Economic Growth Effect on Income Inequality

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Spring 2015

Introduction

An issue that has been continuously present in American politics and debates is that of income inequality. By definition according to inequality.org, income inequality is the extent to which income is distributed in an uneven manner among a population. This is such a hotly debated subject in the United States because of the level of inequality that we have. Not only is this inequality in our country extremely large, but it is continuing to grow. During the Great Recession of 2007-2009, the wealthiest Americans were hit the hardest, however since the recession's end their income has been rising at an incredibly fast rate. The income gap between the top one percent and the rest of the country is as wide as it has been since the 1920s (CNBC). The Center on Budget and Policy Priorities reported that in 2013 the top one percent of Americans received a 19 percent share of total income before taxes and the top ten percent secured 48 percent.

While economic inequality is prevalent in the United States, it is by no means an issue limited to our country. In 2006, the United Nations University's World Institute for Development Economics Research found based on data from the year 2000, that the richest one percent of the world's adults owned almost 40 percent of the world's total household wealth (inequality.org). Similarly to the issue in the United States, the gap between the top one percent and the rest of the world is continuing to grow. From 1975 up to the Great Recession in 2007 a large percent of the growth in pretax incomes was going directly to the top one percent. To be more specific, 37 percent of growth in Canada went to the richest one percent, and 20 percent in both Australia and the United Kingdom (OECD). As previously stated, the Great Recession took a great toll on these top income earners, but they were able to bounce back after the recession was over and continue to increase their wealth.

Seeing as many of these countries that face such vast inequality are highly developed nations, it is necessary to ask if economic growth has something to do with this income inequality. While this question has been widely researched and many people have tried to establish a reliable relationship between the two, there has not been enough empirical evidence to cement a relationship between them. This paper will attempt to establish a relationship between economic growth and income inequality, while also considering the possible effects of unemployment levels and three cultural factors. The cultural factors that will be used in the model are from Hofstede (1984) and are as follows: *individualism, power distance,* and *indulgence vs. restraint.*

Background

The initial interest in the relationship between economic growth and income inequality began in the 1950s with Simon Kuznets. His interest in the economic growth of nations led him to formulate the famous "inverted U curve" hypothesis that was widely used by policy makers. In his research, Kuznets (1950) studied the economic tendencies of both developed and developing nations. In his findings, he reported that in undeveloped nations he found there is no "middle" class, meaning that there is a well-defined split between the sector of people with low income and those with relatively high income. Oppositely, developed nations tended to have a broad "middle" class that gradually spans the gap between the highest income level and the lowest. The basis for Kuznets' "inverted U curve" stems from these findings. Kuznets determined that when a country's economy begins to grow, they initially would face increasing inequality. Once they reach a certain point in this economic growth however, their inequality will peak and then start to decline. When graphed with inequality measured on the Y-axis and growth

on the X-axis, this would resemble the inverted U shaped curve from where the hypothesis gets its' name.

In the 1980s and 90s Kuznets' hypothesis began to face a lot of scrutiny. There are two major issues that economists find with the hypothesis. The first is that the curve is able to maintain its inverted U shape, while countries are not actually becoming more equal. The second is known as the "great U-turn". (Theorizing). This is the tendency for developed nations to experience a come back of inequality after a period where inequality had previously been declining. In their paper, Theorizing the Relationship between Inequality and Economic Growth, Roberto Patricio Korzeniewicz and Timothy Patrick Moran (19) use the Schumpetarian view of "creative destruction" to try and validate Kuznets' original hypothesis. Korzeniewicz and Moran explain,

> "Rather than a single and fundamental transition between two distinct distributional arrays, we should expect capitalism and economic growth to result in multiple and overlapping demographic transitions between many distributional arrays that never cease to emerge anew, prevail for a time, and eventually be left behind." See figure 7.

By incorporating the idea of "creative destruction" into Kuznets' original hypothesis, we can assume that through economic growth there is a "constant drive towards inequality." (Korzeniewicz Moran).

