

**The Status of the Commonwealth of Independent States in Achieving the
Millennium Development Goals**

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An Applied Research Project
(Political Science 5397)
Submitted to the Department of Political Science
Texas State University
In Partial Fulfillment for the Requirements for the Degree of
Masters of Public Administration
Fall 2009

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Abstract

The purpose of this research is to explore the progress of three low income countries (Kyrgyzstan, Tajikistan, Uzbekistan) and six lower-middle income countries (Armenia, Azerbaijan, Georgia, Moldova, Turkmenistan, Ukraine) of the Commonwealth of Independent States (CIS) toward reaching eight targets of the Millennium Development Goals and attempt to predict if the targets will be met by the 2015 deadline. The overarching focus of the Millennium Development Goals is to put an end to poverty. Scholarly literature asserts that poverty is multi-dimensional and is no longer considered to be based solely on income. Therefore, ending poverty involves work on all of poverty's dimensions. This study takes into account eight of the targets of the Millennium Development Goals for the nine CIS countries. Time series regression and trend analysis are the methods used to predict whether the studied CIS countries will meet the targets. The results of the study show that at existing rates of progress, the nine CIS countries as a region will not meet the eight studied targets of the Millennium Development Goals. The results of this research should be alarming to all individuals and organizations dedicated to the cause of eradicating poverty.

About the Author

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Acknowledgement:

This paper is dedicated to my husband and our son who were by my side throughout this process; and to my parents who always remind me of the importance of eradicating poverty.

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Chapter 1

Introduction

In September 2000, the United Nations hosted the largest gathering of world leaders ever assembled. This historic meeting, known as the Millennium Assembly, created the global determination of the world's heads of states and governments to put an end to the "most challenging and vexing problems inherited from the twentieth century" (Sachs 2005, 210). These leaders hoped that the problems of extreme poverty, disease, deprivation, and environmental degradation could be alleviated through global awareness and partnership with new technologies and the wealth of the developed countries. Consequently, the Millennium Declaration was endorsed by 189 countries, focusing on peace, security, disarmament, environmental protection, development, and poverty eradication worldwide (United Nations 2000). The Millennium Declaration became a central global statement, giving hope that the divided and complex world could come together and make a commitment to improve conditions for those less fortunate, "to spare no effort to free our fellow men, women, and children from the abject and dehumanizing conditions of extreme poverty" (United Nations 2008c, 3).

The world leaders adopted eight specific, measurable goals, known as the Millennium Development Goals. The first seven goals focus on eradicating extreme poverty and hunger; achieving universal primary education; promoting gender equality and empowering women; reducing child mortality; improving maternal health; combating HIV/AIDS, malaria and other diseases; and ensuring environmental sustainability. The

eighth goal calls for the creation of a global partnership for development to achieve the first seven goals, with targets for aid, trade, and debt relief (International Monetary Fund 2008; Sachs 2005b, 213). The Millennium Development Goals include 18 targets aiming to dramatically reduce extreme poverty and its dimensions by the year 2015, with 1990 as the baseline year (see Appendix A).

Following consultations with international agencies including the World Bank, the International Monetary Fund (IMF), the Organization for Economic Cooperation and Development (OECD), and the specialized agencies of the United Nations, the UN General Assembly recognized the Millennium Development Goals as part of the road map for implementing the Millennium Declaration. By setting the Millennium Development Goals, the leaders pledged that the world would achieve measurable improvements in the most critical areas of human development.

The Millennium Development Goals are a set of development targets agreed to by the international community, representing essential steps for the development of humankind, as well as for the immediate survival for a significant portion of the world's poorest individuals. These goals embody the development aspirations of the world as a whole, as well as a desire for all inhabitants of the planet to have universally accepted human values and rights, such as freedom from hunger, the right to healthcare and basic education, and fulfillment of the world's responsibility to future generations. In order for the Millennium Development Goals to be achieved, poor countries as well as rich countries have to work together to do their part. At the UN's Millennium Assembly and

other UN meetings, poor countries have pledged to govern better and invest in their people through health care and education. Rich countries have pledged to support them through aid, debt relief, and fairer trade.

The Importance of the Millennium Development Goals

“The Millennium Development Goals are the world’s time-bound and quantified targets for addressing poverty and its many dimensions” (Sachs 2005a, 1). The Millennium Development Goals also address the basic human rights, as pledged in the Universal Declaration of Human Rights, such as the right to health, education, shelter, and security. These goals are the most comprehensive, detailed, and specific set of poverty reduction targets that the world has ever established. There is no question that the Millennium Development Goals are bold ambitions and commitments; nevertheless, according to Sachs, “the Millennium Development Goals are achievable” (Sachs 2005, 211) and “utterly affordable” (Sachs 2005a, 1).

The significance of the achievement of the Millennium Development Goals is paramount. If the goals are achieved by 2015, tens of millions of lives will be saved. More than one billion people are currently living in extreme poverty (Sachs 2005a, 1). The Millennium Development Goals’ commitment is to provide a road map for a better life for these people. If the promises of the Millennium Development Goals are fulfilled, more than 500 million people will be lifted out of extreme poverty; more than 300 million will not suffer from hunger; 30 million children, who would die before turning

five years old, will live; 2 million mothers would be saved while delivering their babies; 350 million people will have access to safe drinking water; 650 million people will benefit from basic sanitation; and hundreds of millions of women and girls will live in freedom (Sachs 2005a, 1-2).

The Millennium Development Goals represent the commitment of the world to more than one billion people who are living in extreme poverty and face every day the struggle of life and death. The goals also represent “a new era in international development” where rich and poor countries pledge resources and action for poverty eradication (Sachs 2005a, 4). Finally, since extreme poverty is correlated with global security, by reducing it, the earth can become a more peaceful place for everyone (Sachs 2005a, 9).

Research Question: The purpose of this research is to explore the progress of low and the lower-middle income countries of the Commonwealth of Independent States in achieving the Millennium Development Goals. More specifically, this study is an attempt to predict whether three low income countries (Kyrgyzstan, Tajikistan, Uzbekistan) and six lower-middle income countries (Armenia, Azerbaijan, Georgia, Moldova, Turkmenistan, Ukraine) of the Commonwealth of Independent States will meet eight targets of the Millennium Development Goals by 2015.

Chapters Summaries

This paper is divided into five chapters in order for the research question of the study to be fully developed. Chapter One, *Introduction*, states the research question and provides a big picture of the Millennium Development Goals, the core topic of this study.

Chapter Two, *Literature Review*, provides information on the scholarly literature and work that has been done related to poverty and its dimensions. This chapter includes the working hypotheses used for this research.

Chapter Three, *Methodology*, presents the steps and procedures used to collect and analyze data for this applied research and provides an operationalization of the conceptual framework. This chapter also discusses the Commonwealth of Independent States and the reason for choosing the countries in this study. Chapter Four, *Results*, details the findings of the study. The concluding chapter summarizes the paper and the findings of the research.

Chapter 2

Literature Review

Introduction

Developing countries must overcome many daunting challenges on the path to development. The purpose of this literature review is to discuss these problems, including the causes and proposed theories to address them. These problems include poverty, hunger, education, gender inequality, child mortality, maternal health, HIV/AIDS, and environmental degradation. The most important factor to consider when reviewing these problems and the daunting tasks that developing countries face in addressing them is that no issue is independent. Each problem affects some, if not all, of the others. For example, poverty has many dimensions. An impoverished country almost certainly has problems with hunger, a lack of universal primary education, gender inequality, high child mortality rates, poor maternal health which leads to high maternal mortality rates, higher rates of HIV and AIDS, and a lack of environmental sustainability. Their interdependence makes all of these issues important. If these issues of poverty are addressed independently, no comprehensive and lasting progress toward the elimination of poverty can be guaranteed. For any real progress to be made, all of these concerns have to be considered holistically. This literature review, seeks to provide a deeper understanding of poverty and its dimensions.

Poverty

Although poverty is generally accepted as the most important issue facing developing countries throughout the world, the literature shows that there is no universally accepted definition of poverty (Hagenaars and Vos 1988, 211; Williams 1999, 194; UNICEF 2000, 5; Muro, Mazziotta, and Pareto 2009, 1). Various definitions provided in the literature focus on the income aspect of poverty, but a definition of poverty has to include all of the elements that define poverty-stricken families around the world including low income, hunger, gender inequality, disease, lack of safe childbirth, lack of access to clean water and sanitation, environmental degradation, lack of access to a sustainable livelihood, social exclusion, hopelessness, and vulnerability (UNICEF 2000, 5; World Bank 2000-2001, 15-20).

Jeffrey Sachs, in his 2005 book, *The End of Poverty*, discusses the debates over the definition of poverty but suggests that poverty can be broken into three degrees: extreme poverty, moderate poverty, and relative poverty. Extreme poverty is what most people think of when they think of poverty; it means that households cannot meet basic needs for survival such as being chronically hungry, lacking safe drinking water, sanitation, adequate shelter, and basic articles of clothing; or being unable to access healthcare or provide an education for their children. Sachs maintains that unlike moderate and relative poverty, extreme poverty is only found in developing countries and is generally concentrated in East Asia, South Asia, and sub-Saharan Africa. A country as

a whole is considered to suffer from extreme poverty if at least 25 percent of the population experienced this type of poverty (Sachs 2005b, 24).

Sachs describes moderate poverty as a living situation where the basic needs of life are met, but just barely. A country is said to suffer from moderate poverty if it does not meet the threshold of extreme poverty described above but does have at least 25 percent of its population living in extreme or moderate poverty (Sachs 2005b, 22). East Asia and Latin America are two regions that have countries that can be considered to exist in moderate poverty. Relative poverty refers to the poor in high income countries that lack access to cultural goods, entertainment, recreation, quality education, healthcare, and prerequisites for upward social mobility (Sachs 2005b, 22).

The literature on poverty shows that although there is no consensus on the definition of poverty, there is an international consensus that poverty is multidimensional and cannot be reduced to the income dimension anymore, as used to be discussed in the past (Williams 1999, 194; UNICEF 2000, 5; Muro, Mazziotta, and Pareto 2009, 1, World Bank 2000-2001, 16-21). Poverty is more than a lack of money. Poverty is lack of assets, health, education, and other areas of human development. Poverty is vulnerability to risks beyond one person's control such as natural disasters, crime, or wars, and a state's inability to reduce these risks which poor people face every day of their lives. Poverty is being voiceless and powerless (World Bank 2000-2001, 16-21). These are all the dimensions of poverty.

The United Nations and other organizations tracking global poverty rates focus on

various indices including: the proportion of people earning less than \$1 per day, the poverty gap ratio, the share of the poorest quintile in national consumption, and the growth rate of the gross domestic product per employed person (United Nations 2006a).

The World Bank classifies countries of the world based on their level of income. These classifications are: low income, which are countries with a gross national income (GNI) of \$935 or less per capita; lower-middle income countries, which have between \$936 and \$3,705 GNI per capita; upper-middle income, which are countries with \$3,706 - \$11,455 GNI per capita; and high income, which have a GNI per capita greater than \$11,455 (World Bank 2009).

Poverty on a global level remains a major problem. For many families across the world, the widening global disparities between rich and poor have increased their sense of deprivation and injustice, while social mobility and equal opportunity remain foreign concepts to far too many people (World Bank 2000-2001, VI). Sachs documents the history of poverty. Approximately 200 years ago, the entire population, with the exception of a very small minority of rulers and land owners, would have been considered impoverished under modern standards. For the last 200 years, though, the human population has entered a unique period of long-term modern economic growth. During this time, not all regions and families benefitted from this economic growth equally. Approximately one-sixth of the world's population achieved high income status through consistent growth; two-thirds have risen to middle-income status with more

moderate rates of economic growth; but the remaining proportion of people have lived in extreme poverty with very low rates of economic growth (Sachs 2005b, 30).

Since the 1950s, the concept of global poverty reduction has begun to gain importance. Numerous strategies have been developed to reduce the number of impoverished people in the world (World Bank 2001, 6). The World Bank, in its World Development Report, describes many of these strategies which have evolved over time. The 1950's and 1960's strategy focused on large capital investments in the infrastructure of poor countries. In the 1970s, the international community focused on improving health and education in order to reduce the numbers of those living in poverty. The 1980s brought an emphasis on economic openness and reliance on the free market to work with little or no interference. More recently, in the 1990s and 2000s, there has been more of an emphasis on providing opportunity, empowerment, and security. This most recent strategy recognizes that there is no single, universal blueprint for poverty reduction. Therefore, there is a need to focus on the causes of poverty and the living conditions of the impoverished (World Bank 2001, 7). The most recent strategy includes an emphasis on three causes of individual poverty which are generally out of the poor's influence or control: the lack of opportunity, empowerment, and security.

The World Bank outlines various objectives that correspond to the three parts of the most recent poverty reduction strategy. The goal of increasing opportunity includes: 1) encouraging effective private investment; 2) expanding into international markets; 3) building the assets of poor people; 4) addressing inequalities across gender, ethnic, racial,

and social divides; and 5) getting infrastructure and knowledge to poor areas (World Bank 2001, 8-9).

The goal of empowerment includes: 1) laying the political and legal basis for inclusive development; 2) creating a public administration that fosters growth and equity; 3) promoting gender equality; 4) tackling social barriers; and 5) supporting poor people's social capital (World Bank 2001, 9-10).

The goal of security includes: 1) formulating a modular approach to helping poor people manage risk; 2) developing national programs to prevent, prepare for, and respond to macro shocks (both financial and natural); 3) designing national systems of social risk management that is also pro-growth; 4) addressing civil conflict; and 5) tackling the HIV/AIDS epidemic (World Bank 2001, 10-11).

All of these are important strategies which can be used by developing countries in their fight against poverty.

Income Poverty

In its most common usage, income poverty is defined as “insufficient income to buy a minimum basket of goods and services” (UNICEF 2000, 6). The most used indicator to measure income poverty is “headcount ratio,” which represents “the proportion of people or households whose income falls below a particular poverty line”

(UNICEF 2000, 6). The key measure of poverty is the poverty line, which represents “the critical cutoff in income or consumption below which an individual or household is determined to be poor” (World Bank 2001, 18). The international poverty line, \$1 per day per person, set in 1990 by the World Bank, is widely accepted as the international standard for extreme poverty which is expressed in purchasing power parity to adjust for price differences between countries (World Bank 2008, 1). The “\$1-a-day” poverty line was recalibrated at \$1.08 a day in 1993, and was changed again in 2005 to the \$1.25 per day (World Bank 2008, 1). Following the World Bank’s (2008, 1) most recent data, 1.4 billion people in the developing countries live in extreme poverty, which translates to one out of five people living on less than \$1 a day in the developing world. Measuring income poverty enables both a government and the international community to understand poverty and to act to alleviate it.

