Project 1 Technical Report

Introduction

Trust is a fundamental aspect of human relationships, influencing how individuals interact with each other and the world around them. To better understand the factors that contribute to overall trust, we have identified three key independent variables: wealth, income inequality, and education.

Wealth, as measured by GDP per capita purchasing power parity (PPP), is believed to have a positive impact on trust. This is because people living in wealthier countries tend to have access to more resources, leading to greater levels of security and stability.

Education, specifically the ratio of attending primary school, is another variable that researchers believe can positively influence trust. Education has been linked to improved critical thinking skills, enhanced social connections, and a greater sense of personal empowerment, all of which can contribute to higher levels of trust.

On the other hand, income inequality, as measured by the Gini Index, is thought to have a negative impact on trust. Countries with high levels of income inequality tend to have lower levels of social cohesion, as individuals are more likely to feel disconnected from those around them.

To test these theories, researchers have analyzed various datasets to compare levels of trust with these three independent variables. By understanding the relationship between these factors, we can gain a deeper understanding of what influences trust and how it can be fostered within communities and societies.

Theory and Hypothesis

Generalized trust levels refer to the level of trust that individuals have in their fellow citizens and social institutions. This concept is considered to be an important determinant of social and economic outcomes and has been the subject of much research in the social sciences. This paper will explore the relationship between generalized trust and three country-level factors: income inequality, GDP per capita, and education.

Hypothesis 1

In a comparison of individuals within a society, a decrease in income equality is associated with a reduction of generalized trust among members of a society.

Explanation

A large body of literature has established a negative relationship between income inequality and generalized trust. Research has shown that unequal distributions of wealth can lead to a breakdown in social cohesion and a reduction in social trust (Wilkinson and Pickett, 1-8). This may occur because high levels of income inequality create greater social distance between individuals and groups, leading to feelings of alienation and a decrease in the likelihood of cooperative behavior.

Income inequality also contributes to a reduction in social mobility and can limit access to resources and opportunities, which can create a sense of hopelessness and reduce people's trust in their fellow citizens and institutions. Furthermore, high levels of income inequality have been

linked to lower levels of civic engagement and political participation, which can further erode social trust (Wilkinson and Pickett, 1-8).

Hypothesis 2

In a comparison of people within a country, an increase in the value of wealth is associated with an increase in generalized trust among people who reside in that country.

Explanation

According to existing literature, higher levels of economic development, as measured by GDP per capita, are associated with higher levels of generalized trust. As countries experience economic growth, individuals are more likely to have access to better-paying jobs and greater resources, which can increase their sense of security and well-being. This, in turn, can foster a more trusting social environment (Knack and Keefer, 1256-1258).

Furthermore, higher levels of economic development are associated with more stable political institutions, which can increase people's trust in their government and other social institutions. Additionally, economic growth can lead to the development of a more diverse and vibrant civil society, which can provide individuals with a greater sense of community and social support, further promoting social trust (Knack and Keefer, 1256-1258).

In the comparison of people within a country, an increase in the value of wealth/material needs is associated with an increase in citizens that reside in a country who claims people can be trusted. Essentially, the wealthier a country or society is, on top of meeting basic material needs, the more its members are able to take risks in spite of their trusting attitudes, while also making discouraging untrustworthy behavior (Bandfield, 1958: 110). Wealth represents an individual’s economic output value to society, which in turn can lead to the promotion of economic growth.

Societies within countries that experience higher levels of trust tend to have a higher GDP per capita which measures the economic prosperity of citizens. After one economic meta-analysis research was conducted, there was a 10-percentage point increase in trusting people within a country have significant potential to raise the per capita real GDP growth by 0.5 percentage points.("Connecting trust and economic growth", Deloitte)

Some counter-arguments argue whether or not wealth is an important factor in determining whether wealth is only a measure at the individual level. However, we believe that although that may be true to some extent, wealth can significantly promote growth within a society as wealthy individuals are able to provide the working capital to increase productivity. Thus, this can lead to better trust levels as societies increase their economic output.

Hypothesis 3

Generalized trust in society positively correlates with the level of educational attainment as measured by the literacy rate.

Explanation

According to existing literature, higher levels of educational attainment have been found to promote critical thinking and democratic participation, as well as increase access to information and resources, which in turn can foster greater social trust. For example, studies have shown that individuals with higher levels of education are more likely to engage in cooperative behavior and exhibit greater tolerance towards diverse groups, which can contribute to a more trusting social environment (Putnam).

