



# Economic Freedom, and the Effect on Misery

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## Abstract:

Questions regarding whether the economy should be free or heavily regulated are relevant in the structuring of government. One might assume that the purpose of government policies should be to maximize the population's utility and minimize misery. Therefore, it is interesting to research how economic freedom affects personal misery. This thesis investigates whether there is a correlation between misery and economic freedom. The study was conducted by running a random effects model with clustered standard errors between Okun's Misery Index and the Heritage Foundation's Economic Freedom Index. The Misery Index is the sum of a country's inflation rate and unemployment rate, both of which have been shown to have a negative effect on personal well-being. The Economic Freedom Index consists of twelve variables that represent free-market values.

The results showed a significant negative correlation between the Misery Index and the Economic Freedom Index. This indicates that a higher level of economic freedom leads to a less miserable population. To observe which aspects of the Economic Freedom Index that affects misery, separate regressions were run between the Misery Index and the twelve variables representing economic freedom. These results showed that only one of the twelve variables, namely the variable of property rights, had a significant correlation with the Misery Index. However, when the Bonferroni Correction was applied, none of the individual variables showed significance.

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# 1 Introduction

## 1.1 Background

Throughout history, humanity has always been on a quest to maximize our personal happiness. What makes an individual happy is something of a subjective nature. For some, it might be spending time with their loved ones, and for some, it might be as simple as listening to a record by the Beatles. Even though the reason for our happiness varies among people, the goal is shared; maximizing our personal happiness.

It might result from human curiosity to try to explain something as subjective as happiness by a scientific method. In economics, the concept of utility is often used as a measurement of the satisfaction a person receives from consuming goods and services. The utility a person receives from consuming is highly personal and could therefore be considered a measurement of happiness (Perloff, 2013). However, the concept of utility is rather theoretical and difficult to apply in practice. To be able to present a study with a higher degree of trustworthiness, a measurement of happiness that is based on more concrete factors would be desirable. There have been attempts to calculate the concept of happiness where the variables are not as theoretical as in the concept of utility. One method was presented in the 1960s by American economist Arthur Okun who tried to calculate happiness' counterpart, unhappiness, in the form of the Misery Index. According to Okun, inflation and unemployment are two driving factors in the population's unhappiness, and therefore his index is based on these two variables (Hashimzade, Myles & Black, 2017a).

Both inflation and unemployment are affected by the economic situation in a country, which means that misery, at least Okun's definition of it, could be affected by how a country has decided to structure its economy. Therefore, it is interesting to investigate whether there is a correlation between misery and how regulated an economy is. In other words, is there a correlation between the Misery Index and an index that represents economic freedom?

In the world of politics, the purpose of the government is often central in the political discourse. Libertarians might agree with John Locke, believing that the only role for the state is to protect life and property (Iyer *et al.*, 2012). On the other side of the isle, the socialist might believe that the government has the purpose of redistributing wealth and power in society to benefit the working class (Tufekci, 2019). This discourse happens in all nations in the world. How heavily an economy should be regulated, and whether that makes the population happier or more miserable, is a question that most probably will be relevant as long as there is an economy to structure. Political discussions have to a large extent been built around this premise for years, and for a good reason. Questions related to how an economy should be structured does have an impact on the population's lives. Decisions about the economy are made on a regular basis by politicians around the world. Therefore, more knowledge about the subject should be seen as desirable due to the importance of the topic in question. Therefore, this thesis hopes to be able to contribute to the debate, by providing information on how misery is affected by economic freedom. This will be done by comparing Okun's Misery Index with the Economic Freedom Index presented by the Heritage Foundation.

A random-effects model will be used to find whether there is a correlation between misery and the economic freedom in a nation. In the regression, there will be one output variable and twelve regressors. The twelve regressors are all part of the Economic Freedom index and each represents one factor that the Heritage Foundation considers to be important for a free economy. The twelve regressors are all described in the background/theory part of the thesis to provide a deeper understanding of they are considered to be an important part of a free economy.

## 1.2 Purpose

The purpose of this thesis is to investigate whether there is a correlation between Okun's Misery Index and the Heritage Foundation's Economic Freedom Index. The thesis also aims to answer which factors of the Economic Freedom Index that mainly affects the Misery Index. How economic freedom affects misery in a country is a question that divides the political discourse. In order for our policy-makers to make well-grounded decisions, more knowledge about the subject should be desirable. The aim with this thesis is to contribute to the debate, and thus, the following two research questions are presented.

## 1.3 Research question

- *Is there a correlation between Okun's Misery Index and the Heritage Foundation's Economic Freedom Index?*
- *How do the Economic Freedom Index's explanatory variables affect the Misery Index?*

## 1.4 Hypotheses

Through the research connected to the thesis, articles have been found regarding the connection between economic freedom and level of misery. To be able to answer the second research question, the Economic Freedom Index is divided into its twelve variables. This thesis aims to investigate whether these individual inputs affect the misery in a nation. The null hypothesis for all of the hypotheses is that there is no effect on the Misery Index if one of the freedoms were to change in a nation. If the null hypothesis were to be rejected, that would mean that the variable affects the Misery Index.

H<sub>1</sub>= A change in the laws and regulations regarding private property will affect the misery in a nation.

H<sub>2</sub>= A change in Judicial efficiency will have an effect on the misery in a nation.

H<sub>3</sub>= A change in the integrity of the government will have an effect on the misery in a nation.

H<sub>4</sub>= A change in tax burden for individuals and corporations will affect the misery of a nation.

H<sub>5</sub>= A change in the fiscal health of a nation will have an effect on the misery in the country.

H<sub>6</sub>= A change in freedom of doing business in a country will affect the misery of a nation.

H<sub>7</sub>= A change in the freedom of the labor market will have an effect on the misery in a nation.

H<sub>8</sub>= A change in the monetary freedom of a country will affect the misery in the nation.

H<sub>9</sub>= A change in the freedom of trade both nationally and internationally affect misery of a country.

H<sub>10</sub>= A change in the freedom of investment in a country will have an effect on the misery of that nation.

H<sub>11</sub>= A change in the financial freedom of a nation will affect the misery in that nation.

H<sub>12</sub>= A change in the public spending will have an effect on the misery in the country.



## 2 Theoretical Framework

*In this section of the thesis, theory about the two indexes, the Misery Index and the Economic Freedom Index, will be presented. This will give the reader a deeper understanding of the two indexes, and by that, making it easier to follow the discussions and analysis in the thesis. This section will also present earlier research regarding relevant factors about the two indexes. This will function as the fundament for the discussion and analysis. In addition, to motivate the usefulness of the Okun's Misery Index, previous studies that have used the index will be presented.*

### 2.1 Theory regarding the two indexes of interest

*In this section of the theoretical framework, a deeper explanation of the two indexes used in the study, the Misery Index and the Economic Freedom Index, will be presented. The components that make up the indexes will be explained, in order to help the reader understand how the indexes might interact with previous studies that will be presented in 'Earlier Research'. In the case of the Misery Index, those components will be inflation and unemployment, and in the case of the Economic Freedom Index, those components will be the twelve explanatory variables.*

#### 2.1.1 The Misery Index

In the 1960s, American economist Arthur Okun introduced the misery index. This index is formed by adding the rate of unemployment with the rate of inflation. Therefore, it works as an indicator of how the average citizen of a country is doing economically, which affects personal well-being (Banerjee, 2016). According to Okun, unemployment and inflation lead to both economic and social costs for a country, and a rise in the misery index implies a deterioration of the country's economic performance (Hashimzade, Myles & Black, 2017a). A rise in inflation means that the cost of living increases, and a rise in unemployment means that more people cross the line into poverty. Therefore, a higher grade on the index implies an unhappier population. The misery index ( $m_t$ ) is calculated on either a quarterly or annual basis. It is defined as the sum of the current rate of unemployment ( $u_t$ ) and the current rate of inflation ( $\pi_t$ ) (Cohen, Ferretti & McIntosh, 2014).

$$m_t = u_t + |\pi_t|$$

##### 2.1.1.1 Inflation and Unemployment

As previously mentioned, the two variables that make up Okun's misery index are inflation and unemployment. As it relates to unhappiness, a study from 2011 shows that both inflation and unhappiness contribute to unhappiness. The report however shows that unemployment

causes more unhappiness than inflation (Ruprah & Luengas, 2011). In the following section, both of the variables will first be discussed individually, and then the relationship between the both will be explained.

#### 2.1.1.1.1 Inflation

Inflation is the rise in the general price levels, which means that the consumer can purchase fewer goods and services for the same amount of money. Inflation can therefore be seen as money losing its value. Several factors might lead to the occurrence of inflation. If a country's central bank decides to start printing money, and therefore increases the money supply, it can be a source of inflation (The Federal Reserve, n.d.). Thus, money can be compared to any, what one may call, "ordinary" goods or services. Just as an increase in the supply of, for example, milk will lead to lower prices on said goods, an increase in the monetary base will lead to the money being worth less than it was before the expansion.

Historically, an aggressive increase in the money supply has been the reason for the occurrence of hyperinflation in some countries. Instances of hyperinflation, like those that have been observed in post-World War 1 Germany and Zimbabwe in the early 2000:s, are examples of economies where the currency has lost a high degree of its value, making it more or less unusable (Mcindoe-Calder, 2018).

Inflation can also emerge when the producers can not satisfy a rapid rise in the aggregated demand for goods and services, and therefore, are forced to raise their prices. Another source of inflation can be the expectations of inflation themselves. If the households expect a rise in prices, they might demand higher wages. Higher wages mean higher costs for the company, which they might want to compensate for with higher prices. Inflation is in this situation a self-fulfilling prophecy (The Federal Reserve, n.d.). Inflation has negative effects on the economic environment. A study that used panel data for the OECD countries shows that inflation curbs investments. This indicates that the high investment activity that has been observed in the OECD countries during the 1990:s, might be due to the low inflation environment at the same time (Wood, 1996).

#### 2.1.1.1.2 Unemployment

For this thesis, unemployment data is collected from the World Bank, which uses statistics from the International Labour Organization (ILO) (The World Bank, n.d.). The unemployment rate is the ratio of the total number of unemployed people in a specific country, divided by said country's labor force. The labor force is not equal to the total population of the country, but is instead defined in a specific age interval (International Labour Organization, n.d.). The ILO defines the working population as those the age 15 to 64 (International Labour Organization, n.d.). The labor force is thus the sum of the total number of people employed and unemployed.

#### 2.1.1.1.2.1 *The relationship between inflation and unemployment*

The two variables, inflation and unemployment, are not to be seen as completely separated, but instead, there is an inverse relationship between the two. This relationship is presented in the Phillips Curve, which was first introduced by A. W. Philips in 1958. In his original paper, Phillips did not present the Phillips curve as a relationship between the rate of unemployment and the rate of inflation, but instead as a relationship between the rate of unemployment and the rate of change of money wage rates (Phillips, 1958). Economist Milton Friedman later modified Phillips' concept in 1968. According to Friedman, Phillips' concept contains a defect, namely the failure to distinguish between nominal wages and real wages. Nominal wages and real wages will move together when the changes in prices are stable, and therefore, the Phillips Curve can also be expected to be relatively stable. For periods for which the rates of prices fluctuate drastically, the Phillips Curve will not be well defined. Friedman therefore suggested that inflation should be included as an independent variable in the Phillips Curve (Friedman, 1968).

#### 2.1.2 Economic Freedom Index

The Economic Freedom Index aims to measure the level of economic freedom in a country during a specific year. The index was created in 1995 by the Heritage Foundation. The Heritage Foundation was founded in 1973 (The Heritage Foundation, n.d.) and is an American, conservative think tank that aims to promote public policies based on the concept of free enterprise, limited government, and individual freedom (The Heritage Foundation, n.d.). According to the Heritage Foundation, economic freedom means the following:

*“The fundamental right of every human to control his or her own labor and property. In an economically free society, individuals are free to work, produce, consume, and invest in any way they please. In economically free societies, governments allow labor, capital, and goods to move freely, and refrain from coercion or constraint of liberty beyond the extent necessary to protect and maintain liberty itself.”* (The Heritage Foundation, n.d.)

