

**THE EFFECT OF GENDER EQUALITY AS DETERMINANT OF
MATERNAL MORTALITY IN DEVELOPING COUNTRIES**

By

PARK, Jin Ha

THESIS

Submitted to

KDI School of Public Policy and Management

in partial fulfillment of the requirements

for the degree of

MASTER OF DEVELOPMENT POLICY

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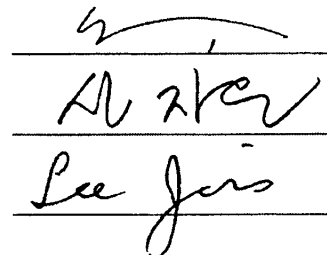
MASTER OF DEVELOPMENT POLICY

Committee in charge:

Professor Kim, Taejong, Supervisor

Professor Shin, Jaemun

Professor Lee, Jinsoo


The image shows three handwritten signatures on horizontal lines. The top signature is a stylized 'K' with a horizontal bar, likely for Professor Kim, Taejong. The middle signature is 'Shin Jaemun' in cursive. The bottom signature is 'Lee Jinsoo' in cursive.

Approval as of May, 2013

ABSTRACT

THE EFFECT OF GENDER EQUALITY AS DETERMINANT OF MATERNAL MORTALITY IN DEVELOPING COUNTRIES

By

PARK, Jin Ha

This paper analyzes cross-sectional data of 75 low-income countries to find out the impact of gender inequality on maternal mortality. The result of the study identifies two pathways gender functions as significant social determinant of maternal health outcomes in developing countries. First is gender inequality embedded in the culture as discriminatory family code such as early marriage, polygamy, parental authority, and inheritance to women. The other is women's freedom of civic engagement and political participation labeled as civil liberty. Both determinants address women's decision-making power at different level, first within the family and the latter in the public sphere. The implications we can derive from the findings are that maternal health policy or program in developing countries will yield desired health outcomes when empowerment measures for women both at individual and structural level are incorporated, which requires a multi-sectoral approach.

Dedicated to Sung-hyun, Yeju and Jesus

ACKNOWLEDGEMENT

I would like to express my deepest gratitude to my supervisor Professor Taejong Kim for his guidance and support throughout the course of my working on this Thesis. This thesis could not have been written without encouragement of family and friends. I thank God for my supportive husband and caring daughter who generously tolerated my absence from the family due to frequent duty travels, work and study. I am also greatly indebted to friends of Joyful Church for their sincere prayers and moral support.

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I. INTRODUCTION

Maternal death is defined as deaths occurring during pregnancy, childbirth and within 42 days after delivery.¹ Most updated global estimate on maternal mortality is 287,800 of 2010, which is 800 deaths every day. Though it is a 47 % decline from the estimates of year 1990, it is far from meeting the MDG target which aims to reduce by 75 % of mortality ratio until 2015.² Globally, 99% of maternal deaths occur in developing countries. While the regions with the highest maternal mortality are sub-Saharan Africa and South Asia, only six countries – India, Nigeria, Pakistan, Afghanistan, Ethiopia, and the Democratic Republic of the Congo were accountable for more than 50% of total maternal deaths in year 2008 (Hogan et al, 2010).³ The disparity in maternal mortality between the developed and developing countries had been quoted as the largest discrepancy of all health related statistics (Mahler 1987) when the Safe Motherhood Initiative was launched. Nevertheless, the trend still continues today. Indeed, MDG 5 is showing most sluggish progress among the 8 goals (World Bank, 2011). The chance of a woman to risk her life due to pregnancy and delivery

¹ Dominant causes of maternal mortality which is estimated to account for 80% of all maternal deaths are hemorrhage – severe bleeding and infections mostly after childbirth, high blood pressure during pregnancy and unsafe abortion (WHO Factsheet on Maternal Mortality). Indirect causes include pre-existing disease not unique to pregnancy - such as HIV/AIDS, malaria, tuberculosis or anemia. Deaths from accidents, murders or suicides during pregnancy and within 42 days are considered incidental and thus excluded from the maternal mortality statistics (Ronsmans & Graham 2006). Nevertheless, there are mounting evidences of strong correlation between pregnancy and such deaths from accidents, murders or suicides during pregnancy as the ultimate consequence of biological, social, economic and cultural influences.

² The targets for MDG 5 are to improve maternal health, reduce maternal mortality ratio (MMR) by 75 % from the baseline of 1990 and to achieve universal access to reproductive health. Maternal mortality ratio is number of maternal deaths during given time periods per 100,000 live births during same time period.

³ MMR in 2008 for Sweden, Sierra Leone, and Afghanistan are 5, 1033, and 1575(per 100,000 live births) respectively (Lancet 2010)

is 1: 30,000 in Sweden while 1:6 in Sierra Leone or Afghanistan. It is substantially greater than that for child or neonatal mortality (Ronsmans & Graham, 2006).

