

# Racial/Ethnic Income Inequality Responses to a Government Maintenance Program in the US<sup>♦</sup>

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## Abstract

In this study, we investigate the income inequality responses of blacks, whites, and Hispanics in the United States to the income maintenance program Temporary Assistance for Needy Families (TANF) using cross sections of state-level data. Our results show that this program indeed reduces income inequality but the impacts are not uniform across racial/ethnic groups. Specifically, we find that blacks have results that differ from those of the other two groups or those of the United States as a whole. These results are robust when using either the Gini or Theil measure of inequality.

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## 1. INTRODUCTION

Policy makers in a welfare state have, as a goal, the task of providing a social safety net for families and individuals who might have disruptions to their income earning capacity such that they do not fall below certain income thresholds. But policy makers cannot be sure whether the responses to social programs will be uniform when the population is disaggregated by certain characteristics such as age, family composition, race, etc. Indeed, Danzinger and Plotnick (1981) stated when thinking about how these programs effect the populous "...they deal differently with people having the same needs but different characteristics and they discourage work."

As a consequence of this attempt to provide a bottom income threshold for citizens, theory would suggest that these programs should help in reducing both poverty, in an absolute sense, and income inequality.

Although the inequality disparity between racial/ethnic groups has been documented what has not been done, to this point in the literature, is an examination of the effectiveness of given income maintenance programs in reducing income inequality when the population is disaggregated into racial/ethnic groups.<sup>1</sup> This work is a first attempt in that regard.

Past research by Gangl (2008) investigates whether there is a link between high levels of inequality and economic mobility, over time. If certain individuals, like women or blacks, are predominately found in the lower tail of the income distribution, then areas of the country where economic mobility is limited could experience heightened levels of entrenched inequality. Another plausible explanation for persistent differences in economic growth rates is ethnic diversity, which is supported by the research of Rupasingha et al. (2002) so it is not unreasonable to examine the impact of a given maintenance program by racial/ethnic group.

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<sup>1</sup> See Hoover and Yaya (2010) for differences in income inequality across racial/ethnic groups in the United States.

Additionally, Kuznets (1955) hypothesized that inequality would initially be positively correlated with economic development but that the relationship between growth and inequality would become negative at higher levels of development, thus having an inverted “U” shape. Later, Nielsen and Alderson (1997) use a panel of U.S. counties to find that the Kuznets hypothesis held for the period 1925 through 1970, where growth and income inequality had the expected inverted U-shape but that after 1970 there had been a “U-turn” in that relationship. The authors partly attribute this change to the racial composition of the population. Here, they promote the idea that racial “dualism” may have contributed to the inversion of the Kuznets curve because whites and blacks systematically find different employment opportunities and sources of income that leads to dual economies and persistent income inequality.

Gallet and Gallet (2004) confirm the earlier findings of Nielsen and Alderson (1997), stating that the Kuznets curve has been inverted. They find that the change “for Black Americans began...earlier than that for the aggregate and White Americans. Also, the income levels associated with the turning points differ...” The previous findings that income inequality responses to economic factors are not uniform, should mean that policy makers would be keenly interested to know how large government sponsored programs to provide social safety nets impact groups in the population.

In this work we look at the impact of a specific and costly government program, namely the combined Temporary Assistance for Needy Families (TANF) cash welfare and food stamp benefits for a family of three by state on income inequality of three racial/ethnic groups. Our disaggregated racial/ethnic cohorts are whites, blacks, and Hispanics.

Our results show that this program indeed reduces income inequality but the impacts are not uniform across racial/ethnic groups. Specifically, we find that blacks have results that differ from those of the other two groups or those of the United States as a whole.

The rest of the paper is organized as follows: the next section briefly discusses the income inequality measures used in this analysis. Section 3 describes the data and its sources. The next section provides analysis of the results with the final section providing conclusions and policy implications.

## 2. INCOME INEQUALITY MEASURES

In most cases, standard descriptive statistics give limited information about the nature of a distribution. Moreover, most of them fail to measure inequality sufficiently. For example, simple statistics such as variance and range have been used as an inequality metric in the literature; however, they have been heavily criticized for their inability to capture the pattern of distribution among the extremes (Temkin 1993). On the other hand, the Gini Coefficient and Theil Index are widely accepted in the literature as inequality metrics mostly due to their ease of interpretation.

