 교육수준, 도시화 수준 그리고 인구 1,000 명당 의사 수를 선정하였다.

결과: 기술 분석에 따르면 2002 년부터 2017 년까지 해외원조의 총액은 꾸준히 증가하고 있다. 공적개발원조 같은 경우 대부분의 비중이 사회기반 시설 및 서비스 부문에 제공되고 있으며, 이 중 일반 보건, 인구정책 및 성생식보건과 식수위생인 건강관련 프로젝트에 투입되고 있다. 또한, 대부분의 원조가 성병 및 HIV 에 지출되고 있지만 성생식보건과 가족계획 분야에 투입되는 비율은 꾸준히 증가하고 있는 추세다. 고정효과 회귀분석에 따르면, 해외원조는 미미한 수준으로 SRHR 에 긍정적인 영향을 미치고 있다. 전세계 수준으로 살펴보면,

공적개발원조는 1 년 또는 2 년 후에 효과를 보여주고 있으며, SRHR 지표 개선에 효과를 보여주는 유일한 해외원조이다. 공적개발원조는 모성 사망률, 출산 시 의료인 상주 비율, 여성의 피임도구 사용률, 친밀한 관계에서의 폭력에서 효과적이지만, 민간부분 원조는 어느 지표에도 효과를 나타내지 않는다. 결과를 소득 수준별로 분류하면, 해외원조는 저소득 및 중저소득 국가에서 제일 효과적이다. 저소득 국가에서는 모성사망률과 출산시 의료인 상주 비율이 통계적으로 유의미하게 감소하였고, 친밀한 관계에서의 폭력 또한 감소하였다. 더불어, 대부분의 해외원조가 HIV/AIDS 프로그램에 지출되고 있음에 불구하고 HIV 감염률은 실제로 반대 방향을 제시한 유일한 지표였다. 즉, 해외원조가 지출될 때 실제로 HIV 감염률이 증가하는 것으로 보여지나 이 결과는 국가 내 새로운 HIV 감염률이 충분히 분산되지 않았다고 볼 수 있다.

결론: 결론적으로 해외원조의 효과는 모성 사망률, 청소년 출산율, 출산 시 의료인 상주 비율, 피임도구 사용률, 친밀한 관계에서의 폭력 부분에서 통계적으로 유의미한 결과를 나타냈지만 실제 수치는 매우 작은 영향을 미치는 것으로 확인되었다. 예를 들어, 해외원조가 가장 큰 영향을 준 SRHR 관련 영역은 15 세부터 49 세 여성의 피임도구 사용률 있었는데, 이는 피임관련 프로그램에 지출되는 ODA 금액이 1% 증가할 경우, 피임도구 사용률이 0.213% 증가한 점을 확인할 수 있다. 또한, 해외원조가 가장 약한 영향을 준 영역은 청소년 출산율이며, 인구정책 및 성생식건강 프로그램에 대한 ODA 가 1% 증가할 경우 청소년 피임율은 0.008%만 감소하였다. 또한, 민간부문 원조는 글로벌 수준에서 분석하였을 때 SRHR 지표에 통계적으로 유의미한 영향을 미치지

않았으나, 분석을 소득 수준으로 분리했을 때 민간 부문 원조는 주로 저소득 및 중저소득 국가의 모성사망률과 청소년 출산율 감소에 효과적인것으로 확인되었다. 더불어, 해외원조가 지급된 후 최소 1 년이 지나야 효과가 나타난다는 점을 확인할 수 있었다. 본 연구에서는 성생식보건 및 권리가 각 개인의 의미있는 삶을 살기 위한 필요 요소이며, 해외원조가 경제적 자원이 부족한 개발도상국의 장기적인 성생식보건 및 권리의 달성을 촉진 할 수 있는 수 많은 요소 중 하나임 확인 할 수 있었다.

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