The literacy rate serves as an indicator of education attainment, as the ability to read and write is often seen as a basic marker of educational progress. By using the literacy rate as a measure of educational attainment, we can examine the relationship between education and social trust at a country level.

While it is possible that other factors, such as economic development, may also impact social trust, the literature suggests that the relationship between education and trust is robust and holds across different cultural and economic contexts. Furthermore, while it may be tempting to argue that other factors, such as income inequality, may play a role in shaping trust, The

relationship between education and trust has been shown to be relatively stable even when controlling for other variables.

It is important to note that while these three factors may play a role in shaping trust, other factors may also impact social trust. However, the literature suggests that the relationships between income inequality, GDP per capita, and literacy and trust are robust and hold across different cultural and economic contexts.

In conclusion, this paper has explored the relationship between generalized trust and three country-level factors: income inequality, GDP per capita, and education. The literature suggests that generalized trust is negatively correlated with income inequality, positively correlated with GDP per capita, and positively correlated with the literacy rate. Further research is needed to further explore these relationships and to examine the complex interplay between these factors in shaping social trust.

Data and Research Design

Wealth/Material well-being

The material wealth of individuals within a society can vividly represent prosperity within a nation alongside economic growth and output. Because the wealth/material well-being of a nation relies upon the members' economic efficiency of a nation, GDP per capita is a sufficient measure of wealth/material well-being and can not only emphasize the measure of the value of output per person within an economy but how prosperous the nation is as a whole on average and the economic growth along the way with it (Stiglitz, Sen, & Fitoussi). Although GDP Per Capita could be significantly skewed in certain countries that either pose an extreme income inequality or countries that are very small with a high GDP, it is still a sufficient measure in our case that generalized trust highly relates to a nation's population prosperity. According to our research (Our Theory and Hypothesis), as countries experience economic growth, individuals are more likely to have access to better-paying jobs and greater resources, which can increase their sense of security and well-being. This, in turn, can foster a more trusting social environment (Knack and Keefer). A way to measure material wealth throughout various countries is GDP per capita PPP (purchasing power parity $). GDP per capita PPP is simply a measure of GDP Per capita that properly adjusts the currency rates of purchasing power between different countries. Thus, it is a measure of a country's average economic output per person alongside the consideration of a nation's currency purchasing power. The reason why this measure is so effective in measuring material wealth within a nation is that it takes into account the GDP per capita plus the fact that the same goods and services can vary in price throughout different countries due to the economic conditions that reside within that country (International Monetary

Fund (IMF) - World Economic Outlook (WEO) Database). Thus, it represents a more transparent notion of the different standards of living/material wealth throughout various countries.

In order to understand how the GDP per capita PPP is effective in measuring material wealth and prosperity within a nation, it's important to understand how it's calculated. GDP per capita is calculated by the sum of gross value added by all resident producers in the economy plus any product taxes (fewer subsidies) not included in the valuation of output, divided by mid-year population ("GDP Per Capita Calculation"). Our statistical concept and methodology regarding this data set are based on a CSV file that contains 271 countries consisting of the gross domestic product (GDP) expressed in current international dollars converted by purchasing power parity (PPP) conversion factor as the data values within the table throughout the years 1990-2021 for each country ("GDP Per Capita PPP Data"). The columns in the table represent the years and the rows in the table represent the various countries. We will not apply factor analyses to group our independent variable “material wealth within a society” to other independent variable measures of trust, although they may be similar. This is in part due to the fact that it may result in other independent variables consisting of factors that do not relate as closely to trust as material wealth being a single variable in the dataset (Delhey & Newton).

Income Inequality

The Gini Index is a metric that provides a measure of income inequality by summarizing the dispersion of income across the entire income distribution. The Gini coefficient ranges from 0 to 1, where 0 represents perfect equality (where everyone receives an equal share) and 1 represents perfect inequality (where only one recipient or group of recipients receives all the income). The Gini coefficient is calculated based on the difference between the observed cumulative income distribution, represented by the Lorenz curve, and the theoretical distribution of perfectly equal income. (US Census)

To calculate the Gini Index, the Lorenz curve is first plotted based on income data, with the cumulative percentage of income on the y-axis and the cumulative percentage of the population on the x-axis. Then, the area between the Lorenz curve and the perfect equality line is calculated and divided by the total area under the perfect equality line. The resulting ratio, expressed as a decimal or percentage, represents the Gini Index. The World Bank provides data on the Gini Index for many countries, which allows for cross-country comparisons of income inequality levels.