Hunger

Hunger is a global problem requiring a concerted and persistent worldwide effort for its elimination. Despite the difficulty this challenge poses, the United Nations reports that it is possible to halve hunger by 2015. However, in order to eliminate hunger, its causes and the issues surrounding it should be studied. Hunger is defined by the United Nations as “the subjective feeling of discomfort that follows a period without eating” (United Nations 2005c, 19). Hunger is a problem that is inextricably linked with so many issues of the developing world including child mortality, maternal health, environmental

degradation, universal primary education, and poverty (United Nations 2005c, 1; Webb 2006, 112). Hunger is linked so closely with poverty that it has been described as both a cause and effect of poverty (United Nations 2005c, 1). Despite this fact, economic growth alone is insufficient to eliminate hunger because so many people that are affected by it live in deep “poverty traps” beyond the reach of traditional economic markets (United Nations 2005c, 2).

The United Nations (2005c, 2) reports that hunger occurs in three different forms: acute, chronic, and hidden. Acute hunger affects approximately 10 percent of those that suffer from it and generally occurs during famines and disasters. Chronic hunger affects the most people, approximately 90 percent of those that struggle with hunger, and includes chronic malnourishment caused by a consistent lack of access to food of sufficient quality and quantity. Chronic hunger results in underweight individuals, stunted child growth, and high child mortality rates. Hidden hunger is caused by a lack of essential micronutrients including vitamins and minerals and is estimated by the United Nations to affect more than 2 billion individuals worldwide (United Nations 2005c, 2). While acute hunger receives considerable attention and resources through the humanitarian and emergency work of many governmental and non-governmental organizations, chronic (non-emergency) hunger, which affects so many more people, receives low priority and scant resources (Webb 2006, 110).

There are many causes of hunger. Poverty, war, natural disasters, disease epidemics, and political and economic shocks, are all catalysts for the basic causes of

hunger which are economic, political, social, and cultural in nature. Many of the underlying causes however, are directly related to household food security and a lack of a healthy environment (United Nations 2005c, 20). One of the more recent problems contributing to the growth of hunger and malnutrition is the high cost of food affecting the “bottom billion,” or the people who live on one dollar or less a day (Ki Moon 2008, 1; Blanco 2002, 1). When poor people are faced with inflation, they either buy less food or buy cheaper, less nutritious food. The eventual outcome is that poor people become hungrier and they are further from a healthier life and future (Ki Moon 2008, 2). Although there are many causes for hunger, there is no disagreement that poverty is the root cause of “chronic hunger” (Samal 1998, 1846).

The United Nations (2005c, 20) outlines eight determinants of hunger including: 1) poverty; 2) education; 3) food production and access; 4) sanitation, health facilities, and access to clean drinking water; 5) inequalities of socioeconomic and political access that exist in a society; 6) HIV/AIDS; 7) instability and conflict; and 8) natural disasters and climate variability. It is widely accepted that hunger, if not addressed, begets continued poverty (Webb 2006, 112). Therefore, following the progress of the fight against both poverty and hunger, and their dimensions, is very important.

To track hunger, the United Nations and other organizations use the following indices: the prevalence of underweight children under-five years of age and the proportion of the population below the minimum level of dietary energy consumption (United Nations 2005c, 35).

Patrick Webb, in his article *Halving Hunger and Malnutrition: How are we doing in Meeting the Millennium Development Goal Number 1?* discusses the fact that while hunger is incredibly important on the individual level, it also represents a major development issue at the national and global level. He proposes that there are five separate but related indices that, when taken together, provide a picture of the prevalence of hunger in a society: 1) the proportion of people living in poverty (as measured by those who live on less than \$1 per day); 2) the poverty gap, which offers an understanding of how severe the poverty is in certain segments of society; 3) the share of the lowest quintile in national income or consumption, which focuses on inequality as felt by those at the bottom of the poverty distribution; 4) the proportion of people undernourished, which is made up of the national per-capita availability of calories, a distribution of available calories across households, and a threshold for minimum calorie consumption; and 5) the prevalence of underweight children (Webb 2006, 107-109).

Webb concludes that, if hunger is going to be effectively addressed, improved surveillance and tracking systems are needed to ensure that problems are highlighted rather than obscured, and that moral outrage has to be catalyzed rather than be suppressed to bring about change and solutions.

Universal Primary Education

Universal primary education is necessary for a country to achieve on its path toward development. Progress in education can lead to progress in health, nutrition, and poverty reduction; and likewise, that progress (in health, nutrition, and poverty reduction) can lead to progress in achieving universal primary education (United Nations 2009, 29). Therefore, it is generally accepted that the most effective strategy for achieving sustainable development and eliminating poverty is to expand access to education and improve its quality (Tiedao, Minxiz, Xuequin, Xi, Yan, and Jie 2004, 1; Todaro 1999, 326).

The literature provides abundant evidence that shows the strong relationship between income poverty and education (Todaro 1999, 343; Fredricksen 1983, 142; UNESCO 2009, 26). Additionally, a quality education will have an effect on factors other than poverty and income (United Nations 2009, 29). Progress in education is a catalyst to economic growth and productivity, achievement of gender equality, improvement in child health, distribution of opportunities, and a reduction of social disparities in any country (UNESCO 2009, 24-29).

Despite the fact that many developing countries have understood the importance of providing a quality education, and address it by spending the largest amount of their government expenditures on education (Todaro 1999, 328; Fredericksen 1983, 142); nevertheless, achieving universal primary education is difficult for many developing countries because of the direct relationship between income and school participation

(Ushadevi 2001, 2779). In fact, it is estimated that 75 million children, including 31 million boys and 44 million girls, do not have the opportunity to have a primary education (United Nations 2007). Poor children who are hungry, in poor health, and malnourished remain out of the school system; because completion of a primary education is not their first priority (Ushadevi 2001, 2780). Besides the fact that malnutrition keeps children out of school, it adversely affects their mental performance. It has been shown that serious nutritional deficiencies impair normal growth and function of the brain (Ushadevi 2001, 2780). The most critical factors that help children stay in school are good nutrition, health, and a positive social environment (Ushadevi 2001, 2780). Therefore, in order to create opportunities for children to get an education and a better quality life, it is imperative that poverty and its dimensions are tackled in the poorest countries.

Many of the poorest nations fail to provide primary education because they are too poor to rely on private financing for balanced educational development (Jones 2008, 38). Economic growth can open the opportunity for many educational providers, but because these poor countries lack economic growth, they require the involvement of the international donor community, which can play a dynamic role in the educational development (Jones 2008, 38). Jones (2008, 35) criticizes the expectation that primary education would achieve a fully literate society. He says that it would be naïve to expect an impoverished family to underpin the development of secondary, technical, and higher education and that the “ideal model of achievement of only primary education” is a narrow approach. Jones argues that adolescents and young adults are the overlooked

groups, and they should also benefit from programs that would help them to gain knowledge and life skills to improve the society they live in.

According to a United Nations report (2009, 26), there are many factors that can heavily influence whether an individual completes a primary education including gender, ethnicity, birth place, parental income, the health conditions of the children and residents of the local community, the level of poverty in an area, and other factors.

There are several indices which the United Nations and researchers use to measure a population's level of education including illiteracy, enrollment, drop-out rate, mean years of schooling, attendance, and grade repetition (Ushadevi 2001, 2781).

Although these are the most important indices, it is also important for researchers to monitor indices that will likely have an effect on education such as those that focus on the hunger, poor health, and malnutrition of school age students (Ushadevi 2001, 2780). In spite of the fact that these indices have shown that recent gains in achieving universal primary education have been made, there is still much progress needed for universal primary education to be accomplished (Burnet 2008, 185).

For developing countries to realize the goal of universal primary education, they need to team up with members of the international community to provide primary education for all residents (Jones 2008, 38). Additionally, in order to address the neediest within developing countries, the international community and local governments need to focus on the basic learning needs of the poorer rural population and other disadvantaged

social groups, specifically those living in remote and minority regions (Tiedao, Minxiz, Xuequin, Xi, Yan, and Jie 2004, 2).

Gender Equality

The literature discusses (Baden and Goetz 1997, 3; Peterson and Runyan 1999, 29; Ostegaard 1992, 7) the fact that gender and sex are often misunderstood. Sex is understood as the biological distinction between men and women, whereas gender refers to a learned behavior and associated expectations that distinguish between masculinity and femininity (Peterson and Runyan 1999, 5). Since many societies place different values on masculine and feminine behaviors, gender is the basis for inequality between men and women (Peterson and Runyan 1999, 5). The results of this gender inequality vary from culture to culture, and in many parts of the world, it is considerable.

A United Nations report showed that although women compose half of the world's population and performed two-thirds of the world's work hours, they were “almost universally poorer in resources and more poorly represented in elite positions of decision-making power” (Peterson and Runyan 1999, 5). This can be seen by the fact that women hold only 18 percent of the parliamentary seats worldwide (United Nations 2007). The United Nations also states that although the reasons for this inequality vary, most societies typically favor men and boys, which leaves them more access than women and girls to the capabilities, resources, and opportunities that are important for the

enjoyment of social, economic, and political power and well-being (United Nations 2005d, 30).

To improve gender equality, a society has to offer access for women to basic human necessities (education, health, and nutrition), to resources and opportunities, and reduce women's vulnerability to violence and conflict (United Nations 2005d, 30). The most emphasized method to improve gender equality is related to education. According to a United Nations report (2005d, 37) "various studies show that educated women are more effective at improving their own well-being as well as their families." Better education for girls has a direct correlation with lower fertility rates, mortality rates, and vulnerability to HIV/AIDS; and it has positive effects on women's health, integrity, and on the educational attainment of their children (United Nations 2005d, 37-41).

One theory for improving gender equality is the empowerment theory. The empowerment theory focuses on making women aware of the issues of gender inequality; encouraging them to improve their personal situation and to attain a good education; and challenging social influences which put an emphasis on keeping women in traditional, and less equal, roles of society (Hall 1992, 15). The core concept of empowerment lies in the ability of a woman to control her own destiny, which should come naturally without any fear of violence (United Nations 2005d, 33).

The United Nations and other international organizations, such as UNESCO, the International Labor Organization, and the Inter-Parliamentary Union, track four main indices when researching gender equality and its progress over time: the ratio of girls to

boys in primary, secondary, and tertiary education; the ratio of literate women to men 15-24 years old; the share of women in wage employment in the non-agricultural sector; and the proportion of seats held by women in national parliaments (United Nations 2006a).

Although combating gender inequality in the developing world is critical, according to Haleh Affshar (1996), it would be wrong, when talking about gender inequality, to generalize women in the developing world based on the experiences and attitudes of women in the developed world. Affshar suggests that it is important for the Western World to maintain respect for individual cultures while still working to break down gender stereotypes.

Child Mortality

Child mortality is a severe problem for much of the developing world. It refers to the problem of children dying at or before the age of five (United Nations 2008c; UNICEF 2000). Thirty-seven percent of deaths among children under five-years of age occur in the first month of life (United Nations 2008c, 21).

The literature shows that there is strong correlation between child mortality and poverty, indicating the importance of socio-economic disparities in access to health services and feeding practices that affect the child's susceptibility to disease and death during the ages of 1 to 4 (UNICEF 2000, 16; United Nations 2008c, 20). A child born in

a developing country “is over 13 times more likely to die within the first 5 years of life than a child born in an industrialized country” (United Nations 2008c, 21).

Cochrane and Zachariah (1983) conducted a study which showed the correlation between child mortality and fertility. If a child dies early, then the woman is more likely to get pregnant again due to the biological effect of fertility and the emotional effect of a child’s death on a parent. The study found that those parents who had a child die in the first few births, were more likely to have more children over-all than those that have no child deaths. The study also showed that family planning is more cost effective than direct mortality reduction plans at decreasing the childhood mortality rate. Ultimately, the study concluded that the less children born, the fewer children who will die from the various causes of childhood mortality.

A comparative study of Demographic and Health Surveys in twenty countries concluded that there is a close link between children’s health and poverty in the family and the level of maternal education (UNICEF 2000, 18). The study indicates that an infant whose mother had no formal education is about twice as likely to die before she becomes a year old as an infant whose mother completed a post-primary education.

UNICEF indicates that the widening gap between developed and developing countries is observable not only in terms of income but also in terms of social indicators. The World Health Organization, for instance, estimates that in most developing countries, the probability of dying before the age of five is about five times lower for better-off social or economic groups than the national average (UNICEF 2000, 22-27).

The United Nations and other organizations that track child mortality use three main indicators: the under-five mortality rate; the infant mortality rate, which represents the number of children who die before their first birthday out of every 1,000 live births; and the proportion of one-year-old children immunized against measles (United Nations 2006a; Todaro 1999, 50).

There are numerous causes for child mortality including malnutrition, disease caused by lack of safe water, inadequate sanitation, poor hygiene, and the lack of sufficient amounts of healthy food (UNICEF 2000, 22-27). Many of the leading causes of children's deaths such as pneumonia, diarrhea, malaria, and measles, can be easily prevented through basic improvements in health services. However, undernourishment is considered to be the major cause in more than one third of all deaths in children under-five years of age (United Nations 2008c, 21).

According to UNICEF's report, there are five principles of good social policy that aim to reduce poverty in a rapid and sustainable manner which will help to decrease child mortality. First, developing countries must integrate and simultaneously address economic and social rights. They should not give priority to achieving microeconomic stability or economic growth first while keeping social development as a secondary issue. Second, the developing countries must spend more on basic social services and child protection. Third, these countries must allocate funds better in terms of integration, equity and efficiency. Fourth, during periods of austerity and adjustment the countries must maintain a level of financial support for basic social services and the protection of

children's rights. Finally, developing countries must promote community participation in managing the delivery of an integrated package of social services and special protection of vulnerable children (UNICEF 2007, 22).

In addition to the theory of reducing child mortality through the reduction of poverty, there have been various campaigns which have been implemented by international, nonprofit, and governmental organizations, including those that provided insecticide-treated mosquito nets to children living in areas affected by malaria, measles vaccines, and maternal and neonatal tetanus shots (United Nations 2008b, 2).

Additionally, the United Nations promotes five suggestions for preventing child mortality: 1) ensure full coverage of immunization programs; 2) scale up Vitamin A supplementation; 3) pursue exclusive breastfeeding for children under six months of age; 4) provide adequate nourishment for children of poor families; and 5) promote hand washing and treatment of home drinking water (United Nations 2008b, 2). Therefore, there are numerous measures that developing countries can take to address the severe problem of childhood mortality.

Maternal Health

Maternal health is a critical problem facing the world. Almost one in every 200 live births worldwide leads to the death of the mother (Shiffman 2000, 274). Studies show that up to 90 percent of all maternal deaths are related to the structure and

performance of health care services (Fawcus 1996, 27; Urassa 1997, 12; Gottlieb and Lindmark 2002, 14).

