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A BRIC IS SICK

HEALTH PATTERNS IN THE CONTEXT OF ECONOMIC DOWNTURNS IN RUSSIA FROM THE 2000'S

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ABSTRACT

Suspected associations between economic performance and health are contradictory in the literature. The present paper's purpose was to contribute to this ongoing discussion by analyzing health trends of the 2000's in the Russian Federation in the context of the economic downturns. Russia is a particularly interesting case study because of its financial instability and the devastated health status of the population. The thesis took a quantitative approach and analysis of statistical data was used as the main method for investigation drawing on Grossman´s health capital model, the counter-cyclical theory of stress, Wilkinson's income inequality hypothesis and the health lifestyle theory of Cockerham. The paper found tentative evidence of the adverse relationship between economic downturns and health. Based on the results it is concluded that Russia has to provide better quality data, invest in health infrastructure, and raise awareness regarding risky lifestyle choices and unhealthy diet if they want to tackle health consequences with adequate responses.

Key words: economic decline, public health, Russian Federation

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1. INTRODUCTION

1.1 Economic downturns and public health in the development context

Over the past 15 years, global health has gone through revolutionary developments. Having been a high profile issue on the political agenda, public health issues have received increasing global attention, multiplying academic efforts, raising awareness and making significant technological and scientific advances in achieving improved global health for a greater part of the world's population (Mathers & Bonita 2009, Fidler 2009).

The statement that developments in health have been revolutionary is not an exaggeration. Evidence for the radical transformation global health has gone through since the 1990's is abundant. Life expectancy at birth in countries with per capita income under 1025 USD is currently 60 years, and has improved eight years in the course of the last decade (WHO 2013). Additionally, the likelihood of a child dying before reaching the age five dropped by 35% between 1990 and 2010 worldwide (WHO 2013).

The progress made is also well illustrated by the Millennium Development Goals (MDGs), which since their formulation in 2000 have been key instruments to guide public health practitioners[1]. All of the eight development goals are interconnected and encapsulate public health issues in one way or another. Based on information from June 2012 complied by the Statistics Division of the Department of Economic and Social Affairs of the United Nations, which tracked the progress made against 16 targets in 9 regions, in case of 58 indicators of the total 144, targets are already met or are expected to be met by 2015 (UN 2012). MGD 4 and 5 (reduce child mortality and improve maternal health respectively), are the most important goals from a public health perspective, and together with MDG 8 (develop global partnership for development) are the only goals without showing stagnation or deterioration among the 8 MGDs[2].

Although these improvements are impressive, satisfaction must be tempered. Many public health researchers have articulated their concern that these achievements, however revolutionary they are, are fragile and not yet secure because of the current increasingly unstable financial environment.

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1 The MDGs were formulated at the UN Millennium Summit. They are statements, which the countries signing the declaration would like to achieve by 2015.

2 For more detailed data on progress, please see UN 2012.

They argue that the long-term projections of economic trends can easily reverse these gains in no time (Mathers & Bonita 2009, Fidler 2009, Benatar et al. 2011, Yang et al. 2010).

Economic downturns are feared to batter global health accomplishments, and they have been both becoming frequent and severe. Particularly in low- (LIC) and middle income countries (MIC), where due to lack of financial resources, health effects may not just be greater, as larger part of the population is poor and vulnerable (Cutler et al. 2002:280), but also quicker, as during economic downturn, the poor and vulnerable are the first to suffer because of the less resilient public services and governance system (Fidler 2009:12). They will be the first to lose their jobs affecting adversely their mental health, due to the unstable financial situation they are more likely to adapt risky or unhealthy lifestyles, and they will avoid seeking medical care being concerned about the costs (WHO 2009).

Although, as previously stated, many researchers warn about this potential health impact of financial downturns, previous studies evaluating the relationship between economic variables and health have presented mixed findings and offer incomplete understanding of this important relationship. Although concerns are supported by some empirical data showing strong and positive correlation between recession and poor health (Catalano et al. 2005, Clark & Oswald 1994, Cutler et al. 2002, McKee-Ryan et al. 2005, Murphy & Athanasou 1999, Gallo et al. 2004), a few analyst argue that any sudden economic change (positive or negative) has a negative effect on health (Stuckler et al. 2009), and several scholars studying high income and Asian countries speculate that economic downturn might actually lower mortality (Ruhm 2000, Ruhm 2008, Tapia-Granados 2005, Tapia-Granados 2008, Tapia-Granados & Diez Roux 2009, Gerdtham & Ruhm 2006). Some researchers even suggest that recession improves health, as people engage in less affluent and in more healthier activities: they do not drink alcohol and smoke less, cook home instead of eating at fast-food restaurants, and walk instead of taking their car, resulting in more exercise, less pollution and traffic accidents (Bougerol 2009, Cowen 2009).

If economic downturns indeed affect health dynamics negatively and threaten to reverse gains already made on the MDGs, understanding this relationship is a primary development concern, and is crucial to be able to tackle health losses and consequences with adequate policy responses. Additionally, the trend of economic instability is expected to continue and emerge over the next 20-25 years (Fidler 2009:2) presenting a potential long lasting impact on health and other aspects of wellbeing (Cutler et al. 2002:280).

1.2 Research problem

In the previous section the rationale for studying economic downturns and health dynamics was emphasized and the importance of the topic for development studies was pointed out.

In this paper it will be explored how economic changes from the 2000's affected health in the Russian Federation. The Russian Federation is a particularly important country to study the relationship between economic variables and health for three reasons. Firstly, due to problems of "macroeconomic stabilization in transition countries in general, and in response to currency crises and the current global economic crisis in particular" (Slay 2009:1), economic downturns have been becoming both repeated and severe since the 1990's. Secondly, The Russian Federation at the moment is undergoing a prolonged epidemiological transition accompanied by accelerating population aging and widening gap of life expectancy between men and women. Thirdly, due to the underdeveloped social protection system, social safety nets do not buffer the potential effects of the economic fluctuations.

These three reasons make the Russian Federation an ideal case study for quantifying the health impacts of economic downturns. Additionally, the Russian Federal State Statistics Service has time series information available on health, health care and economic outcomes on national and regional level.

1.3 Research aim, purpose and scope

The present thesis will contribute to the health economics literature by seeking to understand how health dynamics are affected in the context of economic downturns in the Russian Federation since the 2000's. As concluded in the previous section, suspected associations between health and economic decline remain poorly researched and contradictory. Nor is it clear under what circumstances economic downturns might affect health.

The present thesis' main aim is to contribute to this ongoing academic discussion by investigating health dynamics in the context of economic decline. Accordingly, the paper seeks to answer the following questions:

- What is the relationship between economic decline and health in the Russian Federation between 2000 and 2011?

- To what extent can the declining economic performance be responsible for the evaluation of the burden of diseases in the country?
- What is the relationship between economic performance and substance abuse?

Understanding how and why health status of the population is affected by an economic crisis is an extremely important step to be able to be able to tackle consequences with appropriate public policy responses. Accordingly, the research seeks to inform Russian health programming and policy makers by identifying risks, costs and benefits of policy choices.

As it is clarified by the above stated research questions, an important demarcation to be kept in mind is that it is not the purpose of this paper to reveal individual-level associations between macroeconomic stability and health. While the analysis, results and conclusions are generalized for the whole population, these cannot be taken for granted on the individual level.

Nor is it the paper's purpose to understand the "why" behind the phenomenon, or explore the causes and background mechanisms behind health or economic performance. Exploring the dynamics of these mechanisms goes well beyond the scope of this thesis and it is not the purpose of this analysis to touch up on that. The purpose of this paper is rather to seek to understand and answer the questions "how" and "to what extent" could the Russian population's health be affected by economic fluctuations since the 2000's.

Grossmann's health capital model will serve as the general theoretical framework, extended with important theories emerging from other studies of health economics: Wilkinson's income distribution hypothesis, the counter-cyclical theory of stress and Cockerham's "health lifestyle theory". These four theories will be the major underpins guiding the direction of the analysis. Additionally, the theory of the epistemological transition will help to contextualize and interpret the results emerging from the descriptive data analysis.

The research project employs a quantitative approach and official statistical data gathered from the Russian Statistical Office, World Bank Development Indicators Database, WHO Health for All Database and Food and Agriculture Organization of the United Nations will be analyzed according to the theoretical framework constructed.

1.4 Outline of the Study

The thesis is organized the following way: the next chapter discusses economic declines, health and recent epidemiological trends and the health care system in the Russian Federation. Chapter 3 drafts the link between economic crisis and health and outlines past and current research conducted. Chapter 4 discusses the theoretical framework. Chapter 5 describes the data, its collection, sources, reliability and validity. Additionally, chapter 5 discusses how the data has been analyzed, describes the design of the study, the methodology applied, and its pros and weaknesses. Chapter 6 discusses the analysis, while Chapter 7 summarizes the results and outlines possible areas for future research.

2. ECONOMIC DOWNTURNS, HEALTH AND HEALTH SYSTEM IN THE RUSSIAN FEDERATION

As it was highlighted in the introduction, two main reasons make the Russian Federation an "ideal" case for studying the effects of economic instability on health: 1.) Recent and repeated GDP declines and increasing financial instability on the course of 2000-2010, and 2.) The devastating status of the health of the population characterized by an ongoing epistemological transition and widening gap between male and female life expectancy. In this chapter I will turn to describe these two main characteristics. Due to the scope of the paper I will limit myself to conclusions emerging from the last 15 years.

2.1 The economic context

Two wide-scale economic crises have impacted the country since the 2000's. The first after the global financial crisis of 1998, and the second after the global financial crisis of 2008. The impact of these financial crises has been significant with only limited periods of economic recovery between them.

Between 2000 and 2002 GDP growth rate dropped by 4,9% (World Bank 2013a), which can be contributed to the extended effect of the 1998's East Asian financial crisis. As the crisis kicked in, world oil prices started to fall. This eroded the Russian current account surplus, which combined with budget deficit, led to the devaluation of the rubble, increased private and public debt, and collapsed the banking sector (Popovich et al. 2011:5). After the "rubble crisis domestic production recuperated and increased by the end of 2002 (Popovich et al. 2011:5). 2002 and Vladimir Putin's early years of presidency brought an intervening mild period of recovery, and macroeconomic situation improved a bit although not steadily, lasting until 2007 (World Bank 2013a). In 2007, GDP started to drop again due to the financial crisis of 2008. By 2009 GDP fall again with 13%, hitting

its negative record in many years (World Bank 2013a). Based on data from 2010 and 2011 GDP growth rates are still modest and have not recuperated yet (World Bank 2013a).

A closer look reveals additional weaknesses (World Bank 2013b). Russia is very strongly dependent on its natural resources. High oil prices hit a record high in 2011, and while this translates into "strong export receipts, buoyant fiscal revenues, and rapid increases in public wages and transfers", the "non-oil current account deficit and non-oil fiscal deficit remained close to record highs", highlighting and emphasizing how dependent the country's economy on oil is (World Bank 2013b:3).

Although poverty rates were reported to stagnate or decline moderately, due to extensive droughts food prices increased with 17,5% between 2010 and 2011 (World Bank 2011:7). This event had an important effect on low-income households due to their "higher food consumption and limited possibilities for substitution" (World Bank 2011:10). Indeed, GDP in rural regions is only about one third or half of that in big cities (like Moscow and St. Petersburg) (Rosstat 2013).

Let's now turn our attention to the economic stability and well-being not just in absolute, but in relative terms. In 2002 the government declared its aim to halve the number of people living in poverty by 2007 (Shaban et al. 2006:110). Thanks to these efforts and the recovery of the early-mid 2000's, poverty rates in the cities indeed started to fall rapidly. Unfortunately this was not true for rural areas where poverty declined with only half of the pace (Gerry et al. 2008:593), further widening the urban–rural divide to the extent that by the mid 2000's "poverty had become a largely rural phenomena" primarily driven by the working age population of the country (Gerry et al 2008:606).

