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QUALITY OF GOVERNMENT

Corruption kills

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Abstract:

Various international organizations have documented the existence of corruption and similar practices in many different areas of the health care sector. Empirical studies show that in many poor countries over 80 percent of the population has experienced corrupt practices in the health sector. In rich countries corruption takes other forms such as overbilling and bribes when contracts to build hospitals are signed. The question addressed in this paper is if corruption also has a negative impact on population health. In the theoretical section we argue that the causal link between low levels of Quality of Government (QoG) and population health can be either direct or indirect. The former takes place when, for example, low QoG causes high levels of illegitimate absenteeism among health workers or demands for direct payment of bribes for adequate treatment. The latter (indirect) causal link is when low QoG leads to poverty, low social capital, and low levels of life satisfaction - all leading to difficulties in handling various life challenges which in turn causes health problems. Our central question is policy related. If you want to improve population health, is it better to simply increase spending on health care (and if so, should this be public or private money), or is it better to improve the overall quality of the countries' government institutions? Using cross section data from more than 120 countries, our findings in the bivariate analyses are that more of a QoG variable is positively associated with higher levels of Life Expectancy, lower levels of Mortality Rates for Children and Mothers, higher levels of Healthy Life Expectancies and higher levels of Subjective Health feelings. In contrast to the strong relationships between the QoG variables and the Health indicators, the relationships between the health spending measures and population Health are rather weak most of the time and occasionally non-existent. Moreover, for Private Health Spending as well as for Private Share of Total Health Spending, the relation to good Health is close to zero or slightly negative. The policy recommendation coming out of our study to improve Health levels around the world, in rich countries as well as in poor countries, is to improve the Quality of Government and to finance health care with public, not private, money.

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Corruption in the Health Sector

The minute after she had given birth to her first child at one of the public hospitals in the city of Bangalore in India, Nesam Velankanni wanted the midwife to put the crying baby on her chest. However, before even getting a glimpse of her newborn baby, a nurse whisked the infant away and an attendant asked for a bribe. Nesam Velankanni was told that the customary price if she wanted to hold her child directly after giving birth was 12 USD for a boy and 7 USD if it was a girl. The attendant told her that she wanted the money immediately because the doctors were leaving for the day and wanted their share before going home. For Nesam Velankanni and her family, 12 US dollars was a substantial amount of money since her husband was working for less than one dollar a day. Eventually, the poor woman's mother-in-law solved the problem by promising to pawn a set of gold earrings and so Nasam Velankanni got to hold her newborn baby. Even if the government of India have established fierce measures to combat such forms of petty corruption and extortion in the health sector, the custom remains partly because many poor people are afraid that their babies will receive bad treatment from angry health care workers if they do not pay (Dugger 2005).

This story, told in *The New York Times* on August 30th, 2005, is but one of innumerable descriptions of corruption and similar forms of dysfunctional government practices that exist in many countries in the health care sector. Survey data about perceptions of corruption from 23 developing countries shows that corruption in the health care sector is ranked as number one among nine sectors in three countries¹, as number two in three other countries² and within the top four most corrupt sectors in another four countries³. In many of these countries, over 80 percent of the population has experienced corrupt practices in the health sector. Another survey study from former communist countries in Eastern Europe has shown that in most of these countries, well over 50 percent of the population thinks that corruption among doctors is widespread (Lewis 2006). In Hungary the practice is to leave an envelope at the doctor's desk with a sum that for an ordinary Hungarian family is quite substantial (Kornai 2000). Another example is the very high level of absenteeism among health personnel in many national health care systems in developing countries. For various reasons (low pay, bad control, low sense of public duties, greed), health care workers in developing countries simply do not show up at

¹ Moldova, Slovakia and Tajikistan.

² Bangladesh, India and Sri Lanka.

³ Kazakhstan, Kyrgyz Republic, Madagascar and Morocco.

work. Instead, they decide to earn extra money by working “on the side” (Lewis and Lloyd-Sherlock 2009; Widmalm 2008). Moreover, Eslava-Schmalback *et al.* show that inequity in health is higher in countries with more corruption (Eslava-Schmalbach et al. 2008, p. 146).

Dying of Corruption

In 2006, the well-known international anti-corruption organization *Transparency International* published a special report about the devastating effects that corruption have on people’s access to health care and on health in general. The report documents the existence of corruption and similar practices in many different areas of the health care sector such as the administration of hospitals, “under the table” payments to doctors in many Eastern European countries, the existence of counterfeit drugs in Nicaragua and overbilling to insurance companies in the United States. The report indicates that while the type of corruption illustrated by the “Bangalore case” above is unusual in the OECD countries, other forms of corrupt practices in the health care sector plague many developed countries. Recently, *The New York Review of Books*, one of the world’s most influential literary magazines, published a lengthy article (and a following “exchange”) titled “Drug Companies and Doctors: A Story of Corruption” in which the author Marcia Angell claims that medical doctors in the U.S. are evaluating the effects of new drugs manufactured by companies in which they also have an economic interest. One interesting part of this “exchange” is that the author of the article does not equate corruption with criminal behaviour. Instead, she argues that corruption should be understood as “undermining the impartiality that is essential both to medical research and clinical practices”. As Marcia Angell argues, “judges do not hear cases in which they have a financial interest. Reporters do not write stories about companies in which they have a financial interest. By the same token, doctors should not have a financial interest in treatments they are evaluating” (Angell 2009). With this definition of corruption, Angell is in line with the former World Bank economist Daniel Kaufmann, who introduced the concept of “legal corruption” by which he means activities by agents to “collude and purchase, or unduly influence the rules of the game, shape the institutions, the policies and regulations and the laws for their own private benefits”.⁴ According to Kaufmann, legal corruption is closely connected to activities that undermine collective action (Kaufmann and Vicente 2005). The

⁴ <http://info.worldbank.org/etools/bspan/PresentationView.asp?PID=2363&EID=1056>

concept of “legal corruption” is especially important in the health care sector since instances when for example hospitals, insurers or pharmaceutical companies act dishonestly to enrich themselves instead of putting the patients medical needs as their first priority, they may not be doing anything that is formally illegal. But as Savedoff and Hussman have argued, “they are abusing the public’s trust in the sense that people and organisations engaged in health care delivery are held to a higher standard in the interest of protection people’s health” (Savedoff and Hussmann 2006). Since the medical profession usually is given a large degree of discretion, they are assumed to act in the best interests of their patients.

Studying the Relationship Between the Quality of Government and Good Health

Corruption has a significant negative impact on population health. Gupta et al (2000) have demonstrated that corruption indicators are negatively associated with for instance child and maternal mortality. The purpose of this study is to try to give a preliminary overview of the relation between variables that measure what has been conceptualized as “Quality of Government” (Rothstein and Teorell 2008) and a number of standard measures of population health in the light of how much and what type of (private or public) money is spent on health care in different countries (Bloom and Canning 2000). In addition to whatever academic interests our study will have, we argue that analyses like this one may have something important to say to policy makers in both the health care and development sector. Simply put, if you want to improve population health (measured as infant mortality and expected life time at birth), what works? More precisely, is it better to simply increase spending on health care (and if so, should this be public or private money), or is it better to improve the overall quality of the countries government institutions?

It should be added that indicators of population health such as the ones we use here, can be interpreted as telling us more about a society than just how healthy its population is. As argued by Hall and Lamont, there are good arguments for taking population health as a measure of how successful different societies are. Based on the idea of “capabilities” launched by Amartya Sen, and criticizing various strands of “post-enlightenment thought for leading to a balkanization within (and between) the social science disciplines, they argue that all else being equal, health enhances people capabilities “to pursue their the goals important to

their lives, whether through individual or collective action” and that this is what defines a successful society (Hall and Lamont 2009, p. 2).

The empirical case studies and illustrations noted above are important for increasing our knowledge about the great variety of corrupt practices that can take place in the health care sector. They are also very valuable for laying bare the “micro-level” logic in these practices and give insights into how the agents’ behaviour can be understood. However, like all case studies, they can be questioned because of the difficulty to generalize from the data. One reason for why many health economists have refrained from studying the impact of corruption on the performance of the health sector in their countries has been the lack of intra-country comparable data. However, by using available measures of indicators on the quality of government institutions in a large number of countries, a small group of scholars have started to analyze this problem at a more generalizable level. The general finding, which we will refer to below, is that the “quality of government factor” is statistically positively related to standard measures of population health such as infant mortality and life expectancy from birth. Moreover, in some studies it has been shown to be more important than the level of public spending on health care. Before summarizing this literature, we want to make a few arguments for why the health care sector may be especially prone to problems of corruption and similar forms of dysfunctional government practices.

Ways of Causality

In development economics, the earlier focus on market liberalization as the primary mean for economic growth (a.k.a. the *Washington Consensus*) has to a large extent been replaced by a new theory that puts forward the importance of the quality of government institutions (Acemoglu and Robinson 2008; Kaufmann and Kraay 2002; Rodrik 2007; Rodrik, Subramanian, and Trebbi 2004). This shift is prominent also in political science where proponents of the importance of democratization for development have started to shift their focus to variables that are closely connected to the performance on the “output” side of the political system (Diamond 2008a; Diamond 2008b; Paris 2004; Popov and Dinello 2007). Among the problems that can hinder the development of high quality government institutions are of course corruption (in its many forms) but also clientelism, patronage and other forms of discrimination. While high quality government institutions can have various institutional

forms, their basic social norm has been defined as “impartiality“ in the exercise of public power (Rothstein and Teorell 2008).

There are several reasons for why population health should be related to the quality of government (henceforth QoG). The indirect links are that since a country’s QoG is positively related to economic performance, high QoG should result in more economic growth which should imply better food, better housing, access to safe water and sanitation, less strenuous working conditions, fewer people living under destitute conditions, and so forth (Bloom and Canning 2000). However, the link between a country’s economic prosperity and population health is by no means clear cut. The “wealthier is healthier” proposition has difficulties handling the fact that there is great variation in for example infant mortality and life expectancy between equally poor and (albeit to a lesser extent) equally rich countries (Evans 2009).

The magnitude of how an institutional factor like QoG indirectly has an effect on population health can be illustrated by the following example. According to a conservative estimation by the World Health Organization, 1.3 billion people lack access to sufficient quantities of safe water, and nearly 3 billion people are without adequate sanitation. Consequently, 80 percent of all illnesses in the developing world are the result of waterborne diseases. A conservative estimation is that 10,000 people die every day from water and sanitation related illnesses (Anbarci, Escaleras, and Register 2009; Stockholm International Water Institute 2006). This problem is by an increasing number of experts in the area no longer seen as an engineering problem that can be solved by more investment in technical equipment. It is not a lack of technical solutions (dams, sewages, water cleaning stations, etc.) or natural supply of clean water that is the main problem. Instead, the problem lies in dysfunctional administrative institutions. More precisely, the problem is seen as caused by a lack of adequate institutions for maintenance, pricing and distribution of rights to land and water (Bruns and Meinzen-Dick 2000; Transparency International. 2008). Cross-comparable empirical assessments of how different institutional frameworks perform comparatively in providing safe water are however in short supply and more research is widely asked for (Bayliss 2003; Bruns and Meinzen-Dick 2000).

Other such indirect causal chains could be that QoG is positively related to social capital (a combination of extended social networks and generalized trust) which in turn has been shown

to have a positive impact on health (Lindstrom and Mohseni 2009; Rothstein and Stolle 2008; Schultz, O'Brien, and Tadesse 2008). Hall and Taylor argue that not being able to cope with various life challenges often leads to emotional as well as physiological health problems. Lacking networks and relations based on mutual trust is one important factor why people lack capabilities to handle various challenges (Hall and Taylor 2009). Using an experimental approach, Rothstein and Eek (2009) have shown that experiencing corruption in public authorities does not only diminish people's trust in these authorities, but also their trust in "people in general". Thus, one can argue for a causal chain that goes from corruption to low trust/low social capital to health problems (Hall and Taylor 2009). Moreover, based on data from the World Value Survey and WHO, Helliwell and Huang (2008) have shown that living under corrupt, unreliable and untrustworthy government institutions is a very important explanation for low subjective well-being (a.k.a unhappiness), especially in poorer countries, controlling for a number of other variables such as divorce rate, income/capita and religiosity. Since low life satisfaction is causally related to health problems, there could thus also be a causal chain running from corruption to unhappiness to low population health.

High levels of QoG should also make people more willing to pay taxes since they would have more confidence in how well their tax money will be used by various government agencies (Scholz and Lubell 1998). Since there is a positive correlation between *public* spending on health care and the standard measures of population health, high QoG should result in more public spending on health care and thus better population health.

Furthermore, as shown by research in social epidemiology, there seems to exist a strong causal link between social and economic inequality on the one hand and low levels of population health on the other hand. For example, Wilkinson and Pickett show that this relation between equality and well-being exist both when they compare Western OECD countries and when they compare the fifty states in the U.S. What is striking about their findings is that mental illness, physical health problems and shorter life expectancy is not only hitting poor people in unequal societies. Instead, they show for example that "across whole populations, mental illness is five times higher in the most unequal compared to the least unequal societies" (Wilkinson and Pickett 2009, p 181). The same goes for problems like obesity, life expectancy and various forms of physical illnesses. As they point out, the Nordic countries together with Japan are the ones that are doing best in their sample. This shows that low levels of inequality (and the following higher level of population health) can be reached

without an encompassing high-spending welfare state (Japan). However, as they also point out, most of the countries that have high levels of population health are countries with encompassing welfare states (the Nordic countries). Thus, there may be another indirect causal link between QoG and population health because in countries with low QoG, people will not entrust the government with enough money (taxes) and without economic resources, there will be a shortage of social policies that ameliorate high levels inequality which, according to this type of research, is a major causal factor behind low population health (Marmot 2004; Siegrist and Marmot 2006; Wilkinson and Pickett 2009).

As indicated by the empirical illustrations mentioned above, one could also hypothesize a number of more direct causal mechanisms between QoG and population health. The health care sector produces a type of service in which what economists call “problems of asymmetric information” are common. The source of the funding for medical treatment, be it the patient herself, a government agency or a private insurance agency, cannot have anything close to “perfect information” if the treatment the doctor(s) suggests is motivated by medical reasons or by an interest for personal enrichment. Moreover, when there is a “third party” that pays, something that is common in most developed countries, patient and doctor can collaborate to use treatments that cost more than what is medically motivated. The health care sector is special since the provider of the service usually determines what the “customers” should buy (Savodoff and Hussmann 2006). The consequence of these information problems is that the health care service is a classic case for “market failures” implying that governments usually have to be involved in order to avoid massive inefficiency (Barr 2004). This implies that the production of an efficient health care sector often involves a complex mix of public, semi-private and private providers as well as regulatory agencies. Taken together, the problems of the economic magnitude of the health care sector in many countries, the complex mix of actors and the information problems may make this sector especially prone to corruption (legal or illegal) as well as other forms of low QoG.

State of the Art

Surprisingly, there are only a handful of studies in the health and governance literature that systematically have analyzed the relation between health, health care and QoG.

Employing data from 91 countries, Rajkumar and Swaroop analyzes the impact of public health spending on child mortality by modelling the interaction between public spending and QoG variables such as “quality of bureaucracy” and “control of corruption”. Controlling for a number of other variables, such as income inequality and ethno-linguistic division, they conclude that QoG is central in determining the effectiveness of public spending on health care. The empirical analysis reveals that a one percentage point increase in the share of public health spending of GDP lowers the child mortality rate by 0.32 % in countries with high QoG, 0.20 % in countries with average QoG and has no effect in countries with low QoG. (Rajkumar and Swaroop 2008)

One of the few meta-analyses of the relation between QoG and health has been carried out by Maureen Lewis for the Center for Global Development. The main finding is that “good governance” is a critical factor in making national health care systems work and that public spending on health care is inefficient in countries with low QoG. Unless governments shift their attention to the institutional factors that affect performance in the health sector, it is doubtful that mortality rates will decline (Lewis and Lloyd-Sherlock 2009). Wagstaff and Claeson (2004) have shown that an increase in the levels of public health funding in countries that have received a medium or low CPIA (Country Policy and Institutional Assessment) that measures the quality of policies and institutions) score by the World Bank would not by itself necessarily lead to a reduction in child mortality. Conversely, they demonstrate that in countries with high levels of QoG, an increase in government health budgets would reduce mortality rates for children and mothers based on the assumption that the additional funding is distributed to programs and institutions according to the same ratio as current allocations. A similar result is reached by a study with data from 118 developing countries (Baldacci et al. 2008). Regarding the specific question of HIV, an analysis of 149 countries shows that the prevalence of HIV is significantly related to low QoG (Menon-Johansson 2005). Lastly, in a recent study, Klomp and de Haan have undertaken the most advanced study that we have found so far in this area in terms of data and methods. The authors criticise the above mentioned type of studies for only taking a few control variables into account and that their conclusions about the positive effect of QoG on population health therefore are in doubt. They furthermore argue that the relationship between governance and the (quality of) the health care sector is arguably a key variable in explaining differences in health outcome across countries. In addition to a wealth of data from 101 countries for measuring QoG, Klomp and de Haan use sixteen indicators for measuring health. In addition to the standard

indicators mentioned above, they add for instance the prevalence of a number of diseases such as HIV, Polio and Tuberculosis. Moreover, they measure the standard of the health care sector by using ten indicators such as, for example, number of health care personnel per 1,000 inhabitants and immunization rates for four different illnesses (Hepatitis, Diphtheria, Measles and Tuberculosis).

Klomp and de Haan's main finding is that governance influences health through its indirect positive effects on the standard of the health care sector and on income. A 1 % increase in governance leads to an increase of 0.55 % in the quality of the health sector and 3.54 % in the health of individuals. Moreover, the study shows that it is through the indirect positive effects on income that governance can contribute most to an improvement in health. However, the authors also argue that the significance of these indirect effects varies between country groups. For countries with a relatively healthy population, QoG will have a positive indirect effect through the quality of the health care sector, but not via income. On the other hand, for countries with a poor population health, the case will be the opposite; QoG will have a positive indirect effect through income, but not via the quality of the health care sector (Klomp and de Haan 2008). Lazarova and Mosca (2008) have a similar argument when they make the case that absolute income is what matters the most in terms of improving health indicators in countries below a certain threshold (5,000 PPP international dollars per capita), whereas in the countries above this threshold it is QoG that is the most important determinant of health.

One conclusion from this study is that the influence from QoG on the standard of the health sector may be explained that it is only in countries with a relatively high level of general QoG that people are willing to pay the taxes at the level needed to have a high standard in the health care sector. However, the causality may also run in the opposite direction. In countries where people perceive that the quality of the health care sector is low (for example because they experience various forms of corruption by the health care staff), they will not be willing to pay taxes at the level needed to increase the general QoG (Rothstein and Eek 2009). Another conclusion is that the small amount of research in this area and the variation in the results point to the need for more research.

Charting Basic Relationships

As a first take on the relation between QoG and population health, we felt an urgent need to simply chart the basic relationships between a number of well-known Quality of Government variables and some standard measures of population health. Our data is from the Quality of Government open source dataset (Teorell, Holmberg, and Rothstein 2008). Aided by some of the meta-analyses cited above, we decided to employ three QoG variables and five indicators of health. Since money always matters, we also concluded that we could not avoid including some spending variables. Hence, four measures of health spending were incorporated as well. A pivotal question is to what extent quality of government matters besides, or on top of, health spending. A related but largely overlooked question in the literature is whether public or private health spending is best at creating good health? And if one type of health spending is better than the other, does the same still hold in combination with good government?

Our three chosen QoG variables are the World Bank's Rule of Law indicator, the World Bank's Government Effectiveness measure and Transparency International's Corruption Perceptions Index. In theory they measure different things, but in practice all three of them are highly inter-related with correlation coefficients of around .93. However, for informational purposes we include all three in our investigation.

Four of our five health variables are also highly internally correlated across our sample of some 180 countries. The internal correlations vary between .85 and .97. The four variables are Life Expectancy at Birth, Mortality Rate for Children under Five, Maternal Mortality Rate and Healthy Life Expectancy – all taken from WHO. Our fifth health variable is less correlated with the other four (around .10). It is a Subjective Health measure taken from the World Value Survey and it is only available for around 45 countries in the Quality of Government Institute data bank. The money variables measure Total Health Spending (% of GDP), Government Spending on Health (% of GDP), Private Spending on Health (% of GDP) and Private Share of Total Health Spending (%). All spending measures have been put together by WHO.

In the Figure Appendix, that is fully published on the QoG Institute's web page, 35 bivariate scatter plots with regression lines are presented for all of our five health variables and they

have been run against the three QoG variables and the four health spending measures.⁵ Browsing through all these very informative scatter plots gives an excellent overview of the bivariate relationships around the world between, on the one hand, health spending and good government and, on the other, good health. Five of these instructive plots can be found at the end of this article.

Added to this, we have also included 24 additional scatter plots that demonstrate the connections between two health indicators (Healthy Life Expectancy and Mortality Rate for Children under Five) and three measures of Health Spending and three QoG variables in OECD countries as well as Non-OECD countries (see the QoG Institute's web page). This addition was made in order to be able to study the relationships hands on among more developed and rich countries in comparison to less developed and poor countries. In the health literature, the degree of economic development is often included as an intervening or interacting variable ultimately affecting levels of population health. The hypothesis is that a better economy leads to better health for the population. The OECD versus Non-OECD classification of countries is used as a crude but useful and concrete proxy for the level of economic development and richness.

The results are summarized in a set of tables in the Table Appendix. All QoG variables reveal strong and positive bivariate relationships with all five Health indicators. Here a positive relation indicates that *more* of a QoG variable is positively associated with *higher* levels of Life Expectancy, *lower* levels of Mortality Rates for Children and Mothers, *higher* levels of Healthy Life Expectancies and *higher* levels of Subjective Health feelings. The positive relationship with QoG is most pronounced for Healthy Life Expectancy and least noticeable for Subjective Health.

In contrast to the strong relationships between the QoG variables and the Health indicators, the relationships between the Health Spending measures and population Health is rather weak most of the time and occasionally non-existent. The connection to Health levels is positive, but weak for Total Health Spending and Government Health Spending. However, for Private Health Spending as well as for Private Share of Total Health Spending, the relation to good Health is close to zero or slightly negative. A negative relation in this context means that

⁵ <http://www.qog.pol.gu.se>, - Working Paper 2009:16

more Private Health Spending (as a percentage of GDP) is coupled with *lower* Life Expectancy, *higher* Mortality Rates among Children and Mothers, *lower* Healthy Life Expectancies and *lower* Subjective Health assessments.

Controlling for being an OECD or a Non-OECD country does not change any of the relationships. The QoG variables are all positively related to good Health among OECD as well as Non-OECD countries. However, if anything, the relationships are somewhat stronger among OECD countries. Notwithstanding this, it is worth emphasizing that the connection between good Government and good Health is rather strong and positive among the less economically developed Non-OECD countries. Quality of Government matters for good Health among poor as well as rich countries.

Even the relationships between Health Spending and levels of population Health stay the same after taking OECD membership into consideration. All correlations are weak if at all existing. But the relationship between Total Health Spending and good Health as well as the relation between Government Health Spending and good Health is positive among OECD and Non-OECD countries. For Private Health Spending there is no relation, or a negative one, with Health indicators like the Mortality Rate of Children under Five and Healthy Life Expectancy. Thus, money matters for good Health, but only to a limited extent. And preferably it should be public money, not private.

Testing the results for overlapping or confounding effects in multivariate analyses further strengthens our conclusions. For example and as in Table 5, regressing a Health indicator (Healthy Life Expectancy) on a QoG variable (Government Effectiveness) and two Health Spending variables (Government as well as Private Expenditures on Health) underscores our previous finding that Quality of Government as well as Public Health Spending – independent of each other - is strongly and positively connected to high levels of population Health.⁶ Private Expenditures on Health, however, is not associated with good Health. If there is any connection it tends to be negative, not positive.⁷

⁶ The results remain unchanged when we include interaction terms in the regression analyses. There are no significant interaction effects from Government Effectiveness and the Health Spending variables on levels of Healthy Life Expectancy. The independent linear effect of Government Effectiveness is the most important.

⁷ We have run the regression test separately among OECD countries and Non-OECD countries. The QoG variable has a strong and significant positive effect on Healthy Life Expectancy in both analyses, among OECD and Non-OECD countries. Government Health Spending has also a positive effect in both cases, but among the

Consequently, the recommendation coming out of our study to improve Health levels around the world, in rich countries as well as in poor countries, is to improve the Quality of Government – corruption kills – and to finance health care with public, not private, money.

Good Governing Matters

As indicated above, there are many reasons for why variations in the level of Quality of Government should have an impact on population health. Some are what we have called the direct factors such as absenteeism of health personnel because they want to earn more money working illegally on the side. Demands of extra “under the table” fees may deter some of those that are in most need of health care to visit health clinics. Corruption in the procurement of contracts and the supply of pharmaceutical may be other such direct factors. However, as shown in the cases of safe water and policies that ameliorate the worst forms of inequality, there may also be strong indirect effects between QoG and population health. Our results so far are of course preliminary and need to be analyzed further using more control variables. For example, the HIV epidemic that has had devastating effects in large parts of sub-Saharan Africa may be related to factors that are very remotely, if at all, related to any of the QoG measures we have used in this analysis (Persson and Sjöstedt 2009). Still we believe that as a first take, we have shown that studying this relationship is important. The finding that it is public and not private spending that has a positive effect on population health demands further investigations. One possible way for understanding this surprising effect may be the following. According to new research by Krishna, what drives people into poverty in many developing countries (and also for the uninsured part of the population in the United States) is that they themselves, or someone in their family, are hit by an illness that requires extensive medical treatment (Krishna 2006). Lacking health insurance, the medical bills they have to pay becomes a financial burden of such a magnitude that they are driven into severe poverty, often because they have to sell land, cattle or other assets that they have used to accumulate income. The effect of the lack of publicly funded health insurance results in severe poverty for many which, in turn, may be the cause for why they a) are hit by the inequality-bad health effect that the social epidemiologists have analyzed or, that they simply will lack resources for even basic forms of preventive health care (Krishna 2007).

few OECD countries the regression coefficient is not significant. Private Health Spending has a not-significant but negative effect on good Health among OECD as well as Non-OECD countries.

Appendix Figures

Table 1. The Relationship Between Three Quality of Government Variables and Five Indicators of Health

Health Indicator	Rule of Law		CPI		Government Effectiveness	
	R ²	Relation	R ²	Relation	R ²	Relation
Life Expectancy at Birth	.38	pos.	.28	pos.	.38	pos.
Mortality Rate Children <5	.38	pos.	.26	pos.	.38	pos.
Maternal Mortality Rate	.32	pos.	.24	pos.	.33	pos.
Healthy Life Expectancy	.47	pos.	.38	pos.	.47	pos.
Subjective Health (WVS)	.14	pos.	.20	pos.	.19	pos.

Comment: A positive relation indicates that more of the QoG-variable is positively associated with *higher* levels of Life Expectancy, *lower* levels of Mortality Rates for Children and Mothers, *higher* levels of Healthy Life Expectancies and *higher* levels of feeling Subjectively Healthy. A negative relation indicates the opposite on all accounts. CPI stands for Corruption Perception Index. The data come from the QoG Institute Data Bank. All variables are specified in the Figure Section.

Table 2. The Relationship Between Four Measures of Health Spending and Five Indicators of Health

Health Indicator	Total Health Spending (% of GDP)		Gov't Spending on Health (% of GDP)		Private Spending on Health (% of GDP)		Private Share of Total Health Spending (%)	
	R ²	Relation	R ²	Relation	R ²	Relation	R ²	Relation
Life Expectancy at Birth	.13	pos.	.23	.pos	.01	neg.	.14	neg.
Mortality Rate Children < 5	.14	pos.	.20	.pos	.00	neg.	.13	neg.
Maternal Mortality Rate	.11	pos.	.19	.pos	.00	neg.	.10	neg.
Healthy Life Expectancy	.16	pos.	.23	.pos	.01	neg.	.14	neg.
Subjective Health (WVS)	.20	pos.	.10	.pos	.09	pos.	.01	neg.

Comment: See Table 1. A negative relation means that more private spending on health as a percentage of GDP or as a percentage of total health spending is associated with *lower* Life Expectancy, *higher* Mortality Rates among Children and Mothers, *lower* levels of Healthy Life Expectancy and *lower* levels of Subjective Health assessments.

Table 3. The Relationship Between Three Quality of Government Variables and Two Indicators of Health Levels Among OECD and Non-OECD countries.

Corruption Perception Index

Health Indicator	OECD Countries		Non-OECD Countries	
	R ²	Relation	R ²	Relation
Mortality Rate Children <5	.24	pos.	.17	pos.
Healthy Life Expectancy	.49	pos.	.13	pos.

Government Effectiveness

Health Indicator	OECD Countries		Non-OECD Countries	
	R ²	Relation	R ²	Relation
Mortality Rate Children <5	.37	pos.	.34	pos.
Healthy Life Expectancy	.55	pos.	.30	pos.

Rule of Law

Health Indicator	OECD Countries		Non-OECD Countries	
	R ²	Relation	R ²	Relation
Mortality Rate Children <5	.44	pos.	.33	pos.
Healthy Life Expectancy	.55	pos.	.30	pos.

Comment: See Table 1. A positive relation indicates that more of the QoG-variable is positively related to *higher* levels of Healthy Life Expectancies and to *lower* levels of Child Mortality.

Table 4. The Relationship Between Three Measures of Spending on Health and Two Indicators of Health Levels Among OECD and Non-OECD Countries

Total Health Spending (% of GDP)

Health Indicator	OECD Countries		Non-OECD Countries	
	R ²	Relation	R ²	Relation
Mortality Rate Children <5	.06	pos.	.08	pos.
Healthy Life Expectancy	.13	pos.	.04	pos.

Government Spending on Health (% of GDP)

Health Indicator	OECD Countries		Non-OECD Countries	
	R ²	Relation	R ²	Relation
Mortality Rate Children <5	.19	pos.	.12	pos.
Healthy Life Expectancy	.28	pos.	.09	pos.

Private Spending on Health (% of GDP)

Health Indicator	OECD Countries		Non-OECD Countries	
	R ²	Relation	R ²	Relation
Mortality Rate Children <5	.01	neg.	.00	neg.
Healthy Life Expectancy	.00	neg.	.01	neg.

Comment: See Table 2. A positive relation indicates that more of the health spending variable is associated with *higher* levels of health. A negative relation means that more health spending is related to *lower* levels of health.

Table 5. Regressing Healthy Life Expectancy on Government Effectiveness and Government and Private Expenditures on Health

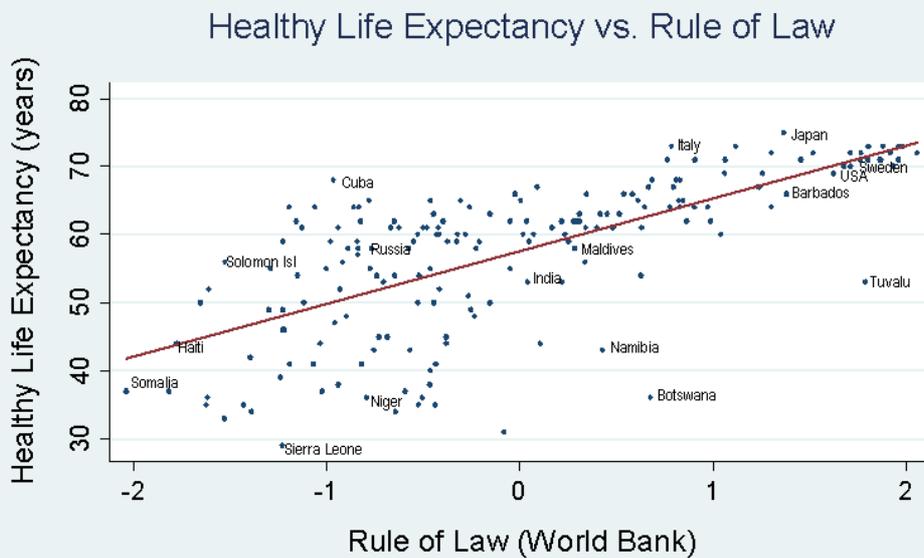
	Coefficient	t-value
Constant	54.3***	30.1
Government Effectiveness	6.60***	9.6
Government Expenditure on Health (% of GDP)	0.96***	3.0
Private Expenditure on Health (% of GDP)	-0.10	-0.2

Adj. R² = .48

Comment: The dependent variable (Healthy Life Expectancy) is measured in years. The Expenditure variables are measured as percent of GDP. The World Bank's Government Effectiveness variable is standardized and varies in most cases between -2.5 (low effectiveness) and +2.5 (high effectiveness).