The maternal mortality ratio is the primary measure or indicator of maternal health used by the United Nations, UNICEF, and the World Health Organization (United Nations 2006a). The maternal mortality ratio measures the number of women who die as a result of a pregnancy and/or the related birth.

Janes's study shows multiple causes for maternal mortality and, similarly, many strategies for reducing maternal mortality. Causes for maternal mortality can be classified under two categories: direct and indirect obstetric causes. Direct obstetric causes "result from obstetric complications of the pregnancy state and are the same worldwide: hemorrhage, sepsis, eclampsia, obstructed labor, and complications of abortion" (Janes 2004, 252). Indirect obstetric deaths are those that are caused by previous diseases, or non-obstetric diseases, that arise during pregnancy and are exacerbated by the pregnancy (Janes 2004, 252). The United Nations states that the vast majority of pregnancies can be prevented, and up to a third of maternal deaths globally could be prevented by meeting unmet needs for contraception (United Nations 2008b, 1). Another method of preventing maternal mortality, as well as child mortality, is for women to have fewer pregnancies and space births farther apart (United Nations 2008b, 1).

Jeremy Shiffman (2000) analyzed multiple theories in his article, *Can Poor Countries Surmount High Maternal Mortality*. One of these theories is the wealth perspective on mortality change. The wealth perspective assumes that death rates change

only gradually when broad social or public health policies are implemented. Therefore, the maternal mortality rate can only be substantially improved when there is economic development in a country. Shiffman explains that although a country's wealth can have an impact on the maternal mortality rate, high standards of living are not a necessary precondition for lowering maternal mortality rates. Additionally, Shiffman cites a previous study by John Caldwell which showed that of 11 variables studied, income per capita had the lowest correlation with national mortality rates, and the key to low mortality was high standards of living and good nutrition, which might be related to, but not dependent on, wealth (Shiffman 2000, 277).

The second theory on mortality change, the health perspective, maintains that maternal mortality can be changed only through critical health interventions (Shiffman 2000, 276). These interventions include antenatal care, family planning services, safe and legal abortion, trained medical attendants at delivery, and emergency obstetric care. The advocates of the health perspective believe that maternal health is such a crucial issue that the problem should be addressed without waiting for the economy to change (Shiffman 2000, 276).

The third and final theory for addressing maternal mortality that Shiffman discussed is the empowerment perspective. This theory focuses on improving women's position in society rather than on improving the economy or increasing health services. This theory emphasizes a few basic principles: 1) when women's status is higher in a society, their health is more likely to get the attention of the leaders; 2) empowered

women are more likely to have a higher education, and women with higher education have been shown not to be at as high a risk for maternal mortality; and 3) women that have a higher education are less likely to have many children, which will decrease the chances of maternal mortality by itself (Shiffman 2000, 277).

Shiffman's study suggests that high standards of living are not a necessary condition for lowering maternal mortality. The most critical interventions include educating women, making health care a priority and ensuring that pregnant women have access to appropriate medical services (Shiffman 2000, 274). Shiffman concludes that although each one of these theories have different understandings on how to reduce maternal mortality levels, the most effective method would combine all three by improving health services, reducing rates of poverty, and working to empower women (Shiffman 2000, 277).

These three initiatives have received a lot of attention from the international community. Nevertheless, the international community has failed to obtain significant improvements in reducing maternal mortality in the developing world (Janes 2004, 232). Moreover, Liljestrand and Pathmanathan state that "there has been no visible progress in maternal mortality reduction at the global level in the last 40 years" (Liljestrand and Pathmanathan 2004, 299). This failure is due to the fact that maternal mortality occurs in "a specific social, cultural, and political context" that can greatly affect maternal, individual, and community health (Miller, Sloan, and Beverly 2003, 12). The maternal mortality tragedy can be avoided with critical interventions, as well as the need for

political and social will at international and national levels, to accelerate maternal mortality reduction (Shiffman 2000, 274).

HIV/AIDS

Acquired Immune Deficiency Syndrome (AIDS) is one of the most devastating diseases that the world has to face. The virus that causes AIDS, the Human Immunodeficiency Virus (HIV), knows no boundaries, no class, no face, and no race. AIDS has caused a global catastrophe, because social and economic stability in already affected areas are threatened, while spreading into new regions and wreaking enormous devastation (Gender Links 2002, 1).

HIV/AIDS is a relatively new and unique disease. HIV/AIDS was recognized more than two decades ago and since has grown into one of the largest epidemics in human history (United Nations 2005a, 13). It was first recognized in America, in 1981, after a number of homosexual men developed a rare pneumonia. The characteristic of their disease was that they had severe immune deficiency, which led to the development of pneumonia. The same year, in central Africa, a new disease causing severe weight loss and diarrhea was spreading and being referred to as, "slims disease." It had the same characteristics, although it was present in heterosexually-oriented people, but it also caused a severe immune deficiency. In 1983, scientists determined that the immune deficiency virus (HIV) causes the new disease called AIDS (Evian 2006, 3).

HIV attacks the immune system of the body and slowly breaks down the body's ability to defend itself against germs and diseases. Initially, the person who carries the virus gets sick more often; when the body no longer recovers, the person has reached the final stage of HIV infection, which is AIDS. There are no clear symptoms and no cure for the HIV infection (Winkler 2003, 5).

UNAIDS, the joint UN program on HIV, defines the HIV risk as the probability of an individual to become infected through his or her own actions, knowingly or not, or another person's actions (United Nations 2006b, 105). The modes of transmission are through sex, injection, blood transfusion, or from a parent to a child (mother to child).

UNAIDS and the World Health Organization (WHO), in collaboration with other organizations, review the state of the epidemic. According to the recent numbers, HIV/AIDS killed more than 2.1 million people in 2007; the number of people living with HIV worldwide is 33.2 million; and there are 2.5 million people newly infected with HIV (UNICEF 2009).

Although HIV spreads without discrimination, certain groups of people are more vulnerable to HIV infection. The literature shows that due to social, cultural, religious and biological reasons, women are more vulnerable than men, adolescents have become more vulnerable to HIV than adults, and young girls are more at risk than boys. Also, poor people are more vulnerable than the economically advantaged. People with low levels of education are less likely than other groups to get treatment for HIV infection (United Nations 2006b; UNICEF 2009; Gender Links 2002, 1).

There are four populations with the highest risk of getting HIV: sex workers; men who have sex with men; injecting drug users; and prisoners. In most countries, these groups are those who tend to have a higher prevalence of HIV infection because of the conditions that they are exposed to (United Nations 2006b, 105).

The review of the literature shows that HIV is associated with poverty and social vulnerability (Barnet and Whiteside 2002, 9; United Nations 2005a, 20). Almost all the hardest hit countries are poor. Africa, for example, the poorest of the continents, is at the epicenter of the epidemic, as is Haiti, which is the poorest country in the Western Hemisphere and has the highest HIV prevalence (United Nations 2005a, 20). Research has shown that the correlation between HIV and poverty is not perfect (United Nations 2005a, 20). Botswana and South Africa are examples because they are Africa's wealthiest nations but are also the hardest hit by HIV/AIDS.

The causal links between poverty and HIV risk are complex. The disease affects the poor the most (Barnet and White 2002, 8). The lack of education, poor access to health care, poor nutrition, and exposure to other diseases play an important role in the risk of developing HIV. Lack of educational opportunity fuels migrant labor and disturbs family lives (United Nations 2005a, 20). Barnett and Whiteside (2002) have argued that the notion of underlying social or economic risk should be broadened to include what they call "low social cohesion" which is the situation when economic inequality, social disruption, and poverty itself are present.

HIV can have many implications. It spreads other serious diseases such as

malaria, bacterial infections, and tuberculosis, which are the leading determinants of HIV- related morbidity (Barnet and White 2002, 7). It has been associated with a fourfold increase in the number of cases of tuberculosis (Gender Links 2002, 1). It affects families and communities; it kills parents and caregivers, leaving orphans behind. These effects bring other threats, as well, including risk to their education, health, and well-being of the affected children (Barnet and White 2002, 8-9; UNICEF 2009). This evidence clearly shows that HIV can no longer be considered solely a health issue. Many implications of HIV/AIDS threaten development, social cohesion, political stability, food security, and life expectancy, and have a crippling effect on the economy (Barnet and White 2002, 8-9; UNICEF 2009). Therefore, reversing the spread of HIV demands the full realization of human rights and the empowerment of all gender groups in all spheres of life.

Environmental Sustainability

The term sustainability can be used in different contexts. In its most basic form, the literature refers to sustainability as a result of activities that "enhance the planet's ability to maintain and renew the viability of biosphere and protect all living species; enhance society's ability to maintain itself and solve major problems; and maintain a decent level of welfare for present and future generations of humanity" (Dunphy 1999, 6). A major aspect of sustainability focuses on the activities of humans and their effect on the environment.

Environmental sustainable development is defined by the United Nations as "meeting current human needs without undermining the capacity of the environment to provide for those needs over the long term" (United Nations 2005b, 1). A report by the United Nations states in order to achieve environmental sustainability, there has to be a balance of human development with a stable environment that provides resources such as fresh water, food, clean air, wood, fisheries, and productive soils and protection from floods, droughts, pest infestations, and disease (United Nations 2005b, 1).

There are direct and indirect drivers for environmental change. The direct drivers are land cover change resulting from logging, conversion to agriculture, road construction; over-appropriation or inappropriate exploitation of natural resources, such as overfishing; invasive alien species; pollution of air, soil, and water; and climate change. Indirect drivers include demographic change, such as population growth; economic factors, such as overconsumption that leads to increased waste; market failures and distortions, such as environmentally damaging subsidies; scientific and technological change; institutional gaps, such as a lack of regulatory institutions; and sociopolitical factors, such as differences in cultures that could lead to different consumption patterns (United Nations 2005b, 5-8).

Researchers and institutions including the United Nations, the World Health Organization, the International Energy Agency, and others follow numerous measures to determine whether progress has been made in the field of environmental sustainability. Included in these measures are the proportion of land area covered by forest; the

proportion of population using solid fuels; the proportion of population with sustainable access to an improved water source; the proportion of population with access to improved sanitation; and others (United Nations 2006a).

The United Nations considers environmental sustainability to be a vital part of the effort to reduce global poverty because environmental degradation has been linked to poverty, hunger, gender inequality, and health (United Nations 2005b, 2). Poverty reduction requires the protection and management of the natural resource base while promoting social and economic development (United Nations 2005b, 2). In order to protect natural resources, the world's poor need to have access to infrastructure that provides safe drinking water, electricity, fuel, and transportation, because without these necessities, the poor are more likely to rely on natural ecosystems to provide them through small-scale farming, grazing, harvesting, hunting, and fishing, which can have an aggregate large-scale impact (United Nations 2005b, 3).

One of these environmental factors directly tied to human development is related to the availability of fresh and clean water. In the book *Achieving Broad-Based Sustainable Development*, the authors, Weaver, Rock, and Kusterer, discuss a World Bank study that shows that the number one environmental problem of developing countries is poor water quality, scarce clean water, and inadequate sanitation, which causes more than 3 million deaths per year. The second environmental problem in developing countries is increasing air pollution; the third is declining agricultural productivity; and the fourth is a loss of biodiversity (Weaver, Rock, and Kusterer 1997,

248). These major environmental problems exact a large human health toll in the developing countries, which traps them even more in poverty and disease.

Weaver, Rock, and Kusterer (1997) go on to provide some theories and suggestions for developing countries to achieve environmental sustainability. The authors argue that developing countries can achieve significant improvements in environmental quality and economic efficiency if government policies that are not good for growth or the environment are corrected. Although the authors indicate that economic growth and environmental sustainability can go hand-in-hand, there are certain industries and circumstances that will make these two goals incompatible. Such an issue is a trade policy that can encourage "pollution havens," where dirty industries move to poorer countries that have less stringent environmental regulations. This action could lead to economic growth without environmental sustainability and, subsequently, cause health problems for the local population.

Conceptual Framework

The working hypotheses are summarized and linked to the supporting literature in Table 2.1.

Table 2.1: Conceptual Framework

Working Hypotheses	Supportive Sources
<p>WH 1a: The proportion of people whose income is less than \$1.25 a day will be halved between 1995 and 2015 in the nine CIS countries (Kyrgyzstan, Tajikistan, Uzbekistan, Armenia, Azerbaijan, Georgia, Moldova, Turkmenistan, and Ukraine), based on the trend of current data.</p> <p>WH 1b: The proportion of people who suffer from hunger will be halved between 1995 and 2015 in nine CIS countries (Kyrgyzstan, Tajikistan, Uzbekistan, Armenia, Azerbaijan, Georgia, Moldova, Turkmenistan, and Ukraine), based on the trend of current data.</p>	<p>Hagenaars and Vos 1988 Williams 1999 Muro, Mazziotta, and Pareto 2009 Sachs 2005b World Bank Development Report 2000-2001 World Bank 2008 World Bank 2009 UNICEF 2000 United Nations 2006a</p> <p>Ki Moon 2008 Blanco 2002 Samal 1998 United Nations 2005c Webb 2006</p>
<p>WH 2: All children in nine CIS countries (Kyrgyzstan, Tajikistan, Uzbekistan, Armenia, Azerbaijan, Georgia, Moldova, Turkmenistan, and Ukraine) will be able to complete a full course of primary schooling by 2015, based on the trend of current data.</p>	<p>Todaro 1999 Tiedao, Minxia, Xuequin, Xi, Yan, and Jie 2004 Ushadevi 2001 Jones 2008 Fredericksen 1983 United Nations 2007 United Nations 2009 UNESCO 2009 Burnet 2008</p>
<p>WH 3: Gender disparity will be eliminated in primary education by 2015 in nine CIS countries (Kyrgyzstan, Tajikistan, Uzbekistan, Armenia, Azerbaijan, Georgia, Moldova, Turkmenistan, and Ukraine), based on the trend of current data.</p>	<p>Baden and Goetz 1993 Ostegaard 1992 Affshar 1996 Peterson and Runyan 1999 Hall 1992 United Nations 2005d United Nations 2006a United Nations 2007</p>
<p>WH 4: The under-five mortality rate will be reduced by at least two-thirds between 1995 and 2015 in nine CIS countries (Kyrgyzstan, Tajikistan, Uzbekistan, Armenia, Azerbaijan, Georgia, Moldova, Turkmenistan, and Ukraine), based on the trend of current data.</p>	<p>Todaro 1999 UNICEF 2007 United Nations 2008b United Nations 2008c UNICEF 2000 Cochrane and Zachariah 1983 United Nations 2006a</p>

<p>WH 5: The maternal mortality rate will be reduced by three-quarters between 1995 and 2015 in the nine CIS countries of (Kyrgyzstan, Tajikistan, Uzbekistan, Armenia, Azerbaijan, Georgia, Moldova, Turkmenistan, and Ukraine), based on the trend of current data.</p>	<p>Shiffman 2000 Liljestrand and Pathmanathan 2004 Janes 2004 Gottlieb and Lindmark 2002 Fawcus 1996 Urassa 1997 Miller, Sloan, and Beverly 2003 United Nations 2006a United Nations 2008b</p>
<p>WH 6: The spread of HIV/AIDS will be halted by 2015 in nine CIS countries (Kyrgyzstan, Tajikistan, Uzbekistan, Armenia, Azerbaijan, Georgia, Moldova, Turkmenistan, and Ukraine), based on the trend of current data.</p>	<p>Barnett and Whiteside 2002 United Nations 2005a Winkler 2003 Evian 2006 United Nations 2006b UNICEF 2009 Gender Links 2002</p>
<p>WH 7: The proportion of people without sustainable access to safe drinking water living in nine CIS countries (Kyrgyzstan, Tajikistan, Uzbekistan, Armenia, Azerbaijan, Georgia, Moldova, Turkmenistan, and Ukraine) will be reduced by half between 1995 and 2015, based on the trend of current data.</p>	<p>United Nations 2005b Dunphy 1999 Weaver, Rock, and Kusterer 1997 United Nations 2006a</p>

Chapter Summary

This chapter discussed the various dimensions of poverty and the major issues surrounding them. The dimensions of poverty are income poverty, hunger, education, gender equality, child mortality, maternal health, HIV/AIDS, and environmental sustainability. This chapter concludes with a presentation of the conceptual framework and the working hypotheses of this study.