According the result from the 1994-2007 Russian Longitudinal Monitoring Survey[3], in 2006 36% of the respondents reported that they were concerned about not being able to provide themselves with bare essentials in the next 12 months (Denisova 2009:342). This shows a considerable decline from the 49,7% reported in 1994, but still is a high number. Additionally, according to data form the 2006 round of the Survey, vast majority (49%) of respondents reported that they feel their economic status have worsened during the transition period, and only 19% think that they life improved as a result of economic and social changes (Denisova et al. 2010:260).

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[3] The RLMS is a series of nationally representative surveys monitoring the health and economic welfare of households and individuals in the country. For more information, please see http://www.cpc.unc.edu/rlms.

2.2 The health status and the ongoing epistemological transition

Many different public health indicators can be used describe the health status of a population. Life expectancy at birth and mortality are perhaps to two most widely known and used among public health practitioners.

Figure 1 shows life expectancy at birth in Europe highlighting with different colors the different values. While life expectancy at birth was 76,62 on average in 2011 in the European region (WHO 2013), it was 67 years on average in Russia, with a striking 12 years difference between men and women (Rosstat 2013). This makes Russia the only country in Europe, where life expectancy stagnates below 68 years.
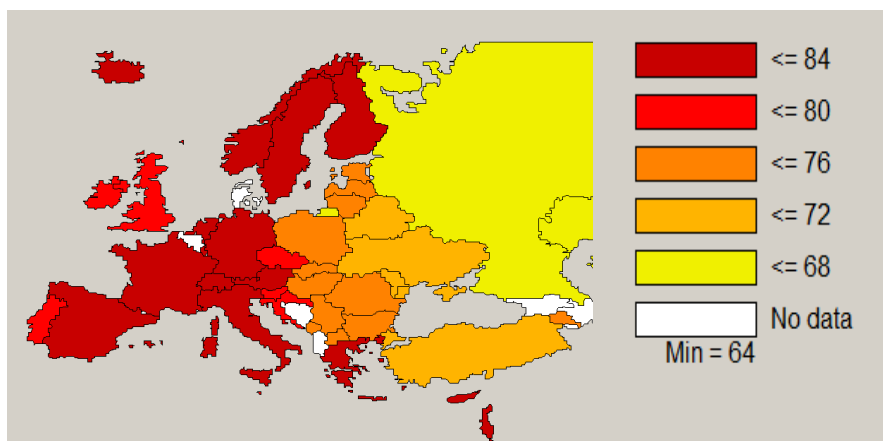

Figure 1: Life expectancy at birth in Europe (Source: WHO 2013)

National mortality and morbidity data for the Russian Federation according to the literature is reasonably reliable and complete (Popovich et al. 2011:9). According to data from the Russian Federal Statistic Office, the adult mortality rate[4] was 13,5 in 2011 (Rosstat 2013). The high increase in male mortality started with the fall of the Soviet Union (Mathers & Bonita 2009:29), and scholarly literature agrees that one possible explanations behind could be the high incidence of working age male alcohol consumption (Leon et al. 1997*). Adult mortality rate in 1990 was 11,2, increasing sharply after peaking at 16,4 in 2003, when it stated to fall slightly reaching 13,5 in 2011 (Rosstat 2013). This data indicates that mortality rates have just started to slowly recover after the increase following the dissolution of the Soviet Union in 1991.

Life expectancy at birth stagnates with a very mild increase from year to year. By 2030 it is

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4   Probability of dying between 15 to 60 years per 1000 population, both sexes

estimated to reach 71 years from the current 67 years (Rosstat 2013). Fertility rates are also observed to decline although in a slower pace: total fertility rate was 1,9 per women in 1990, while in 2011 it was 1,6 (Rosstat 2013).

While health indicators focusing on survival and morbidity are the simplest comparable measure for the health status of the population, they do not capture health as a multidimensional attribute reflecting the various states an individual can have (Mathers & Bonita 2009:4). The global health concept of "burden of disease" on the other hand gives a clear picture on leading causes of illness, disabilities, injuries and deaths (Skolnik 2007:25). The evaluation of the "burden of disease" involves complex economic and social changes, and scientific and technical progresses ongoing in a country.

The health impact the economic downturns can have on the Russian population is guided by the health transition the country currently faces. The theory of health transition is a complex change in the patterns of diseases and health indicators, a combination of demographic and epidemiological transitions (Omran 1971:510). Changes in demographic patterns due to modernization (like population growth, aging, urbanization, industrialization, technological and socio-economic improvements) have major impact on health. The theory of demographic transition supposes a shift in demographic patterns: from high mortality and fertility (stage one) to low mortality and fertility (stage four), with a population growth and aging in between, as mortality declines first (stage two and three) (Skolnik 2007:35). The population structure on the course of the health transition thanks to the developments and gains in life expectancy gradually and slowly shifts from being skewed to the young to being skewed to the elderly (Odberg Petterson 2012).

The theory of epistemological transition is closely related to the above described theory of demographic transition. The major argument of the theory of epistemological transition is that demographical and socio-economic patterns, such as population growth, mortality and fertility rates and life expectancy are with crucial influence on the evaluation of the burden of communicable and non-communicable diseases (Odberg Petterson 2012). Historically, there has been a long term shift in mortality and disease patterns- the primary causes of death and morbidity are gradually shifting from pandemics or infectious (communicable) diseases to chronic or degenerative (non-communicable) diseases creating a *"double burden"* of these diseases (Omran 1971:511-516). In this long transition, high mortality and fertility rates slowly decline, whereas life expectancy slowly starts to rise and chronic or non-communicable diseases displace infectious diseases (Skolnik 2007:35-36).

The first period of the health transition historically includes a first phase with high fertility and mortality rates. Mortality rates are observed to decline first, with the population increasing, and as fertility rates start to decline afterwards, the population growth slows down as well (Skolnik 2007:35). The above described mortality and fertility data suggest that Russia is at the beginning of the health transition and has still a long way to go forward[5]. Mortality rates are expected to further decline as well as fertility rate are expected to fall considerably. These effects of the ongoing health transition have to be taken into account when evaluating the effect of the economic fluctuations on health dynamics.

After reviewing the ongoing epistemological transition and health status, I will provide a brief description of the health system. I will highlight the challenges and areas that are supposed to have importance in relation to economic downturns.

After the fall of the Soviet Union in 1991, the country inherited an extensive and centralized health system, which was quickly reformed by adapting a mandatory health insurance model in 1993 (Popovich et al. 2011:XIIV). Although the system has evolved since then, the legacy is essentially the same: "a highly centralized system focusing on universal access to basic care" (Popovich et al. 2011: XIIV).

Although the main aim is to provide universal and free access to health care- guaranteed as a constitutional right in the Constitution of 1993 (Aarva et al. 2009), health financing generally struggles with shifting to a system of "insurance medicine". The right to access to free health care is determined by the state medical benefit package (Popovich et al. 2011: XVII). The package has two components: 1. Basic care, covering everyday health needs (financed by budgetary funds), and 2. Budget package (covering high technology, outpatient pharmaceutical costs and emergency care) (Popovich et al. 2011: XVII).

The range of benefits covered by the state is comprehensive, without any volume limits and only few services are provided for a fee, which is beyond the scope of the above described guaranteed "basic" care (Popovich et al. 2011: XVII). Due to this reason although private payments have been observed to show a slight increase in recent years, especially in big cities, they still are a very tiny

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[5] Based on the fact that mortality is lower, while fertility rate and life expectancy are higher in economically more developed countries. For comparison: Adult mortality rate in Austria was 9 in 2011, while in Sweden was 10 (World Bank 2013a). Life expectancy at birth in Austria is 81 and in Sweden is 82 (WHO 2013). Adolescent fertility rates in HICs are approximately half of the value in Russia.

fraction of health expenditures (Popovich et al. 2011). Budgetary response of the government during economic declines for this reason still has a considerable impact.

Although services are free of charge, informal payments are frequent in all Central and Eastern European countries of the former Soviet bloc. Under-the-table payment have their roots in the soviet socialized medicine period when hospitals were poorly equipped, and medical doctors received very inadequate pay (Barr & Field 1996, Gaal & McKee 2005, Danishevski et al. 2006, Gaal et al. 2006) and these payments represented significant contribution to the otherwise very underpaid medical staff (Ensor 2004).

3. PREVIOUS EVIDENCE ON ECONOMIC DOWNTURNS AND HEALTH

In this section the research problem will be connected to the ongoing scholarly debate, and it will be positioned within the existing literature about economic downturns and health in order to add, or fill in possible gaps and identify the research front.

Economies generally oscillate between cycles of growth and decline of variable durations (Falagas et al. 2009:1128). These relatively smooth financial cycles, sometimes are interrupted by periods of economic crisis. Economic crises- as defined by Cutlet et al. (2002:281): are the most "severe and concentrated economic downturns". The present thesis will employ this definition, and for this reason, economic crises are also included in the literature review.

There is a growing body of research looking at the health implications of financial crises and economic downturns. The scope of these studies ranges from international crises to local crises or downturns of different scale and they have been carried out in high income (HIC), middle income (MIC) and low income countries (LIC). As it was already highlighted in the introduction, the findings of these researches are not uniform, and some find that economic downturns affect health adversely, while others argue reverse affect. Based on the systematic literature review it is concluded that suspected associations although have received scholarly attention, remain poorly studied and unclear.

There is limited number of library-based papers written with the intention of summarizing the empirical research concerned with the health effects of economic decline. Those conducted focus on

either one aspect of health or one aspect of economic instability in their assessment. Consequently, although they offer important insights, they fail to give an overview of all the studies conducted. In continuation findings emerging from these desk review studies will be reviewed.

Falagas et al. (2009) review literature evaluating the relationship between economic variables and mortality. Eleven studies were selected to be included in this review article- studying countries from all over the world. Falagas et al. report that all-cause mortality increased in seven out of eight studies, cardiovascular mortality increased in six out of seven studies, and mortality because of respiratory infections, chronic liver disease, suicides, homicides and infant mortality were also found to be associated with economic declines. Mortality from transport accidents was found to be the only cause specific mortality that decreased (in five out of six studies).

Catalano et al. (2011) summarize associations between economic fluctuations and incident of illnesses focusing on risk factor and net effect studies of general and cause-specific mortality and morbidity. The risk factor researches seem to converge in their findings: undesirable financial experiences increase the risk of morbidity. Results from net effect researches on somatic outcomes however remain mixed. Interestingly articles reviewed concerning violence on the other hand seemed to depend on the extent of economic decline: they suggest countercyclical associations with shallow economic declines and procyclical effect with steeper declines.

Stuckler et al. (2009) reviewing evidence from the previous three global financial crises (Great Depression, post-communist crisis of 1990's and the East-Asian crisis of 1998) find that rapidity of the economic changes appears to be the most important hazard for populations' health, not the direction of the change. Additionally, the extent to which economic changes impact health dynamics were found to depend on: risks factors, social cohesion (informal welfare), and social protection (formal welfare).

Suhrcke & Stuckler (2012) in their study performed a systematic literature review focusing on the evaluation of burden of communicable diseases after subsequent periods of crisis. Of the 37 studies reviewed, in total 30 found evidence that incidence of infectious diseases increase during recession. This is speculated due to worsening living conditions and decreasing access to therapy and treatment. According to the findings emerging from the literature reviewed, infants, the elderly, migrants, homeless persons and prison population are the most affected. The study concludes that budgetary response of the government has considerable effect in mitigating effects.