In 2016, changes were made to the inputs of the index, and as of today, the index is based on 12 quantitative and qualitative factors, which can be further grouped into four categories. The first category is *Rule of Law*, which includes: property rights, government integrity, and judicial effectiveness. The second category is related to *Government Size* and includes the variables: government spending, tax burden, and fiscal health. The third category included in the index is *Regulatory Efficiency*, which includes the variables: business freedom, labor freedom, and monetary freedom. The fourth and last category is called, *Open Markets*, and it involves the following three factors: trade freedom, investment freedom and financial freedom. Each of the twelve factors is graded on a scale of 0 to 100, and the average of these factors, with equal weight being given to each, determines a country's overall score of economic freedom (The Heritage Foundation, 2020).

### 2.1.2.1 Defining the twelve economic freedoms

The Heritage Foundations' Economic Freedom Index consists of twelve variables that they consider to be critical in defining economic freedom. These twelve variables will be explained in the following paragraphs in order to help the reader get a greater understanding of the foundations of the index.

#### 2.1.2.1.1 Property Rights

Property rights is an evaluation of how easy it is for the population in a country to accumulate private property and how the rights of private property are protected by law. It also measures how well the government is enforcing the laws regarding private property. Another important part of this variable is how likely it is that the government expropriates private property and analyzes the independents of the judiciary system. To get a high score on the property rights variable, it is vital that the individuals in the nation have the ability to enforce contracts and that the judiciary system treat these lawsuits independently from the state (The Heritage Foundation, n.d.).

#### 2.1.2.1.2 Judicial efficiency

A well-functioning legal framework is vital for the protection of the nation's citizens. Without a well-functioning legal framework, the citizens are not protected against unlawful actions from individuals, the government or other private parties. The key part of judicial efficiency is the assurance that the nation's laws are respected, and appropriate legal action is taken in case when someone acts against the law. Three main parts affect the score of judicial efficiency: The independence of the judicial system, the quality of the processes in the legal system, and if the judicial system acts favorably in cases where the government is involved (The Heritage Foundation, 2018).

#### 2.1.2.1.3 Government integrity

A vital part of economic freedom is the freedom from corruption in government. This introduces coercion into the relations regarding economics. The concern of corruption is that if the government is corrupt, decisions regarding the economy are not taken in the best interest of the citizens, instead the decisions are taken because of bribery, nepotism, or other immoral acts. These actions by the government erode the trust in the government and raise the cost of the government (The Heritage Foundation, 2018).

#### 2.1.2.1.4 Tax Burden

The marginal tax rate in a country for both individuals and corporations is measured as a percentage of GDP. The score of tax burden comes from three different variables: The maximum tax rate of private citizens, the maximum tax rate for corporations, and the tax burden in the nation as a percentage of GDP (The Heritage Foundation, 2018).

#### 2.1.2.1.5 Government spending

Government spending is all the transactions that the governments pay in. This includes all the consumption and payments to the population, for example welfare payments. The optimal level of government spending has never been identified, and most likely, it will differ from country to country. Research has shown that extensive public spending has the effect of budget deficits and raising the national debt, and these effects harm the dynamics of the economy. The Economic Freedom Index has zero government spending as the benchmark. Unfortunately, some underdeveloped countries with a weak government might receive a high score in this variable (The Heritage Foundation, 2018).

#### 2.1.2.1.6 Fiscal Health

An important part of the work of the government is to maintain fiscal health. If the government fails to maintain fiscal health, it has shown to lead to instability and overall uncertainty in the economy. If a government is overspending, it often leads to lowering of productivity and, in the end, raises the risk of economic stagnation. In the index, the score is measured through two variables with different weights: the average debt as a percentage of GDP in the last three years (80% of the weight) and the total debt as a percentage of GDP (20% of the weight) (The Heritage Foundation, 2018).

#### 2.1.2.1.7 Business freedom

When the index measures business freedom it measures to which extent the government is constraining the operation of corporations. The score of business freedom comes from 13 different variables all related to the constraints that the government set on the operation of businesses. If a nation has a score of 100 on the business freedom index, it indicates that there are no constraints from the government in the operation of a business (The Heritage Foundation, 2018).

#### 2.1.2.1.8 Labor freedom

When measuring the labor freedom in a country, there are several aspects taken into account. The index is focused on the legal and regulatory part of the labor market. If a country has laws regarding minimum wages or restraints on how a company can hire and fire personnel are two examples of variables that are considered in labor freedom (The Heritage Foundation, 2018).

#### 2.1.2.1.9 Monetary freedom

The variable monetary freedom is based on two variables: price control and the average inflation level in the last three years. The index uses monetary freedom as a variable because of the effects of inflation and price instability. According to the Heritage Foundation, the most ideal type of price control is if a nation has price stability without governmental intervention in the market (The Heritage Foundation, 2018).

#### 2.1.2.1.10 Trade freedom

Trade freedom is measuring the degree of freedom of trade. In the index, they have two inputs to measure this variable: the average tariff rate and measurement of non-tariff trade barriers. This variable is used to measure how much the government is intervening in the import and export of goods and services (The Heritage Foundation, 2018).

#### 2.1.2.1.11 Investment freedom

According to the Heritage Foundation, there should be no constraint of the flow of capital in a free country. They express it as an individual or company should have the right to move their capital in or out of the nation freely. A country that fulfills this will get a score of 100 on the investment freedom variable. In reality, most of the countries in the world have some restrictions on the flow of capital both nationally and internationally. Some countries even close their borders to international investment. To measure this index, the Heritage Foundation uses multiple variables regarding legal and regulatory framework regarding the free flow of capital (The Heritage Foundation, 2018).

#### 2.1.2.1.12 Financial freedom

In the index, financial freedom is a variable that describes the efficiency of banking and how independent the banking system is from the government. In general, if the government controls the banks and other companies in the financial sector reduces the possibility of competition and, through that, hinders easier access to the capital market and credit. To measure this variable, the index uses five broad areas concerning the capital market: to which extent the government intervenes in banks and other capital firms, and to which extent the state has direct or indirect ownership over these companies, to which extent the government regulates the capital market, how much influence the government has on the allocation of credit, and how open the nation is to foreign competition on the financial market (The Heritage Foundation, 2018).

## 2.2 Earlier Research

*In the following section, previous research concerning the subject of economic freedom and its effect on factors relevant to the concept of misery will be presented. These studies will be of help when the results shall be interpreted. By understanding surrounding factors of the two indexes, the possible connection between the two should also become clearer.*

### 2.2.1 Economic growth and free market reforms

Economic development has been shown to have an important effect on life expectancy. In 2003, the World Health Organization published an article by American sociologist Samuel H. Preston where the professor explained the positive correlation between income and life expectancy. To put it in simple terms; as countries grow richer, the population lives longer. One potential reason for this correlation, as it is presented in the paper by Preston, is that richer countries have greater access to health-related services and health technology. An interesting aspect of this correlation is that it is a diminishing one. This means that a rise in income has a more significant effect on poorer countries than rich countries (Preston, 2003).

A study made in 2003 showed that political liberalizations are predominantly followed by dramatic improvement of the country's income. The authors of the study concluded that the enforcement of substantial property rights, the fostering of an independent judicial system, the counteraction of corruption, the dismantlement of burdensome regulation, the allowance of press freedom, and the protection of political rights and civil liberties, make countries develop at a greater rate. The authors mean that these are critical factors that define a healthy economic environment (Roll & Talbott, 2003). In another study, the authors discuss how reforms toward a freer economy influence income equality in a country. They find that a free market is favorable for income equality; when a government liberates the market, the poor begin to catch up to the rich in the nation. The study also shows that this will have a positive effect on the country's gross national product (GDP)(Berggren, 1999). These studies indicate that when a government liberates an economy, it does not only facilitate economic growth, but it could also lower economic inequality in a country.

Besley and Persson (2009) found that nations that have a rigid system that protects private property rights, have a higher degree of GDP growth than nations that do not have a system for protection of private property. The most important factor in the protection of private property is the investment in the legal system. Another important aspect is the possibility to register the property at the court, so it is possible to defend the property at the legal level. Pejovich (1990) found that when a nation decides to prioritize the equality of the nation, at the cost of private property rights, it leads to a higher degree of inflation and unemployment. The problem with this trade-off, as presented by Pejovich (1990), is that businessowners lose the incentives to invest in their businesses, when said business is not protected from the government or other entities.

## 2.2.2 Taxation

Inequality may sometimes be used as a justification for taxation. Biswas, Chakraborty and Hai (2017) found that taxes that alleviate poverty often have a positive effect on the economy. At the same time, taxation lowers the incentives for the middle-class and wealthy to work and invest. This may create a problematic situation for the politician who tries to balance the goals of lowering poverty rates while simultaneously creating incentives for the middle and upper class to work.

One study shows that when the top marginal tax rate goes over 60%, it harms economic growth (Milasi & Waldmann, 2018). This assumption is strengthened in another study that found that when a developing country raises the tax ratio, it also harms the economic growth rate (Mourmouras & Rangazas, 2009). This is an indication that for developing countries, a rise in the tax rate might be harmful for the development of the economy. The article further describes that when an economy grows, the rates of taxations also tend to increase (ibid.). Tax Burden is a part of the Economic Freedom Index, which makes these previous studies relevant for the study presented in this thesis.

A further study found that when a government raises taxes on capital, the consumption in a nation will be lowered. The authors had the opinion that the lowered consumption was balanced with a higher degree of welfare (Conesa, Kitao & Krueger, 2009).

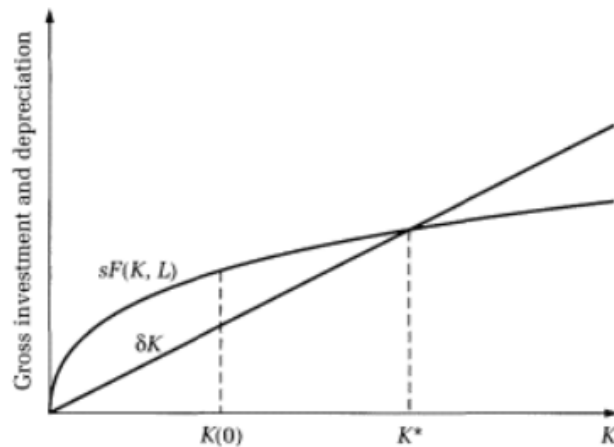
## 2.2.3 Unemployment and labor laws

A study made in Britain in 1994 shows that being without a job harms the mental well-being of the unemployed. The study indicates that unemployment, therefore, is not voluntary but something people are forced into. The study also showed that people who recently lost their job are unhappier than those who are long-term unemployed (Clark & Oswald, 1994). This study supports some of the assumptions made by Okun, namely that unemployment leads to misery, and by that, further adds weight to Okun's index being a relevant measurement for misery.

When it comes to laws that regulate labor, the Heritage Foundation sees them as a negative for the economic freedom in a nation. Marshall (1994) on the contrary found that labor laws are important to more effectively change the capital/labor ratio. In countries with a lack of rigid labor laws the development of the ratio is slower than in nations with more rigid labor law.



Figure 2.2-1 Solow Growth Model (Barro, 1997)



The findings from Marshall (1994) can be connected with the Solow Model shown in Figure 1. In the Solow growth model capital is the driving factor of growth. This can lead to in countries with less rigid labor laws with a slower development of capital/labor ratio, the growth of the nation moves slower than in a nation with rigid labor laws (Marshall, 1994; Gottfries, 2013).

According to Wood (1996), when the topic of unemployment is discussed, international trade and its effect on the unemployment rates are often mentioned. There seems to be a general misconception that international trade leads to unemployment for the more developed countries in the trade deal. Earlier studies have shown that this is not true. A study conducted among 10 Arab countries between the years 1991 and 2012, showed that, in the long-run, openness in trade leads to less unemployment (Awad & Yussof, 2016). Aoria and Pugh (2013) found that nations involved in open-trade with other countries have a lower degree of volatility in the economy. This leads to a more sustainable growth in the nation. The information presented in these studies are important for the study conducted in this thesis. Due to unemployment being a key variable in the Misery Index, it is important to understand what affects this variable.