Chapter 3 Methodology

This chapter discusses the methods used to test the working hypotheses, describes the independent and dependent variables, and addresses the subjects of the study. The chapter also discusses the strengths and weaknesses of the study.

Operationalization of the Conceptual Framework

The working hypotheses are operationalized in Table 3.1.

Table 3.1: Operationalization of the Conceptual Framework

Independent Variable	Measurement	Data Source
Time	Year (1995 – 2007)	N/A
Dependent Variables		
WH 1a: Poverty	Percentage of Population Earning Less than \$1.25 a Day	World Bank
WH 1b: Hunger	Percentage of Population Undernourished	World Bank; Nationmaster.com
WH 2: Universal Primary Education	Percentage of Relevant Age Group Finishing Primary Education	World Bank
WH 3: Gender Equality	Ratio of Girls to Boys in Primary and Secondary Education	World Bank; Nationmaster.com
WH 4: Child Mortality	Under- Five Mortality Rate (per 1,000 Live Births)	World Bank
WH 5: Maternal Mortality	Maternal Mortality Rate (per 100,000 Live Births)	World Health Organization
WH 6: HIV/AIDS	Percent of Population Ages 15-49 Infected with HIV	World Health Organization
WH 7: Environmental Sustainability	Percent of Population with Access to an Improved Water Source	World Bank; Nationmaster.com

Independent Variable

The independent variable for all hypotheses is the time period between 1995 to 2007. The year 1995 is used as a baseline. The trend of data from 1995 to 2007 will be used to predict the 2015 values. In some instances, data are not available for 1995, so the closest available data after 1995 are taken as the baseline for the analysis. An explanation of the years used is included later in this chapter.

Dependent Variables

The dependent variables used in the Operationalization Table are drawn from the United Nations Millennium Development Goals. These goals and their targets serve as the basis for formulating the working hypotheses used in this study.

Poverty

The first of the Millennium Development Goals is to halve the proportion of people living in extreme poverty. The key measure for poverty, the poverty line, was set by the World Bank in 1990 at \$1 a day. This poverty line is widely accepted as the international standard for extreme poverty and is expressed in purchasing power parity (PPP) to adjust for differences in prices between countries (World Bank 2008, 1). The “\$1-a-day” poverty line was recalibrated in 2005 to \$1.25 a day (World Bank 2008, 1). The formal indicators used to measure poverty are *percentage of population living below*

\$1.25 per day, poverty gap ratio, and share of poorest quintile in national consumption (United Nations 2003, 5). The indicator used in this study is the *percentage of population earning less than \$1.25 a day*, which is adjusted for purchasing power parity between countries.

Hunger

The first Millennium Development Goal pairs a reduction in income poverty with a reduction in hunger by half. *Prevalence of undernourishment (percent of population)*, also known as *proportion of population below minimum level of dietary energy consumption*, and *the prevalence of underweight children under five years of age* are the formal indicators to measure hunger in the developing countries (United Nation 2005, 37-39).

The indicator used in this applied research is the *percentage of population undernourished*. Undernourishment occurs when food intake level falls below the minimum level of dietary energy requirements (United Nations 2003, 14).

Universal Primary Education

The second Millennium Development Goal aims to reach universal enrollment of children in primary school by 2015. There are several indicators used to measure the progress toward this goal. The indicator chosen for this study is the *percentage of*

relevant age group finishing primary education, which is defined as the ratio of the total number of students successfully completing (or graduating from) the last year of primary school in a given year to the total number of children of official graduation age in the population (United Nations 2003, 20). It is possible for this target to exceed 100 percent because in some circumstances, the total number of children completing the last year of primary school could be higher than the total number of children of official graduation age because some children finish primary school after the official graduation age, increasing the numerator to a number higher than the denominator.

Gender Equality

The third Millennium Development Goal calls for gender equality and the empowerment of women. There are many indicators used to measure the progress toward this goal. The indicator chosen for this study is the *ratio of girls to boys in primary and secondary education*.

Child Mortality

The fourth Millennium Development Goal targets reduction by two-thirds of the death of children under five years of age. The formal indicators used to measure the progress toward the reduction of child mortality are *the under-five mortality rate*, the

infant mortality rate, and the proportion of one-year-old children immunized against measles (United Nations 2003, 3).

The indicator used in this study to measure child mortality is the *under-five mortality rate per 1,000 live births*.

Maternal Mortality

The fifth Millennium Development Goal targets a reduction of maternal mortality by three-quarters. The formal indicators used to measure the progress toward this goal are *the maternal mortality ratio and the proportion of births attended by skilled health personnel* (United Nations 2003, 3).

The indicator used in this study is the *maternal mortality rate per 100,000 live births*. This includes women who die from any cause related to, or aggravated by, pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth, or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy (United Nations 2003, 36).

HIV/AIDS

The sixth Millennium Development Goal aims to combat HIV/AIDS, malaria, and other major epidemic diseases which pose significant threats to any progress in

developing countries. There are many formal indicators used to measure this goal. For this study, only the HIV target was chosen. The indicator chosen for this study is *percent of population ages 15-49 infected with HIV*.

Environmental Sustainability

The environmental goal calls for sustainable development, access to safe drinking water and sanitation, and an improvement of the lives of urban slum dwellers. There are many indicators used to measure the progress of each target related to the environmental goal. This study uses only the target related to access to safe drinking water using the indicator *percent of population with access to an improved water source*, which is defined as the percentage of the population using any of the following types of water supplies for drinking: piped water, public tap, borehole or pump, protected well, protected spring or rainwater (United Nations 2003, 64).

Subjects of this Study: Commonwealth of Independent States

The Commonwealth of Independent States (CIS) was formed in 1991 and is made up of twelve countries that were a part of the former Soviet Union: Russia, Belarus, Ukraine, Moldova, Georgia, Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, and Turkmenistan. After the collapse of the Soviet Union, these countries made the transition from a centrally planned economy to a market economy. This

transition was not easy, and the countries of the CIS went through a tumultuous period of poverty, war and military conflicts, a disrupted health care system, “brain drain,” and high adult mortality rates (World Health Organization 2005, 1-2). Since independence, the twelve countries of the CIS have achieved varying levels of development. Based on criteria established by the World Bank, three countries are considered low income countries (Kyrgyzstan, Tajikistan, and Uzbekistan); six countries are considered lower-middle income countries (Armenia, Azerbaijan, Georgia, Moldova, Turkmenistan, and Ukraine); and three countries are considered higher-middle income countries (Russia, Belarus, and Kazakhstan). Since the Millennium Development Goals primarily focus on combating extreme poverty in low income and lower-middle income countries, this study focuses on the nine countries of the CIS which are considered low income or lower-middle income countries. Table 3.2 categorizes the CIS countries by income level.

Table 3.2: Classification of CIS Countries by Income

Low Income	Lower-Middle Income	Higher-Middle Income
Kyrgyzstan	Armenia	Russia
Tajikistan	Azerbaijan	Belarus
Uzbekistan	Georgia	Kazakhstan
	Moldova	
	Turkmenistan	
	Ukraine	

It should be noted that Georgia withdrew from the CIS on August 19, 2009, following a war with Russia in the summer of 2008. Since Georgia was a part of the CIS

for the period covered by this study, it is included in the analysis with the other low and lower-middle income countries.

Methodology

The study uses exploratory research, and the conceptual framework is working hypotheses. Exploratory research signals that the study is in its preliminary stages and the use of working hypotheses help “establish the connection between the research question and the types of evidence used to test the hypotheses” (Shields and Tajalli 2005, 14). According to Shields, working hypotheses are relevant with this research because they lead to the discovery of facts and provide insight into the future direction of inquiry (Shields 1998, 211).

Existing data are used to test eight hypotheses to predict whether nine low to lower-middle income CIS countries will achieve the Millennium Development Goals. Eight targets of the seven Millennium Development Goals will be analyzed to predict whether these targets will be met in the affected countries by 2015, based on the most recent data available. The target will be considered to be met only if all nine countries reach it; otherwise, it will not be considered as met on a regional basis. For the countries that have sufficient data for a particular goal, the hypotheses will be tested by developing a time series regression model, with time being the independent variable and each goal having a separate indicator as a dependent variable. The rest of the countries will be examined through a trend analysis because regression would not be an appropriate

method due to numerous missing data values and an insignificant result. This trend analysis will show any positive or negative trend for the region as a whole and whether the goals are likely or unlikely to be achieved on a country level.

Where regression analysis is applicable, the study will review the trend in the data from 1995 to 2007. Based on the trend, a projection will be made for the year 2015, which is compared to the 1995 value, and a prediction will be made as to whether each goal will be achieved. Where regression analysis is not applicable, the study will review the trend in the data from 1995 to 2007, establish whether a trend exists, and use any existing trend to predict whether the country will achieve the related goal. Although the Millennium Development Goals baseline is 1990, this study uses 1995 as a baseline because the countries used for this study were part of the Soviet Union in 1990, and data for many of these countries were not widely available until 1995.

This research uses aggregated data from various data sources including the World Bank, the World Health Organization, and Nationmaster.com. Nationmaster.com is a website that compiles data from various sources including the United Nations, the World Bank, and the Central Intelligence Agency's World Factbook.

Strengths and Weaknesses

As with any research, strengths and weaknesses can be found. One of the weaknesses of the study is the unavailability of complete data. The Millennium

Development Goals used the year 1990 as a baseline. Using 1990 as a baseline for these nine countries posed a difficulty because these countries had not yet gained their independence, and in the years following the breakup of the Soviet Union, they were struggling to become independent. Therefore, the study uses 1995 as a baseline. Even with this adjusted baseline, complete data were unavailable. In order to address some of the missing data values, different data sources were used to provide the most updated and complete information possible. This poses another weakness because in some instances data originated from multiple sources.

The intent of the research is to use regression analysis as much as possible to predict whether a country will achieve the target. Since the results of the regression analysis were not significant for many countries across multiple targets, trend analysis was chosen as an alternative to regression analysis, which is not as precise a tool in predicting for future progress.

Chapter Two, *Literature Review*, showed that poverty has many dimensions and that it has always been difficult to measure poverty, because the term is relative. The purpose of the Millennium Development Goals is to focus on all of the dimensions of poverty, with eight goals, eighteen targets, and 48 indicators related to poverty. The scope of this study is limited to eight of the indicators.

This research focuses on the situation in the low and lower-middle income countries of the CIS. Higher-middle income countries are not included in this study because they are considered to have already achieved, or are likely to achieve, the

Millennium Development Goals on a national level. This might be considered a weakness because the general national data may not reflect the disparities that exist within each of these countries.

The primary strength of this study is the focus on a region that is often overlooked and the results are broken down on both a regional and country level.

Human Subjects Protection

This applied research project was submitted to the Texas State Institutional Review Board and received exemption. This research does not include any human subjects.

Chapter Summary

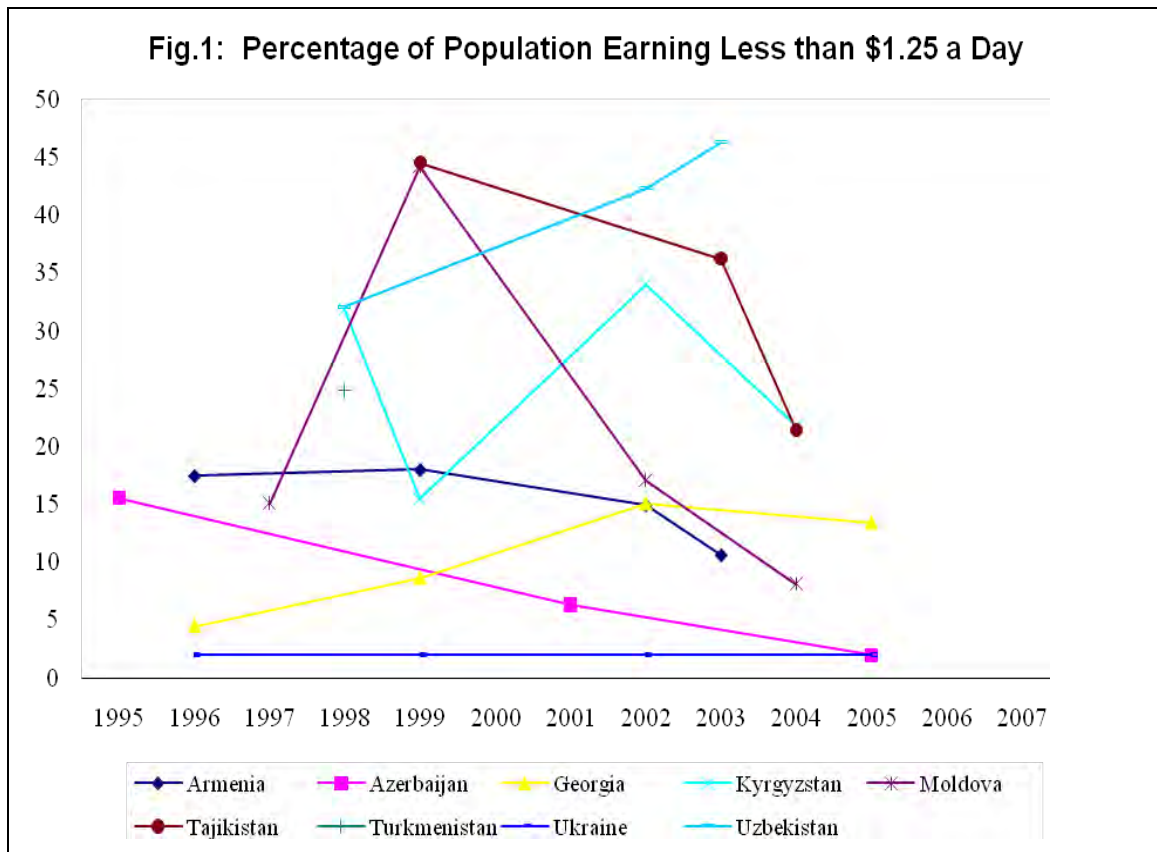
This chapter presented the methodology used to address the research purpose of the study. Further, it included the operationalization table with a description of the dependent and independent variables as well as an overview of the subjects of this study. The next chapter will address the results of the study.