Maternal mortality not only represents inequity between countries but within countries as well.⁴ It reaffirms the “inverse care law” - that the more disadvantaged social group will be the less likely to be accessible to health services (Hart 1971). Most crucial proven intervention to prevent maternal mortality is skilled birth attendance (SBA) which refers to births being attended by trained health personnel including a doctor, a midwife or a nurse. The disparities reported within countries for SBA between the rural poor women and urban rich⁵ reaffirms the fact that the inverse care law is still relevant today providing a useful framework to understand fundamental problem of global maternal mortality within and cross-countries. Nevertheless, there are more reasons than financial resources for limited access to maternal services. For example, in Bangladesh, 37 % of women in the upper household wealth quantile reported not using a skilled birth attendant (Mumtaz and Levay, 2012).

Maternal mortality is said to be “tracer condition” for health system as it requires three essential components of a well functioning health system that is: adequate access, medical attendance, and health referral system (World Bank 2007). More broadly, maternal mortality offers a “litmus test” of the status of women, their access to health care, and the adequacy of the health care system in responding to their needs (WHO 2004). Maternal mortality in developing countries is a complex interaction of health system and diverse socio-economic and cultural determinants. The purpose of this paper is trying to find out what are

⁴ In Peru, for example, there is six-fold difference in maternal mortality between the richest and poorest quantiles (Filippi and others, 2006).

⁵ The odds of having a skilled birth attendant at delivery for women in the poorest quintile are 94 % lower than for women in the highest wealth quintile (Ahmed, 2010).

the underlying causes of the disproportionately and persistently high, yet mostly avoidable maternal mortality in developing countries. In particular, this paper employs the lens of gendered analysis to understand the fundamental cause of maternal mortality in the context of under-development.

II. LITERATURE REVIEW

The famous anecdote of “Mrs. X” representing a poor, uneducated, rural woman and the long road of pregnancy and childbirth that ended in death caused by haemorrhage during childbirth originally presented by Dr. Fathalla⁶ provides a holistic picture about maternal deaths in low income countries. The story addresses fundamental causes including socioeconomic barriers beyond medical and health determinants to maternal mortality.

A more systematic approach to understand maternal mortality within a conceptual framework is being provided by Thaddeus and Maine (1990), known as the “three-delays” model. The model offers strategic entry point for medical interventions by tackling fatal delays that can cause maternal deaths. The first delay within the model occurs while making decisions to seek care (due to lack of proper medical knowledge on obstructed care, cultural barriers...etc). Second delay occurs while reaching for the service (due to poor road conditions, lack of financial resources for transportation ...etc). Lastly, delay occurs even after reaching the health facility due to lack of service capacity including lack of

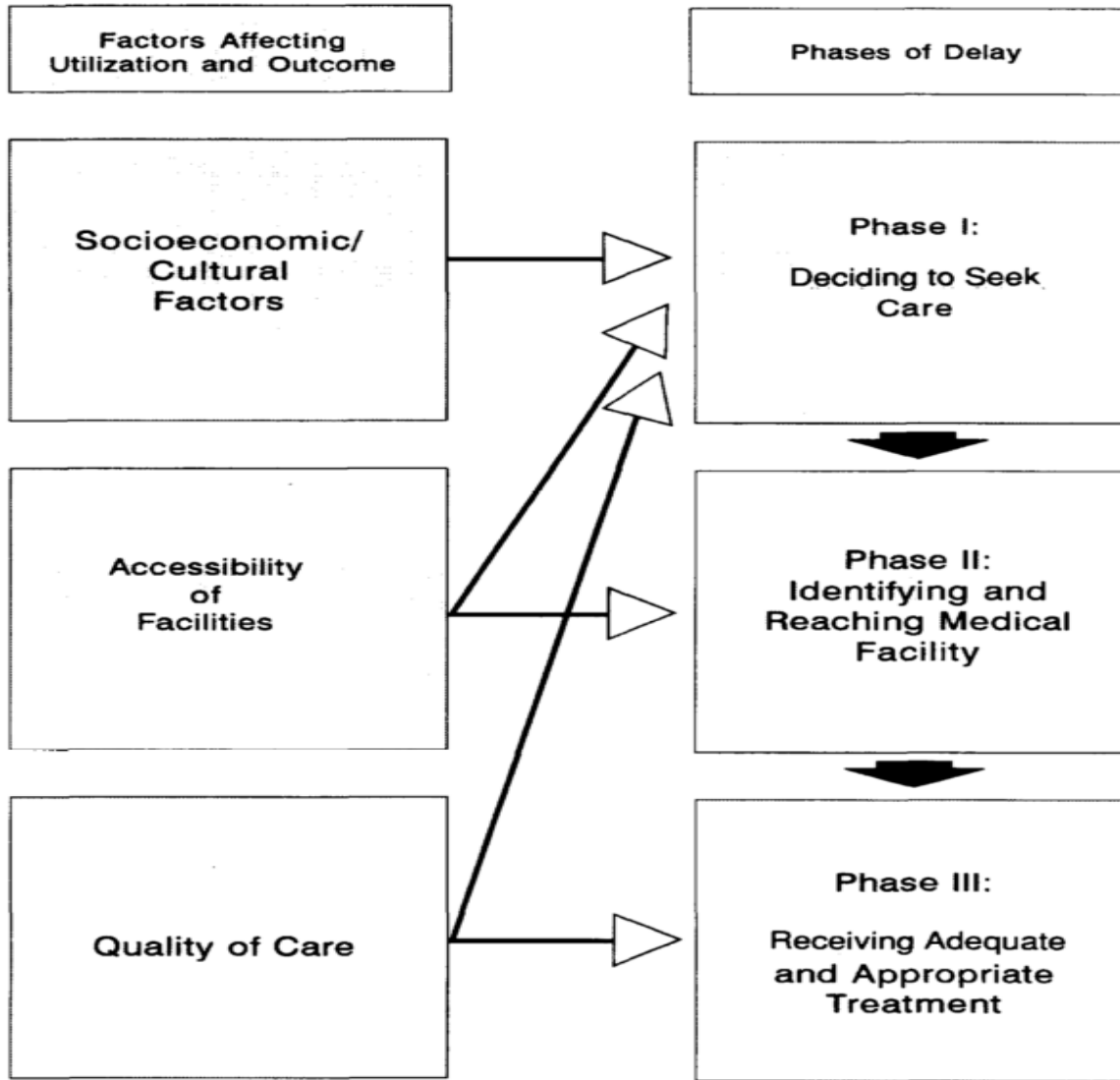
⁶ “Why did Mrs. X die?”