Appendix Figures

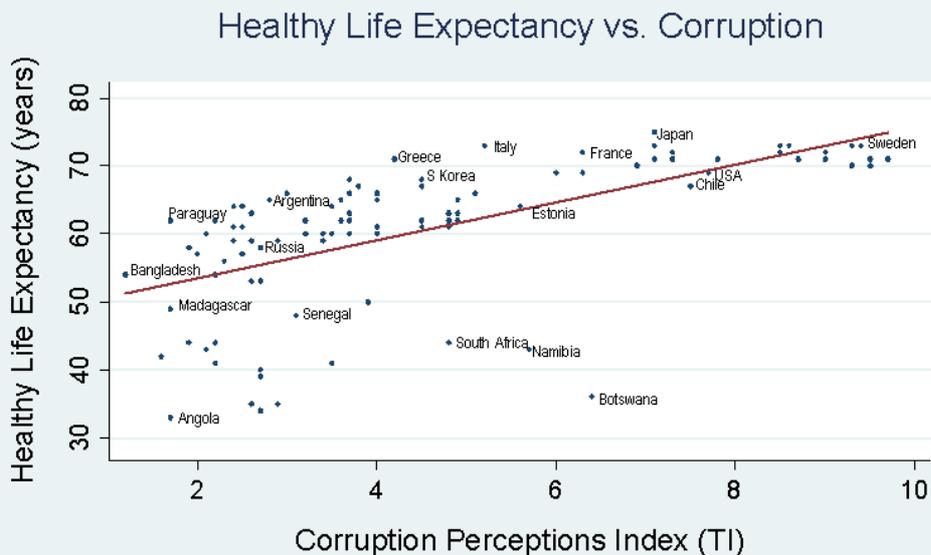
Figure 1



R-squared=0.47

Source: WHO 2003, World Bank Governance Indicators 2002

Figure 2

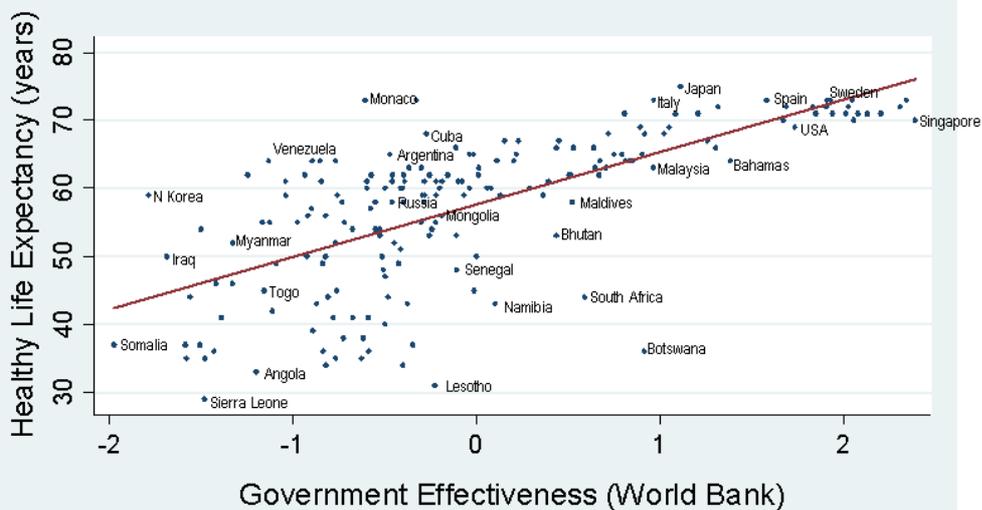


R-squared=0.38

Source: WHO 2003, Transparency International (2002)

Figure 3

Healthy Life Expectancy vs. Government Effectiveness

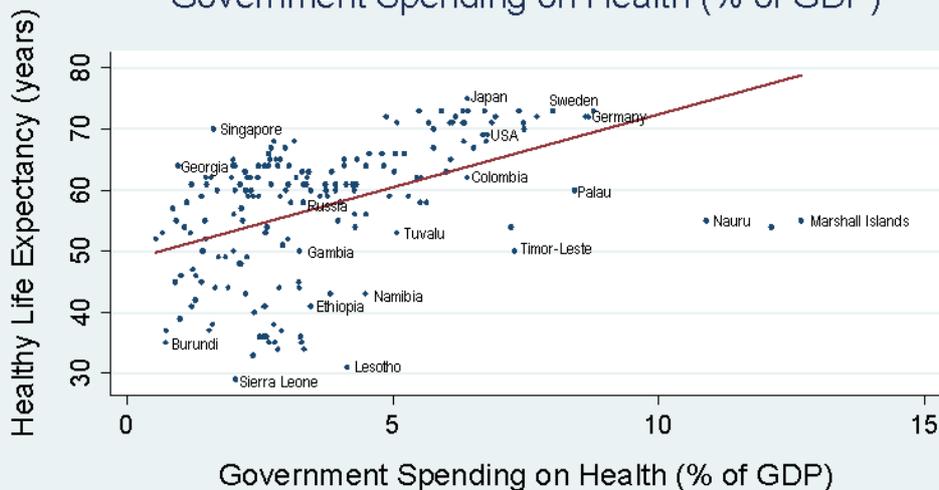


R-squared=0.47

Source: WHO 2003, World Bank Governance Indicators 2002

Figure 4

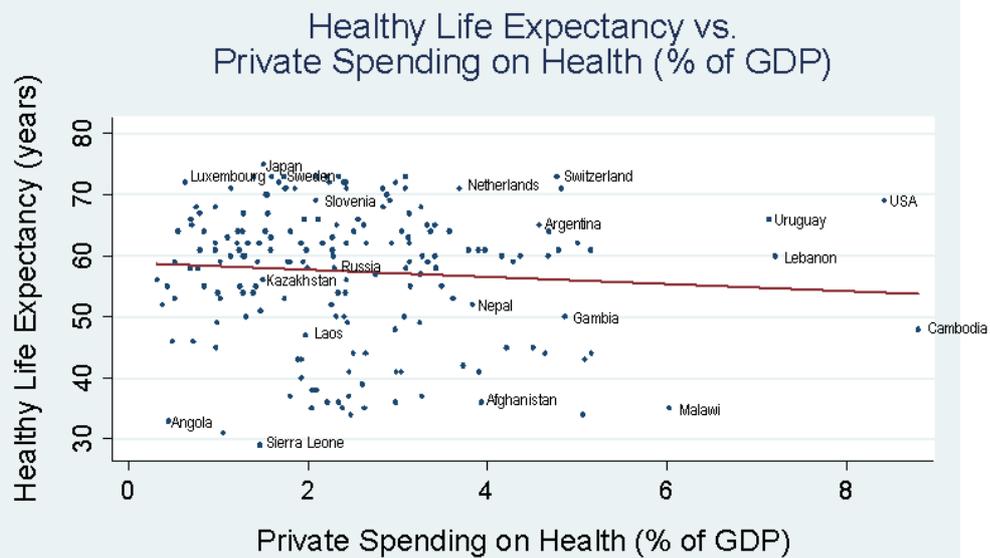
Healthy Life Expectancy vs. Government Spending on Health (% of GDP)



R-squared=0.23

Source: WHO 2003, World Health Organization 2003

Figure 5



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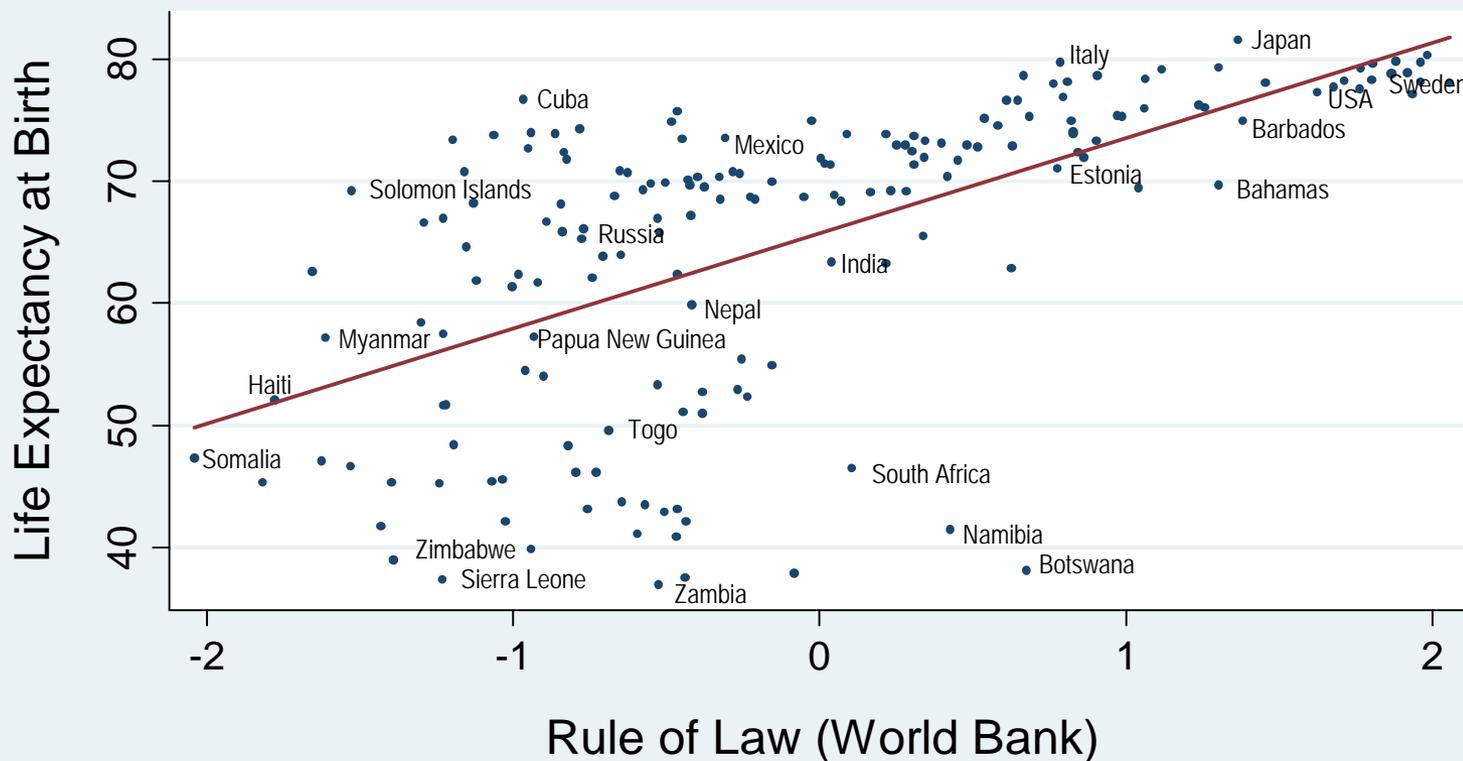
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Appendix Figures

Figure 1

Life Expectancy at Birth vs. Rule of Law

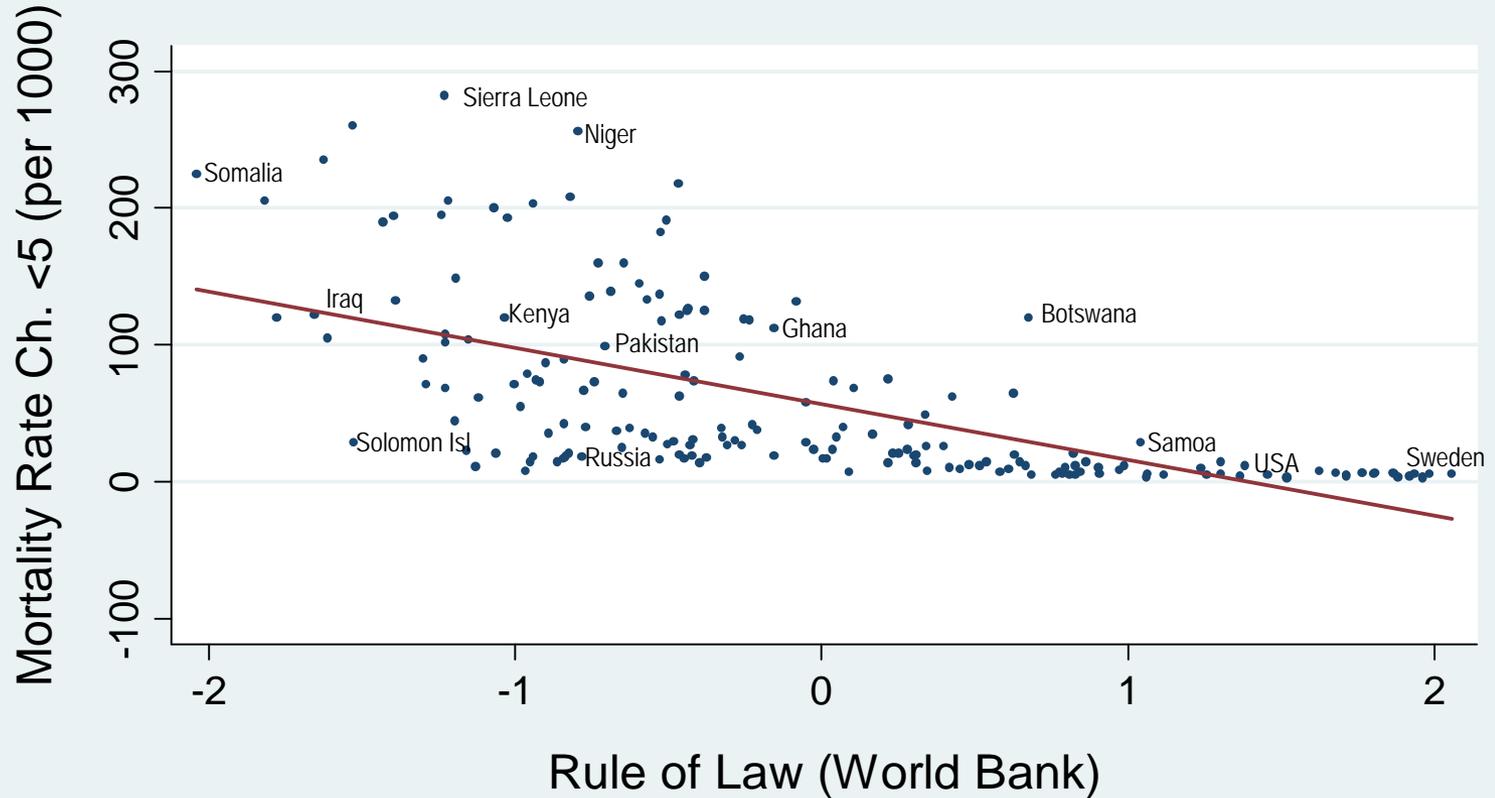


R-squared=0.38

Source: World Development Indicators 2002, World Bank Governance Indicators 2002

Figure 2

Mortality Rate Children <5 vs. Rule of Law

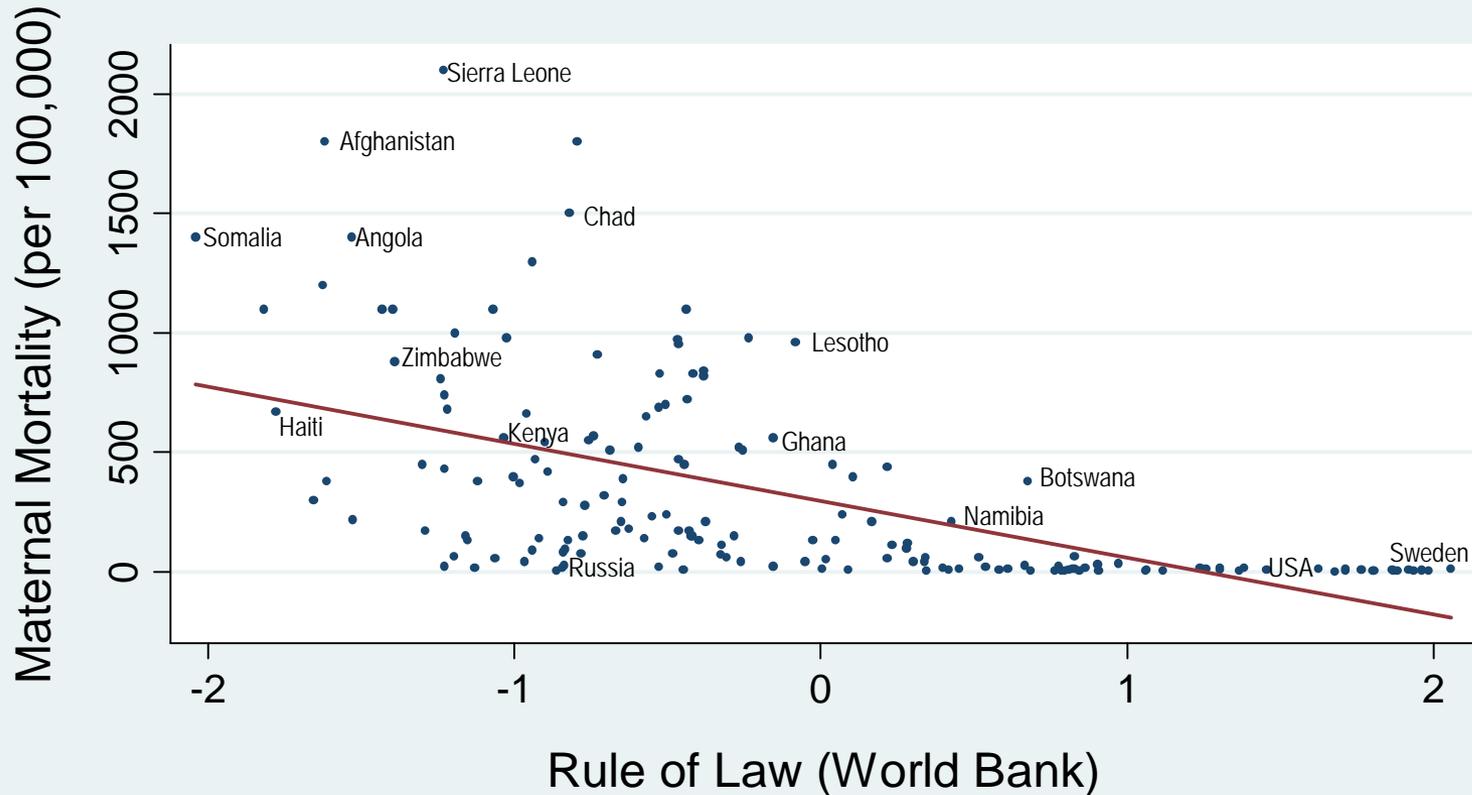


R-squared=0.38

Source: World Bank HNPStats 1995-2005, World Bank Governance Indicators 2002

Figure 3

Maternal Mortality Rate vs. Rule of Law

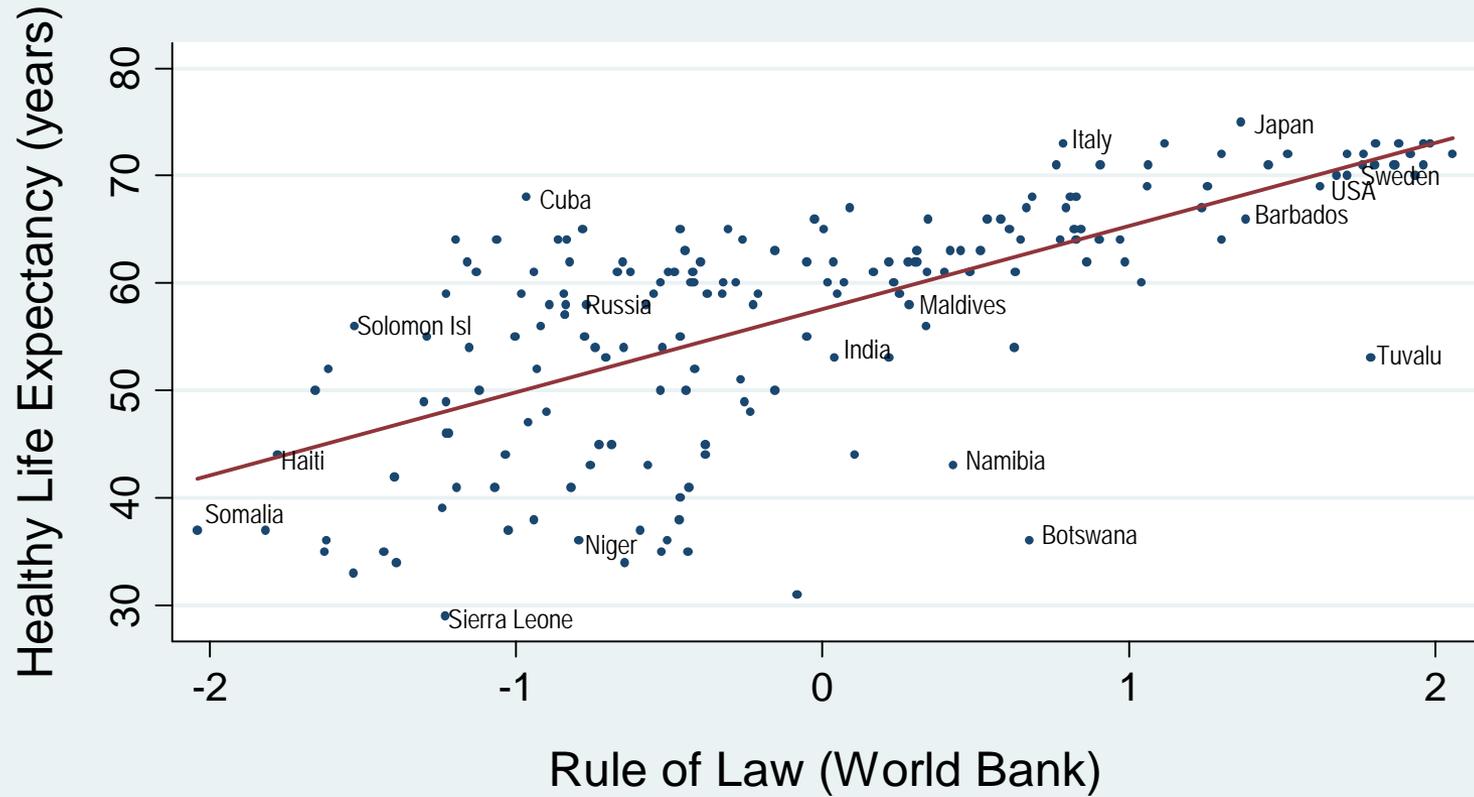


R-squared=0.32

Source: WHO 2005, World Bank Governance Indicators 2002

Figure 4

Healthy Life Expectancy vs. Rule of Law

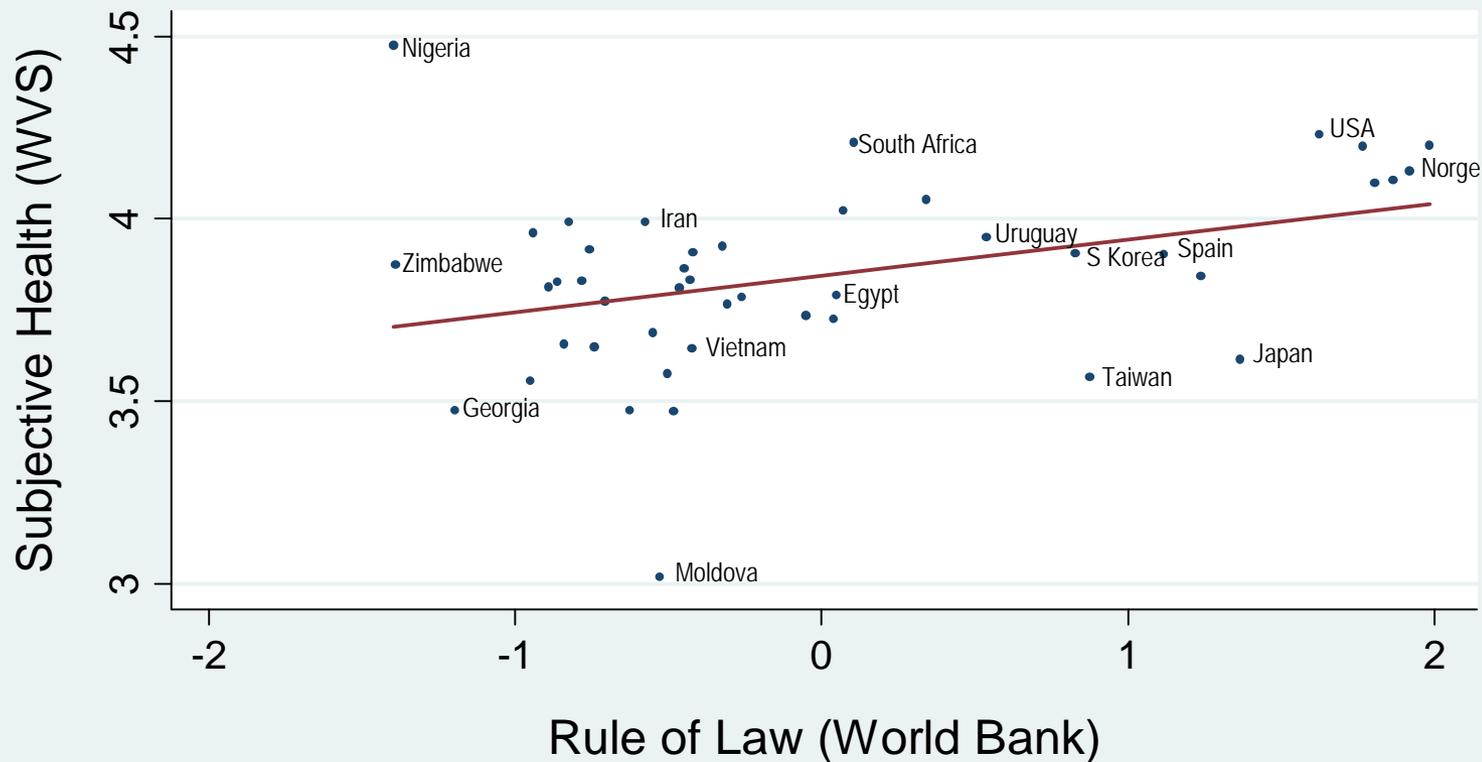


R-squared=0.47

Source: WHO 2003, World Bank Governance Indicators 2002

Figure 5

Subjective Health vs. Rule of Law

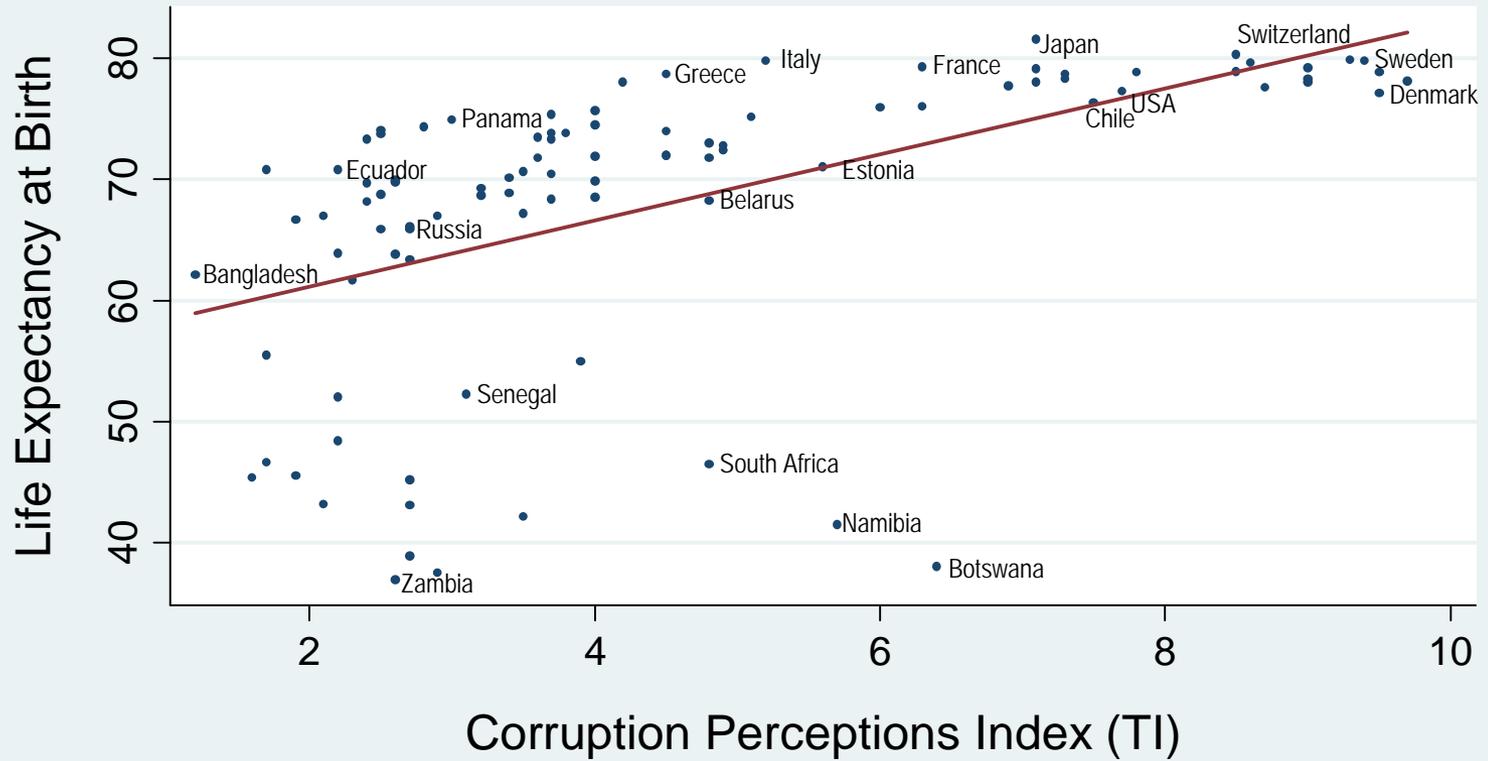


R-squared=0.14

Source: World Values Survey 1999-2002 (reversed scale), World Bank Governance Indicators 2002

