Can structural indicators explain gender difference in life expectancy (LE) at birth among WHO member countries?

Masteroppgave i folkehelsevitenskap

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PREFACE

I have spent the last couple of years at the University of Tromsø and the Department of Community Medicine, which has been a really interesting time and a personal challenge. I have enjoyed it a lot and especially the last term with international health. Therefore it was easy to decide when I was presented with the idea for this thesis and it has been an interesting and instructive journey from idea to the final product. It has been hard work and I am proud of the result and in connection with that I would especially like to thank Jan Abel Olsen and Birgit Abelsen for the guidance and advice given throughout this thesis. Also my sister Maria and my father Per-Olav deserve mentioning for that reasons, and last but not least my dear Kristin and my lovely daughter Maja for sticking out with my absence and me.

SUMMARY

BACKGROUND: The difference in life expectancy at birth between genders differs and in vast majority of the countries it is the women who outlive men. We have a global average at about 7% difference in advantage women, but the difference goes as high as 23%. There are established hypothesis of why women outlive men and in this thesis I will take a closer look into how social and structural variables influence these and the gender gap in life expectancy at birth.

METHOD: The data is primarily collected from the World Health Organizations (WHO) in addition to other organizations within the United Nations (UN) system, the World Bank and Central Intelligence Agency (CIA). The population in this thesis consists of the 193 member countries that made up the WHO in 2008. Not all of the countries had data for all the variables and because of this there are only 98 countries that participated in the regression of the whole group. The analysis consisted of bivariate correlations and multiple regressions to study the correlations between the variables.

RESULT: The maternal mortality rate (MMR) has significant impact on changes in the dependent variable in low-income countries and in the all-countries population. Among the behavioral indicators the adult literacy rate for men shows great explanatory power (β) for changes in the dependent variable in all populations. The structural indicators imply that women live relatively shorter in comparison to men in low-income countries with uneven distribution of wealth and high corruption. We also see that the that high consumption of tobacco, imbalanced wealth, low GNI per capita and a low degree of urbanization has statistical significance

CONCLUSION: The findings show a trend of increasing inequality is correlated with a decrease of LE that the birth ratio. This apply in particular to low-income countries and the all.-countries population, while in high-income countries there seem to be a stronger correlation between the behavioral indicators and changes in the LE at birth ratio.

KEY WORDS: LE at birth, mortality rates, socioeconomic gradient, GINI index, GNI per capita PPP$, urbanization, corruption.

SAMMENDRAG

BAKGRUNN: Forskjellen i life expectancy at birth mellom kjønn varierer fra land til land og i de fleste tilfellene så lever kvinner lengre enn menn. Det globale gjennomsnittet er på ca 7% lengre levetid for kvinner enn menn, men man har forskjeller som er helt opp i 23%. Det finnes etablerte hypoteser på hvorfor kvinner lever lengre enn menn og i denne oppgaven vil jeg se på hvordan sosiale og strukturelle variabler påvirker disse og kjønns forskjellene i life expectancy at birth.

MATERIALE OG METODE: Primært er dataene samlet inn fra Verden Helse Organisasjon (WHO) i tillegg til andre organisasjoner innen Forente Nasjoner (FN), Verdens Banken og Central Intelligence Agency (CIA) . Populasjonen in denne oppgaven er i utgangspunktet de 193 landene som utgjorde verdens helse organisasjon i 2008. Ikke alle disse landene hadde fullstendige data for alle variablene derfor satt man bare igjen med 98 land når man kjørte regresjonsanalysen på samlede gruppen. Analysene som ble brukt i denne oppgaven for å sjekke korrelasjonen mellom variablene er korrelasjonsanalyse og multippel regresjonsanalyse.

RESULTAT: Den mødredødeligheten (MMR) har betydelig innvirkning på endringer i den avhengige variabelen i lavinntektsland og i alle-land befolkningen. Blant de atferdsmessige indikatorene for voksne lesekyndige for menn viser stor forklaringskraft (β) for endringer i den avhengige variabelen i alle populasjoner. De strukturelle indikatorer antyder at kvinner lever forholdsvis kortere i forhold til menn i lavinntektsland med ujevn fordeling av rikdom og høy korrupsjon. Høyt forbruket av tobakk, ubalanserte rikdom, lav GNI per capita og en lav grad av urbanisering har også statistisk signifikans.

KONKLUSJON: Funnene viser en trend med økende ulikhet korrelert med en nedgang av LE at birth ratio. Dette gjelder i særlig low-income countries og all-contries populasjonen, mens i high-income countries ser man den sterkeste sammenhengen mellom de atferdsmessige indikatorene og endringer i LE at birth ratio

NØKKELORD: Forventet levealder ved fødsel, dødsrater, sosioøkonomiske gradient, GINI indeks, GNI per capita PPP$, urbanisering, korrupsjon.

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1. INTRODUCTION

Life expectancy (LE) at birth reflects the overall mortality level of a population, by summarizing mortality patterns that applies to all age groups – children, youths, adults and the elderly(1). I am not going to elaborate or go into further discussions of the calculation of LE at birth, other than that the calculation is based on life tables(1, 2). In an understandable way one can say that LE at birth describes:

"The average number of years that would be lived by those born today if the current risk of dying at each age were to persist throughout their whole life" (3, p105).

This is not the case for most of the world's population; over time the risk of dying is changing in line with the rest of the world for better or worse. As a result of this we also see change in LE at birth from year to year and throughout our lives, both within populations and worldwide.

The starting point for this thesis is an average worldwide distinction in LE at birth of 4.8 years (7.3%) between women and men. With this thesis I want to see how social and structural indicators influence the gender gap in LE at birth. The objective is to explore which indicators that affects the difference in LE at birth between women and men in the different income groups.

The life expectancy at birth ratio (LE at birth ratio) was created as the dependent variable and it measures the difference in LE at birth between women and men. By using 2012 estimates for Switzerland (Appendix) as an example, the calculation to compute the LE that birth ratio:

Female LE at birth 83.83 years / Male LE at birth 78.03 years
= 1.0743 in LE at birth ratio.

This shows that the average Swiss woman is expected to live 7.43% longer than the average Swiss man.

With data sets on LE at birth from both the World Health Organizations (WHO) from 2008(4) and the Central Intelligence Agency (CIA) World Factbook from 2011 (Appendix) I chose to use the numbers from the CIA in the dependent variable because of seemingly better precision on the calculations proportionately to WHO`s

calculations. Although there are differences between the calculations the correlations are highly significant, P=0.000 at a 0.01 level (2-tailed) and Pearson Correlation = 0.595.

The structure of the thesis

The thesis begins with an explanation of the concept LE at birth and the dependent variable LE at birth ratio. This is followed by an introduction on variations in LE at birth and the theoretical approach. Then the indicators are presented followed by the method section where I account for the statistical methods and the data. In the results section the findings from the analysis is presented. In the discussion section the strengths and weaknesses of the methods and data used in the thesis presented followed by the findings and finally a summary.

Introduction to variations in life expectancy (LE) at birth

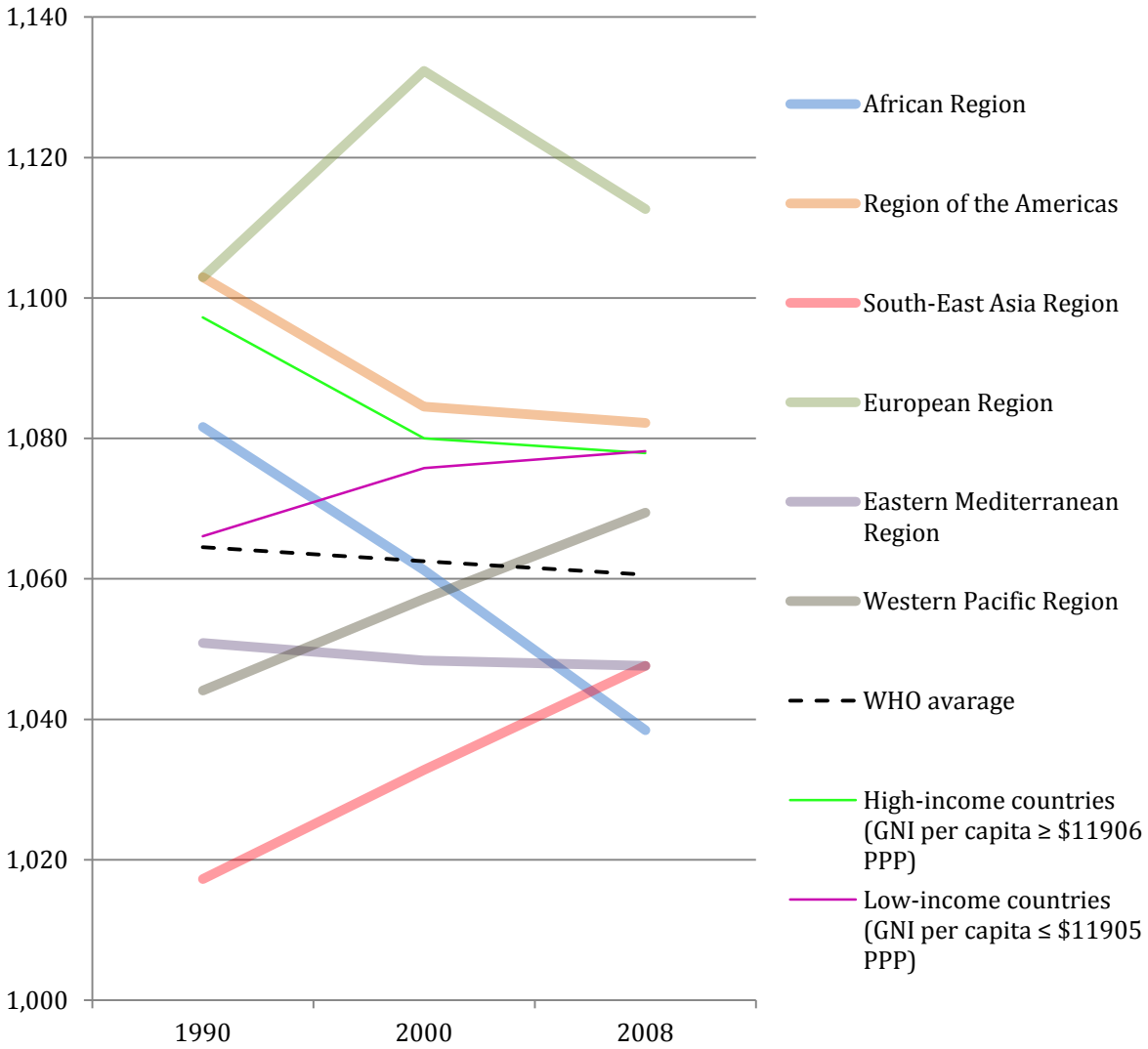
It is important to remember that LE at birth is an average value of the whole population. In many of the countries referred to in this thesis, morality; among children(5); in relation to pregnancy and childbirth(6); and due to risky and reckless behavior(7), are high and will have a major impact on the average value that LE at birth is. Even though a population has a low LE at birth value it does not necessarily mean that the elderly account for a small fraction of the population.

There are great differences in LE at birth between populations, both geographical and by income groups. The comments and reflection on the development and changes in LE at birth ratio over the last decades, is in this thesis based on the WHO data from 1990, 2000 and 2008(4). This is because CIA has no record of LE at birth from former years; it is only the latest numbers that are available i.e. 2011.
In *Figure 1* we can see that the average LE at birth ratio for the member countries of the WHO has a declining trend. The trends in the geographical regions[1](8) differs, it is the regions of the Western Pacific and South-East Asia(4, p48-56) that have continuous increase during the last decades. While Africa, the Americas and the Eastern Mediterranean Region have a decline of LE at birth ratio over the same period of time. Europe is the only region with a fluctuate development in this time period,

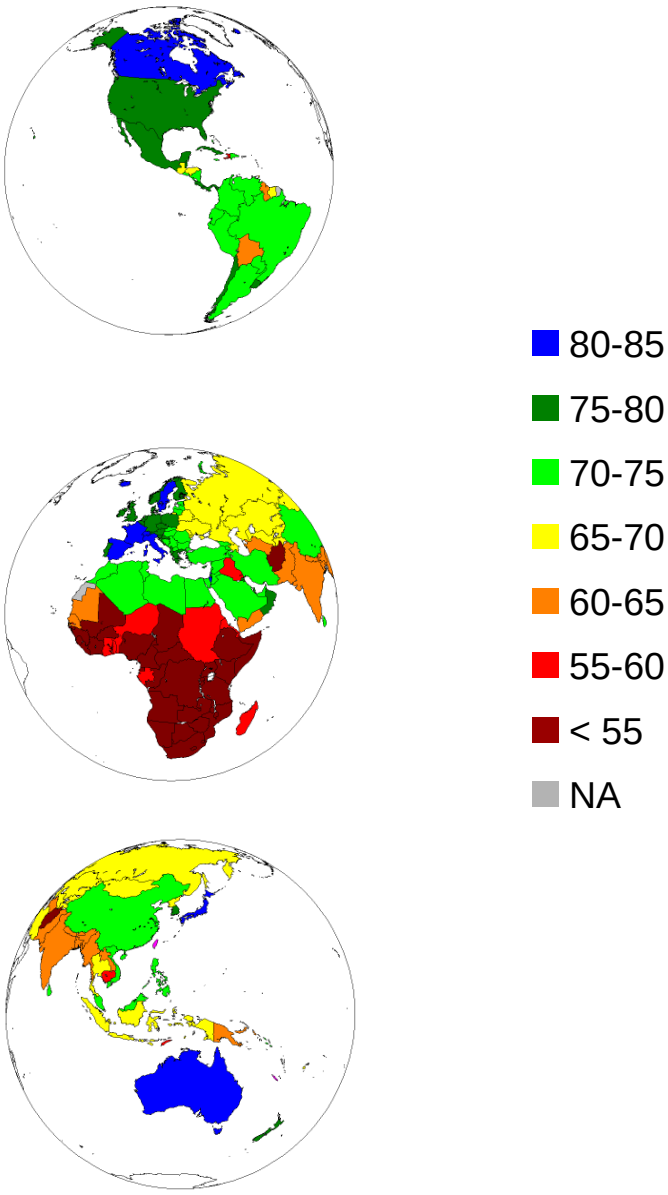
1. When referring to geographical regions in this paper, it will be in accordance with the classification of geographical regions as classified by the World Health Organization.

but also here there has been an increase between 1990 and 2008. When the WHO member countries are divided by GNI per capita in PPP$ we see an interesting development; the LE at birth ratio in the two populations are approaching one another, achieving an almost equal value in 2008.