Mrs.X died in hospital during labour. The attending physician certified that the death was from hemorrhage due to placenta praevia. The consulting obstetrician said that the hemorrhage might not have been fatal if Mrs.X had not been anaemic owing to parasitic infection and malnutrition. There was also concern because Mrs.X had only received 500 ml of whole blood ,and because she died on the operating table while a Caesarean section was being performed by a physician undergoing specialist training. The hospital administrator noted that Mrs X had not arrived at the hospital until four hours after the onset of severe bleeding, and that she had had several episodes of bleeding during the last month for which she did not seek medical attention. The sociologist observed that Mrs X was 39 years old, with seven previous pregnancies and five living children. She had never used contraceptives and the last pregnancy was unwanted. In addition, she was poor, illiterate and lived in rural area.

- Excerpt from “Maternal mortality helping women off the road to death” WHO Chronicle, 40: 175-183 (1986), a report of the First Interregional Meeting on the Prevention of Maternal Mortality held in Geneva during November 1985. The story was originally provided by Dr. M.F. Fathalla widely used and referred to for programming and training tools for maternal health programs. WHO created the same titled animated film in 1988 to educate health workers and policy-makers. In 2012, WHO remade an updated version of the animated film “Why did Mrs. X die, retold” featuring Dr. M.F. Fathalla himself as a commentator in the video, which can be accessed at http://www.who.int/maternal_child_adolescent/topics/maternal/en/

medical supplies and human resources, inadequate management and absence of accountability measures.

[Figure1] Three-Delays Model

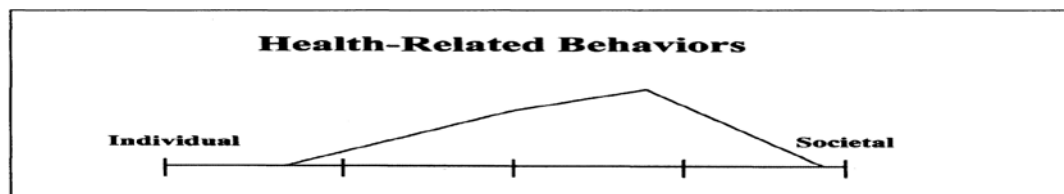


- Source : S.Thaddeus and D.Maine, *“Too Far to Walk: Maternal Mortality in Context”* , New York: Columbia University, Center for Population and Family Health, 1990 republished at Social Science Medicine Vol.38, No.8 pp. 1091-1110, 1994.

Even though the model takes socio economic and cultural factors into account causing delay to seek care, the model focuses on women and their families to be accountable for their own decisions. Decision not to seek care is often regarded as the failure of the

woman and her family (Freedman et al, 2005). It reflects the traditional assumption of public health that individuals have essentially complete control over their health-related behaviors (Mann, 1997). The “three-delays” model has bypassed how features of health system may shape peoples choices, let alone how health-related behaviors are substantially influenced by societal factors and context (Mann, 1997).

[Figure2] Health-Related Behaviors Model



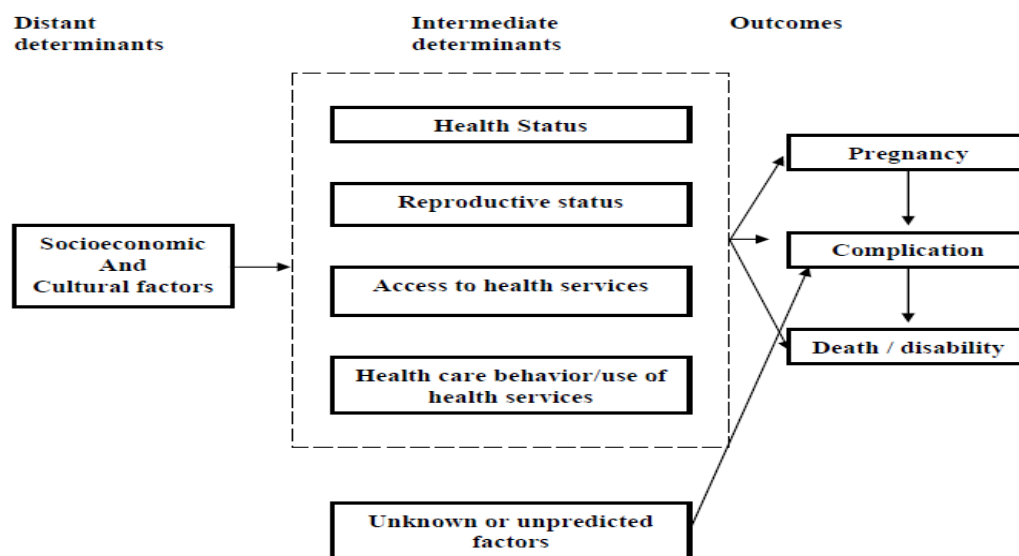
- Source: Mann J, Medicine and Public Health, Ethics and Human Rights, *The Hastings Center Report*, 1997.