Figure 6

Life Expectancy at Birth vs. Corruption

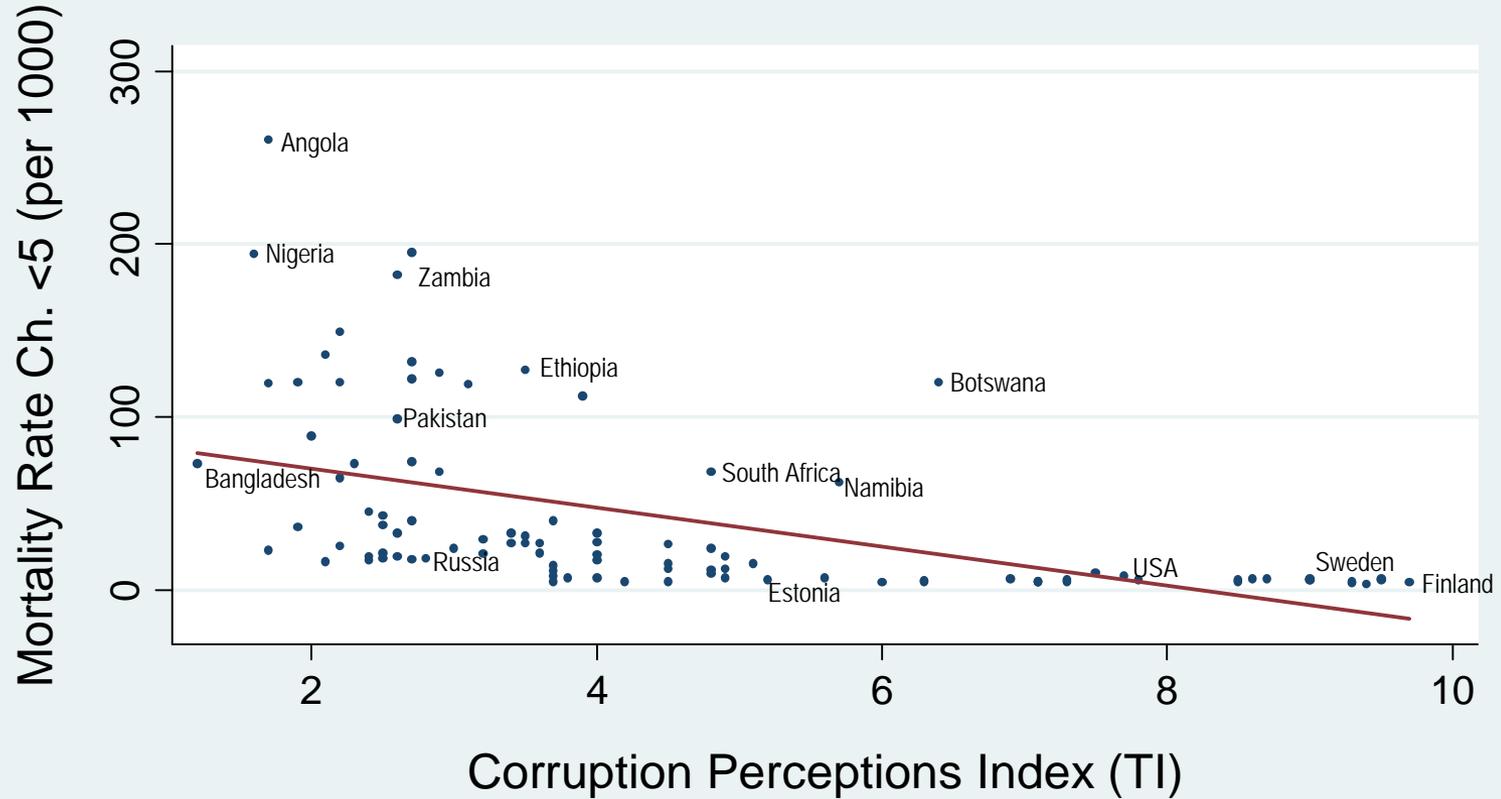


R-squared=0.28

Source: World Development Indicators 2002, Transparency International 2002

Figure 7

Mortality Rate Children <5 vs. Corruption

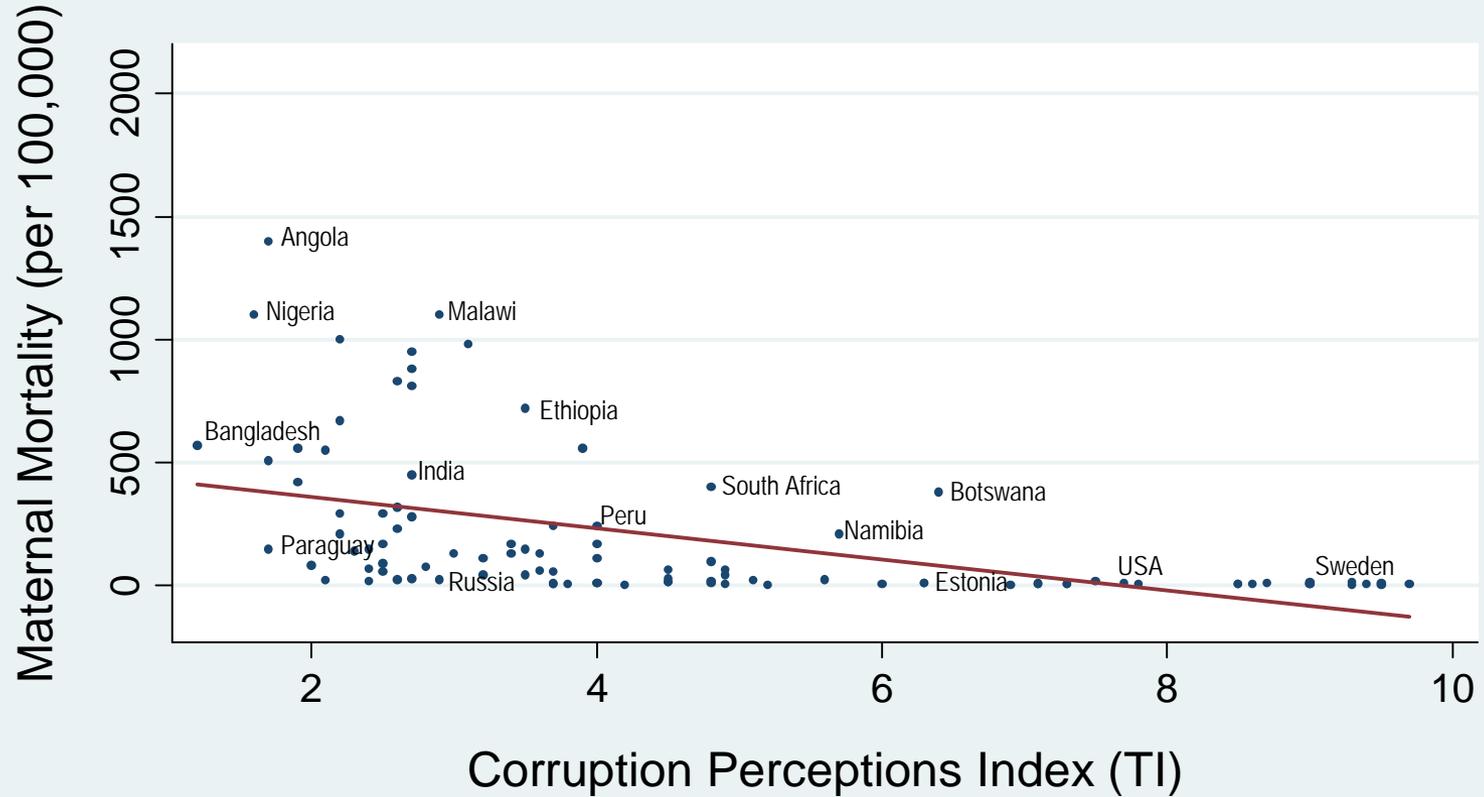


R-squared=0.26

Source: World Bank HNPStats 1995-2005, Transparency International (2002)

Figure 8

Maternal Mortality Rate vs. Corruption

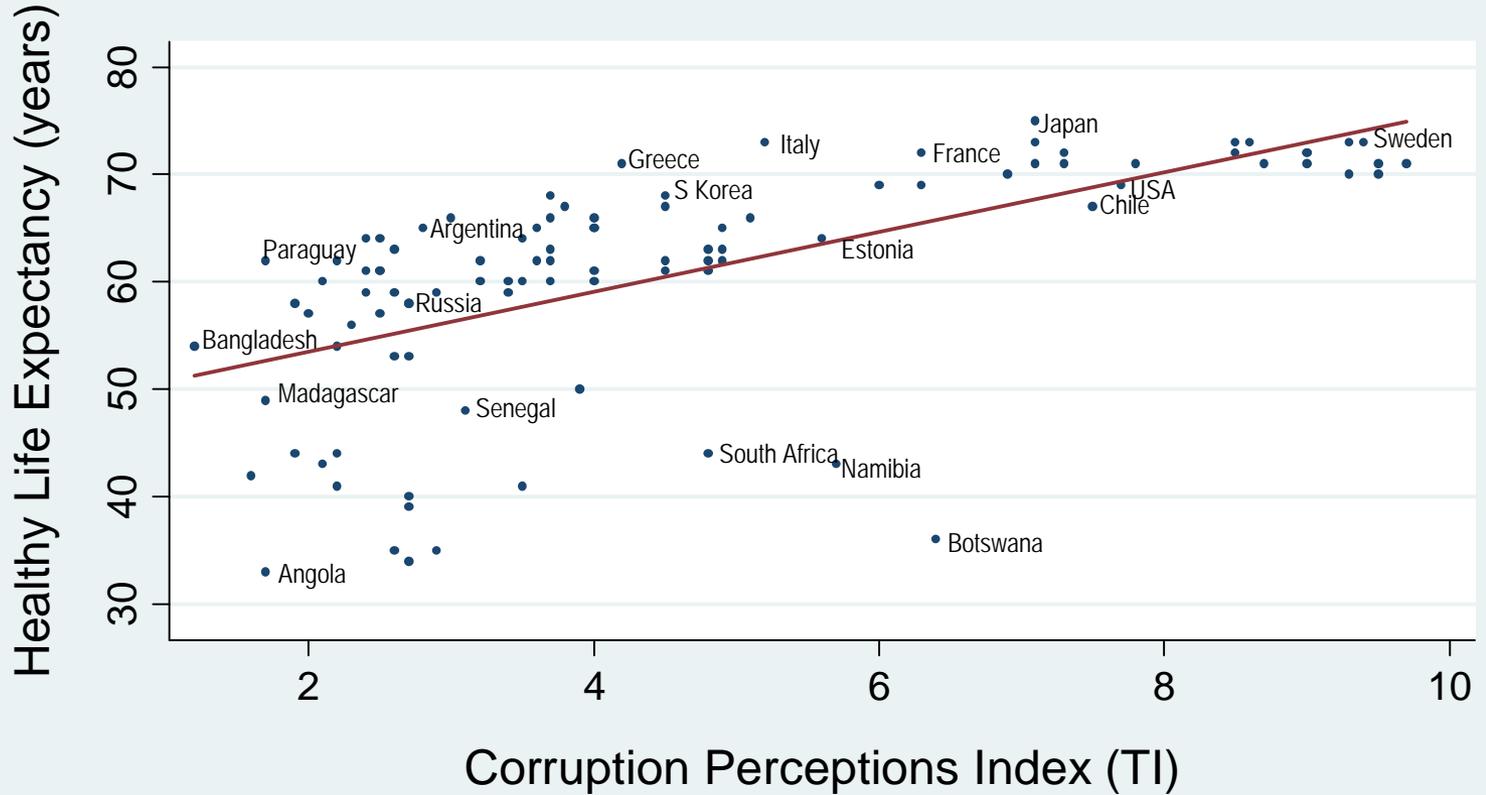


R-squared=0.24

Source: WHO 2005, Transparency International (2002)

Figure 9

Healthy Life Expectancy vs. Corruption

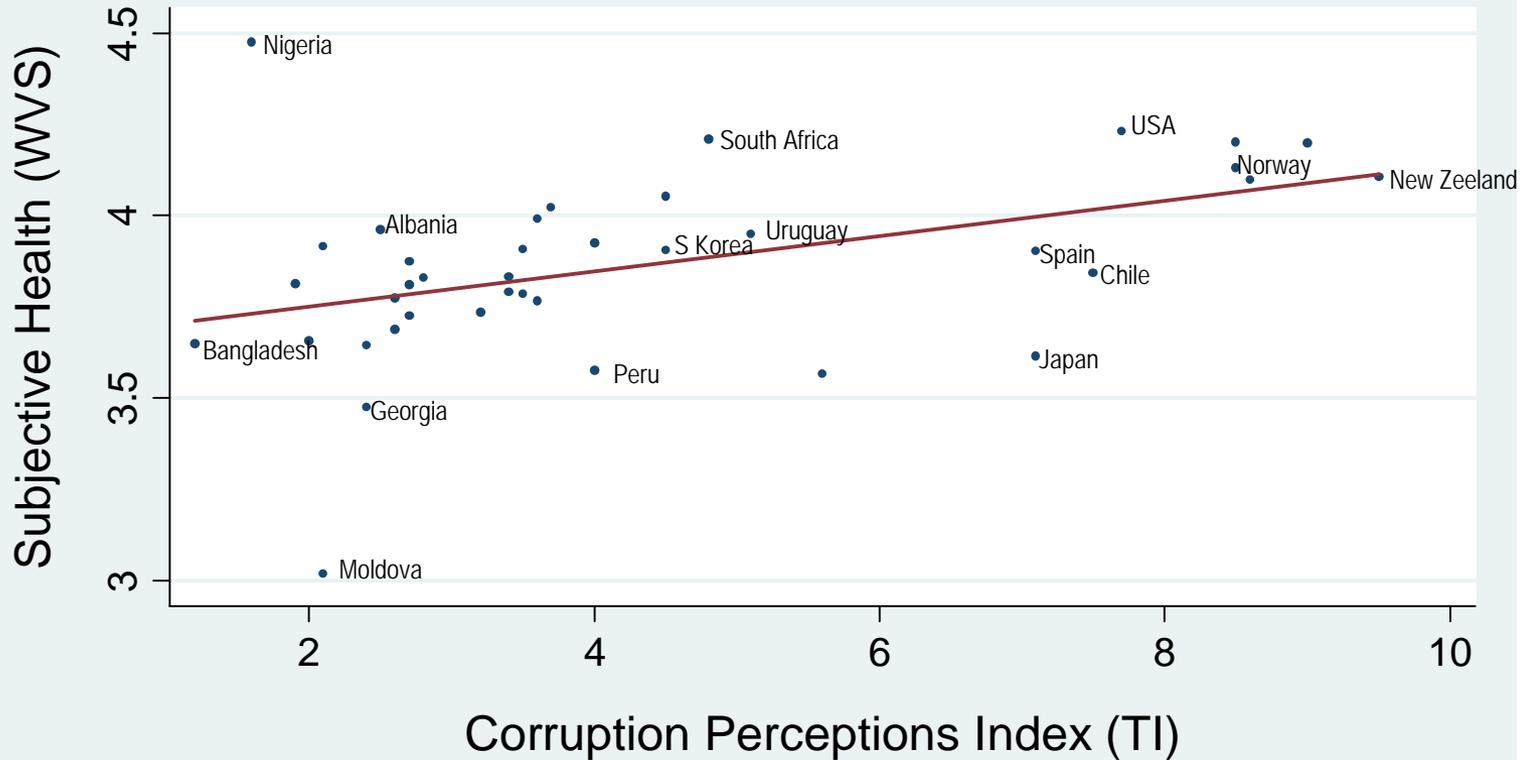


R-squared=0.38

Source: WHO 2003, Transparency International (2002)

Figure 10

Subjective Health vs. Corruption

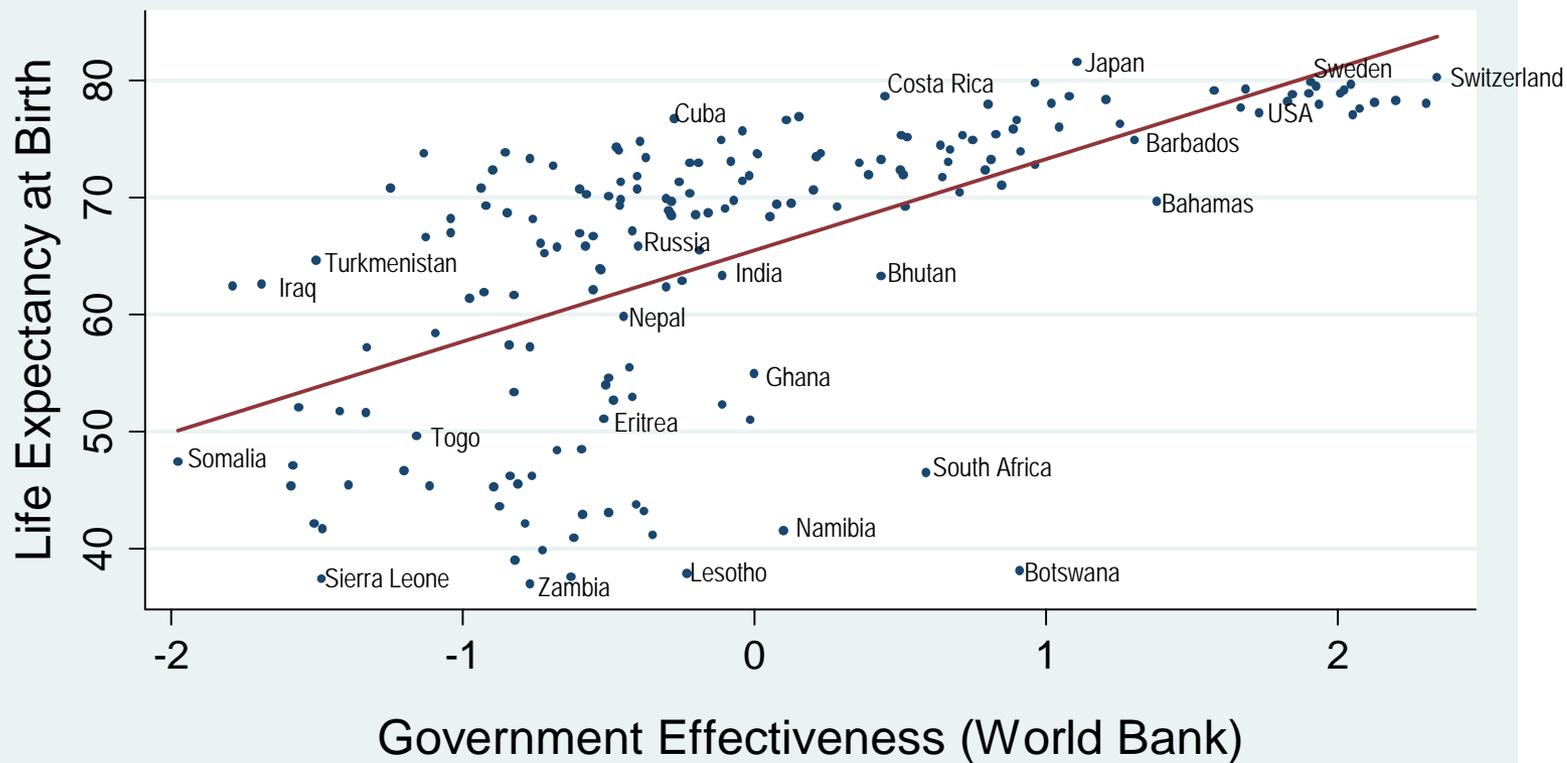


R-squared=0.20

Source: World Values Survey 1999-2002 (reversed scale), Transparency International (2002)

Figure 11

Life Expectancy at Birth vs. Government Effectiveness

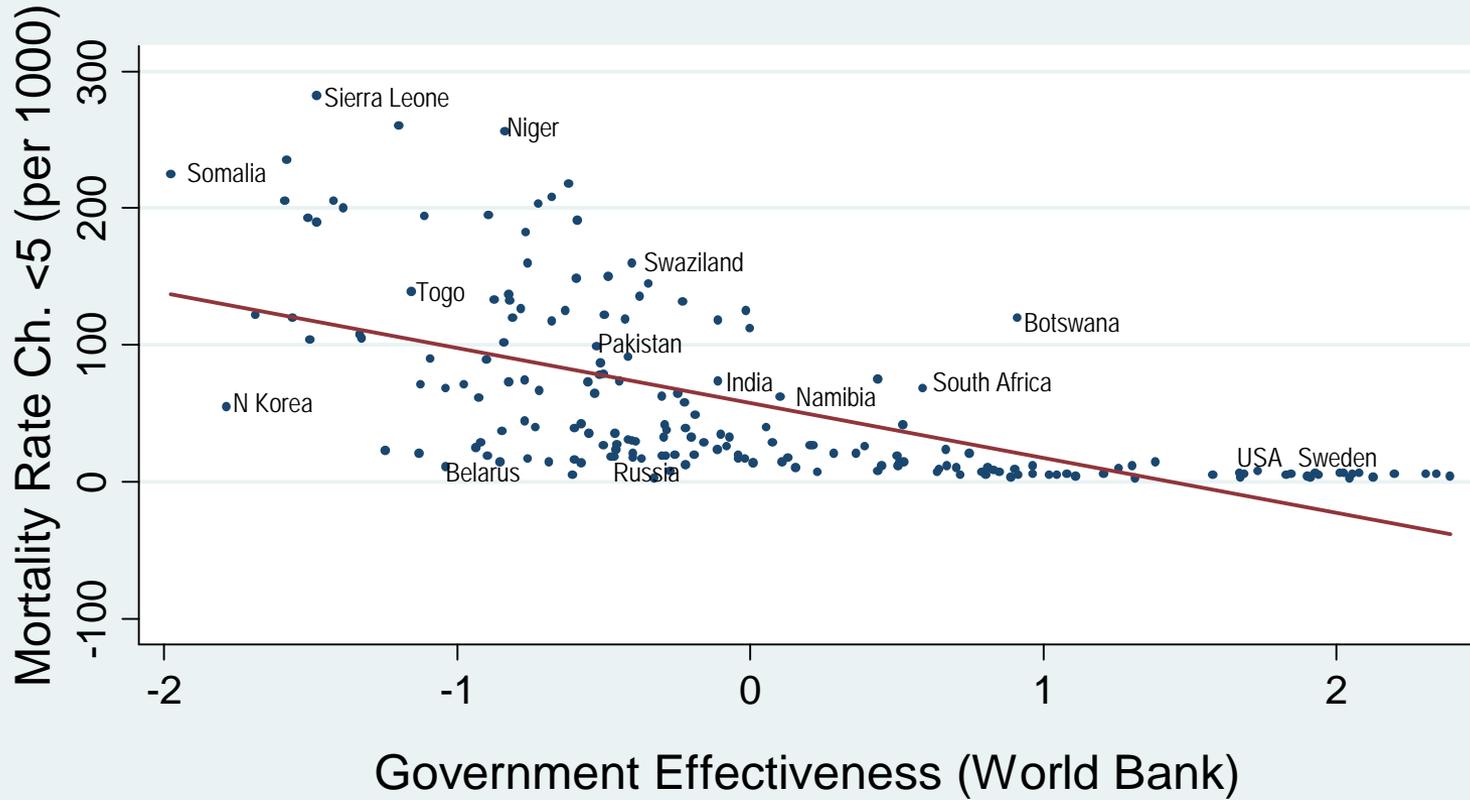


R-squared=0.38

Source: World Development Indicators 2002, World Bank Governance Indicators 2002

Figure 12

Mortality Rate Children <5 vs. Government Effectiveness

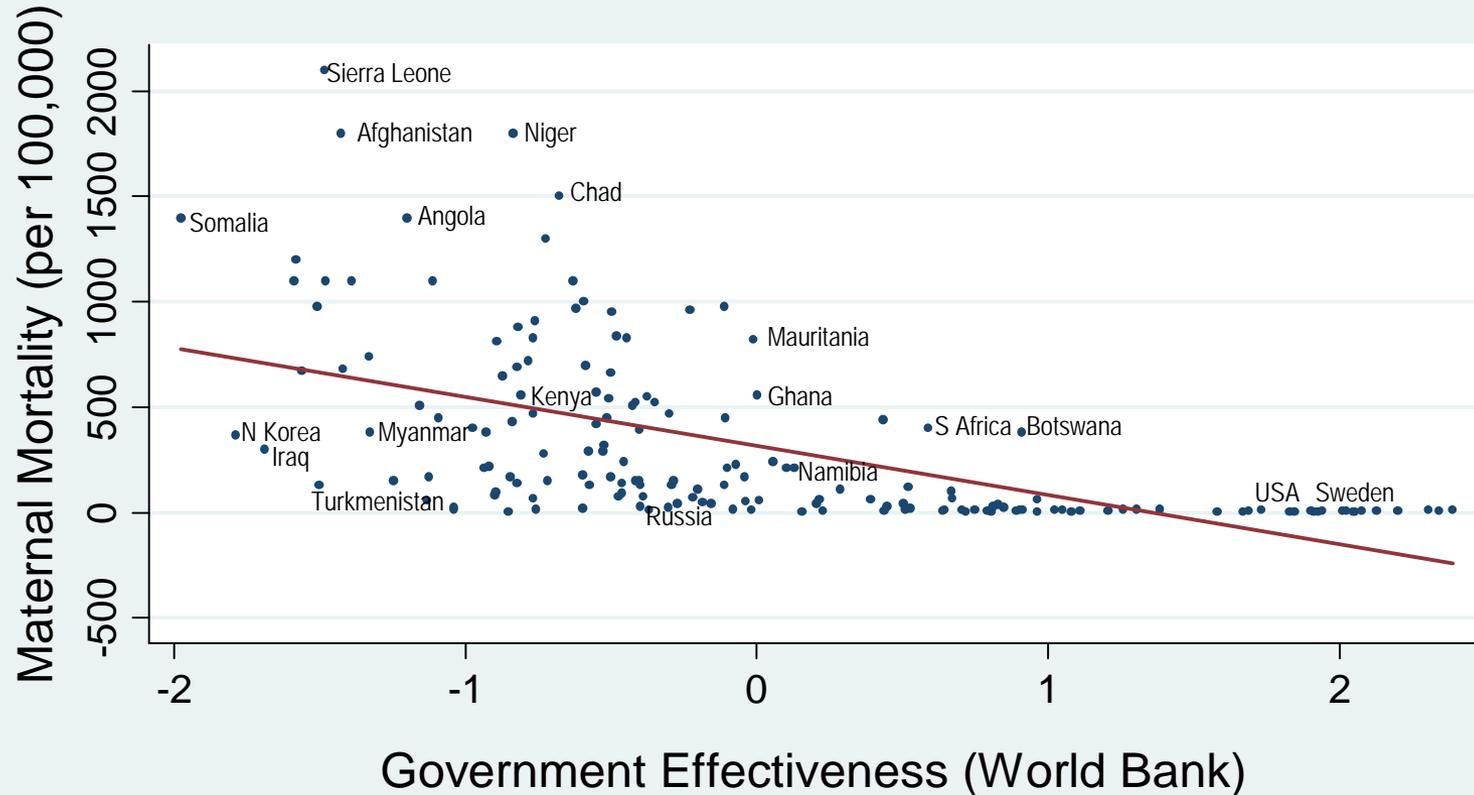


R-squared=0.38

Source: World Bank HNPStats 1995-2005, World Bank Governance Indicators 2002

Figure 13

Maternal Mortality Rate vs. Government Effectiveness

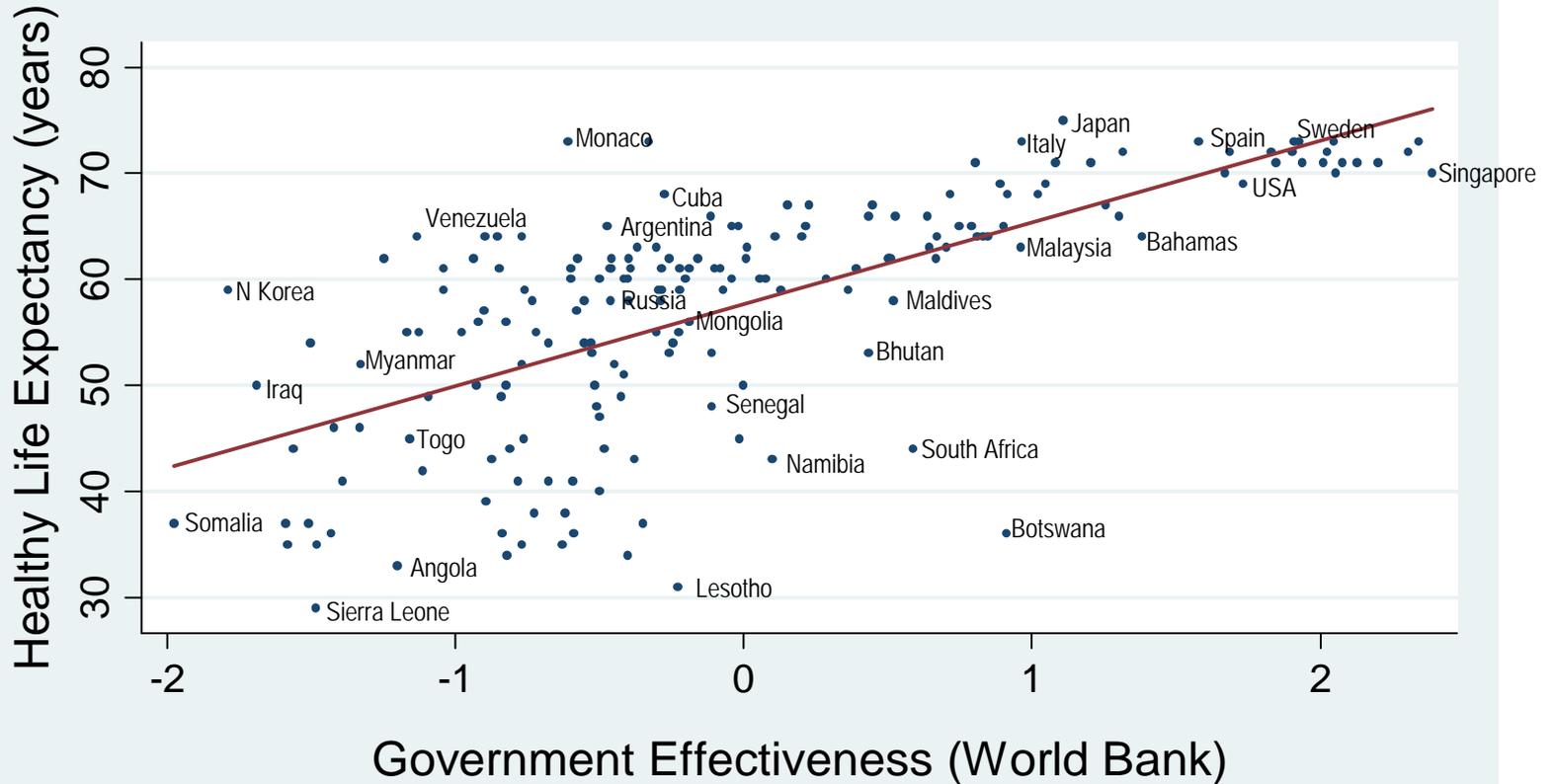


R-squared=0.33

Source: WHO 2005, World Bank Governance Indicators 2002

Figure 14

Healthy Life Expectancy vs. Government Effectiveness

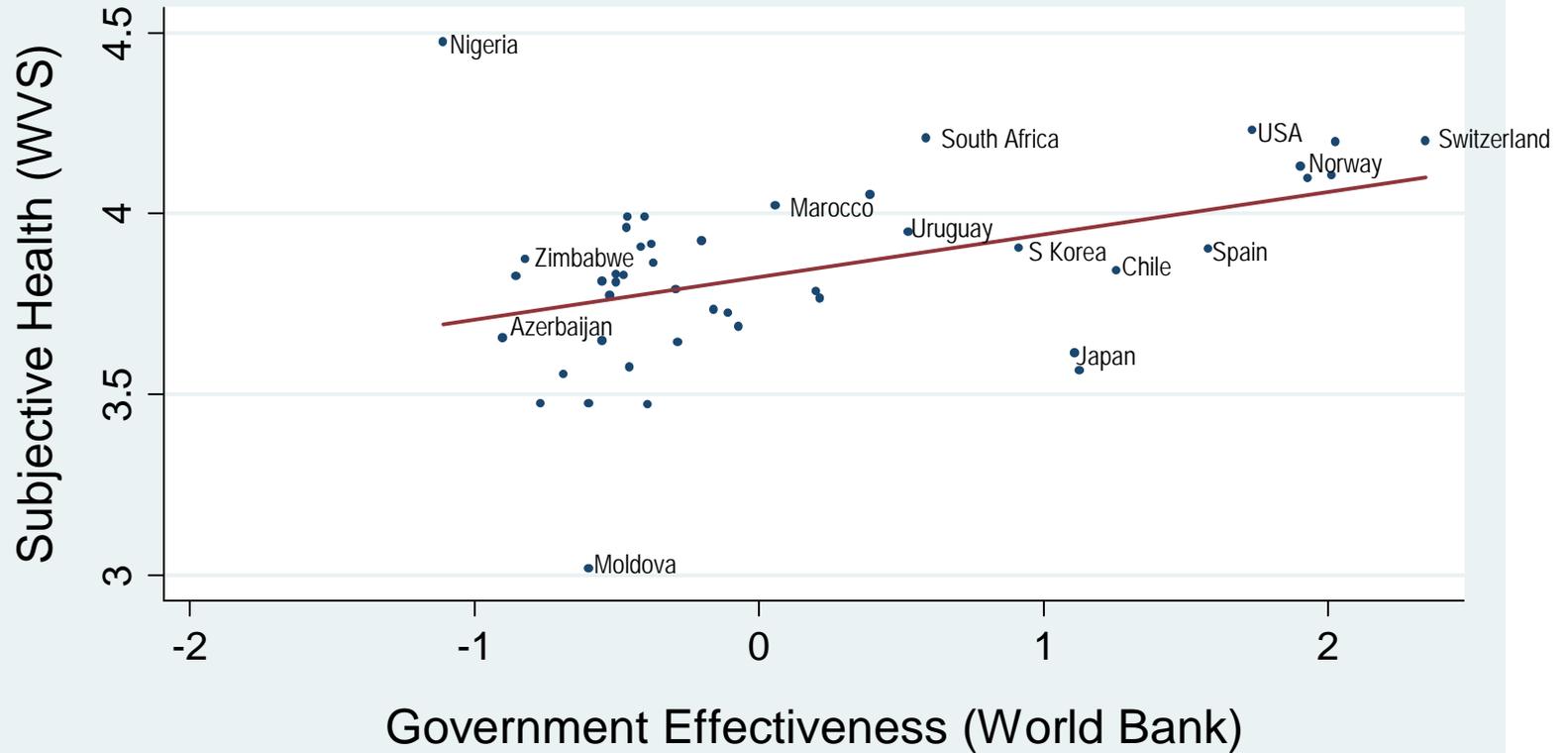


R-squared=0.47

Source: WHO 2003, World Bank Governance Indicators 2002

Figure 15

Subjective Health vs. Government Effectiveness

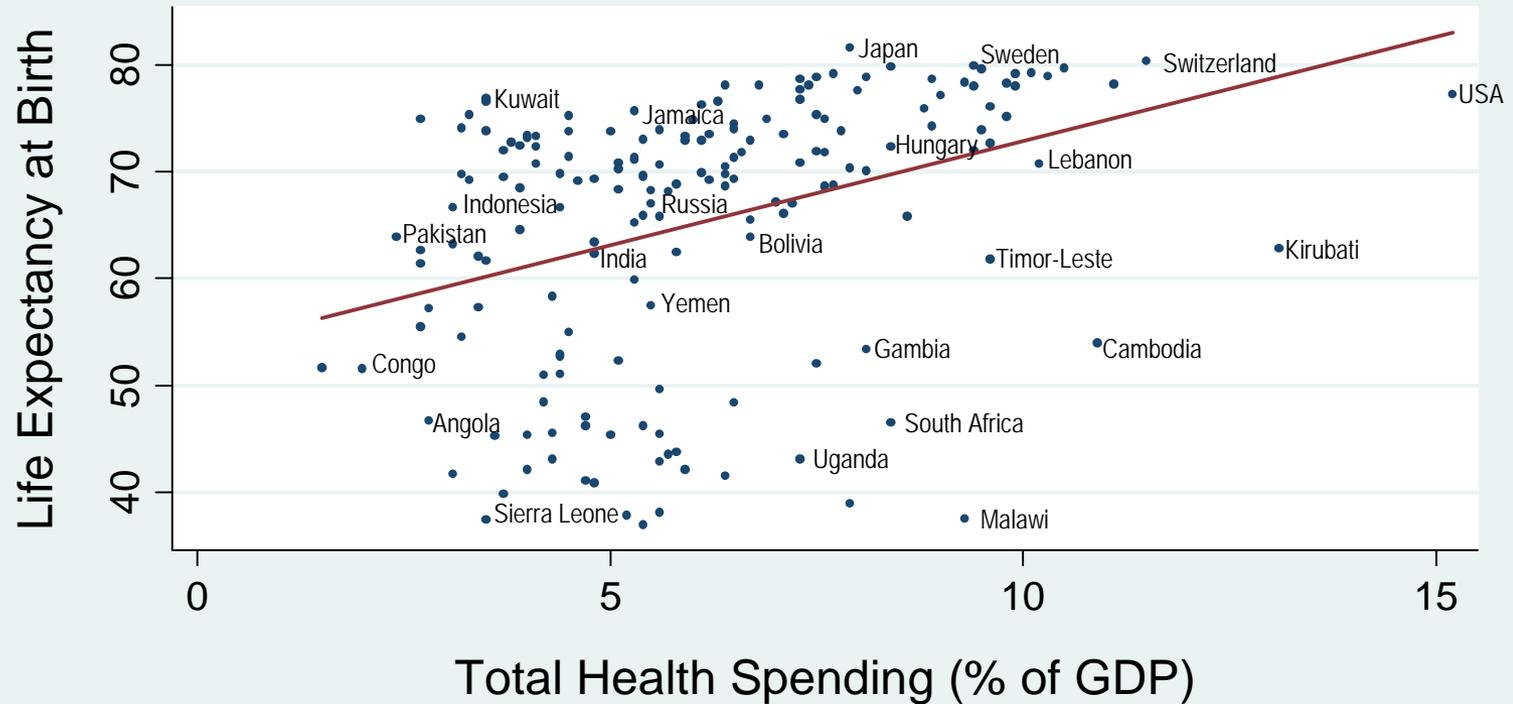


R-squared=0.19

Source: World Values Survey 1999-2002 (reversed scale), World Bank Governance Indicators 2002