## 2.3 Previous studies with the Misery Index

*There have been several previous instances where Okun's Misery Index has been compared to other variables. In this section of the theoretical framework, earlier research surrounding the Misery Index will be presented. These earlier studies show the range and the usefulness of the index, and show the reader that Okun's Misery Index is well-established among earlier researchers. This section will also function as an indication where there could be a gap in the research and thereby further motivating why this study could be a valuable contribution.*

A common use of the misery index is to compare it with the crime rate in a country in order to observe whether there is a correlation. There are several studies that have found a positive long-run correlation between the misery index and crime rate in multiple countries (Munir, Asghar

& Ur Rehman, 2017; Tang & Lean, 2009). There have also been many studies linking the misery index to multiple different economic variables. Grabia (2011) showed that in the European Union, there was a strong convergence, the poorest nations were catching up to the richer ones. However, at the same time, the ranking in the misery index did not change. The people in more prosperous nations had a lower amount of misery despite a lower growth rate.

The effects of economic growth have previously been directly compared to the Misery Index. A study made in Pakistan shows a negative correlation between economic growth and the Misery Index. This means that as the economy grows, the population becomes less miserable (Wang *et al.*, 2019).

Adrangi and Macri (2019) used the Misery Index to compare it with the popularity rate of the sitting president. The authors found a negative correlation between the two variables; if the misery index went up, the popularity rating went down. The study showed that the probability of the president receiving a positive approval rating would decrease by three percent if unemployment increases by one percent. It also showed that the probability of the president receiving a positive approval rating would decrease by seven percent if the inflation increases by one percent. The popularity of the sitting president can be seen as a reflection of the population's approval of the president's work while in office. Therefore, it is logical that greater levels of unemployment and inflation leads to a dissatisfied population.

A study made among 55 African countries implies that policy changes only will have a short-term effect on the Misery Index. The authors mean that it is more reasonable to follow a gradual approach in trying to lower the Index (Solarin, Gil-Alana & Lafuente, 2020).

One study compared the Misery Index with the suicide rate in the United States during the time period 1958 to 1992. This study showed that the original Misery Index was significantly correlated with the suicide rate (Yang & Lester, 1999). These results add weight to the Misery Index as being a reliable index on misery.

## 3 Methodology

*The methodology section will present how the study in the thesis was conducted, step by step. In order to motivate for the reader why the results of this study are legitimate, the choice of method will be reviewed and analyzed. This section will also discuss reliability and validity in the thesis in order to present the reader with potential flaws with the study.*

### 3.1 Research design

Bryman, Harley & Bell (2019) explain that research design is the process of collecting and analyzing data. Firstly, a research paradigm needs to be chosen, and this relates to whether the study should be of a qualitative nature, or quantitative one. These two paradigms are differentiated in how they explore reality. Bryman, Harley & Bell (2019) explains that the main differentiation between the two is that qualitative studies mainly handles “words”, while quantitative studies mainly handles “numbers”. The qualitative study will use rich and deep data, while the quantitative study will use hard and reliable data to answer the research question. Lastly, an important factor that differentiates the two methods is whether the researcher himself is close or distant to the object that the study aims to investigate.

This study investigates whether there is a correlation between the Misery Index presented by Okun, and the Heritage Foundation’s Economic Freedom Index and its twelve sub variables. To answer this question, data were collected from a total number of 153 countries over a period of five years. The study is therefore of a quantitative nature since large data sets were used, and for this reason, quantitative methods were used to answer the research questions made in this thesis.

The data used in this thesis have both a time series and cross-sectional aspect. Time-series data are observations that are spread out at equal length of time, for example days, months, or years (Doane & Seward, 2019). In this thesis the time-series observations are the yearly observations between 2016 and 2020. Cross-sectional data are instead if the observations are spread between different units. The units might be, individuals, regions, or countries (Doane & Seward, 2019). In this thesis 153 different countries are used to answer the research questions, giving the data the cross-sectional aspect.

## 3.2 Research Methods for Data Collection

*In this section of the methodology, the process in which the data was collected will be presented.*

### 3.2.1 Data Collection

Only secondary data was used for this thesis. Secondary data is data that originally was not collected for the purpose of the specific study. One main reason to use secondary data instead of collecting a large primary data set is to save time and money. When using secondary data from reliable sources, the data often reflect the population instead of the possibility of having to deal with bias or skewness (Vartanian, 2010). Firstly, in order to calculate the level of misery in the countries used for the thesis, data sets containing the rates of unemployment and the rates of inflation were collected. This data was collected from the World Bank, which gives the data a level of trustworthiness. The world bank is a cooperation between its 189 member countries (The World Bank, n.d.) with the aim to facilitate development in major areas (The World Bank, n.d.). For this thesis, data from 153 countries was used. This was the total number of countries where the World Bank could provide both the rates of unemployment and the rates of inflation. For unemployment rates, the modeled ILO (International Labour Organization, n.d.) estimates were used, which makes the comparisons between countries more just by eliminating potential national biases.

The next data set used for this thesis was the Economic Freedom Index. As mentioned in the thesis, the Economic Freedom Index was created in 1995, but in 2016, changes were made to the input of the index. This means that if data were used from both before and after the change in the index, there was a risk that the results would have been distorted. For this reason, data were used from 2016 to 2020. The data for the Economic Freedom index was directly downloaded directly from its source, the Heritage Foundation's website.

Data for thirteen countries were not available at the World Bank, and instead, the rates of inflation and rates of unemployment were manually collected from each of the countries central banks. These countries were the following: Argentina, Cambodia, Central African Republic, Comoros, the Democratic Republic of the Congo, Egypt, Kazakhstan, Kenya, Liberia, Suriname, Tajikistan, Trinidad and Tobago, Turkmenistan and Uzbekistan.

Due to the hyperinflation in Venezuela and Zimbabwe, these countries were left out of the study. Hyperinflation is an abnormality, and using these countries would therefore not be representable of what this thesis aims to investigate.

### 3.2.2 Data Analysis

In this thesis, a quantitative approach was used to gather and analyze data. In the process of gathering and analyzing the data, Microsoft Excel and Stata were used. The data was collected in an Excel sheet, and after the data was gathered, the sheet was imported to Stata for analysis. To begin with, a Lagrange multiplier test was conducted to evaluate whether a Pooled OLS or a random effect model should be used. The null hypothesis was rejected and therefore the random effects model was more suited to use. After that, a Hausman test was conducted to evaluate if the data should be handled through random or fixed effect. The null hypothesis could not be rejected and because of that, the random-effects model was used. The data was then transformed to panel data, and through that, the data could be used. To find the answer to the research questions, the data was regressed through panel data with a random effect model.

The economic freedom index was split into its twelve components. This was made to clarify which of the economic freedoms had an impact on the Misery Index. To avoid the risk of overstating the precision of the regressors, the standard errors are clustered. This means that the standard error is clustered into 153 different clusters. To avoid a misleadingly small standard error, this method raises the trustworthiness of the final result (Cameron & Miller, 2015).

Due to there being multiple variables of interest, the alpha-value in the regression might be incorrect. Therefore, a Bonferroni correction was used in order to decrease the risk of a type-1 error. In this thesis, an alpha of 0.05 is used, and under normal circumstances, there would be a 5%. When running multiple regressions at once, the probability of a type 1-error is larger than 0.05. The Bonferroni correction handles this situation by dividing alpha by the number of statistical tests performed (Sedgwick, 2012).

### 3.2.3 Variables

*This section of the methodology will present the different variables that were used in the study.*

#### 3.2.3.1 Dependent Variable

This thesis investigates how economic freedom affects the misery of a nation's population. In order to measure how economic freedom affects misery, the thesis uses the Misery Index as the dependent variable. The Misery Index is a combination of inflation and unemployment and said data is collected from the World Bank database.

### 3.2.3.2 Variable of Interest

This thesis has constructed a model that presents how the twelve different input variables of the Economic Freedom Index affect the Misery Index. The different variables of interest that are analyzed in this study are: Property Rights, Judicial Efficiency, Government Integrity, Tax Burden, Government Spending, Fiscal Health, Business Freedom, Labor Freedom, Trade Freedom, Investment Freedom, and Financial Freedom. These variables are described in the theory section of the thesis.

## 3.3 Breusch and Pagan Lagrangian multiplier test for random effects

Table 3.3-1 Breusch and Pagan Lagrangian multiplier test for random effects

<i>Estimated results</i>	Var	sd = sqrt(Var)
<i>Misery index</i>	79.26776	8.903244
<i>e</i>	14.33253	3.785833
<i>u</i>	58.47805	7.647094
<b>Test: <math>Var(u)=0</math></b>	Chibar2 = 946.33	
	Prob > chibar2 = 0.0000	

A Breusch and Pagan Lagrangian Multiplier (LM) test for random effect was conducted in Stata. The test measures whether the data is fit for a pooled OLS model or a random effect model. In an LM-test the null hypothesis is set to  $var(u)=0$ . This means that there is no variance in the unobserved variables. If the test shows that the data cannot reject the null hypothesis, a pooled OLS model should be used. The data in this thesis received a P-value of 0.00000, which means that the null hypothesis can be rejected, and a random effect model should be used.

### 3.4 Hausman Test

Table 3.4-1 Hausman Test

Coefficients				
	<i>(b)</i> <i>Fixed</i>	<i>(B)</i> <i>Random</i>	<i>(b-B)</i> <i>Difference</i>	<i>Sqrt(diag(V_b-V_B))</i> <i>S.E.</i>
<i>Property Rights</i>	-0.0794036	-0.0920912	.0126876	.0167304
<i>Judicial</i>	-0.002922	-0.0080812	.0051593	.015415
<i>Efficiency</i>				
<i>Government</i>	.0706407	.0586708	.0119699	.0153922
<i>Integrity</i>				
<i>Tax Burden</i>	-0.0160915	-0.0247442	.0086526	.0403498
<i>Government</i>	-0.0033809	-0.0148824	.0115015	.0192358
<i>Spending</i>				
<i>Fiscal Health</i>	-0.0338099	-0.0304304	-.0033795	.0058461
<i>Business</i>	-0.0278375	.0093535	-.037191	.0280524
<i>Freedom</i>				
<i>Labor Freedom</i>	.0063176	.0034689	.0028486	.0411798
<i>Trade Freedom</i>	-0.0192595	-0.0390083	.0197488	.0175497
<i>Investment</i>	-0.0335225	-0.0487451	.0152226	.0346791
<i>Freedom</i>				
<i>Financial</i>	.0252841	-0.0400845	.0653686	.0753526
<i>Freedom</i>				

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(10) &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\ &= 5.98 \\ \text{Prob}>\text{chi2} &= 0.8749 \end{aligned}$$

A Hausman test was conducted to decide whether the data was fit for a fixed effect model or a random effect model. The difference between the random effects, and fixed effects models is that in the random-effects model, there is an assumption that all the cross-sectional units have the same intercept, namely alpha (Brooks, 2019). In a Hausman test, the null hypothesis is that a random effect model is the best way to handle the data. The null hypothesis means that there is no correlation between the error terms and the dependent variable. The result of the Hausman test was a P-value of 0.1533, which is larger than 0.05 and means that the null hypothesis cannot be rejected. This indicates that there is no correlation between the error term and the output variable. The results of the Hausman test indicate that the data should be handled through a random effect model.

## 3.5 Econometric Models

### 3.5.1 Panel Data

To investigate whether there is a correlation between economic freedom and misery in a nation, the thesis uses a panel data set with 153 countries, spanning over a five-year period. Panel data is a combination of time-series data and cross-section data (Brooks, 2019). The time-series data in our material is the yearly data and the cross-sectional data is the different countries.

### 3.5.2 Panel Data Regression Models

$$y_{it} = \alpha + \beta x_{it} + u_{it}$$

The data used in this thesis is a Panel Data set because of the combination of time-series and cross-sectional data. Due to the result of the Breusch and Pagan Lagrangian multiplier test for random effect, the data needs to be treated with a random effect model. To investigate whether a random effect model or a fixed effect model should be used, a Hausman test was conducted. The null hypothesis could not be rejected, and therefore a random effect model is preferred.