Chapter 4

Results

The purpose of this chapter is to present the results of the study as determined through time series regression and trend analyses. The chapter discusses each working hypothesis on an individual basis, and then provides a summary of the results.

Working Hypothesis 1a: The proportion of people whose income is less than \$1.25 a day will be halved between 1995 and 2015 in the nine CIS countries (Armenia, Azerbaijan, Georgia, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan), based on the trend of current data.



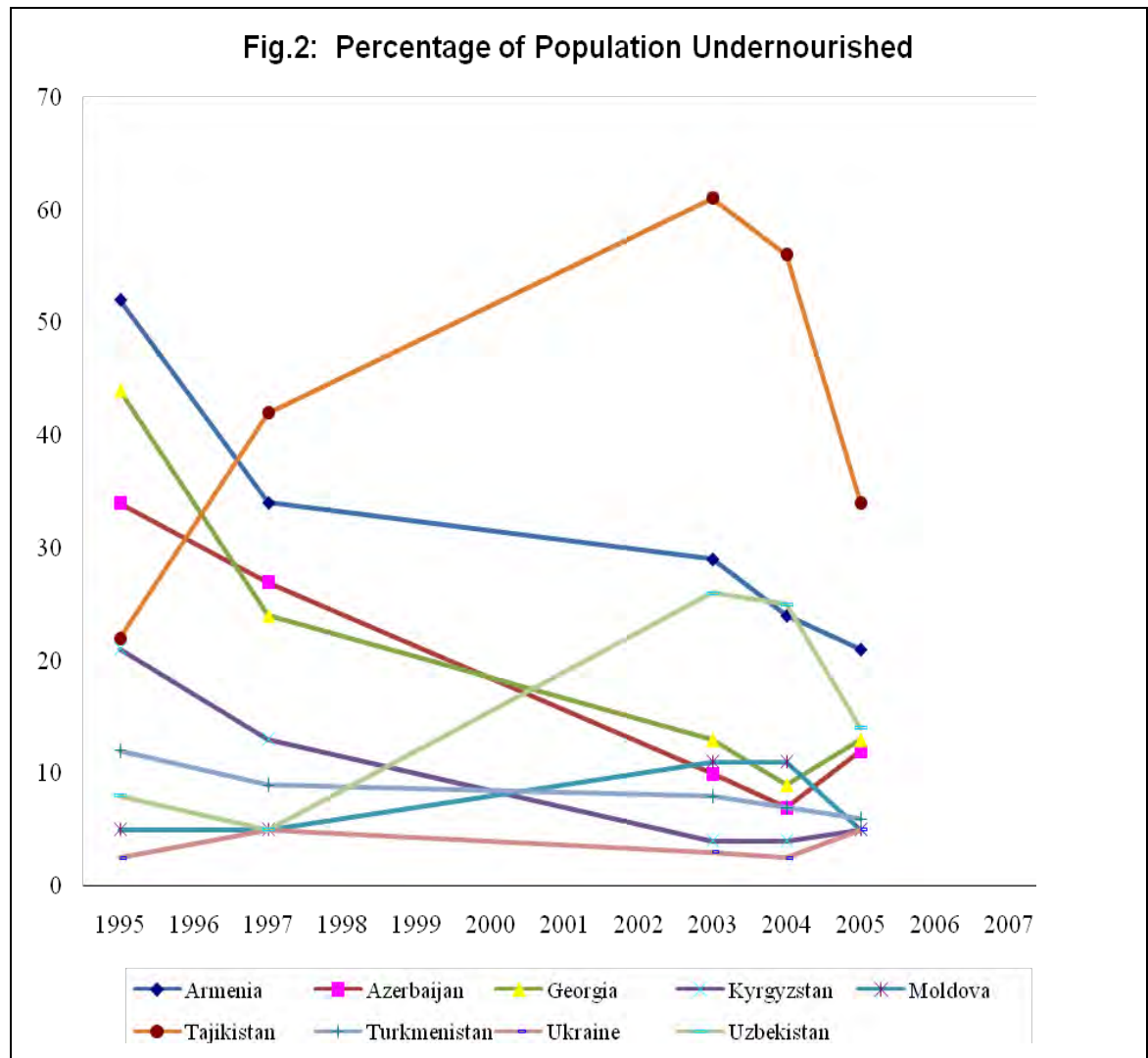
The indicator used to measure the progress towards achievement of working hypothesis 1a is the *percentage of population earning less than \$1.25 a day*. Based on the limited available data (Appendix B), at existing rates of progress, four countries will fall short of this target. Therefore, the region as a whole will not achieve the goal of reduction in poverty.

On a country-by-country basis, Azerbaijan and Tajikistan have already more than halved the proportion of people whose income is less than \$1.25 a day; therefore, these countries have achieved the goal. The data indicate that Kyrgyzstan, Armenia, and Moldova are decreasing the proportion of people living under the poverty line, but they are doing so at different rates: Armenia from 18 percent to 11 percent; Kyrgyzstan from 32 percent to 22 percent; and Moldova from 15 percent to 8 percent. In the absence of complete data, and not having data for the year 1995, it is difficult to know where the countries started. It is easy to see that the number of poor people in Armenia, which had 18 percent of the population living under the poverty line in 1996, is almost constantly declining.

Conversely, the size of the population living in poverty has vacillated in Moldova and Kyrgyzstan. Although the poverty trend in these two countries indicates a reduction, it is difficult to make any interpretations. More specifically, Moldova had 15 percent of its population living under the poverty line in 1997, which tripled by 1999 to an alarming 44 percent, and then decreased to 17 percent in 2002, and 8 percent in 2004. Kyrgyzstan started at 32 percent of its population living under the poverty line in 1998, which was

halved by the next year at 16 percent, then doubled in 2002 to 34 percent before decreasing to 22 percent in 2004. Ukraine has consistently had approximately two percent of its population living under the poverty line. Since Ukraine made no progress in reducing this percentage, it will not be able to achieve the goal. The data for Georgia and Uzbekistan are striking. In Georgia, the number of poor people living below the poverty line has tripled, from 4.5 percent in 1996 to 13.5 percent in 2005. In Uzbekistan, the number of people living below the poverty line grew from 32 percent in 1998 to more than 46 percent in 2003. This trend is alarming and suggests that much needs to be done for Georgia and Uzbekistan to reach the goal.

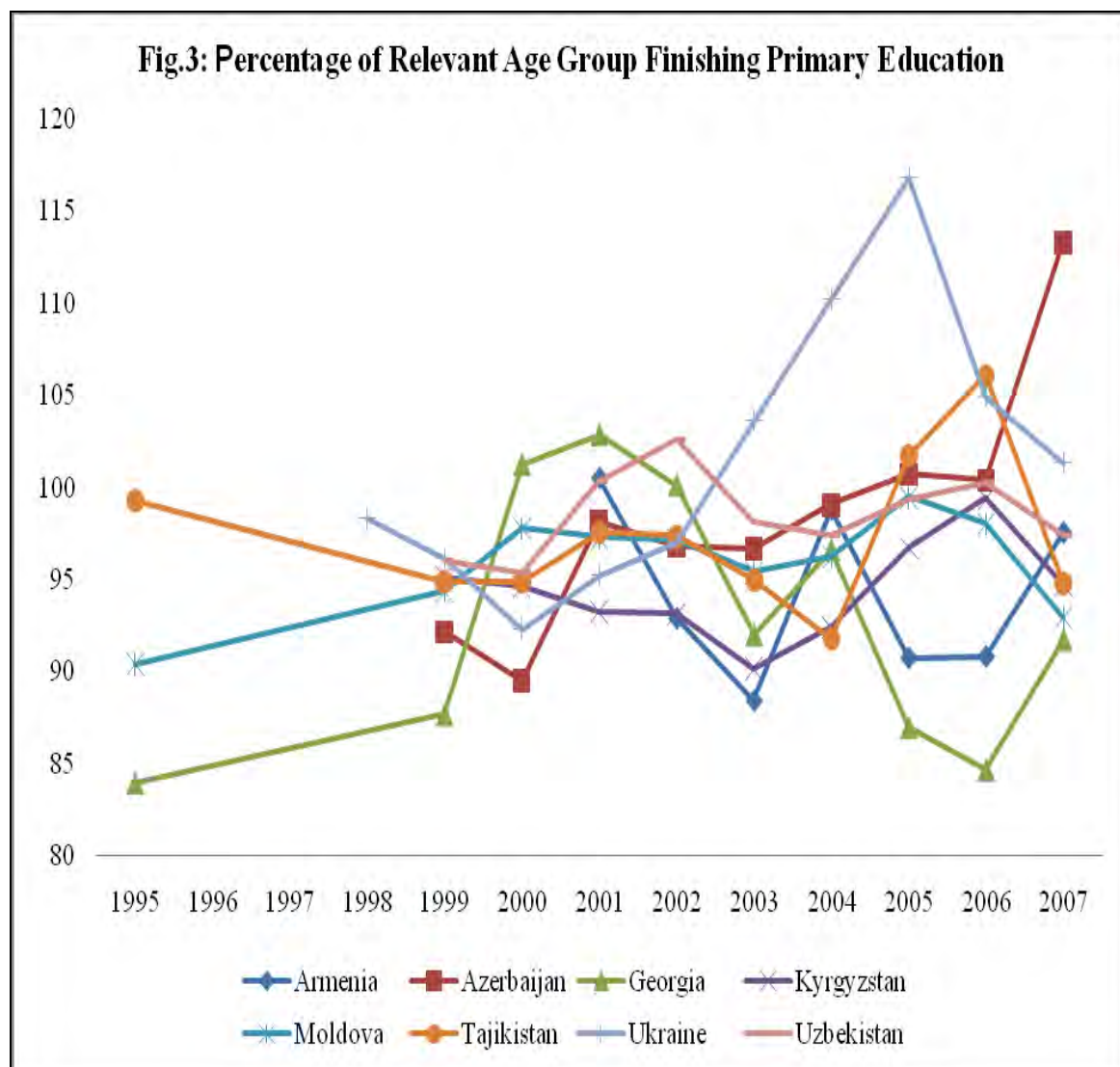
Working Hypothesis 1b: The proportion of people who suffer from hunger will be halved between 1995 and 2015 in nine CIS countries (Armenia, Azerbaijan, Georgia, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan), based on the trend of current data.



The indicator used to measure the progress toward achieving working hypothesis 1b, related to hunger, is the *percentage of population undernourished*. Based on the available data (Appendix B), at existing rates of progress, four countries will fall short of

this target. Therefore, the region as a whole will not achieve this goal. However, there are good results for more than half of the nine countries. Five countries (Armenia, Azerbaijan, Georgia, Kyrgyzstan, and Turkmenistan) already halved the number of people undernourished, achieving the goal. The situation is different for the remaining four countries (Moldova, Tajikistan, Ukraine, and Uzbekistan) where the percentage of population that is undernourished is growing at different rates. Therefore, they will not achieve the target of halving the number of undernourished people. Since the data used for these countries are only available through 2005, it is unclear whether these countries have reduced the numbers in the past four years.

Working Hypothesis 2: All children in nine CIS countries (Armenia, Azerbaijan, Georgia, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan) will be able to complete a full course of primary schooling by 2015, based on the trend of current data.



The indicator used to measure the progress toward achieving working hypothesis 2, related to education, is the *percentage of relevant age group finishing primary education*. Based on the available data (Appendix B), at the existing rates of progress,

one country will fall short of this target, and it is unclear whether or not five additional countries in the region will achieve the target. Therefore, the region as a whole will not achieve the Millennium Development Goal of achieving primary education for all children. This was determined through time series regression analysis for two countries where the upward trend is significant. Since regression was not significant for the remaining seven countries, trend analysis was chosen as a method of assessment.

A time series regression analysis shows a significant result for Azerbaijan and Ukraine (Table 4.1). In order to predict the value for 2015, a regression equation is computed for these two countries, which shows the value for 2015 exceeds the target for both Azerbaijan and Ukraine; therefore these two countries have already achieved the goal. Six countries (Armenia, Georgia, Kyrgyzstan, Moldova, Tajikistan, and Uzbekistan) do not show any progress in achieving the target of a 100 percent primary completion rate. Tajikistan and Uzbekistan exceeded a 100 percent completion rate, but have been unable to maintain it. No data are available for Turkmenistan.