Figure 16

Life Expectancy at Birth vs. Total Health Spending (% of GDP)

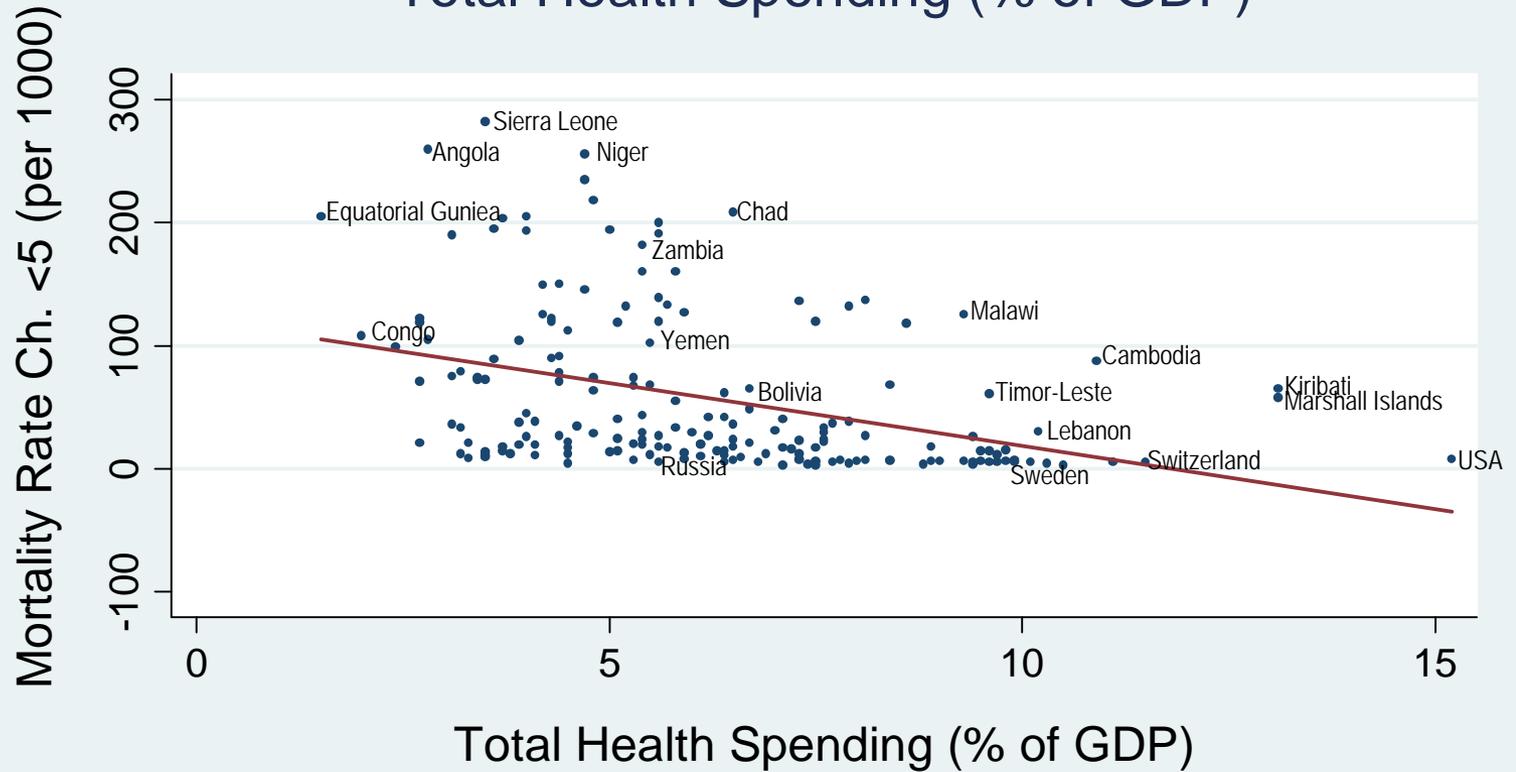


R-squared=0.13

Source: World Development Indicators 2002, World Health Organization 2003

Figure 17

Mortality Rate Children <5 vs. Total Health Spending (% of GDP)

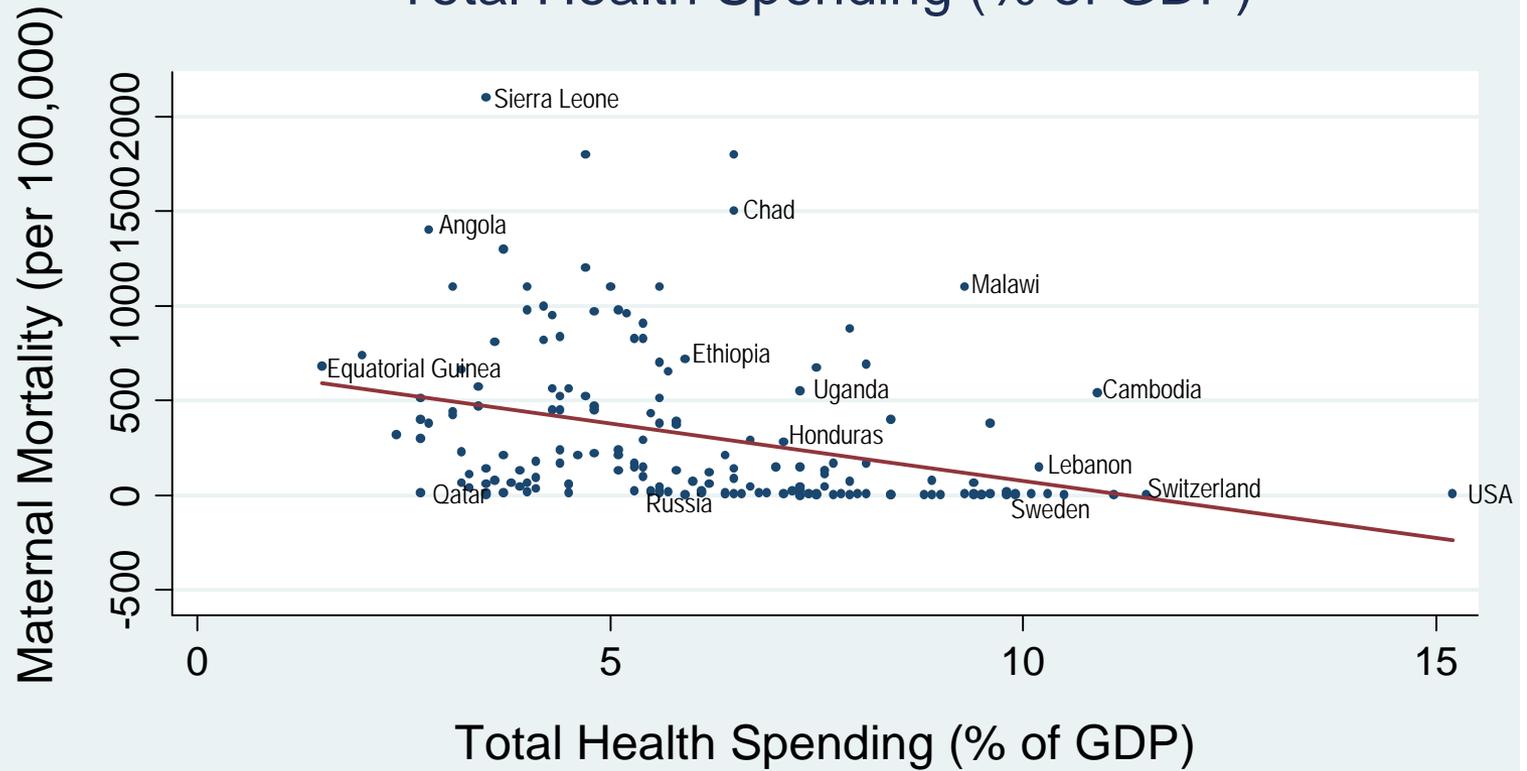


R-squared=0.14

Source: World Bank HNPStats 1995-2005, World Health Organization 2003

Figure 18

Maternal Mortality Rate vs. Total Health Spending (% of GDP)

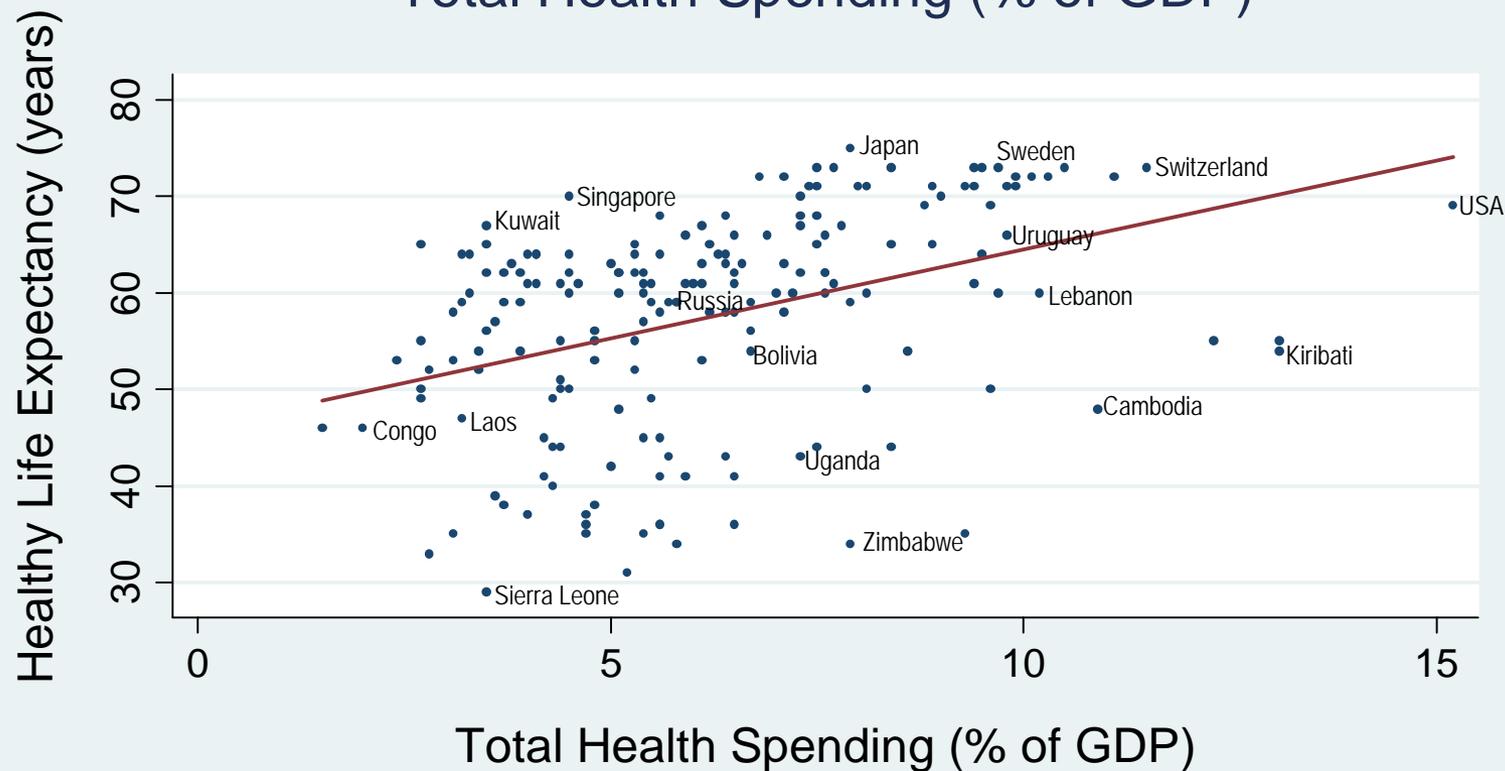


R-squared=0.11

Source: WHO 2005, World Health Organization 2003

Figure 19

Healthy Life Expectancy vs. Total Health Spending (% of GDP)

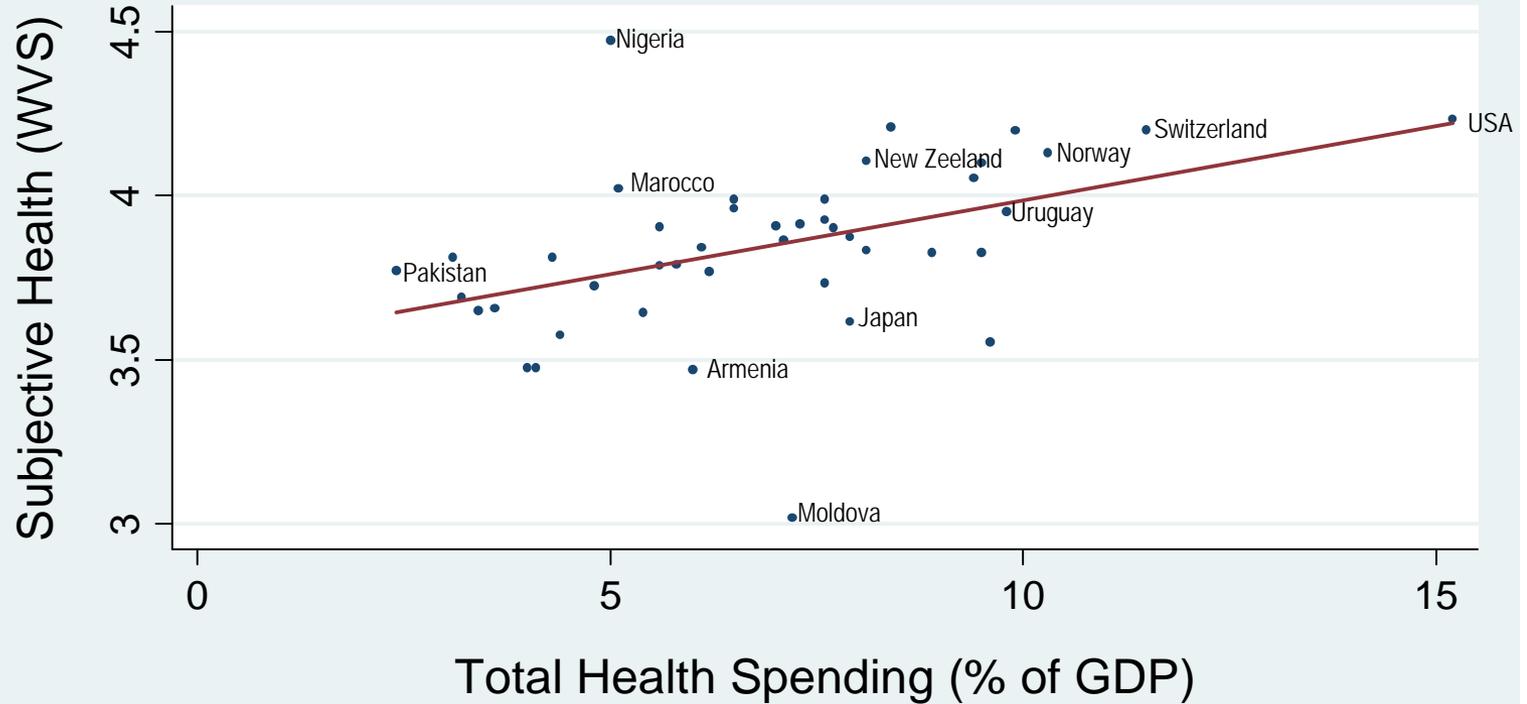


R-squared=0.16

Source: WHO 2003, World Health Organization 2003

Figure 20

Subjective Health vs. Total Health Spending (% of GDP)

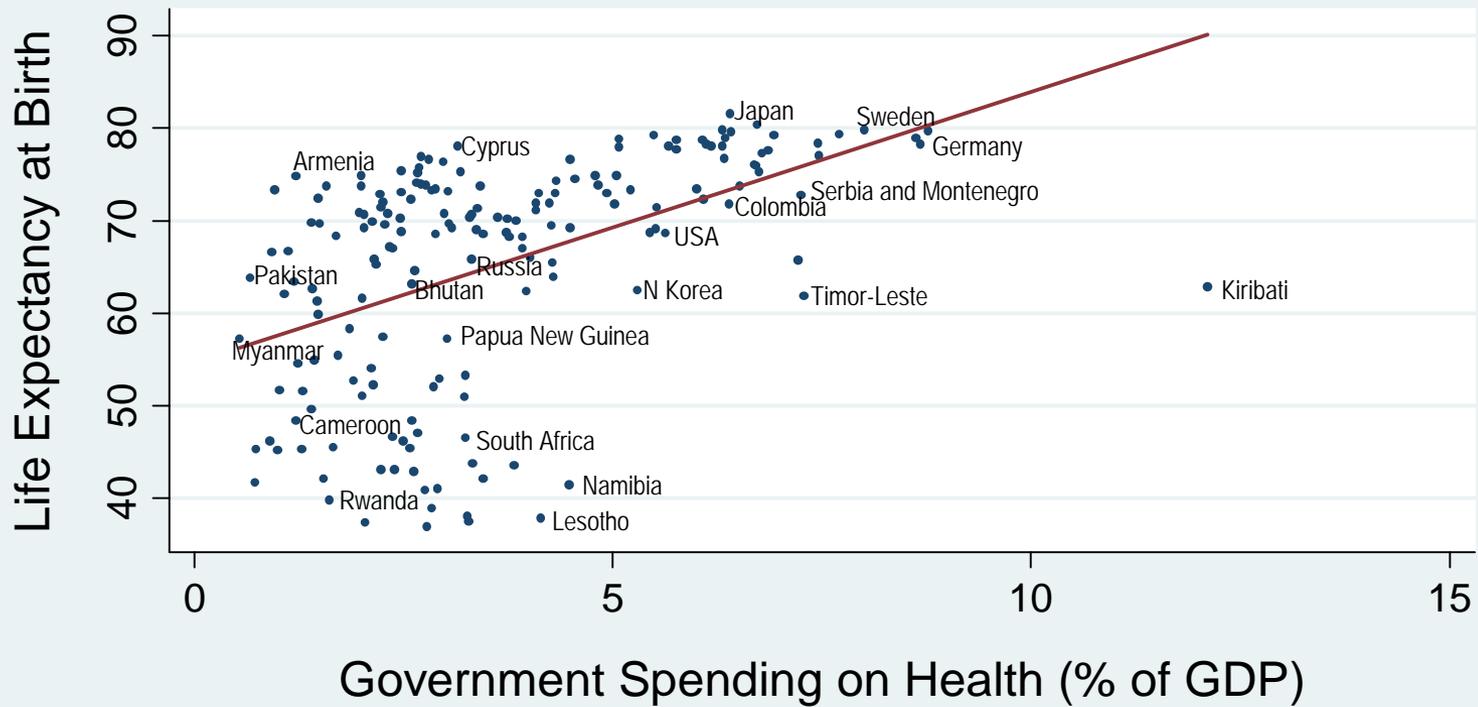


R-squared=0.20

Source: World Values Survey 1999-2002 (reversed scale), World Health Organization 2003

Figure 21

Life Expectancy at Birth vs. Government Spending on Health (% of GDP)

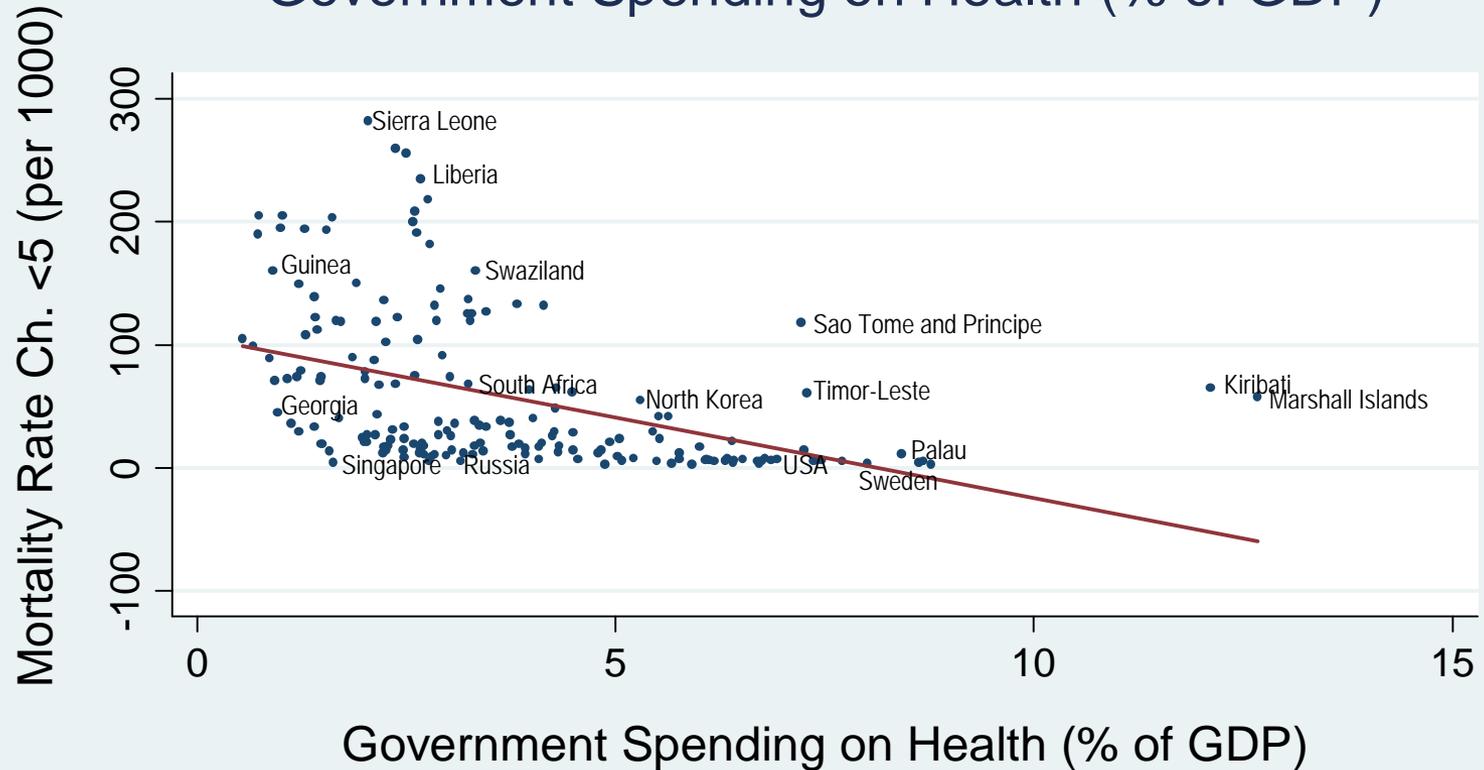


R-squared=0.23

Source: World Development Indicators 2002, World Health Organization 2003

Figure 22

Mortality Rate Children <5 vs. Government Spending on Health (% of GDP)

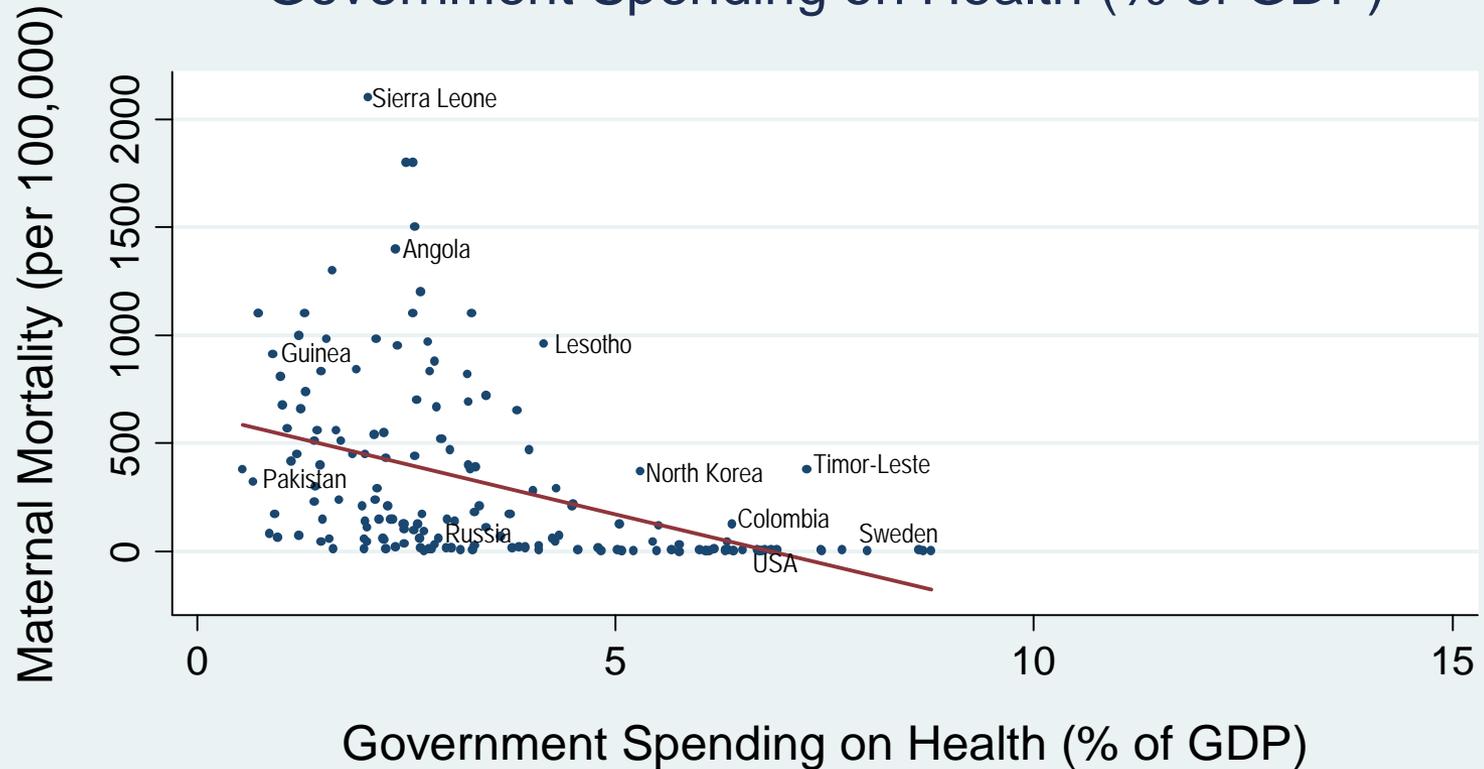


R-squared=0.20

Source: World Bank HNPStats 1995-2005, World Health Organization 2003

Figure 23

Maternal Mortality Rate vs. Government Spending on Health (% of GDP)

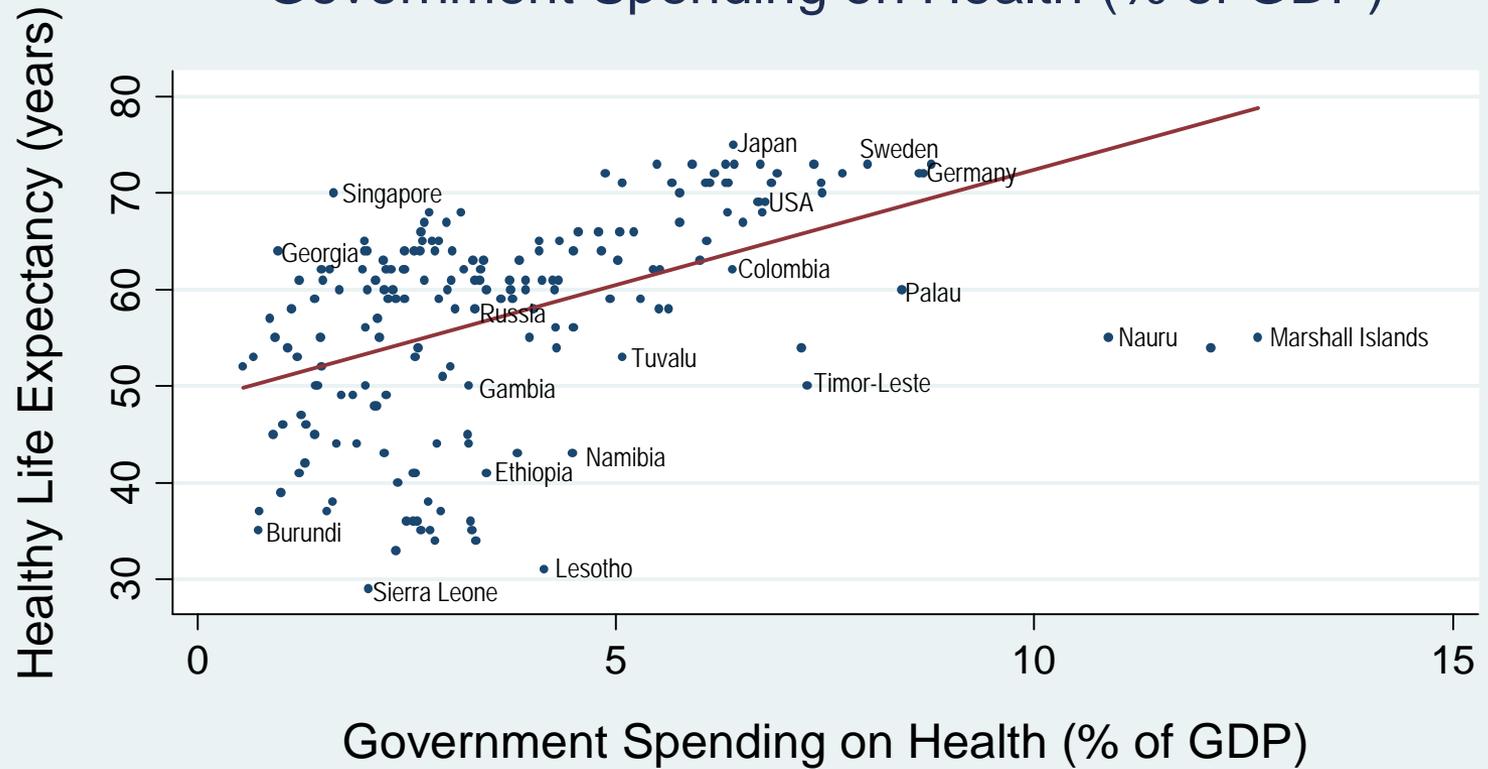


R-squared=0.19

Source: WHO 2005, World Health Organization 2003

Figure 24

Healthy Life Expectancy vs. Government Spending on Health (% of GDP)