Complementing the shortcomings of the three delays model where structural analysis surrounding maternal deaths in developing world is missing, McCarthy and Maine (1992) offers a comprehensive and an integrated framework for analyzing the cultural, social, economic, behavioral, and biological factors that influence maternal mortality. McCarthy and Maine differentiates socioeconomic status as distant determinants while biological conditions and accessibility to health services as intermediary determinants for maternal health outcomes.

McCarthy and Maine’s framework, nevertheless is still bound in the traditional public health model mostly concerned with indentifying patterns of diseases and disorders among certain groups of people and improving health of a population (Wang, 2010). It must be noted that an individual’s status does not depend alone on the socioeconomic characteristics

of the household the person belongs. The position of an individual within the household is determined by the individual's own characteristics such as gender, age, ownership of assets, and income earning capacity. (Sen and Iyer, 2012).

[Figure 3] Framework for Analyzing Determinants of Maternal Mortality and Morbidity



- Source: McCarthy J. and D Maine., A Framework for Analyzing the Determinants of Maternal Mortality, *Studies in Family Planning*, pp. 23-33, 1992.

Building further on the existing model and framework to understand the issue of maternal mortality in developing countries, the purpose of this thesis is to examine whether gender inequality in those countries exerts significant influence, and if so in what dimension and through which path. The gender equality approach offers a new way to understand and analyze the demographic processes of mortality and fertility (Basu, 2000). Gender norms and values of a society are underlying and interwoven throughout the entire process from the values placed on seeking care for women to dynamics of decision making and women's degree of mobility and visibility (Mumtaz and Levay, 2012).

III. RESEARCH METHOD.

1. Hypothesis and Variables

Main hypothesis to be tested in this thesis is whether social norms surrounding gender are significant determinants of maternal mortality in developing countries. It will be done through examining causalities between global maternal mortality rate (MMR) as dependant variable and four categories of determinants as independent variables which are related to (1) a functioning health system and service delivery, (2) socio-economic, (3) socio-cultural and (4) socio-political factors.

Three variables selected as a proxy to measure health system and service delivery as most powerful controlling factors for maternal mortality are based on the indicators of MDG5 : (a) antenatal care, (b) skilled birth attendance (SBA) and (c) health expenditure.⁷

In order to measure the gender dimension of social determinants of the health outcome, this thesis will use OECD's Social Institution and Index (SIGI).⁸

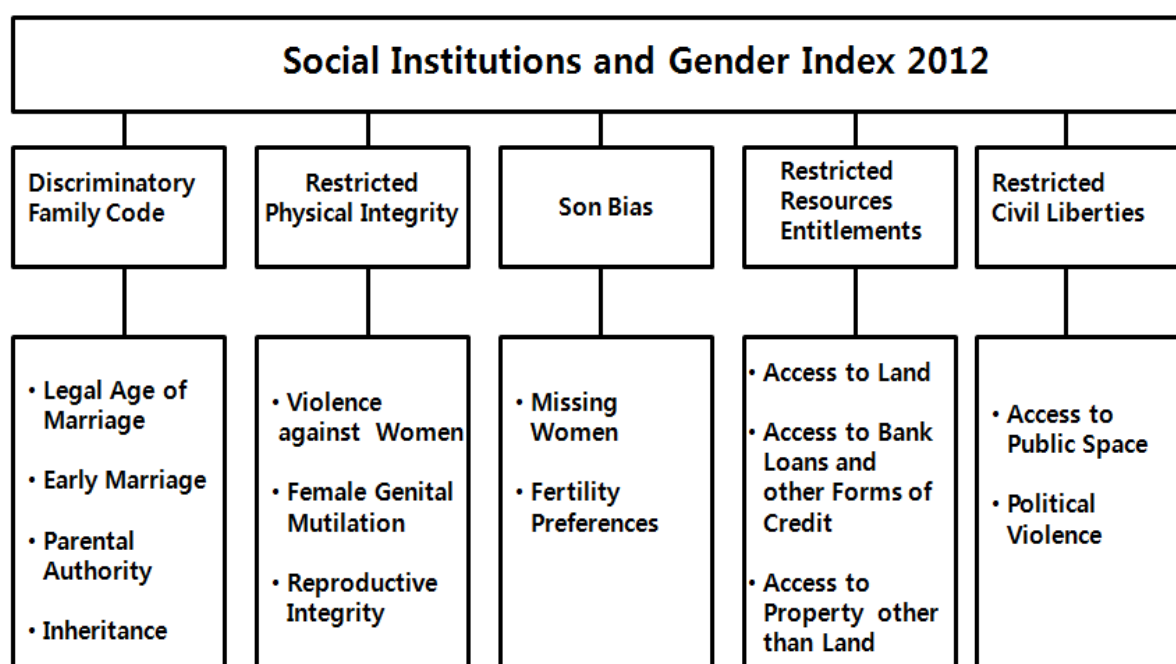
⁷ As the country data for rest of the MDG 5 indicators (contraceptive prevalence, adolescent birth rate, and unmet family need) were unavailable, I use the percentage of health expenditure from total GDP as a proxy for the healthy system.