We formulate the Gini by calculating:

$$GINI = \frac{1}{2n^2\mu} \sum_{i=1}^n \sum_{j=1}^n |y_i - y_j| \quad (1)$$

where  $\mu$  is mean income,  $n$  is the number of individuals in the group,  $y_i$  is the income of the  $i^{th}$  individual in the group,  $y_j$  is income of the  $j^{th}$  individual in the group. This coefficient lies between zero and one, with a higher Gini coefficient corresponding to a higher level of inequality. A zero Gini coefficient means perfect equality of incomes; whereas a coefficient of one means perfect inequality of incomes.

In addition, we calculate the Theil measure using:

$$THEIL = \ln(\mu_y) - \ln(\mu_{gm}) = \ln\left(\frac{\mu_y}{\mu_{gm}}\right) \quad (2)$$

where  $\mu_y$  is the arithmetic mean and  $\mu_{gm}$  is the geometric mean of the distribution of income. The Theil measure has the advantage of summing income inequalities within subgroups. The Theil always takes positive values. A zero Theil would indicate perfect equality where the geometric mean is equal to the arithmetic mean, mode, and median. However, when the Theil measure is greater than zero, the distribution of income is skewed to the right. The higher the Theil measure, the more unequal income is distributed.

There are fine differences between these inequality metrics. Unlike the Gini Coefficient, the Theil Index is not bounded by one. However, as stated in Campano and Salvatore (2006), the Theil "...addresses a very important socioeconomic question that is based on human characteristics. For large populations of humans, almost all human characteristics are normally distributed and hence symmetric distributions." The Theil measures the movement from the norm, which is critical for work on income distributions. However, the Gini Coefficient is the mostly commonly used metric thus it has wide appeal since it is more easily understood and calculated.

### **3. THE DATA**

This empirical study uses two different data sources. The first one provides data for combined Temporary Assistance for Needy Families (TANF) cash welfare and food stamp benefits for a family of three. The Committee on Ways and Means publishes data on this program by state in their report called "Background Material and Data on the Programs within the Jurisdiction of the Committee on Ways and Means," informally known as the "Green Book".

This book has been published since 1981 and we use the last 2 editions published in 2004 and 2008. The Green Book provides data and information on Medicare, Social Security, Unemployment Compensation, Foster Care and welfare.<sup>2</sup>

The second portion of the data is compiled from cross-section samples from the American Community Survey (ACS), provided by the Census Bureau. The Census Bureau screens approximately three million households annually. Data were collected in all 3,141 U.S. counties. The questionnaire allows the Census Bureau to collect several important variables such as personal and family income, employment status, educational attainment, age, and gender etc. Therefore, ACS is regarded to be one of the most complete and representative surveys in the United States. In order to match the combined TANF data provided in the Green Book, we have utilized the 2004 and 2008 cohorts of ACS.

One of the most important variables collected in ACS is personal income, which we used to calculate the income inequality of the racial/ethnic groups. Personal income is the sum of eight different sources of income in the ACS. These sources of income are wage or salary income, net self-employment income, interest, dividends, or net rental or royalty income or income from estates and trusts, social security or railroad retirement income, Supplemental Security Income (SSI), public assistance or welfare payments, retirement, survivor, or disability pensions, and all other income.

We also use these data to create an income inequality measure for family income. This variable is equal to the sum of all incomes of a family. For example, if a family of three people were surveyed: two adults and a child with one adult employed and earning \$50,000 per year, the other adult unemployed and a child with a part-time job earning \$4,000 per year, the ACS reports \$54,000 in family income. In the appendix, we present the results using family income.

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<sup>2</sup> <http://waysandmeans.house.gov>

Other variables collected were educational attainment. The responses of individuals are converted into actual years of schooling. A zero response corresponds to no schooling completed. The maximum level of schooling is twenty, which corresponds to a doctorate degree.

Table 1.a has the number of observations for each racial/ethnic group in each cohort in addition to income inequality measures (both Gini and Theil) for personal and family income. Using the Gini or Theil measure, inequality rose slightly from 2004 to 2008 for all groups and the U.S. This latter period reflects the beginning of the “Great Recession” so these results are consistent with other macroeconomic indicators of worsening conditions.