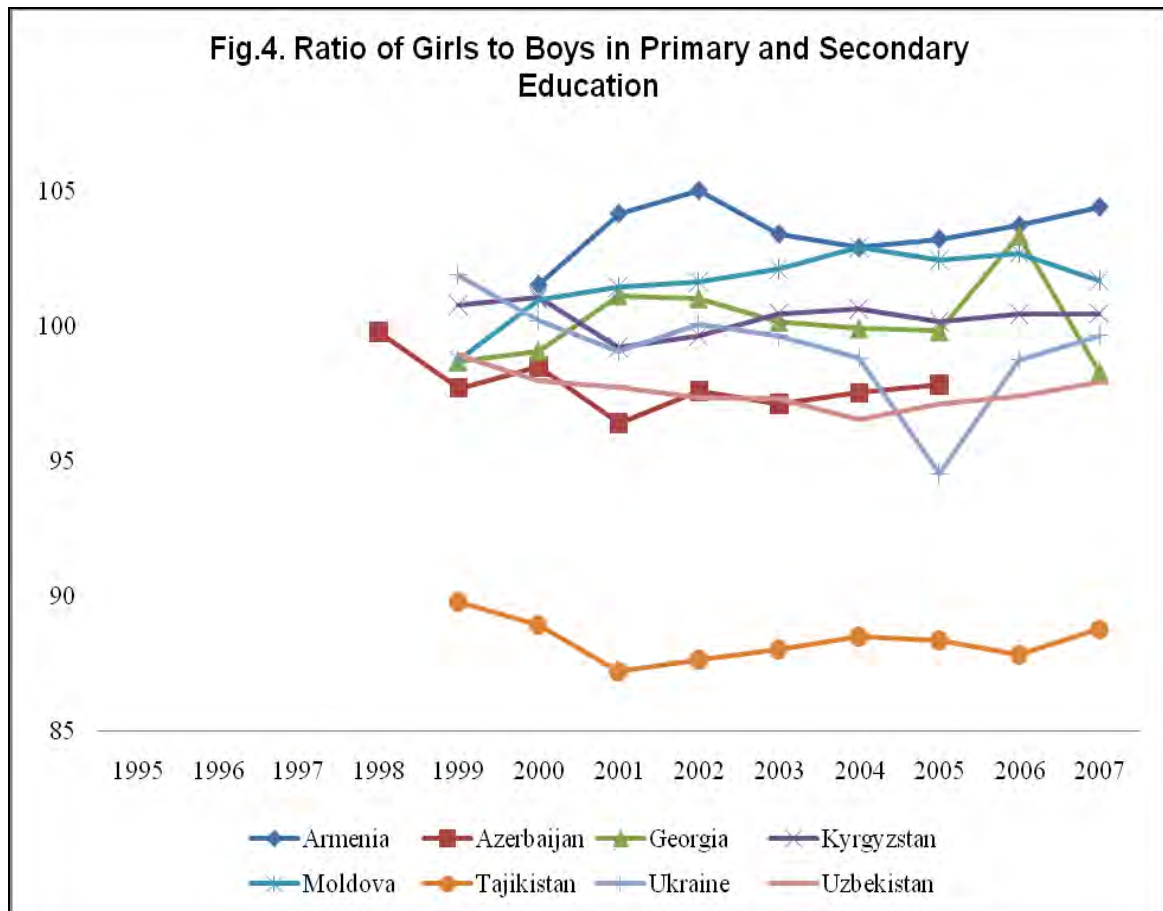
Table 4.1: Regression Coefficients for Primary Completion Rate

Countries	Coefficient
Armenia	0.64
Azerbaijan	2.29**
Georgia	-2.29
Kyrgyzstan	0.53
Moldova	-0.27
Tajikistan	0.62
Turkmenistan	No Data
Ukraine	1.92*
Uzbekistan	0.04

* Significant at $\alpha < 0.05$

** Significant at $\alpha < 0.01$

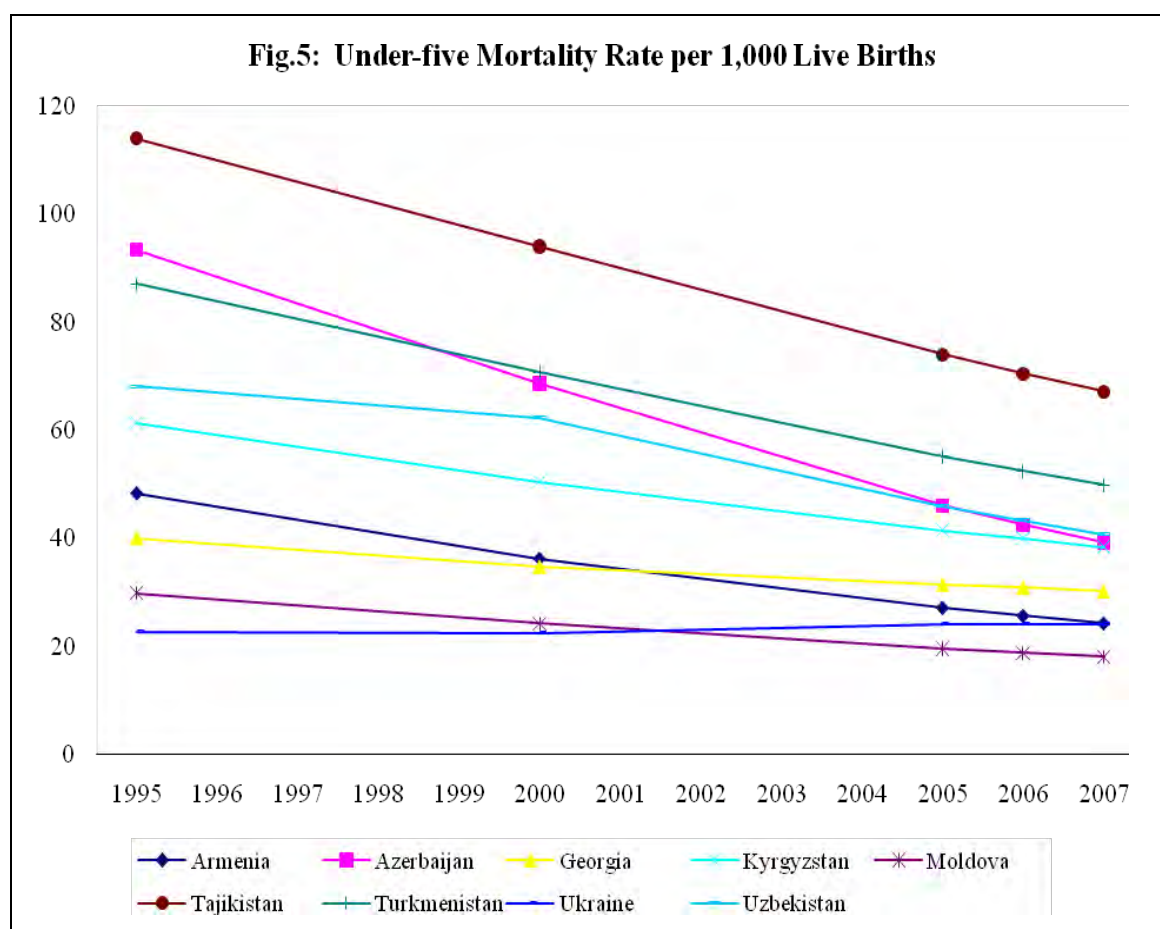
Working Hypothesis 3: Gender disparity will be eliminated in primary education by 2015 in nine CIS countries (Kyrgyzstan, Tajikistan, Uzbekistan, Armenia, Azerbaijan, Georgia, Moldova, Turkmenistan, and Ukraine), based on the trend of current data.



The indicator used to measure the progress toward achieving working hypothesis 3 is the *ratio of girls to boys in primary and secondary education*. Based on the available data (Appendix B), at the existing rates of progress, one country will fall short of this target, and it is unclear whether or not four more countries will achieve this target. Therefore, the region as a whole will not achieve the target of this Millennium

Development Goal. However, there are good results for seven of the nine countries. Armenia, Kyrgyzstan, and Moldova already have achieved the target by consistently exceeding 100 percent for this indicator. Georgia and Ukraine achieved the target for some years but were not able to maintain it; therefore it is unclear whether these countries will be able to reach the target. Azerbaijan and Uzbekistan have a ratio consistently above 97 percent, but it is unclear from the trend analysis whether they will achieve the target of 100 percent for this indicator. The trend analysis shows that Tajikistan will not achieve this target by 2015; it has not made any improvement during the relevant time frame and consistently has less than a 90 percent ratio of girls to boys in primary and secondary education. Turkmenistan has no data available for this indicator. Overall, this indicator shows that gender equality is not the region's biggest challenge; nevertheless, the target will not be achieved for all nine studied countries.

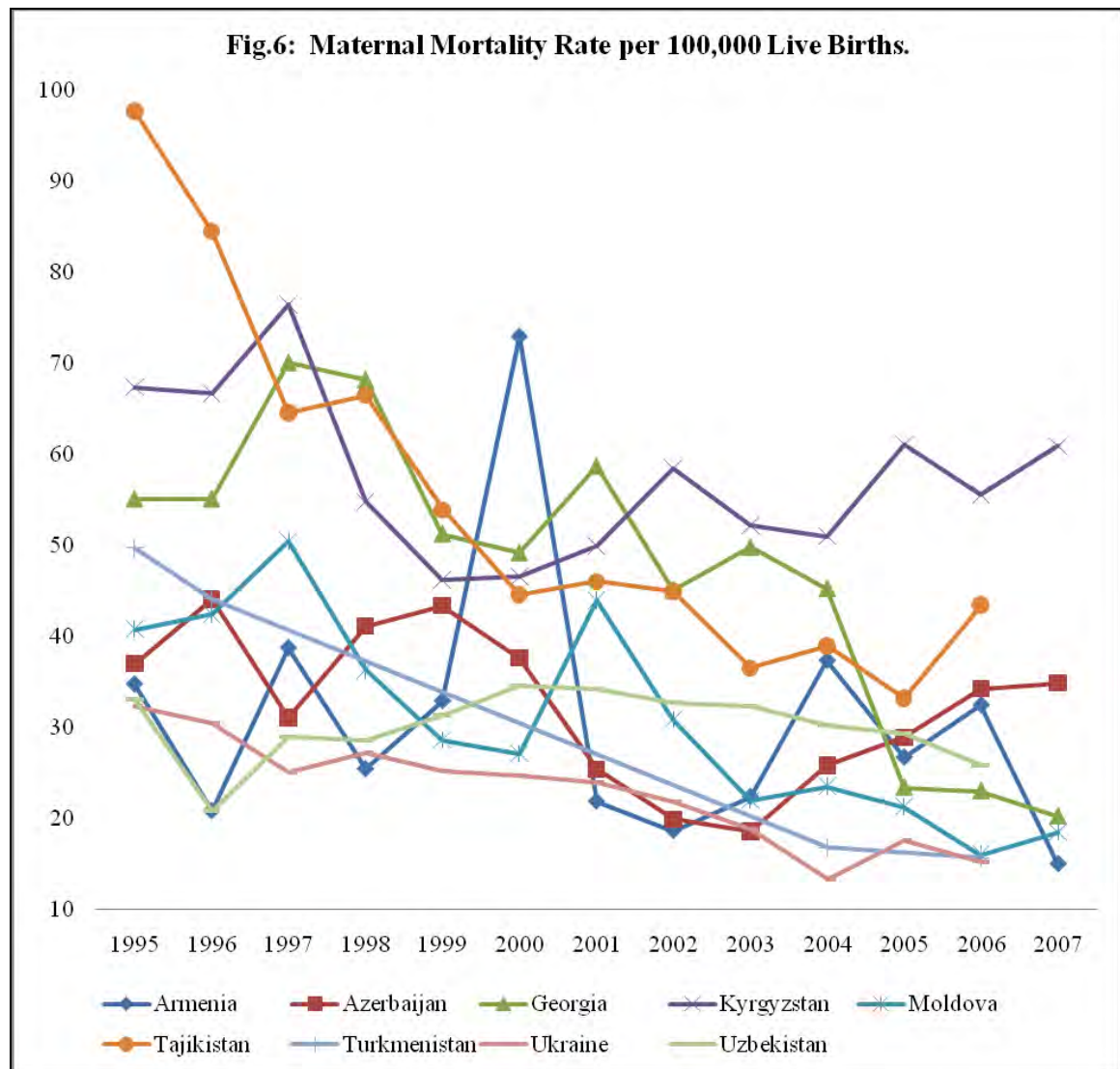
Working Hypothesis 4: The under-five mortality rate will be reduced by at least two-thirds between 1995 and 2015 in nine CIS countries (Armenia, Azerbaijan, Georgia, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan), based on the trend of current data.



The indicator used to measure the progress towards reducing child mortality is the *under-five mortality rate per 1,000 live births*. Based on the available data (Appendix B), at the existing rates of progress, two countries will not achieve this target and four more are currently not on track. Therefore, the region as a whole will not meet the target. Despite this result, progress towards reducing the under-five mortality rate has been achieved in eight of the nine studied countries, with Ukraine being the exception. In

order for the countries to reach the goal of reducing child mortality by two-thirds, they should have reduced child mortality by 45 percent by 2007, the last year of available data, assuming all things remain equal until 2015. The data show that two countries have already met or exceeded this target: Armenia, with a 50 percent reduction, and Azerbaijan, with a 58 percent reduction. Turkmenistan is on track to meet this target. The data show that four countries are close to meeting this target: Kyrgyzstan, with a 37 percent reduction; Moldova, with a 39 percent reduction; Tajikistan, with a 41 percent reduction; and Uzbekistan, with a 40 percent reduction. Georgia has reduced its child mortality rate by 25 percent, which is well under the 2007 reduction target of 45 percent. As mentioned above, the child mortality rate in Ukraine is increasing, with an almost 7 percent increase from 1995 to 2007.

Working Hypothesis 5 - The maternal mortality ratio will be reduced by three-quarters between 1995 and 2015 in the nine CIS countries of (Armenia, Azerbaijan, Georgia, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan), based on the trend of current data.



The indicator used to measure progress toward achieving the goal of maternal mortality is *maternal mortality rate per 100,000 live births*. Based on the available data (Appendix B), at the existing rates of progress, one country will not achieve this target,

and two more currently are not on track. Therefore, the region as a whole will not achieve the working hypothesis. This was determined through time series regression analysis for four countries where the trends are statistically significant.