MDG 5: Improve maternal health	
Target 5.A: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio	5.1 Maternal mortality ratio 5.2 Proportion of births attended by skilled health personnel
Target 5.B: Achieve, by 2015, universal access to reproductive health	5.3 Contraceptive prevalence rate 5.4 Adolescent birth rate 5.5 Antenatal care coverage 5.6 Unmet need for family planning

- Source: UN Statistics Division, the Official UN site for MDG Indicators
<http://mdgs.un.org/unsd/mdg/host.aspx?Content=indicators/officiallist.htm>

⁸ The Social Institutions and Gender Index (SIGI) launched by the OECD Development Centre in 2009 was the first attempt to capture, quantify and measure social institutions that discriminate against women and girls. SIGI

[Figure 4] The composition of SIGI



Source: <http://genderindex.org/content/team>, OECD Development Centre

The reason this thesis selected the OECD SIGI as a measure for gender inequality is because it addresses fundamental elements of discrimination embedded in a culture and society as “social institutions” in a comprehensive manner. It identifies 14 key institutions as variables grouped into 5 sub-indices: Discriminatory Family Code, Restricted Physical Integrity, Son Bias, Restricted Resources and Entitlements and Restricted Civil Liberties.

complements other existing gender indices such as UNDP Gender Inequality Index and the World Economic Forum Global Gender Gap Index which measure gender inequality in terms of outcomes such as education attainment or labor market participation.

Social Institutions and Development Index (SIGI)

- 1. Discriminatory Family Code** measures the factors which influence the decision-making power of women in the household with respect to early marriage, polygamy, parental authority, and inheritance.
- 2. Restricted Physical Integrity** comprises different indicators (laws, attitude, and prevalence) on violence against women and the existence of female genital mutilation.
- 3. Son Bias** reflects the economic valuation of women, based on the variable “missing women”, which measures gender bias in mortality due to sex-selective abortions or insufficient care given to baby girls.
- 4. Restricted Civil Liberties** measures women’s freedom of social participation through freedom of movement and freedom of dress.
- 5. Restricted Resources & Entitlements** cover women’s rights and *de facto* access to several types of property. It includes three variables: women’s access to land, to property and to credit.

In an attempt to identify what is the pathway through which gender functions as a significant social determinant of maternal mortality in developing countries, the framework of analysis include both gender and non-gender variable for each socio-economic, cultural and political category. As for socio-economic determinants, (d) the Restricted Resources indices of SIGI is adopted as a gender variable while (e) GINI coefficients is selected as a non-gender variable to test whether income inequality within a country plays a role in determining maternal mortality. The (f) Restricted Physical Integrity, (g) Discriminatory Family Code, and (h) Son Bias indices of SIGI are deeply engraved in the culture of a society, thus all categorized as gendered socio-cultural variables. Two variables are selected for socio-political determinants. For gendered variable, the (i) Restricted Civil Liberty indices of SIGI and the (j) World Bank Governance Index (WGI) on Political Stability and Absence of Violence⁹ as the gender-neutral socio-political determinant for maternal deaths to be examined. The reason only “Political Stability and Absence of Violence” variable is selected within the WGI is based on two rationales. First, wars and conflicts exert direct influence on reproductive health of women through disrupted access to health services, migration and in particular, gender based violence. Secondly, the other five dimensions of WGI are already picked up in the four categories of the analytical framework. For example, the “voice and accountability” dimension of governance share common features with the “civil liberty” of SIGI. Some dimensions of WGI are implicitly incorporated in other variables. The level of health service represented by the coverage of skilled birth attendance, prenatal care and proportion of health expenditure within the GDP is in part manifestation of

⁹ The World Bank provides aggregate subjective indicators which combine the reports from other enterprise, citizen and expert survey respondents and covers over the period of 1996-2009. Six dimensions of WGI are ‘(1) Voice and accountability,’ ‘(2) Political stability and absence of violence,’ ‘(3) Government effectiveness,’ ‘(4) Regulatory quality,’ ‘(5) Rule of law,’ and ‘(6) Control of Corruption. - Source: World Bank, “Worldwide Governance Indicators,”

- Source: <http://info.worldbank.org/governance/wgi/index.asp>

“government effectiveness”. “Regulatory quality” and “control of corruption” also contribute to a functioning health system. For example, challenge to women’s physical integrity - such as violence against women not punished justly or illegal medical practices as gender selected abortion causing the “missing women” phenomena in the developing world - could be taken as the accumulative consequences of poor regulatory quality or unjust rule of law as well as corruption of overseeing authorities.