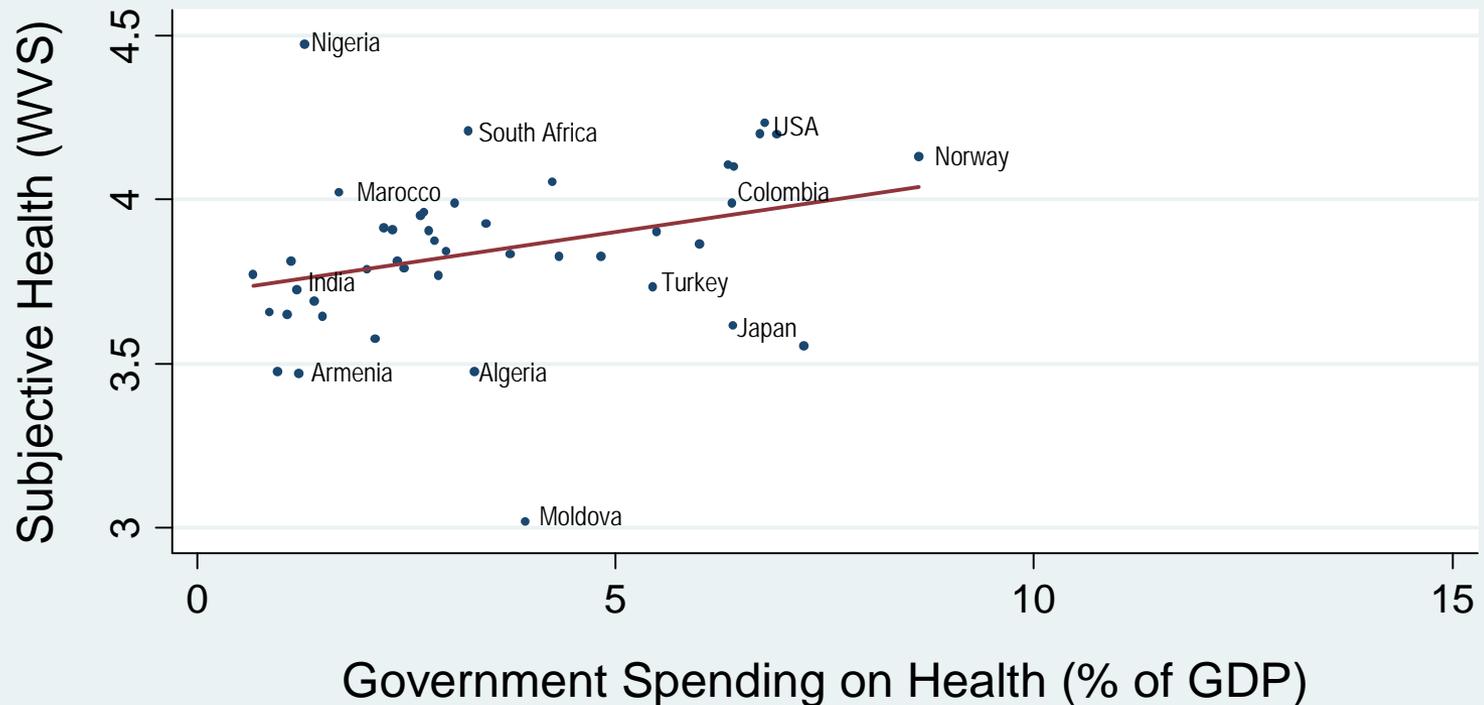


R-squared=0.23

Source: WHO 2003, World Health Organization 2003

Figure 25

Subjective Health vs. Government Spending on Health (% of GDP)

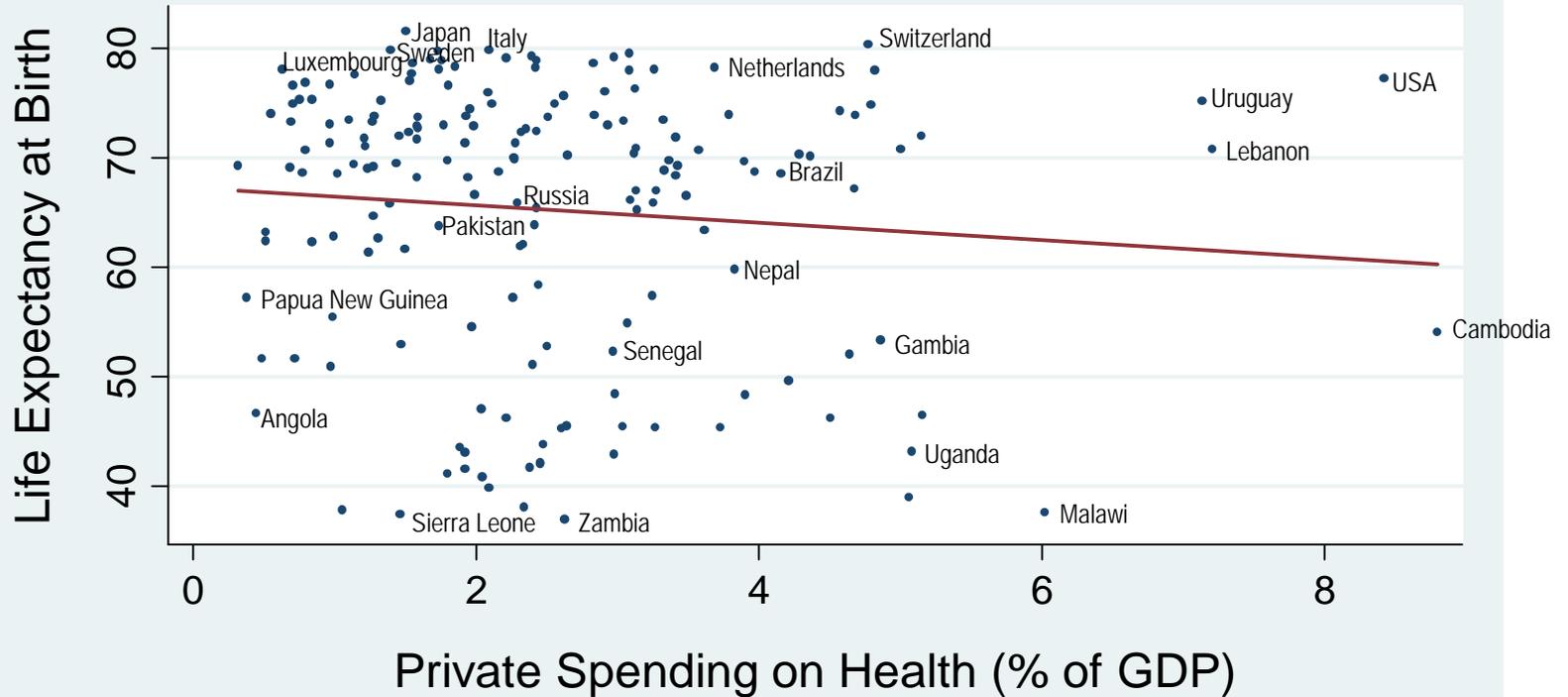


R-squared=0.10

Source: World Values Survey 1999-2002 (reversed scale), World Health Organization 2003

Figure 26

Life Expectancy at Birth vs. Private Spending on Health (% of GDP)

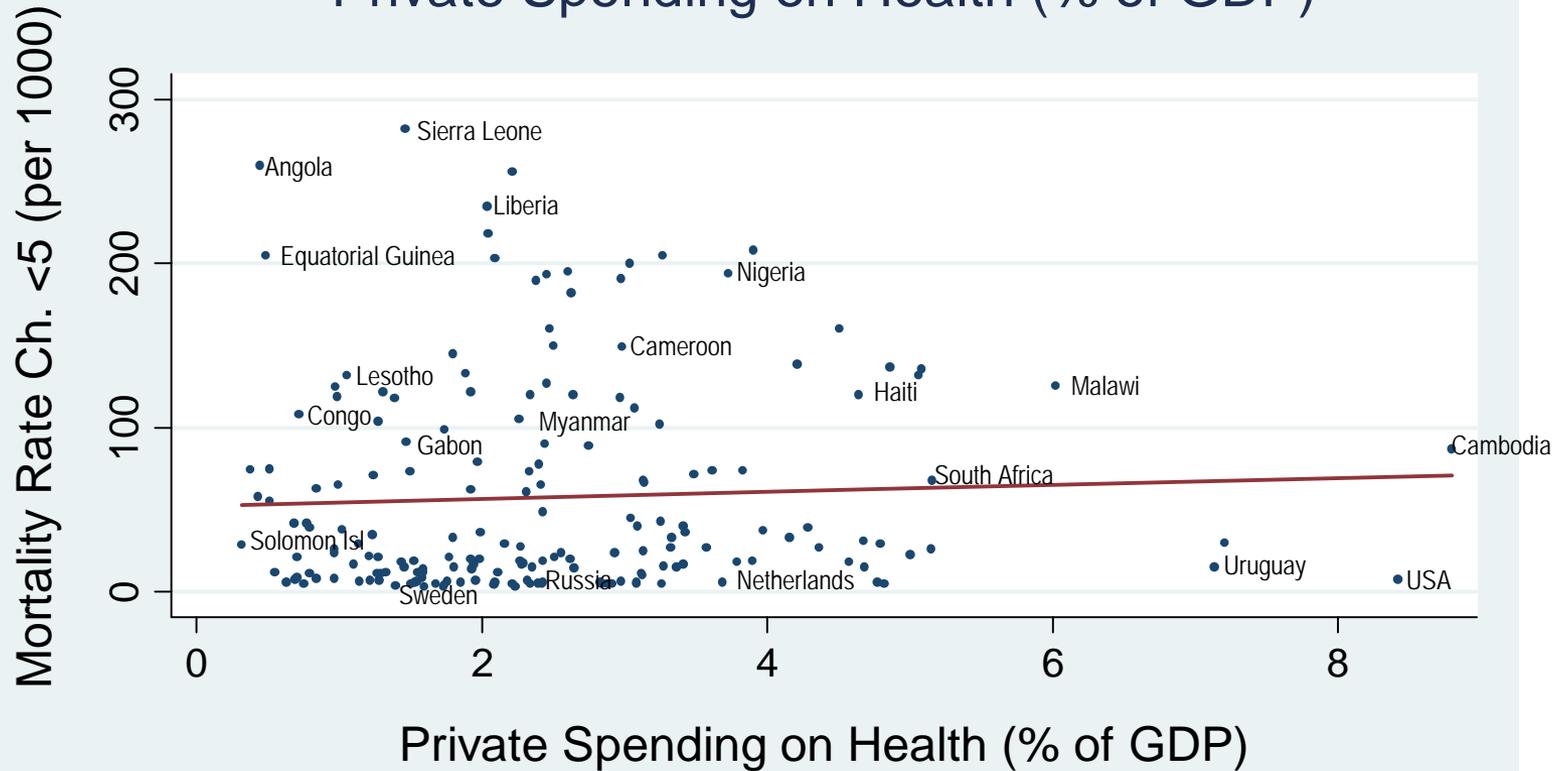


R-squared=0.01

Source: World Development Indicators 2002, World Health Organization 2003

Figure 27

Mortality Rate Children <5 vs. Private Spending on Health (% of GDP)

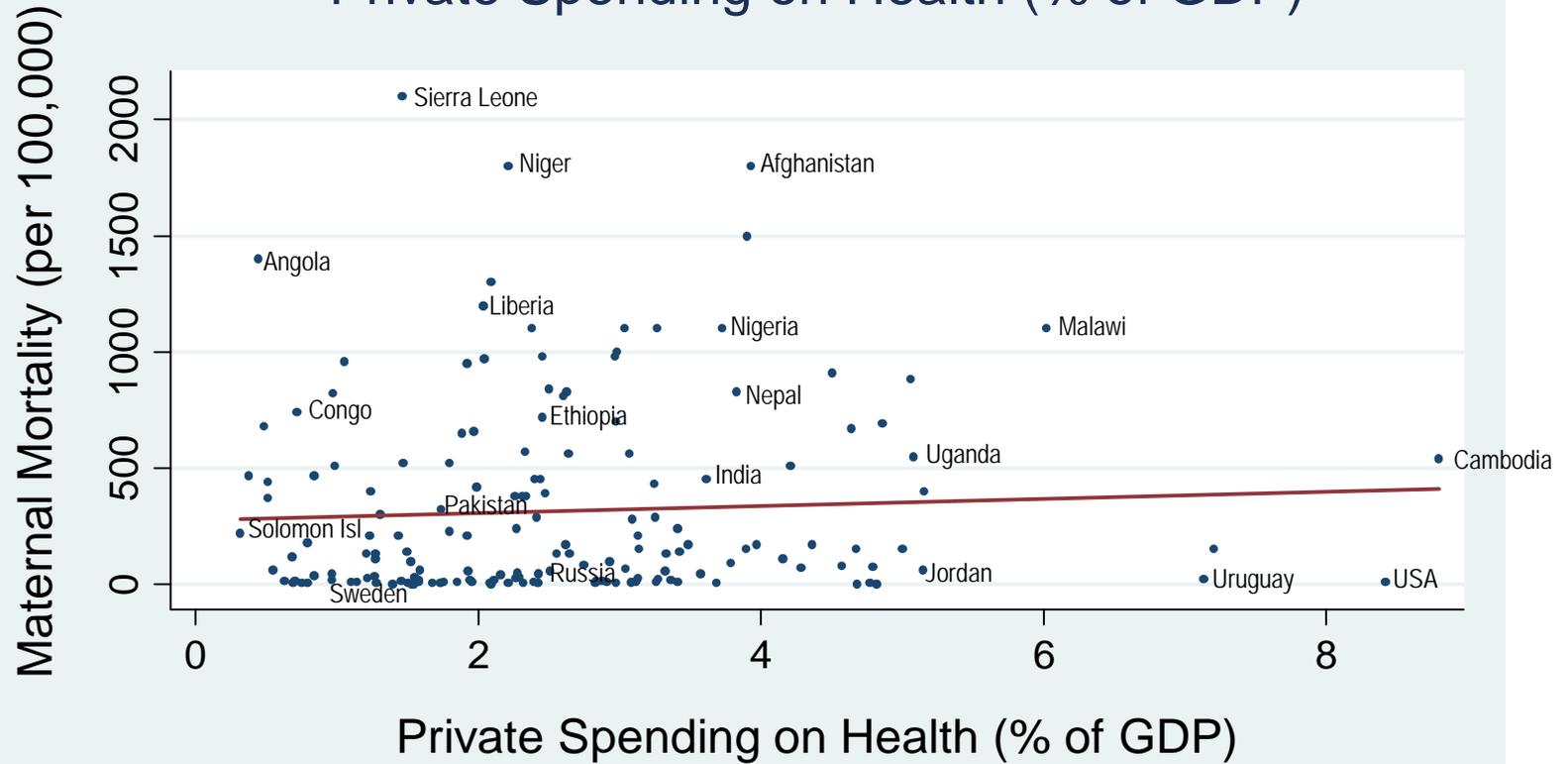


R-squared=0.00

Source: World Bank HNPStats 1995-2005, World Health Organization 2003

Figure 28

Maternal Mortality Rate vs. Private Spending on Health (% of GDP)

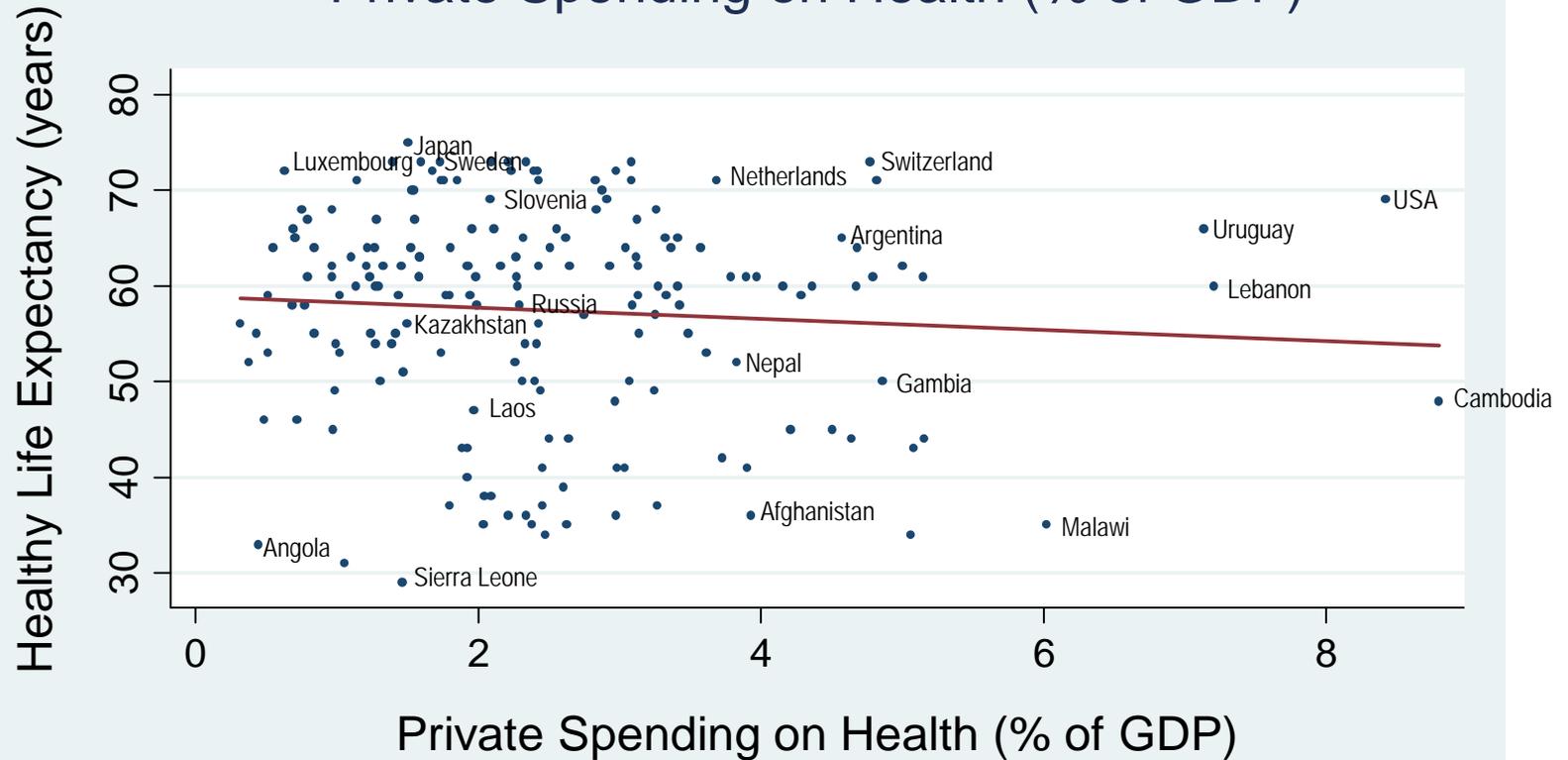


R-squared=0.00

Source: WHO 2005, World Health Organization 2003

Figure 29

Healthy Life Expectancy vs. Private Spending on Health (% of GDP)

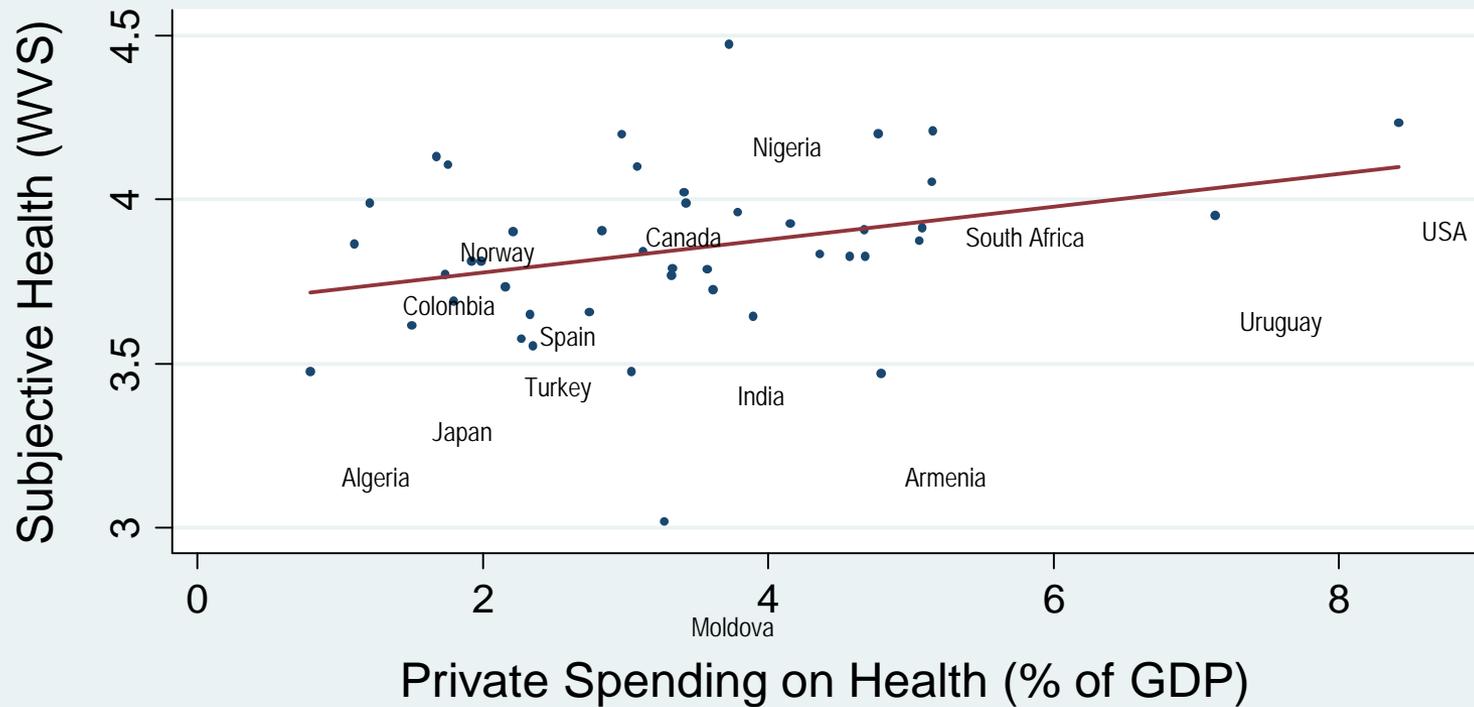


R-squared=0.01

Source: WHO 2003, World Health Organization 2003

Figure 30

Subjective Health vs. Private Spending on Health (% of GDP)

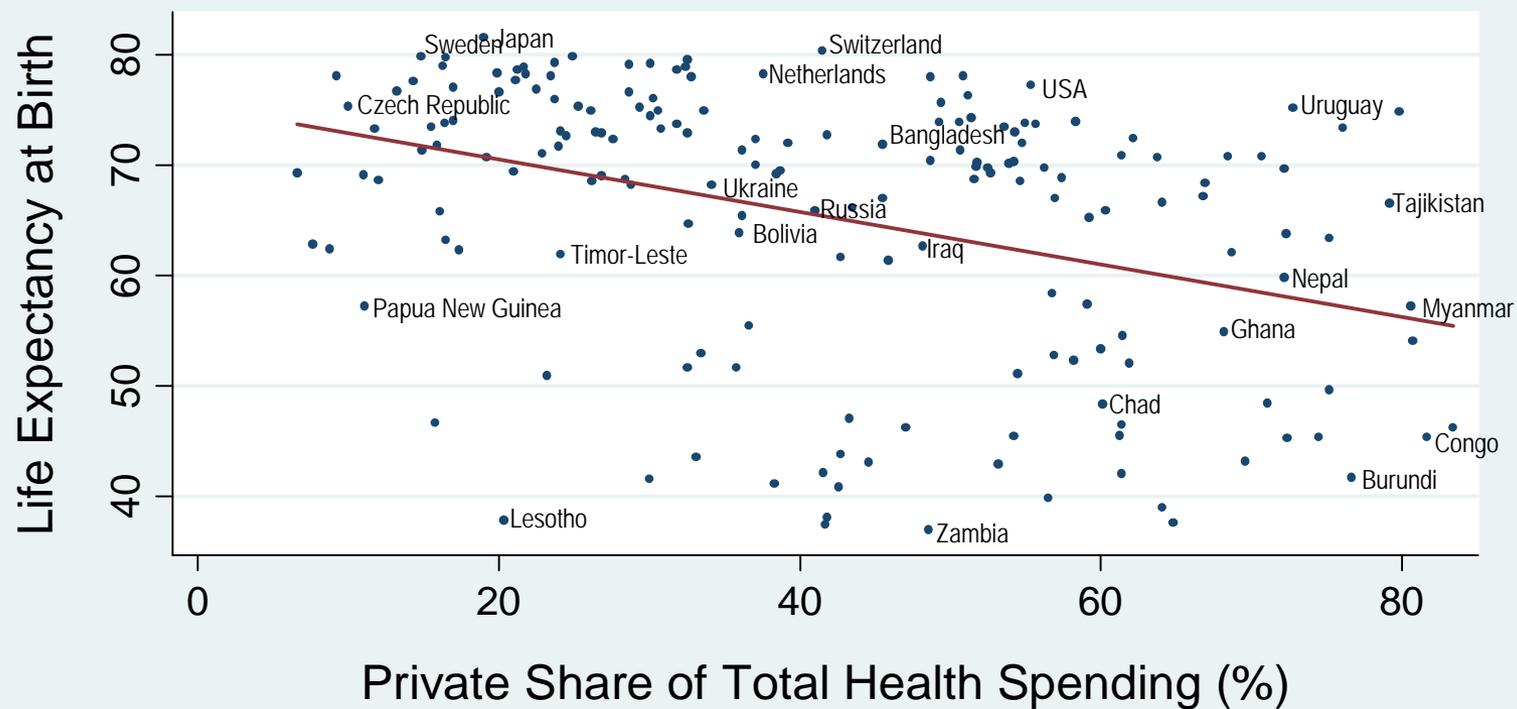


R-squared=0.09

Source: World Values Survey 1999-2002 (reversed scale), World Health Organization 2003

Figure 31

Life Expectancy at Birth vs. Private Share of Total Health Spending (%)

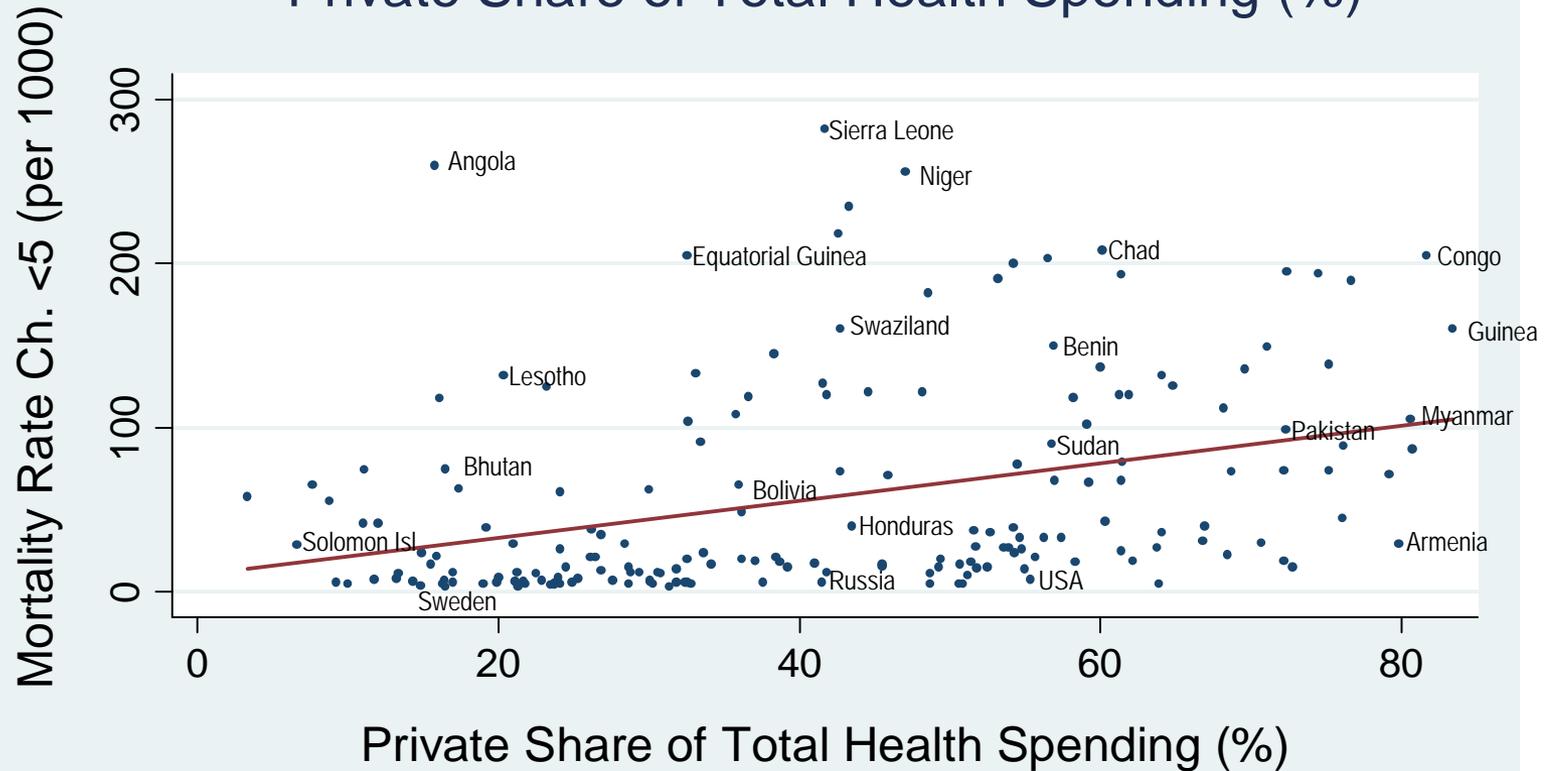


R-squared=0.14

Source: World Development Indicators 2002, World Health Organization 2003

Figure 32

Mortality Rate Children <5 vs. Private Share of Total Health Spending (%)

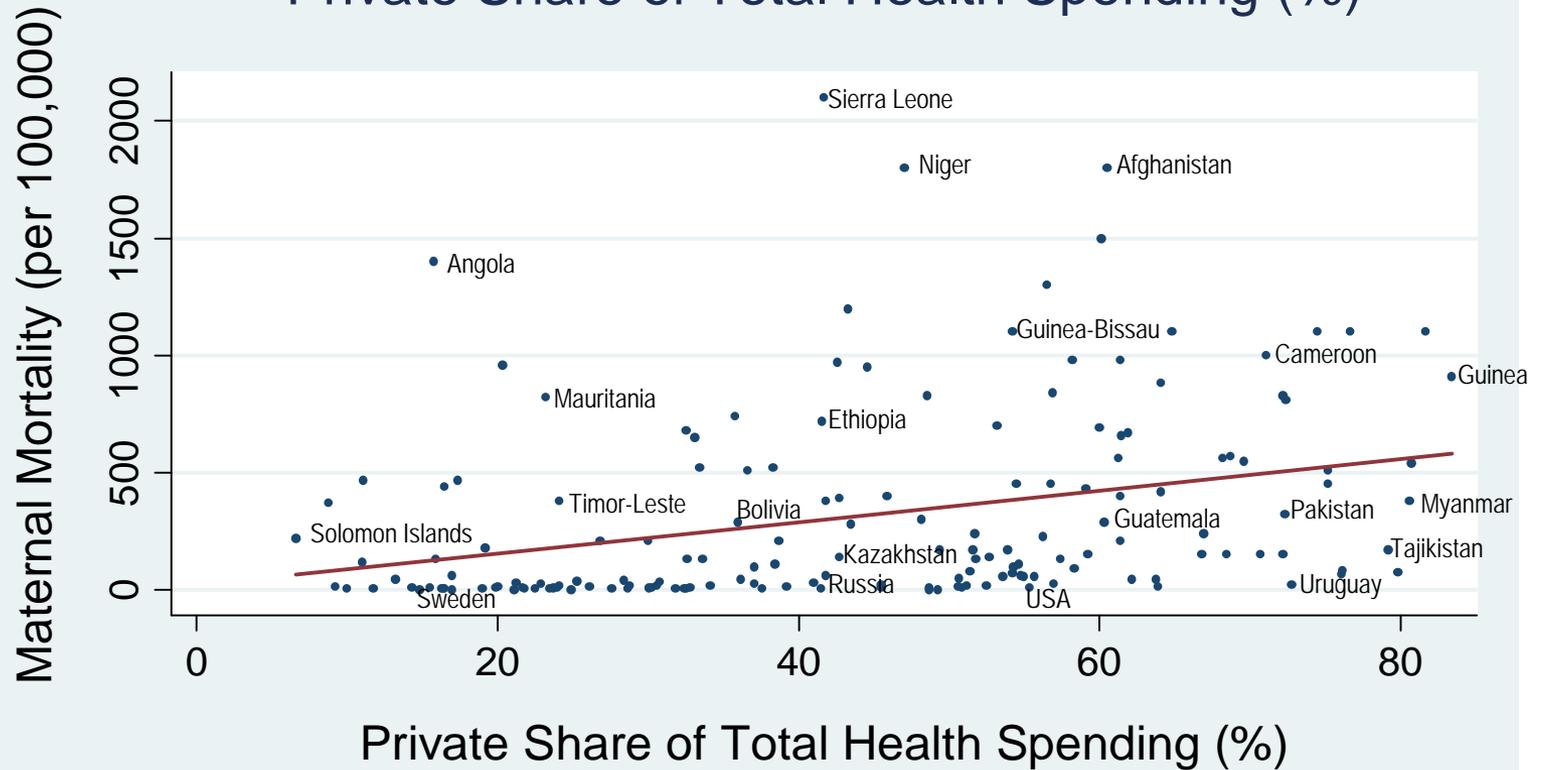


R-squared=0.13

Source: World Bank HNPStats 1995-2005, World Health Organization 2003

Figure 33

Maternal Mortality Rate vs. Private Share of Total Health Spending (%)