Figure 1: LE at birth ratio trends in geographical regions and income groups from 1990-2008 (WHO) (4, p48-56)



Atlas 1: LE at birth atlas(9)



The evolvement of LE at birth through time clearly shows the evolution of society reflected in the LE at birth statistics. After the industrialized revolution and the big steps forward within medicine we saw huge improvements of our lives, clearly illustrated by the increase in LE at birth(10). Since the beginning of the 20th century until today some countries in the industrialized part of the world[2] (11) have seen an increase in LE at birth of over 100%. It is important to mention that this increase is

2. In this paper the countries defined and mentioned as the industrialized world, are the 48 countries defined as having a *Very High Human Development* in the Human development index for 2011 from the United Nations Development Programme.

imbalanced and even though there are huge improvements, there are still countries today that have the same life expectancy that was common 200 years ago. A child born in Zimbabwe or Afghanistan in 2008 can expect to live as long as the average LE at birth were in Sweden in the middle of the nineteenth century(12).
The *atlas 1* illustrates the life expectancy at birth worldwide by country. What we primarily see at first glance is the great difference between Africa and the rest of the world and also how the industrialized world stands out in the other end of the scale. There are many and complex reasons to why LE at birth in Africa, and especially in the Sub-Saharan countries, has had a standstill the last century and now has the lowest LE at birth in the world (Appendix). Some of the more obvious reasons are poverty and the huge epidemics of HIV and AIDS, tuberculosis, malaria and other communicable diseases in addition to the non-communicable disease(13). The political instability in the region is also to blame, it devastates and causes wars both within and between neighboring countries(14).
There are considerable differences in LE at birth between regions, neighboring countries, and even within cities(15). The substantial differences in LE at birth ratio, which may be between neighboring countries, can be illustrated within the Nordic countries. The Nordic countries Sweden (1.06 LE at birth ratio), Norway (1.07 LE at birth ratio), and Finland (1.09 LE at birth ratio), all have shared national borders and are alike I many ways. The strongest connection is probably "Nordic Welfare model"(16), which make a difference in LE at birth ratio of 3.5% interesting.

The gender difference in LE at birth in the statistics from both CIA and WHO is unambiguous, women outlive men in most countries(4, 17). In a historical perspective we can see that the difference between genders in LE has existed at least since the 1750s, when the first statistics on the subject where registered in Sweden(12).
The 2011 estimations from the CIA World Factbook show that there are only six countries where the average man outlives the average women; Kenya (0.9 LE at birth ratio); Lesotho (0.96 LE at birth ratio); South Africa (0.97 LE at birth ratio); Mozambique (0.97 LE at birth ratio); Zimbabwe (0.97 LE at birth ratio) and Namibia (0.99 LE at birth ratio) (Appendix). These are all African nations. When we look at the geographical regions we see that the lowest LE at birth ratios are found in the poorer parts of the world with an average difference in Africa of 2 years (1.04 LE at

birth ratio), and South-East Asia and the Eastern Mediterranean with 3 years (1.05 LE at birth ratio)(4).

At the other end of the list we find Russia where the average woman outlives the average man with 14 years (1.23 LE at birth ratio), a relative difference of 23%. Followed by; Ukraine (1.19 LE at birth ratio); Belarus (1.18 LE at birth ratio); Kazakhstan (1.17 LE at birth ratio); Estonia (1.16 LE at birth ratio); Latvia (1.16 LE at birth ratio) and Lithuania (1.14 LE at birth ratio). These countries were all part of the former Soviet Union.

This tendency with the biggest differences and the highest LE at birth ratio is initially found in the richest geographical regions of the world. The region with the highest difference in LE at birth between the genders is Europe with 8 years (1.11 LE at birth ratio), followed by the Americas with 6 years (1.08 LE at birth ratio) and the Western Pacific Region with 5 years (1.07 LE at birth ratio) (4).

Figure 3 illustrates the same tendency for the different income groups. It shows that the countries in the high-income group have the largest differences between men and women in LE at birth ratio, but that the majority of the countries in both the high-and low-income groups are centered between 1,025 - 1,100 LE at birth ratio. This is consistent with the tendencies we see in *Figure 1,* the LE birth ratio for high-income countries and low-income are approximately equivalent in 2008 opposed to the statistics from 1990 and 2000.

When a cutoff line is set at 1.050 (a relative difference of <5%) LE at birth ratio we will have 34 countries beneath it, of which 25 is to be found in Africa. Out of the 26 countries in the chart with a value of 1.100 or higher (a relative difference of >10%) 18 have a connection to the former Soviet Union on account of being either a former republic or satellite state of the old regime.

Prosperity levels

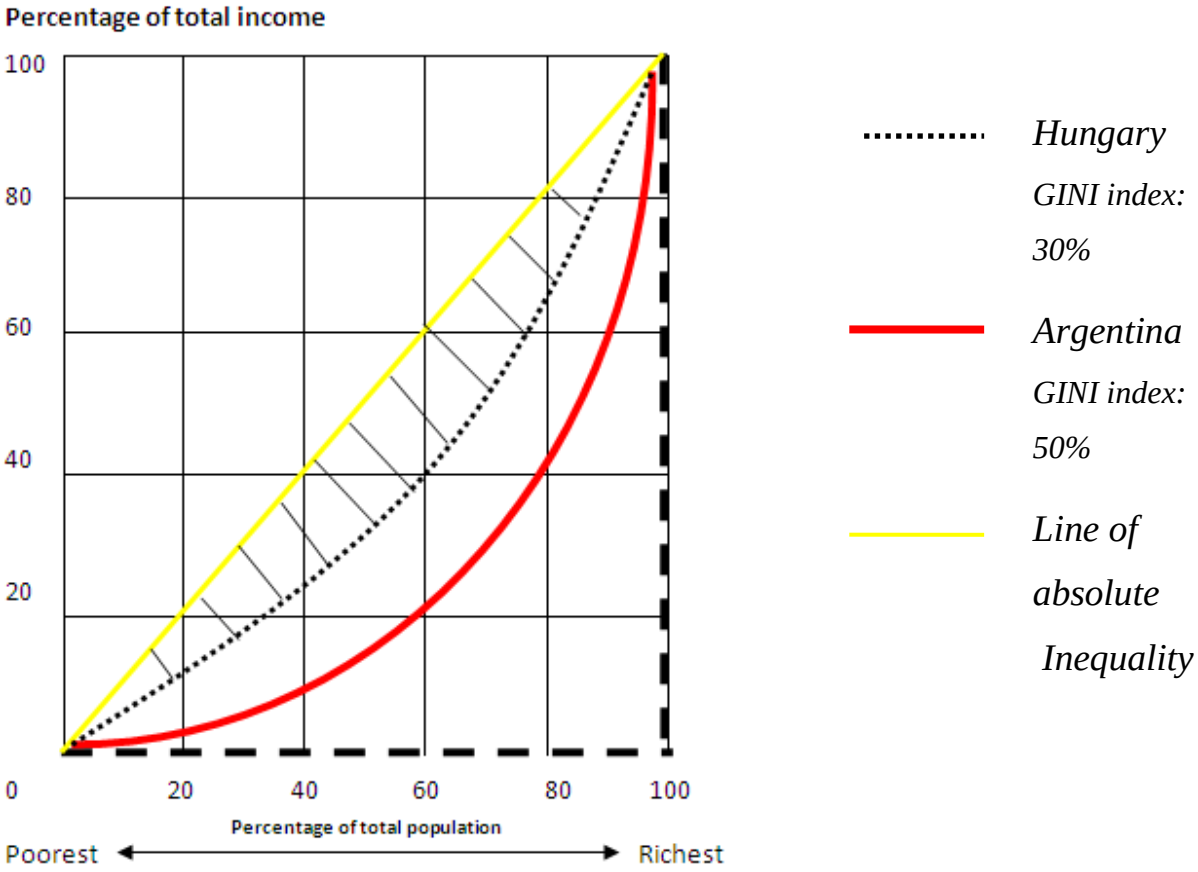
The Pareto Principle, the 80-20 rule or the "Vital Few and Trivial Many Rule" (18) refers to the principle that roughly 80% of the effect comes from 20% of the cause. This principle has a point of origin in economics but can be transferred to many different settings, including the distribution of wealth. In 2008 the richest 20 percent in the world accounted for 75 percent of the global income, while 1.4 billion people lived for less than a US$1.25 a day(19). This enormous imbalance and difference in people's prosperity in the world has excited over time and in all probability it will continue.

The literature refers to several different definitions on poverty. Some of the most common are the one set by the UN(20) and by the World Bank(21, page 123). UN defines poverty as a denial of choices and opportunities and violation of human dignity. Poverty illuminates the lack of fundamentals such as having the possibility to go to school, earning money, having access to clean water and sanitation in addition to insecurity, powerlessness and exclusion of individuals, households and communities. Like we see from the UNs definition, poverty is much more than income, but when poverty is measured it is usually based on the GNI per capita. In accordance with the UN a person is considered poor if the income level falls below a minimum level that is necessary to meet basic needs, and this minimum level is usually called the poverty line. Two of the most common ways to measure poverty is by an absolute definition and by a relative definition. An *absolute* definition is set at the poverty line but this line will differ from population to population and in time. An example of an absolute line is the World Banks poverty line for extreme poverty that is US$1.25 a day. A *relative* definition of poverty is a measurement of the resources and living conditions of parts of the population in relation to others. This can be defined as people with income less than 50% of the median income of the population. Poverty comparisons between populations are complicated because of the different starting points. One of the only things that will be common between a poor man living in Sub-Saharan Africa and a poor man living in Scandinavia is that they both are poor per definition. Even though you are considered a poor man or woman with a Norwegian citizenship you will have access to clean water and sanitation, you will have a roof over your head, you will be able to complete an education at the highest level, your income will exceed US$1.25 a day and you will have the possibility to medical treatment no matter what your income is. None of these benefits could be taken for granted if you were poor and your home were for instance Burundi, Lesotho or USA. And still if you were poor by the relative definition set by the OECD, 50% of the median income of the population, initially you will be worse off in the low-income countries of the world than in the high-income.

The different income categories, which the world's countries often are categorized into, is usually from the World Bank and are based on the GNI per capita in US$. That means the average income of countries citizens, and it does not say anything about the distribution of the income. So even though we have a high average on the GNI per capita it does not give

us the correct numbers to compare income rates per capita. For this matter we can use the GINI index (*Figure 2)*. To set an example, taking per definition, four high-income countries like Russia, Argentina, Chile and Hungary. The two South American countries have GINI coefficients on over 50, which mean that a small group of people earns most of the money in these economies, compared with the two other. So even though you have two countries with basically the same GNI per capita, the difference in the GINI coefficients will be able to give a reflective picture of the situation.

Figure 2: Lorenz curves and GINI indexes for Argentina and Hungary



2. Why women outlive men - A theoretical approach

It has not been written or done a lot directly on the topic that deals with gender differences in LE at birth on a global scale. It has been done extensive research and been written numerous articles on other determinants that have an impact on the calculation of LE at birth, for instance on mortality rates and the gender differences related to this (12, 22-24). In the articles there are some explanations that recur and they form the bases for the theoretical approach in this thesis. These hypotheses are usually divided in two, the constitutional and the external.

The constitutional hypotheses

These hypotheses refer to biological and genetic explanations. According to Kruger and Nesses' biological explanation(23) for the gender differences in mortality, our understanding must be based on how differences between genders were shaped by natural selection. Looking at the longevity among individuals, both human and animals, we will see that it consists mostly of females, which shows better adaptation to the environment. This difference is usually a result of the sexual selection, where the males compete more intensely for mating access to females compared to what females do for males. This is because females usually invest more in offspring, and are thus selected to be choosier in selecting mates. Kruger and Nesses' theory on natural selection being the reason for longevity among women as opposed to men, will contribute to an increase in the LE at birth ratio.

The genetic explanation is women's advantage because of their XX chromosomes in advantage to men's XY chromosomes. As the Y-chromosomes are relatively small in size and it only contains a few genes related to the determination of gender, the female chromosomes are consequently in an advantage situation. The X chromosome is considerably larger and contains numerous genes that control biological processes not connected with sex determination. Hence, the possession of at least one X-chromosome is essential to life and the possession of the Y-chromosome is not (12). The genetic theory also speaks in favor of women and could contribute to a LE at birth ratio of >1. These hypotheses explain why women live longer than, and because of variations in women their biology and genetics it could also explain variations in LE at birth ratio.

The external hypotheses

The external hypothesis in the literature embraces the social, cultural, environmental and behavioral factors that can explain the sex differences in LE at birth. However this thesis will have the main focus on the behavioral and the collective term structural determinants.

Within the major part of most species women choose males because of the male's success in reproductive competition and often on the expense of health and longevity, meaning that women live longer on an average. Among humans, males have greater mortality all through life, with a peak at the age of 22(12, p88). At this time in a young man's life his mortality rate is three times higher than a young woman at the same age. Even though the mortality rate is very low it is a considerable difference between the genders (12, 25). Nonetheless it is not only in young age we see these differences. In large parts the average life span for men are more likely than women to engage in risky and reckless behaviors that increase the possibility of disease, injury and death (22). The hypothesis can explain variations in the LE at birth ratio, since behavior and structural determinants will vary between populations and of various extents will affect mortality rates and the LE at birth ratio.