### 3.5.3 Random Effect Estimation Model

$$y_{it} = \alpha + \beta x_{it} + \omega_{it}$$
$$\omega_{it} = \epsilon_i + \vartheta_{it}$$

In a random-effects model, it is assumed that the intercept for every cross-sectional unit (countries) comes from a joint intercept, and in addition, the epsilon in the equation is a random variable that is constant over time but varies across countries. In other words, epsilon measure the variation between the countries (Brooks, 2019).



### 3.5.4 The model of the thesis

To test whether economic freedom affects the degree of misery in a nation, a random-effects model is used to evaluate the variables of interests' effect on the misery in a country. The program Stata was used to run the random effect model. The model used to evaluate the hypotheses is presented below and has one output variable and twelve variables of interest. The different variables of interest are described in the theoretical framework.

$$\begin{aligned} \text{Misery} = & \alpha + \beta_1 \text{Propertyrights}_{it} + \beta_2 \text{Judicialeffectivness}_{it} + \beta_3 \text{Governmentintegrity}_{it} \\ & + \beta_4 \text{Taxburden}_{it} + \beta_5 \text{GovtSpending}_{it} + \beta_6 \text{FiscalHealth}_{it} + \beta_7 \text{BusinessFreedom}_{it} \\ & + \beta_8 \text{Laborfreedom}_{it} + \beta_9 \text{TradeFreedom}_{it} + \beta_{10} \text{InvestmentFreedom}_{it} \\ & + \beta_{11} \text{FinancialFreedom}_{it} + \omega_{it} \end{aligned}$$

## 3.6 The Quality of the Research

*For this section of the methodology, the quality of this study will be discussed from the perspective of two factors, reliability and validity. This will help the reader to notice potential flaws with the study that could affect the results.*

### 3.6.1 Reliability

Reliability refers to whether the results would be the same if the study were conducted by another pair of researchers (Bell, Bryman & Harley, 2019). The reliability of this study should be high. The source of the data has been presented, along with which data was used. The methodology section has also presented how the data was used in Stata and which calculations were made. Therefore, if the study were to be remade, the same results should be acquired, provided that data from the same time period were being used.

### 3.6.2 Validity

The concept of validity measurement on whether or not a study measures what it aims to measure (Bell, Bryman & Harley, 2019). The main point that could be discussed is whether Okun's Misery Index is a good measurement of the concept of misery. As presented in the theory section, both inflation and unemployment have an impact on personal misery. There are certainly other variables that factor into a person's misery, but creating an index with all of these variables would be close to impossible, much since the concept of misery is of a very subjective nature. The line has to be drawn at some point, and it is therefore up to the reader to use the theory presented in this thesis and decide the strength of Okun's Misery Index.

### 3.6.3 Trustworthiness of the data

The data for inflation and unemployment were collected from the World Bank, which is a non-governmental organization (NGO), controlled by the United Nations (UN). This provides the source with credibility. It is possible to discuss whether an organization does have any bias in its data presentation, but the World Bank commonly is considered to be an organization with a high level of credibility.

The Economic Freedom index was collected from the Heritage Foundation, which is a well-known conservative think-tank with an open political agenda and political leaning. Therefore, it is important to discuss the trustworthiness of the data that they publish. Contrary to the World Bank, the Heritage Foundation has a clear agenda, namely that they want to achieve a higher level of Economic freedom in the world. To avoid the accusation of bias in their data, they publish all the sources they collect to create the Economic Freedom index. This information is easily accessible on their website. In addition, they publish their methodology on their website. All these factors are important in the choice to use their index in this thesis, and through these factors, it is easy to control if they manipulate the data in any way. Therefore, it is possible to accept the credibility of the Economic Freedom Index.

### 3.6.4 Ethical considerations

*In Business Research Methods (2019), Bryman, Harley, and Bell means that there are four primary areas where the ethical aspect should be considered.*

The first consideration mentioned is whether there is an exposure of *harm to the participants* (Bell, Bryman & Harley, 2019). Since no external people were involved in the making of this thesis, no interviews or similar encounters were conducted, this consideration is deemed satisfied. All data used for the research is gathered from either well-established private organizations or directly from a country's government. Whether these organizations have used questionable methods in their data collection process, for example, if any of the governments have manipulated their data to hide problems in the country, is something this thesis cannot stand accountable for. The following consideration, whether there is a *lack of informed consent* (Bell, Bryman & Harley, 2019) is deemed satisfied for the same reason, no external people were involved in the writing of this thesis.

The third consideration mentioned in Business Research Methods (Bell, Bryman & Harley, 2019) is whether there is an *invasion of privacy*. All data used for this thesis is publicly available, which means that there were no infringements on personal integrity in the thesis' data collection process. The last consideration is whether *deception* was involved in the making of the study (Bell, Bryman & Harley, 2019). This consideration is related to whether the researchers present their research as something other than what it is. To maintain this consideration, transparency has been a critical factor in the research process. The methodology of the study, as well as the previous research that has been used, are presented in a way that helps the reader view all aspects that lead up to the discussion.

## 3.7 Possible sources of error

*In this section of the methodology, potential sources of error in the different steps of the method will be presented.*

### 3.7.1 Data analysis

One possible source of error is that the data is not analyzed correctly. To avoid this error, a Breusch and Pagan Lagrangian multiplier test for random effect was conducted to conclude whether a pooled OLS model or a random-effect model should be used. The data was able to reject the null hypothesis and therefore, the random effect model was chosen. To choose between the random effect model or the fixed effect model, a Hausman test was conducted. The data could not reject the null hypothesis, and therefore the random effect model was preferred. These tests decrease the possibility of conducting an error in the analysis of the data.

### 3.7.2 Omitted variable bias

Omitted variable bias is when critical variables are omitted from the regression. This leads to a bias in the coefficients of the variables, and it occurs when the omitted variable correlates with explanatory variables in the econometric model (Hashimzade, Myles & Black, 2017b). This bias has the possibility of making the forecast of the model incorrect. The standard errors of the variables will also be affected upward. These effects have the risk of resulting in incorrect estimations of the hypotheses (Brooks, 2019).

The variables of interest in this thesis were chosen by the Heritage Foundation, based on relevance in economic freedom, to take part of the Economic Freedom Index. This means that there is a possibility of omitted variable bias in the results. Without adding a multitude of variables, it is close impossible to remove the possibility of omitted variable bias in the regression.

### 3.7.3 Multicollinearity

If there is a problem with multicollinearity between the variables of interest, it might yield an inflated variance in the parameters. This can lead to an increase in difficulty to find significance, and even change the sign of the parameter. A commonly accepted test to see if the model suffers from multicollinearity is to test the variance inflation factor (VIF). A normally used rule of the VIF-test is if a variable of interest exceeds a score of ten, the model suffers from multicollinearity which might affect the outcome of the analysis (O'Brien, 2007). In Table 2.8-1 the results of the VIF-test are presented.

Table 3.7-1 Variance Inflation Factor Test

<i>Variable</i>	<i>VIF</i>	<i>1/VIF</i>
<i>Property Rights</i>	7.70	0.129849
<i>Government Integrity</i>	6.55	0.152692
<i>Judicial Efficiency</i>	4.98	0.200748
<i>Financial Freedom</i>	3.79	0.263930
<i>Investment Freedom</i>	3.08	0.324980
<i>Business Freedom</i>	3.09	0.323967
<i>Trade Freedom</i>	2.55	0.391720
<i>Government Spending</i>	1.70	0.588897
<i>Tax Burden</i>	1.52	0.657314
<i>Labor Freedom</i>	1.42	0.706613
<i>Fiscal Health</i>	1.18	0.849080
<i>Mean Vif</i>	3.41	

According to O'Brien (2007) the rule of thumb is that a value over ten is an indication of the problem of multicollinearity in the model. There is no variable of interest with a VIF-score of over ten, so according to the rule of thumb, the model does not suffer from problems of multicollinearity. It is important to mention that some of the variables of interest have a relatively high VIF-score so there might be some multicollinearity in the model, but according to the rule of thumb, the model does not have a major problem with multicollinearity.

### 3.7.4 Correlation between the Misery Index and Monetary Freedom

One of the variables in the Economic Freedom index has the same sub-variable as the Misery Index. One of the inputs that create the Monetary Freedom score is inflation, and inflation is half of the Misery Index. Therefore, the correlation between them is partly a correlation between inflation and inflation. The variable of Monetary Freedom was therefore removed from the model because it is not possible to know if the effect Monetary Freedom has on Misery Index is just inflation having an effect on inflation. Therefore, the hypotheses (H<sub>8</sub>) stated earlier in the thesis will not be tested.

## 4 Results

*In this part of the thesis, the descriptive statistics and the results of the statistical test will be presented. Further, the R-square of the model will be presented to show how well-fitted the model is. In the appendix, the reader can find scatter plots and trend lines for all of the twelve variables of interest.*

### 4.1 Descriptive statistics

Table 3.1-1 presents the descriptive statistics of the 759 observations divided through 153 countries in a period of 5 years (2016-2020). The countries that are represented in this thesis are distributed around the world. In Table 3.1-1, a deconstruction based on continents is presented. The continent with the most observations is Africa, followed by Europe.

*Table 4.1-1 Descriptive statistics*

<i>Continent</i>	<i>Observations</i>	<i># of Countries</i>
<i>Globally</i>	759	153
<i>Africa</i>	230	46
<i>Asia</i>	129	27
<i>Europe</i>	205	41
<i>Middle East</i>	55	11
<i>North America</i>	45	9
<i>Oceania</i>	20	4
<i>South America</i>	75	15

## 4.2 Results from the regression with Panel Data and Random Effect

Table 4.2-1 Regression results one regressor

<i>Misery Index</i>	<i>Globally</i>
<i>Economic Freedom Index</i>	-.2460899**

\*= Significant without Bonferroni Correction \*\*=Significant with Bonferroni Correction

When observing the results from a regression with only one regressor, the Economic Freedom index, there is a negative correlation between the Economic Freedom index and the Misery Index. The results of the regression are statistically significant and indicate that more economic freedom leads to less misery in a nation. The coefficient of -0.2460899 shows that for every point that nation gains in the Economic Freedom Index, the country loses 0.2460899 points in the Misery Index.

Table 4.2-2 Regression results twelve regressors

<i>Misery Index</i>	<i>Globally</i>
<i>Property Rights</i>	-.0920912*
<i>Judicial Efficiency</i>	-.0080812
<i>Government Integrity</i>	.0586708
<i>Tax Burden</i>	-.0247442
<i>Government Spending</i>	-.0148824
<i>Fiscal Health</i>	-.0304304
<i>Business freedom</i>	.0093535
<i>Labor Freedom</i>	.0034689
<i>Trade freedom</i>	-.0390083
<i>Investment freedom</i>	-.0487451
<i>Financial freedom</i>	-.0400845