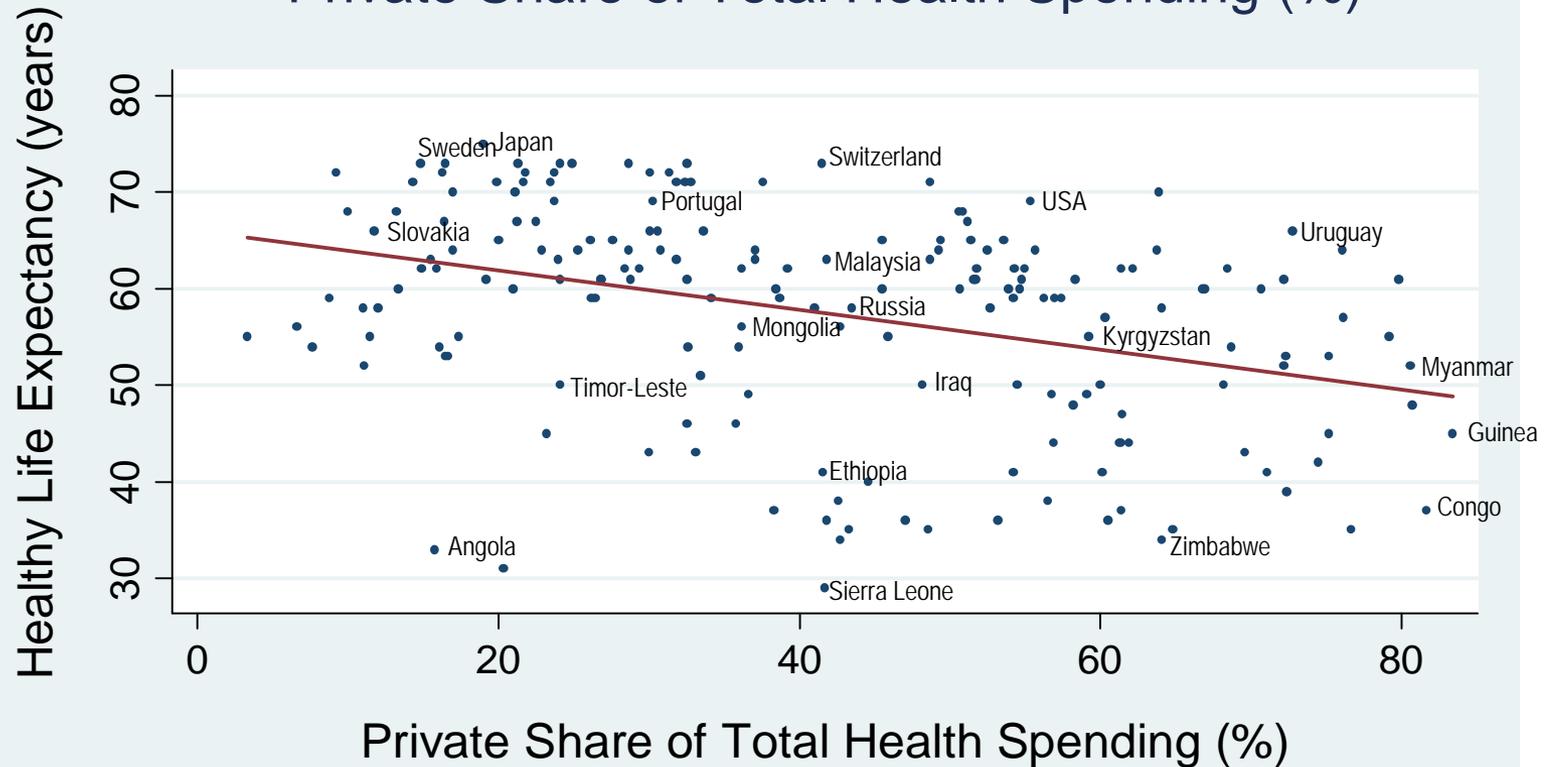


R-squared=0.10

Source: WHO 2005, World Health Organization 2003

Figure 34

Healthy Life Expectancy vs. Private Share of Total Health Spending (%)

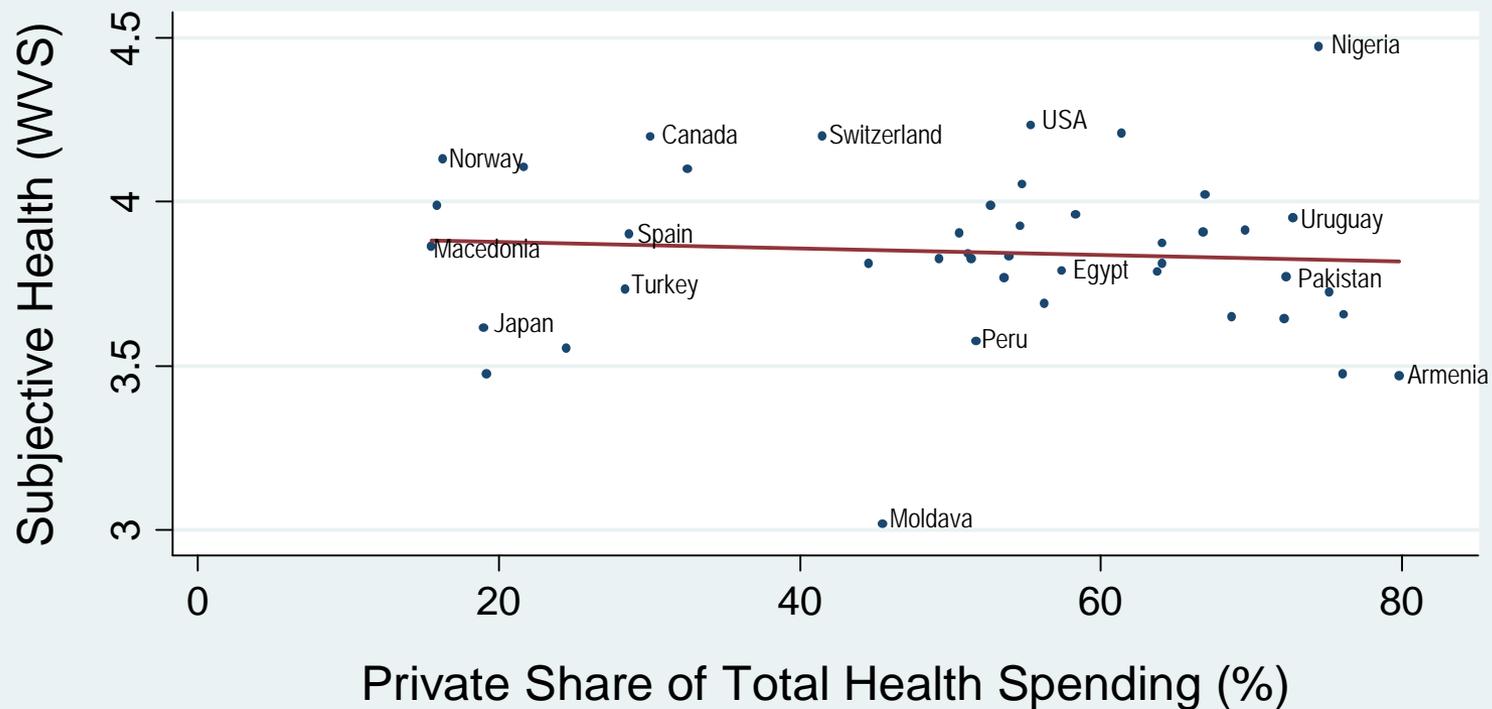


R-squared=0.14

Source: WHO 2003, World Health Organization 2003

Figure 35

Subjective Health vs. Private Share of Total Health Spending (%)

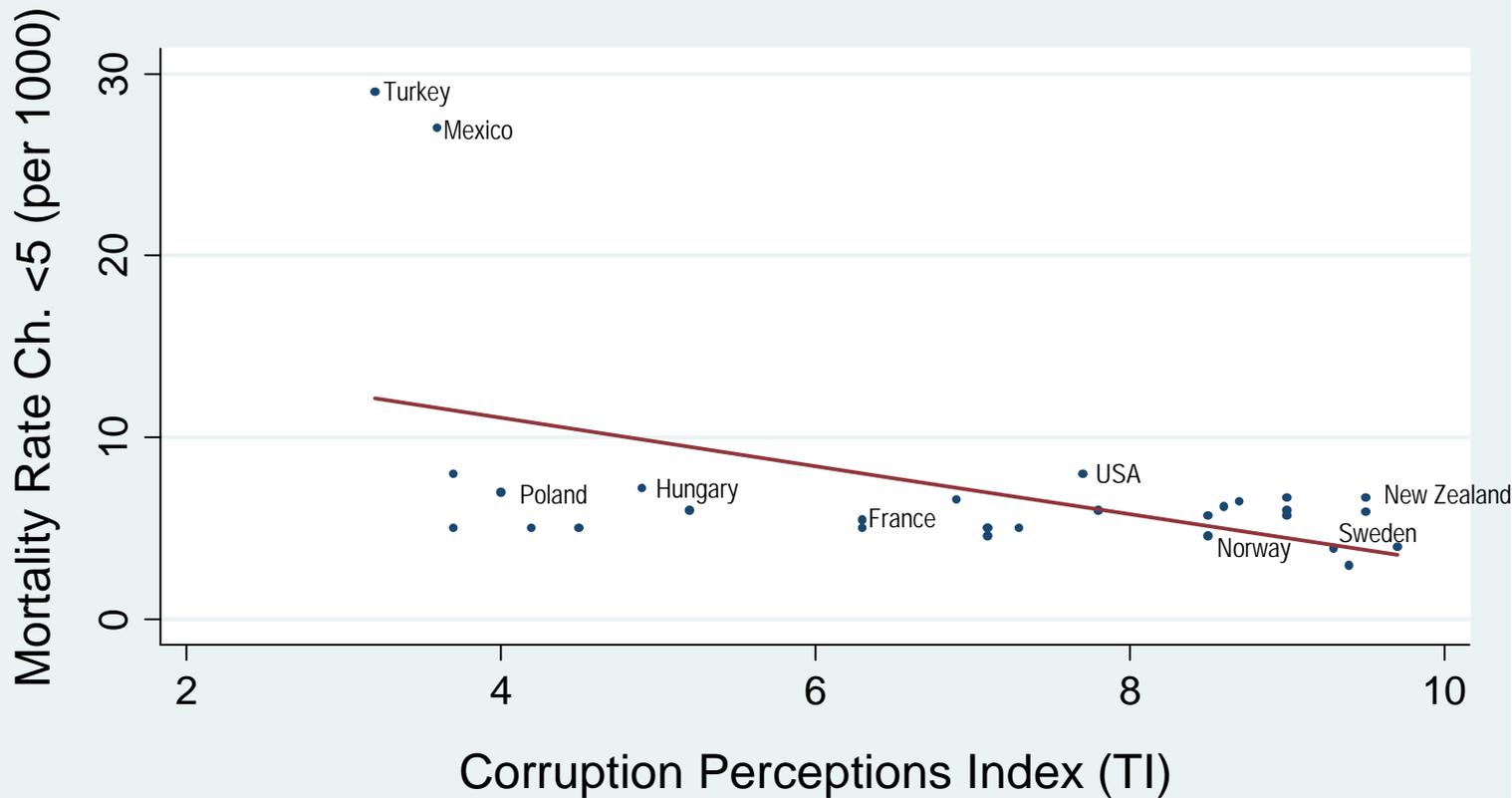


R-squared=0.01

Source: World Values Survey 1999-2002 (reversed scale), World Health Organization 2003

Figure 36

OECD: Mortality Rate Children <5 vs. Corruption

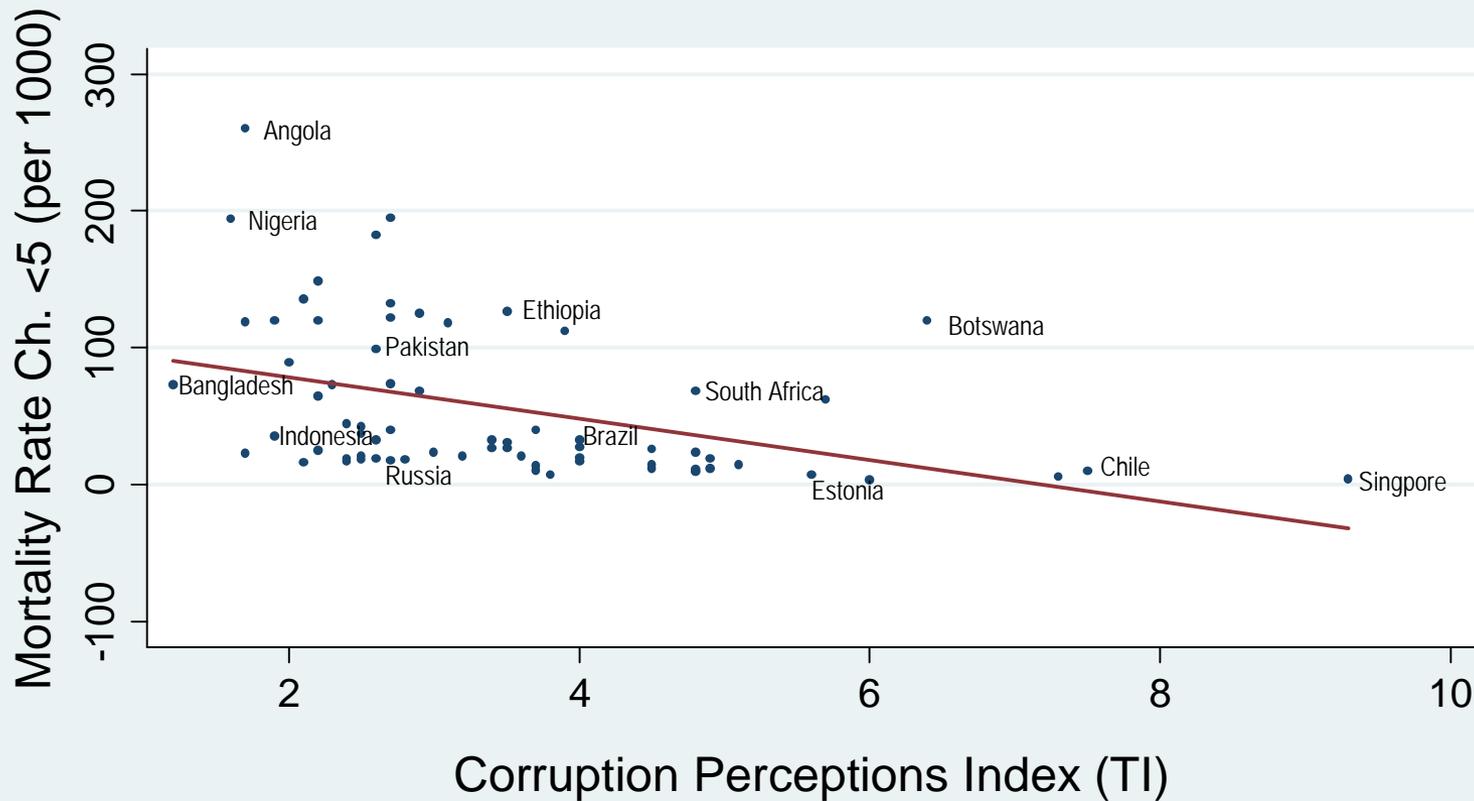


R-squared=0.24

Source: World Bank HNPStats 1995-2005, Transparency International (2002)

Figure 37

Non-OECD: Mortality Rate Children <5 vs. Corruption

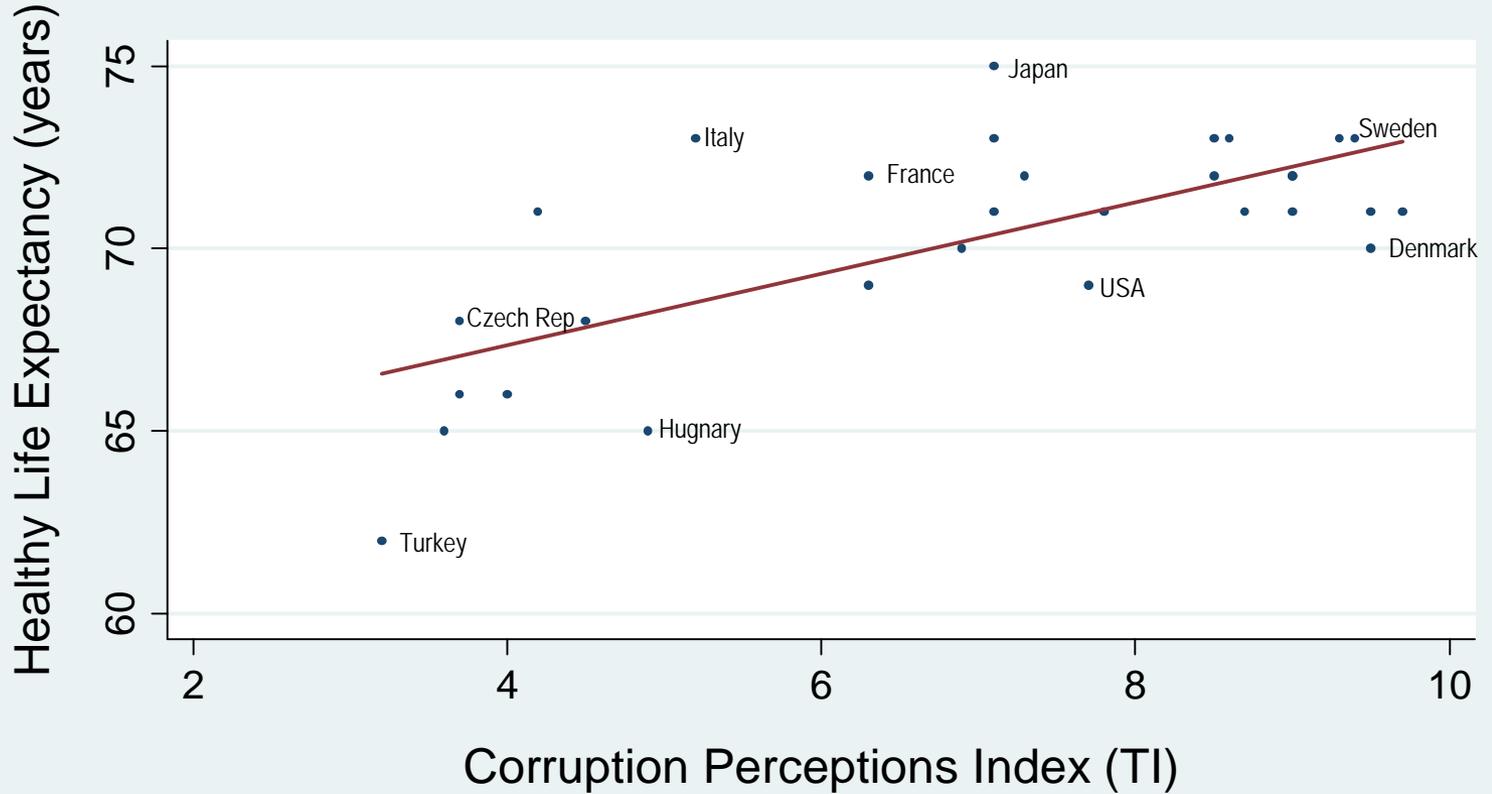


R-squared=0.17

Source: World Bank HNPStats 1995-2005, Transparency International (2002)

Figure 38

OECD: Healthy Life Expectancy vs. Corruption

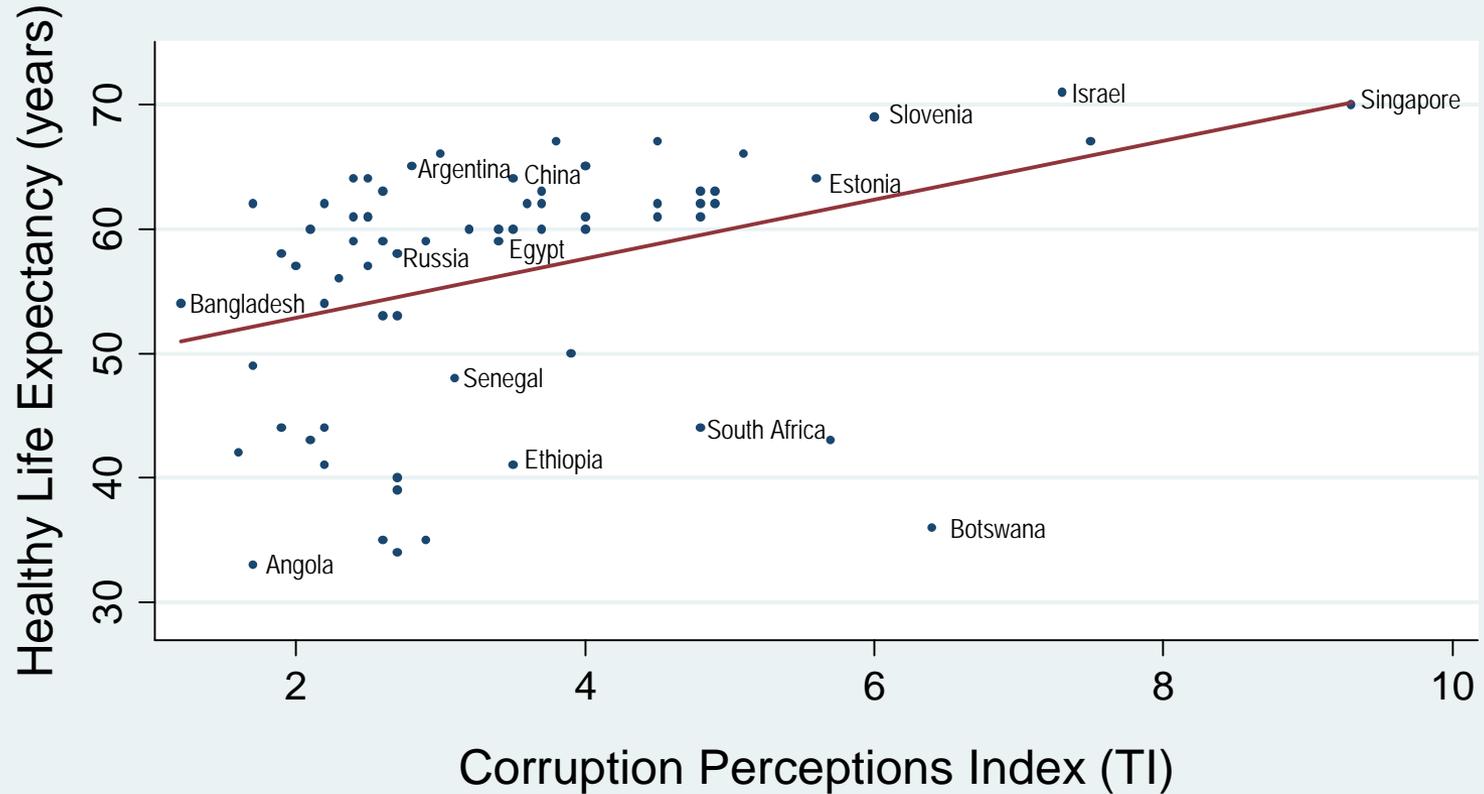


R-squared=0.49

Source: WHO 2003, Transparency International (2002)

Figure 39

Non-OECD: Healthy Life Expectancy vs. Corruption

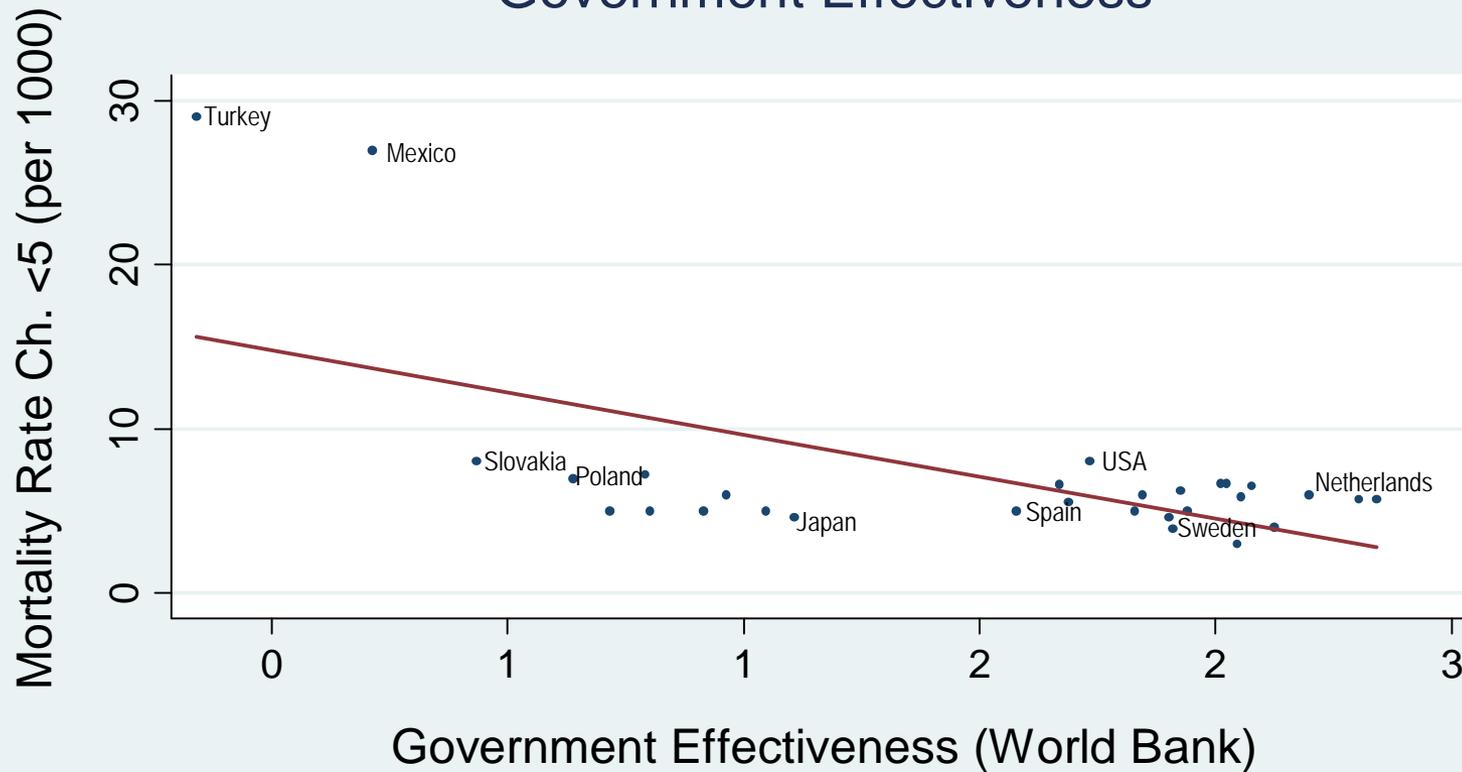


R-squared=0.13

Source: WHO 2003, Transparency International (2002)