In addition, Table 1.b presents more detailed information for each racial/ethnic group and the entire country regarding income for both individuals and families. Personal and family income for whites was largest in the pooled sample and cross-sections. Interestingly, the pooled personal income for blacks and Hispanics are close to each other with blacks being slightly larger. However, when the family is used as the unit of measure, Hispanics had an average pooled family income that was nearly \$10,000 larger than blacks although still much smaller than that of whites. This result is even more striking given that Hispanics had the youngest population in the sample and the least education.

Table 2.a presents data on income inequality by individual racial/ethnic groups. The reader should note that the unit of measurement here is the same one used in the regression analysis that follows. We use the average state-level income inequality of each group for both sample years. This gives us variation that would have been absent had we simply used the three groups. For personal income, the greatest amount of inequality (using the Gini measure) was found among Hispanics at 0.5467 while the smallest found among blacks at 0.5252. These results reverse themselves when examining family income where Hispanics had inequality,

measured by the Gini, at 0.4987 while blacks had inequality of 0.5446. This result shows that the contributions from family members to family income among Hispanics not only help to raise the average level of income but lowers inequality among this group. This finding will be important in explaining some of the variation in responses to the combined TANF program by group since these results support the idea that individuals' use of family support is an important source of income pooling/smoothing.

In Table 2.b, we add state-level data for both personal and family income, education, unemployment rate, the size of the group, and the percent of the racial/ethnic group that is male. The differences across groups were stark. While the mean unemployment rate for whites was about 5 percent, which was close to the national average, the average unemployment rate for blacks was more than double at 12 percent. These differences continued throughout most of the variables used. For instance, the average level of schooling achieved by blacks was 12.76 years; by Hispanics 11.55 but for whites 13.50, which approximately corresponds to an associates degree, closely matching the entire U.S. population.

## 4. RESULTS

### Modeling

Following Hoover and Yaya (2010), we used the following regression model:

$$Inequality_{jit} = \alpha_0 + \alpha_1 Income_{jit} + \alpha_2 Income_{jit}^2 + \alpha_3 Education_{jit} + \alpha_4 Per\_Male_{jit} + \alpha_5 Unemployment_{jit} + \alpha_6 TANF_{jit} + \epsilon_{jit}$$

where *Inequality* is the Gini coefficient or Theil measure as defined in Equations 1 and 2, for racial/ethnic group *j* in state *i* at time *t*. The model is estimated for the full US sample, whites, blacks, and Hispanics for two time periods separately and a pooled regression. The pooled regression approach is appropriate when the groups to be pooled are relatively similar and the

model can be directly run using Ordinary Least Squares on concatenated groups. *Income* and *Income*<sup>2</sup> are used to capture any non-linearity between income and inequality; the *Education* variable is the average educational attainment of each cohort in state *i*. *Per\_Male* is the percentage of each group that is male in state *i*. We also control for the unemployment rate since it is an important determinant of income inequality. We also include our main coefficient of interest, TANF with *a priori* expectations that the estimated coefficient would be negative, suggesting that TANF benefits have lowering impact on income inequality by creating a limit on the lower tail of the distribution.

Ordinary Least Squares (OLS) method is susceptible to heteroscedasticity, which leads to bias and inefficiency in coefficient estimation. “Weighted Least Squares” is generally used to eliminate the effect of heteroscedasticity in the data. In our estimations, we used analytic weights where the variance of an observation is inversely proportional to the size of the cohort in each state. This method is appropriate when the observations represent the averages as in our study across the fifty states and the District of Columbia. Models estimated with WLS are more precisely estimated compared to OLS.

We also address the issue of endogeneity as it relates to the variables in question. The issue is important in this analysis, as there is a question of whether there is a greater need for a government maintenance program, such as TANF, in states that have higher overall inequality. For this purpose, an instrumental variable is selected that is uncorrelated with inequality but correlated with TANF. Hoover and Pecorino (2005) show that the absolute value of the margin of the last presidential vote is significantly related to federal government spending at the state level. What they find in particular is that this variable is correlated with spending in the “other” category of federal spending at the state level, which is the category, which programs like TANF

are funded through. Two-stage least square (2SLS) results, where government programs are instrumented with the margin of the vote, suggest that the WLS results are sufficient to address endogeneity concerns.

However, Galbraith and Hale (2008) posit that high state inequality is negatively correlated with voter turnout and positively correlated with the Democratic vote share, after controlling for race and other factors. We believe that our instrument is sufficiently different from the findings of the authors to validate its usefulness. The measure of inequality used by the authors is not a standard measure such as the Gini or Theil, which has great influence on the authors' results. In addition, by using the absolute value of the margin, we incorporate states that voted for and against the sitting president, which would nullify the impact of strict Democratic or Republican vote shares.