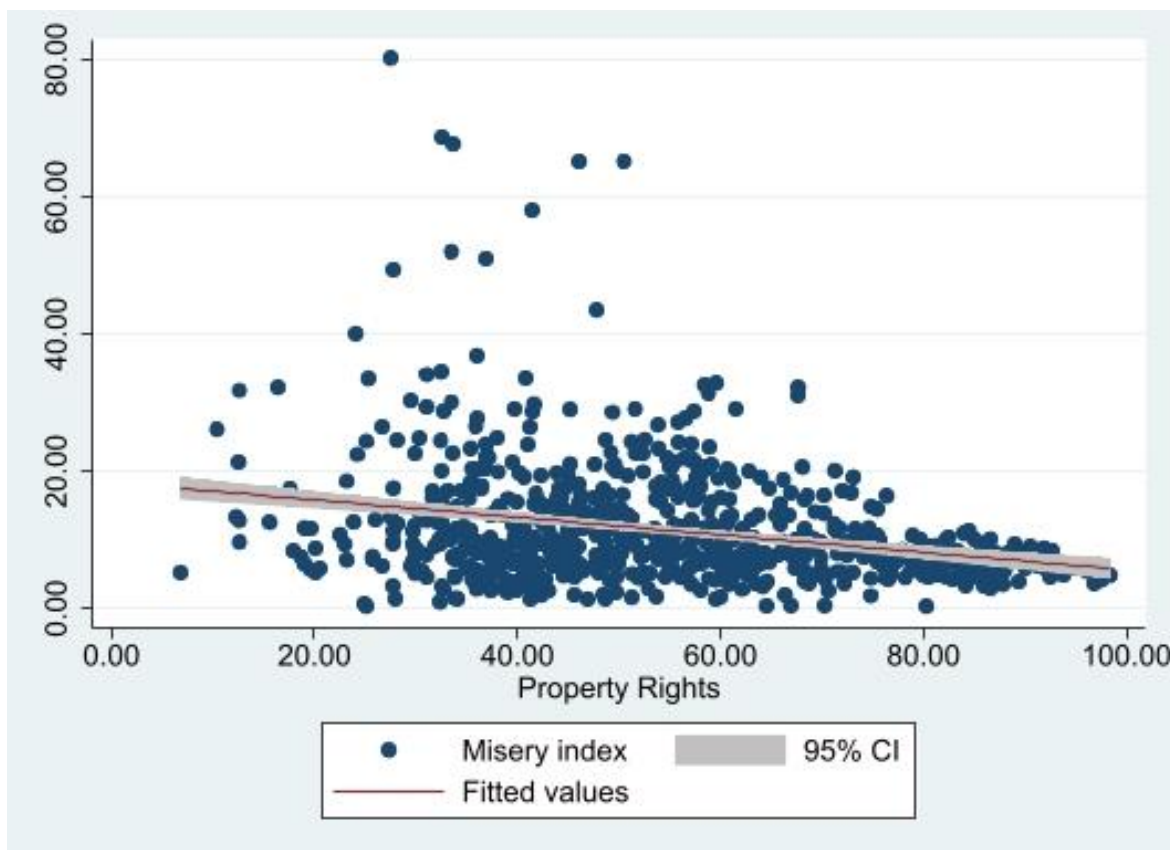
\*= Significant without Bonferroni Correction \*\*=Significant with Bonferroni Correction

The thesis uses a significance level of 0.05, but the regression has multiple regression running simultaneously. Therefore, the significance level needs to be adjusted with Bonferroni correction. To correct the significance level using the Bonferroni correction the significance level is divided with the number of hypothesis in this case:

$$0.05/11 = 0.0045454545$$

With the new significance level that are received after the Bonferroni correction, there are no variables that maintain significance. Before the Bonferroni Correction, Property Rights was significance, but due to the fact that multiple analysis ran at the same time the risk of a type-1-error is larger than 0.05.

*Figure 4.2-1 Fitted values property rights*



Before the Bonferroni Correction was applied, only the variable of Property Rights was significant. As seen in table 4.2-2 with the variable of Property Rights, there is a clear trend that a better legal and regulatory protection of private property leads to a lower misery. However, the correlation is not significant after the Bonferroni Correction is applied. Even if a variable does not reach statistical significance, it does not mean that the variable holds no effect.

## 4.3 R-square

R<sup>2</sup>, also known as the coefficient of multiple determination, is the proportion of variation in the output variable that can be traced back to the regressors. The score ranges from zero to one. A score of zero indicates that no variation in the output variable is due to the regressors, and a score of one indicates that all of the variations in the output variable is accounted to the regressors. It is beneficial to receive a high R<sup>2</sup> because a higher score leads to more predictive power in the regression (Cortinhas, 2012).

$$R^2 = \frac{SSR}{SS_{yy}} = 1 - \frac{SSE}{SS_{yy}}$$

SSR: Sum of squares regression

SSE: Sum of squares error

SS<sub>yy</sub>: Sum of squares total

In the regression (see table 3.2-2), an overall R-squared of 0.1154 is calculated. This indicates that 11.54% of the variation in the Misery Index is accounted from the regressors regarding economic freedom. This means that only 11.54% of the variability of the output variable is explained by the model.

## 4.4 The Econometric Model

It is possible to derive a regression from table 3.2-2. The regression is presented in the method. The regression is with a random effect model and clustered standard errors.

$$\begin{aligned} Misery = & 26.3136 - \beta_1 0.0921 - \beta_2 0.0081 + \beta_3 0.0587 - \beta_4 0.0247 - \beta_5 0.0149 - \beta_6 0.0304 + \beta_7 0.0093 \\ & + \beta_8 0.0035 - \beta_9 0.0390 - \beta_{10} 0.0487 - \beta_{11} 0.0401 + \omega_{it} \end{aligned}$$

$\alpha$  is the intercept (26.3136)

X<sub>1</sub> is the score of Property Rights in the Economic Freedom Index

X<sub>2</sub> is the score of Judicial Effectiveness in the Economic Freedom Index

X<sub>3</sub> is the score of Government Integrity in the Economic Freedom Index

X<sub>4</sub> is the score of Tax Burden in the Economic Freedom Index

X<sub>5</sub> is the score of Government Spending in the Economic Freedom Index

X<sub>6</sub> is the score of Fiscal Health in the Economic Freedom Index

X<sub>7</sub> is the score of Business Freedom in the Economic Freedom Index

X<sub>8</sub> is the score of Labor Freedom in the Economic Freedom Index

X<sub>9</sub> is the score of Trade Freedom in the Economic Freedom Index

X<sub>10</sub> is the score of Investment Freedom in the Economic Freedom Index

X<sub>11</sub> is the score of Financial Freedom in the Economic Freedom Index



## 5 Discussion and analysis

*In this part of the thesis, the results from the study will be discussed and analyzed based on the previous research presented in the thesis.*

### 5.1 The Economic Freedom Index's effect on the Misery Index

The results from the study conducted in this thesis showed that there was a negative correlation between the Misery Index and the Heritage Foundation's Economic Freedom Index. The correlation was significant, which enables statistical conclusions. The study indicates that a higher level of economic freedom leads to a lower degree of misery. As discussed in the introduction, what makes us happy, or in the case of this study, "miserable", is highly subjective. However, previous research that is presented in this thesis, and the results from this study, indicate that there seems to be some overarching factors that affect most of the population.

The problem regarding defining happiness or misery through a scientific formula was presented earlier in the thesis. Okun's Misery Index might not be the definitive version of misery calculation, but it is a version where earlier research has shown that the constituent variables, inflation and unemployment, have an effect on personal misery.

As presented in the theory section, unemployment directly affects a person's mental-health negatively. People find meaning in their occupation, and financial compensation is not the only utility people gain from working (Clark & Oswald, 1994). Even though the Economic Freedom Index indicates that zero percent of unemployment is desirable, the index does not necessarily give an answer on how unemployment shall be erased. As presented in the theory section, earlier research has shown that freer economies facilitate economic growth, which in turn, positively affects factors such as life expectancy (Preston, 2003). Earlier in the thesis, a study was presented which suggested that the enforcement of substantial property rights, the fostering of an independent judicial system, the counteraction of corruption, the dismantlement of burdensome regulation, the allowance of press freedom, and the protection of political rights and civil liberties are critical factors in what defines healthy, growing economy (Roll & Talbott, 2003). An interesting observation is that these factors are similar to several of the variables which makes up the Economic Freedom Index. This observation gives more weight to the trustworthiness of the Economic Freedom Index and implies that the Heritage Foundation has used appropriate variables. It also gives an indication that the index could predict economic growth in a country, which could be an opportunity for future research.

The most important outtake of this thesis is that there seems to be a negative correlation between economic freedom and misery. To get a nuanced understanding of how the Economic Freedom Index affects misery, the index must be stripped down to its components. However, the study conducted in the thesis showed that none of the twelve variables were significant on its own. Even if none of the twelve variables was statistically significant, it is interesting to discuss how the trends of the variables affect misery in a nation. Even if a variable is not significant, it does not mean that the variable has no effect, just that the variable does not have the power to reject the null hypothesis.

## 5.2 The twelve variables of the Economic Freedom Index

*For the following part of the discussion, each variable will be discussed on their own. As mentioned earlier in the thesis, the variable of Monetary Freedom was left out due to it containing the same sub-variable as the Misery Index. On their own, none of the variables was shown to have a significant effect on the Misery Index after the Bonferroni Correction was applied. This is important for the reader to keep in mind. However, each variable showed some correlation with the Misery Index, which makes room for some discussion based on the direction of the coefficient. Focus will be put on variables with a higher absolute value, and variables where the earlier research presented in the study supports assumptions and conclusions.*

### 5.2.1 Property Rights

The variable of Property Rights was the closest (the reader has to decide if one could consider a variable to be a “statistical close”) of the non-significant variables to being significant. The variable showed a negative correlation with a coefficient of -0.09. Property Rights was the variable that was significant before the Bonferroni Correction, but lost its significance after the correction was applied. The negative correlation means that a government that respects property rights helps in creating a society with a less miserable population. An important aspect of the variable is that the individuals of the nation have the ability to enforce contracts and that the judiciary system does not work in favor of the government.

An important aspect to take into account is that countries that have a high degree of property rights also have higher GDP growth than countries with a lower degree of property rights (Besley & Persson, 2009). This is supported by Roll and Talbott (2003) who conclude that an important aspect of a good economic environment is a good protection of property rights. This might explain why the trend in the model with respect to property rights is a negative correlation between it and the Misery Index.

One of the inputs of this variable was how well the judiciary system respects contracts and private ownership of property (The Heritage Foundation, 2018). This seems to be an important factor, due to the Heritage Foundation giving it its own variable, which will be discussed in the following paragraph.

### 5.2.2 Judicial efficiency

The variable of “judicial efficiency” showed a positive correlation with the Misery Index, which means that a higher level of judicial efficiency results in more misery. The coefficient was relatively small, barely -0.01. This gives an indication that a well-functioning judiciary system counteracts misery. The effectiveness of the judicial system was also an input in the variable of “property rights”, which also showed a negative correlation with the Misery Index.

### 5.2.3 Fiscal health

With a coefficient of -0.03, the variable of fiscal health showed an inverse relationship between the variable and the Misery Index, which means that a high level of fiscal health leads to a lower degree of misery. In the index, the fiscal health score is measured through two variables: the average debt as a percentage of GDP in the last three years and the total debt as a percentage of GDP. The former is responsible for 80% of the score, and the latter is responsible for 20% of the score.

This variable indicates that the population becomes more miserable when the government spends money it does not have. The government can finance its expenditure in three main ways: printing money, taking loans, or directly through taxes. All of these three affect the population. Economist Milton Friedman described inflation as “taxation without legislation” when he referred to how inflation can be seen as a cost for the population (Obstfeld, 2020). If the government decides to finance its expenditure through taxes, the government debt grows larger. This debt has to be paid back sometime in the future. The government does not have any of its own money; it is received from the population through the tax system. Therefore, a government loan today is taxation on the population tomorrow.

### 5.2.4 Tax Burden

The variable “Tax Burden” showed a negative correlation with a coefficient of -0.02. A higher score on the variable means a lower tax burden in the country. Thus, the results indicate that an effective taxman leads to higher levels of misery. As presented earlier in the thesis, a higher tax burden lowers the incentives for the middle- and upper-class to work and invest (Biswas, Chakraborty & Hai, 2017). If the incentives to work are artificially lowered by an increase in taxes, a logical conclusion would be that the unemployment rate goes up. This phenomenon does not only happen when a government raises taxes on labor; rather the same effect can be observed when the taxes on capital gain are raised (Conesa, Kitao & Krueger, 2009). This indicates that taxes on both labor and capital affects the consumption in a country, and with lower consumption, rationally a lower consumption will lead to lower demand for labor. Conesa, Kitao, and Krueger (2009) further argued that the lowered demand of consumption is balanced by a higher level of welfare. The argument between consumption and welfare is more of a political discussion rather than a discussion between right and wrong. It depends upon an individual's opinion whether they believe a reduced consumption, as a result from higher taxes, is desirable if the higher taxes finance welfare.

### 5.2.5 Government integrity

The variable of “Government Integrity” was shown to positively correlate with the Misery Index, with a coefficient of 0.06. These results suggest that a more corrupt government makes the population less miserable. Many developing countries scored low on the Misery Index, even though these countries might be suffering from corrupt governments. These results might suggest some limitations with Okun’s Misery Index. Different indexes might be needed when calculating misery in, for example, developing countries and OECD countries.

