

Income Inequality and Economic Growth: Evidence From the United States

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April 2022

1 Introduction

Income inequality is a growing area of concern for many people around the world. Economists have studied this area but still have not developed a consensus as to the causes and more importantly the solutions. In addition, many economists have focused on developing countries rather than developed countries. This paper differs in its attempt to find evidence in a developed country. In order to show these impacts, this paper utilizes proxies for both production supply and consumer demand.

Given the contradictory results, economists have begun to classify theories into three categories. The first is socio-political theories. Under this view, incentive from income inequality leads social and political unrest. This introduces destabilization, higher crime, and possibly revolution. Through this view, redistribution is minimal and only an attempt to avoid revolution. In addition, higher income inequality leads to higher economic growth. The second category is savings rate and tech spillovers. Under this view, higher income inequality leads to higher savings rate. This increases the amount of investment in an economy and thereby fuels growth. In addition, the technological gains from higher investment lead to more spillovers in an economy. The third category involves the level of credit market asymmetries. This focuses in on the amount of available credit and the differences between high and low income individuals. The main point of this theory states that inequality allows for higher levels of access than would otherwise be available.

In order to produce this study, the data is restricted to the United States. This will provide a look into the impact of income inequality within high-income countries. This paper utilizes an unique time frame that includes 1991 through 2018. This is the most recent time frame allowed given the constraints on the data availability. In addition, this paper provides a holistic approach to income inequality by utilizing Gross Domestic Product, Gross National Income, and Personal Consumption Expenditures. The goal of this paper is to provide and

update to past work and a comprehensive look at income inequality in the United States.

This study provides the following key results. There is a definite positive correlation between income inequality and Gross Domestic Product, Gross National Income, and Personal Consumption Expenditures. These results conflict with some past studies while supporting others. In general, this disagrees with the view that a country reaches maturity and income inequality reduces. The results show that income inequality positively affects growth even at the maturity stage.

The remainder of the paper is organized as follows. Section 2 contains a review of the current literature. Section 3 contains a description of the data and initial statistics. Section 4 contains the econometric methodology. Section 5 contains the results. Section 6 is the conclusion.

2 Literature Review

Early work into the impact of economic growth and income inequality showed that economic growth reduced income inequality. Kuznets(1955) showed this and provided a comprehensive look at economic growth and income inequality. This began the view of the inverted U-shaped curve. This curve modeled the early increases in inequality followed by reductions as an economy reaches maturity. However, this did little to provide a consensus. Many other economists found contradictory results. For example, Benabou and Perotti find that income inequality tends to lower economic growth while Forbes(2000) finds the opposite.

This leads to an interesting question. Does globalization mitigate income inequality? According to Bechtel(2014), globalization does decrease income inequality. More specifically in Bechtel(2012), he explains that "economic anxiety along with loss of household income and purchasing power has harmful effects on consumer demand, voter turnout, institutional trust, societal satisfaction, and well-being." He later determines that economic anxiety is driven by income inequality. As such, income inequality mimics the effects of economic anxiety. Using a large-cross national sample from the fifth round of the European Social Survey, he shows that globalization reduces income inequality and as a result the negative effects of economic anxiety.

Wahiba and Weriemmi(2014) take a look at the relationship between economic growth and income inequality in Tunisia. In their study, they show that economic growth and openness exchange constituted aggravating factors of inequalities. Also, these factors increased the negative effects with the accelerated process of trade liberalization. In addition to the prior result, they found that income inequality had a negative effect on economic growth. In addition, this effect was more pronounced after the acceleration brought about by opening exchange. This result is explained by the authors as the country reaching an

”unbearable” level of inequality. It also shows a failure of redistribution policies.

Rubin and Segal(2015) look into the effects of economic growth on income inequality in the United States. In their paper, they find that income of the top earner is more sensitive to economic growth. This is explained by the linkage of top earners with capital markets. Lower earners tend to be more reliant on labor income rather than capital income. This includes the trend of providing capital options to top labor earners. These individuals tend to have a higher amount of wealth that provides higher incomes. The authors conclude that growth and income inequality are positively correlated.

Aguiar and Bils(2011) offer a different look at the impacts of income inequality on economic growth. They utilize data from the Consumer Expenditure Survey to understand the role inequality has on demand. They do so by using reports on active savings and after tax income. This is used to construct the measure of consumption implied by the budget constraint. Next, they use a demand system to correct for measurement error. The system exploits the difference between the growth rates of luxury goods versus necessary goods. They find that consumption inequality has closely tracked income inequality. This implies that consumer demand and income inequality may be positively correlated.