### **Impact of Independent Variables**

Programs like TANF are designed to act as social safety nets and as a consequence we would expect them to decrease income inequality for the population. However, we do not know if racial/ethnic cohorts of the population respond similarly to such programs. Finally, we will test whether these results are sensitive to the type of inequality measure used.

Table 3.a presents results of our instrumental variables analysis using the Gini coefficient as the inequality measure. In the first panel, we have results for the United States as a whole for the 2004 cohort, the 2008 cohort, and pooled results. We do find that that the results mostly support the position that income and income squared have a quadratic form of the type suggested by Kuznets. In addition, although not always statically significant at standard levels, it is reassuring that the sign on education is negative. Furthermore, we find that unemployment is positively correlated with income inequality. Most important for this work, we find strong

statistical significance for TANF as an effective policy instrument in decreasing inequality. Given that the last three decades has seen an increasingly larger share of income going to the top 1 percent of earners, the fact that TANF has a negatively statistically significant estimated coefficient shows the impact that this program has had.

However, when the sample is disaggregated to the racial/ethnic group level, we find that this policy variable yields varying results. The results are strongest and most consistent with the United States sample for whites. This is not surprising given that whites comprise the largest group in the sample. However, encouragingly the results are negatively statistically significant for Hispanics also.<sup>3</sup> What is less encouraging is the fact that the estimated coefficients that are presented in the third panel which contains the results for blacks are statistically insignificant. Although for 2008 and the pooled results, the estimated coefficients are negative, in none of the regressions are the estimated coefficients statistically significant at standard levels. This is surprising given that the sample size for blacks is larger than for Hispanics. As mentioned previously, Hispanics have larger average family incomes than blacks. In addition, the increases in family income come from the contributions of males. Indeed, the last panel shows that males significantly reduce income inequality for Hispanics but this result is not found for blacks. The impact of males does not appear for whites or the entire US population either but neither of these groups has average income as low as Hispanics.

Table 3.b presents the same results as Table 3.a using the Theil Index as the measure of inequality. As with the Gini, the Theil results show that unemployment is positively correlated with income inequality and education is negatively correlated. However, even using this more expansive measure of inequality, the estimated coefficients for TANF for blacks were statistically insignificant although mostly negative. This was not the case for Hispanics as the

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<sup>3</sup> This is true for the 2008 and pooled results but not for 2004.

results were consistently negatively significant. The effects of males are dramatic and stand in stark contrast to those of the both blacks and whites. But as stated previously, whites have higher average incomes and do experience statistically significant negative benefits from TANF regarding income inequality.

In the appendix to the paper, the same results are presented for both the Gini coefficient and Theil measure for family income. The results are not as strong as those presented for personal income.<sup>4</sup>

## **5. POLICY IMPLICATIONS and CONCLUSIONS**

In this analysis we examine the relationship of an important income maintenance program on income inequality. We find that combined TANF and food stamp benefits for a family of three are related to decreases in income inequality.

This is an important linkage between the stated purposes of such a program, providing a minimum standard of living for citizens, and decreasing income inequality. One could reasonably expect that without such programs the incomes of those in the lower tail of the income distribution would be even lower. This could lead to increasing levels of civil discord, which would not be beneficial for society.

However, the results are troubling when the data are disaggregated at the racial/ethnic group level. Whites and Hispanics respond to this policy instrument in a fashion similar to the country as a whole. Namely, the combined TANF benefits negatively and significantly reduce income inequality. This was not the case for blacks. The estimated coefficient for blacks was mostly negative when using the Gini or Theil measure of inequality for TANF, however never significant at standard levels.

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<sup>4</sup> In a previous version of this work, household income was used. Household income more closely matches data given from the Census. The results using household income are available from the authors upon request.

The implications for policy makers are many. It is not clear that a single policy instrument applied uniformly to disaggregated groups will lead to the same outcome for all. From earlier research in this area, and our work here, one of the findings explaining the differences in income inequality among racial/ethnic groups is the percentage of males. An area of emphasis for policy makers could be strengthening circumstances that lead to greater stability in incorporating males into each sub-group, which would increase average income and help reduce within-group inequality.