In continuation, evidence arising from individual studies will be reviewed. Several online search engines were used to identify publications assessing the effect of recession on health and references of the papers identified were also traced to be able to give a comprehensive overview. Based on the systematic literature review conducted before the research has begun, findings differ according to income groups. I will argue that evidence from HICs differ from that in MICs and LICs. The supposed main reason behind the difference is the well-developed safety nets in more affluent countries, which are speculated to buffer the impacts of economic downturns. For this reason the literature review will be organized according to evidence from 1. HICs and 2. MICs and LICs, and 3. the Russian Federation.

3.1 Evidence from high income countries

Much of the literature on the relationship between economic conditions and health has been concentrated on high income countries. To set the context for recent research, it is important to mention Brenner (1973), who studying the Great Depression argued for an inverse relationship between economic fluctuations (measured by changes in unemployment rates) and health (measured by infant and maternal mortality rates) and was one of the earliest researchers studying the impact of economic declines on health. Although Brenner's findings have been long disputed by many scholars, it laid down the foundations for research between economic variables and health. Some of his critics argued that there is little evidence for such relationship (Wagstaff 1985, Mc Avinchey 1988); while others argued against the findings themselves (Gravelle et al. 1981, Joyce & Mocan 1993).

Some studies find adverse effect of economic downturns on health. Deaton and Paxson (1999) find cyclical increases in mortality using data from panel of aggregate birth cohort from 1975 to 1995. Ruhm (2000) on the other hand, using longitudinal state level data from the United States for the period 1972-1991 finds a strong inverse relationship between unemployment and macroeconomic conditions. He argues that time is a large contributor in this, as with rise in unemployment, people have more time to seek medical care and live healthy lifestyles.

Unlike Ruhm, Economou et al. (2008) does not uncover a strong negative association between national unemployment rates and mortality levels. Using fixed-effects model to control for unobserved time-invariant characteristics, they find that economic downturns harm health in the 13 European Union countries studied.

Svensson (2007) explores the relationship between business cycles and heart attack mortality in 21 Swedish regions during the period 1987–2003. Results find that the business cycles have a significant, counter-cyclical effect in case of working age population between 20 and 49 of age; however the effect is insignificant on the overall rates of incidence, mortality and lethality.

Contrary is the conclusion Stuckler et al. (2008) reaches, who using longitudinal multivariate regression analysis of cardiovascular disease found that banking system crisis increases population heart disease mortality rates by 6.4%. They also point out that consequences can be more severe in developing countries.

These evidences, emerging from high income countries, although offering valuable insights, it is important to note, that it is unclear whether they are applicable to MICs and LICs. One of the most important arguments against is, that in HICs the well-developed social safety nets and reliable governance system buffer possible health consequences.

3.2 Evidence from middle- and low income countries

Evidence from middle and low income countries generally suggest that the intuition that health declines with macroeconomic instability is right.

Khang et al. (2005) studying the economic turmoil in South Korea in the late 1990's found relatively small effects on mortality. All-cause mortality continued to decrease during the economic downturn. Remarkable increase is reported in suicidal death, while homicide, pneumonia and alcohol abuse increased slightly. Significant decrease in transport accidents is also found.

Two important studies emerge from Latin America, both finding that economic turmoil had a negative effect on health. Paxon and Schady (2005) examining child health on the course of the financial crisis of the 1980's in Peru, have found that infant mortality increased with approximately 2,5 percentage points during crisis years, totaling a 17000 excess of infant death. Although information on the economic situation of individuals was limited, the study speculates that decrease in public and private expenditures contributed the most significantly to the observed increase.

Cutler et al. (2002) studying mortality rates in Mexico also have found that economic declines have a devastating effect on the very young. Analyzing mortality rates with special attention to vulnerable population (the elderly and young), the study found that mortality rates show a counter cyclical relationship with economic decline. Mortality rates were found to be 5-7% higher during

the 1995-1997 crisis years. The effects of health were found to be directly related to the extent of the economic decline. The tentative conclusion of the study corresponds to the finding of Paxon and Schady (2005). Reduced incomes and public health expenditures are speculated to place a greater burden on health, effecting mortality rates adversely.

More important for this thesis is the evidence from previous studies concentrating on the Russian Federation. As according to World Bank classifications, the Russian Federation is considered to be one of the 86 countries falling under the middle-income range set (World Bank 2013a) conclusions emerging from previous studies will be summarized here.

Lundberg et al. (2007) in a cross-sectional study analyze perceived control and self-rated health in two middle aged population samples from Sweden and Russia. They result support the view that perceived control strongly influences health. Both perceived control and self-rated health are reported to be significantly lower in Russia than in Sweden varying by the socio-economic parameters. Perceived control is found to be able to mediate the associations between socioeconomic status and health.

Many of the studies conducted in Russia concentrate on the immediate transition period, the aftermath of the dissolution of the Soviet Union in 1991. Special attention and emphasis is given to the role of abusive alcohol consumption as the most important impact on mortality. The literature overwhelmingly agrees that hazardous drinking is an important cause of mortality, especially among working age male.

Perlman (2010) using data collected on the course of the Russian Longitudinal Monitoring Survey finds that economic declines on the course of 1994-2004 were associated with temporary decrease in heavy drinking, while consumption of home distilled spirit increased gradually mostly among socioeconomically disadvantaged groups.

Denisova (2009) also utilize data from the Russian Longitudinal Monitoring Survey. Results show the importance of the relative, non-income status on mortality. Labor market behavior and occupational mobility were also found to be with significant importance in terms of mitigating harmful effects of economic decline. Empirical evidence point out the determinant role of smoking, which is an interesting finding in the Russian context, where usually the role of alcohol is emphasized.

Findings emerging form the study of Horvath et al. (2012) analyzing the impact of the economic decline on human development indicator of Central and Eastern Europe and the CIS region coincide with the above studies. They emphasize the adverse impact of economic decline especially on income poverty and on the poorest. Results suggest increase in suicide and homicide rates, as well as sexually transmitted diseases among youth groups

4. THEORETICAL FRAMEWORK

In this chapter the building blocks of the theoretical framework will be presented as well as the most important concepts will be described.

First, it is important to define the concept of economic declines. Among economic researchers the most widely spread definition is the definition of the National Bureau of Economic Research (NBER), which defines economic downturns as ''a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales'' (Suhrcke et al. 2012:2). While this is a useful definition, this paper will take a broader approach, and economic downturns will be measured in terms of rapid GDP per capita decrease that goes beyond the routine changes.

A general theoretical framework underlying the empirical model of the thesis will be constructed using Grossman's human capital model of the demand for health (1999) complemented with additional interpretations and theoretical perspectives emerging from previous studies. Grossman's model, views health as "one of the component of human capital stock" that generates "healthy time as its output", drawing an important difference between healthy life time as output, and medical care as one of the many inputs of health capital. The health capital stock- or amount of health possessed- can increase or depreciate/decrease according to the impact of the inputs, or "choice variables introduced". A person inherits an "initial stock of health" that depreciates with age (later stages in life with an increasing rate) until it falls behind a critical level, when the individual dies. On the other hand, investments - produced by "household production functions that relate choice variables as inputs to different outputs in health"- such as medical care, diet, sport, substance abuse, or risky lifestyles can increase or decrease the agents' life span. Additionally, this production function is affected by personal characteristics, which determine the efficiency- e.g. the amount of health output gained from a given input or choice variable (Grossman 1999:1-6).

Two inputs generated by the economic crisis will be introduced as part of this general theoretical framework, which via their high depreciation rates of health capital are predicted to decrease the population's life span: income and substance abuse as lifestyle choice.

4.1 The income theory

The first variable introduced to the general theoretical framework will be real wages, which when decreasing it is speculated to decrease investments in health, and as consequence health capital is expected to deteriorate.

Reduced income and rising prices not only means that people will have less means to invest in their health capital, it will also mean that they will have to invest in managing their lost job or income- consequently affecting other inputs of the model also. The objects of choice (so called "commodities" in Grossman's model) are the pleasures that consumers produce with inputs from market good and services and their own time (Grossman 1999:2). For example using sport equipment and their own time they produce recreation increasing their health capital (Grossman 1999:3). In declining economies, as the money available is reduced, individuals also rearrange their choice variables according the personal preferences. They might produce fewer investments in salutary behaviors, or contrary, they might consume less risky goods and services- depending on the hierarchy of their preferences.

Consumption, health related costs, recreational activities and medical spending are four types of investments that following the countercyclical variant of the effect budget mechanism (Catalano et al. 2011:434) are speculated to be cut back[6]. As argued by Zohoori et al. (1998) this results in unhealthy diet, reduced food consumption and nutrition levels. (When coupled with inflation and high food prices, this is especially the case (Lock et el. 2009)).

The effect of income on health is important not just in absolute terms (via the direct effect of income loss on the health capital of the individual) - as Grossman argues, but also in relative terms. Following Wilkinson's income distribution hypothesis, I argue that losses of income do not just affect health on the individual or on the household level, but also on the level of the society in general via complex societal mechanisms as the burden of relative deprivation increases when

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[6] It is important to note that there is a second, procyclical theory of effect budget mechanism, that on the other hand speculates that in contracting economies, as time at work is reduced, people would invest in more salutary activities. However our hypothesis will be deducted using the counter-cyclical notion (Catalano et al. 2011:434-5).

incomes fall (Wilkinson 1996).

4.2 Economic decline and substance abuse- the lifestyle choice to mitigate the effects of stress

Many medical and sociological studies of health determinants underscore the importance of unhealthy lifestyle, as one of the most important factors behind the deterioration of health (Denisova 2009:337). For this reason, the second input to be introduced and tested is the role of unhealthy lifestyles, which is suspected to decrease the populations' health capital at an increasing rate. The effect of smoking, alcohol and drug consumption on health will be tested, as the main outcome of somatic, psychological and behavioral illnesses of declining economies.

Two lines of theories can be distinguished when it comes to stress mechanism and health related factors of the economic downturns. First, the procyclical theory of stress assumes that occupational stressors and risks (high job demands and low control) increase the likelihood of cardiovascular diseases and other health outcomes. Consequently, they speculate that economic downturns, although might increase unemployment as employers are urged to cut back on salary spending, also change psychological time demands. As time spent at work is reduced, people regain time control over their life and this consequently reduces the prevalence of stress related illnesses (Karasek & Theorell 1990, Moen et al. 2013).

The counter-cyclical theory on the other hand stresses the importance of financial and employment insecurities as the most important source of stress. Walberg et al. (1998) and Denisova (2009) present macro- and micro-level evidence respectively that in the Russian context the counter-cyclical mechanism of stress dominates. However they do not test it in the context of economic downturns.

Vinokur et al. (1996) argues that counter-cyclical effect of stress could be further aggravated, as financial insecurities additionally increase the likelihood of experiencing stress in other aspects of life, especially in relationships. Based on longitudinal data from 815 recently unemployed, their research found that insecure financial situation produced withdrawal of social support and increased social undermining between partners.

These mechanisms I believe have an increasing importance on life satisfaction and depressive

symptoms in the Russian context due to existing cultural and social norms. In Russian society, men are seen as the principal breadwinners of the family, whereas women in many cases stay at home to take care of household duties and dependent family members. Losing the status of main breadwinner of the family threatens the identity of unemployed men. Many scholars have noted in their research that Russian men appear to be experiencing extreme difficulties when it comes to coping with economic change and unemployment (Kiblitskaya 2000; Rotkirch 2000).

The stressful situations people can find themselves in as a consequence of the economic fluctuations, is not only important on the individual level, but also as a group measure. Relative deprivation is an important vulnerability factor and can serve as an explanation for many diseases persisting as a consequence of lifestyle choices at the bottom of the social scale (Wilkinson 1996). The development literature points out that people with low status not only have limited choices to live the life they truly value, but they also tend to participate less in the society (Sen 1999). As Wilkinson argues, this is not only important, because shapes inequalities, but also has a negative effect on social relations. The more egalitarian a society is the more solidarity people demonstrate towards each other (Wilkinson 1996). In the Russian context due to the lack of developed social safety net, these impacts are not buffered through government institutions and policies. This adds in as an important input decreasing the efficiency of the household production function of health capital.