3 Data

The data for this study is collected from the Federal Reserve Bank of St. Louis. The main focus of the data is the impact of the Gini Coefficient on Gross Domestic Product, Gross National Income, and Personal Consumption Expenditures. The Gini Coefficient is a measure of inequality ranging from 0(perfect equality) to 1(perfect inequality). This data transforms the Gini Coefficient to a scale of 1 through 100. This allows for an easier interpretation. Gross Domestic Product and Gross National Income Product are measures of production supply. Personal Consumption Expenditures is a measure of consumer demand. In addition to these variables, information on inflation and housing expenditures were collected. These variables were collected from the Federal Reserve as well. The time frame for this data is 1991 thru 2018. This is the longest continuous stream of Gini Coefficients available from the Federal Reserve. The Descriptive Statistics are shown in table 1.

4 Methodology

The econometric model used for this analysis is an Autoregressive model. This choice allows for autocorrelation within the data. In addition to this choice,

Newey West standard errors are used. Also, a Dickey-Fuller test is used to confirm the presence of a unit-root. Below is the equations used for the estimation.

$$\log(GDP) = \beta_0 + \beta_1 Gini + \beta_2 inf + \beta_3 \log(GDP)_{t-1} + \epsilon$$

$$\log(GNI) = \beta_0 + \beta_1 Gini + \beta_2 inf + \beta_3 \log(GNI)_{t-1} + \epsilon$$

$$\log(PCE) = \beta_0 + \beta_1 Gini + \beta_2 inf + \beta_3 \log(PCE)_{t-1} + \epsilon$$

In the models above, GDP stands for Gross Domestic Product. GNI stands for Gross National Income. Gini represents the Gini Coefficient. Inf represents the measure of inflation. ϵ is an error term given to the models.

5 Results

Figure 1 shows visually that the levels of Gross Domestic Product, Gross National Income, and Personal Consumption Expenditures tend to increase with inequality as measured by the Gini Coefficient. Below is a table of the estimation results using process stated earlier.

The first column of table 2 shows the results using the first difference of Gross Domestic Product as the dependent variable. It shows an increase of 1.9 percent per unit increase in the Gini Coefficient. However, this result is not statistically significant. The inflation coefficient shows .76 percent increase in GDP per unit increase of inflation. This result is also not statistically significant. The lag variable showed a decrease of 10 percent per unit increase. This result was not statistically significant.

The second column of table 2 shows the results using the first difference of Gross National Income as a dependent variable. It shows an increase in Gross National Income of .4 percent per unit increase in the Gini Coefficient. This result is not statistically significant. The inflation coefficient shows a .9 percent increase but is also statistically insignificant. The lag variable showed a decrease of 2.1 percent per unit increase. This result is not statistically significant.

Column 3 of table 2 shows the results using the first difference of Personal Consumption Expenditures as a dependent variable. It shows an increase in Personal Consumption Expenditures of .28 percent increase per unit increase in the Gini Coefficient. This result is not statistically significant. In addition, it shows a .9 percent increase in Personal Consumption Expenditures per unit increase of inflation. This result is not statistically significant. The lag variable shows a 2 percent decrease in Personal Consumption Expenditures. This result is statistically significant.

6 Conclusion

Income inequality is a major area of study by economists. However, much of this focuses on developing countries rather than developed countries. This paper differs from others by focusing on a high income country. The results of this study conflict with much of the findings in developing countries. It implies that the same impediments to growth in developing countries are not the same as developed countries.

Much of the current literature provides contradictory results. It seems the results change with methodological choice of the researcher at the developing level. This study provides some key results. It finds that Gross Domestic Product tends to change positively with income inequality. Gross National Income tends to change positively with income inequality. Finally, Personal Consumption Expenditures tend to change positively with income inequality. If taken as causal, these results show a very different consistency than seen at the developing level.

The purpose of this paper is to provide evidence to support the theory that the relationship of inequality is different in developed countries than in developing. This is achieved through the use Federal Reserve data and an autoregressive model. This method was chosen to account for autocorrelation in the error term. In addition, Newey-West standard errors were used to improve the variance measurement.

Table 1

Variable	Observations	Mean	Std. Dev	Minimum	Maximum
<i>PCE</i>	28	8480.103	3009.446	3943.449	13913.53
<i>GDP</i>	28	14003.37	2730.636	9361.322	18606.79
<i>GNI</i>	28	12781.57	4460.326	6096.75	20946.78
<i>Log GDP</i>	28	9.5277	.2028	9.1443	9.8312
<i>Log GNI</i>	28	9.392	.3725	8.7155	9.9497
<i>Log PCE</i>	28	8.9789	.3817	8.2798	9.5406
<i>Gini</i>	28	40.47143	.7962212	38	41.5
<i>Inflation</i>	28	2.367143	1.021197	-.36	4.24
<i>HPI</i>	28	1148.769	314.0255	677.09	1674.49
<i>FDifflog GDP</i>	27	.0254	.0586	-.1933	.2144
<i>FDifflog GNI</i>	27	.0457	.0201	-.02	.0691
<i>FDifflog PCE</i>	27	.0467	.0175	-.0159	.0741
<i>Lag GDP</i>	27	9.5165	.1976	9.1443	9.8025
<i>Lag GNI</i>	27	9.3714	.3629	8.7155	9.8981
<i>Lag PCE</i>	27	8.958	.3724	8.2798	9.4909

