

The Integration of Family Stability into Income Distribution Measures: A Teaching Methodology

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ABSTRACT: *Many of our students have experienced the internal cost of family instability. Out of wedlock births, divorce and separations have imposed substantial psychic cost upon them. The purpose of this paper is to expose them to the more macroeconomic external cost of family instability. The teaching method illustrated here provides a visual lesson on the external cost created by family dissolutions.*

INTRODUCTION

The goal of this paper is two-fold. First, the paper illustrates an opportunity for faith integration within the context of principles of economics curriculum. The opportunity rises within the course discussion of poverty and income distribution, which normally appears in our micro principles courses. Second, the paper offers a teaching tool that reinforces the cause/effect relationship.

EXPLAINING CHANGES IN INCOME DISTRIBUTION

In our course discussion of income distribution, we typically use two measures to illustrate the issue — the Lorenz Curve and the GINI coefficient. Both tools are created by the Bureau of Labor from the Current Population Survey conducted in March (Jones and Weinberg, 2000). The survey bases the two measures on the income shares of families.¹ The Lorenz Curve provides the visual illustration and the GINI gives us a more quantitative measure of income distribution. There are two important conclusions that come out of that discussion. One is that incomes in the United States are distributed very unequally. In 2001 the top 20% of income earning families earned 50.1% of all earned income in the United States. The bottom 20% of all income earners had only 3.5% as their share of income. The second conclusion is that inequality has been rising

over the past three decades (Ryscavage, 1995 also Bishop, Formby and Smith, 1997). In 1971, the shares of the top and bottom 20% were 43.5% and 4.1% respectively. From 1971 to 2001 the top quintile increased from 43.5 to 50.1, while every other quintile share fell over that same period.

The reason for the first conclusion, unequal income distribution, is primarily due to our choice among economic systems. Capitalism is an efficient system for generating economic output because of the incentive driven mechanism. However, the free market system rewards productivity and creativity without regard to income outcomes. Since productivity and creativity are unequally distributed, incomes are also unequally distributed.

The reason for the second conclusion, rising inequality, is not so straight forward. What has changed in the U.S. economy that has driven the income distribution more toward the higher GINI values? The research literature can provide the instructor with a reasonable set of explanatory variables (Chevan and Stokes, 2000). We can talk about the diminishing influence of labor unions and the impact of global markets. We can include mention of technological change and the unequal educational outcomes. However, one specific determinant holds a special interest for the Christian community. A key determinant of the changing income distribution is family structure. The percent of families with a single-parent head of household has risen from 15% in 1974 to 28% in 2003 (Statistical

Abstract of the United States). Over a similar time period (1980-2004) the percent of children living with a mother who had never been married increased from 2.2% to 9.9%. Over that same time period, the percent of children living with a divorced mother rose from 7.5% to 8% (Ibid.).

Why is family structure so important? From a research perspective, it is no more interesting than any of the other determinants. However, from a Christian perspective it is another piece of evidence of the importance of family structure and the cost of family instability. When families divorce or fail to form, income distribution is adversely affected. Given the current conflict between the position of the Christian community and the more secular world we have an opportunity to add some clarity to the issue.² Clearly, there are economic implications for the non-traditional formation of families.

At the federal level, there are policies that influence the formation/dissolution of families in a number of areas. For example, tax legislation penalizes the traditional family by “stacking” the earned income from marriage partners, potentially moving them into higher marginal tax brackets. Perhaps the biggest controversy is centered on the qualifications for redistributive programs. Often, married with children excludes a couple from benefits. The vast majority of programs require the presence of children and the absence of a parenting partner. The clear incentive of programs like these is to dissolve a marriage or fail to form one. We subsidize child care so that “single” parents can enter the labor market, but in doing so, we create more incentives to dissolve two parent families. How can we best illustrate this to our students? Given the perverse outcomes of the destruction of family structure, how can we best illustrate the economic impact upon income distribution?