These arguments ties well to the "health lifestyle" theory of Cockerham (2002:44), who departing from Max Weber's "lifestyle theory" argues that health lifestyles are "collective patterns of health related behavior based on choices available to people according to their life chances". According to Cockerham, following Bourdieu's explanation of "pure rational choice", people in Russia may have control over their choices, but not over "the social and psychological conditions channeling those choices into certain direction" (2002:44). Reaching back to Durkheim's ideas Cockerham argues that although the Soviet Union and its ideology is part of the past, due to the over-regulation that existed, the fall of the system and the emergence of a different social structure did not necessary mean new ideological orientation. On the contrary, people- especially those who are disadvantaged by the new system or find themselves in financially insecure situation- remain attached to the former norms and values (2002:44-45). Unhealthy lifestyle practices (especially drinking) is a habitus, a "sense of the game", that derives from both the socialization in the past Soviet State and from life experiences (2002:45). The working class practices (especially heavy alcohol consumption) have become a widespread routine to mitigate stress.

Overall, the second building block of the theoretical frameworks guides how important the role of substance abuse as the "mainstream" lifestyle choice to mitigate stress on health is in the context of economic downturns.

5. DATA AND METHODOLOGY

5.1 Methodology

The methodology for the thesis concentrated around three major stages: 1.) initial preparation and planning activities, 2.) literature review, and 3.) collection, assessment and analysis of data. As primary data and statistics will be used for the analysis, the last stage draws heavily on quantitative methods, whereas the first two stages are more of qualitative in nature.

As part of the second stage of my methodology, I also consulted with medical doctors. These conversations were also professional interactions, but lacked the carefully structured questioning and listening approach that defines interviews (Kvale 2007:10). Mikkelsen states that one of the possible weaknesses of this method is that different knowledge is obtained from different sources, which could impose difficulties on the further analysis (Mikkelsen 2005). This was not regarded as a methodological issue in this case. Following Kvale's approach, who defines research interviews as interactions between the interviewer and the interviewee with the primary objective of constructing knowledge (2007: 2), through these conversations I gained additional insights into the research area, and the possibility of getting to know different point of views was a strength rather than disadvantage. The purpose of these interviews and discussions was twofold. Firstly, to get a deeper understanding the causes and consequences behind the diseases that economic instability and risky lifestyle can cause. Secondly, additional propose was to get an "insider", health practitioner perspective on the research area.

As for the third and most important stage: the collection, assessment and analysis of data; quantitative analysis was used as a tool of investigation drawing on variables collected from the Russian Statistical Office (2013).

5.2 Description of data and its sources

The empirical basis for the thesis will be aggregate and case specific health, economic and unemployment data from the time frame 2000-2011. Morbidity data was collected from WHO

Health for All Database (WHO 2013), while socio-economic data was taken from the database of the Russian Statistical Office (Rosstat 2013), the World Bank Development Indicator Database (World Bank 2013a) and from the Database of the Food and Agriculture Organization of the United Nations (FAOSTAT 2013). Appendix A describes the data used in the analysis. The data will be used to analyze descriptively the possible impacts of the economic downturns on health patterns.

Socio-economic data is expressed in US dollars. Morbidity data includes incidence per 100.000 people to correct for population changes. Data was collected from both the Russian Statistical Office and from the WHO Health for All Database. After cross-checking the values, the WHO Data seemed more reliable in case of specific diseases and was decided to be used in the cause specific analysis. Data from the Russian Statistical Office had missing values for four years in the case of socially significant diseases (like Tuberculosis and Sexually Transmitted Diseases).

The Food and Agriculture Organization of the United Nations collects trade data for import and export values by cooperation with the government that supplies most of the information (FAOSTAT 2013). Data for socio-economic indicators are from World Bank's national accounts data files relying on official sources (World Bank 2013a).

WHO collects the data featuring in the Heath for All Database from various sources (WHO 2013): 1.) Directly from countries, 2.) From technical units collecting statistical information within their own field (this is mostly relevant in the case of incidence of infectious diseases, immunization and mortality data by cause age or gender, and lastly 3.) Other agencies and institutions are also an important source of secondary data.

Since the data depends on the health recording and processing system of Russia, so does the accuracy of the data used. Incomplete registration and consequent underestimation for this reason is suspected to affect the reliability of the data. Data on the incidence of communicable diseases however is collected by the Communicable Diseases unit of WHO and in general are reported to be relatively complete and accurate (WHO 2013).

Like in case of several studies examining the health impact of economic downturns unemployment and GDP per capita will be used as the indicators of the economic performance and aggregate or cause specific morbidity as the indicator of the current state of health. It is important to note, that while unemployment and GDP per capita can show if morbidity rates are relatively high or low compared to the peaks and falls in unemployment and economic output, they do not access if

mortality increases after GDP falls. Additionally, these measurements are very far from capturing the effect people might experience during recession. Especially because as it was established in the theoretical framework, relative income measures can have just as much effect on health and GDP does not capture the possible effect of rising inequalities within the society.

While unemployment is a more relevant and widely available measurement to capture the possible effects of economic downturns, and is "more closely associated with short term changes in health than other economic indicators" (Stuckler et al. 2009:143), it still leaves the gap of capturing relative deprivation that poor and vulnerable people might experience due to raising inequalities. As several studies have pointed out, perceived control and deprivation could have just as much effect on health than other income based measurements.

Measuring poverty rates and income concentration and how they evaluated over time in Russia is very problematic due to three main reasons. 1.) Due to ideological reasons, poverty was declared dead during the Soviet era, and decent poverty measures were only implemented in the early 1990's. 2.) Income data provided by the Russian Statistical office (Rosstat 2013) is incomplete, and there are almost year-to-year changes in the breakdowns and measurements. And lastly, 3.) It is impossible to capture black market contribution or in terms of inequality measuring accurately the distortion caused by the concentrated wealth of business and oil oligarchs.

I will use the GINI inequality index obtained from the database of the Russian Statistical Office to capture the eroding effect of inequality. The GINI index is a measurement indicating the deviation of the distribution of income or consumption from a perfectly equal distribution (World Bank 2013a), and for this reason it is not a very sensitive indicator showing only very moderate changes over time. Still it was decided to be the best proxy available for measuring inequality. However, due to the above mentioned limitations in income reporting, it is suspected that the GINI index underestimates the real gravity of inequalities and the possibility of bias shall be kept in mind when interpreting the results.

As it was pointed out in numerous previous studies, to capture the national production and drinking habits of alcohol in Russia also hides considerable challenges due to wide spread consumption of non-purchased alcohol. "Samogon" (home distilled spirits) and surrogate alcohols (after shaves, colognes or industrial alcohol) are both wide spread and potentially very harmful (Perlman 2010, McKee et al. 2005, Leon et al. 2007, Zaigraev 2004). In this study three indicators will be used as proxy for alcohol consumption: 1.) Pure alcohol consumption, litres per capita for age 15 and above

form the WHO Health for All Database (WHO 2013), 2.) Road traffic accidents involving alcohol per 100000 population form the WHO Health for All Database (WHO 2013), and 3.) the import value of distilled alcohol and tobacco (in 1000 US dollars) collected from the Database of the Food and Agriculture Organization of the United Nations (FAOSTAT 2013).

Lastly, the use and analysis of official statistics is a very controversial area in social research, and although offering many advantages, at the same time hides considerable challenges that shall be addressed upfront. In terms of advantages, the biggest "win" is that the data collected is reliable enough to make generalizations about the whole population of Russia.

Shall be kept in mind that when assuming associations between two variables, conclusions are generalized to individuals in the whole population. This is an important limitation of statistical analyses in general. However, this study, as mentioned in the introduction does not seek to reveal individual findings or conclusions. The purpose of this study is to investigate the relationship between economic performance and health.

6. ANALYSIS AND DISCUSSION

Financial instability as it was argued in the previous section will be looked at in terms of GDP per capita and the unemployment rate and the GINI coefficient. The data on the evaluation of these variables can be seen as Figure 2 and 3.
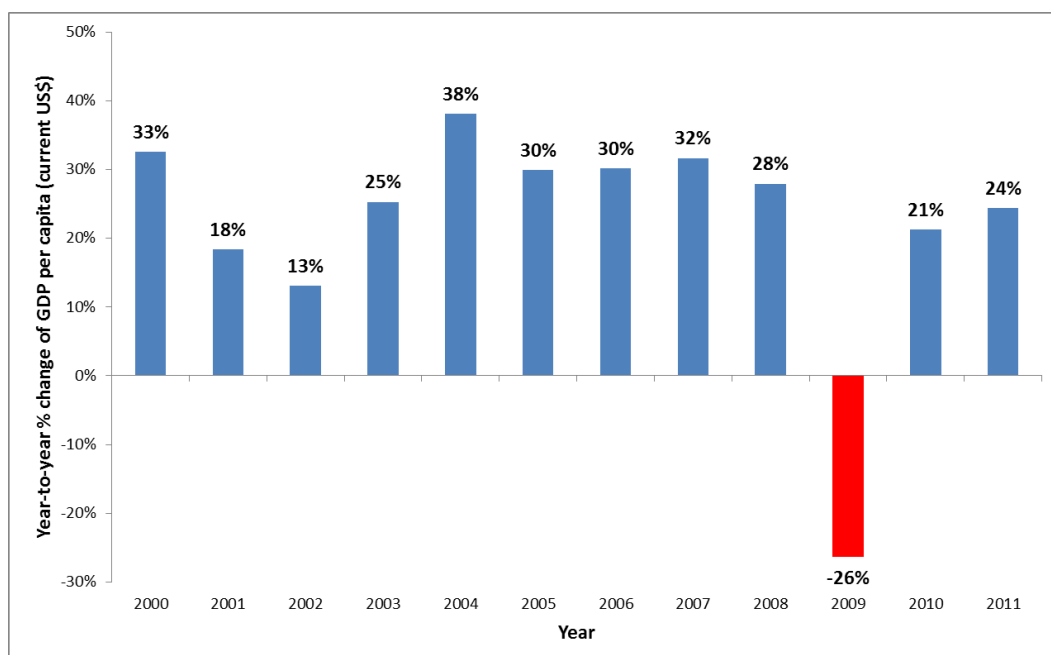

Figure 2: Year-to-year change in GDP per capita (Source: World Bank 2013a)

Figure 2 shows year-to-year percentage changes of GDP per capita. Taking a look at the graph, two periods with downturn are noticeable. At the beginning of the 2000's economic growth noticeably decelerated possibly as the extended effect of the East-Asian financial crisis of 1998. While economy started to pick up by the mid 2000's, from 2009, the effect of the global financial crisis actually reversed GDP, generating a -26% rapid fall.