Data (World Bank) on the Gini Index may not be available for all years or countries and may have gaps or inaccuracies (Our World in Data, 2019). We are employing efforts to fill these gaps and improve the accuracy and completeness of Gini Index data, using statistical methods to estimate missing data or gathering other data to supplement. However, it is important to interpret Gini Index data with caution and recognize its limitations and uncertainties.

Education

We think that education is highly correlated to the level of trust. Higher levels of educational attainment have been found to promote critical thinking and democratic participation, as well as increase access to information and resources, which in turn can foster greater social trust.

Primary education is important in establishing basic knowledge and principles of the world, which includes establishing a principle of social interaction in the world. (Our World in data). We believe that if fewer people in the country get primary education it will lead to less trust among people.

Our data has been published by the World Bank under the name World Development Indicators (Our World in Data, 2021). Results show a ratio between new entrances in the last grade of primary school divided by the population of the entrance age for the last grade of primary education. Having the ratio of these 2 variables we will be able to see how the percentage of the people who get into the last grade of primary school correlates to trust. We need to note that this data does not provide any information on how many people finished the last grade of primary school. Some data that will give more than 100% appeared due to the fact that this research included people who went to school early, or late, and stayed an extra year or more. This data is restricted but we will be able to compare countries with high and low levels of trust with the percentage of people in that country that attended the last year of primary school.