Figure 40

OECD: Mortality Rate Children <5 vs. Government Effectiveness

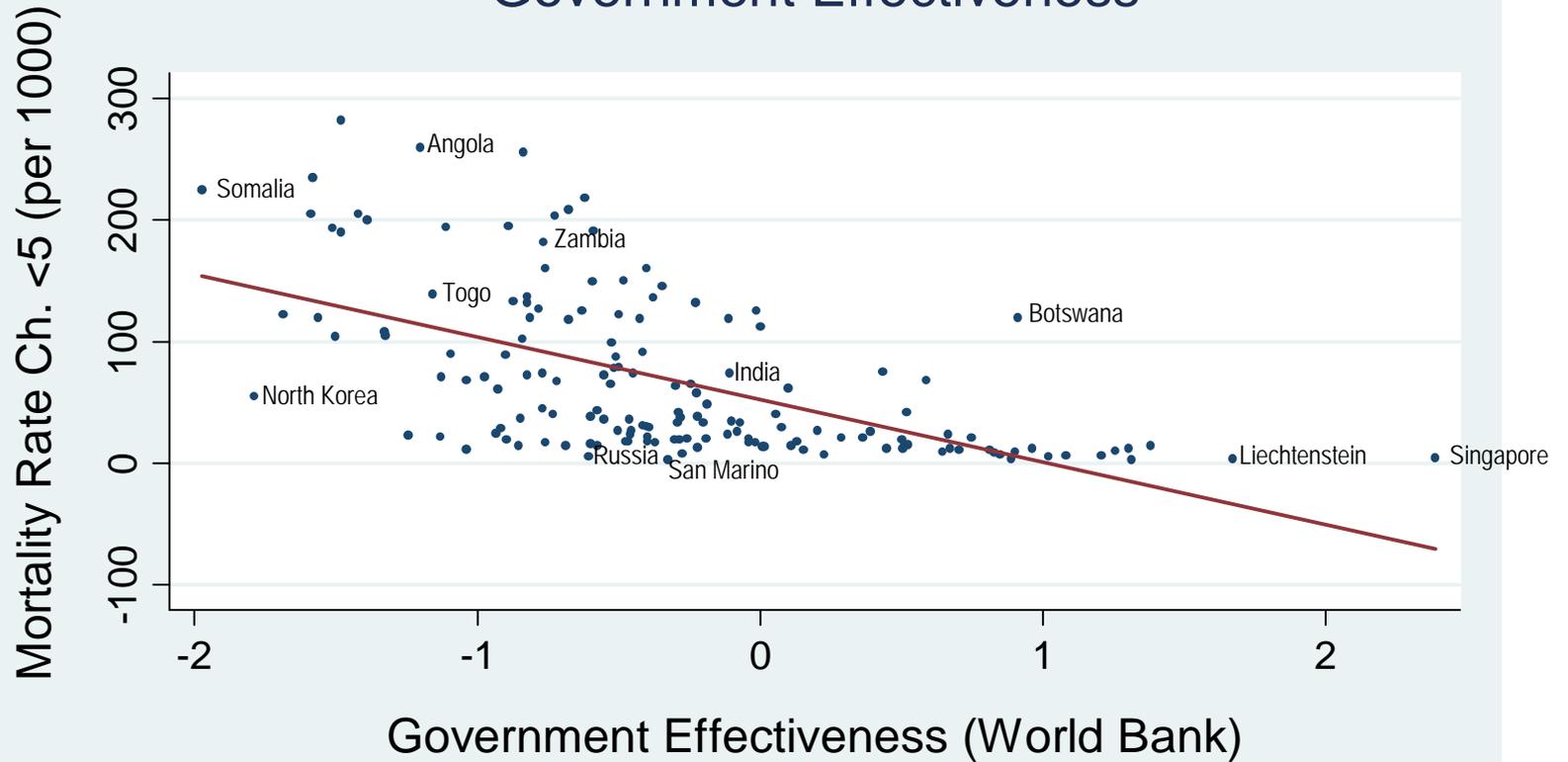


R-squared=0.37

Source: World Bank HNPStats 1995-2005, World Bank Governance Indicators 2002

Figure 41

Non-OECD: Mortality Rate Children <5 vs. Government Effectiveness

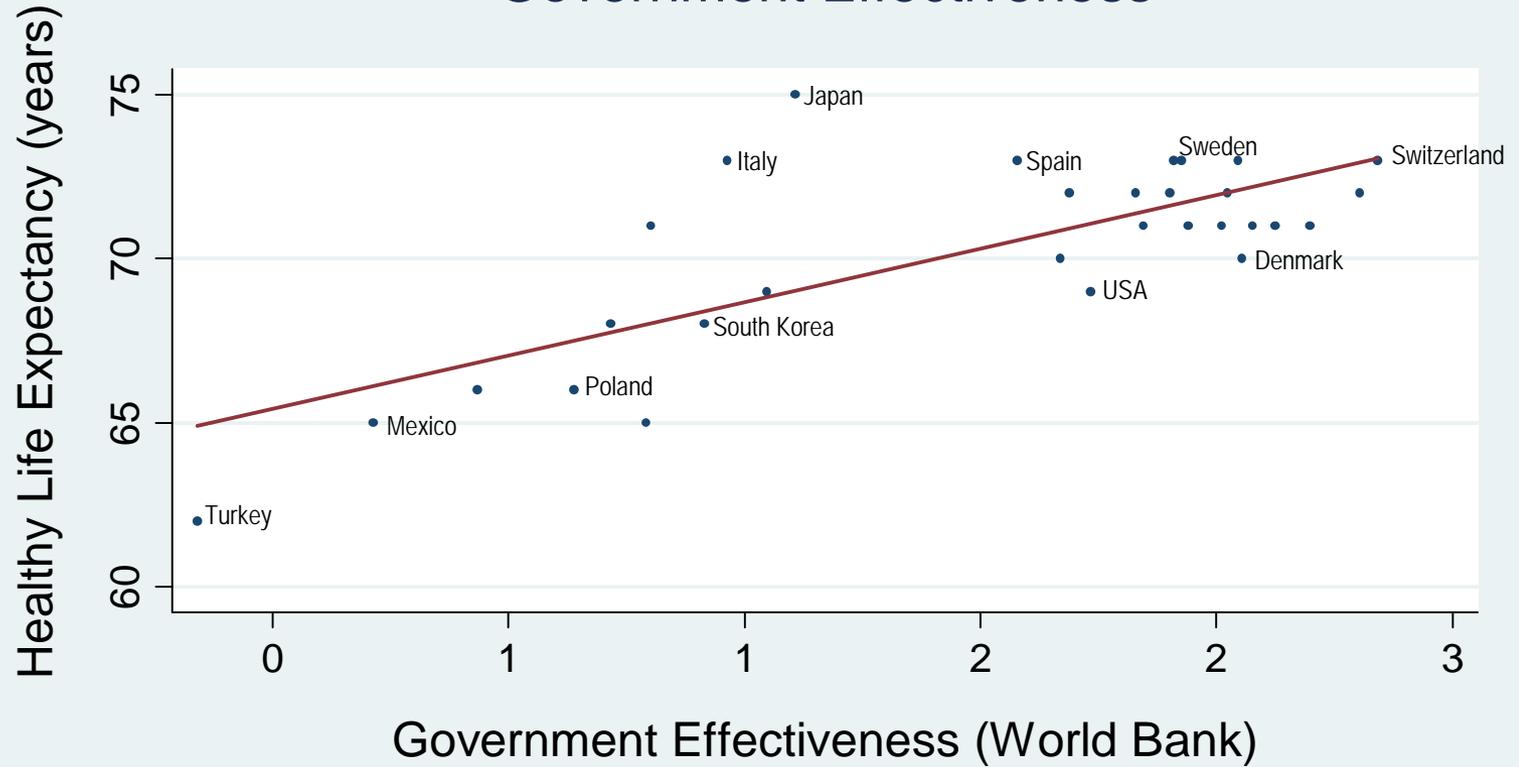


R-squared=0.34

Source: World Bank HNPStats 1995-2005, World Bank Governance Indicators 2002

Figure 42

OECD: Healthy Life Expectancy vs. Government Effectiveness

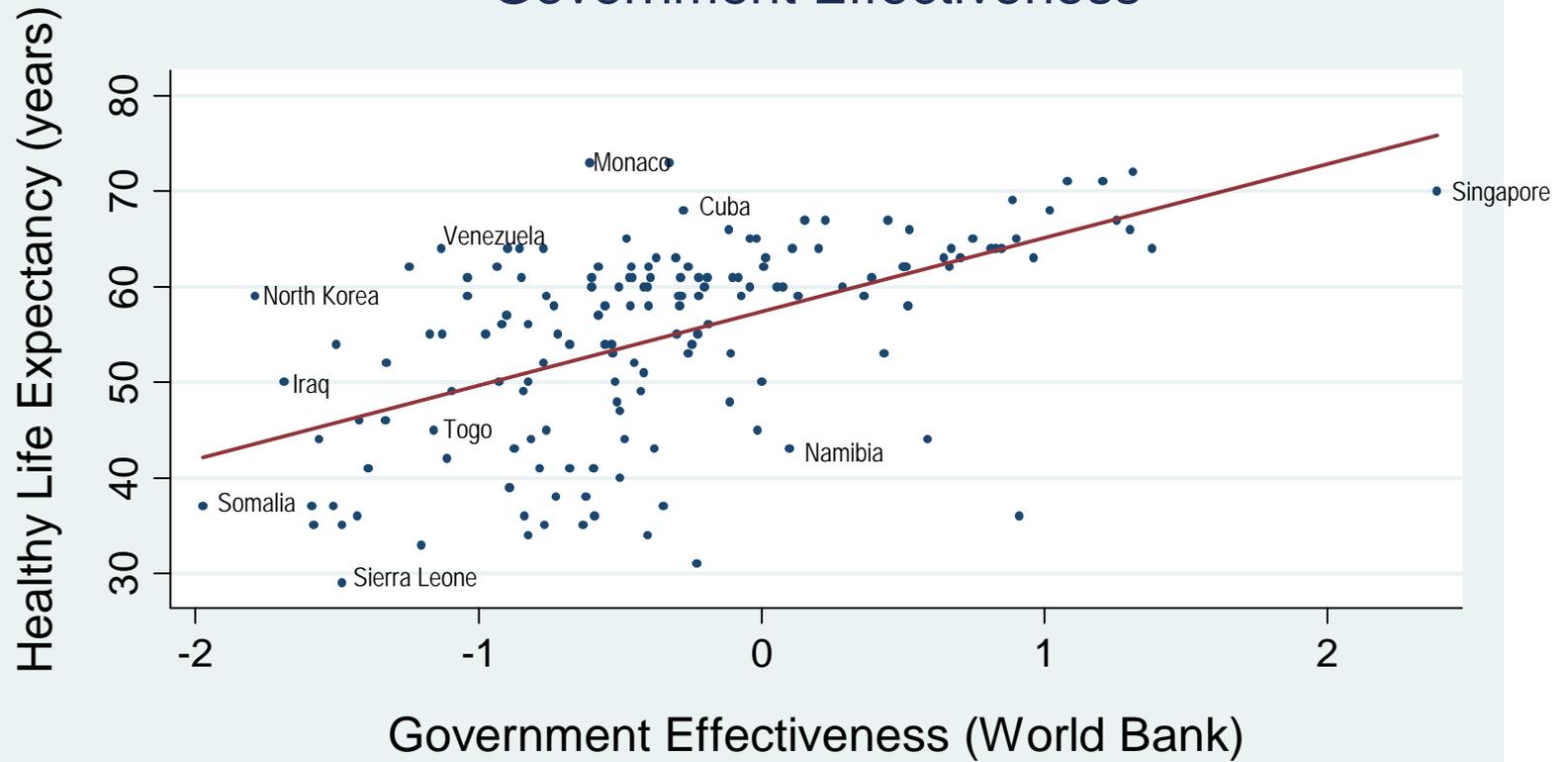


R-squared=0.55

Source: WHO 2003, World Bank Governance Indicators 2002

Figure 43

Non-OECD: Healthy Life Expectancy vs. Government Effectiveness

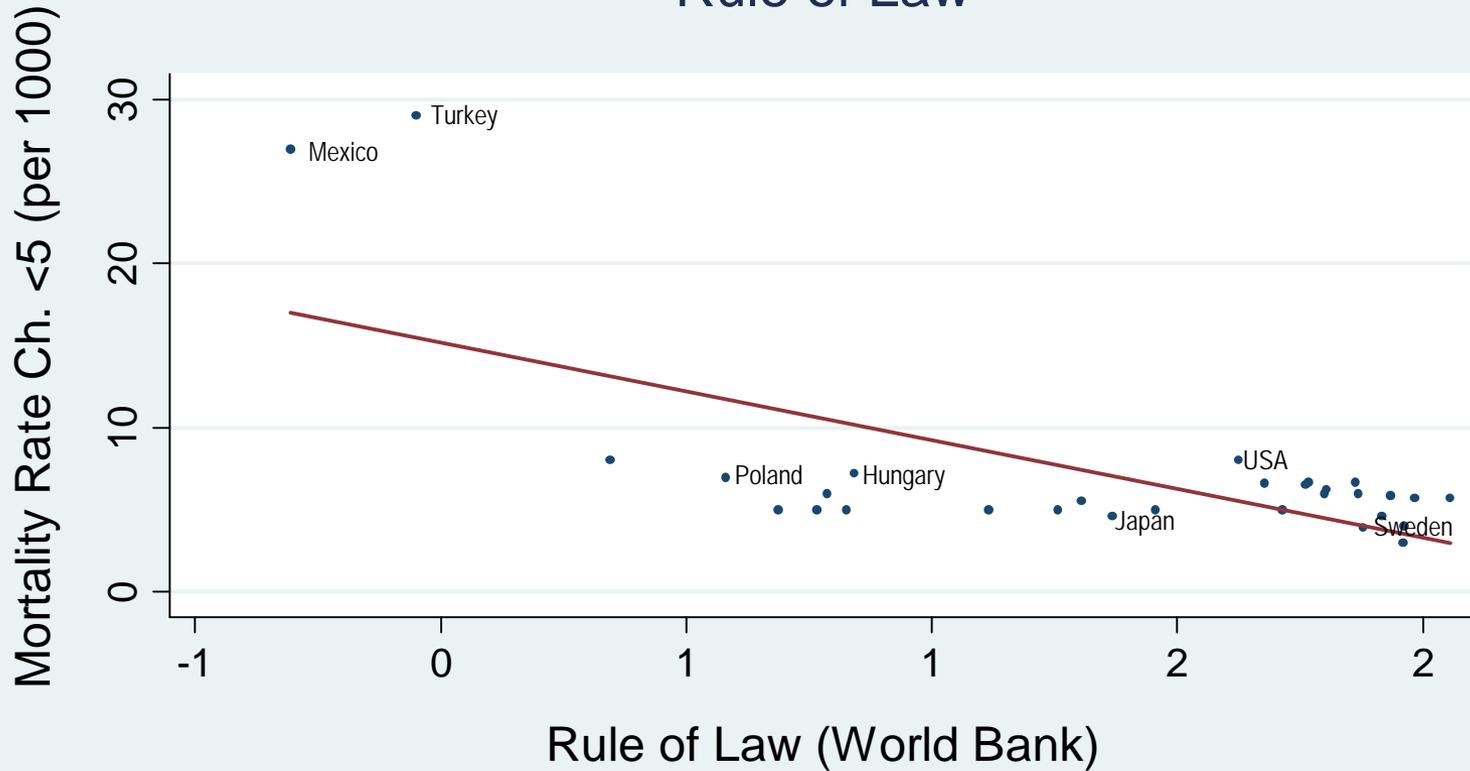


R-squared=0.30

Source: WHO 2003, World Bank Governance Indicators 2002

Figure 44

OECD: Mortality Rate Children <5 vs. Rule of Law

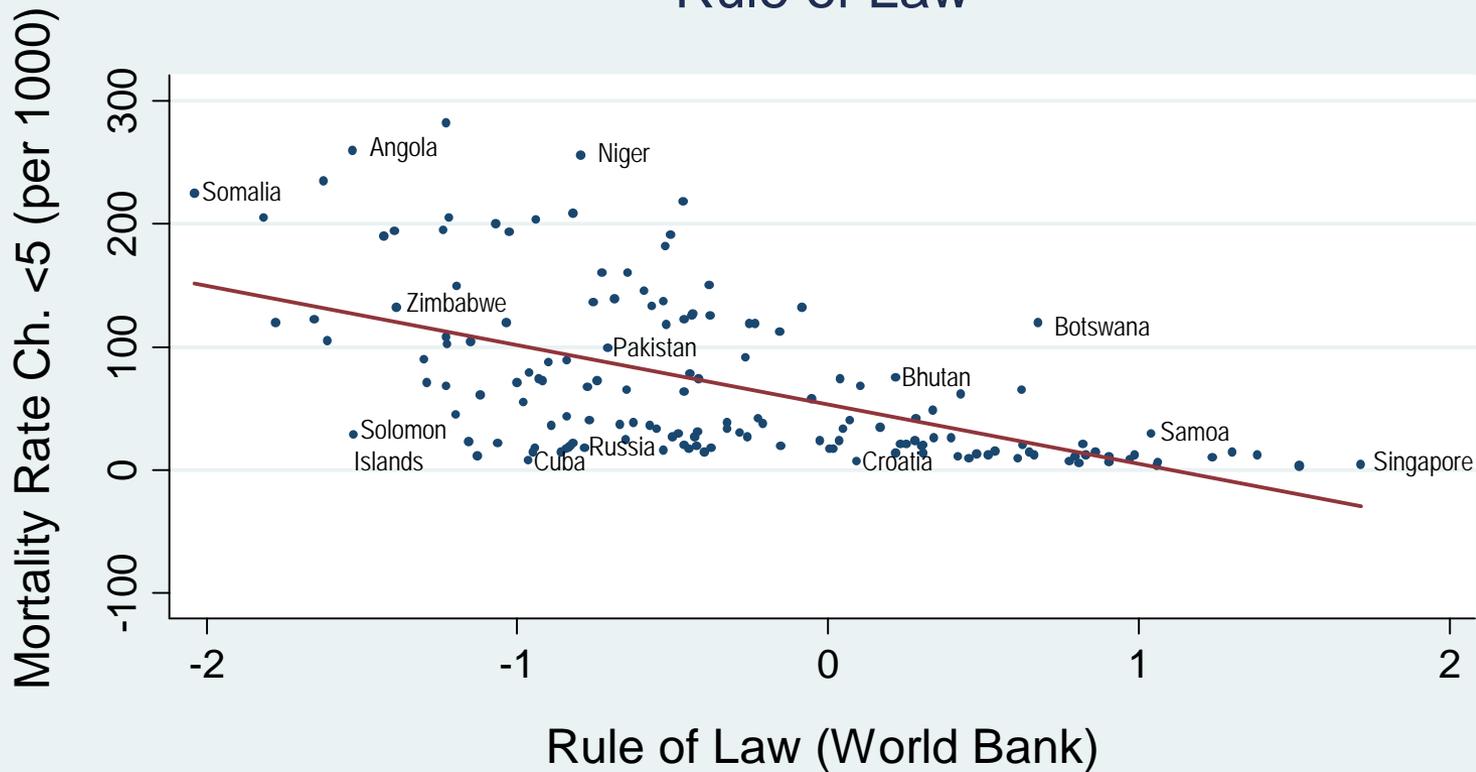


R-squared=0.44

Source: World Bank HNPStats 1995-2005, World Bank Governance Indicators 2002

Figure 45

Non-OECD: Mortality Rate Children <5 vs. Rule of Law

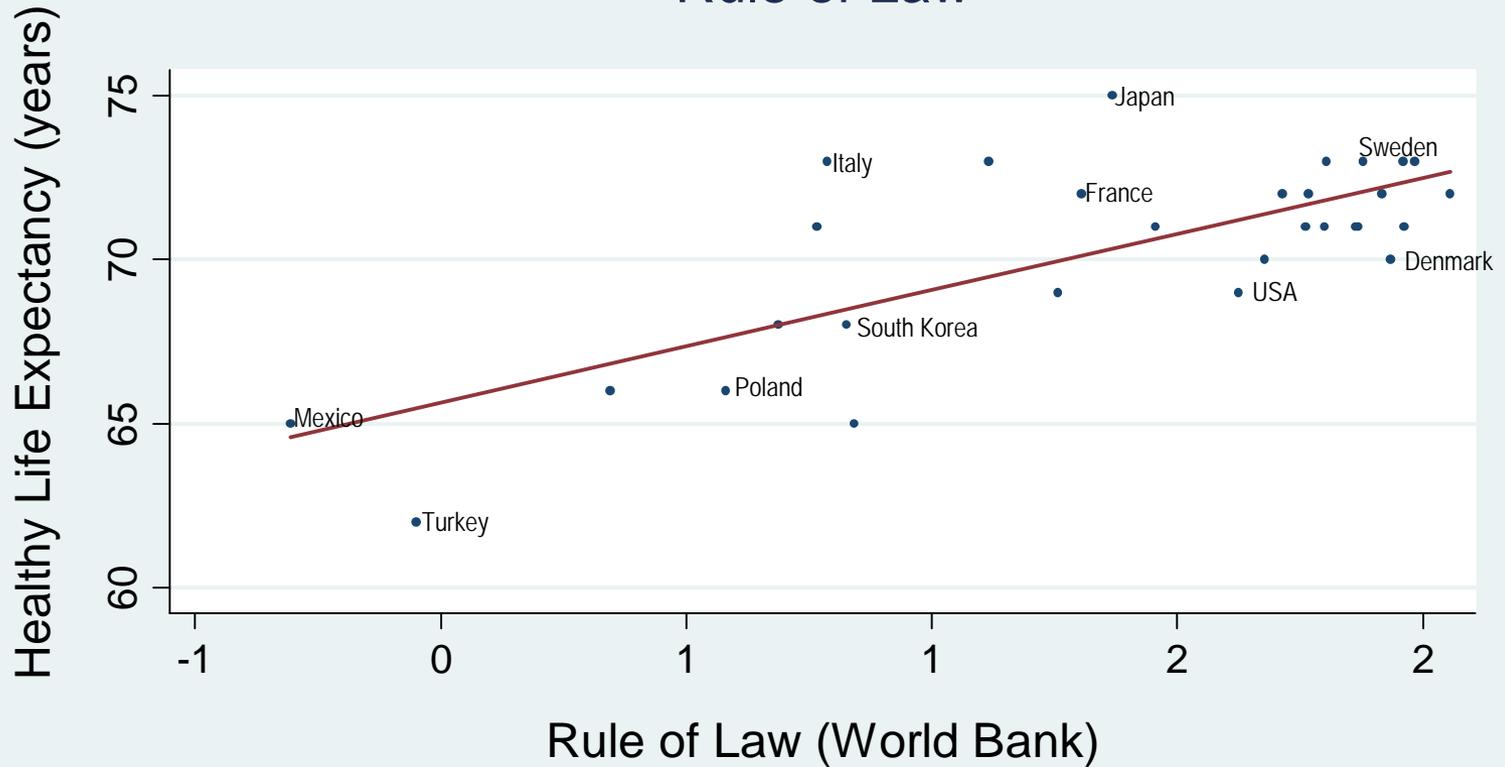


R-squared=0.33

Source: World Bank HNPStats 1995-2005, World Bank Governance Indicators 2002

Figure 46

OECD: Healthy Life Expectancy vs. Rule of Law

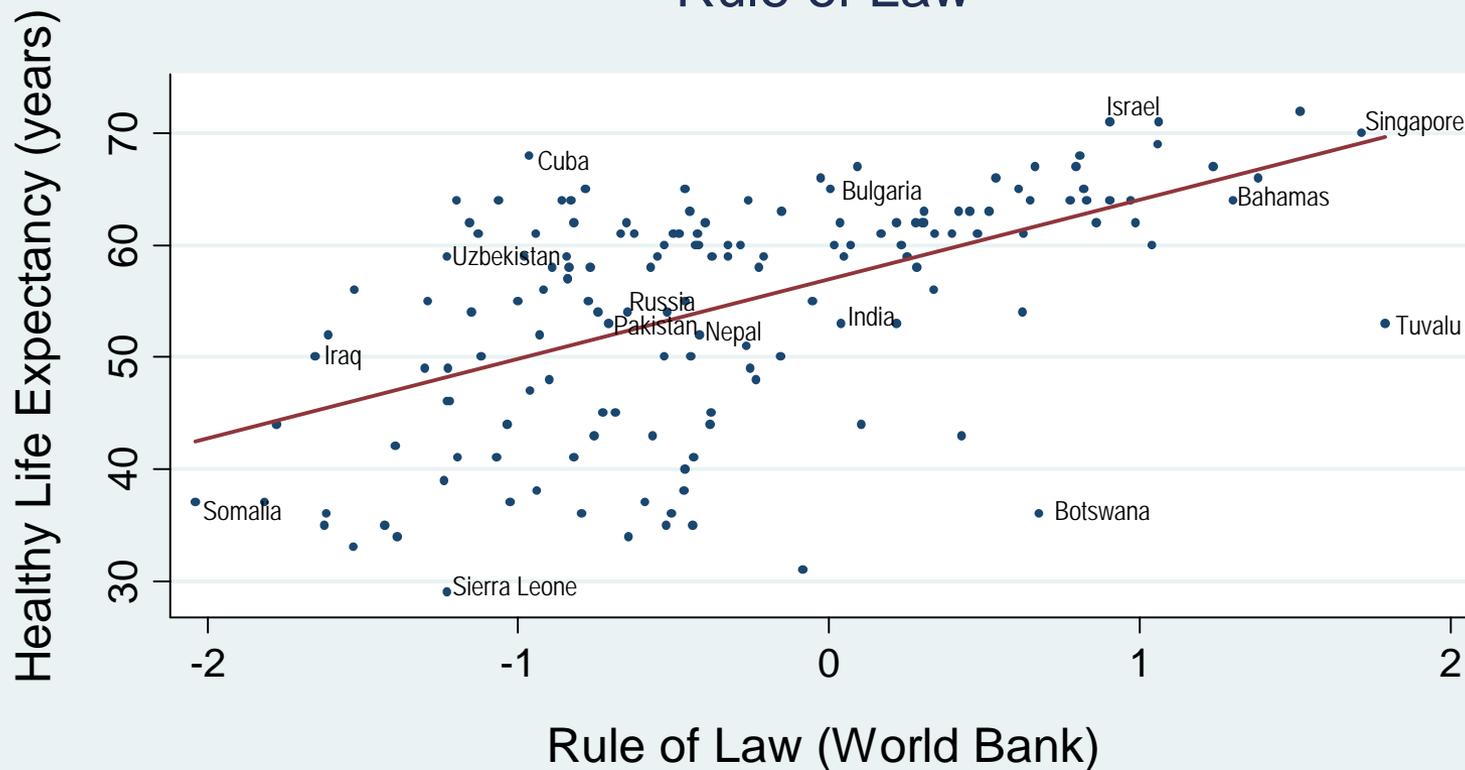


R-squared=0.55

Source: WHO 2003, World Bank Governance Indicators 2002

Figure 47

Non-OECD: Healthy Life Expectancy vs. Rule of Law

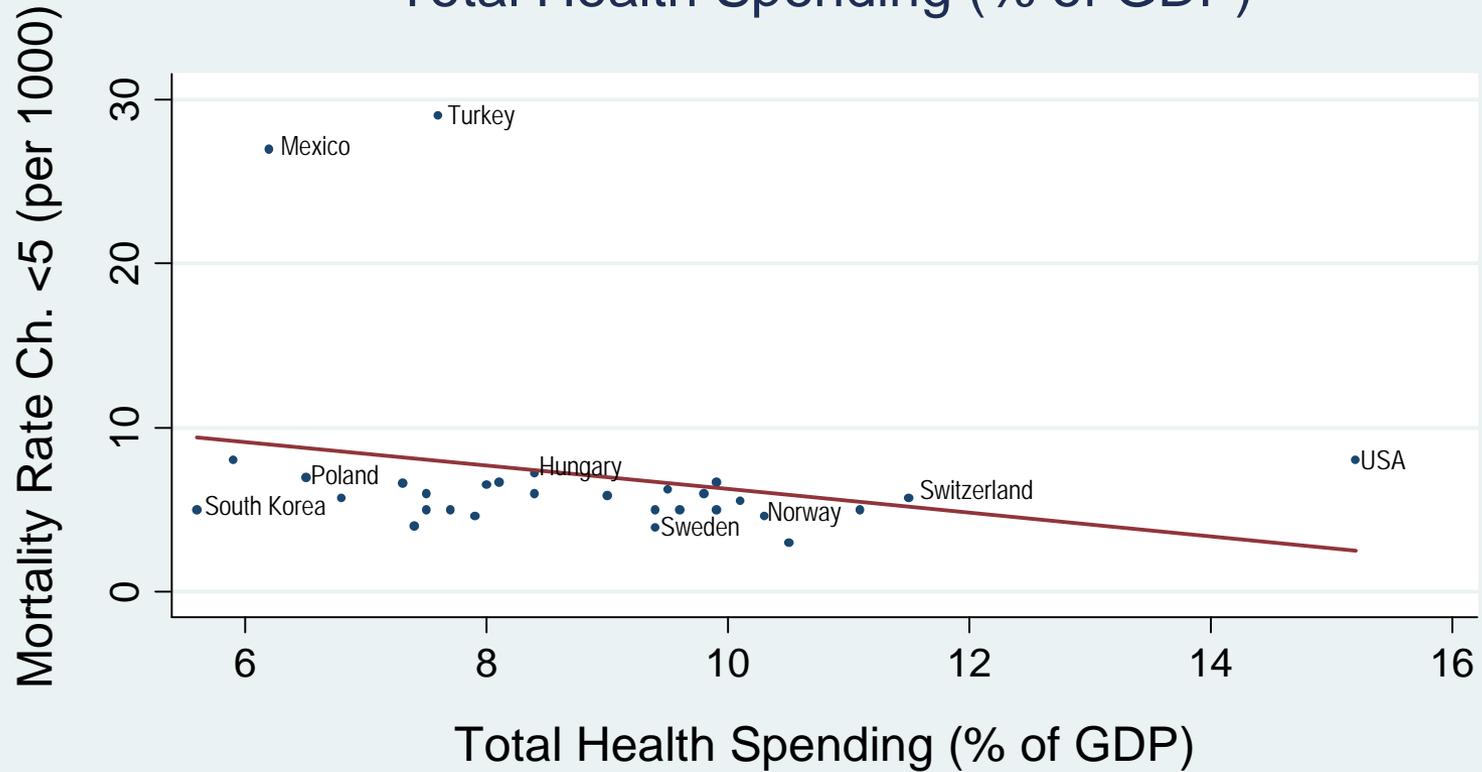


R-squared=0.30

Source: WHO 2003, World Bank Governance Indicators 2002

Figure 48

OECD: Mortality Rate Children <5 vs. Total Health Spending (% of GDP)

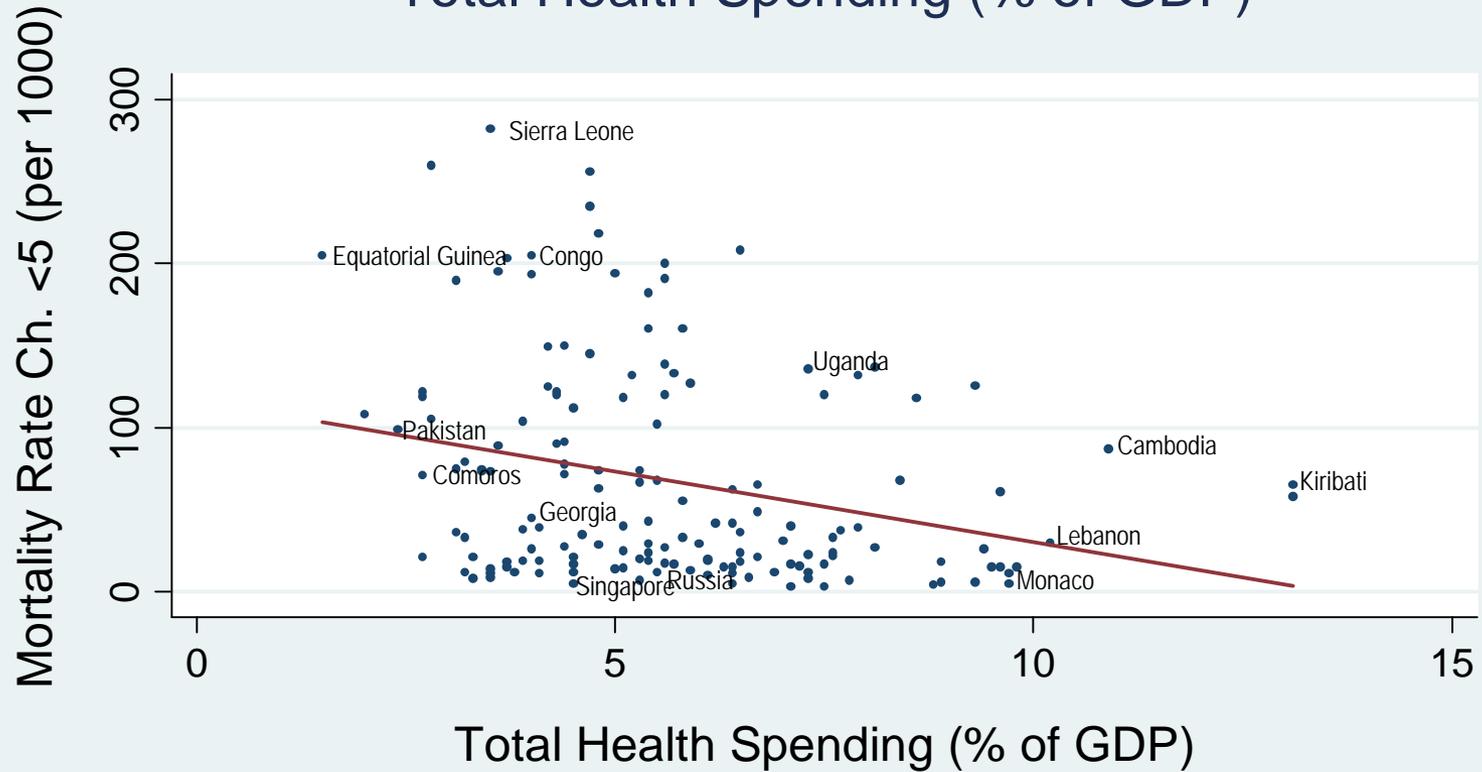


R-squared=0.06

Source: World Bank HNPStats 1995-2005, World Health Organization 2003

Figure 49

Non-OECD: Mortality Rate Children <5 vs. Total Health Spending (% of GDP)

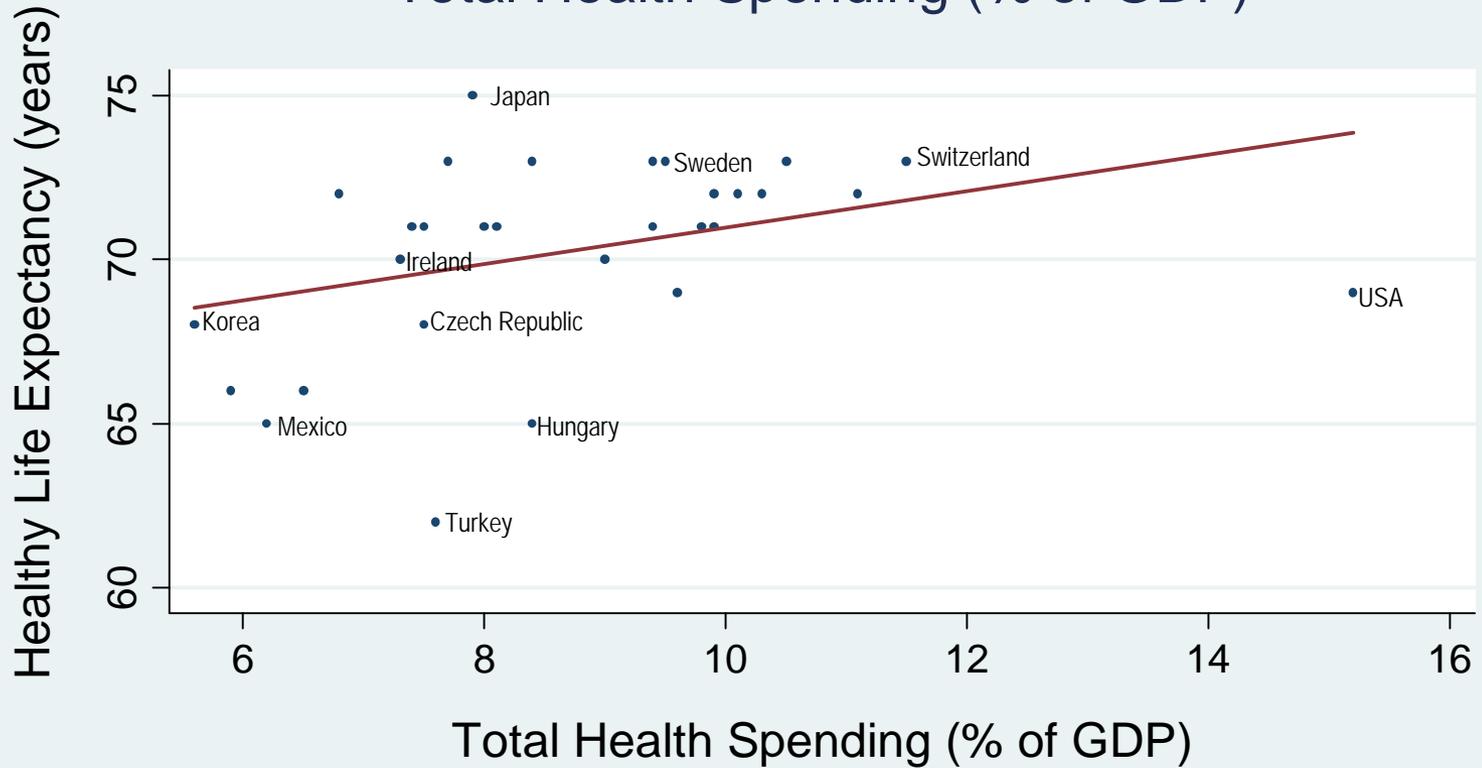


R-squared=0.08

Source: World Bank HNPStats 1995-2005, World Health Organization 2003

Figure 50

OECD: Healthy Life Expectancy vs. Total Health Spending (% of GDP)