2. Data and Sources

The base year of the datasets used for this thesis is 2008 as it was the most recent year with most complete availability of cross-section data sets. Nevertheless, the SIGI 2012 index is used as a proxy for 2008 due to availability of the respective 5 sub-indices (i.e. Discriminatory Family Code, Restricted Physical Integrity, Son Bias, Restricted Resources and Entitlements and Restricted Civil Liberties). It is because earlier released SIGI 2009 (based on the year 2008 statistics) only publicizes the final composite index.¹⁰ The data-sets are mainly from three sources. This paper uses the MMR database from the 2010 Lancet article, “Maternal mortality for 181 countries, 1980 – 2008: a systematic analysis of progress towards Millennium Development Goal 5”. Other than the MMR and SIGI, rest of the datasets are derived from two sources of World Bank – the Worldwide Governance Indicators, and the Development Indicators.

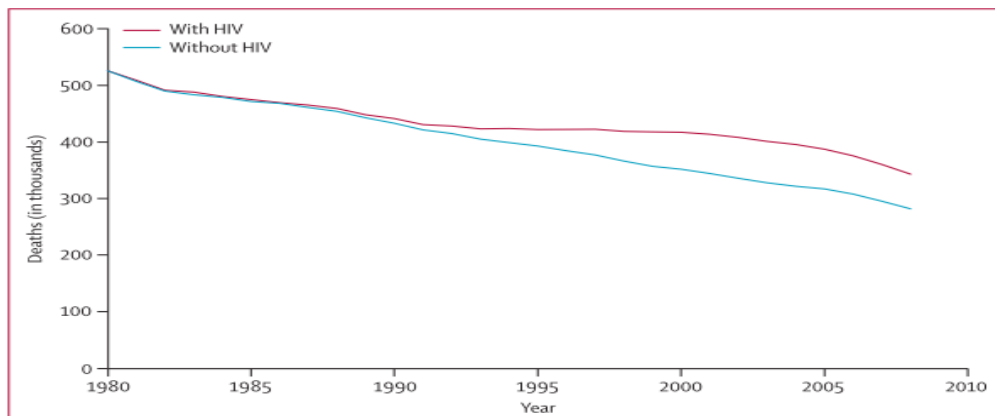
¹⁰ The first SIGI composite index has been released in year 2009 before 2012. The top 5 rankings of year 2012 were 1. Argentina, 2.Costa Rica, 3.Paraguay, 4.South Africa and 5. Macedonia, whereas year 2009’s top 5 ranking was 1. Paraguay, 2.Croatia, 3. Kazakhstan, 4. Argentina, and 5. Costa Rica. Considering that the gender values and norms of a society are hardly changing and if it does only over long period of time, the SIGI 2012 is considered to be valid proxy compatible with rest of the data with base year of 2008. In addition, changes in rankings between 2009 and 2012 are mainly a result of improvement in quality of data including data sources rather than improvement in discriminatory social institutions, thus genuine comparison of changes between SIGI 2009 and 2012 is said not to be possible.

- Source: 2012 SIGI Summary Results, OECD

3. Limitations.

This study has many limits and limitations, among which I feel the necessity to address three issues in particular. First is the lack of richness of qualitative study on actual cases of specific regions or populations groups. This study analyzes aggregate result of final development outcomes through macro-level country data. Secondly, this paper is not able to trace the dynamics of gender inequality and maternal mortality over certain time periods through panel studies. Lastly, this study does not touch upon the HIV/AIDS issue which is a dominant public health threat of our era including maternal mortality¹¹. I have considered HIV/AIDS issue too vast beyond the scope of this study which needs to be handled as a separate topic, yet acknowledge it as a limit.

¹¹ In a counterfactual scenario of a global HIV/AIDS prevalence to be zero, the global MMR would be 206 per 100,000 livebirths in 2008 where as the actual estimate of global MMR in 2008 was 251.



[Trend of global maternal deaths with HIV and without HIV (counterfactual scenario) 1980-2008]

- Source: Hogan, Margaret C. and others. "Maternal Mortality for 181 Countries, 1980 – 2008: a systematic analysis of progress towards Millennium Development Goal 5", *Lancet*, 2010

[Table 1] Description of Variables

Variable	Description
MMR 08	Maternal Mortality Ratio* of Year 2008 * Number of maternal deaths per 100,000 live births during a given time
SBA	% of births attended by skilled health professionals including medical doctors, midwives and nurses out of total births
Prenatal	% of pregnant women receiving prenatal care
Health Exp (%GDP)	% of total health expenditure out of GDP
SIGI 2012**	The SIGI is an unweighted average of a non-linear function of the subindices: $\text{SIGI} = \frac{1}{5}(\text{Family Code})^2 + \frac{1}{5}(\text{Physical Integrity})^2 + \frac{1}{5}(\text{Son Bias})^2 + \frac{1}{5}(\text{Civil Liberties})^2 + \frac{1}{5}(\text{ResourceEntitlement})^2$
Family Code**	Social institutions that limit and restrict women's decision-making power and status in the household and the family
Physical Integrity**	Social institutions that limit and restrict women and girls' control over their bodies
Son Bias**	Social Institutions that foster intra-household bias towards sons and the devaluation of daughters
Resource Entitlement**	Social institutions which restrict women's access to control of, and entitlement over economic and natural resources
Civil Liberty**	Social institutions that restrict women's access to, participation and voice in the public and social spheres
Gini08	GINI Coefficient***of year 2008 *** An aggregate numerical measure of income inequality ranging from 0 (perfect equality) to 1(perfect inequality)
Political Stability	Perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including domestic violence and terrorism. Values range from approximately -2.5 (highly unstable) to 2.5 (highly stable)

** Values of SIGI and the subindices are between 0 and 1, with 0 meaning no inequality and 1 indicating complete inequality.