Figure 3 shows the changes in unemployment and the GINI coefficient for the same period. Fluctuations in unemployment do not correspond with changes in GDP per capita at the first glance. Although we can notice a considerable 34% increase from 2008 to 2009- given the sizeable decline in comparison to the previous years it can be reasonably expected that this was largely driven by the global financial crisis. Generally unemployment decreases slowly but steadily during the course of the early and mid 2000's. Unemployed in Russia- as defined by the Russian Statistical Office - are those, who are registered in the state employment service as unemployed or at the local employment office as searching for job (Rosstat 2013). It can be possible, that due to under registration with public authorities and black market employment, the presented data on unemployment does not actually mirror the actual size of the population out of job. Interestingly, the GINI index on the other hand does not seem to coincide with GDP per capita decreases and slow downs. This means that either other social factors might be influencing around the time of the crises, or tax and federal authorities are unable to keep track of wealth accumulation of the richest part of the society. Hiding income and registering businesses in foreign countries with more favorable tax policies is not a rare occurrence, and very well can be the case in Russia causing distortions in the GINI index.
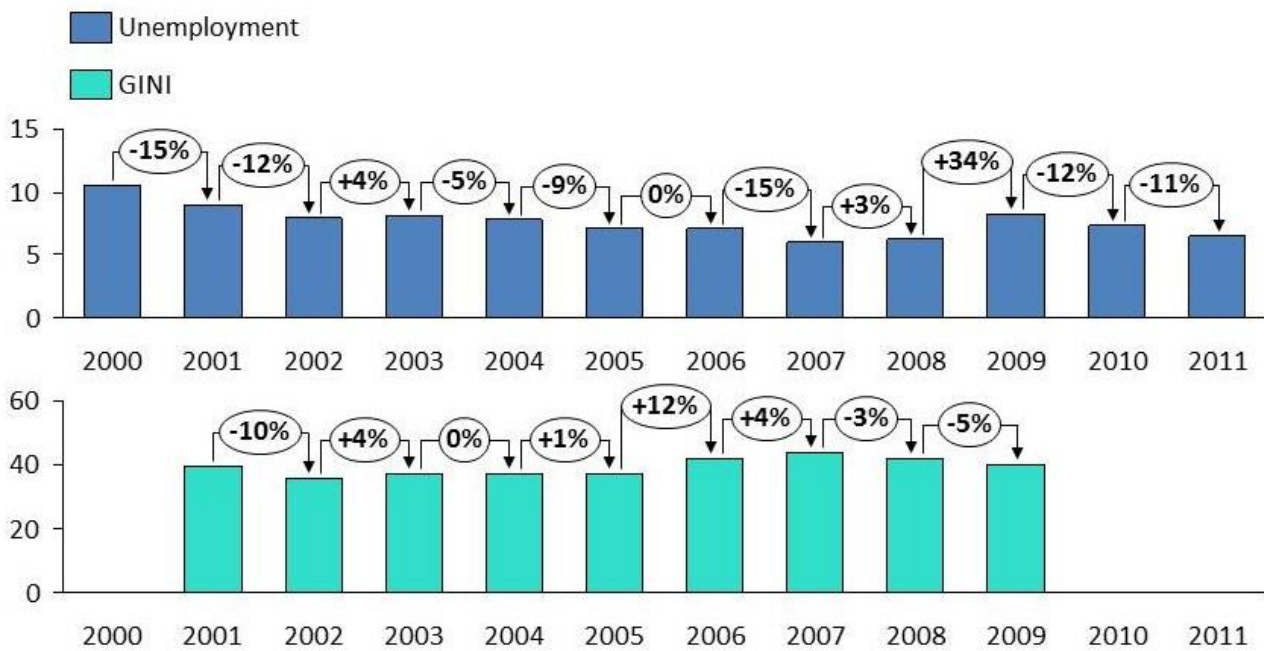
Figure 3: Year-to-year % changes in unemployment rates and GINI coefficients (Source: Rosstat 2013)

Year-to year percentage changes in health expenditures- as presented by Figure 4 almost exactly mirror changes in GDP per capita. The association between the two indicators is easy to see- health expenditures are financed by the government through income, and for this reason it is very much linked to the economic performance of the country. From a health policy perspective this is potentially harmful, because health system budgets and expenditures should in theory be determined upon the spread and evaluation of diseases rather than on financial grounds.
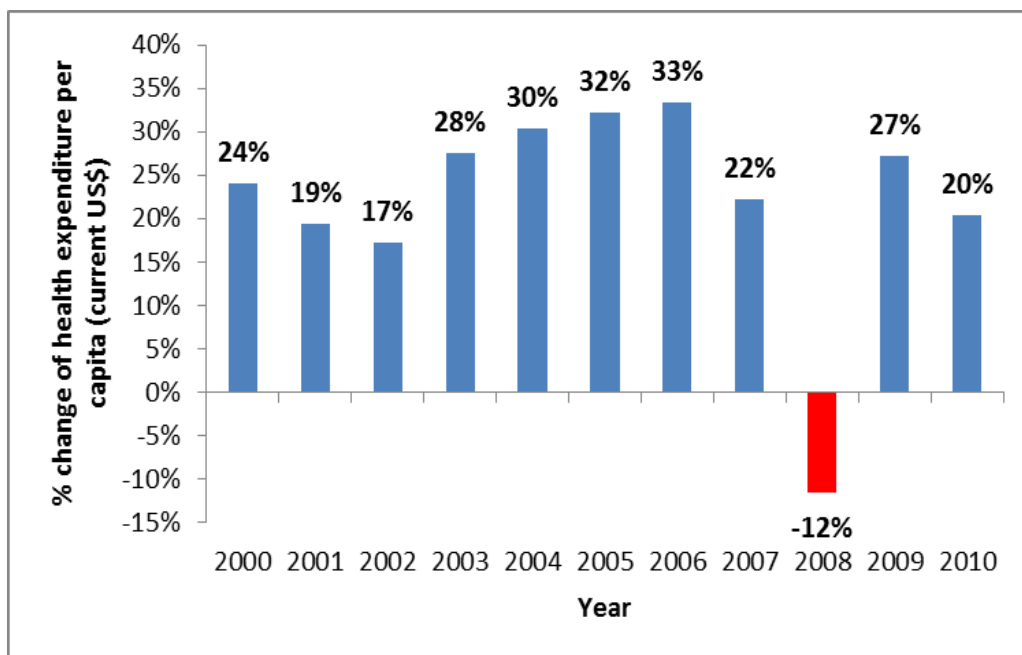

Figure 4: Year-to-year % change of health expenditure per capita (Source: World Bank 2013a)

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Turning our attention now to the dependent variables of the analysis, and taking a look at the aggregate morbidity data presented by Figure 5, we can see a sudden spike at 2009, corresponding to the time of the crisis. This change corresponds to 4% increase translating into 34 more incidences per 1000 population. Compared to the general 1-2% year-to-year changes in average, this is a double the normal increase. In terms of main causes, non-communicable diseases are largely responsible for the peak with a 7% year over year increase.

In general, morbidity can be observed to increase and be particularly sensitive around the above described crisis periods. At the beginning of the 2000's, when the Russian economy was observed to slow down, mortality from 2001 to 2003 increased by 5%. This is equivalent of 37 more incidences in first case registered diseases per 1000 population. Again non-communicable diseases rose the most markedly reporting a 7% increase, but injuries and morbidity due to external causes also have increased by 3%.

Overall morbidity increased by 11% from 2000 to 2011. Increase can be observed in all of the three main causes. Incidence of communicable diseases increased from 509 to 581, non-communicable diseases from 509 to 581, while injuries have increased from 86 to 93 per 1000 population. This translates into a 3% increase in communicable, 14% in non-communicable diseases and 8% increase in morbidity due to injuries and external causes.
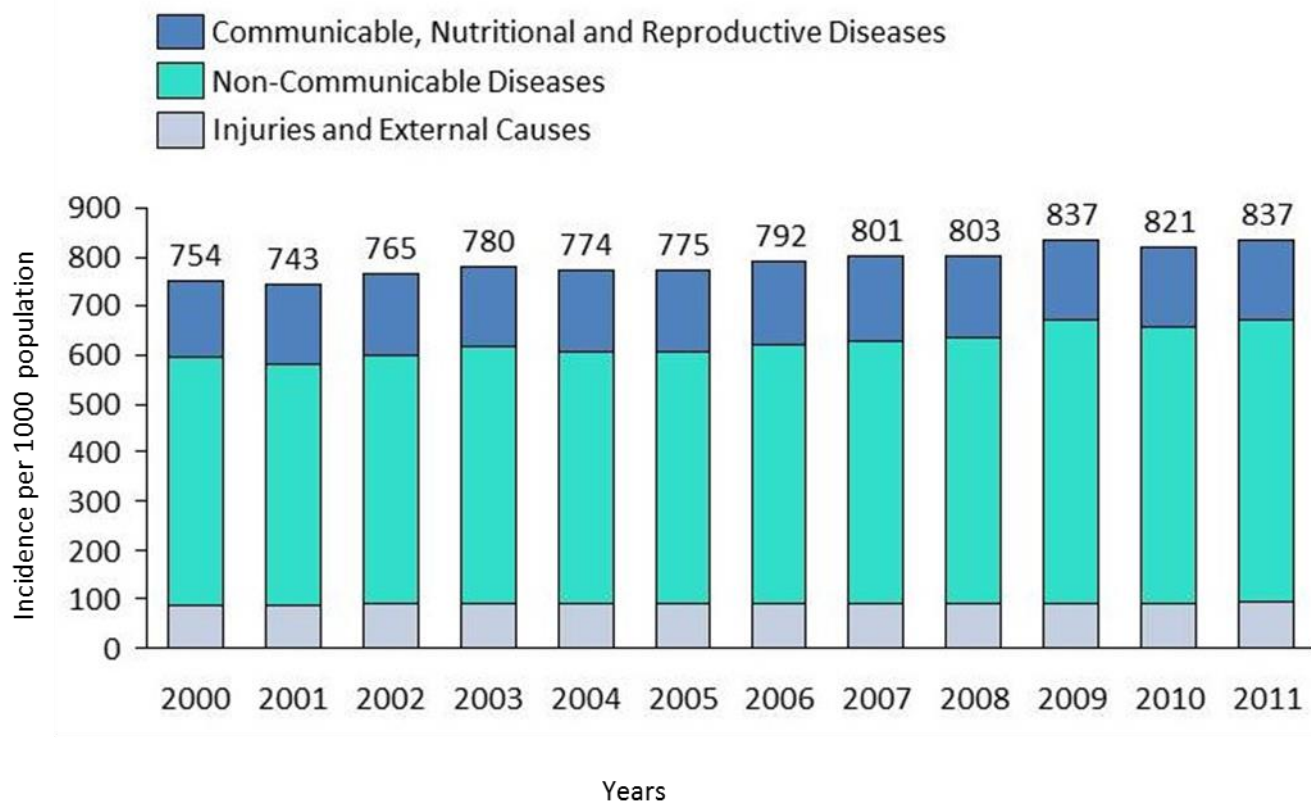
6.1 Correlations

Using the bivariate analysis techniques, the variables introduced in the previous section were correlated with each other in order to describe the strength and the direction of the possible relationship between them. The three economic indicators served as the independent variables for the correlations, whereas aggregate and case specific incidence and hospitalization data served as the independent variables. All of the variables in the analysis are continuous. For this reason, Parson's R was used to determine the strength and direction of the relationship. Before performing the correlations, as Pallant suggests (2010:141), scatterplots were generated to check for the possible violation of linearity and homoscedascity assumptions. The relationship of the two set of variables can be described by the following equation:

$[V_H] = f[V_f]$, where V_H= health variables and V_f= financial indicators

First the strength and generalizability of the relationship between GDP per capita, unemployment, and the GINI coefficient were explored. According to the expectations presented in the previous section, GDP per capita seemed to be the most reliable indicator, showing some correlation, while changes in unemployment and GINI did not show presentable results.