A VISUAL ILLUSTRATION

In the following table, I illustrate the significance of family stability upon the quintile measure of income distribution. I assume that dissolved families split the family income between the two units upon dissolution. I assume that family dissolution creates a greater number of families in the nation. In the first iteration I am also assuming that family dissolution occurs at the bottom end of the income distribution. I can relax this particular assumption and also show that family dissolution throughout the income distribution also causes deterioration in income shares.

Column one identifies each family in this hypothetical nation with the unimaginative names of A through J. Column two provides an initial starting point for this coun-

try's income distribution. In this world, there are high-income families ranging to low-income families. Quintile shares (two families per quintile) are recorded at the bottom of the quintile. For example, the highest income quintile is recorded with family B, the bottom of that particular quintile. I calculated a GINI coefficient for our starting point by using five discrete points from the quintile distribution. I calculated the area under the curve then subtracted that value from the area under the diagonal to get the area between the diagonal and the Lorenz Curve. Then I set the ratio of that area (numerator) to the area under the diagonal (denominator) to calculate the GINI. The GINI has a value of .1668 for this hypothetical example.

Column 3 records the demographic changes that occur when families in the lower half of income dissolve and form families with one head of household. In this example, our 10-family world becomes a 15-family world. This is an extreme example of demographic change. I have imposed all dissolutions at the bottom of the income scale to show the result of this extreme case on income distribution. The lower case letters represent two families created from the single upper case family. Hence, we have two “f” families from the original F family. All incomes, under the new demographic outcome remain the same, but the income for each upper case lower-income dissolved family has been divided by two. There are now 15 families, and therefore, each quintile contains three families instead of two.

The upper quintile has added family C, with an income of \$47,000. The upper quintile now has a total of \$146,000 income from the same total national income. So, its share has risen from 27.6% to 40.7%. Compounding this shift, we look at the bottom end of the income distribution and find that the share of the lower quintile has fallen from 12.3% to 9.1%. Using the same method as before, I calculated the GINI for this iteration. That value is .3232. The GINI has increased by almost 94%.

Even though the higher income families have not gained any income and even though national income has not changed, the shares of the quintiles have changed dramatically. This is a major point of the lesson, that the dissolution of the traditional family structure “artificially” modifies the income distribution measures. One can carry the lesson even further and draw the conclusion that family dissolution contributes to the creation of poverty. This is particularly true if the dissolution of families is sending single parent families to the bottom end of the income distribution. If this is happening, then we would expect to see more dispersion at the bottom end of the income distribution. Greater dispersion is exactly the conclusion drawn by Daly and Valletta (2006).

Table 1

Table 1								
Family Name	Income & Share By Quintile		Income & Share By Quintile			Income & Share By Quintile		
Col. 1	Col. 2	Share	Col. 3	Col. 4	Share	Col. 5	Col. 6	Share
A	50,000		A	50,000		B	49,000	
B	49,000	27.6	B	49,000		D	45,000	
C	47,000		C	47,000	40.7	F	35,000	35.9
D	45,000	25.6	D	45,000		H	25,000	
E	37,000		E	37,000		a	25,000	
F	35,000	20.0	f	17,500	27.7	a	25,000	20.9
G	27,000		f	17,500		c	23,500	
H	25,000	14.5	g	13,500		c	23,500	
I	23,000		g	13,500	12.4	J	21,000	18.9
J	21,000	12.3	h	12,500		e	18,500	
			h	12,500		e	18,500	
			i	11,500	10.1	g	13,500	14.1
			i	11,500		g	13,500	
			j	10,500		i	11,500	
			j	10,500	9.1	i	11,500	10.2

What if we relax the assumption that all of the family dissolution occurs at the bottom end of the income distribution? A second iteration of the example leads us to columns 5 and 6. In this iteration, family dissolution occurs throughout the income range. Alternating the dissolutions, every other family is dissolved starting with family A and continuing through the 10 families. Again, we are left with 15 families in the distribution. The changes to the income distribution are not as extreme this time. However, the GINI still increases from .1668 to .2328, an increase of almost 40%. Under any realistic assumption about the distribution of single parent families, the GINI always reflects a less equal distribution of family income. The interested reader can perform other iterations, relaxing the assumption of constant income to find that a less than equal split of the family's income leads to greater deterioration in the GINI, as more families are forced to fall further down in the distribution. A less than equal split in family income is probably a more realistic description of actual outcomes. One could also experiment with increased income, post family dissolution.