IV. FINDINGS AND ANALYSIS

1. Summary Statistics

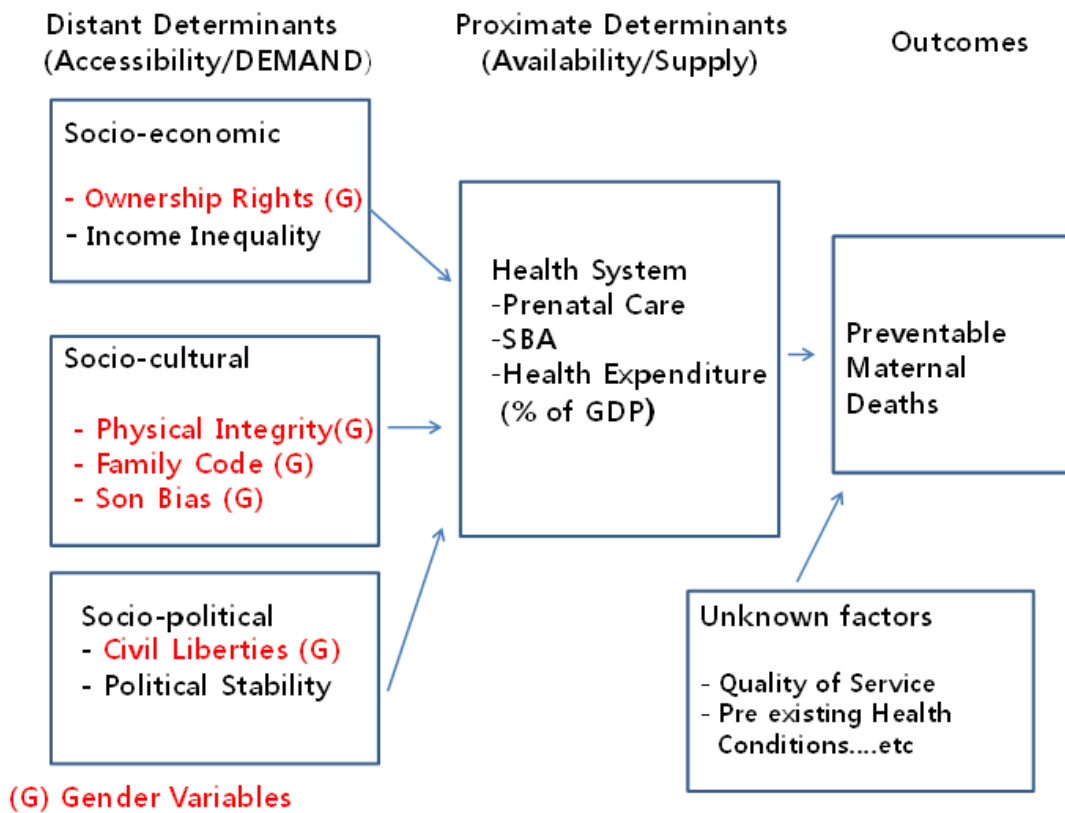
This study analyzes cross-section data of 75 countries falling in the range from the least developed to the upper-middle income countries with summary of the statistics as below.

[Table 2] Summary Statistics

Variable	No	Mean	Std. Dev.	Min	Max
Dependent Variable					
MMR08	75	312.4533	320.0528	8	1575
Independent Variables - Proximate Determinants					
SBA	75	67.94533	26.93961	5.7	100
Prenatal	75	83.65533	17.39154	27.6	99.9
Health Exp (% GDP)	75	5.973333	2.202047	2.3	13.3
Independent Variables – Distant Determinants – Gendered					
SIGI 2012	75	0.256675	0.12559	0.0069	0.6011
Resource Entitlement	75	0.416455	0.211687	0	1
Civil Liberty	75	0.503045	0.26326	0	1
Son Bias	75	0.542464	0.189992	0.1336	1
Physical Integrity	75	0.375553	0.243391	0	0.9635
Independent Variable – Distant Determinants – Gender Neutral					
Gini08	75	41.068	8.308771	27.8	63.9
Political Stability	75	-0.63933	0.87128	-2.69	1.19

This thesis further develops McCarthy and Maine's model as a structural framework to analyze the variables.