## 5.2.6 Government spending

The variable regarding the expenditure of government showed a coefficient of -0.01, meaning a negative correlation. This suggests that the more the government spends, the more miserable the population becomes. When defining the variable, the Heritage Foundation has zero government spending as the benchmark. This means that as soon as the government is beginning spending money, their score is lowered. Whether a benchmark at zero expenditure is reasonable can be discussed. In practice, zero government spending would mean the abolishment of said government. The Heritage Foundation indicates that this is not desirable with the formulation: “*The ideal level will vary from country to country*”. Variations among zero government and zero government are difficult to accomplish, so the Heritage Foundation suggests that some government is needed (The Heritage Foundation, 2018). This might indicate that there are some internal contradictions with the Economic Freedom Index. It is important to keep in mind that the Heritage Foundation’s index is not an objective definition of economic freedom, rather it is their interpretation of what economic freedom means. For this thesis, the Heritage Foundation’s index was used due to there being several independent studies that support the ideas they present. However, this does not exclude the probability that there might be a more suitable index for economic freedom.

## 5.2.7 Business freedom

The variable of business freedom showed a positive correlation with a coefficient of barely 0.01. This indicates that the population is more miserable when the businesses are free. The Heritage Foundation defines business freedom as such that a perfect score would mean that there are no government restraints in the operation of a business (The Heritage Foundation, 2018). Because the coefficient is so small, it indicates that business freedom does not have a large effect on inflation and unemployment.

## 5.2.8 Labor freedom

The variable representing “labor freedom” showed a positive correlation with a coefficient of 0.03. In the definition of labor freedom, there is a negative effect on the score if the country has legislation regarding minimum wages or restrictions on how a business can dismiss employees.

A possible explanation for this is that in countries with a lack of labor laws, the development in the capital/labor ratio is developing slower than in countries with more rigid laws regarding labor (Marshall, 1994). This can be connected to the Solow growth model, where capital is the driving factor of growth. If the capital/labor ratio does not rise, the growth of the nation will be slower and less effective (Gottfries, 2013). This might indicate why there is a positive correlation between labor freedom and the Misery Index. If the lack of labor laws leads to a slower investment in capital, this will, according to the Solow growth model, lead to a slower growth of the economy. In the theoretical framework, a study was presented which showed a negative correlation between economic growth and the Misery Index (Wang *et al.*, 2019). This might explain the correlation between the two variables.

### 5.2.9 Trade freedom

The variable of trade freedom showed a negative correlation with a coefficient of -0.04. This indicates that more trade freedom leads to less misery. For this variable, there were two inputs: the average tariff rate and measurement of non-tariff trade barriers. A misconception about international trade, particularly between developed and less developed countries, is that it leads to unemployment among the more developed countries (Wood, 1996). According to previous studies, this assumption is not true. In the long run, openness in trade leads to less unemployment (Awad & Yussof, 2016). This information indicates that there is some truth in the results produced in this study. Due to unemployment being a variable in the Misery Index, a negative correlation with trade freedom is reasonable.

### 5.2.10 Investment freedom

The variable of investment freedom showed a negative correlation with a coefficient of -0.05. A study made in 2003 argues that inflation curbs investment, suggesting a relationship between the two. The study also suggests that a decline in investment leads to a higher degree of unemployment (Madsen, 2003). It is reasonable to assume that an economic environment that facilitates investment results in more investments being made, and therefore, said economic environment should be desirable to reach a goal of decreased unemployment. This previous research aligned with the results of the study conducted in this thesis. Even though it was not significant, the study showed that an increase in investment freedom is followed by a decrease in misery. The previous research suggests that this is due to the direct connection between investment and unemployment.

### 5.2.11 Financial freedom

The variable of financial freedom showed a negative correlation with a coefficient of -0.04, which indicates that a higher degree of financial freedom results in less misery among the population. According to the Heritage Foundation, state ownership of banks and other financial institutions reduces competition and lowers access to credit (The Heritage Foundation, 2018). Thus, the results regarding this variable suggest that a higher degree of private ownership of banks and financial institutions reduces inflation and unemployment due to these two being the constituent variables of the Misery Index. Whether these have a direct impact or not is difficult to conclude. However, as presented earlier in the thesis, free-market reforms have a tendency to result in an increase in GDP (Berggren, 1999), which in turn makes the population less miserable (Wang *et al.*, 2019).

### 5.3 Final thoughts about the non-significant variables

As has been mentioned several times in this section of the discussion, the results for the individual variables were not significant. Therefore, the discussion in this section is built more on statistical observations than statistically significant results. Even though the results of the variables are not significant, the trend is important to discuss.

The negatively correlated variables without significance have mostly a connection with freedom of money and property. An example of that is the negative correlation with trade, financial, and investment freedom. These are all freedoms connected to the free flow of money, either in regards to trade or investment. A study from 2013 shows that when a country has freedom of investments, they have lower volatility in the economy than countries closed for foreign investment (Aoria & Pugh, 2013). This indicates that more freedom in the flow of capital leads to more stability in the economy and, through that is more sustainable growth over time.

In regards to the importance of property rights, Pejovich (1990) shows that when the government creates programs that are made to better the inequality in a nation at the cost of the rights of private property, it leads to higher inflation and raised unemployment. This study indicates why there is a negative correlation between private property laws and the Misery Index. When business owners do not know if they can profit from their business in the long-term, there is no incentive to develop the business.

## 6 Conclusion

The study conducted in this thesis indicates that a higher degree of economic freedom results in a lower degree of misery. These results have been received by running a regression between Okun's Misery Index and the Heritage Foundation's Economic Freedom Index, which is based on twelve variables representing economic freedom. When the index was divided into its twelve components, only one of the variables, property rights, showed a significant correlation with the Misery Index. However, when the Bonferroni Correction was applied, none of the individual variables showed significance. Even though the correlation between the Misery Index and the twelve variables was not significant, the results still indicate that there is some correlation between them. The study was successful in providing results, and the research questions presented in this thesis can therefore be considered answers.

## 7 Further research

An example of further research would be to use other indexes in regard to misery. It would be interesting to compare the Economic Freedom index with the World Happiness Index, even though happiness is a subjective feeling a study about happiness and economic freedom might find interesting connections between the two areas.

Another possible research is to use another Misery Index instead of Okun's Misery Index. It might be interesting to do the same type of study as this but use Barros Misery Index or Hanke's Misery Index and see if the result of that match with the results of this study. Another interesting aspect discussed at the start of the discussion is to see if economic freedom has an impact on economic growth in a nation.



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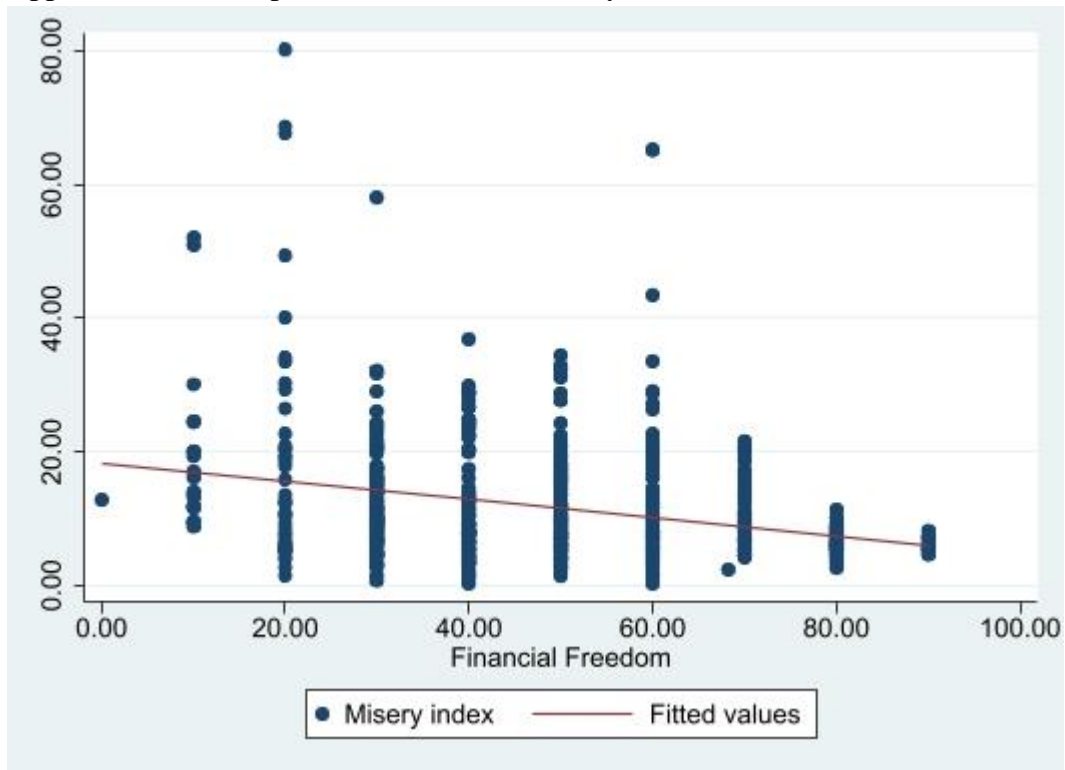
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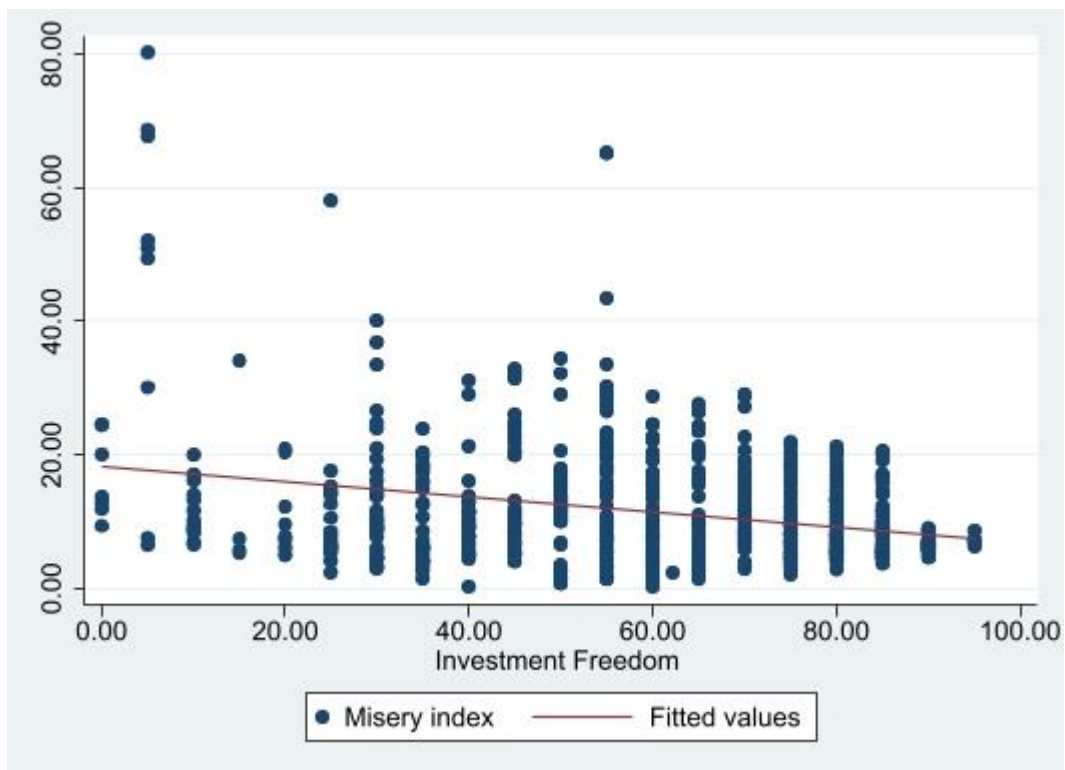
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# 9 Appendix