Visualization and Regression

Wealth

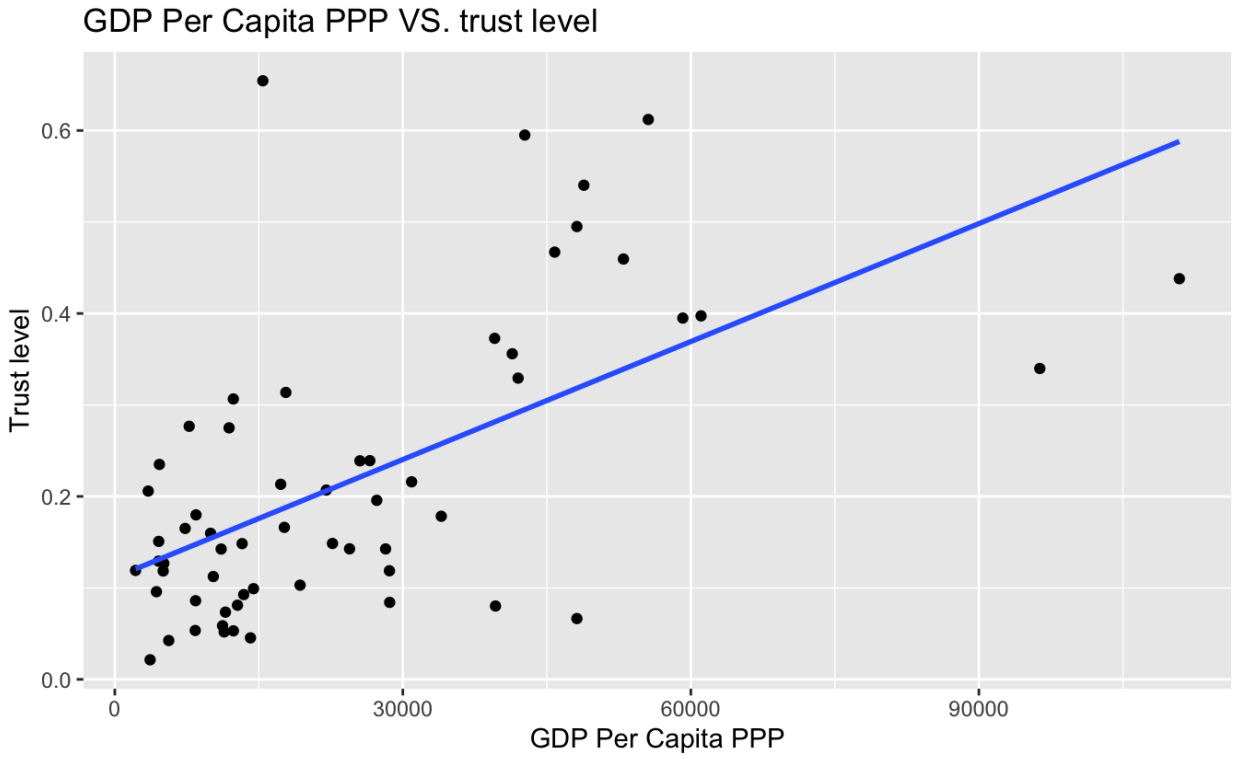

Table 1: Regression Analysis of the Relationship Between Trust and Wealth

Characteristic	**Beta**	**p-value**
(Intercept)	0.11	<0.001
GDP	0.00	<0.001

Number of observations: 58

R^2: 0.3567

Explanation

Our analysis of 58 countries has yielded valuable insights into the correlation between wealth and trust. Specifically, our measurement of wealth, GDP Per Capita PPP, which takes into account the economic output per person within a nation as well as the purchasing power of currency that varies across nations, was found to be statistically relevant to generalized trust levels, with a p-value of 0.000142 and a t-value of 4.40. These findings support our hypothesis that higher levels of material wealth are associated with higher levels of trust within nations.

These results have important implications for the relationship between economic development, prosperity, and trust in political institutions. Our findings suggest that as nations strive to improve their economic output per person, as measured by GDP Per Capita PPP, they may also be contributing to the development of a more trusting society. Conversely, lower levels of wealth and economic output per person may be associated with lower levels of trust, which could have negative implications for a nation's political stability and overall well-being.

Overall, our analysis highlights the importance of economic development and growth in fostering a more trusting society and provides valuable insights into the relationship between wealth and trust. As nations continue to seek ways to improve their economic output per person, they would do well to consider the potential benefits of increased trust levels, both for their citizens' well-being and for the stability of their political institutions.