Why should the average student in our classes care about this conclusion? An increasingly larger number of our students have experienced family dissolution firsthand. They

have seen the interpersonal impact of single parent families. Now they have the opportunity to see the collective impact of family instability. This simple illustration can provide a visual relationship between family structure and income distribution. We bring clarity into the issue of the causes of income disparity and poverty by revealing this relationship. We also reinforce the importance of a traditional family structure.

IMPLICATIONS AND CONCLUSIONS

How does this paper fit into the overall discussion of family structure and income distribution? We do have to be careful how we interpret the income distribution measures. By arranging the distribution by families (or households) we distort the percentage of the population in each of the quintiles. For example, the top 20% of families does not necessarily contain 20% of the population. If the average family size is larger in the higher quintile, then more than 20% of the population is included in the top quintile. In that case, a per-capita income distribution methodology would provide more clear information. The measures also ignore the progressive tax rates that depress the inequality of the income distribution, nor do they include the redistributive programs that also

equalize income distribution. A more thorough discussion of these issues can be found in Rector and Hederman, 1999.

The use of the table provides a good entry point into the discussion of income distribution and poverty. It can also be used to help explain the phenomenon of the disproportionate incidence of poverty among women and children in the United States. It also helps to dispel the politicized nature of the discussion on income distribution. Daly and Valetta (2006) report that the two most significant determinants of the changes in income dispersion are the growing dispersion of men's wages and changing family structure. According to their calculations, fully one-third of the changes in the GINI coefficient are associated with changing family structure. There are those among the more politicized who simply attach the responsibility for the changes upon federal administrations. The evidence suggests that the changes that we have experienced in the past three decades are largely micro economic in nature. The role of the government is more indirect and its significance is argumentative.

We can add to the church's position on the importance of the traditional family structure. Not only is there religious and sociological significance, but there is also an economic impact. Summed together, these three disciplines can provide a strong argument for the formation of traditional families.

ENDNOTES

¹ The BLS also offers the GINI measured by household instead of family structure, see: Jones and Weinberg (2000).

² Clapp (1993) offers a moderate discussion of this issue, while Lahaye (1982) gives the more Evangelical side of the argument.

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APPENDIX: Construction of the GINI and Lorenz Curve

The Lorenz Curve is presented as a boxed graph with percentage of income scaled on the vertical axis and percentage of families scaled on the horizontal axis. A diagonal curve represents a perfect distribution of income. For example, 20% of the families earn 20% of the nation's income, 40% of the families earn 40% of the nation's income, etc. I have plotted the five points from the initial distribution presented in table 1 into illustration 1. Note, that the percentages are cumulative across each of the axes. For example, in the initial distribution, the poorest 20% of families hold 12.3% of the income. The poorest 40% of families hold 26.8% of the income. If we connect the five points linearly, we can create a Lorenz curve for the income distribution of this hypothetical income distribution. The GINI is then calculated by summing the area

under the Lorenz Curve and dividing by the total area under the diagonal. In a formula that would appear as $A/(A+B)$. Area A can be calculated by first taking the area of the triangle outlined by the axes and the diagonal. So, that area is $\frac{1}{2}bh = .50$. Then we can use the area under the Lorenz Curve (.4166) to calculate the value of $A = .5 - .4166 = .0834$. The area under the Lorenz Curve can be calculated using simple algebra since that area is a combination of triangles and rectangles. If the Lorenz Curve had been presented as a continuous curve, we would have measured that area using integral calculus. This possibility would seem inappropriate for most economics courses. Using the numbers generated from our calculation of A and B, we can compute the value of GINI. $GINI = .0834/.5 = .1668$.

Illustration 1