[Figure 5] Framework for Analyzing MMR and Gendered Social Determinants of Maternal Mortality and Morbidity



- Source: Author (adapted from McCarthy J. and D Maine, 1992)

Acknowledging the proximity of health related causes to maternal mortality, the three variables of direct health interventions are constantly included in the analysis. First regression outcome demonstrates that gender norms (represented by SIGI 2012 variable) are statistically as significant as the SBA intervention. Then each category of distant determinants (political, cultural and economic aspects of social determinants) is weighed against the proximate cause (health intervention) in a sequence (regression outcome 2~ 8).¹²

¹² This study employs the Ordinary Least Squares (OLS) regression technique using cross-section data in STATA software (version 11). Since we are dealing with cross-sectional data, non-constant variances across the countries are a likely problem we may typically face (heteroscedasticity). To resolve this issue within the STATA environment, the regression tests are run with the heteroskedasticity-robust standard errors (Source: STATA 10 Tutorial Keil, M)

[Table 3] Regression Outcomes on MMR

Independent Variables	(1)	(2)	(3)	(4)	(7)	(6)	(5)	(8)
	MMR08	MMR08	MMR08	MMR08	MMR08	MMR08	MMR08	MMR08
SBA	-8.288 (6.10)**	-8.469 (5.98)**	-9.044 (6.06)**	-8.865 (6.30)**	-9.134 (6.80)**	-8.639 (6.72)**	-7.817 (5.52)**	-8.146 (6.05)**
HEshare	14.194 (0.97)	10.563 (0.70)	13.146 (0.86)	12.876 (0.83)	16.348 (1.11)	10.174 (0.62)	16.493 (1.08)	13.071 (0.93)
prenatal	3.116 (0.78)	1.900 (0.49)	2.162 (0.58)	1.623 (0.45)	3.070 (0.75)	1.460 (0.38)	1.909 (0.51)	2.273 (0.56)
SIGI2012	597.668 (2.80)**							
Rentitlement		178.440 (1.16)						
Gini08			-1.442 (0.40)					
stability				5.922 (0.15)				
Cliberty					276.839 (2.91)**			
Son Bias						-193.612 (1.23)		
Family Code							237.641 (2.29)*	
pintegrity								236.703 (1.75)
Constant	376.689 (1.38)	591.535 (2.29)*	726.816 (2.83)**	705.890 (3.38)**	439.381 (1.61)	821.543 (4.41)**	489.693 (2.10)*	508.849 (1.80)
Observations	75	75	75	75	75	75	75	75
R-squared	0.51	0.48	0.47	0.47	0.51	0.48	0.49	0.49

- 1) Robust t statistics in parentheses
- 2) * significant at 5%; ** significant at 1%

Since the findings add on to proven evidence that the skilled birth attendance would be the foremost important intervention to reduce maternal mortality and achieve the MDG 5, another regression test is conducted to find out which gender variable affects the use of SBA with statistical significance. The findings are consistent with previous outcomes showing the family code and civil liberty as significant gender variables.

[Table 4] Regression Outcomes on SBA

SBA	Resource Entitlement	Physical Integrity	Family Code	Son Bias	Civil Liberty
Regression Outcomes	-16.772 (1.53)	-26.44 (1.50)	-47.946 (2.57)*	-21.853 (1.46)	18.853 (2.13)*

- 1) Robust t statistics in parentheses
- 2) * significant at 5%; ** significant at 1%

Thus, in terms of social determinants for maternal mortality, two gender variables each from socio-cultural and socio-political categories are identified. First is the Discriminatory Family Code index of SIGI which measures legal age of marriage, early marriage, parental authority and inheritance to daughters. This finding backs up the “Girl Effect” principle, which is considered as a “fast track” for poverty reduction these days in particular by the NGO community. Investing in girls’ education in developing countries will defer their marriage. They will be successfully integrated to formal labor force with lower fertility and eventually averting the possibility of maternal deaths during their prime time of life. Another significant variable found is gender equality in terms of civil liberty (access to public space and political voice) as determinant of maternal mortality.

Miller (2008) revealed that in the US, women’s political participation through extended suffrage has led rapid increase in public health spending and hygiene campaigns. The reduction rate of child mortality linked precisely to the year of change in women’s suffrage since 1920s. It demonstrates how women’s increased participation in shaping public policy through voting rights can have benevolent outcomes. Women’s decision-making power and status in the family is important for fostering positive health and welfare outcomes not only for their children (OECD, 2012) but women themselves. At personal level, it can be women’s choice of contraceptive methods, their willingness to attend antenatal care, their preparedness to deliver in a health facility and have a skilled attendant at birth (Ahmed and others, 2010). Ultimately, it could be explained that empowerment of women and their increased civic participation will enhance the capacity of a nation (Young 2001).

V. IMPLICATIONS

The result of this study shows the importance of cultural and political dimension of social determinant of health. In practice, nevertheless, there is somewhat a distinct gap between the respective development themes. While maternal mortality falls within the program mandate of health sector, fostering political participation is an area for political development or governance programs. On the other hand, gender inequality issues with cultural aspects are handled as social development programs. In order to bridge the gaps, health system must be approached as a core social institution that is culturally embedded, politically contingent, and in particular, as the very fabric of social and civic life (Freedman et al, 2005). It should be translated to a multi-sectoral approach in development programming in reality. Development interventions to reduce maternal mortality need to address both demand and supply side of policy. While strengthening health system and expanding service capacity, empowerment measures for women should be included simultaneously at all levels from household to public spaces.

Development is more than growth, poverty reduction or meeting the basic needs. It is a holistic transformation of a society that cannot take place without an enabling environment for both men and women.

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