Income Inequality

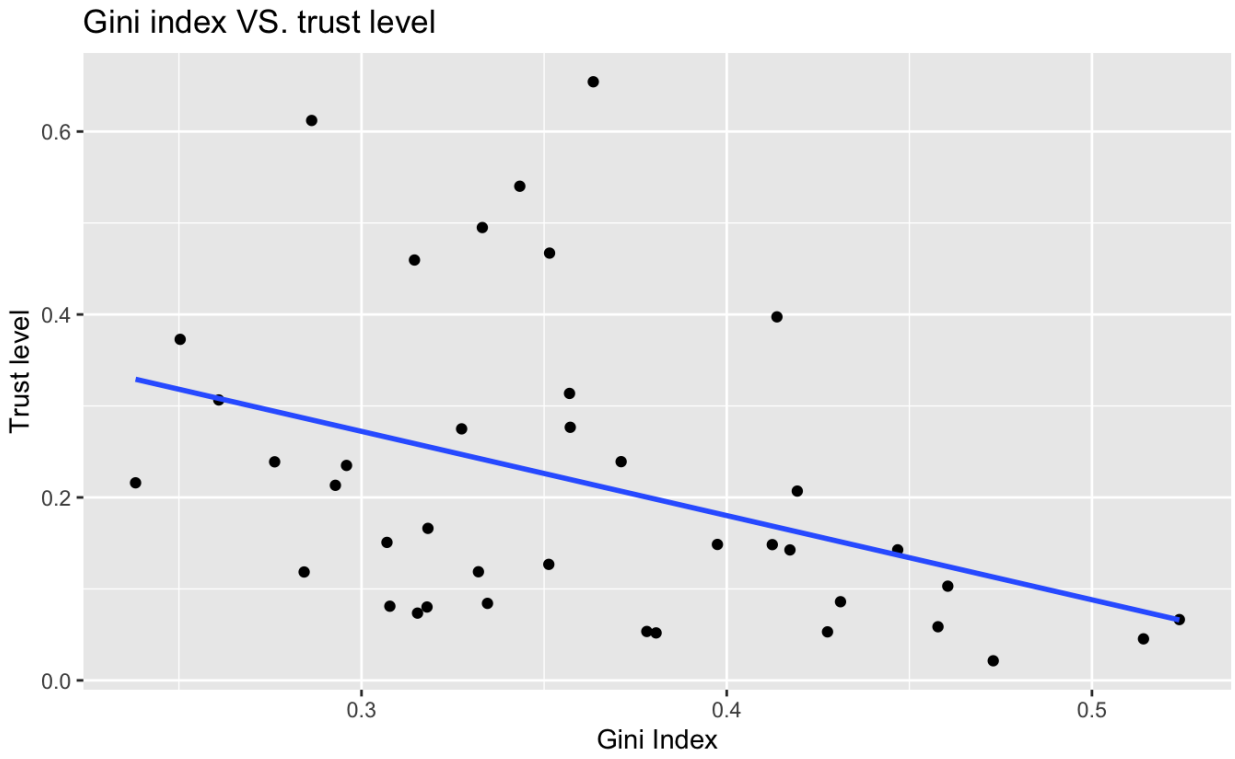

Table 2: Regression Analysis of the Relationship Between Trust and Income Inequality

Characteristic	**Beta**	**p-value**
(Intercept)	0.55	<0.001
Gini	-0.92	0.013

Number of observations: 38

R^2: 0.1518

Explanation

Our study examined the relationship between income inequality and trust, as measured by the Gini coefficient, using a regression analysis of 38 Countries. The results showed a significant negative relationship between income inequality and trust, with a low p-value of 0.013 indicating strong evidence to support this finding. This highlights the importance of reducing income inequality to promote a more cohesive and trusting society.

When income inequality is high, it can create a sense of injustice and a lack of confidence in societal institutions, leading to social unrest and political instability. This can undermine social cohesion and exacerbate divisions between different socioeconomic groups. By addressing income inequality through policies and initiatives that promote equal opportunities and fair distribution of resources, governments can help to build a more cohesive and trusting society. This can have positive implications for social and political stability, leading to greater economic growth and prosperity.

While our study provides valuable insights into the association between income inequality and trust, it is important to acknowledge the limitations of the small sample size used in the analysis. Further research using larger sample sizes is needed to provide a more comprehensive understanding of the relationship between income inequality and trust, as well as to identify the specific factors that influence this connection. Nevertheless, the findings of our study highlight the significance of reducing income inequality to foster a more cohesive and trusting society and underscore the need for continued research and action in this area.