As previously mentioned, this study will attempt to explain the relationship between growth and the income inequality. However this particular research will not only take into account the economic factors that affect inequality but it will also use three different cultural factors from Hofstede's cultural dimensions to determine the causes of inequality. It has been

studied that cultural factors are as important as the economic factors behind the increasing income inequality.

The three cultural factors that we have selected for the model were taken from current literature (see Beugelsdijk, Maseland, and Van Hoorn 2013). This paper analyzes the stability of Hofstede's cultural dimensions over time as a country develops. The data used in the study is taken from the World Values Survey and measures two-generation cohorts (1941 1971). The cultural factors that will be used for this model are *individualism, power distance,* and *indulgence vs. restraint.*

Hofstede (1984) has explained the interpretations of the cultural dimensions as follows: *Individualism* measures the degree to which individuals look after themselves and their own interests as opposed to the benefit of the overall society as a whole (collectivism). *Power Distance* measures the degree to which individuals in a society accept the fact that power is distributed unevenly throughout the society. The third cultural factor that will be used for the model in this paper is *indulgence versus restraint.* This factor was not one of Hofstede's original cultural factors but it was added later on. The interpretation of this factor measures the degree to which societies regulate and suppress the tendencies of instant gratification. They were used to identify and measure the ethical issues in the country and of different countries. (Beugelsdijk, Maseland, and Van Hoorn)

Data and Model:

The econometric model to be used is as follows:

$Y_\iota = \beta 0 + \beta 1 x 1_\iota + \beta 2 x 2_\iota + \beta 3 x 3_\iota + \beta 4 x 4_\iota + \beta 5 x 5_\iota$

Where Yi= Gini coefficient
X1=GDP

X2=level of unemployment
X3=cultural factor one: individualism
X4=cultural factor two: power distance
X5=cultural factor three: indulgence versus restraint

The expected signs for $\beta 1$, $\beta 2$, $\beta 4$, and $\beta 5$ are positive, while $\beta 3$ is expected to be positive or negative.

The Gini coefficient is the measurement of the income distribution in a country. It is based on a scale from 0 to 1 with 0 being perfect equality and 1 representing perfect inequality.

Along with the measures gathered on the cultural factors, data was collected on inequality, GDP, and unemployment. The data for all three of these variables was collected through the World Bank. The data provided in Beugelsdijk, Maseland, and Van Hoorn (2005) shows measurements of the cultural trends for two different age cohorts. The first group has an average birth year of 1941 while the second cohort has an average birth year of 1971. Due to these birth years, GDP, Gini coefficient and unemployment were collected from 214 countries for the years 1990 and 2010. These years were chosen because they represented a time when members of each of these age cohorts would be members of the work force. The data was then compared to what we had available for the cultural variables. The number of countries to be used for the study was narrowed down to 50 based on the availability of information for all of the desired variables.

Another issue that was encountered while collecting data for the model was with the amount of information available for the gini coefficient used to measure inequality. The gini coefficient is not recorded as well as the other variables being used in the model and it was found that there are a lot of gaps between the years that it is recorded, making it difficult to find enough countries with a gini coefficient measure for both 1990 and 2010. To correct for these gaps in the data, averages of the gini coefficient were taken for the years 1990-1994 and 2010-2014 to allow

for more complete information. Once those averages were computed there was enough information available for 50 countries to be included in the model.

Results

For the initial results, a cross sectional analysis was done for the year 2010. The results of the regression are shown below in Table 1. The initial results suggest that three of the five explanatory variables are significant. We can also see from these results that all of the significant variables have the expected signs. The only variable that did not have its expected sign was the cultural factor *power distance,* whose P-value indicates that it is not statistically significant for this model. The other variable that was ruled as insignificant for this model was GDP.

Unemployment is a very significant variable for this model. The positive sign was expected and indicates that an increase in unemployment will lead to an increase in the gini coefficient. This was expected because a larger gini coefficient represents greater inequality. When unemployment increases it is expected to increase inequality, therefore leading to a larger gini value.