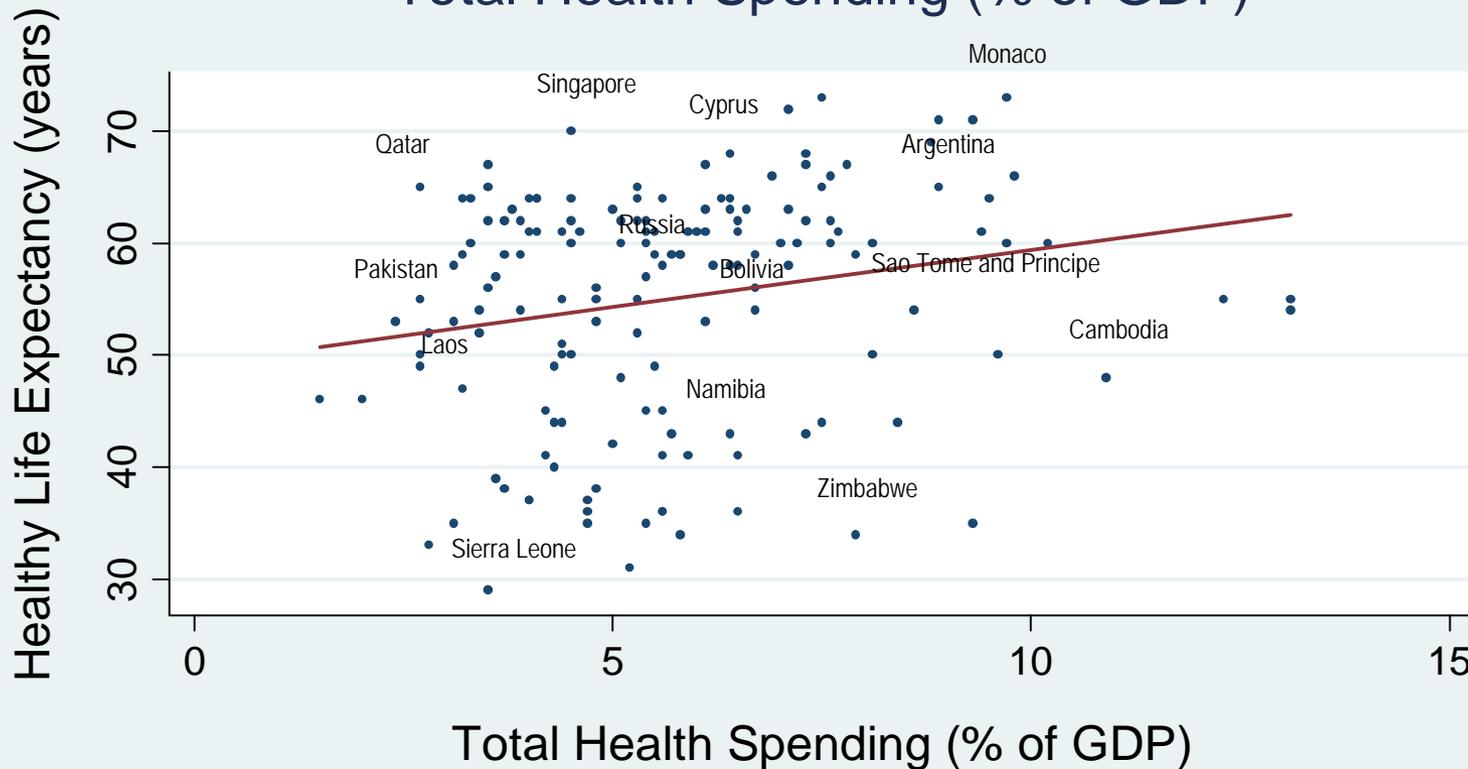


R-squared=0.13

Source: WHO 2003

Figure 51

Non-OECD: Healthy Life Expectancy vs. Total Health Spending (% of GDP)

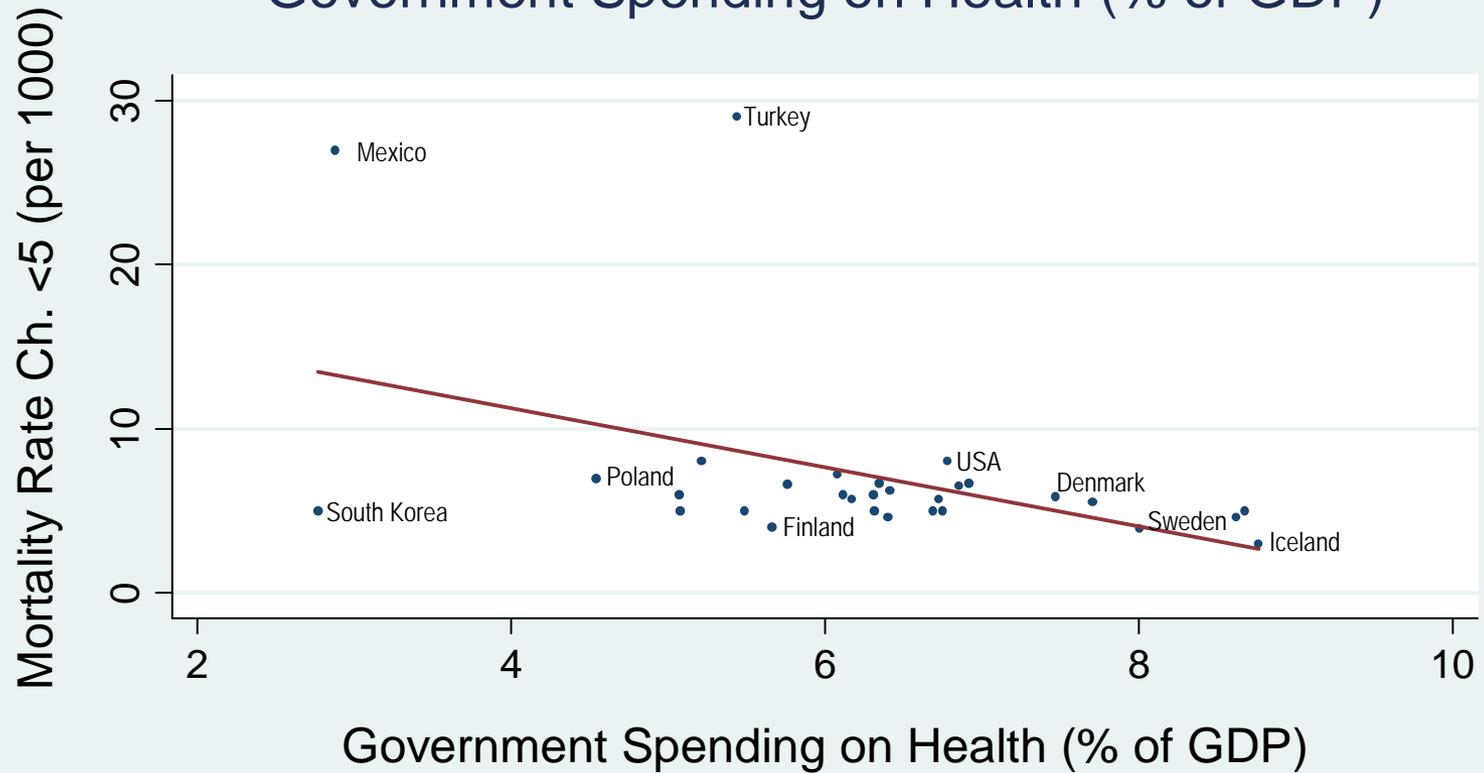


R-squared=0.04

Source: WHO 2003

Figure 52

OECD: Mortality Rate Children <5 vs. Government Spending on Health (% of GDP)

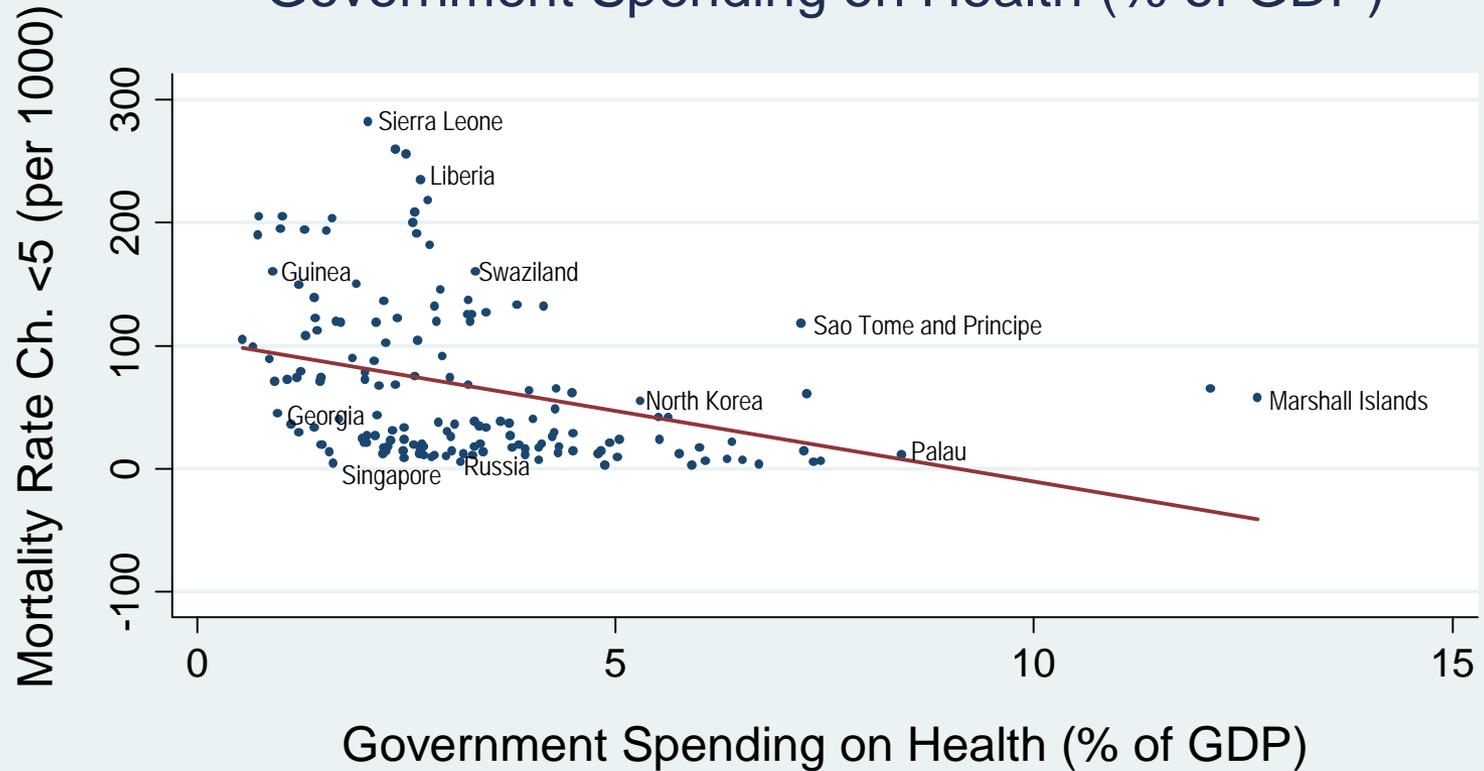


R-squared=0.19

Source: World Bank HNPStats 1995-2005, WHO 2003

Figure 53

Non-OECD: Mortality Rate Children <5 vs. Government Spending on Health (% of GDP)

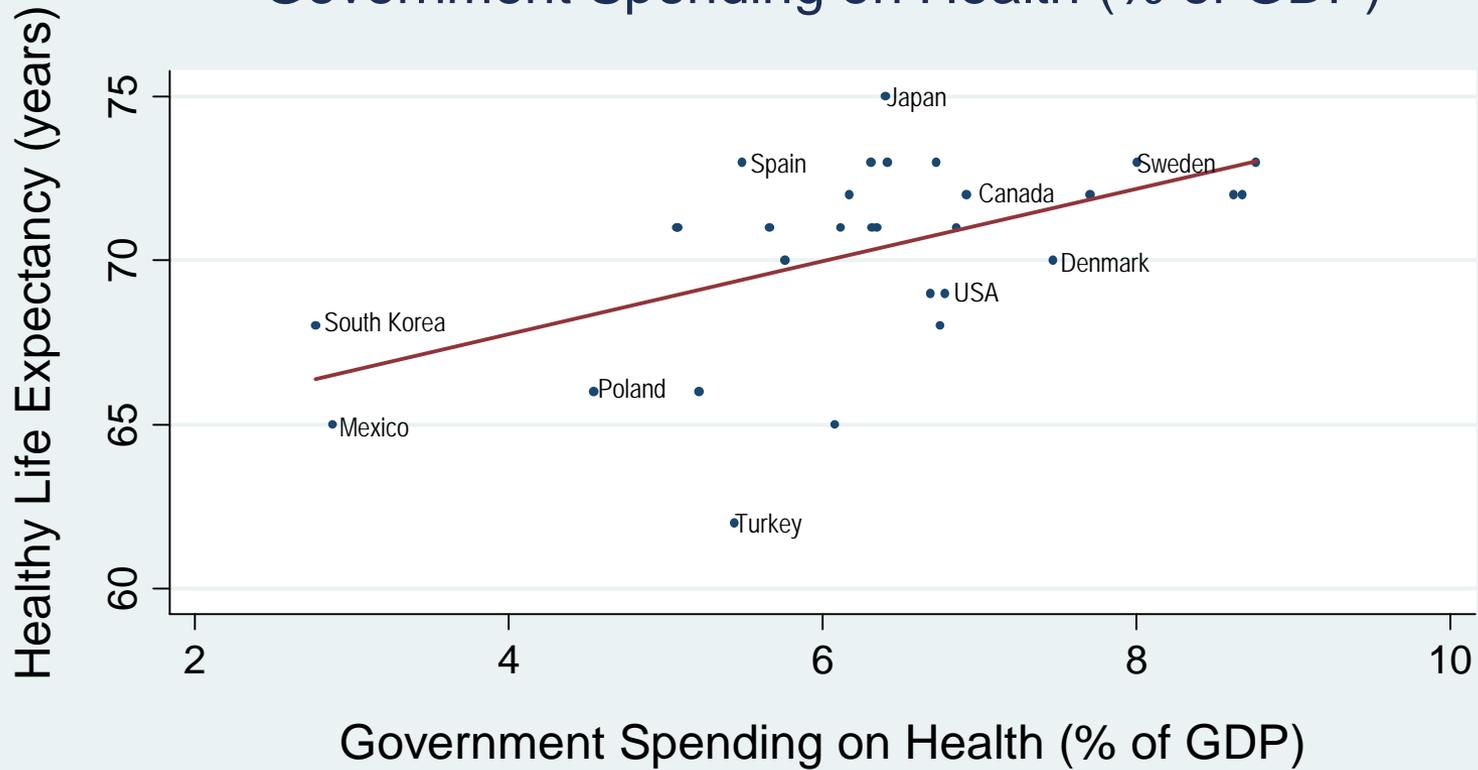


R-squared=0.12

Source: World Bank HNPStats 1995-2005, WHO 2003

Figure 54

OECD: Healthy Life Expectancy vs. Government Spending on Health (% of GDP)

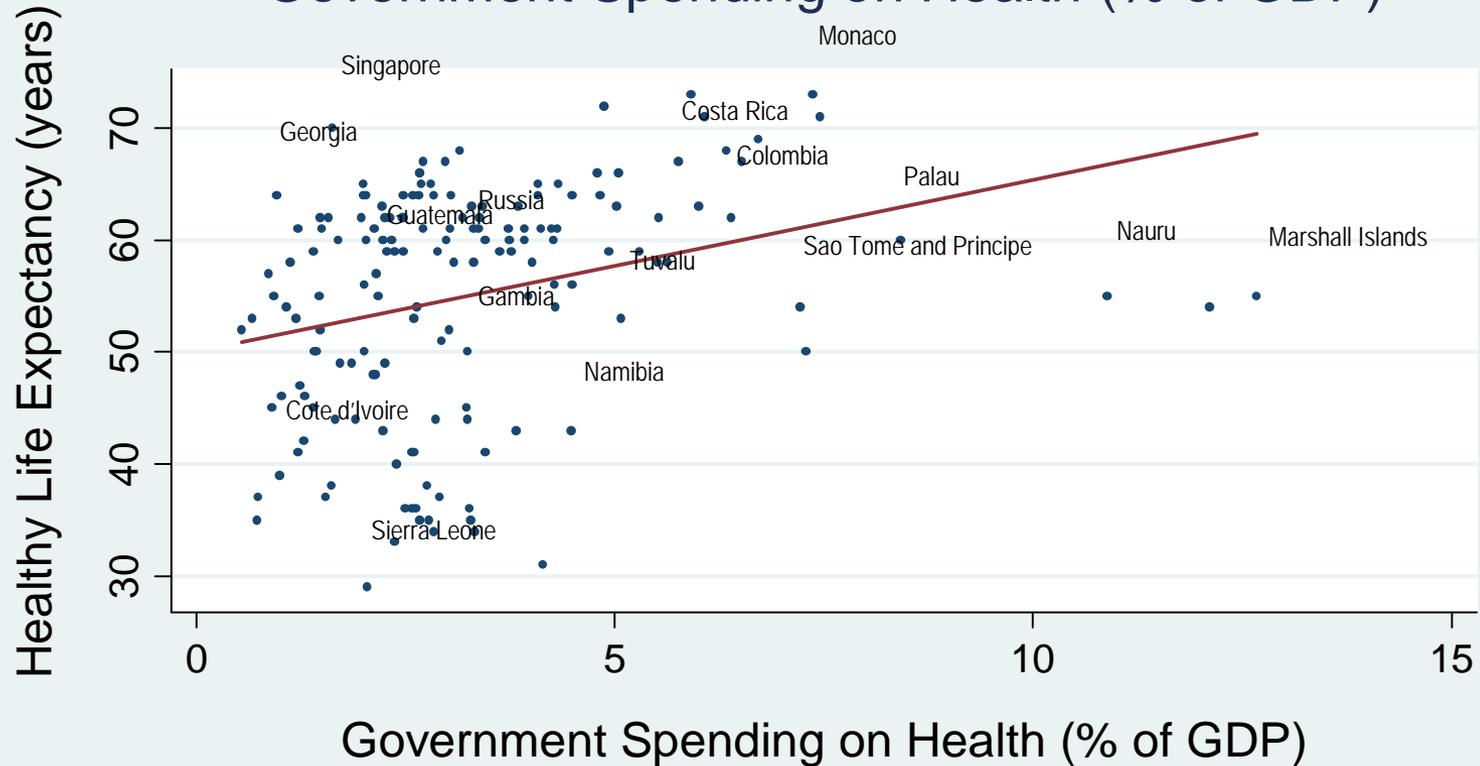


R-squared=0.28

Source: WHO 2003

Figure 55

Non-OECD: Healthy Life Expectancy vs. Government Spending on Health (% of GDP)

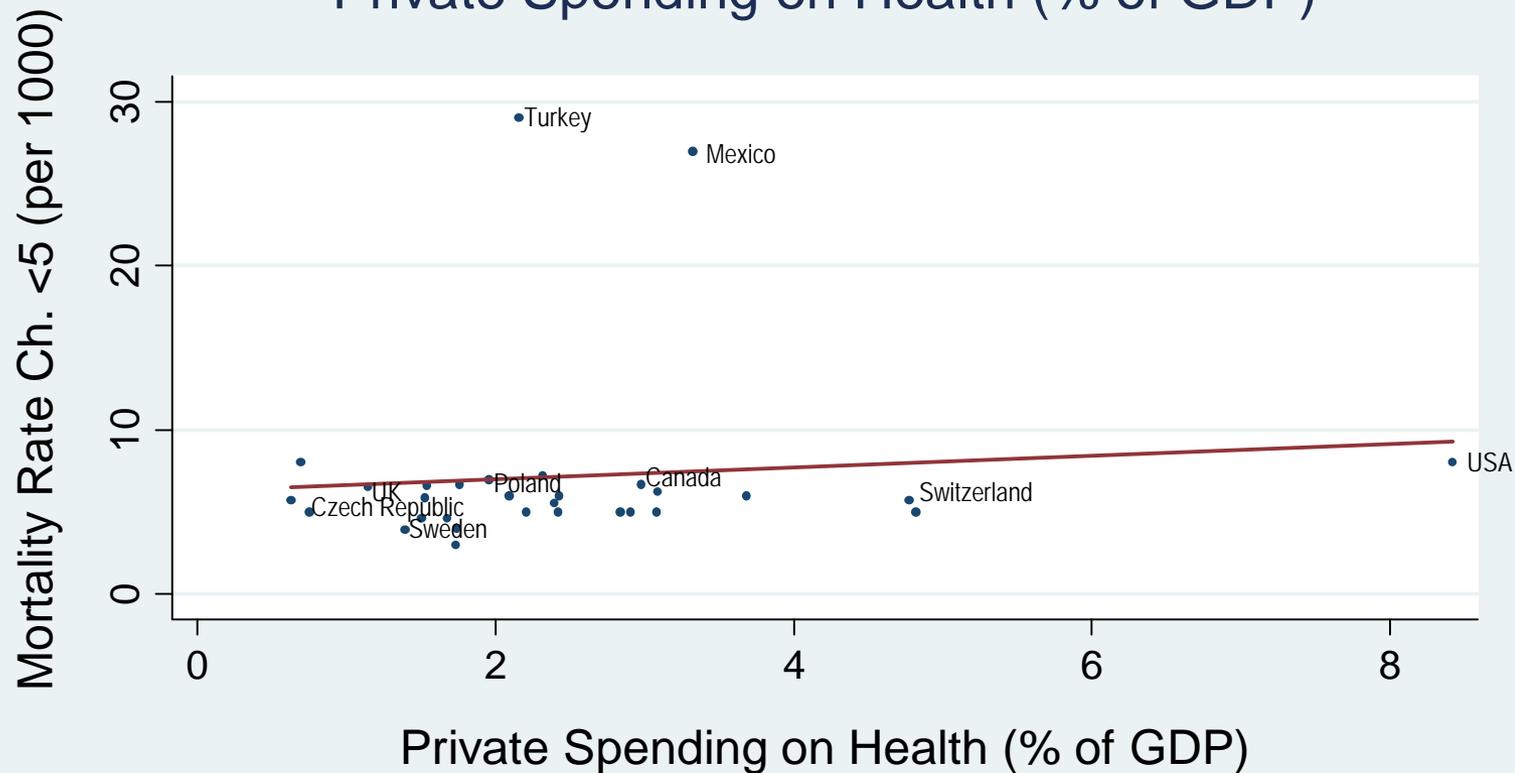


R-squared=0.09

Source: WHO 2003

Figure 56

OECD: Mortality Rate Children <5 vs. Private Spending on Health (% of GDP)

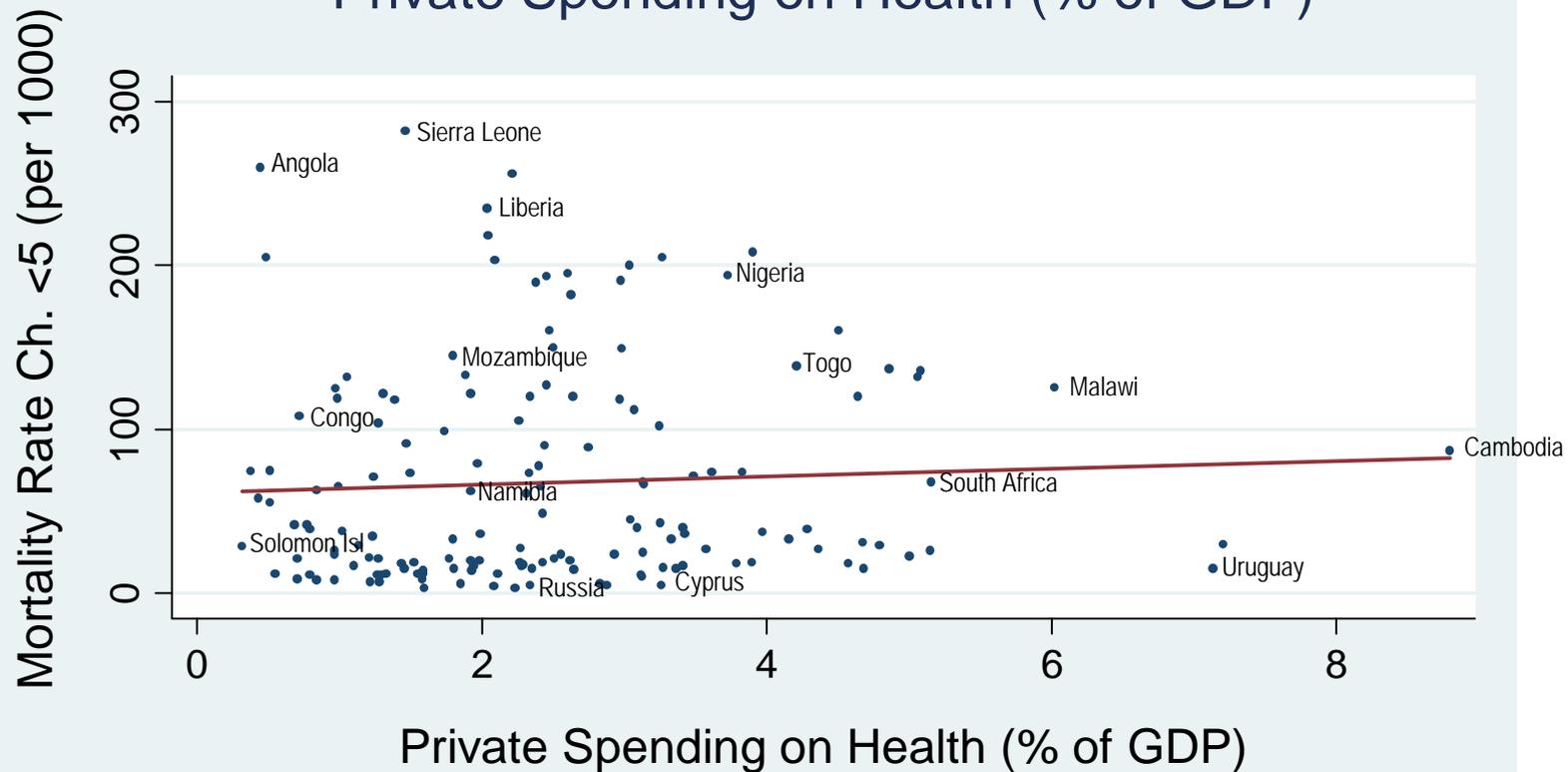


R-squared=0.01

Source: World Bank HNPStats 1995-2005, World Bank Governance Indicators 2002

Figure 57

Non-OECD: Mortality Rate Children <5 vs. Private Spending on Health (% of GDP)

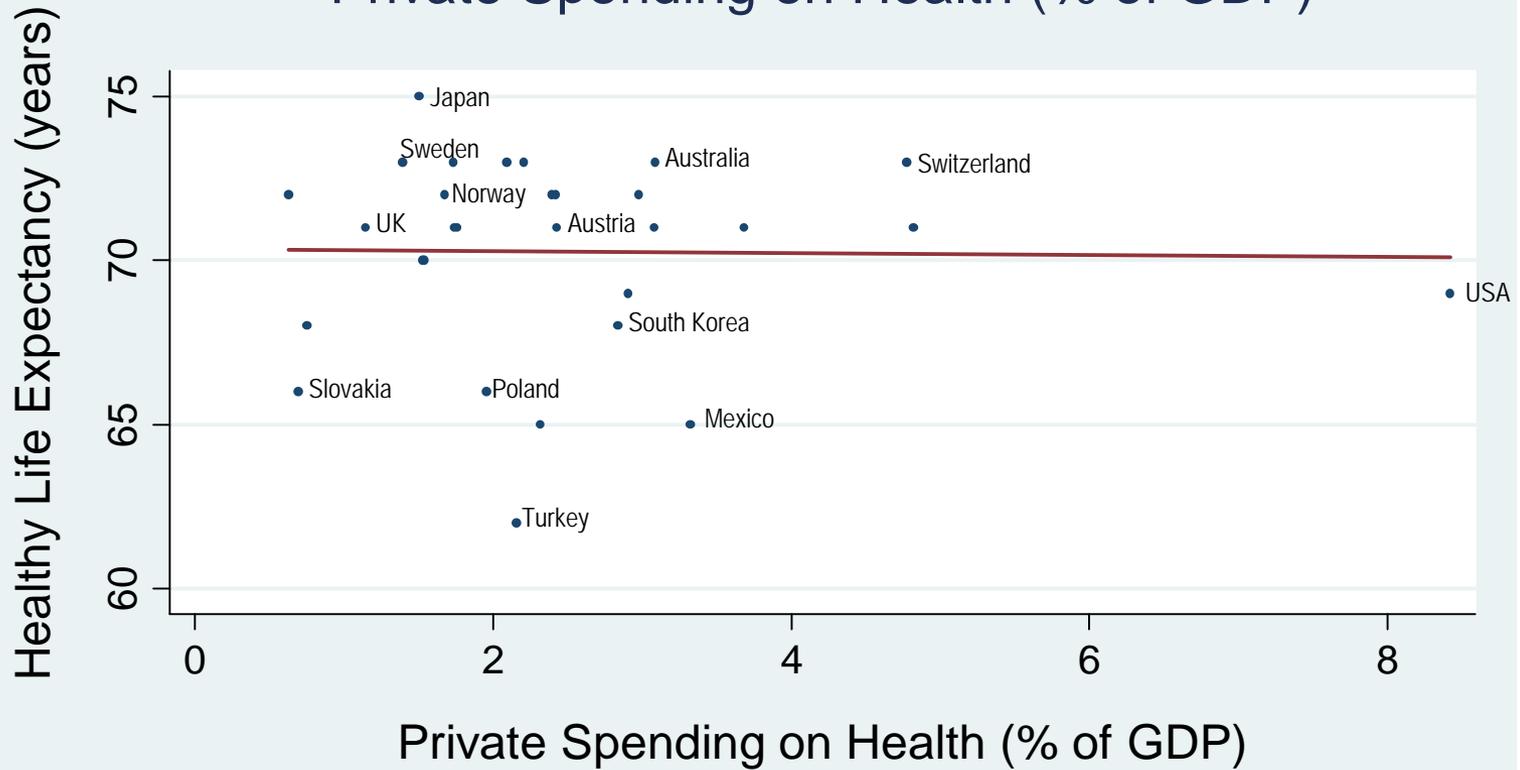


R-squared=0.00

Source: World Bank HNPStats 1995-2005, World Bank Governance Indicators 2002

Figure 58

OECD: Healthy Life Expectancy vs. Private Spending on Health (% of GDP)

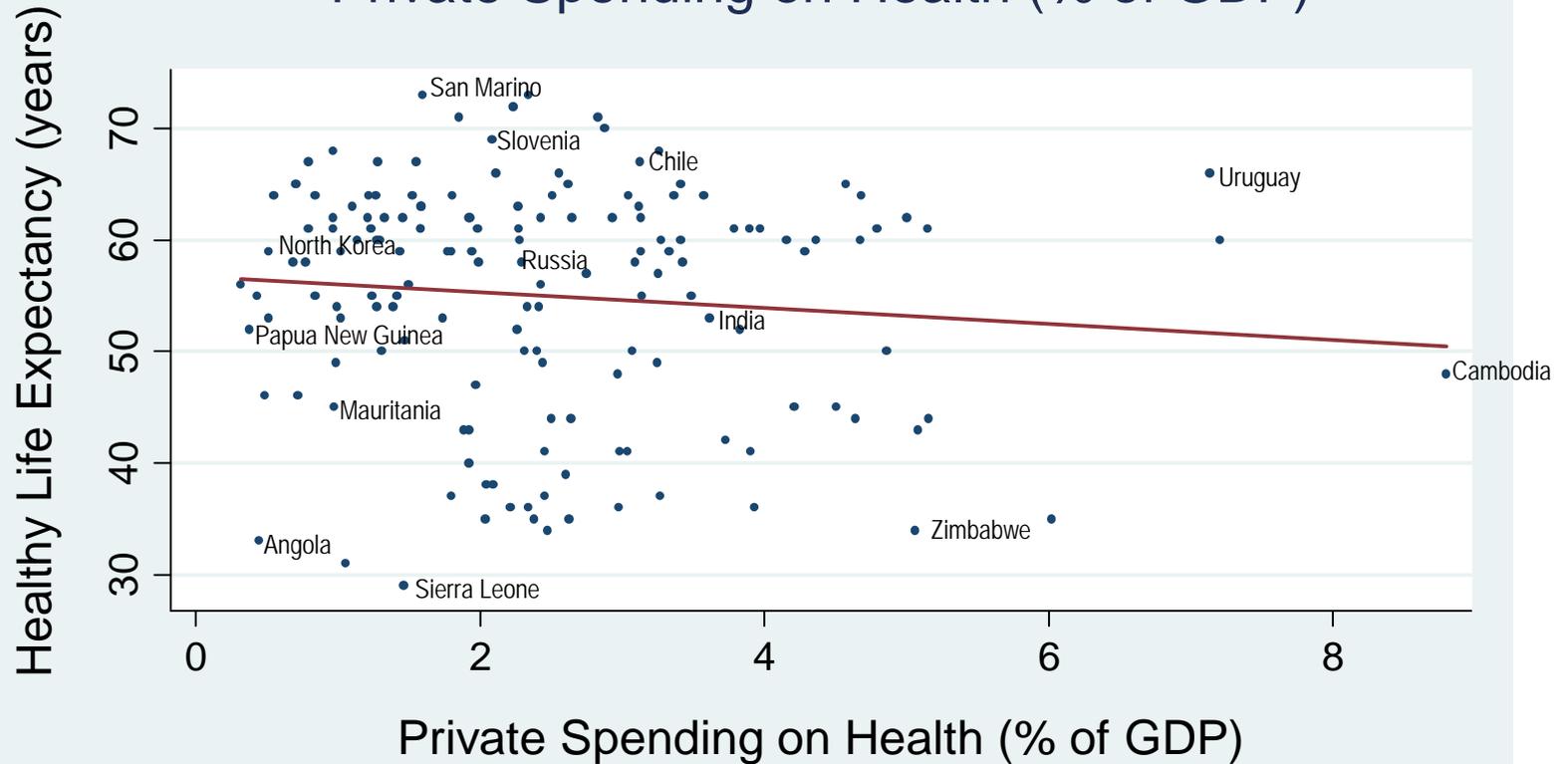


R-squared=0.00

Source: WHO 2003, World Bank Governance Indicators 2002

Figure 59

Non-OECD: Healthy Life Expectancy vs. Private Spending on Health (% of GDP)



R-squared=0.01

Source: WHO 2003, World Bank Governance Indicators 2002