The socioeconomic gradient in health

In conjunction with this matter and the constitutional and the external theories I will also introduce *the socioeconomic gradient in health*. This gradient refers to the worse health of those who are in the lower levels of socioeconomic position and can be linked to the social and biological hypothesis in this thesis (26). This is not just on a global scale; it can also be experienced in the different areas of your hometown as well as in the hierarchy at your work. According to the theory, the director of the hospital is likely to live longer and better than the assistant director, and also the head of the hospital ward will be healthier and happier than the nurses. Education will also matter, meaning that the professors would outlive the physicians without a doctor's degree, even if their salaries indicate similar socioeconomic status. In" The status syndrome" Michael Marmot presents this phenomenon and discusses the social differences and what causes them. He also brings up the extreme status disparities and social segregation at the national level. He explains how this undermines the public health, whereas relative equality, social cohesion and strong public education systems promote collective well-being (27). The socioeconomic gradient in health can explain variations in LE at birth ratio because of "the feminization of

poverty"; the majority of people living on 1 dollar a day or less are women(28); there are more women than men that are illiterates(29), and poor women are often denied access to critical resources such as credit, land and inheritance(28).

3. Exploring the Indicators

LE at birth depends on many different indicators, in this thesis I have categorized them into three groups:

Biological: *Infant mortality rate, Under-five mortality rate, Maternal mortality rate, Fertility rate*
Behavioral: *Adult smoking rate (male and female), Literacy rate (male and female), Alcohol consumption*
Structural: *GNI per capita in $PPP, Gini index, Richest/poorest ratio, Corruption Perceptions Index, Corruption Control, Living in urban areas*.

Infant mortality rate (IMR)

The IMR is the number of deaths of infants under the age of 1 expressed as a number per 1000 live births(30).

IMR is one of the most important and widely used health indicators and gives us vital information about the health situation and the economic situation in a country. The worse the health status and economy of a country is, the higher the IMR will be (2). The rate has had a forcible decrease over the last 50 years. In 1960 we had a worldwide rate at 126 per 1000 live births, while the average among the WHO's 192 member countries in 2008 were 34. As an example Singapore has had a decrease of 94% and Romania has had a decrease for 78% over the same period of time. The variation between countries and regions are considerable and the rate for 2008 varies from 1 to 165 mortalities per 1000 live births with a global mean value of 19. Africa is the region with the highest rate; it is over six times as high as the rate in Europe, with respectively 85 and 12. The source for the IMR is WHO and the data was published in WHO's World Health Statistics reports 2010 (4).

The hypothesis connected to this variable states that a high infant mortality rate gives a higher mortality rate among women. In accordance with the hypothesis it is expected that the infant mortality rate will influence the dependent variable with a decrease of the life expectancy at birth ratio and that the average women in countries with a high IMR will have a relative shorter duration of life.

Maternal mortality ratio (MMR)

The MMR is the death of women during pregnancy, childbirth, or within 42 days after delivery(31), expressed as a number per 100 000 live births.

On a global scale the maternal mortalities reaches almost a 1000 deaths per day, which is about 1% of the global mortality rate, and 99% of these deaths occur in low-income countries (GNI per capita ≤ $11905 PPP) (3, p236, 32). The difference between low-income countries and high-income countries are substantial; in the poorest countries of the world the risk of dying during childbirth is about 1 in 6 while in Northern Europe it is about 1 in 30 000(33).
The MMR from 2008 we will see that they vary from 1400 in Afghanistan and 2 in Greece(34). Globally the average MMR is 260 and Africa has the highest score among the regions with MMR of 620, which is almost twice as high as the second region on the list Eastern Mediterranean (MMR 320) and thirty times the rate in Europe (MMR 21). There has been a decline in the world average MMR over the last decades of 34%, with the greatest improvements in South-East Asia and Western Pacific with a decline of 59% between 1990-2008, whereas the lowest decline is seen in the Eastern Mediterranean and Africa with a decline of 24% and 27%(34).
The source for the MMR is WHO and the data was published in WHO's Trends in maternal mortality: 1990 to 2008.

Connected to this variable is the hypothesis that a high MMR gives a high mortality rate among women in low-income countries. In accordance with the hypothesis it is expected that the life expectancy at birth ratio will be influenced by MMR with a decrease. And it is anticipated that women will live relatively shorter in countries with a MMR.

Total Fertility Rate (TFR)

The TFR is the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with current age-specific fertility rates (35).

TFR shows the prospects for population change in a country (not taking into account other factors that will lead to an increase in the population e.g. immigration), and a rate of two per woman is considered the replacement rate for a population with a relative stability in terms of the total population. Rates' exceeding 2 indicates a growing population and a median age in decline. In populations with rates below 2 indicate populations decreasing in size and growing older(36).
The global average TFR has had a steady decline since 1990 and all regions shows this same trend. In general this declining trend is most pronounced in industrialized countries, and Europe (TFR 1.6) and the Western Pacific (TFR 1.8) are the only two regions with a TFR < 2. The other regions range from a TFR 2.2 in the Americas and a TFR 4.9 in Africa.
The lowest rates by country are found in Bosnia (TFR 1.17) and South Korea (TFR 1.19), while the highest rates are found in Niger (TFR 7.17) and Afghanistan (TFR 6.56). The source for the TFR is The World Bank and the data are published on http://data.worldbank.org and are a part of the World Development Indicators(35).

The hypothesis connected to this indicator states that a high TFR gives a high mortality rate among women in low-income countries. The assumption is that a high TFR will lead to a high IMR and thus a high mortality rate among women because giving birth in a low-income country is a risk by itself. Therefore it is assumed that women will live relatively shorter in countries with high TFR.

Adult Literacy Rate (ALR)

Adult literacy rate is the percentage of a population aged 15 years and over who can both read and write and understand a short simple statement on his/her everyday life(37).

Literacy rate is one of the easiest available ways to internationally compare education and lack of education between populations. According to UNESCO literacy has never been more necessary for development. It is the key to communication and learning of all kinds and a fundamental condition of access to today's knowledge societies, and the disparities between populations are huge(38). The global average ALR for women is 79.2% while men has 88.3%(29), while in 1990 the respective numbers were 69.2 and 82.2(39). The improvement can be seen for both genders and in all geographic regions. The lowest ALR for both genders are found mainly in Africa, with the 10 lowest ALR among women; Niger (Female ALR: 15, Male ALR: 43); Ethiopia (Female ALR: 18, Male ALR: 42); Mali (Female ALR: 18, Male ALR: 35). Also in the Eastern Mediterranean there are countries with severe illiteracy, Bhutan (Female ALR: 39, Male ALR: 65) and Pakistan (Female ALR: 40, Male ALR: 69). On the basis of ALR amongst women, 68 out of 167 countries that have an ALR > 95%, these are primarily countries in Europe and the Americas. The source for the adult literacy rate are UNESCO and were published unstats.un.org(40).

The hypothesis connected the ALR is that a low ALR gives a relatively shorter life expectancy for women I comparison to men. This is because more women than men are illiterates and thus have a harder time in getting work and being able to care for themselves.

Adult alcohol consumption

The definition of alcohol consumption refers to the amount of liters consumed of pure alcohol per capita, computed as the sum of alcohol production and imports, less alcohol exports, divided by the adult population aged 15 years and older(41).

In middle- and low-income countries the alcohol consumption is primarily lower among women relatively too men(42). Looking at the total consumption of pure alcohol for 2005 we see that the consumption of >10 liters of alcohol per capita has a geographical concentration primarily in Europe and former Soviet republics(43). Compared with other WHO regions Europe's alcohol consumption is in a league of its own. While the average European consumes 12.2 liters of alcohol the average American drinks 8.7 liters and in East Mediterranean the average consumption is 0.67 liters(44).

Harmful alcohol consumption is a considerable contributor to the global burden of disease, and especially in high- income countries can we see high alcohol consumption. In 2004 2.5 million people died due to alcohol, including 320 000 young people between 15-29 years of age. Alcohol abuse is the cause of death for nearly 4% of the total amount of deaths, and 4,5% the global burden of disease measured in disability-adjusted life years lost (45). The highest consumption of alcohol are primarily found in Europe where the Republic of Moldova, the Czech Republic, Hungary and Russia are topping the list with an average consumption of respectively 18.22, 16.45, 16.27 and 15.76 liters per year. The lowest consumption levels are found in the countries of North Africa, the Eastern Mediterranean region, and southern Asia in which alcohol consumption for most of the countries are <2 liter per year. The source for adult alcohol consumption is the UN and are published in the Global Status Report on Alcohol and Health 2011(44).

The indicator on adult alcohol consumption is connected to the hypothesis that the more men drink the larger the relative difference in LE at birth between genders gets in low-income countries. The assumption is that the alcohol consumption among adults will affect the LE at birth ratio with an increase since men have a tendency to drink more than women and therefore it is expected that men in countries with high alcohol consumption will live relatively shorter.

Adult smoking rates for women and men

The adult smoking rate is the prevalence of smoking, and it is presented gender specific as the percentage (%) of men and women from the age 15 and over that smoke any forms of tobacco including cigarettes, cigars and pipes, and excluding smokeless tobacco. Data include daily and non-daily smoking(46).

Each year 5 million people are killed because of in tobacco related deaths. Second-hand tobacco smoke is estimated to cause about 600 000 premature deaths per year worldwide(47), which is approximately the same number of people who are killed by measles or women who die during childbirth each year (48). The reason the adult smoking were chosen as a variable is because of the high prevalence among men in comparison to women, especially in low- income countries. According to the numbers from the UN there are only two countries in the world where there are more women than men that is

smoking; Sweden and Nauru(46). The prevalence of adult smoking among men and women are collected from the UN and they were presented in WHO`s report on the global Tobacco epidemic 2008.

The hypothesis is that smoking is an extensive cause of death in our lifetime and the more men smoke relative to women the shorter they live. In accordance with the hypothesis it is expected that high numbers of smoking among men relatively to women will affect the dependent variable with an increase because of higher mortality rates among smokers.

The Gross national income per capita (GNI) PPP$ 2008

The GNI per capita in PPP$ are GNI converted into international dollars using purchasing power parity (PPP) rates. This means that a PPP$ has the same purchasing power over GNI as a U.S. dollar has in USA. GNI is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad(49).

GNI was formerly known as GNP and is GDP plus net receipts of primary income from nonresident sources and provides an aggregate measure of income. The purchasing power parity (PPP) rates are an international dollar that has the same purchasing power over GNI as a U.S. dollar has in the United States. The variation of GNI per capita is considerably and the distribution between the regions is unambiguous the Americas and Europe have a GNI per capita > PPP$ 20 000, while South-East Asia, Africa and the Eastern Mediterranean region has < PPP$ 4000. Looking at the different countries Luxembourg and Norway had respectively PPP$ 64 320 and PPP$ 58 500 in 2008, while African nations like the Democratic republic of Congo has PPP$ 290 and Liberia PPP$ 300(4). The data for this indicator are collected from the World Banks World Development Indicators and was published in WHO`s World Health Statistics reports 2010.

This variable is connected to the hypothesis that poverty reduces LE given that women are poorer than men. It is therefore expected that in countries with low GNI per capita women will live relatively shorter because of absolute lower income.

The GINI index 1992-2007

The GINI index ranges from 0 to 100 and is a standard economic measure of income inequality, based on Lorenz Curve. A society that scores 0.0 on the GINI scale has perfect equality in income distribution. The higher the number, the higher is the inequality. Hence the score of 100 indicates total inequality where only one person corners all the income. It is used also as a measure of other distributional inequalities such as market share(50).

There are variations between regions but they are not as substantial as we have seen with other variables. The region with the highest scores is the Americas, where most countries have values > 45, while Europe primarily has values <35. The countries with the largest extent of uneven wealth distribution are to be found in Africa and the Americas. Namibia has a GINI-index of 74.3, Comoros 64. 3 and large economies like Brazil and Argentina has respectively 55 and 50. The most even distribution of wealth is found in the Scandinavian countries (24.7 – 25.8), Japan 24.9 and Slovakia 25.8. The data for this indicator are taken from the World Banks World Development Indicators and is published at the World Banks Web Pages (50).

The hypothesis is that men will live shorter in comparison to women in countries with high GINI coefficients. The assumption is that men are more preoccupied of financial stability and independency. The more unevenly the wealth is distributed in a country, the harder it is to be financial independent and therefore will men live relatively shorter in these countries. And because of the assumed it is expected that relative income matters more to men than women.

Richest / Poorest 10% (RP 10) -ratio

The richest to poorest ratio is deciles dispersion ratio that says something about the economic inequality in a country. The ratio presents the average income of the richest 10 percent of the population divided by the average income of the bottom 10 percent(51).

The correlation between the RP 10- ratio and the GINI coefficient are significant and shows the same geographical pattern as the Gini index. Since the RP 10-ratio is more sensitive to the relative income, hence more sensitive to the poorest part of a population, I chose to include in the thesis along with the Gini index.
At the top of the list with a ratio of 106 we find Namibia succeeded by Bolivia 93.9 and Angola 74.6. In Brazil the richest 10% earns more than 40 times as much as the poorest 10% and in Argentina the number is 30. The data for this indicator are collected from the World Banks World Development Indicators and was published in UN`S Human Development Report 2009.

The variable on RF 10 ratio is connected to the hypothesis that men will live shorter than women in low-income countries with a high RF 10 ratio. This is because along with a high level of uneven distribution of wealth follows corruption and a high alcohol consumption, which affect men to a higher extent than women and therefore they will live relatively shorter. In accordance with the hypothesis it is expected that a high richest / poorest 10%-ratio will affect the dependent variable with an increase.

Transparency International, Corruption Perception Index (CPI)

The CPI range from 0 to 10, whereas 0 being a highly corrupt country and 10 expressing the total absence of corruption. The CPI measures the perceived level of the corruption in the majority of the countries around the world. Transparency International has named their index a “survey of surveys", and they base it on thirteen different expert and business surveys(52).