The cultural values that were significant to the model were both *individualism* and *indulgence versus restraint.* The parameter estimate for *individualism* was found to have a negative sign. This was expected because the more individuals in a society focus on themselves the more likely it is for that society to have less inequality. *Indulgence versus restraint* parameter estimate was found to have a positive sign, which was also expected. As previously stated *indulgence versus restraint* is the degree to which societies regulate and suppress the tendencies of instant gratification. The positive sign indicates that when there is an increase in the tendency to suppress the need for instant gratification, there will be greater inequality in a country. This

makes sense because the less money that individuals spend on themselves indicates that they do

not have the income available to indulge which would indicate more inequality.

Time Series:

After the initial cross sectional regression was completed we also estimated the model

using the sample observations for the years 1990. The results from this regression (see table 2)

supported the initial results from the sample observations for the year 2010, with unemployment,

individualism, and *indulgence versus restraint* being the significant variables. Also consistent

with the findings in the 2010 model, were that GDP and *power distance* were insignificant

explanatory variables.

We then ran the panel for the years 1990 and 2010. Both a fixed effect model and a

random effect model were used and found to have very different results. When using the fixed

effect model, none of the explanatory variables were found to be significant. Using the random

effects model however, three of the five explanatory variables were significant. The significant

variables in the random effects model were unemployment*, indulgence versus restraint, and

power distance.* These are the same three variables that were found to be significant in the cross

sectional analysis. While all three variables are significant to the model, both *indulgence versus

restraint* and *power distance* were more significant that unemployment, having significantly

lower P-values. The results from the random effects model further support the importance of

unemployment, *indulgence versus restraint*, and *power distance* for the model measuring

inequality.

Conclusion

The results from the research conducted thus far in the paper do not provide evidence to support the initial hypothesis that economic growth has an effect on income inequality. In all three of the models the results suggested that GDP was not a significant explanatory variable for the gini coefficient. Further measures will be taken to try and establish a relationship between the two. One of the main changes that will be made in the model will be using GDP growth from the previous years as opposed to just using the value for GDP during the specific year. Incorporating the rate of change of GDP into the model in place of the original GDP is expected to change the outcomes. It is expected that the rate of change of GDP will be a significant variable that affects the gini coefficient. This value will also be a better measure of growth.

An unexpected outcome of the paper was establishing a strong relationship between income inequality, *indulgence versus restraint* and *power distance*. The two cultural factors were found to be the most significant of the explanatory variables in the model. Unemployment was also a more significant explanatory variable than I had originally expected.

While three of the five explanatory variables used in the model were found to be statistically significant, the variable that was expected to be the most important in the hypothesis proved to be completely insignificant. Hopefully the changes made with regards to GDP will be enough to provide evidence of a relationship between growth and inequality.

References

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Strassmann, W. Paul. "Economic Growth and Income Distribution." The Quarterly Journal of Economics 70.3 (1956): 425-40. Oxford University Press. Web. 28 Sept. 2014.