Correlating the aggregate burden of diseases with GDP per capita, the two-tailed t-test resulted in $p<0.01$, and the correlation strength was 0,888. This indicates a positive direction, with a large strength, using the interpretation suggested by Pallant (2010:132). This somewhat contradicts to our expectation, suggesting as the economy declines so does the overall burden of diseases as presented by Figures 6 and 7 below.
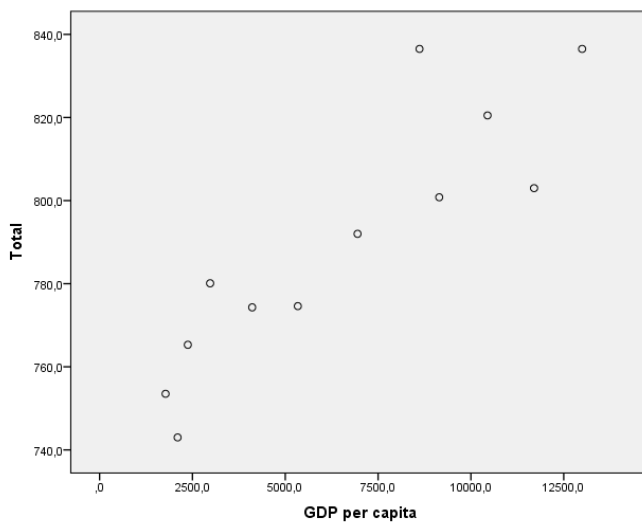
Figure 6: GDP per capita and aggragate burden of morbidity

Correlations

		GDP per capita	Total
GDP per capita	Pearson Correlation	1	,888[**]
	Sig. (2-tailed)		,000
	N	12	12
Total	Pearson Correlation	,888[**]	1
	Sig. (2-tailed)	,000	
	N	12	12

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 7: GDP per capita and aggragate burden of morbidity

This finding on the other hand corresponds to the evaluation of the epistemological transition and also could potentially be interpreted as an evidence for the increasing double burden of disease the country faces at the moment.

According to the income block of the theoretical framework, as the economy declines, the money available will be reduced. Consumption, health related costs, recreational activities are suspected to be cut back, resulting in unhealthy diet, reduced food consumption and nutritional levels (Zohoori et al. 1998, Lock et al. 2009). The previously presented 14% rise in communicable diseases although does not concentrate around any marked years related to the crisis, it flags concerns regarding that vulnerable groups might be disproportionately affected. Socially significant diseases are those, which show higher prevalence among disadvantaged, poor or vulnerable groups. These are tuberculosis, hepatitis, syphilis and gonorrhea and alcoholic psychosis. The newly registered cases of diabetes mellitus will be used as the most suitable proxy of unhealthy diet.

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Changes in the incidence of these diseases have not been steady over time. Although the longer run decrease in infectious and sexually transmitted diseases generally corresponds with the longer run trend of epistemological transition, their decrease markedly slowdown in some years, and in general, it is not a steady trend. The early 2000's show a peak in TBC, alcoholic psychosis and diabetes incidence, while around 2009 diabetes peaked.

When correlating tuberculosis, hepatitis and alcoholic psychosis with changes in economic indicators no significant associations were found. Syphilis and Gonorrhea on the other hand, show some support of the income theory, and seem to be to some extend correlated with changes in GDP per capita, as presented by the scatterplots of Figure 8 and 9. Although their relationship is not la definite linear, (rather curvilinear), we cannot reject the theory that changes in income would affect the burden of socially significant diseases. The fact that the relationship is rather curvilinear suggests that it is possible, that there is a bare existence minimum level, under which the chance for individuals to take risky lifestyles exponentially increases. The findings regarding the incidence of sexually transmitted diseases are in line with previous research, pointing out that especially among young groups, higher rate of social activity and lower awareness can be observed (Horvath et al. 2012, Panchaud et al. 2000).
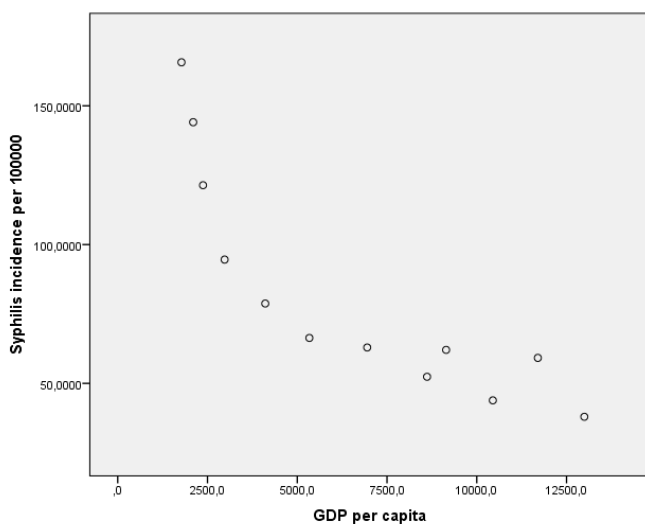

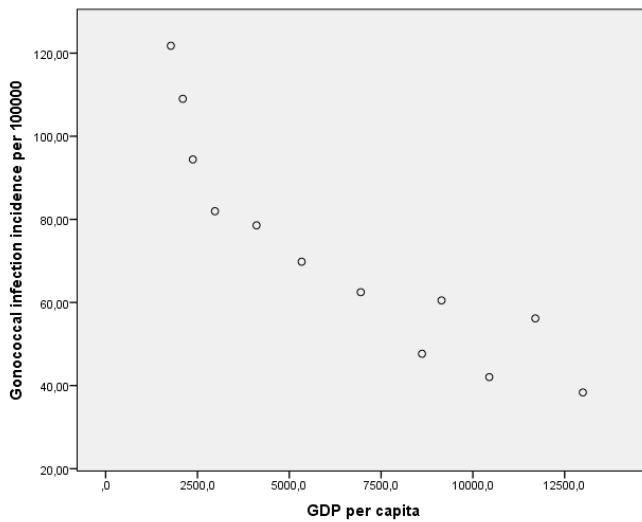**Figure 8: Syphilis incidence and GDP per capita**

Figure 9: Gonococcal incidence and GDP per capita

Mental disorders seem to be negatively correlated with changes in GDP (Figure 10). The two-tailed t-test resulted in $p<0.01$, and the correlation strength was -0,874 (Figure 11). This finding underlines the importance of the behavioral and psychosomatic effects of economic downturns stressed by many scholars as outlined in the literature review. The validity of the counter-cyclical theory of stress in the Russian context has been stressed by many scholars before (Walberg et al. 1998, Denisova 2009, Vinokur et al. 1996). As it was presented in the theoretical framework, the counter-cyclical effect of psychosomatic diseases has an increasing importance in social relationships due to existing cultural and social norms. Financial instability between partners can easily result in social undermining and weakening support. Many scholars have noted that Russian men are especially likely to experience difficulties coping with economic change, and losing the status of principal breadwinner can threaten their identity (Kiblitskaya 2000, Rotkirch 2000, Denisova 2009). As it was presented in the introduction, the current health dynamics in Russia paint a very threatening picture for men, whose life expectancy at birth is currently 12 years behind their female counterparts. In this context, the preliminary correlation found between mental disorders and GDP per capita is a new, relevant finding.
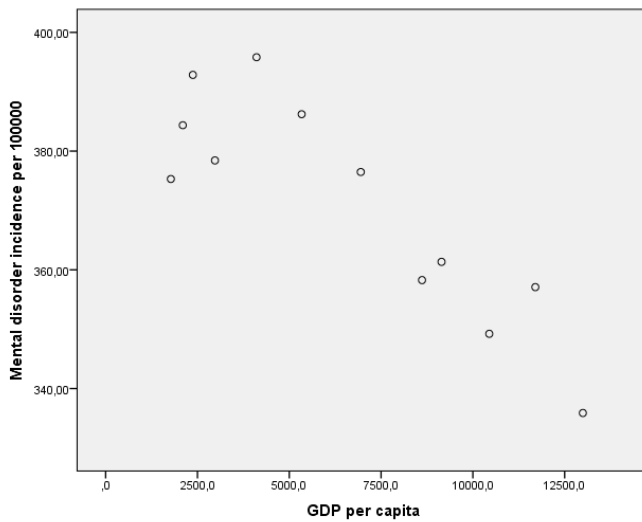
Figure 10: Mental disorder incidence and GDP per capita

		GDP per capita	Mental disorder incidence per 100000
GDP per capita	Pearson Correlation	1	-,874[**]
	Sig. (2-tailed)		,000
	N	12	12
Mental disorder incidence per 100000	Pearson Correlation	-,874[**]	1
	Sig. (2-tailed)	,000	
	N	12	12

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 11: Correlation between mental disorder incidence and GDP per capita

Diabetes was found to show the strongest correlation with GDP per capita: $p < 0,01$, $r = 0,935$ (Figures 12 and 13). This is a strong positive correlation, as demonstrated by the figures on the next page. The finding supports the argument of Zohoori et al. (1998) presented in the theoretical block. It is speculated that as the economy picks up and GDP per capita increases, people follow unhealthy diets, go to fast food restaurant instead of cooking home and do not exercise enough. Due to the fact that Russia is at the beginning of the epistemological transition, and a population ageing has just started, unhealthy diet is speculated to play a larger role than elderly diabetes.
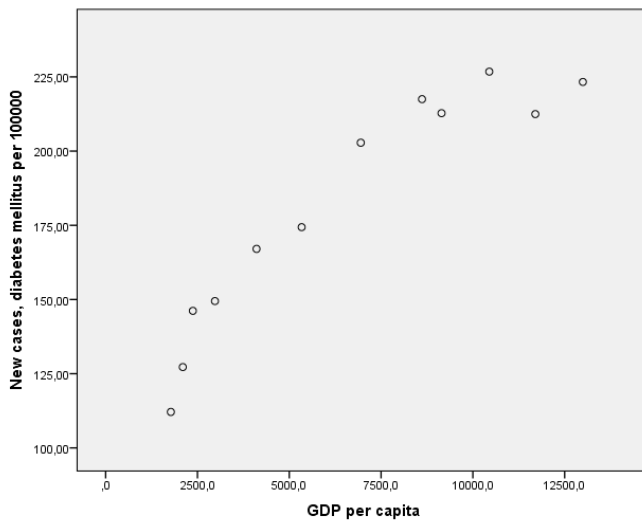
Figure 12: New cases of diabetes and GDP per capita

Correlations

		GDP per capita	New cases, diabetes mellitus per 100000
GDP per capita	Pearson Correlation	1	,935[**]
	Sig. (2-tailed)		,000
	N	12	12
New cases, diabetes mellitus per 100000	Pearson Correlation	,935[**]	1
	Sig. (2-tailed)	,000	
	N	12	12

[**]. Correlation is significant at the 0.01 level (2-tailed).

Figure 13: New cases of diabetes and GDP per capita

Moving over to analyzing results of hospital discharges, we can observe a strong positive correlation with Neoplasm (r=0,966), circulatory system diseases (r=0,915) and ischemic heart diseases (r=0,895), cerebrovascular diseases (r=0,931) and injuries and poisoning (r=-938). Increase in the first four cases of diseases corresponds to the longer trend of epistemological transition. Additionally, it is very much in line with findings of previous literature assessing the impact of the economic downturns on health suggesting that circulatory system diseases and injuries are the major causes of death contributing to decrease in life expectancy (Gavrilova et al. 2000, Horvath et al. 2012).
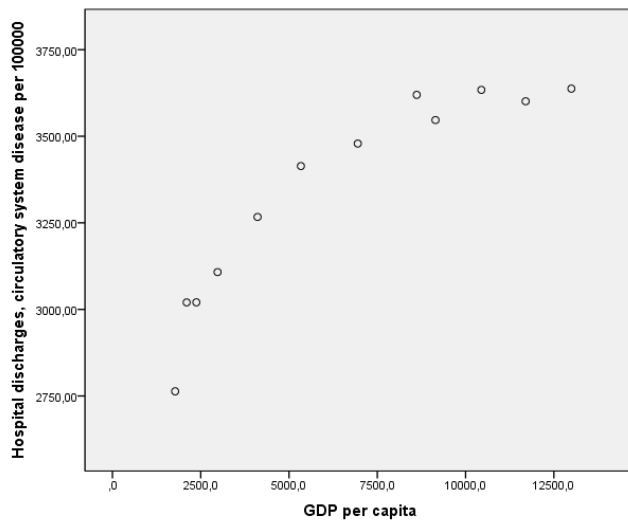
Figure 14: Circulatory System Diseases and GDP per capita

Correlations

		GDP per capita	Hospital discharges, circulatory system disease per 100000
GDP per capita	Pearson Correlation	1	,915[**]
	Sig. (2-tailed)		,000
	N	12	12
Hospital discharges, circulatory system disease per 100000	Pearson Correlation	,915[**]	1
	Sig. (2-tailed)	,000	
	N	12	12

[**]. Correlation is significant at the 0.01 level (2-tailed).