Transparency International defines corruption as the abuse of entrusted power for private gain(53), and bases their corruption index on the abuse of entrusted power for private gain. The Corruption Perceptions Index (CPI) ranks countries according to the perception of corruption in the public sector and the index is an aggregate indicator that combines different sources of information about corruption, making it possible to compare countries. According to the UN, *political corruption* costs governments $1.600.000.000.000 ($1.6 Trillion) each year(54) and it is the sector or institution most affected by corruption. In large parts of the world corruption is widespread and is present in numerous institutions e.g. the police, the private business sector, judiciary, parliaments and the media.

The data for this indicator are collected from Transparency International and was published in the Corruption Perception Index 2009(52). The extensiveness of corruption is widespread and all of the regions have it in some extent(55). The most corruptive regions are the Eastern Mediterranean, South-East Asia, Africa and the southern parts of the Americas. But also in Europe there are countries with high levels of corruption, especially among the Balkan countries and former Soviet republics with CPI scores between 2.2 and 4. In the Eastern Mediterranean region, Africa and South-East Asia there are a large number of countries with scores between 1.1 and 2, and the 3 countries with the lowest CPI score is found in these regions[3].
The top-ten list of countries with the highest CPI scores, hence lowest extent of corruption, consists of countries from central and northern Europe, North America and the West-Pacific region[4].

The CPI is connected to the hypothesis that men will live shorter than women in countries with a high level of corruption. A man is more preoccupied of success and to be successful in social hierarchies. The more corrupt and mistrusted a country is, the harder it is to get fair opportunities to succeed in the social hierarchy. This could lead to frustration, despair and higher mortality rates among men, and as a consequence of the assumptions it is expected that a high extent of corruption will influence the dependent variable with an increase.

Control of corruption

Control of corruption is an alternative indicator for corruption and hypothesis on corruption. The Control of corruption indicator ranges from 0-100, where 0 is a highly corrupt economy and 100 an economy with very low corruption.

The World Bank defines corruption as what captures perceptions of the extent to which public power is exercised for the gain of private interests. This including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests(56). The World Bank has a broader definition of corruption than Transparency

3. CPI scores: Somalia 1.1, Afghanistan 1.3, Myanmar 1.4.

4. CPI scores: New Zealand 9.4, Denmark 9.3, Singapore 9.2, Sweden 9.2, Switzerland 9.0, Finland 8.9, Netherlands 8.9, Australia 8.7, Canada 8.7, Iceland 8.7

international and also uses a different strategy to aggregate the corruption indicators. The correlation between the two corruption variables is at best weak (r = 0.213), and with a statistical significance at the 0.05 level. In the end, definitions and aggregation choice seem to matter only marginally and the two variables show the same tendencies with a low extent of corruption in the western industrialized countries of the world and with the Eastern Mediterranean, Africa and South-East Asia as the regions with the highest extent.

Living in urban areas (urbanization)

This measure of urban population refers to the percentage (%) of people living in urban areas in each country of the world, as defined by national statistical offices. It is calculated using World Bank population estimates and urban ratios from the United Nations World Urbanization Prospects(57), and was published in the WHO`s World Health Statistics reports 2010. In the nineteenth century 3% of the world's population lived in urban areas (58), and in 2010 was the first time in the history of man when more people are living in cities than in the rural areas of the world(59). Because of poverty and unemployment in rural areas people are drawn to the cities to seek their fortune and because of this increasing trend of urbanization it is anticipated that this will influence the LE at birth.

The regions with the highest percentage of people living in urban areas are the Americas and Europe with 80% and 70 %, while Africa and South-East Asia respectively have 37% and 32%. Even though South-East Asia has the lowest percentage of their total population living in urban areas we find 7 of the 10 largest urban agglomerations here, and the remaining 3 in the Americas(60). Between countries it varies from 100% to 10% and with a mean value of 57%.

The urbanization variable is connected to the hypothesis that women in countries with a high urbanization percentage will live longer relative to men because of a higher risk of hunger, violence and unemployment for men in highly populated areas. As well as high urbanization are beneficial for women because of better access to education and healthcare. In accordance with the hypothesis it is expected that the LE at birth ratio will be influenced with a increase in countries with a high urbanization percentage.

4. Method

The data

The objective with this thesis is to see which variables or which combination of variables that affect the difference in life expectancy between men and women the most. With a substantial population the sources[5] for the dependent and the independent indicators were limited. The data was published in numerous different Web Pages and reports, but the primary sources were limited to a few global organizations. For the LE at birth ratio the only two primary sources are the World Health Organization (WHO) and the Central Intelligence Agency (CIA). I chose to use the numbers from the CIA because of the two decimal places, which gives a better precision on their calculations proportionately to WHO`s calculations.

The independent variables were of three kinds; biological, behavioral and structural. For the biological indicators, infant mortality rate (IMR), under-five mortality rate, maternal mortality rate (MMR) and total fertility rate (TFR) where chosen, but I chose to exclude the under-five mortality rate because of the similarities with the infant mortality rate. For the IMR, MMR, I chose to use the data from WHO, while the data for the TFR is collected from the World Bank. This was because of the annual datasets since 1990 from the member states, and that we were able to see trends and evolvement of the rates as opposed to the data from CIA that only shows the present numbers and do not have an archive on the former data.
Of the behavioral indicators I chose to include literacy, alcohol consumption and tobacco consumption. There were a lot of missing data on literacy, especially in high-income countries. With the assumption that the literacy rate could explain a lot in low-income countries, I decided to give the high-income countries with missing values[6] on literacy the average literacy rate for high-income countries. Since differences in the ALR for both women and men, are relatively small between high-income countries I considered this method to give a fairly correct view of the situation. This enabled me to do the analysis with the literacy rate indicator for both

5. In this context I have chosen to refer to the different organizations within the UN, and not the UN as one organization.

6. 25 out of 55 high-income countries had no statistics on literacy. Therefore, I gave them the average literacy rate of the remaining 30 high-income countries. Female: 96.4 Male: 97.4

low- and high-income countries. Data on literacy were available from both UN and CIA; I chose to use the data from the UN since they were more recent.
The data on alcohol consumption of pure alcohol by the adult population over 15 years of age is for the entire population and are not divided by gender. On the basis of this it may be difficult and inaccurate to draw final projections for each of the genders. Simultaneously the national statistics where gender specific rates are available shows that men do drink considerably more than women (44, p273-277), and that there are a clear majority of women who are completely alcohol abstainers (44, p14). I therefore believe that the indicator is suitable in this context. The data for the behavioral indicators on tobacco and alcohol where collected from WHO, which is the only source for these data in this scale.
All the structural variables were included in the correlation analysis, but in the regression analysis RP10-ratio and control of corruption were excluded because GINI index and RP10-ratio are strongly correlated, and CPI and control of corruption are correlated. The structural data are collected from four different sources; the World Bank (*GNI per capita, Corruption Control*), the United Nations World Urbanization Prospects (*Living in urban areas*), United Nations Development Program (*GINI index, Richest /Poorest 10% ratio)* and Transparency International (*The Corruption Perceptions Index*). Also for these indicators the number of sources is limited. The only source for GNI per capita in the extent and over a time perspective of 20 years is the World Bank. Also when it comes to the GINI index, "Richest / Poorest 10% ratio" and "living in urban areas-percentage" the only provider and the primary source of extensive data were chosen, and I would like to remark that the publications of the data from the providers are widespread.

Income groups and statistical methods

Income groups, on the basis of the model that the World Bank and the UN utilize, categorized all the indicators in this thesis. They divide the economies of the world into four categories based on the GNI per capita in US$: low (<US$975), lower middle (US$976 – US$3855), upper middle (US$3856-US$11905) and high (>US$11906) –income group. I have merged the three lowest income groups together and named them *the low-income group* with GNI per capita ≤ 11905 PPP$ and defined *the high-income* group as GNI per capita ≥ 11906 PPP$. This had to be done

because of missing data in some of the indicators included in the regression analysis. It would have been impossible to use the results from the regression analyzes in each of the four income groups because of insufficient amount of data. These apply in particular the countries of the three lowest income groups.
All the indicators were categorized by income groups on the basis of the GNI per capita in PPP$, which only were available for 162 out of the 193 WHO countries. Consequently all analysis of indicators that is divided on the basis of GNI per capita in PPP$, low-income countries and high-income countries, is based on a total of *162* countries divided into107 low-income countries and 55 high-income countries.
This does not apply when referred to as *all-countries* in this thesis. GNI per capita in PPP$ is not taken into account then and thus will not match the numbers low-income and high-income countries, but the available numbers for the relevant indicator. This applies to figure 1, table 1.1, figure 3, table 2.2 and table 2.3.
Also in the regression analysis the N will vary because of missing data in indicators. The N represents the sum of all countries that have data for all relevant indicators. In table 3.1 we see that there are 98 countries with data from all indicators, regardless of the stated classification based on GNI per capita in PPP$. Table 3.2 shows the 55 low-income countries, based on GNI per capita in PPP$, with data from all relevant indicators. Table 3.3 shows the 43 high-income countries, based on GNI per capita in PPP$, with data from all indicators.

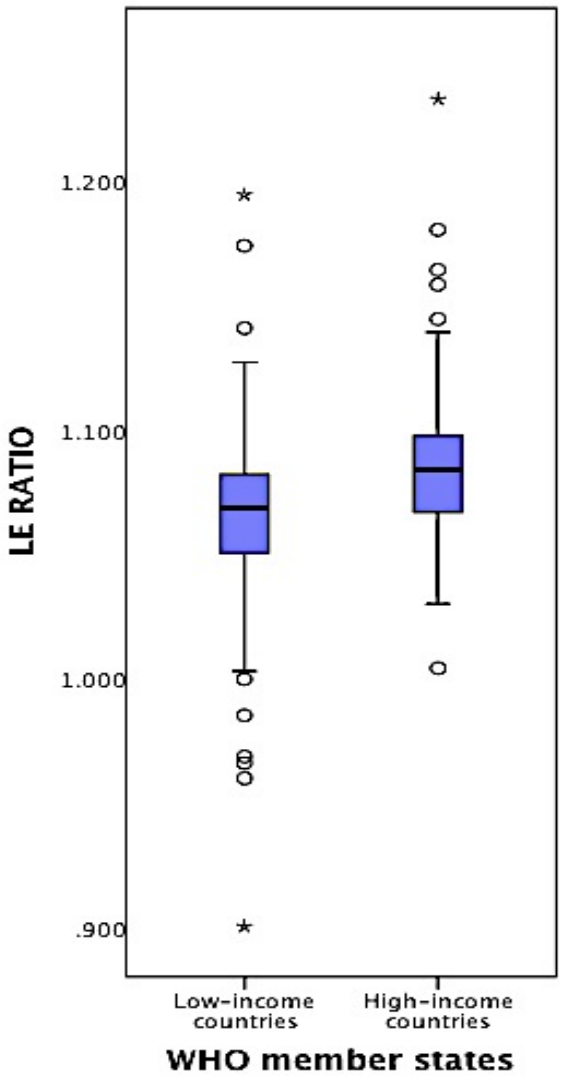
The statistical analyses for this thesis were done in SPSS Version 19. Bivariate correlation were done to evaluate the interaction between the independent variables and the dependent variable, and Pearson where used as the correlation coefficient. To complete the analysis the correlation between all the independent variables and the dependent variable multiple linear regressions were utilized.

Table 1.1

A review of the central tendencies for the all-countries population, and divided into high- and low-income countries

Review of the data															
Variables	N			Mean Value			Median Value			Std. Deviation			Variance		
Populations	All countries	High-income countries	Low-income countries	All countries	High-income countries	Low-income countries	All countries	High-income countries	Low-income countries	All countries	High-income countries	Low-income countries	All countries	High-income countries	Low-income countries
LE at birth Ratio	191	55	107	1,071	1,087	1,067	1,071	1,084	1,068	0,381	0,037	0,038	0,001	0,001	0,001
Infant Mortality Rate	193	56	107	33,80	9,79	47,69	21	5	38	33,384	14,077	32,094	1114,5	198,1	1030
Maternal Mortality	171	53	97	211,22	31,283	305,08	68	13	210	287,708	56,374	288,48	82776	3178	83224
Fertility Rate	181	54	105	2,948	1,888	3,548	2,44	1,68	3,26	1,478	0,674	1,450	2,186	0,456	2,105
Adult Smoking, Male	131	46	67	34,57	38,83	31,71	33,40	36,35	29	13,837	10,785	15,340	191,45	116,3	235,32
Adult Smoking Female	129	46	66	12,95	21,54	7,24	9,20	22,70	4,15	11,002	7,753	7,901	121,04	60,1	62,422
Alcohol Consumption	187	55	106	6,527	10,463	5,110	6,07	10,68	4,7	4,601	4,102	3,630	21,173	16,83	13,18
Literacy, Male	166	53	94	87,67	97,13	81,34	95	97,4	83,5	14,661	2,734	16,394	214,97	7,475	268
Literacy, Female	166	53	94	80,74	95,40	70,96	91	96,4	78	22,016	4,358	24,316	484,72	18,99	591
GNI per Capita PPP$	162	55	107	11600	25919	4105	6310	22435	3450	12927	12501	3046,250	1,671E8	1,563E8	9279639
GINI-index	140	48	89	40,745	35,242	43,752	39,45	34,50	42,6	9,156	7,6844	8,667	83,842	59,05	75,12
Richest / Poorest 10% Ratio	141	48	89	17,549	11,752	20,808	12,5	9,8	14,1	15,982	6,915	18,722	255,43	47,82	350,5
CPI	174	54	101	3,99	5,898	2,974	3,3	5,7	2,8	2,091	2,268	1,016	4,375	5,144	1,032
Corruption Control	191	56	107	47,40	5,898	34,995	45,93	77,27	33,49	28,880	26,427	20,457	834,091	698,42	418,49
Living in Urban Areas	193	56	107	55,55	70,73	43,90	57	73	43	23,075	17,686	18,704	532,468	312,78	349,82

LE Ratio in low-and high-income countries						
	Valid		Missing		Total	
	N	%	N	%	N	%
Low-Income Countries	107	92.2	9	7.8	116	100
High-Income countries	55	90.2	6	9.8	61	100



Correlation tables

Table 2.1

Unadjusted correlation between Life expectancy at birth ratio based on 2010 numbers from CIA World Factbook and the independent variables in both income groups (GNI per capita $PPP)

All-countries			
Independent Variables	CIA LE at birth ratio Female/Male 2010		
	N	Correlation Coefficient	Sig.
Biological			
Infant mortality rate	191	-0.386	0.000 / **
Maternal mortality rate	170	-0.396	0.000 / **
Fertility rate	180	-0.423	0.000 / **
Behavioral			
Adult smoking, male	131	0.517	0.000 / **
Adult smoking, female	129	0.336	0.000 / **
Literacy, male	166	0.297	0.000 / **
Literacy, female	166	0.322	0.000 / **
Alcohol consumption	186	0.422	0.000 / **
Structural			
GNI per capita	162	0.177	0.024 / *
Gini	140	-0.416	0.000 / **
Richest/poorest ratio	141	-0.261	0.002 / **
Corruption Perceptions Index	173	0.068	0.371 / n.s
Corruption Control	189	0.042	0.563 / n.s
Living in urban areas	191	0.238	0.001 / **
** = p<0.05*			
*** = p<.0.01*			
n.s = not significant			

Table 2.1 is an unadjusted correlation analysis of the overall population and shows statistical significance and negative correlation in all of the biological indicators. This correlation between low LE at birth ratio and high mortality- and fertility rates indicates that women live relatively shorter compared to men in these populations. The behavioral determinants show positive correlation between high consumption of alcohol and tobacco, high literacy rates, and the dependent variable. There is a strong positive correlation between high tobacco consumption, for both men and women, and the dependent variable. In the populations where women has a high tobacco consumption they live relatively longer than men, which could be explained by the fact that men smoke even more than women in these populations.