Table 4.2: Regression Coefficients for Maternal Mortality Ratio

Countries	Coefficient
Armenia	-0.85
Azerbaijan	-1.08
Georgia	-4.07**
Kyrgyzstan	-0.56
Moldova	-2.57**
Tajikistan	-4.07**
Turkmenistan	Insufficient Data
Ukraine	-1.48**
Uzbekistan	0.04

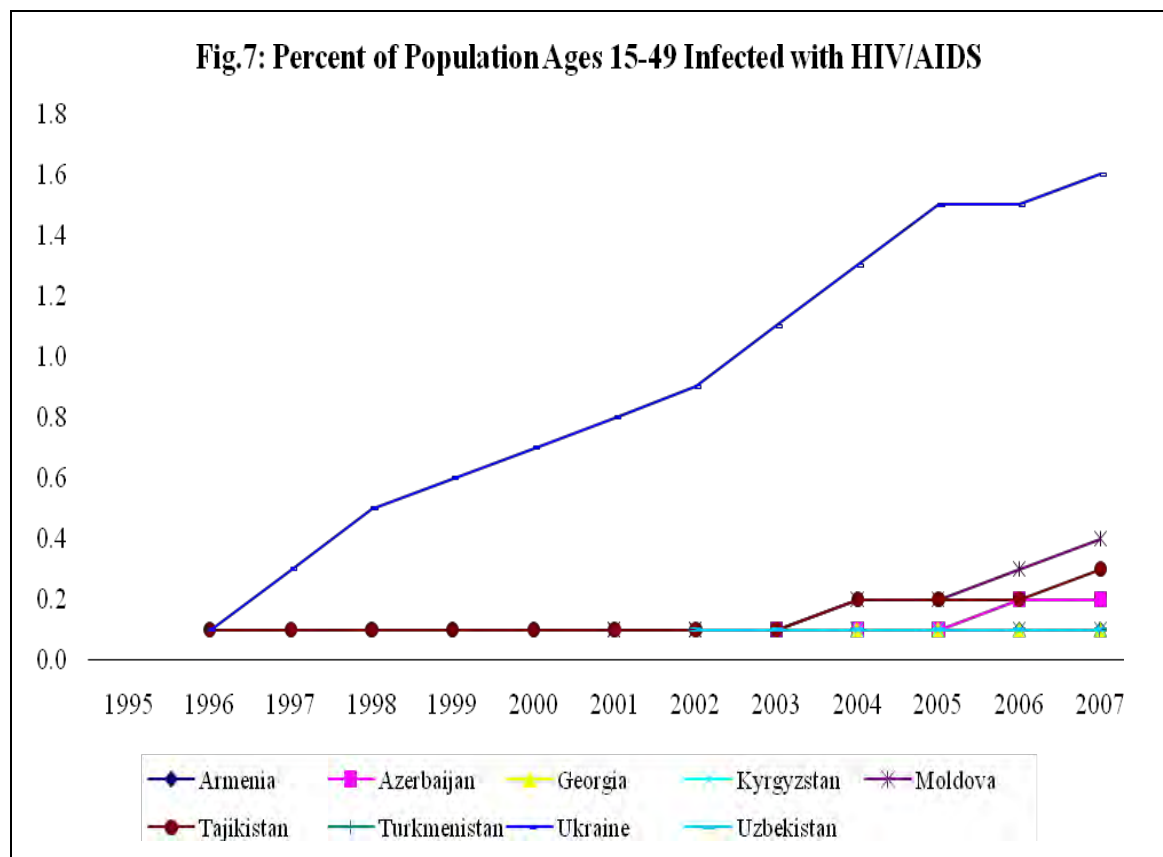
** Significant at $\alpha < 0.01$

Table 4.2 displays the time series regression analysis for the indicator related to maternal mortality in the nine CIS countries used for this study. The time series regression analysis shows a significant result for Georgia, Moldova, Tajikistan, and Ukraine. Based on this analysis, these countries all will achieve the target of reducing the maternal mortality rate from 1995 by three-quarters in 2015, if all things remain equal. The regression analysis for the remaining five countries was not significant. The time series analysis assumed that for each country to achieve a 75 percent reduction in the maternal mortality rate between 1995 and 2015 there should be a reduction of 45 percent by 2007. Of the five countries that did not show a significant trend in reducing maternal

mortality, Armenia and Turkmenistan are exceeding this 2007 target of 45 percent, and it is expected that if all thing remain equal, they will exceed the overall target by 2015.

Azerbaijan and Uzbekistan are not on track, and it is not likely that they will achieve the target of a 75 percent reduction by 2015. It is also expected that Kyrgyzstan will not achieve the target by 2015, if all things remain equal.

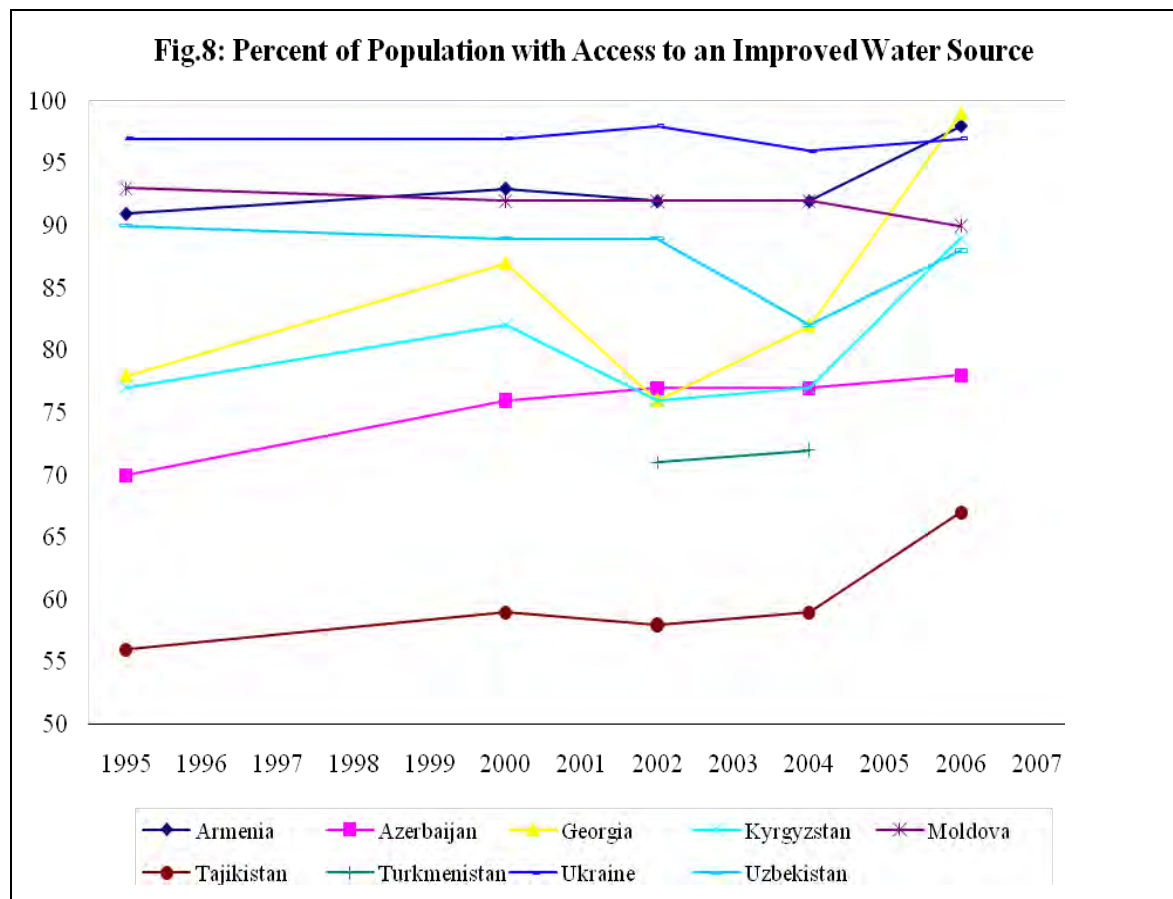
Working Hypothesis 6 – The Spread of HIV/AIDS will be stopped by 2015 in nine CIS countries (Armenia, Azerbaijan, Georgia, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan), based on the trend of current data.



The indicator used to measure progress towards reducing the number of individuals infected with HIV is the *percent of population ages 15-49 infected with*

HIV/AIDS. Based on the available data (Appendix B), at the existing rates of progress, four countries will fall short of this target. Therefore, the region as a whole will not achieve the working hypothesis. Four countries in the region (Armenia, Georgia, Kyrgyzstan, and Uzbekistan) have already met the goal, and the spread of HIV has stopped at the rate of 0.1 percent of the population ages 15-49. In four other countries (Azerbaijan, Moldova, Tajikistan, and Ukraine), the trend shows that the spread of HIV is growing: Azerbaijan from 0.1 percent to 0.2 percent; Tajikistan, 0.1 percent to 0.3 percent; Moldova, 0.1 percent to 0.4 percent; and Ukraine from 0.1 percent to an alarming 1.6 percent. Therefore, it is unlikely that these countries will achieve this goal by 2015. For Turkmenistan, the available data are insufficient to analyze the spread of HIV.

Working Hypothesis 7: The proportion of people living in nine CIS countries (Armenia, Azerbaijan, Georgia, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan) without sustainable access to safe drinking water will be reduced by half between 1995 and 2015, based on the trend of current data.



The indicator used to measure the progress towards achievement of this goal is the *percent of population with access to an improved water source*. Based on the available data (Appendix B), at the existing rates of progress, three countries will fall short of this target, and two more countries currently are not on track. Therefore, the region as a whole will not achieve the target of this Millennium Development Goal. In order for the target to be achieved, the percentage of population with an improved water

source must be calculated, and then subtracted from 100 percent to determine the percentage of people without access to an improved source. To meet this target, this number would have to be decreased by 50 percent between 1995 and 2015. If all things remain equal, there should be a 27.5 percent decrease in people without access to an improved water source between 1995 and 2006, the last year of available data.

However, Armenia, Georgia, and Kyrgyzstan already have met the target by increasing the percentage of population with access to an improved water source by more than 50 percent. Armenia increased its population having access to an improved water source from 91 percent in 1995 to 98 percent in 2006; Kyrgyzstan increased its access from 77 percent to 89 percent; and Georgia increased its access from 78 percent in 1995 to an impressive 99 percent in 2006.

Azerbaijan and Tajikistan have made considerable progress towards achieving this target but will not achieve it by 2015. Azerbaijan was behind by only 0.25 percent from the target of reducing the number of people without access to an improved water source between 1995 and 2006; and Tajikistan is behind 1.1 percent. It is worth noting that these two countries had the highest percentage of their populations without access to an improved water source in the region, with Azerbaijan having 30 percent and Tajikistan having 44 percent of its population without access to an improved water source. Ukraine did not make any progress towards achieving this goal between 1995 and 2006. The trend for Moldova and Uzbekistan shows that the percentage of people without access to an improved water source increased from 1995 to 2006. More specifically, the percentage of people with an improved water source in Moldova dropped from 93

percent in 1995 to 90 percent in 2006; and in Uzbekistan, it dropped from 90 percent in 1995 to 88 percent in 2006. For Turkmenistan, there are insufficient data to make a trend analysis of the data.

Chapter Summary

This chapter discussed the results of the research for each of the working hypotheses. The results of this study predict that the region, which consists of the nine studied CIS countries will not achieve any of the eight analyzed targets by the year 2015. Despite this prediction, the results of the study, as summarized in Table 4.3, reveal that there is quite a bit of variation in the performance of these countries with respect to achieving the Millennium Development Goals. For example, Armenia is doing the best by already achieving four of the targets and by being on track to achieving three more. There is only one target, related to the primary education completion rate, where it is currently unclear whether or not Armenia will achieve it. Kyrgyzstan is also doing well by already achieving four of the eight targets, being on track to achieving one more, while not being on track to achieving two targets, with it being unclear whether the final target will be achieved. Azerbaijan and Georgia are doing equally well, by already achieving three targets; being on track to achieve one more target; not being on track to achieve three targets; with one target being unclear whether it will be achieved. Moldova has already achieved one target; is on track to achieve two more targets; and is not on track to achieve four other targets; while it is unclear whether it will achieve the

remaining target. Turkmenistan is in a similar position as Moldova by having already achieved one target and being on track to achieve two more. The difference in these two countries is that Turkmenistan had five targets where there were not sufficient data to make a prediction. Tajikistan and Ukraine have already achieved one target and are on track to achieve one more; are not on track to achieve five targets; and it is unclear whether they will achieve the one remaining target. Uzbekistan is doing the worst job, having achieved the HIV/AIDS target, not being on track to achieve five more targets, and it being unclear whether it will achieve two targets.

The following chapter summarizes the paper and the findings of the research.

Table 4.3: Results

Working Hypothesis/ MDG	Indicator	Armenia	Azerbaijan	Georgia	Kyrgyzstan	Moldova	Tajikistan	Turkmenistan	Ukraine	Uzbekistan
1a: Poverty	Percentage of Population Earning Less than \$1.25 a Day	On Track (Exceeding)	Achieved	Will Not Achieve	On Track (Exceeding)	On Track (Exceeding)	Achieved	Insufficient Data	Will Not Achieve	Will Not Achieve
1b: Hunger	Percentage of Population Undernourished	Achieved	Achieved	Achieved	Achieved	Will Not Achieve	Will Not Achieve	Achieved	Will Not Achieve	Will Not Achieve
2: Universal Primary Education	Percentage of Relevant Age Group Finishing Primary Education	Unclear	Achieved	Will Not Achieve	Unclear	Unclear	Unclear	Insufficient Data	Achieved	Unclear
3: Gender Equality	Ratio of Girls to Boys in Primary and Secondary Education	Achieved	Unclear	Unclear	Achieved	Achieved	Will Not Achieve	Insufficient Data	Unclear	Unclear
4: Child Mortality	Under- Five Mortality Rate (per 1,000 Live Births)	On Track (Exceeding)	On Track (Exceeding)	Will Not Achieve	Not On Track, But Close	Not On Track, But Close	Not On Track, But Close	On Track	Will Not Achieve	Not On Track, But Close
5: Maternal Mortality	Maternal Mortality Rate (per 100,000 Live Births)	Will Achieve	Not On Track	Will Achieve	Will Not Achieve	Will Achieve	Will Achieve	Will Achieve	Will Achieve	Not On Track
6: HIV/AIDS	Percent of Population Ages 15-49 Infected with HIV	Achieved	Will Not Achieve	Achieved	Achieved	Will Not Achieve	Will Not Achieve	Insufficient Data	Will Not Achieve	Achieved
7: Environmental Sustainability	Percent of Population with Access to an Improved Water Source	Achieved	Not On Track, But Close	Achieved	Achieved	Will Not Achieve	Not On Track, But Close	Insufficient Data	Will Not Achieve	Will Not Achieve

Chapter 5

Conclusion

The purpose of this chapter is to present a summary of the research related to the eight targets of the Millennium Development Goals that were analyzed for nine CIS countries (Armenia, Azerbaijan, Georgia, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan). The findings were drawn from the results of the time series regression and trend analyses. The chapter will also address the suggestions for future research.

Summary of the Research

The purpose of this research was to explore the progress of three low income countries and six lower-middle income countries of the Commonwealth of Independent States towards reaching eight targets of the Millennium Development Goals as an attempt to predict if the targets will be met by the deadline year of 2015. The Millennium Development Goals are the world's time-bound and quantified targets for addressing poverty and its many dimensions. Chapter Two of this research, *Literature Review*, identified and discussed the poverty dimensions in order to understand the importance of the Millennium Development Goals and the commitment of the world towards reaching them. The literature review gave a better understanding of the poverty dimensions. Although the United Nations Millennium Development Goals have 18 targets, this research looked at eight of them and used the United Nations targets as the basis for

formulating the working hypotheses for the countries that were studied for this research. Chapter Three of this study, *Methodology*, provides the steps taken to test these eight working hypotheses. A time series regression and trend analysis were used as methods to determine the results of the study. Chapter Four of this study, *Results*, presents the findings of the study, and concludes that none of the working hypotheses will be achieved for the nine studied countries of the CIS. At existing rates of progress, there is at least one country for each goal that will not achieve the target. Nevertheless, it is worth mentioning the progress that has been made on a country level, which can be found in Table 4.3 in the *Results* Chapter.