Figure 15: Correlation between circulatory System Diseases and GDP per capita
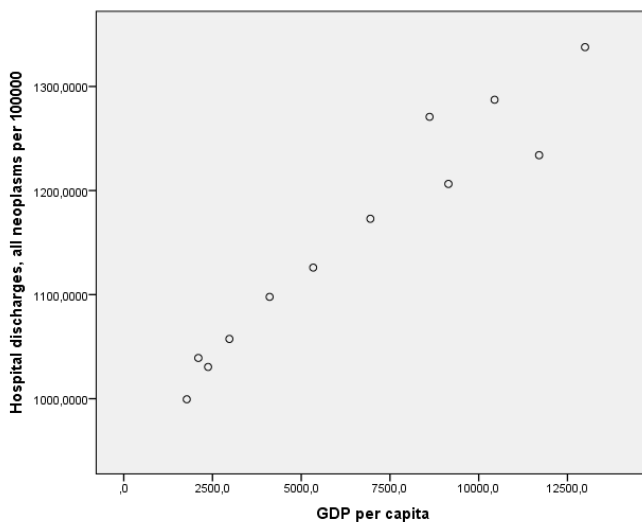
Figure 16: Neoplasm Diseases and GDP per capita

		GDP per capita	Hospital discharges, all neoplasms per 100000
GDP per capita	Pearson Correlation	1	,966**
	Sig. (2-tailed)		,000
	N	12	12
Hospital discharges, all neoplasms per 100000	Pearson Correlation	,966**	1
	Sig. (2-tailed)	,000	
	N	12	12

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 17: Correlation between Neoplasm Diseases and GDP per capita
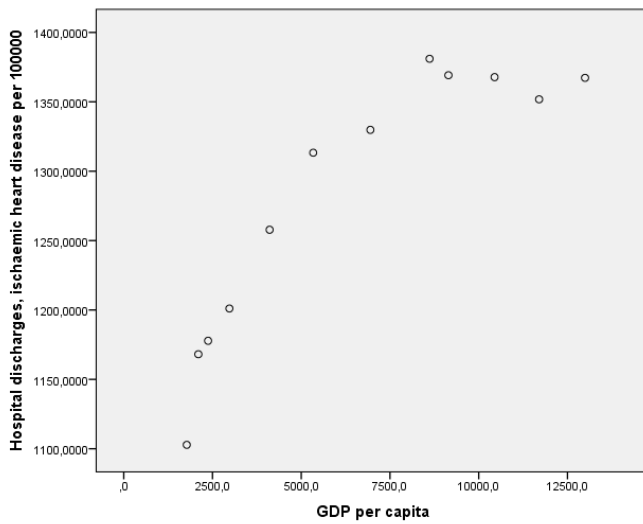
Figure 18: Ischaemic heart diseases and GDP per capita

		GDP per capita	Hospital discharges, ischaemic heart disease per 100000
GDP per capita	Pearson Correlation	1	,895**
	Sig. (2-tailed)		,000
	N	12	12
Hospital discharges, ischaemic heart disease per 100000	Pearson Correlation	,895**	1
	Sig. (2-tailed)	,000	
	N	12	12

. Correlation is significant at the 0.01 level (2-tailed).

Figure 19: Correlations between ischaemic heart diseases and GDP per capita
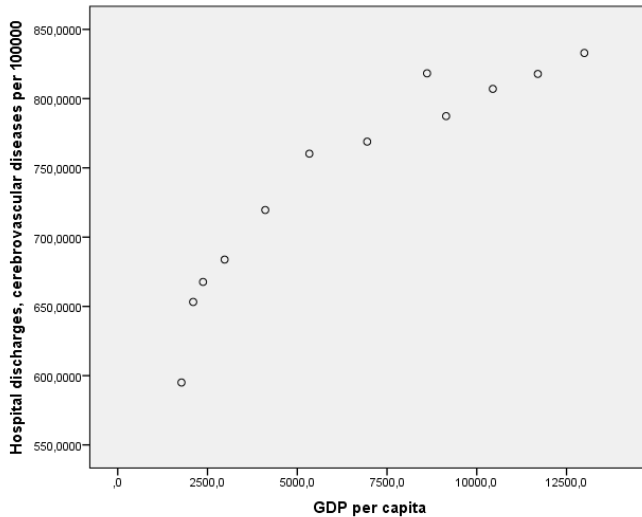
Figure 20: Cerebrovascular diseases and GDP per capita

		GDP per capita	Hospital discharges, cerebrovascular diseases per 100000
GDP per capita	Pearson Correlation	1	,931[**]
	Sig. (2-tailed)		,000
	N	12	12
Hospital discharges, cerebrovascular diseases per 100000	Pearson Correlation	,931[**]	1
	Sig. (2-tailed)	,000	
	N	12	12

**. Correlation is significant at the 0.01 level (2-tailed).

**Figure 21: Correlation between cerebrovascular diseases and GDP per capita**

The strong negative correlation with injuries and poisoning deserves a bit of attention (as presented by Figure 22 and 23). Firstly, it serves with further support to the theory of counter-cyclical effect of stress and additionally underpins the lifestyle choice theory block of the paper. The increase in injuries and poisoning as the economy drops supposes that aggression and frustration are channeled through physical violence and possibly through substance abuse.
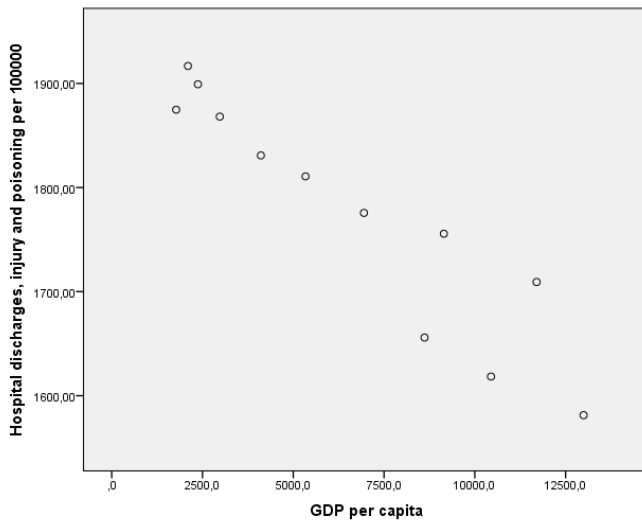
Figure 22: Injuries and poisoning and GDP per capita

		GDP per capita	Hospital discharges, injury and poisoning per 100000
GDP per capita	Pearson Correlation	1	-,938[**]
	Sig. (2-tailed)		,000
	N	12	12
Hospital discharges, injury and poisoning per 100000	Pearson Correlation	-,938[**]	1
	Sig. (2-tailed)	,000	
	N	12	12

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 23: Correlation between Injuries and poisoning and GDP per capita

This leads us to the last research question of the paper: What is the relationship between economic performance and substance abuse?

As it was established by the theoretical framework, many medical and sociological studies have emphasized the importance of alcohol and smoking as one of the principal determinant of health, especially in the Russian context. Reaching back to Cockerham's explanation of "pure rational choice", people in Russia (especially those in insecure financial situation) are argued to follow working class life patterns, because of still being attached to norms and values of the former system.

Three interesting findings emerge after analyzing the data used.

Frist, GDP per capita has shown a strong positive correlation with pure alcohol consumption (r=0,796) (presented by Figure 24 and 25). This coincides with the theory regarding economic decline and substance abuse, and highlights again the importance of alcohol as one of the most important factor behind the deterioration of health in Russia. This result is also very much in line with the previous finding regarding mental disorders. Although the relationship between these two findings need further research, the possibility that alcohol is a main outcome of psychological and behavioral illnesses in declining economies cannot be rejected.
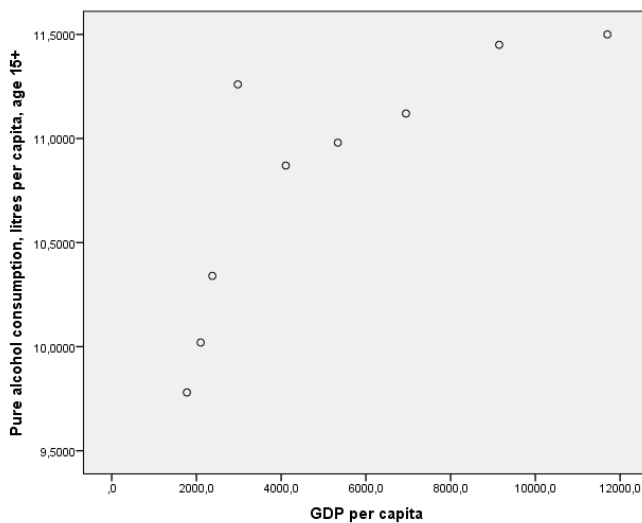
Figure 24: Pure alcohol consumption and GDP per capita

		GDP per capita	Pure alcohol consumption, litres per capita, age 15+
	Pearson Correlation	1	,796[*]
GDP per capita	Sig. (2-tailed)		,010
	N	12	9
	Pearson Correlation	,796[*]	1
Pure alcohol consumption, litres per capita, age 15+	Sig. (2-tailed)	,010	
	N	9	9

 *. Correlation is significant at the 0.05 level (2-tailed).

Figure 25: Correlation between pure alcohol consumption and GDP per capita

Secondly, strong negative correlation with road traffic accidents involving alcohol (r=-0,929 as presented by Figure 26 and 27) was found. From these first findings it can be speculated that economic instability results in less traffic incident involving alcohol. Several explanations can be offered. During economic downturns, as it was also observed by Khang et al. (2005), real income decreases, due to the tight financial situation people are more likely to leave their car home and walk instead. Education and raising awareness or stricter rules imposed on drinking and driving also could be possible explanations. This finding is broadly in line with the findings of Perlman (2010:8), who reports that economic declines of the 1990's were associated with marked temporary declines in heavy drinking probably due to job losses.
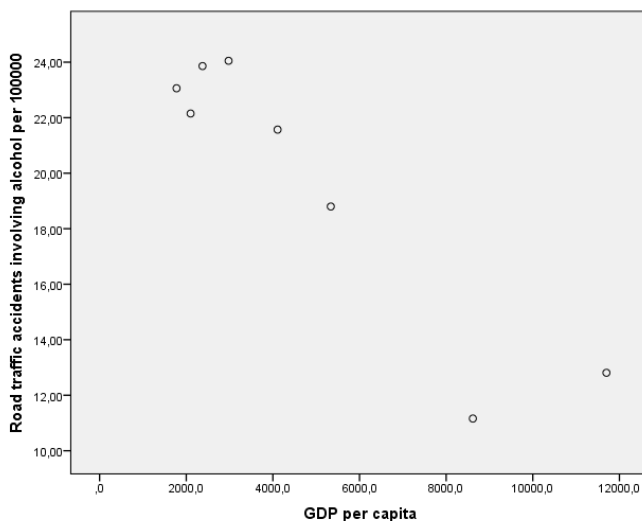
Figure 26: Road traffic accidents involving alcohol and GDP per capita

		GDP per capita	Road traffic accidents involving alcohol per 100000
GDP per capita	Pearson Correlation	1	-,929[**]
	Sig. (2-tailed)		,001
	N	12	8
Road traffic accidents involving alcohol per 100000	Pearson Correlation	-,929[**]	1
	Sig. (2-tailed)	,001	
	N	8	8

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 27: Correlation between road traffic accidents involving alcohol and GDP per capita