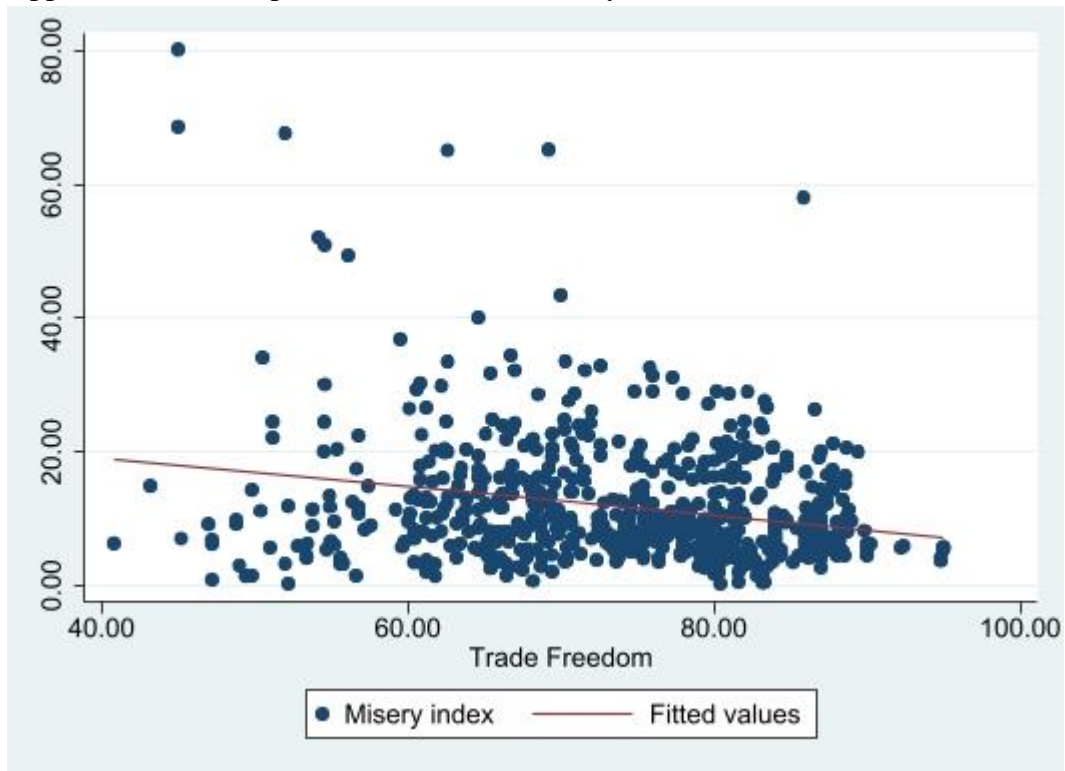
Appendix 1: Scatter plot an fitted values Misery Index and Financial freedom



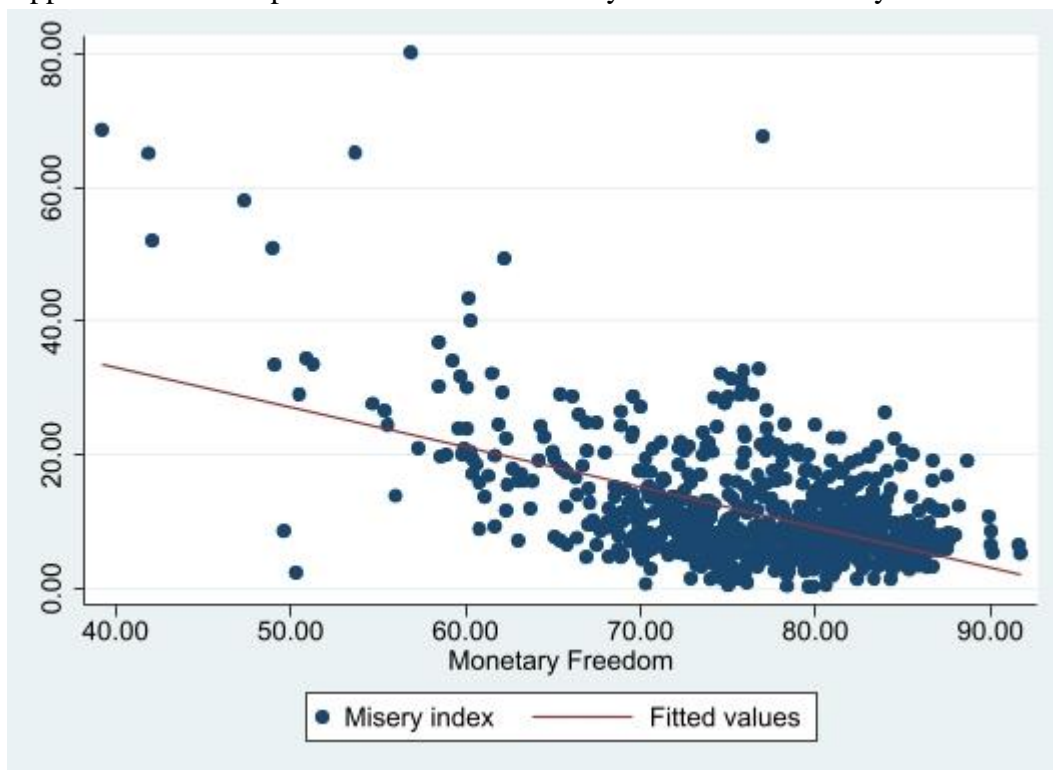
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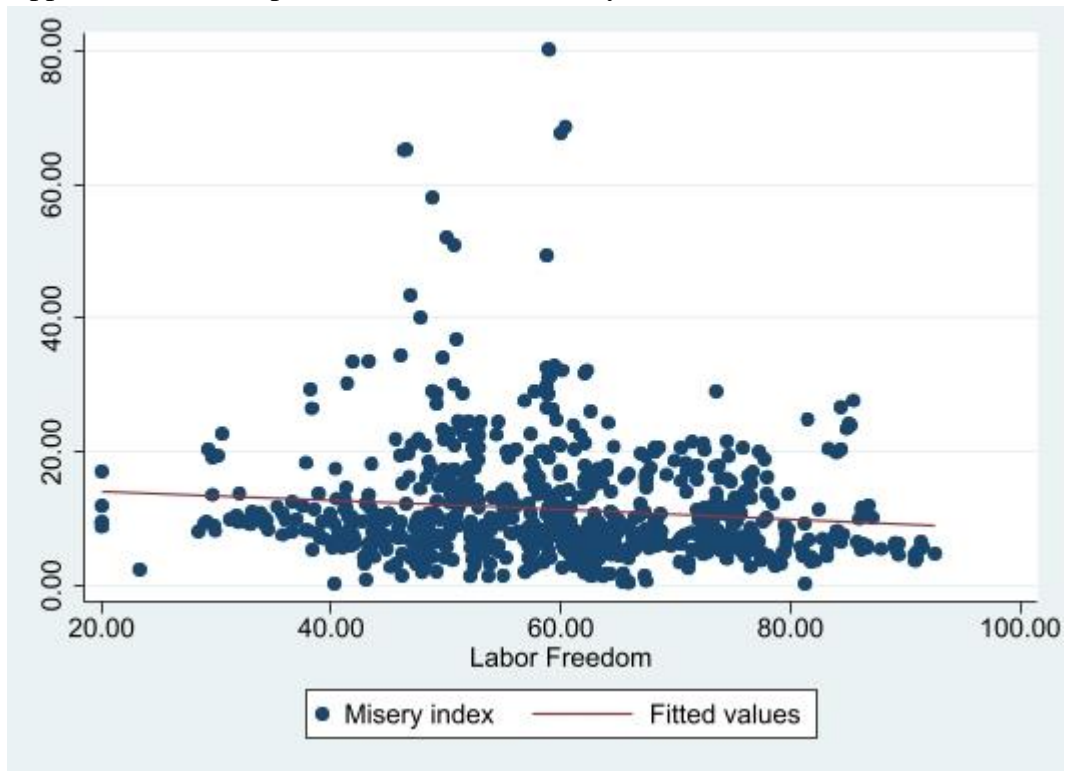
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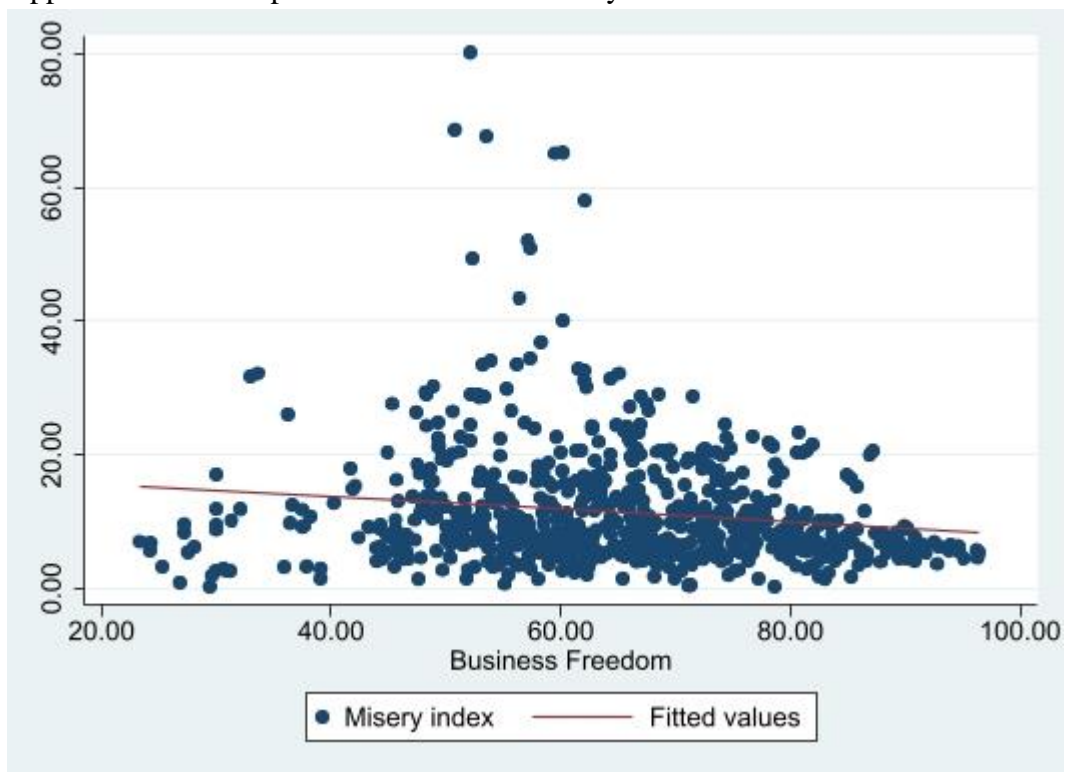
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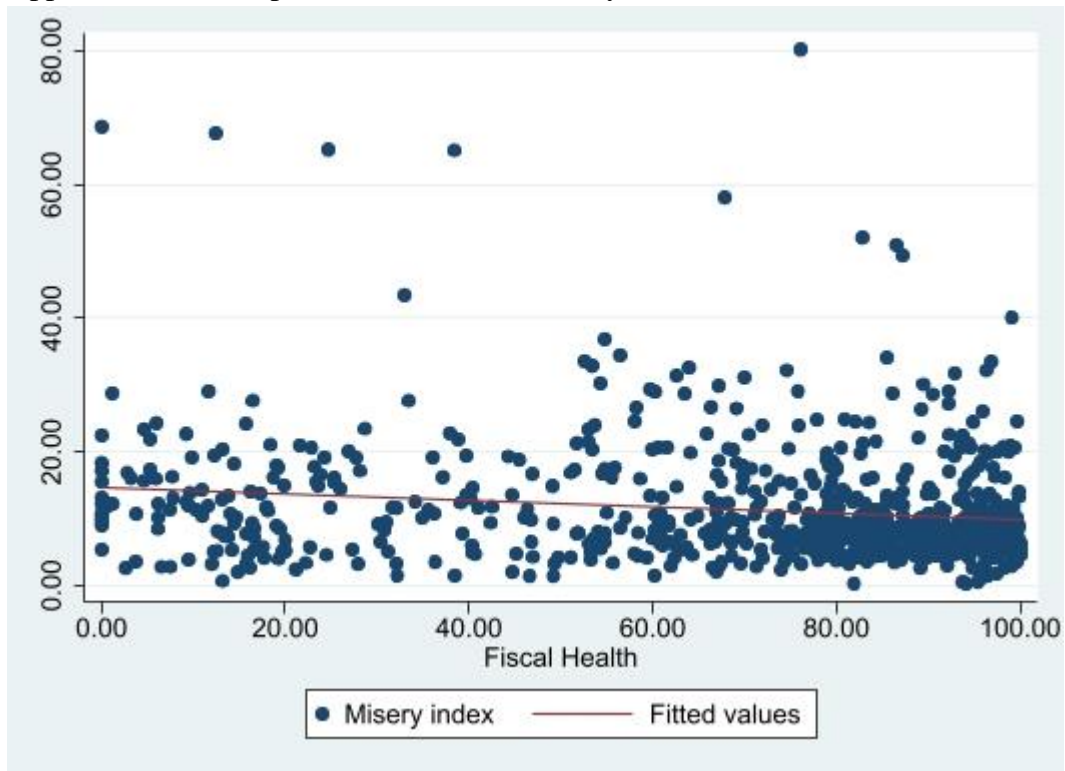
Appendix 5: Scatter plot an fitted values Misery Index and Labor freedom