Education

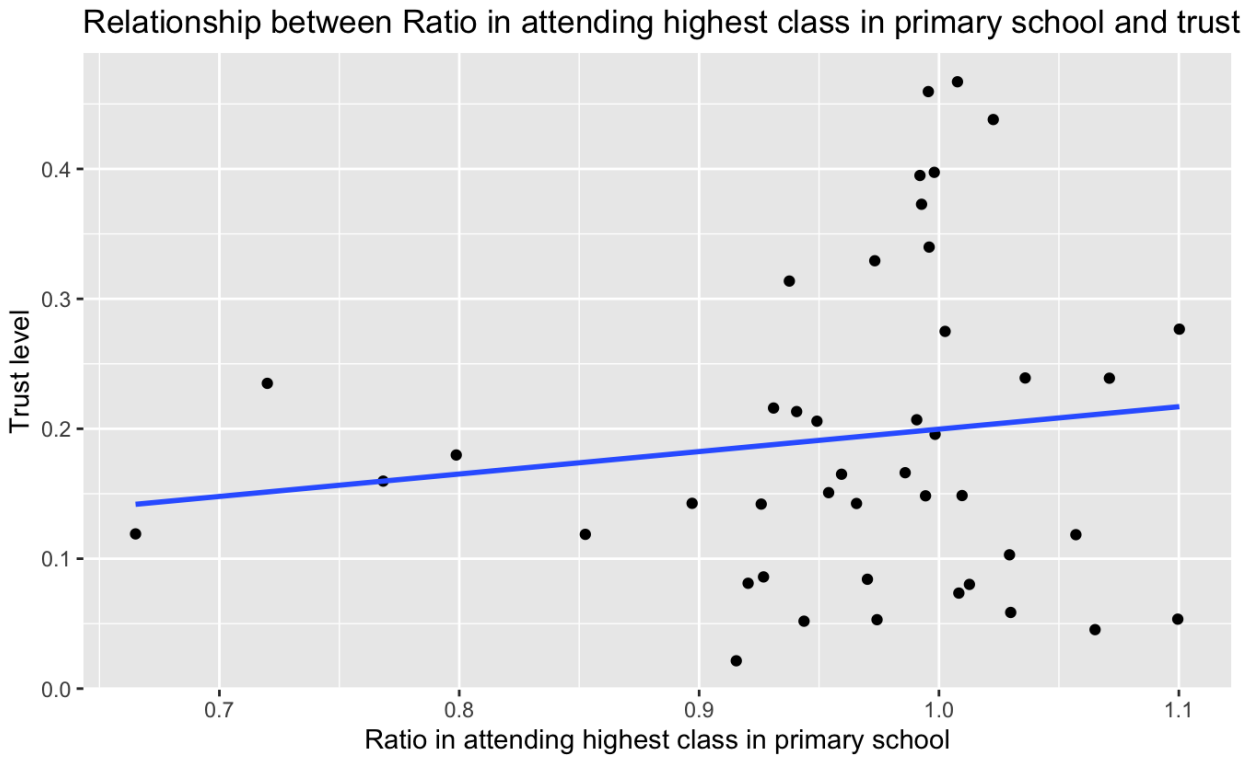

Table 3: Regression Analysis of the Relationship Between Trust and primary school attendance rate

Characteristic	**Beta**	**p-value**
(Intercept)	0.03	0.9
Education	0.17	0.4

*Not statistically significant, No conclusion or not clear relationship

Number of observations: 42

R^2: 0.01633

Explanation

After conducting a thorough regression analysis of our hypothesis, which posited that higher levels of educational attainment would lead to greater social trust, we were surprised to discover that our theory may not hold up under scrutiny. While it is widely believed that education promotes critical thinking, democratic participation, and access to resources and information, our research suggests that these factors may not have a direct impact on levels of social trust.

Our study involved analyzing data from 44 countries, with the trust level as the dependent variable and the ratio of attendance at the highest level of primary school as the independent variable. Using a p-value of 0.9, we found a strong statistically significant chance that the null hypothesis is incorrect, meaning that there is no clear relationship between the two variables.

This is a significant finding, as it challenges the prevailing belief that education is the key to promoting greater social trust. While education is certainly important for individual growth and development, our study suggests that other factors, such as cultural and historical context, may play a greater role in determining levels of social trust.

This research underscores the importance of carefully examining our assumptions and beliefs, and subjecting them to rigorous empirical testing. By challenging our own

preconceptions and theories, we can gain a deeper understanding of the complex social dynamics that shape our world.

Conclusion

Table 4: Regression Analysis of all 3 Variables

Characteristic	**Beta**	**p-value**
(Intercept)	0.22	0.3
Education	0.03	0.9
Gini	-0.50	0.05
GDP Per Capita PPP	0.00	<0.001

Results show that compared to all 3 values, Gini Index and GDP are statistically significant since their P-values are at or below .05

R^2 : 0.5012, Adjusted R^2: 0.4477

Explanation

In today's rapidly changing world, trust is becoming an increasingly important issue. Trust is essential to maintaining social cohesion and ensuring that institutions function effectively. However, it is not always clear what factors influence trust, making it difficult to

address. Our analyses on wealth, income inequality, and education have provided valuable insights into the relationship between economic and social factors and trust.

Our study on wealth found that higher levels of wealth, as measured by GDP per capita PPP, were correlated with higher levels of trust. This suggests that as nations strive to improve their economic output per person, they may also be contributing to the development of a more trusting society. However, it is important to note that the relationship between wealth and trust is complex and there are many factors that may influence it. It is possible that wealth may be a contributing factor to trust, but it may not be the only factor.

Our analysis of income inequality found that income inequality had a negative impact on trust. This highlights the importance of reducing income inequality to promote a more cohesive and trusting society. When income inequality is high, it can create a sense of injustice and a lack of confidence in societal institutions, leading to social unrest and political instability. Addressing income inequality through policies and initiatives that promote equal opportunities and fair distribution of resources can help to build a more cohesive and trusting society. This can have positive implications for social and political stability, leading to greater economic growth and prosperity.

Our study on education challenges the prevailing belief that education is a key factor in promoting trust. We analyzed data from 44 countries, with the trust level as the dependent variable and the ratio of attendance at the highest level of primary school as the independent variable. Using a p-value of 0.9, we found a strong statistically significant chance that the null

hypothesis is incorrect, meaning that there is no clear relationship between the two variables. This highlights the need to critically examine assumptions and theories about the role of education in promoting trust and suggests that other factors may play a more significant role in determining trust levels. Policymakers and researchers should continue to explore the complex relationship between education and trust to develop effective strategies for promoting social cohesion and stability.