Thirdly, the import value of distilled alcohol and tobacco show a very strong linear correlation with GDP per capita changes (r=0,986, presented by Figures 28 and 29). The importance of this finding is twofold. Firstly, together with the finding regarding pure alcohol consumption, confirms the theory that unhealthy lifestyle practices are a widespread routine to mitigate stress. Additionally, the finding stresses the importance of affordability. Prices seem to be a great factor in the patterns of alcohol consumption, driving persistence increase in the consumption of "samogon" and other non-beverage alcohols during "hard times".
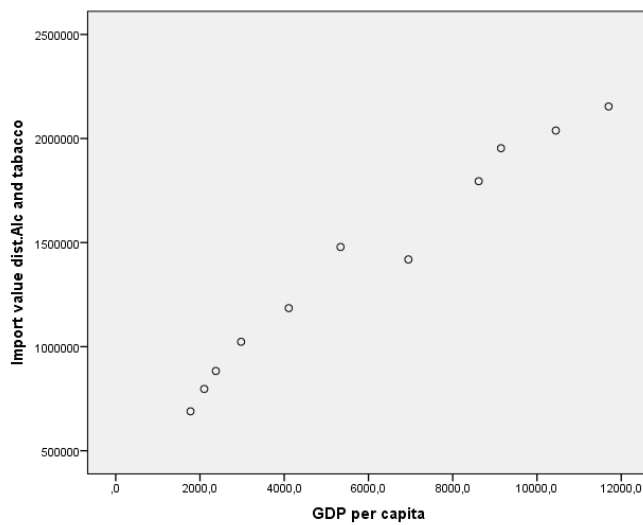
Figure 28: Import value of alcohol and tobacco and GDP per capita

		GDP per capita	Import value dist.Alc and tabacco
GDP per capita	Pearson Correlation	1	,986[**]
	Sig. (2-tailed)		,000
	N	12	11
Import value dist.Alc and tabacco	Pearson Correlation	,986[**]	1
	Sig. (2-tailed)	,000	
	N	11	11

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 29: Correlations between import value of alcohol and tobacco and GDP per capita

7. CONCLUSIONS

7.1 Limitations

In order to be able to drive meaningful conclusion from our result, there are certain limitations that shall be kept in mind, and consequently addressed.

Firstly, this thesis is not a medical study, and lacks a detailed underlying biological framework, which would provide plausible explanations for the mechanism, interrelation, evaluation and incubation period of the different diseases. Although I consulted with medical doctors while collecting and analyzing the data, for the above mentioned reason, it is possible that some causes and/or consequences have been missed in the analysis.

Secondly, as it was already mentioned, majority of the data was collected from or through the Russian Statistical Office or the Russian Government. For this reason it is inevitable that it contains some bias. The actual severity of the financial and health situation of the population is likely to be underestimated to paint a better picture of the country. Such underestimation could potentially skew the findings to identify less negative effects than actually have happened.

Thirdly, the data covers a limited period of time frame, and consequently it does not allow for an analysis in a longer timeframe with more data. Less data means decreasing reliability when interpreting our result. Testing the possible effects of economic declines on the course of a longer time span would be highly desirable. The elevation and evaluation of diseases in very limited cases occur with short time lag, and majority of the diseases develop with a delay of several years depending on socio-economic conditions, capacity and effectiveness of the health system and access to effective treatment. Lag effects vary according to diseases, and while some effects of the economic downturns might show up immediately in health statistics, others might only appear several years or decades later. This study focused on the rather immediate effects of the economic decline, and consequently it is not able to point out any longer term consequences. This shall be done later, in future researches.

Fourthly, correlation does not mean causality. Even if relationship between one indicator of health and one of economic stability was found to be strong, that does not mean that they caused each other. Either of those can cause the other, and moreover, a third, confounding variables might also as well always influence the results and the outcome of the correlations (Pallant 2010).

Lastly, capturing health effects in the context of economic downturns is a complex topic. Many

previous studies have pointed out the importance of relative deprivation and sense of control. These factors might be crucial, but unfortunately they are not available as a national statistical indicator to test them. For this reason, further qualitative analysis and interpretation would be needed in the direction where correlations are found, to be able to extend the results and make them stronger.

After acknowledging these important limitations, the next chapter provides an effort of summarizing the findings emerging from the descriptive data analysis.

7.2 Main Findings and Future Research

The present research although had some limitations pointed out some new and relevant finding in relation to the relationship between economic decline and health.

Although future research is needed to confirm the interactions between economic variables and health, based on the findings we cannot reject the theory that decreasing incomes during economic downturns have an adverse effect on health. The economic performance of Russia showed considerable correlations with the changes in the burden of some diseases. Non-communicable diseases, especially circulatory and heart diseases, cerebrovascular diseases and diabetes show strong correlations with economic downturns. This supports the findings of past and current research introduced in the literature review
.
Sexually transmitted diseases also seem to be affected, and relatively high spread of infectious diseases can be observed during economic decline. Additionally, the importance of alcohol consumption as the primary "lifestyle choice" to mitigate stress is supported by some empirical evidence. These findings underscore the importance of raising awareness about sexually transmitted diseases and alcoholism. Especially among the youth and working age male groups through education and media campaign.

While due to the relatively low changes in GINI it was not possible to correlate relative deprivation with changes in health, the preliminary findings suggested that inequality affects health and Wilkinson's income distribution hypothesis cannot be rejected.

The increasing burden of non-communicable diseases (especially in neoplasm) and their correlation with GDP per capita emphasizes the emerging importance of life-long treatments in Russia. Policy

makers and politicians will have to pay attention to degenerative diseases in the future. This requires knowledge and advanced technologies, which means increasing costs for the health system. As it was pointed out in the analysis, at the moment health care expenditures depend on the economic performance, and when GDP declines, available resources for health care shrink also. Russia will have to increase considerably its health expenditures in the future to be able to serve these demands. Public health policies will also have to be able to adapt to new situations and provide more accurate and reliable data for analysis.

Additional realization that emerges from the study is that, research identifying health losses in the context of economic downturns is not uniform and lacks theoretical and methodological underpinning. Identifying the vulnerable groups who are likely to suffer from the immediate effect of economic decline is crucial to be able to mitigate health consequences. For this, stronger theories and methods need to be developed, which requires multidisciplinary research combining epistemology, microbiology, medicine, economics and human geography.

This means that health statistics and research as time progresses should include a wider array of health issues from acute communicable to chronic non-communicable diseases disaggregated by socio-economic positions within and among countries (Beaglehole and Bonita 2009:57). This was found to be a great problem during this research. First data quality reported by the Russian Federation flags some issues and shall be treated with caution. Secondly, the current economic indicators are not capable of capturing the complex nature of health problems.

Additionally, although there have been a few desk studies conducted with the intention of summarizing findings emerging from previous studies, they all limited in one way or the other in their focus, and consequently fail in giving a comprehensive overview. This is an additional suggested direction for future research.

Appendix - Data Collected and Used in the Study

1. Incidence of socially significant diseases

YEAR	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tuberculosis*	127,0	132,0	137,0	140,0	139,0	135,0	131,0	126,0	120,0	113,0	106,0	97,0
Hepatitis A	1,6	2,0	1,2		30,2	30,4	4,5	10,3	8,2	7,3	6,3	
Syphilis	165,7	144,1	121,4	94,6	78,8	66,4	62,9	62,1	59,2	52,4	43,9	38,0
Gonococcal	121,8	109,0	94,4	82,0	78,6	69,8	62,5	60,5	56,2	47,7	42,0	38,4
Mental disorder	375,3	384,4	392,8	378,4	395,8	386,2	376,5	361,3	357,1	358,3	349,2	335,9
Alchoholic psichosis	42,5	47,7	53,6	55,5	53,6	51,8	46,5	40,8	40,8	35,7	33,3	30,5
Diabetes mellitus**	112,1	127,2	146,2	149,5	167,1	174,4	202,8	212,8	212,5	217,5	226,8	223,3
*per 100000 population												
** new cases, per 100000 population												

Source: WHO 2013

2. Population morbidity by main couses registered with first diagnosis in life

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Communicable, Nutritional and Reproductive Diseases	158,20	161,30	164,60	162,10	168,50	168,50	171,60	170,30	168,60	165,60	162,30	162,50
Non-Communicable Diseases	509,10	494,00	511,50	528,10	515,90	516,10	531,20	539,00	543,20	580,90	566,50	581,20
Injuries and External Causes	86,20	87,70	89,20	89,90	89,90	90,00	89,20	91,50	91,20	90,00	91,70	92,80
Total	753,50	743,00	765,30	780,10	774,30	774,60	792,00	800,80	803,00	836,50	820,50	836,50
Per 1000 population												

Source: Rosstat 2013

3. Hospital discharges by main causes

YEAR	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Hospital discharges, infectious and parasitic diseases*	1185,4	1151,7	1070,6	1026,1	1017,8	1022,4	1001,7	1008,5	995,4	991,1	1024,1	957,2
Hospital discharges, all neoplasms*	999,4	1039,1	1030,5	1057,4	1097,8	1126,0	1172,9	1206,3	1234,0	1270,8	1287,2	1337,8
Hospital discharges, circulatory system disease*	2763,5	3020,2	3020,4	3107,8	3266,9	3414,0	3478,9	3546,8	3601,0	3619,5	3633,9	3637,5
Hospital discharges, ischaemic heart disease*	1102,8	1168,1	1177,8	1201,1	1257,8	1313,3	1329,8	1369,2	1351,8	1381,0	1367,8	1367,3
Hospital discharges, cerebrovascular disease*	595,1	653,2	667,6	683,8	719,6	760,2	768,9	787,4	817,8	818,3	807,0	833,0
Hospital discharges, respiratory system diseases*	2990,3	2942,7	2801,7	2777,6	2677,7	2736,6	2638,4	2674,6	2627,3	2835,0	2736,7	2688,8
Hospital discharges, digestive system diseases*	2189,8	2191,3	2069,1	2028,1	2008,7	1992,0	1993,5	1990,2	1963,8	1946,2	1920,0	1898,0
Hospital discharges, musculoskeletal system and connective tissue diseases*	1048,0	1103,3	997,7	979,4	980,3	973,2	976,6	989,3	979,7	967,5	954,6	953,6
Hospital discharges, injury and poisoning*	1874,8	1916,8	1899,2	1868,2	1830,8	1810,7	1775,6	1755,7	1709,2	1655,9	1618,4	1581,3

*per 100000 population

Source: WHO 2013

4. Road trafiic accidents, alcohol consumption and alcohol and tobacco trade

YEAR	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Pure alcohol consumption, litres per capita, age 15+	9,8	10,0	10,3	11,3	10,9	11,0	11,1	11,5	11,5		
Road traffic accidents involving alcohol per 100000	23,1	22,2	23,9	24,1	21,6	18,8			12,8	11,2	
Road traffic accidents with injury per 100000	109,1	114,4	129,0	142,4	145,0	156,1	160,8	164,0	153,8	143,5	139,6
Persons killed or injured in road traffic accidents per 100000	144,6	152,1	174,2	194,9	198,8	215,8	223,3	229,1	211,9	199,5	194,1
Import value (in 1000 USD) of dist.Alc and tabacco	689130,0	796968,0	883029,0	1023423,0	1185235,0	1478804,0	1418947,0	1953327,0	2153833,0	1794849,0	2038383,0

Source: WHO 2013

5. Financial indicators

YEAR	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
GDP per capita *	1775,1	2100,7	2375,2	2976,1	4108,6	5337,1	6946,9	9146,4	11700,2	8615,7	10446,8	12995,0
Unemployment *	10,60	9,00	7,90	8,20	7,80	7,20	7,20	6,10	6,30	8,40	7,50	6,60
GINI coefficient **	0,40	0,40	0,40	0,40	0,41	0,41	0,42	0,42	0,42	0,42	0,42	0,42

*Source: World Bank 2013a
** Source: Rosstat 2013

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