A high urbanization percentage is positive correlated to a high LE at birth ratio and implies that women are living relatively longer compared to men in populations with high urbanization. In populations with an imbalanced economy there is a statistical significant negative correlation to the LE at birth ratio and indicates that women live relatively shorter than men in these populations.

The correlation analysis of the all-countries indicates that women are living relatively shorter than men in populations where; complications during pregnancy and childbirth are common; high infant mortality rates; unevenly distributed income. It also suggests that women live relatively longer compared to men in populations with; high consumption of tobacco and alcohol; high literacy rates; high GNI and high urbanization.

Table 2.2

Unadjusted correlations between Life expectancy at birth ratio based on 2010 numbers from CIA World Factbook and the independent variables in low-income countries (GNI per capita ≤ $11905 PPP)

Low-income countries			
Independent Variables	CIA LE at birth ratio Female/Male 2010		
	N	Correlation Coefficient	Sig.
Biological			
Infant mortality rate	107	-0.348	0.000 / **
Maternal mortality rate	97	-0.378	0.000 / **
Fertility rate	105	-0.366	0.000 / **
Behavioral			
Adult smoking, male	67	0.435	0.000 / **
Adult smoking, female	66	0.254	0.039 / *
Literacy, male	94	0.233	0.024 / *
Literacy, female	94	0.258	0.012 / *
Alcohol consumption	106	0.255	0.008 / **
Structural			
GNI per capita	107	0.238	0.014 / *
Gini	89	-0.377	0.000 / **
Richest/poorest ratio	89	-0.195	0.068 / n.s
Corruption Perceptions Index	101	-0.083	0.408 / n.s
Corruption Control	107	-0.142	0.146 / n.s
Living in urban areas	107	0.233	0.016 / *
	* = $p<0.05$		
	** = $p<.0.01$		
	n.s = not significant		

Table 2.2 is an unadjusted correlation analysis of the low-income countries. There is a statistical significant negative correlation between all of the biological indicators and the dependent variable, and a statistical significant positive correlation between all the behavioral indicators and the dependent variable. The structural indicators imply that also among low-income countries women benefit from relatively high GNI and high urbanization, in the sense of living relatively longer than men. While uneven distribution of wealth has a negative impact for women, by leading to a decreasing of the dependent variable. The correlation analysis of the low-income countries indicates that women are living relatively shorter than men in populations where; complications during pregnancy and childbirth are common; high infant mortality rates; unevenly distributed income. It also shows that women live relatively longer compared to men in populations with; high consumption of tobacco and alcohol; high literacy rates; high GNI and high urbanization.

Table 2.3

Unadjusted correlations between Life expectancy at birth ratio based on 2010 numbers from CIA World Factbook and the independent variables in high-income countries (GNI per capita ≥ $11906 PPP)

High-income countries			
Independent Variables	CIA LE at birth ratio Female/Male 2010		
	N	Correlation Coefficient	Sig.
Biological			
Infant mortality rate	55	-0.283	0.036 / *
Maternal mortality rate	52	-0.357	0.009 / **
Fertility rate	53	-0.489	0.000 / **
Behavioral			
Adult smoking, male	46	0.619	0.000 / **
Adult smoking, female	46	-0.148	0.327/ n.s
Literacy, male	53	0.482	0.000 / **
Literacy, female	53	0.510	0.000 / **
Alcohol consumption	55	0.517	0.000 / **
Structural			
GNI per capita	55	-0.267	0.048 / *
Gini	48	-0.245	0.093 / n.s
Richest/poorest ratio	48	-0,326	0.024 / *
Corruption Perceptions Index	53	-0.321	0.019 / *
Corruption Control	55	-0.266	0.050 / *
Living in urban areas	55	-0.110	0.425 / n.s
** = p<0.05*			
*** = p<.0.01*			
n.s = not significant			

Table 2.3 is an unadjusted correlation analysis of the high-income countries shows that the biological indicators are strongly significant in this population as well. Among the statistical significant behavioral indicators we also see a positive correlation with the dependent variable, but unlike the other populations, we see that tobacco consumption among women have a smaller impact on the dependent variable. The high-income countries is the only population in this thesis where the corruption indicators are statistical significant and the negative correlation indicates that widespread corruption leads to an increase in LE at birth. As opposed to the other populations the GNI has a negative correlation to the dependent variable, which indicates that a high GNI in high-income countries benefits men.

The correlation analysis of the high-income countries indicates that women live relatively shorter to men in high-income countries where; complications during

pregnancy and childbirth are common; there is high infant mortality rates and relatively high GNI. While women benefit in comparison to men, related to LE that the birth ratio, from; high literacy rates; high consumption of alcohol and tobacco and extensive corruption.

Regression tables

Table 3.1

Multiple regression of Life expectancy at birth ratio based on 2010 numbers from CIA World Factbook and the independent variables in both income groups (GNI per capita $PPP)

All-countries (N 96)				
Independent Variables	CIA LE at birth ratio Female/Male 2010A LE at			
	B	Beta	P	Adjusted R square
				0.595
Biological				
Infant mortality rate	0.000	0.203	0.442	
Maternal mortality rate	0.000	-0.650	0.002	
Fertility rate	0.003	0.092	0.608	
Behavioral				
Adult smoking, male	0.001	0.301	0.003	
Adult smoking, female	0.001	0.123	0.253	
Literacy rate, male	-0.003	-0.919	0.002	
Literacy rate, female	0.001	0.594	0.064	
Alcohol consumption	0.003	0.365	0.000	
Structural				
GNI per capita	2.5115E-8	0.008	0.958	
Gini	-0.002	-0.310	0.001	
Corruption Perceptions Index	-0.010	-0.478	0.001	
Living in urban areas	0.000	0.141	0.162	

Table 3.1 is a multiple regression analysis of the all-countries population; we see that ~ 60% of the variation in the dependent variable can be explained by the independent variables. The model indicates that a high ALR for men; low levels of corruption; increasing alcohol consumption; uneven distribution of wealth and high tobacco consumption among men are correlated with an increase of the LE ratio. Indicating that women live longer in populations in which this occurs.

Table 3.2

Multiple regression of Life expectancy at birth ratio based on 2010 numbers from CIA World Factbook and the independent variables in both income groups (GNI per capita $PPP)

Low-income countries (N53)				
Independent Variables	CIA LE at birth ratio Female/Male 2010A LE at			
	B	Beta	P	Adjusted R square
				0.555
Biological				
Infant mortality rate	5.455E-5	0.036	0.907	
Maternal mortality rate	0.000	-0.686	0.007	
Fertility rate	0.006	0.201	0.400	
Behavioral				
Adult smoking, male	0.001	0.240	0.137	
Adult smoking, female	0.001	0.154	0.192	
Literacy rate, male	-0.003	-0.995	0.009	
Literacy rate, female	0.001	0.588	0.133	
Alcohol consumption	0.003	0.266	0.020	
Structural				
GNI per capita	2.302E-7	0.014	0.943	
Gini	-0.002	-0.358	0.007	
Corruption Perceptions Index	-0.018	-0.319	0.016	
Living in urban areas	0.000	0.135	0.303	

Table 3.2 is a multiple regression analysis of the low-income countries in this thesis; we see that ~ 55% of the variation in the dependent variable can be explained by the independent variables. The model of the low-income countries indicates that high ALR in men; uneven distribution of wealth; low levels of corruption and high alcohol consumption is correlated with an increase in LE ratio. Indicating that women live longer in populations in which this occurs.

Table 3.3

Multiple regression of Life expectancy at birth ratio based on 2010 numbers from CIA World Factbook and the independent variables in both income groups (GNI per capita $PPP)

High-income countries (N43)				
Independent Variables	CIA LE at birth ratio Female/Male 2010			
	B	Beta	P	Adjusted R square
				0.736
Biological				
Infant mortality rate	0.000	-0.023	0.881	
Maternal mortality rate	0.001	0.307	0.110	
Fertility rate	0.016	0.189	0.243	
Behavioral				
Adult smoking, male	0.001	0.477	0.001	
Adult smoking, female	-0.001	-0.143	0.153	
Literacy rate, male	0.013	0.495	0.024	
Literacy rate, female	0.000	0.034	0.856	
Alcohol consumption	0.004	0.377	0.022	
Structural				
GNI per capita	-1.211E-8	-0.005	0.973	
Gini	-0.001	-0.170	0.249	
Corruption Perceptions Index	-0.001	-0.070	0.670	
Living in urban areas	0.000	0.120	0.322	

Table 3.3 is a multiple regression analysis of the high-income countries in this thesis; we see that ~ 74% of the variation in the dependent variable can be explained by the independent variables. Even though the adjusted R square is high, it is only 3 of the independent variables that are statistically significant. The model of the high-income countries shows that an increase of ALR among men; high tobacco consumption among men and high alcohol consumption are correlated with an increase of the LE ratio, thus suggesting women live longer in populations in which this occurs.

5. Discussion

As discussed above, it was challenging to find research that emphasizes the more structural variables connected to the social inequalities in the world with the more established variables and indicators on gender differences in mortality rates. A lot of the data and hypothesis around mortality inequalities were already established and could easily connect to the variables on social and structural inequalities.

Quality of the method – strength and weaknesses

Biological and behavioral data

The dependent variable

The source of the basis for the dependent variable is the CIA World Factbook and it is notified on the site that this is the official source for all US officials. But it is possible to query CIA references because of inaccuracy, the sources of their data are at best inexact and they just refers the different US departments as sources and completes their list with "… and other public and private sources"(61). It is also questionable how they are able to publish LE at birth and other indicators two years before the UN, even though that goes both ways. One can question whether this will affect and cause systemic differences between the sexes, but there is nothing to suggest it.

The estimation of biological and behavioral indicators

In general and the greater part of the UN and the World Banks data are primarily based on civil registration, where complete data is available, on methods of estimation and specialized household surveys, or a combination of these (62). In the poorest parts of the world financial resources and means are not spent on registration of health statistics. Therefore it is difficult to get sufficient and reliable data for the health related indicators because births and deaths are not directly registered in these countries. The UN utilizes different methods to measure the different indicators. The preferred data sources are civil registration with complete coverage that in most cases

rules out the poorest parts of the world. At a time when accountability and rational allocation of resources within health development have become a concern, the need for reliable national statistics for these indicators has never been greater. Worldwide civil registration systems have largely stagnated the past five decades, which has severely restricted their potential as a source of vital statistics on the health of populations (63). The only African country that registers such events according to UN standards in the last decade were Mauritius (6). Without reliable registrations of e.g. births and deaths the statistics in the biological and behavioral data in this thesis can be considered as unreliable (64). In a critical article series the importance of collecting data for health development the authors of the MoVE writing-group[7] (63):

> *"WHO, in particular, has made little progress beyond the collection and dissemination of vital statistics for developed countries to meet the needs of countries and the global health community for reliable information about the health of population … The assessments have relied on questionnaires sent to countries, but national direct assessments have not been done, except in some developed countries. As a result, country-specific plans for developing vital statistics have been meager, at best."(p 1661,63)*

Even though the system for collecting vital statistics is inadequate in proportion to an ideal worldwide method, the sources of origin are also a considerable strength for this thesis, since it is the best methods available. The UN and the World Bank have well-established methods to estimate and collect data and with their enormous system of local and in addition they have regional offices that help with quality assurance. Although the system has vulnerabilities, there is nothing that would suggest this would lead to systematic difference between the genders.

Structural data

Some of the same problems that we see in the collection of the biological and behavioral data are also present in the social data on economics and corruption.

7. *Monitoring Vital Events (MoVE)* writing-group consists of over 50 people. Many of them work within the UN and WHO, see article for complete author list.

GNI per capita

When the World Bank calculates gross national income (GNI) and GNI per capita they use their own Atlas conversion factor (65). The use of Gross domestic product (GDP) as a measurement of development and the comparability of GDP across borders, has a history of criticisms (66, 67). While the use of GNI purpose of the Atlas conversion factor is to reduce the impact of exchange rate fluctuations in the cross-country comparison of national incomes. For countries with high debts that pay high sums of interest to handle their debt it will be reflected in a decreased GNI but not a decreased GDP. Therefore the GNI gives a better picture of the situation for many of the low-income countries with increasing national debt and decreasing assets.

GINI-index

The World Banks calculations of the GINI-index are primarily based on household surveys, data obtained from government statistical agencies and World Bank country departments (50). For the high-income economies the World Bank uses LIS database[8] (68). Again we see the absence of proper data collected in the low-income countries. In addition the data from the high- and middle-income countries are inadequate, because of the incomplete data sets. The values are calculated over a period of 15 years (1992 – 2007), since none of the countries have annual values (69).