Our research has shed light on the factors that influence trust in society. While wealth has been found to have a positive relationship with trust, income inequality has a negative impact on it. It is crucial to address income inequality through policies that promote equal opportunities and fair distribution of resources to build a more cohesive and trusting society. Additionally, our study on education underscores the importance of critically examining assumptions and theories and subjecting them to rigorous empirical testing. Overall, our research underscores the importance of addressing economic and social factors to promote trust and build a more resilient and cohesive society.

Discussion

Generalized trust levels within a nation can have a profound impact on that nation as a whole and therefore any possible factor that influences it should be thoroughly evaluated. We have questioned throughout our research process whether or not wealth, income inequality, and education are correlated to generalized trust levels within a nation. To answer this question, we have developed efficient ways to operationalize each of these three concepts and measure them with a World Value Survey that surveyed individuals within 64 countries questioning "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?". After conducting our research, we have developed some very interesting findings and statistics that give us reasonable insight into how we perceive generalized trust levels within a nation.

Our hypothesis on wealth's impact on generalized trust resembled that we believe an increase in the value of wealth is a crucial factor in generalized trust levels among a nation's population. We have based our hypothesis on the fact that higher levels of trust are closely associated with higher levels of economic development, which is what we aimed to capture. We have also based our hypothesis on economic development leading to more prosperity, more stable political institutions, and a greater sense of community, all of which can lead to an increase in trust levels. We concluded our hypothesis with the fact that when individuals are able to meet a basic material need, individuals are more likely to take risks, whether it be financial, lifestyle, or spiritual in the sense that they adapt their trusting attitudes more towards other individuals in society and their government. So, in order to sufficiently capture our wealth metric, we measured the GDP Per Capita (PPP) which is the economic output per person within

a given nation and time period, alongside the currency purchasing power that varies across different nations. This tells us, relative to the population of a nation, how much each individual's labor/economic value is worth i.e. how effective and efficient individuals are with their scarce resources to boost economic value. In our scatterplot, we found that many of our data points (GDP Per Capita PPP in dots) do fit our line of best fit which can visually bolster the correlation between GDP Per Capita and generalized trust levels. Statistically, we also found that our p-value was less than .05 alongside our t-value being about 4.40. This shows that GDP Per Capita is statistically relevant and considered a sufficient metric when measuring and correlating wealth and generalized trust levels within a nation. We have discovered that GDP Per Capita is an overall sufficient measure of our metric wealth and have come to realize/learn its true implications and effects on countries whose trust levels are both low, medium, or high. Countries that experience higher levels of trust tend to experience higher levels of GDP Per Capita which reinforces our claim that generalized trust does depend somewhat on the wealth of a nation.

Our theory related to income inequality states that the greater the income inequality is less generalized trust there will be. We stated that high-income inequality leads to greater distribution among people which will lead to lower trust among them. We discovered that income inequality has a negative impact on trust, which emphasizes the importance of reducing income inequality to promote a more cohesive and trusting society. Addressing income inequality through policies and initiatives that promote equal opportunities and fair distribution of resources can help to build a more cohesive and trusting society.

Lastly, our study on education challenged the assumption that education is a key factor in promoting trust. Our theory stated that a higher level of education will lead to greater generalized trust. We stated that education promotes critical thinking and democratic participation and fosters greater social trust. We found that when comparing generalized trust with the attendance rate of a higher class in primary school did not give us any sufficient results. Our p-value was extremely high, meaning our results weren't statistically significant. To better explore how education is related to generalized trust we need to look more in-depth at the different levels of education or different datasets that we can use. This finding underscores the importance of critically examining assumptions and theories and subjecting them to rigorous empirical testing.

In conclusion, our research has important implications for policymakers and underscores the need to address income inequality and promote economic development to foster a more cohesive and trusting society. It also highlights the importance of critically examining assumptions and theories and subjecting them to rigorous empirical testing. Trust is a complex issue, and there is much more work to be done to fully understand the factors that influence it. But we believe that our research provides valuable insights into this issue and underscores the importance of continued research and action to promote trust and social cohesion.

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