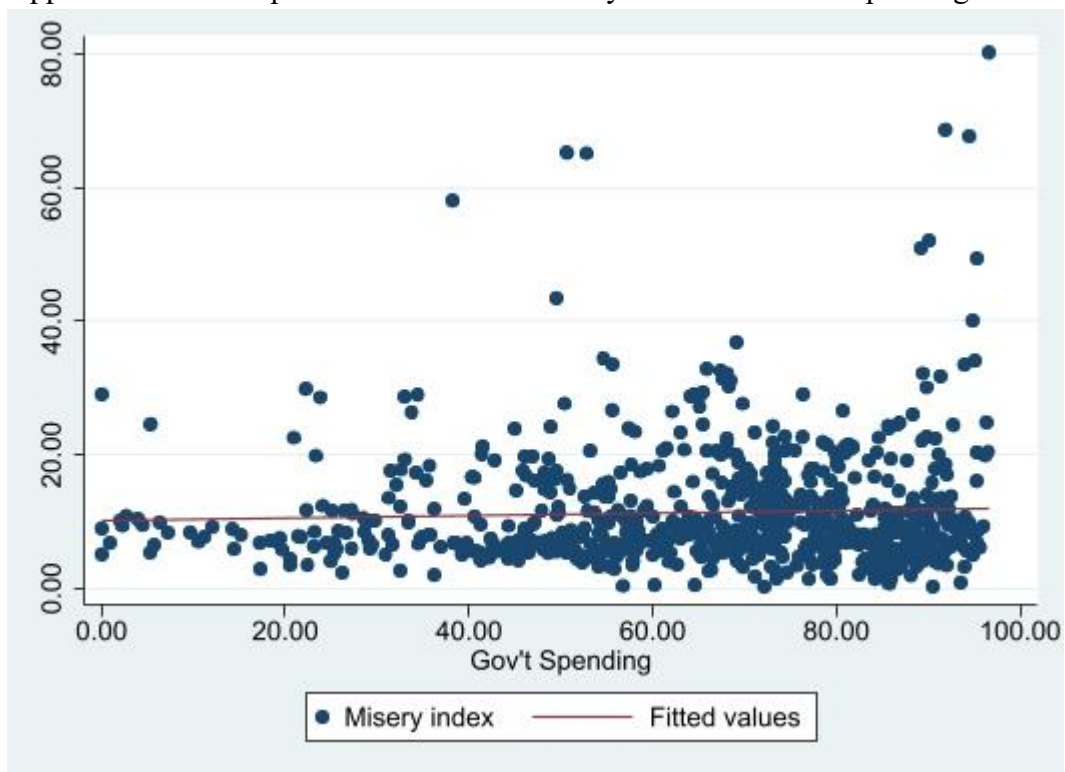
Appendix 6: Scatter plot an fitted values Misery Index and Business freedom



Appendix 7: Scatter plot an fitted values Misery Index and Fiscal Health

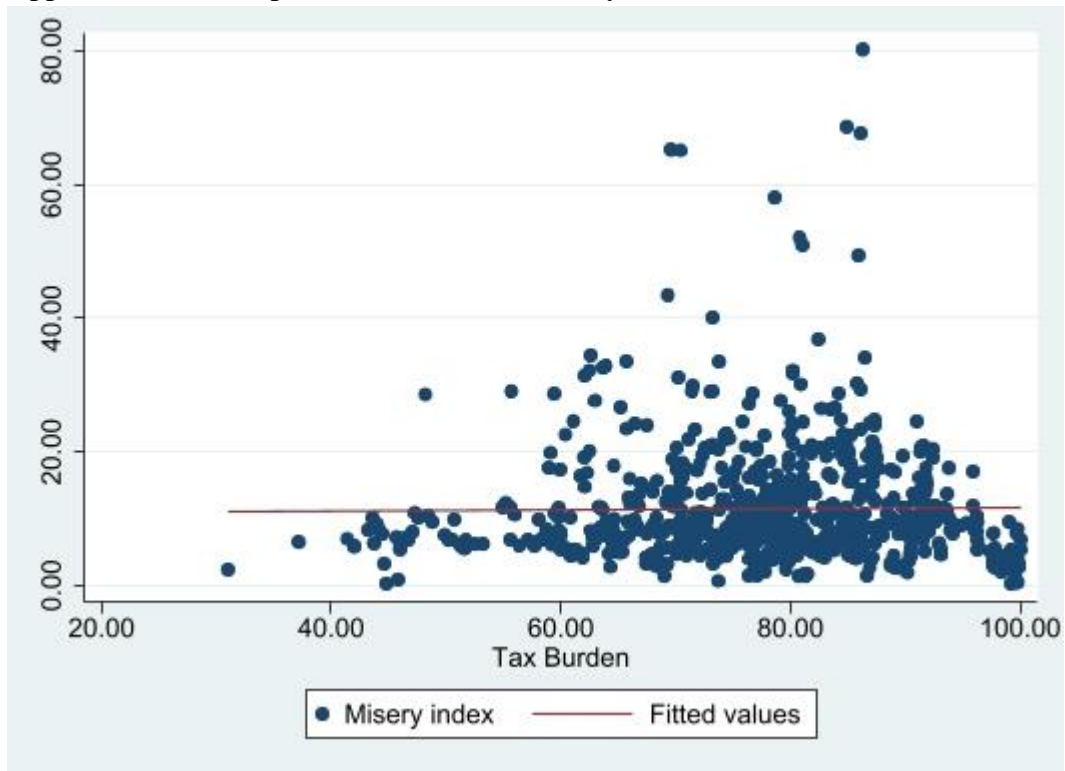


Appendix 8: Scatter plot an fitted values Misery Index and Gov't Spending

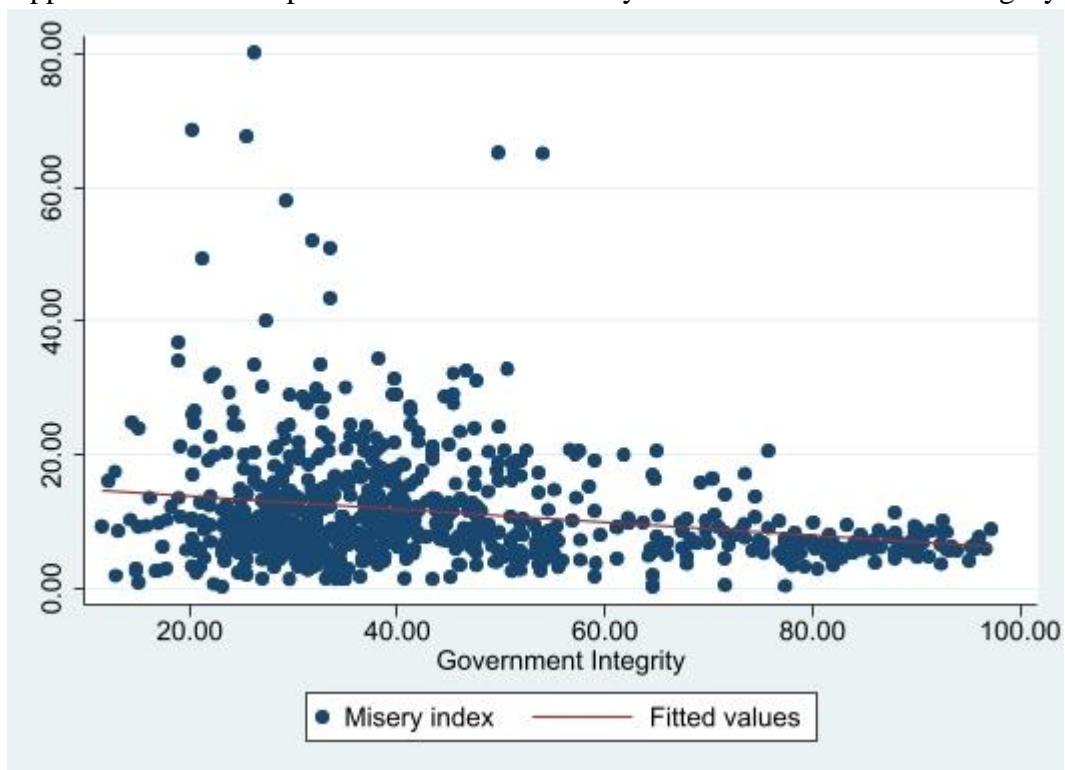




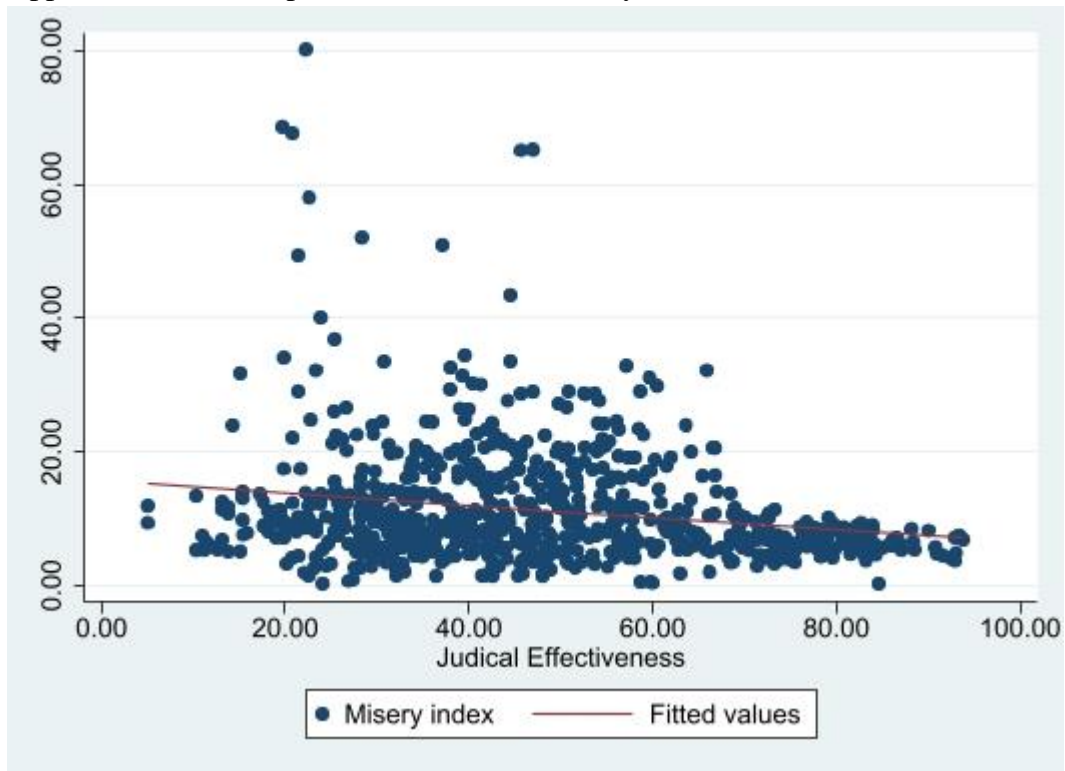
Appendix 9: Scatter plot an fitted values Misery Index and Tax Burden



Appendix 10: Scatter plot an fitted values Misery Index and Government Integrity



Appendix 11: Scatter plot an fitted values Misery Index and Judicial Effectiveness



Appendix 12: Scatter plot an fitted values Misery Index and Property Rights