Corruption Perceptions Index

The Corruption Perceptions Index (CPI) is an aggregated indicator, which means that Transparency International collects data from 13 different sources[9] by 10 independent institutions that cover the past two years. E.g. for the CPI 2010 includes surveys published between January 2009 and September 2010. The evaluation of the extent of

8. *The Luxembourg Income Study Database (LIS)* is the largest available income database of harmonized micro data collected from multiple countries over a period of decades. LIS collects from high- and middle-income countries.

9. *Transparency International* for complete list of sources see reference.

corruption in the different geographical areas is done by experts on the specific geographical area, both residents and non-residents, and business leaders.
This methodology secures a wide difference of sources and a widespread and thorough analysis of the data collected(70).

Control of Corruption

Control of Corruption is one of the World Banks Worldwide Governance Indicators (WGI) and is also an aggregated indicator. The WGI[10] are compiled and summarized with information from 30 existing data sources, both in the public and private sector and they use four different types of sources in the collection of data (71). The WGI's present us with the different countries quality of governance within six different dimensions[11], including Control of Corruption. The overall criticism of the WGI's have been indicated in different literature (72-74), but these critics have also been thoroughly replied by the developers of the WGI (75). Even though the developers can answer the critics, the numbers they operate with are collected, among other methods, through surveys and public sector organizations like the World Bank. So the same problems that we see among the biological and behavioral data are present here.

Living in urban areas

Living in urban areas refers to the percentage of a country`s population that lives in urban areas as defined by national statistical offices and is calculated using World Bank population estimates and urban ratios from the United Nations World Urbanization Prospects. So all in all it is estimations, since only a small part of WHOs member countries has statistics on the population.

10. *The Worldwide Governance Indicators* for complete methodology see reference

11. Voice & Accountability, Political Stability and Lack of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption

Linear regression

It is certainly a drawback is that there are missing data in the regression analysis. Because of the missing data in some of the variables we will not get optimal impression of how and to what extent the individual indicators explain the regression models for each income group (Adjusted R square). This applies particularly to the low-income group, where only 50% of the countries in the regression analysis for comparison with the bivariate correlation analysis. Still there is no reason to believe that the missing data, primarily from the structural indicators, will influence the unstandardized and standardized regression coefficients (B and β), and that we still will see the systematic tendencies despite of this.

To what extent do the indicators affect the LE at birth ratio in the populations?

The biological indicators influence on the LE at birth ratio

The hypothesis connected to the biological indicators states that:

1. *A high infant mortality rate gives a higher mortality rate among women.* Infant Mortality Rate (IMR)
2. *A high MMR gives a high mortality rate among women in low-income countries.* Maternal Mortality Rate (MMR)
3. *A high total fertility rate gives a high mortality rate among women in low-income countries.* Total Fertility Rate (TFR)

In the hypothesis connected to the biological indicators I state that high rates of IMR, MMR and TFR will result in a decrease of the dependent variable. This is based on the assumption that women will live relatively shorter than men in these populations because of the high biological rates.

The findings of the correlation analysis are consistent with the hypothesis and shows statistically significant correlation between high rates of IMR, MMR, and TFR, and low values of the dependent variable in all populations (table 2.1-2.3). This suggests

that women will live relatively shorter than men in populations with high rates in the biological indicators regardless of income (GNI per capita $PPP).
The findings and the statistics indicates that in countries with high mortality rates (IMR and MMR) and a high TFR the probability off living a relatively shorter life are higher than in a country with lower mortality and fertility rates. Whether your country is categorized as a high-income or a low income-country seems to be of minor importance, high biological rates within income groups seem to matter the most. Still there are differences between the income groups; MMR explains more of the changes in the dependent variable in low-income countries than in high-income countries, while the TFR has a relatively greater explanatory power (β) for high-income countries compared to low-income countries in the respective regression models. Figure 3 shows modest differences between low- and high-income countries in LE at birth ratios, which may indicate higher mortality rates and greater risk for women in proportion to men in low-income countries as opposed to high-income countries. Surprisingly the multiple linear analyses show no statistical significance for the IMR or the TFR in neither of the populations. This shows that the IMR does not have as much impact on the dependent variable as I first assumed. It is the MMR that has the greatest impact on the dependent variable of the biological indicators. This could be explained by LE at birth as an indicator is not as sensitive to high mortality rates among children when looking at large and complex populations, even if it is a rate based on average. And that the large number of women that die in connection with giving birth every year has a greater impact on the LE at birth ratio. The established theories can hardly be linked to the tendencies that the analysis shows.

The behavioral indicators influence on the LE at birth ratio

The hypothesis connected to the behavioral indicators states that:

1. *A low ALR gives a relatively shorter life expectancy for women I comparison to men.* Adult literacy rate (ALR)
2. *The more men drink the larger the relative difference in LE at birth between genders gets in low-income countries.* Alcohol consumption.
3. *The more men smoke relative to women the shorter they live.* Tobacco smoking among men and women.

The hypothesis connected to the behavioral indicators states that high literacy rates and high consumption of alcohol and tobacco will give an increase of the dependent variable. This is based on the assumption that men will live relatively shorter than women in these populations.

The unadjusted correlation analysis (table 2.1-2.3) supports the hypothesis and shows statistical highly significant correlation between behavioral indicators and the dependent variable in the all-countries population. The same tendencies are present in low-income countries and in high-income countries but the trends are not as statistically significant. It can also be observed that high ALR in both men and women have a positive effect on LE at birth ratio for women relative to men in all populations.

In the multiple linear analyses some of these tendencies are confirmed. The ALR for men is the indicator with the highest explanatory power (β) for changes in the dependent variable in all populations. But we see different tendencies in low-income in comparison to high-income countries; in low-income countries there is significant correlation between low ALR for men and a decrease in the dependent variable. While in high income countries there is significant correlation between high ALR and an increase in the dependent variable. The ALR for women seems to explain more of the change in low-income countries compared to high-income countries, but are not statically significant in either of the population. Also alcohol consumption has a major impact on the dependent variable in all populations but with a relatively higher explanatory strength in high-income countries compared to low-income countries. Tobacco consumption shows the same tendencies, and it is reasonable to believe that some of these findings have an association with the high consumption of alcohol and tobacco in high-income countries compared to low-income countries. The base in theory for these findings is connected to the external theory that men display risky behavior to a higher extent then women. In this thesis smoking and high alcohol consumption is defined as risky behavior. It was expected that high smoking rates among men in low-income countries would have stronger effect on the dependent variable, especially since the difference between genders on tobacco consumption are considerably larger in low-income countries than in high-income countries. But the findings are unambiguous, the strongest correlation between an increase in LE at birth

ratio and a high consumption of both alcohol and tobacco is found among men in high-income countries.

The structural indicators influence on the LE at birth ratio

The hypothesis connected to the structural indicators states that:

1. *Women are poorer than men and therefore we have greater economic indifference and lower LE for women in low-income countries.* GNI per Capita PPP$ (GNI)
2. *Men will live shorter in comparison to women in countries with high GINI coefficients.* GINI-index and Richest / poorest-10% ratio (RP 10)
3. *Men will live shorter than women in countries with a high level of corruption.* Corruption Perceptions Index (CPI) and Control of Corruption
4. *Women in countries with a high urbanization percentage will live longer relative to men.* Living in urban areas (Urbanization)

In the hypothesis connected to the structural indicators I state that women will live a relatively shorter life than men in countries with low GNI per Capita PPP$. While major unequal distribution of wealth, widespread corruption and high urbanization percentages are indicators that will be beneficial for women, in the sense that they will live relatively longer than men.

GNI has a significant positive correlation in low-income countries (table 2.2), indicating that a low GNI is often seen in conjunction with low LE at birth ratio, suggesting that women live relatively shorter than men. In high-income countries (table 2.3) there is the other way around. The significant negative correlation indicates that a high GNI is often seen in conjunction with low LE at birth ratio, which could suggest that men live relatively longer in comparison to women. These tendencies support the hypothesis that women will live shorter relative to men in low-income countries. The multiple linear analyses do not support the hypothesis or the tendencies in the correlation analysis. The GNI has very little or none influence on changes in the dependent variable in neither of the populations.

The hypothesis connected to the GINI-index and the richest / poorest-10% ratio is falsified, with negative correlation and the highly significant findings in the unadjusted correlation analysis of low-income countries. The significant negative correlation indicates that low GINI-index values are correlated with high LE at birth ratios, which could imply that women live relatively longer compared to men. In the multiple linear analyses, low GINI-index values are strongly correlated with high LE at birth ratios. This indicates that in populations fairly good distribution of wealth there will be an increase of the LE at birth ratio.

The CPI and the Control of Corruption are two different indicators used for measuring corruption in this thesis. They are connected to the hypothesis that men would be outlived by women in countries with widespread corruption, because of men's preoccupation with success and to be successful in social hierarchies. In the unadjusted correlation analyses there is no statistical significance for the findings among low-income countries, while among the high-income countries there is a negative correlation. Indicating that in high-income countries with widespread corruption women will live relatively longer in comparison to men. This tendency supports the hypothesis that corruption will lead to lower LE at birth for men relative to women. The multiple linear analyses show that corruption has a relatively large impact on the dependent variable in the populations' all-countries and low-income countries. The negative unstandardized regression coefficient (B) suggests that increasing corruption is seen in relation to a decline in the dependent variable.

In the unadjusted correlation analysis there are significant correlations between high urbanization percentages and high LE at birth ratios for the all-countries and low-income countries populations. This implies that women will live relatively longer than men in highly populated areas, and thereby support the hypothesis. But the in the multiple linear analyses urbanization has very little effect on the dependent variable.

The findings and assumptions connected to the GNI per capita hypothesis are supported by *the socioeconomic gradient in health* since women, especially in low-income countries, generally are poorer and more vulnerable than men (76). Therefore women are also expected to live relatively shorter, in accordance with both the theory and the findings. The biological theories on *natural selection* and *genetics* do not support the findings in low-income countries. The theories are more relevant for high-income countries where we see a greater difference in LE at birth between genders, and without exception the average woman outlive the average man.

Summary

With this thesis I aimed to prove the structural indicators effect on the LE at birth ratio. The results from the multiple regression analysis of the structural indicators, related to LE at birth ratio when adjusted for GNI per Capita PPP$, shows a significant correlation between the two of indicators, the GINI-index and the CPI, and the dependent variable in two of the populations. High GINI-index values *(all-countries P 0.001, low-income countries P 0.007)* and low CPI values *(all-countries P 0.001, low-income countries P 0.016)* is seen in correlation with a decline in the dependent variable. These trends imply that women will live relatively shorter compared to men in low-income countries and in the all-countries population. Amongst high-income countries these correlations are not significant, but in the bivariate correlation analysis there is a significant correlation between high corruption and an increase in the dependent variable. The tendency in the high-income population related to the CPI is relatively weak so I will not emphasize these findings. Findings among the biological indicators show that the MMR has a major effect on changes in the LE at birth ratio in low-income countries and in the all-countries population. Amongst the behavioral indicators I will emphasize the ALR for men, which seem to have great explanatory power to change in the dependent variable. We also see that high consumption of alcohol and tobacco for men is seen in correlation with an increase in the dependent variable, especially in high-income countries. All in all a summary of the findings show a trend of increasing inequality correlated with a decrease of LE that the birth ratio. This apply in particular to low-income countries and the all-countries population, while in high-income countries there seem to be a stronger correlation between the behavioral indicators and changes in the LE at birth ratio. So the answer to the question: "can structural indicators explain gender difference in life expectancy (LE) at birth among WHO member countries?" have to be a conditional yes. There are strong correlations between the relevant indicators and the LE at birth ratio in low-income countries and the all-countries population. And with the assumption that a decline in the dependent variable imply that women live relatively shorter than men in these populations, one can conclude that variations in the structural indicators could cause variations in the life expectancy ratio. This thesis does not give the full explanation on why the LE at birth ratio differs between countries, nor to what extent the structural differences in populations affect the LE at

birth. But the development of LE that birth shows that the world is progressing and that the differences are smaller than they were a few decades ago. And even if the difference between rich and poor still are tremendous, we find that; more women can give birth safely; more people are learning how to read and write and many more children experience growing up. This is very large and complex topic that is important to follow the development of both through further research and effort.