Based on the results of this study, Armenia has done the best by achieving four targets and being on track to achieve three more, while it is unclear if it will achieve the remaining target. Kyrgyzstan has done the second best by achieving four targets, being on track to achieve two targets, struggling with two targets that it is not expected to achieve, and having one target which is unclear whether it will be achieved. Azerbaijan and Georgia are doing equally well by being tied for the third best in the region, having already achieved three targets; being on track to achieve one more target; not being on track to achieve three targets; and one target being unclear whether it will be achieved.

Moldova is in the fifth position by having already achieved one target; being on track to achieve two more targets; not being on track to achieve four other targets; and it being unclear whether Moldova will achieve the remaining target. Turkmenistan is in a similar position as Moldova by having already achieved one target and being on track to achieve two more. The difference in these two countries is that Turkmenistan had five

targets where there were not sufficient data to make a prediction. Tajikistan and Ukraine are tied in the seventh position by not being able to achieve five of the eight targets, it being unclear whether an additional target will be met, and only being expected to achieve two targets. The findings are similar for Uzbekistan, who is doing the worst of all of the studied countries, with five targets not being achieved, it being unclear whether two targets will be met; and one target already being achieved.

Suggestions for Future Research

This research focused on eight targets derived from the Millennium Development Goals for nine countries of the CIS. The purpose of this research was to answer the question, “Will the targets be achieved?”, but it does not answer the question “Why are the Millennium Development Goals not achieved?” This question could be addressed in many ways, including the exploration of internal and external factors that can explain why some countries fall short on reaching the Millennium Development Goals. It is well known that the global economy and global warming are external factors that hinder development which hits the poor especially hard and makes the Millennium Development Goals more difficult to achieve.

Although these countries share a common history, once being a part of the former Soviet Union, these countries are extremely diverse in terms of size, geography, level of development, historical background, social and political structure, and the existence of unresolved conflicts and social unrest. All of these characteristics could be analyzed to provide a basis for regional sub-groups for further analysis. This type of future research

might explain what factors help some countries achieve the Millennium Development Goals, while impeding others.

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Appendix A

Millennium Development Goals

Goal 1: Eradicate extreme poverty and hunger

Target 1a: Reduce by half the proportion of people living on less than a dollar a day

- 1.1 Proportion of population below \$1 (PPP) per day
- 1.2 Poverty gap ratio
- 1.3 Share of poorest quintile in national consumption

Target 1b: Reduce by half the proportion of people who suffer from hunger

- 1.4 Prevalence of underweight children under-five years of age
- 1.5 Proportion of population below minimum level of dietary energy consumption

Goal 2: Achieve universal primary education

Target 2: Ensure that all boys and girls complete a full course of primary schooling

- 2.1 Net enrolment ratio in primary education
- 2.2 Proportion of pupils starting grade 1 who reach last grade of primary school
- 2.3 Literacy rate of 15-24 year-olds, women and men

Goal 3: Promote gender equality and empower women

Target 3: Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015

- 3.1 Ratios of girls to boys in primary, secondary and tertiary education
- 3.2 Share of women in wage employment in the non-agricultural sector
- 3.3 Proportion of seats held by women in national parliament

Goal 4: Reduce child mortality

Target 4: Reduce by two thirds the mortality rate among children under five

- 4.1 Under-five mortality rate
- 4.2 Infant mortality rate
- 4.3 Proportion of 1 year-old children immunized against measles

Goal 5: Improve maternal health

Target 5a: Reduce by three quarters the maternal mortality ratio

- 5.1 Maternal mortality ratio
- 5.2 Proportion of births attended by skilled health personnel

Target 5b: Achieve, by 2015, universal access to reproductive health

- 5.3 Contraceptive prevalence rate
- 5.4 Adolescent birth rate
- 5.5 Antenatal care coverage (at least one visit and at least four visits)
- 5.6 Unmet need for family planning

Goal 6: Combat HIV/AIDS, malaria and other diseases

Target 6a: Halt and begin to reverse the spread of HIV/AIDS

- 6.1 HIV prevalence among population aged 15-24 years
- 6.2 Condom use at last high-risk sex
- 6.3 Proportion of population aged 15-24 years with comprehensive correct knowledge of HIV
- 6.4 Ratio of school attendance of orphans to school attendance of non-orphans aged 10-14

Target 6b: Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it

- 6.5 Proportion of population with advanced HIV infection with access to antiretroviral drugs

Target 6c: Halt and begin to reverse the incidence of malaria and other major diseases

- 6.6 Incidence and death rates associated with malaria
- 6.7 Proportion of children under 5 sleeping under insecticide-treated bednets
- 6.8 Proportion of children under 5 with fever who are treated with appropriate anti-malarial drugs
- 6.9 Incidence, prevalence and death rates associated with tuberculosis
- 6.10 Proportion of tuberculosis cases detected and cured under directly observed treatment

Goal 7: Ensure environmental sustainability

Target 7a: Integrate the principles of sustainable development into country policies and programs; reverse loss of environmental resources

Target 7b: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss

- 7.1 Proportion of land area covered by forest
- 7.2 CO₂ emissions, total, per capita and per \$1 GDP (PPP)
- 7.3 Consumption of ozone-depleting substances
- 7.4 Proportion of fish stocks within safe biological limits
- 7.5 Proportion of total water resources used
- 7.6 Proportion of terrestrial and marine areas protected
- 7.7 Proportion of species threatened with extinction

Target 7c: Reduce by half the proportion of people without sustainable access to safe drinking water and basic sanitation

- 7.8 Proportion of population using an improved drinking water source
- 7.9 Proportion of population using an improved sanitation facility

Target 7d: Achieve significant improvement in lives of at least 100 million slum dwellers, by 2020

- 7.10 Proportion of urban population living in slums

Goal 8: Develop a global partnership for development

Target 8a: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system

Target 8b: Address the special needs of the least developed countries

Target 8c: Address the special needs of landlocked developing countries and small island developing States

Target 8d: Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term

- 8.1 Net ODA, total and to the least developed countries, as percentage of OECD/DAC donors' gross national income
- 8.2 Proportion of total bilateral, sector-allocable ODA of OECD/DAC donors to basic social services (basic education, primary health care, nutrition, safe water and sanitation)
- 8.3 Proportion of bilateral official development assistance of OECD/DAC donors that is untied
- 8.4 ODA received in landlocked developing countries as a proportion of their gross national incomes
- 8.5 ODA received in small island developing States as a proportion of their gross national incomes
- 8.6 Proportion of total developed country imports (by value and excluding arms) from developing countries and least developed countries, admitted free of duty
- 8.7 Average tariffs imposed by developed countries on agricultural products and textiles and clothing from developing countries
- 8.8 Agricultural support estimate for OECD countries as a percentage of their gross domestic product
- 8.9 Proportion of ODA provided to help build trade capacity
- 8.10 Total number of countries that have reached their HIPC decision points and number that have reached their HIPC completion points (cumulative)
- 8.11 Debt relief committed under HIPC and MDRI Initiatives
- 8.12 Debt service as a percentage of exports of goods and services

Target 8e: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries

- 8.13 Proportion of population with access to affordable essential drugs on a sustainable basis

Target 8f: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications

- 8.14 Telephone lines per 100 population
- 8.15 Cellular subscribers per 100 population
- 8.16 Internet users per 100 population

Appendix B
Raw Data

Poverty headcount ratio at \$1.25 a day (PPP) (% of population)									
Country Name	Armenia	Azerbaijan	Georgia	Kyrgyzstan	Moldova	Tajikistan	Turkmenistan	Ukraine	Uzbekistan
1995		15.55							
1996	17.50		4.48					2.00	
1997					15.11				
1998				31.84			24.82		32.11
1999	18.03		8.65	15.50	44.18	44.53		2.03	
2000									
2001		6.32							
2002	14.97		15.10	34.03	17.08			2.00	42.33
2003	10.63					36.25			46.28
2004				21.81	8.14	21.49			
2005		2.00	13.44					2.00	
2006									
2007									

Prevalence of Undernourishment (Percent of Population)									
Country Name	Armenia	Azerbaijan	Georgia	Kyrgyzstan	Moldova	Tajikistan	Turkmenistan	Ukraine	Uzbekistan
1995	52.00	34.00	44.00	21.00	5.00	22.00	12.00	2.50	8.00
1996									
1997	34.00	27.00	24.00	13.00	5.00	42.00	9.00	5.00	5.00
1998									
1999									
2000									
2001									
2002									
2003	29.00	10.00	13.00	4.00	11.00	61.00	8.00	3.00	26.00
2004	24.00	7.00	9.00	4.00	11.00	56.00	7.00	2.50	25.00
2005	21.00	12.00	13.00	5.00	5.00	34.00	6.00	5.00	14.00
2006									
2007									

Primary Completion Rate, Total (Percent of Relevant Age Group)									
Country Name	Armenia	Azerbaijan	Georgia	Kyrgyzstan	Moldova	Tajikistan	Turkmenistan	Ukraine	Uzbekistan
1995					90.37	99.28			
1996									
1997									
1998								98.31	
1999		92.17	87.67	95.15	94.36	94.88		96.11	96.01
2000		89.50	101.26	94.61	97.79	94.88		92.31	95.40
2001	100.49	98.16	102.88	93.28	97.26	97.58		95.24	100.38
2002	92.88	96.86	100.15	93.15	97.14	97.34		97.05	102.63
2003	88.42	96.70	92.021	90.16	95.38	94.94			98.12
2004	98.82	99.07	96.62	92.42	96.22	91.75			97.39
2005	90.73	100.73	86.98	96.74	99.49	101.72		116.81	99.37
2006	90.82	100.41	84.67	99.41	98.03	106.08		104.93	100.25
2007	97.54	113.34	91.74	94.72	92.91	94.79		101.35	97.46

Ratio of Girls to Boys in Primary and Secondary Education (percent)									
Country Name	Armenia	Azerbaijan	Georgia	Kyrgyzstan	Moldova	Tajikistan	Turkmenistan	Ukraine	Uzbekistan
1995									
1996									
1997									
1998		99.79							
1999		97.70	98.69	100.77	98.73	89.80		101.86	98.94
2000	101.55	98.50	99.08	101.06	101.00	88.93		100.18	98.00
2001	104.18	96.38	101.13	99.20	101.46	87.21		99.06	97.73
2002	105.02	97.58	101.03	99.62	101.64	87.66		100.06	97.35
2003	103.42	97.11	100.17	100.43	102.11	88.04		99.63	97.33
2004	102.91	97.52	99.91	100.61	102.93	88.49		98.80	96.56
2005	103.24	97.82	99.81	100.16	102.45	88.37		94.54	97.11
2006	103.74		103.37	100.45	102.71	87.83		98.74	97.40
2007	104.41		98.29	100.46	101.68	88.77		96.63	97.94

Under-five Mortality Rate (per 1,000)									
Country Name	Armenia	Azerbaijan	Georgia	Kyrgyzstan	Moldova	Tajikistan	Turkmenistan	Ukraine	Uzbekistan
1995	48.40	93.40	40.10	61.30	29.90	113.90	87.10	22.70	68.10
1996									
1997									
1998									
1999									
2000	36.30	68.70	34.80	50.40	24.30	94.00	70.90	22.50	62.30
2001									
2002									
2003									
2004									
2005	27.20	46.10	31.50	41.50	19.70	74.10	55.30	24.20	46.00
2006	25.70	42.60	30.90	40.00	18.90	70.60	52.60	24.20	43.30
2007	24.30	39.30	30.20	38.40	18.20	67.30	50.00	24.20	40.80

Maternal Mortality Ratio (per 100,000)									
Country Name	Armenia	Azerbaijan	Georgia	Kyrgyzstan	Moldova	Tajikistan	Turkmenistan	Ukraine	Uzbekistan
1995	34.72	36.98	55.10	67.33	40.77	97.70	49.64	32.26	32.95
1996	20.78	44.10	55.10	66.66	42.42	84.50	44.03	30.39	20.79
1997	38.70	31.05	70.10	76.43	50.46	64.60		25.08	28.87
1998	25.40	41.13	68.20	54.71	36.29	66.50		27.19	28.53
1999	32.87	43.39	51.25	46.12	28.57	53.90		25.18	31.20
2000	72.94	37.61	49.18	46.50	27.07	44.60		24.67	34.50
2001	21.83	25.37	58.69	49.93	43.90	46.03		23.91	34.12
2002	18.62	19.87	45.06	58.41	30.81	44.99		21.76	32.68
2003	22.35	18.51	49.79	52.14	21.94	36.53		18.85	32.25
2004	37.31	25.83	45.28	50.94	23.52	38.98	16.77	13.34	30.16
2005	26.67	28.89	23.39	61.00	21.22	33.20		17.60	29.24
2006	32.41	34.24	22.99	55.49	15.96	43.44	15.63	15.21	25.83
2007	14.96	34.88	20.21	60.85	18.43				25.01

Prevalence of HIV, Total (Percent of Population Ages 15-49)									
Country Name	Armenia	Azerbaijan	Georgia	Kyrgyzstan	Moldova	Tajikistan	Turkmenistan	Ukraine	Uzbekistan
1995									
1996						0.1		0.1	
1997						0.1		0.3	
1998	0.1					0.1		0.5	
1999	0.1					0.1		0.6	
2000	0.1					0.1		0.7	
2001	0.1			0.1	0.1	0.1		0.8	
2002	0.1			0.1	0.1	0.1		0.9	0.1
2003	0.1	0.1		0.1	0.1	0.1		1.1	0.1
2004	0.1	0.1	0.1	0.1	0.2	0.2		1.3	0.1
2005	0.1	0.1	0.1	0.1	0.2	0.2		1.5	0.1
2006	0.1	0.2	0.1	0.1	0.3	0.2		1.5	0.1
2007	0.1	0.2	0.1	0.1	0.4	0.3	0.1	1.6	0.1

Improved Water Source (Percent of Population with Access)									
Country Name	Armenia	Azerbaijan	Georgia	Kyrgyzstan	Moldova	Tajikistan	Turkmenistan	Ukraine	Uzbekistan
1995	91.00	70.00	78.00	77.00	93.00	56.00		97.00	90.00
1996									
1997									
1998									
1999									
2000	93.00	76.00	87.00	82.00	92.00	59.00		97.00	89.00
2001									
2002	92.00	77.00	76.00	76.00	92.00	58.00	71.00	98.00	89.00
2003									
2004	92.00	77.00	82.00	77.00	92.00	59.00	72.00	96.00	82.00
2005									
2006	98.00	78.00	99.00	89.00	90.00	67.00		97.00	88.00
2007									