Data Sources

GINI index (Data)
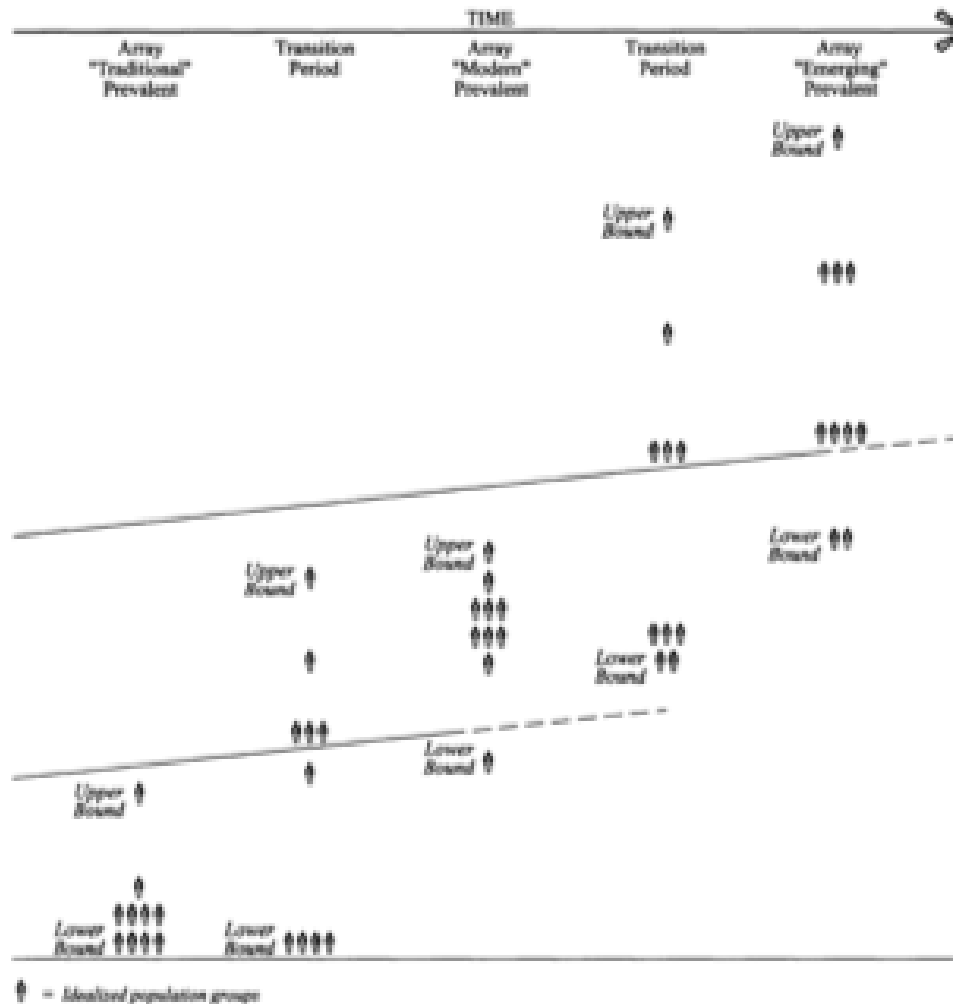http://data.worldbank.org/indicator/SI.POV.GINI

GDP growth (annual %) (Data)
http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG

Unemployment, total (% of total labor force) (modeled ILO estimate)
http://data.worldbank.org/indicator/SL.UEM.TOTL.ZS

TIME

| Array
"Traditional"
Prevalent | Transition
Period | Array
"Modern"
Prevalent | Transition
Period | Array
"Emerging"
Prevalent |

Upper Bound ⚲

Upper Bound ⚲

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Lower Bound ⚲⚲⚲⚲

⚲ = *Idealized population groups*

Comment: This is a stylized depiction of intersectoral transition under a recast Kuznets perspective showing the constant drive toward inequality. Whereas Kuznets assumed array "modern" to be an endpoint, a more Schumpeterian perspective would emphasize the continuing transitions accompanying creative destruction.

Figure 7. The constant drive toward inequality.

Appendix

Table 1: 2010

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	1658.22675	331.64535	8.16	<.0001
Error	34	1382.39779	40.65876		
Corrected Total	39	3040.62454			

Root MSE	6.37642	R-Square	0.5454
Dependent Mean	37.19625	Adj R-Sq	0.4785
Coeff Var	17.14265		

Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	29.67871	9.78417	3.03	0.0046
unempl	1	0.53481	0.20213	2.65	0.0123
gdp	1	1.16874E-13	4.24004E-13	0.28	0.7845
indulg	1	0.29113	0.06839	4.26	0.0002
power	1	-0.05227	0.08141	-0.64	0.5252
indiv	1	-0.26932	0.07467	-3.61	0.0010

Table 2: 1990

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	1246.71704	249.34341	5.40	0.0012
Error	30	1384.99012	46.16634		
Corrected Total	35	2631.70716			

Root MSE	6.79458	**R-Square**	0.4737	
Dependent Mean	38.76111	**Adj R-Sq**	0.3860	
Coeff Var	17.52938			

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	33.58812	13.64199	2.46	0.0198
gdp	1	-3.3143E-13	1.22426E-12	-0.27	0.7885
unempl	1	0.44174	0.21769	2.03	0.0514
indiv	1	-0.24580	0.12543	-1.96	0.0594
power	1	-0.02128	0.11708	-0.18	0.8570
indulg	1	0.21384	0.05964	3.59	0.0012