1. WHO. WHOSIS Life expectancy (LE) at birth (years). WHO; 2008 [cited 2010 4th Nov]; Definiton of LE at birth]. Available from: http://www.who.int/whosis/indicators/compendium/2008/2let/en/.
2. Skolnik R. Essentials of global health. Sudbury, MA: Jones and Bartlett Publishers; 2008. xxvi, 322 p. p.
3. Lindstrand A. Global Health : an introductory textbook. Lund: Studentlitteratur; 2006. 326 s. p.
4. WHO. World Health Statistics 2010. Geneva, Switzerland: The World Health Organization, 2010.
5. UN. Levels & Trends in Child Mortality. childinfo.org: UN Inter-agency Group for Child Mortality Estimation, 2011.
6. Carla AbouZahr TW. Maternal mortality at the end of a decade: signs of progress? Bulletin of the World Health Organization. 2001(79):8.
7. WHO. Mortality and burden of disease In: 2010 WHS, editor. Geneva WHO; 2010.
8. WHO. WHO - its people and offices. [Web page] Geneva World Health Organization; 2011 [updated 2011; cited 2011]; The structure of WHO]. Available from: http://www.who.int/about/structure/en/.
9. Reding A, cartographer Life Expectancy atlas 2005 based on UN Human Development Report 2007-8: World Policy Institute; 2007 Available from: http://www.worldpolicy.org/globalrights/econrights/maps-life.html.
10. scb.se. Life expectancy 1751-2010. [Web page] Stockholm: Statistics Sweden; 2011 [updated 17.03.11]; Available from: http://www.scb.se/Pages/TableAndChart____25831.aspx.
11. UNDP. Human Devlopment Index 2011. [Web Page] http://hdr.undp.org: United Nations Development Programme; 2011; Human Development Index (HDI) - 2011 Rankings]. Available from: http://hdr.undp.org/en/statistics/.
12. Kalben BB. Why Men Die Younger: Causes Of Mortality Differences By Sex. North American Actuarial Journal. 2002;4(4):33.
13. WHO. Causes of death in 2008. [Web Page] WHO.int: WHO; 2012 [cited 2012 6th April]; 10 leading causes of death, by income group]. Available from: http://www.who.int/gho/mortality_burden_disease/causes_death_2008/en/index.html.
14. Collier P. The bottom billion : why the poorest countries are failing and what can be done about it. New York ; Oxford: Oxford University Press,; 2007; xiii, 205 p.].
15. Marmot M. Social determinants of health inequalities. Lancet. 2005;365(9464):1099-104. Epub 2005/03/23.
16. norden.org. About the Nordic welfare model. [Web Page] norden.org: norden.org; 2012 [cited 2012 14th April]; An explanation of the nordic welfare model]. Available from: http://www.norden.org/en/about-nordic-co-operation/areas-of-co-operation/the-nordic-welfare-model/about-the-nordic-welfare-model.
17. CIA. CIA World Factbook. [Web page]: CIA; 2011 [updated 6th April 2011; cited 2011 5th Nov]; Available from: https://www.cia.gov/library/publications/the-world-factbook/fields/2102.html?countryName=World&countryCode=xx&regionCode=oc&%20-%20xx.
18. Hafner AW. Pareto`s Principle: The 80-20 Rule. [Web Page] http://www.bsu.edu: Dean of University Libraries; 2001 A description of the Pareto Principle]. Available from: http://www.bsu.edu/libraries/ahafner/awh-th-math-pareto.html.

19. Globalissues.org. Poverty Facts and Stats. [Web Page]: Global Issues; 2008 [updated 20.09.11; cited 2011 02.10.11]; Social, Political, Economic and Environmental Issues That Affect Us All]. Available from: http://www.globalissues.org/article/26/poverty-facts-and-stats.
20. Gordon D. Indicators of Poverty & Hunger. Expert Group Meeting on Youth Development Indicators; United Nations Headquarters, New York. http://www.un.org/esa/socdev/unyin/documents/ydiDavidGordon_poverty.pdf: University of Bristol; 2005.
21. Padró FF. Statistical handbook on the social safety net. Westport, Conn.: Greenwood Press; 2004. xxiv, 582 p. p.
22. Courtenay WH. Constructions of masculinity and their influence on men's well-being: a theory of gender and health. Social Science & Medicine. 2000(50):16.
23. Daniel J. Kruger RMN. An Evolutionary Life-History Framework for Understanding Sex Differences in Human Mortality Rates. Human Nature. 2006;17(1):23.
24. Viner RM, Coffey C, Mathers C, Bloem P, Costello A, Santelli J, et al. 50-year mortality trends in children and young people: a study of 50 low-income, middle-income, and high-income countries. The Lancet. 2011;377(9772):1162-74.
25. Hazzard WR. Principles of geriatric medicine and gerontology. 5th ed. New York: McGraw-Hill Professional; 2003. xxvi, 1648 p., [12] p. of plates p.
26. Kawachi I, Subramanian SV, Almeida-Filho N. A glossary for health inequalities. J Epidemiol Community Health. 2002;56(9):647-52. Epub 2002/08/15.
27. Marmot M. The Status Syndrome: How Social Standing Affects Our Health and Longevity. New York: Times Books; 2005. 319 p.
28. UN. The Feminization of Poverty. [Web Page] un.org: UN; 2000 [cited 2012 15th April]; Explanation of the phenomenon commonly referred to as "the feminization of poverty"]. Available from: http://www.un.org/womenwatch/daw/followup/session/presskit/fs1.htm.
29. UNESCO. Adult and youth literacy. [Web Page] uis.unesco.org: UN; 2011 [cited 2012 15th April]; Fact sheet presents the latest literacy data]. Available from: http://www.uis.unesco.org/FactSheets/Documents/FS16-2011-Literacy-EN.pdf.
30. Haupt A, Kane TT, Population Reference Bureau. The Population Reference Bureau's population handbook. 4th international ed. Washington, DC: Population Reference Bureau; 1998. 80 p. p.
31. Hogan MC, Foreman KJ, Naghavi M, Ahn SY, Wang M, Makela SM, et al. Maternal mortality for 181 countries, 1980?2008: a systematic analysis of progress towards Millennium Development Goal 5. The Lancet. 2010;375(9726):1609-23.
32. WHO. Maternal mortality. [Web Page] who.int: The World Health Organization; 2010 [cited 2012 18th April]; Fact sheet on Maternal Mortality]. Available from: http://www.who.int/mediacentre/factsheets/fs348/en/index.html.
33. Ronsmans C, Graham WJ. Maternal mortality: who, when, where, and why. The Lancet. 2006;368(9542):1189-200.
34. WHO. Trends in maternal mortality: 1990 to 2008. who.int: The World Health Organization, 2010.
35. theworldbank.org. Fertility rate, total (births per woman). [Web Page] data.worldbank.org: The World Bank; 2012 [cited 2012 28th April]; Descritpition and data of total fertility rate (TFR)]. Available from: http://data.worldbank.org/indicator/SP.DYN.TFRT.IN.
36. CIA. Total Fertility Rate. [Web Page] www.cia.gov: CIA; 2012 [cited 2012 25th April]; Definition and data on total fertility rate (TFR)]. Available from:

https://www.cia.gov/library/publications/the-world-factbook/rankorder/2127rank.html.
37. UNESCO. Education Indicators - Technical guidelines. uis.unesco.org: UNESCO, 2009.
38. UNESCO. The Global Literacy Challenge- A profile of youth and adult literacy at the mid-point of the United Nations Literacy Decade 2003–2012. unesdoc.unesco.org: UNESCO, 2008.
39. Huebler F. Trends in adult literacy, 1990-2008. International Education Statistics. http://huebler.blogspot.com/: Friedrich Huebler; 2010. p. The development of adult literacy 1990-2008.
40. UN. Adult literacy rate (15+) by sex. [Web Page] unstats.un.org: UN; 2011 [updated December 2011; cited 2012 20th April]; Adult literacy rate]. Available from: http://unstats.un.org/unsd/demographic/products/socind/.
41. WHO. Per capita recorded alcohol consumption (litres of pure alcohol) among adults (≥15 years). [Web Page]: World Health Organization; 2008 [updated 2008]; Available from: http://www.who.int/whosis/indicators/compendium/2008/3alu/en/index.html.
42. WHO. Alcohol, gender and drinking problems: perspectives from low and middle income countries. who.int: WHO; 2005 [cited 2011]; Available from: http://www.who.int/substance_abuse/publications/alcohol_gender_drinking_problems.pdf.
43. WHO, cartographer Total adult per capita consumption of pure alcohol (in litres), 2005. who.int: WHO; 2010.
44. WHO. Global status report on alcohol and health. Geneva: World Health Organization, 2011.
45. WHO. Global stratery to reduce harmful use of alcohol. who.int: WHO, Asia S-E; 2009.
46. WHO. WHO report on the global Tobbacco epidemic 2008. Geneva: World Health Organization, 2008.
47. Mattias Øberg AW, Maritta S. Jaakkolac, Armando Perugad, Annette Pruss-Ustune. Global estimate of the burden of disease from second-hand smoke. 2010.
48. Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. PLoS medicine. 2006;3(11):e442. Epub 2006/11/30.
49. theworldbank.org. GNI per capita PPP. [Web Page]: The World Bank Group; 2011 [updated 2009]; GNI per captia based on PPP]. Available from: http://data.worldbank.org/indicator/NY.GNP.PCAP.PP.CD.
50. theworldbank.org. GINI index [Web Page]: The World Bank Group; 2011 [updated 2009]; Available from: http://data.worldbank.org/indicator/SI.POV.GINI.
51. theworldbank.org. Measuring Inequality. [Web Page] web.worldbank.org: The World Bank; 2011 [cited 2012 25th April]; Explanation of decile dispersion ratio]. Available from: http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/EXTPA/0,,contentMDK:20238991~menuPK:492138~pagePK:148956~piPK:216618~theSitePK:430367,00.html.
52. Transparency.org. Corruption Preception Index. Transparency International; 2009; Available from: http://www.transparency.org/policy_research/surveys_indices/cpi/2009.
53. Transparency.org. How do you define corruption? [Webpage] http://www.transparency.org: Transparency International; 2011; Transparency

International`s definition of corruption]. Available from: http://www.transparency.org/news_room/faq/corruption_faq.
54. BBC-News. Corruption costs $1.6tn, UN says. [webpage] http://news.bbc.co.uk: British Broadcasting Corporation; 2009 [cited 2011]; Available from: http://news.bbc.co.uk/2/hi/8350239.stm.
55. Transparency.org. Global corruption barometer 2010. [Webpage] Transparency.org: Transparency International; 2010; The extent of corruption in the world]. Available from: http://www.transparency.org/policy_research/surveys_indices/gcb/2010.
56. Theworldbank.org. Control of corruption. [Web Page] http://info.worldbank.org: The World Bank; 2011; The World Banks definition of corruption]. Available from: http://info.worldbank.org/governance/wgi/pdf/cc.pdf.
57. theworldbank.org. Urban population (% of total). [Web Page]: The World Bank Group; 2009 [updated 2009]; People living in urban areas]. Available from: http://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS.
58. PRB. Human Population: Urbanization. [Webpage] prb.org: The Population Reference Bureau 2011; Informs people around the world about population, health, and the environment]. Available from: http://www.prb.org/Educators/TeachersGuides/HumanPopulation/Urbanization.aspx.
59. UN. World Urbanization Prospects The 2009 Revision - Highlights. esa.un.org: UN, 2010.
60. CIA. People and Society: Urbanization. [Webpage] https://www.cia.gov: Central Intelegence Agency; 2011; Available from: https://www.cia.gov/library/publications/the-world-factbook/geos/xx.html.
61. CIA. The CIA World Factbook. [Web Page] ww.cia.gov: Central Intelgence Agency; 2011 [cited 2010 15.10]; Copyright and contributors to CIA World Factbook]. Available from: https://www.cia.gov/library/publications/the-world-factbook/docs/contributor_copyright.html.
62. WHO. World Health Statistics 2010, Indicator compendium, Interim version. Geneva: The World Health Organization, 2010.
63. Mahapatra P, Shibuya K, Lopez AD, Coullare F, Notzon FC, Rao C, et al. Civil registration systems and vital statistics: successes and missed opportunities. Lancet. 2007. Epub 2007/11/22.
64. Attaran A. An Immeasurable Crisis? A Criticism of the Millennium Development Goals and Why They Cannot Be Measured. PLoS medicine. 2005;2(10):7.
65. theworldbank.org. World Bank Atlas Method. [Web Page] http://data.worldbank.org: The World Bank; 2011 [cited 2011 30.10]; The methodology of the World Bank Atlas Method]. Available from: http://data.worldbank.org/about/data-overview/methodologies.
66. Ayres RU, Warr B, International Institute for Applied Systems Analysis. The economic growth engine : how energy and work drive material prosperity. Paperback ed. Cheltenham: Edward Elgar; 2010. xxi, 411 p. p.
67. Vanoli A. A history of national accounting. Washington, DC: IOS Press; 2005. xx, 522 p. p.
68. LIS. Luxembourg Income Study Database [Web Page] http://www.lisdatacenter.org/: LIS; 2011 [cited 2011 30.10]; Luxembourg Income Study Database, methodology]. Available from: http://www.lisdatacenter.org/our-data/lis-database/.

69. UN. Economy and inequality - Gini index. [Web Page]: UN; 2009 [cited 2011 30.10.2011]; GINI index 1992-2007]. Available from: http://hdrstats.undp.org/en/indicators/161.html.
70. Transparency.org. The Corruption Perceptions Index (CPI) 2009. [Web Page] http://www.transparency.org/: Transparency International; 2010 [cited 2010 05.10.10]; The methodology of the Corruption Perceptions Index (CPI), that measures the perceived levels of public sector corruption in 180 countries and territories.]. Available from: http://www.transparency.org/policy_research/surveys_indices/cpi/2009/methodology.
71. Daniel Kaufmann MM, Aart Kraay. The Worldwide Governance Indicators: Methodology and Analytical Issues. World Bank Policy Research Working Paper. 2010(5430):31.
72. Christiane Arndt CO. Uses and abuses of governance indicators: OECD Development Center Study.; 2006.
73. Knack S. Measuring Corruption in Eastern Europe and Central Asia: A Critique of the Cross-Country Indicators. World Bank Policy Research Working Paper. 2006:64.
74. Thomas MA. What Do the Worldwide Governance Indicators Measure? 2006:51.
75. Daniel Kaufmann MM, Aart Kraay. The Worldwide Governance Indicators Project: Answering the Critics. World Bank Policy Research Working Paper. 2007:34.
76. UNIFEM. Women, Poverty & Economics. [WebPage]: UNIFEM; Women bear a disproportionate burden of the world's poverty]. Available from: http://www.unifem.org/gender_issues/women_poverty_economics/.