Figure 1

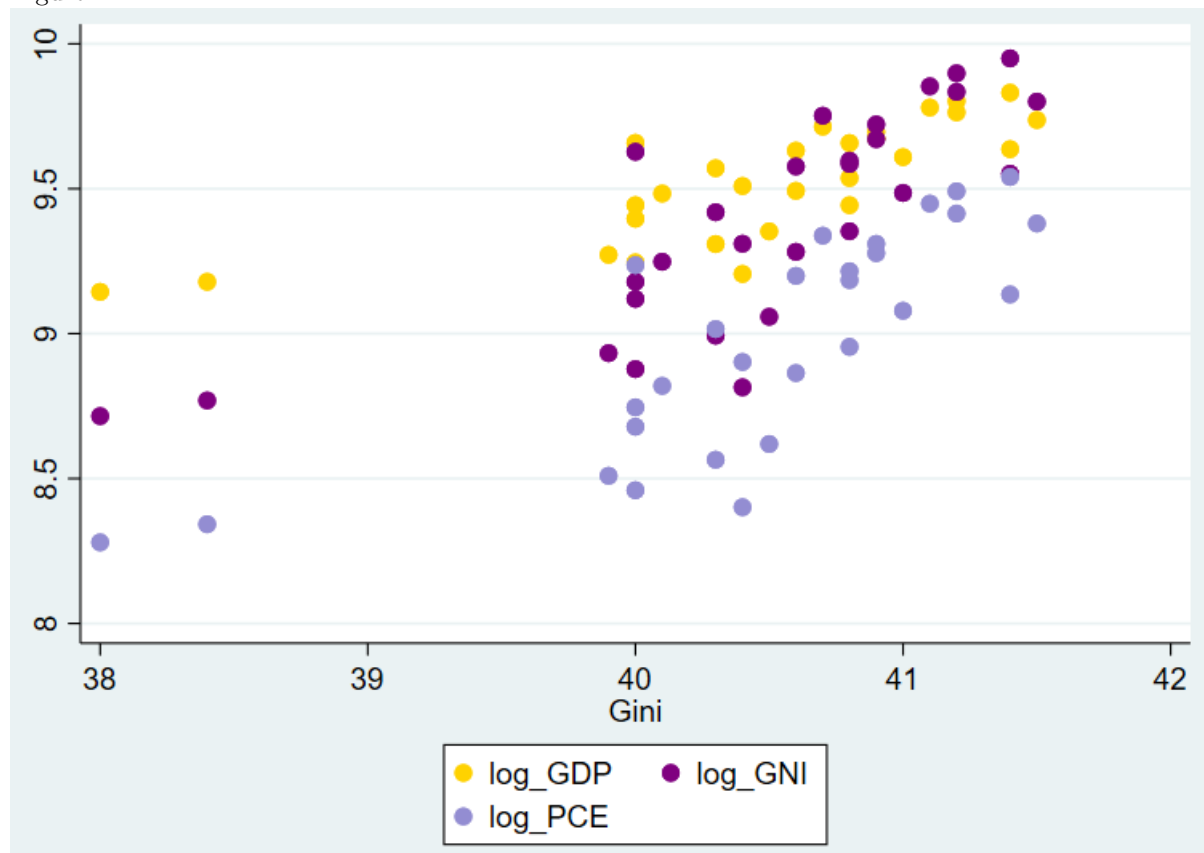


Table 2

	<u>FDiffLog_GDP</u>	<u>FDiffLog_GNI</u>	<u>FDiffLog_PCE</u>
<i>Constant</i>	.2176	.0512	.0958
<i>Standard error</i>	.3998	.1496	.1037
<i>Gini coefficient</i>	.0191	.0042	.0028
<i>standard error</i>	.0195	.0063	.0033
<i>inflation</i>	.0076	.0085	.0093**
<i>standard error</i>	.0129	.0053	.0041
<i>Lag variable</i>	-.1034	-.0207	-.0204
<i>Standard Error</i>	.908	.0164	.0086
***statistically significant at the 1% level			
** statistically significant at the 5% level			
* <u>statistically</u> significant at the 10% level			