Appendix

Life expectancy at birth in years and life expectancy ratio 2011 (CIA)
Changes in life expectancy 1990-2000-2008 (WHO)
Arranged by LE at birth ratio (low-high)

	Life Expectancy at birth 2011 CIA			Changes in LE-ratio 1990-2008 WHO	
WHO member countries 2012 (South Sudan not included)	Male	Female	LE at birth Ratio (Female/Male)	LE-ratio	%
Kenya	57,49	51,78	0,9007	0,0312	3,12 %
Lesotho	41,18	39,54	0,9602	-0,0628	-6,28 %
South Africa	49,81	48,13	0,9663	0,0949	9,49 %
Mozambique	41,83	40,53	0,9689	0,1538	15,38 %
Zimbabwe	46,36	45,16	0,9741	0,1207	12,07 %
Namibia	51,61	50,86	0,9855	-0,0013	0,13 %
Swaziland	47,85	47,85	1	0,0492	4,92 %
Central African Republic	44,4	44,54	1,0032	0,0204	2,04 %
Botswana	61,72	61,99	1,0044	0,0282	2,82 %
Zambia	38,53	38,73	1,0052	0,0374	3,74 %
Afghanistan	44,19	44,61	1,0095	-0,0524	-5,24 %
Bhutan	65,33	66,97	1,0251	-0,009	0,90 %
Malawi	49,39	50,67	1,0259	0,0282	2,82 %
Côte d'Ivoire	54,64	56,28	1,03	0,0196	1,96 %
Equatorial Guinea	60,71	62,54	1,0301	0,0228	2,28 %
Cameroon	52,89	54,52	1,0308	0,0185	1,85 %
India	65,13	67,17	1,0313	-0,0301	-3,01 %
Kuwait	76,51	78,96	1,032	0,0288	2,88 %
Jordan	78,6	81,18	1,0328	0,0035	0,35 %
Nigeria	46,16	47,76	1,0347	0,0444	4,44 %
Gabon	52,19	54,05	1,0356	0,0158	1,58 %
Nepal	64,3	66,67	1,0369	-0,0159	-1,59 %
Sudan	50,49	52,4	1,0378	-0,0348	-3,48 %
Iraq	68,61	71,36	1,0401	-0,0914	-9,14 %
Ghana	58,92	61,31	1,0406	-0,014	-1,40 %
Benin	57,83	60,23	1,0415	0,0025	0,25 %
Uganda	51,66	53,81	1,0416	0,0497	4,97 %
Iran (Islamic Republic of)	69,65	72,72	1,0441	0,0286	2,86 %
Chad	46,67	48,77	1,045	0,0199	1,99 %
Qatar	73,66	77,14	1,0472	0	0,00 %
Algeria	72,35	75,77	1,0473	0,0176	1,76 %

Congo	52,9	55,43	1,0478	0,0332	3,32 %
Niger	51,39	53,85	1,0479	0,0689	6,89 %
Rwanda	55,43	58,14	1,0489	0,0298	2,98 %
Honduras	68,76	72,22	1,0503	-0,028	-2,80 %
Tunisia	73,98	77,7	1,0503	-0,0113	-1,13 %
New Zealand	78,43	82,39	1,0505	0,0192	1,92 %
Sao Tome and Principe	66,65	70,04	1,0509	0,0175	1,75 %
Dominican Republic	71,88	75,6	1,0518	-0,0128	-1,28 %
Saint Vincent and the Grenadines	71,82	75,54	1,0518	-0,0633	-6,33 %
Vanuatu	62,37	65,66	1,0527	0,0014	0,14 %
Angola	37,24	39,22	1,0532	0,1175	11,75 %
Guinea	55,63	58,6	1,0534	0,0532	5,32 %
Turkey	70,12	73,89	1,0538	0,0112	1,12 %
Guatemala	68,49	72,19	1,054	-0,0421	-4,21 %
Belize	66,44	70,05	1,0543	-0,0451	-4,51 %
China	71,61	75,52	1,0546	-0,0408	-4,08 %
Antigua and Barbuda	72,81	76,81	1,0549	0,0016	0,16 %
Jamaica	71,38	75,3	1,0549	-0,0447	-4,47 %
Israel	78,62	82,95	1,0551	-0,0106	-1,06 %
Peru	68,88	72,69	1,0553	0,0192	1,92 %
Iceland	78,53	82,9	1,0556	0,0425	4,25 %
Micronesia (Federated States of)	69,06	72,93	1,056	0,0175	1,75 %
Andorra	80,33	84,84	1,0561	0,0186	1,86 %
Liberia	40,71	43	1,0563	0,5485	54,85 %
Haiti	59,13	62,48	1,0567	-0,0289	-2,89 %
Pakistan	63,51	67,11	1,0567	0,0014	0,14 %
Burundi	56,21	59,43	1,0573	0,0217	2,17 %
Saudi Arabia	74,23	78,48	1,0573	-0,0112	-1,12 %
Sri Lanka	73,08	77,28	1,0575	-0,0424	-4,24 %
United Republic of Tanzania	50,56	53,51	1,0583	0,0004	0,04 %
Grenada	64,06	67,85	1,0592	-0,0135	-1,35 %
Malta	77,21	81,8	1,0594	0,0028	0,28 %
Sweden	78,59	83,26	1,0594	0,016	1,60 %
Marshall Islands	69,15	73,34	1,0606	0,0672	6,72 %
Australia	79,25	84,14	1,0617	0,0178	1,78 %
Brunei Darussalam	73,52	78,07	1,0619	0,0438	4,38 %
Cuba	75,19	79,85	1,062	0,0161	1,61 %
Libyan Arab Jamahiriya	75,01	79,68	1,0623	-0,0107	-1,07 %
Maldives	71,78	76,28	1,0627	-0,0791	-7,91 %
Nicaragua	69,35	73,75	1,0634	0,0742	7,42 %
Mali	50,21	53,4	1,0635	0,0281	2,81 %
Barbados	71,65	76,26	1,0643	0,0155	1,55 %
Oman	71,87	76,55	1,0651	0,0041	0,41 %
Madagascar	60,93	64,91	1,0653	-0,0325	-3,25 %

Canada	78,69	83,91	1,0663	0,0304	3,04 %
United States of America	75,65	80,69	1,0666	0,0314	3,14 %
Senegal	57,12	60,93	1,0667	-0,0332	-3,32 %
Yemen	61,01	65,08	1,0667	-0,0119	-1,19 %
United Kingdom	76,52	81,63	1,0668	0,0172	1,72 %
Denmark	75,69	80,78	1,0672	0,0314	3,14 %
Syrian Arab Republic	71,87	76,7	1,0672	0,0055	0,55 %
Thailand	70,77	75,55	1,0675	-0,0289	-2,89 %
Greece	77,11	82,37	1,0682	-0,0108	-1,08 %
Singapore	79,37	84,78	1,0682	0,0042	0,42 %
Gambia	52,05	55,62	1,0686	-0,014	-1,40 %
Democratic Republic of the Congo	52,58	56,2	1,0688	0	0,00 %
Netherlands	76,8	82,14	1,0695	0,0298	2,98 %
United Arab Emirates	73,65	78,78	1,0697	0,0027	0,27 %
Eritrea	59,71	63,9	1,0702	0,7579	75,80 %
Bahrain	72,67	77,78	1,0703	-0,0133	-1,33 %
Tuvalu	66,99	71,7	1,0703	0,0484	4,84 %
Norway	77,29	82,74	1,0705	0,0318	3,18 %
Cambodia	60,03	64,27	1,0706	-0,0321	-3,21 %
Papua New Guinea	63,56	68,06	1,0708	0,021	2,10 %
Costa Rica	74,96	80,34	1,0718	-0,0117	-1,17 %
The former Yugoslav Republic of Macedonia	72,18	77,38	1,072	0,0016	0,16 %
Ireland	75,6	81,06	1,0722	0,0321	3,21 %
Paraguay	73,19	78,49	1,0724	-0,0141	-1,41 %
Lebanon	71,15	76,31	1,0725	0,0381	3,81 %
Bahamas	67,48	72,43	1,0734	0,0211	2,11 %
Solomon Islands	71,14	76,37	1,0735	0,0013	0,13 %
Switzerland	78,03	83,83	1,0743	0,0446	4,46 %
Saint Lucia	73,78	79,27	1,0744	-0,0261	-2,61 %
Timor-Leste	64,92	69,75	1,0744	0,0194	1,94 %
Albania	75,28	80,89	1,0745	0,0335	3,35 %
Myanmar	61,17	65,74	1,0747	0,0148	1,48 %
Indonesia	68,26	73,38	1,075	-0,0121	-1,21 %
Mauritania	58,22	62,59	1,0751	-0,0179	-1,80 %
Viet Nam	69,24	74,45	1,0752	-0,0089	-0,89 %
Cyprus	74,74	80,38	1,0755	0,0028	0,28 %
Egypt	69,56	74,81	1,0755	0,0051	0,51 %
Burkina Faso	51,04	54,91	1,0758	0,0012	0,12 %
Mongolia	65,23	70,19	1,076	-0,022	-2,20 %
Panama	74,47	80,16	1,0764	-0,0259	-2,59 %
Fiji	68,18	73,41	1,0767	0,0057	0,57 %
Tonga	68,18	73,41	1,0767	0,1547	15,47 %
Austria	76,6	82,56	1,0778	0,0331	3,31 %

Mexico	73,25	79	1,0785	0,0197	1,97 %
Somalia	47,78	51,53	1,0785	0,0711	7,11 %
Italy	77,26	83,33	1,0786	0,0178	1,78 %
Cook Islands	71,46	77,13	1,0793	0,0041	0,41 %
Suriname	71	76,65	1,0796	-0,0248	-2,48 %
Comoros	61,07	65,94	1,0797	-0,0154	-1,54 %
Lao People's Democratic Republic	54,45	58,79	1,0797	0,0064	0,64 %
Togo	57,4	61,99	1,08	0,0069	0,69 %
Malaysia	70,56	76,21	1,0801	0,0031	0,31 %
Guinea-Bissau	46,07	49,79	1,0807	0,0578	5,78 %
Germany	76,26	82,42	1,0808	0,0054	0,54 %
Serbia	71,09	76,89	1,0816	0,0165	1,65 %
Ecuador	72,37	78,37	1,0829	-0,0076	-0,76 %
Dominica	72,61	78,64	1,083	-0,0131	-1,31 %
Djibouti	57,93	62,79	1,0839	0,0013	0,13 %
France	77,79	84,33	1,0841	0,0198	1,98 %
Saint Kitts and Nevis	70,33	76,25	1,0842	0,0066	0,66 %
Samoa	69,03	74,84	1,0842	-0,0283	-2,83 %
Belgium	76,06	82,53	1,0851	0,0173	1,73 %
Trinidad and Tobago	67,98	73,82	1,0859	-0,0303	-3,03 %
Bolivia (Plurinational State of)	64,2	69,72	1,086	-0,0286	-2,86 %
Morocco	72,42	78,68	1,0864	0,0079	0,79 %
Japan	78,8	85,62	1,0865	-0,0097	-0,97 %
Democratic People's Republic of Korea	61,23	66,53	1,0866	0	0,00 %
Philippines	68,17	74,15	1,0877	-0,0077	-0,77 %
Luxembourg	76,07	82,81	1,0886	0,0193	1,93 %
Spain	76,74	83,57	1,089	0,019	1,90 %
Venezuela (Bolivarian Republic of)	70,54	76,83	1,0892	-0,0414	-4,14 %
Republic of Korea	75,45	82,22	1,0897	0,0255	2,55 %
Portugal	74,95	81,69	1,0899	-0,0076	0,76 %
Uzbekistan	68,95	75,15	1,0899	0,0195	1,95 %
Chile	74,07	80,77	1,0905	0,0081	0,81 %
Uruguay	73,1	79,72	1,0906	0,0042	0,42 %
Argentina	73,32	79,97	1,0907	0,0042	0,42 %
Czech Republic	73,54	80,28	1,0917	0,0219	2,19 %
Sierra Leone	52,86	57,71	1,0918	0,1162	11,62 %
San Marino	77,39	84,52	1,0921	0,0419	4,19 %
Turkmenistan	64,94	70,95	1,0925	0,004	0,40 %
Finland	75,48	82,61	1,0945	0,0206	2,06 %
Bangladesh	57,57	63,03	1,0948	-0,0338	-3,38 %
Palau	68,08	74,54	1,0949	0,0395	3,95 %
Ethiopia	52,92	57,97	1,0954	0,0343	3,43 %
Georgia	73,41	80,45	1,0959	-0,0266	-2,66 %
Colombia	70,69	77,64	1,0983	-0,0063	-0,63 %

Bosnia and Herzegovina	74,92	82,34	1,099	0,0185	1,85 %
Cape Verde	68,27	75,05	1,0993	-0,0443	-4,43 %
Tajikistan	62,29	68,52	1,1	0,0379	3,79 %
Mauritius	70,53	77,65	1,1009	-0,0099	-0,99 %
Slovenia	73,25	80,84	1,1036	0,021	2,10 %
Croatia	71,72	79,18	1,104	0,0042	0,42 %
Romania	68,95	76,16	1,1046	-0,0104	-1,04 %
Kiribati	60,14	66,45	1,1049	-0,0447	-4,47 %
Monaco	76,03	84,09	1,106	0,0049	0,49 %
Brazil	68,43	75,73	1,1067	0,0111	1,11 %
Bulgaria	69,48	76,91	1,1069	0,0029	0,29 %
El Salvador	68,72	76,11	1,1075	0,0688	6,88 %
Armenia	69,06	76,81	1,1122	0,023	2,30 %
Slovakia	71,47	79,53	1,1128	0,0217	2,17 %
Republic of Moldova	67,1	74,71	1,1134	-0,0137	1,37 %
Poland	71,65	79,85	1,1144	-0,0074	0,74 %
Nauru	60,58	68,01	1,1226	0	0,00 %
Hungary	69,27	77,87	1,1242	0,0242	2,42 %
Kyrgyzstan	65,43	73,64	1,1255	0,0019	0,19 %
Guyana	62,44	70,38	1,1272	0,0818	8,18 %
Seychelles	68,33	77,85	1,1393	0,0699	6,90 %
Azerbaijan	62,53	71,34	1,1409	0,058	5,80 %
Lithuania	69,98	80,1	1,1446	-0,0303	-3,03 %
Latvia	66,98	77,59	1,1584	0,0052	0,52 %
Estonia	67,45	78,53	1,1643	0,0089	0,89 %
Kazakhstan	62,58	73,47	1,174	-0,0389	-3,89 %
Belarus	64,95	76,67	1,1804	-0,0511	-5,11 %
Ukraine	62,37	74,5	1,1945	-0,0397	-3,97 %
Russian Federation	59,33	73,14	1,2328	-0,0373	3,73 %
Montenegro	NA	NA	NA	0,0266	2,66 %
Niue	NA	NA	NA	-0,1299	12,99 %