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**Table 1.a: Income Inequality of Racial Groups by Year**

<i>Personal Income</i>									
<b>Variable</b>	<b>Year</b>	<b>Obs</b>	<b>USA</b>	<b>Obs</b>	<b>Whites</b>	<b>Obs</b>	<b>Blacks</b>	<b>Obs</b>	<b>Hispanics</b>
<i>Gini</i>	Full	3,041,830	0.5594	2,419,357	0.5535	285,368	0.5387	337,105	0.5698
	2008	2,161,610	0.5617	1,695,542	0.5555	208,999	0.5380	257,069	0.5709
	2004	880,220	0.5497	723,815	0.5441	76,369	0.5378	80,036	0.5630
<i>Theil</i>	Full	3,041,830	0.5594	2,419,357	0.5780	285,368	0.5303	337,105	0.6168
	2008	2,161,610	0.6016	1,695,542	0.5867	208,999	0.5304	257,069	0.6218
	2004	880,220	0.5556	723,815	0.5423	76,369	0.5228	80,036	0.5918
<i>Family Income</i>									
<b>Variable</b>	<b>Year</b>	<b>Obs</b>	<b>USA</b>	<b>Obs</b>	<b>Whites</b>	<b>Obs</b>	<b>Blacks</b>	<b>Obs</b>	<b>Hispanics</b>
<i>Gini</i>	Full	3,041,830	0.5332	2,419,357	0.5312	285,368	0.5509	337,105	0.4915
	2008	2,161,610	0.5358	1,695,542	0.5340	208,999	0.5504	257,069	0.4925
	2004	880,220	0.5219	723,815	0.5186	76,369	0.5488	80,036	0.4835
<i>Theil</i>	Full	3,041,830	0.5339	2,419,357	0.5314	285,368	0.5600	337,105	0.4474
	2008	2,161,610	0.5419	1,695,542	0.5399	208,999	0.5609	257,069	0.4508
	2004	880,220	0.5018	723,815	0.4969	76,369	0.5496	80,036	0.4257

**Table 1.b: Socio-Economic Characteristics of Racial Groups by Year**

Variable	Year	USA				Whites				Blacks				Hispanics			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
<i>Personal Income, \$ (000)</i>	Full	35.61	49.38	0.00	1338.00	38.52	52.57	0.00	1338.00	25.19	30.61	0.00	819.00	23.53	32.80	0.00	941.00
	2008	37.13	52.58	0.00	1338.00	40.44	56.30	0.00	1338.00	26.08	31.95	0.00	819.00	24.23	34.26	0.00	941.00
	2004	31.88	40.20	0.00	824.00	34.02	42.21	0.00	824.00	22.74	26.46	0.00	534.00	21.25	27.48	0.00	654.00
<i>Family Income, \$ (000)</i>	Full	66.98	77.52	0.00	2158.10	71.07	81.56	0.00	2158.10	46.34	52.78	0.00	1302.20	55.09	59.09	0.00	1774.00
	2008	69.91	82.37	0.00	2158.10	74.58	87.13	0.00	2158.10	47.99	54.99	0.00	1302.20	56.96	61.78	0.00	1774.00
	2004	59.77	63.48	0.00	1165.00	62.85	66.00	0.00	1165.00	41.81	45.92	0.00	756.40	49.07	48.97	0.00	884.00
<i>Age</i>	Full	47.59	18.54	16.00	95.00	48.98	18.53	16.00	95.00	44.86	18.07	16.00	95.00	39.88	16.74	16.00	95.00
	2008	47.79	18.57	16.00	95.00	49.31	18.54	16.00	95.00	45.03	18.13	16.00	95.00	40.02	16.83	16.00	95.00
	2004	47.09	18.46	16.00	93.00	48.22	18.50	16.00	93.00	44.41	17.91	16.00	92.00	39.41	16.44	16.00	93.00
<i>Education</i>	Full	13.13	2.95	0.00	20.00	13.46	2.68	0.00	20.00	12.55	2.86	0.00	20.00	11.21	3.87	0.00	20.00
	2008	13.08	2.97	0.00	20.00	13.44	2.68	0.00	20.00	12.52	2.87	0.00	20.00	11.15	3.90	0.00	20.00
	2004	13.25	2.90	0.00	20.00	13.52	2.70	0.00	20.00	12.61	2.84	0.00	20.00	11.41	3.77	0.00	20.00

**Table 2.a: Descriptive Statistics of Dependent Variables for the Racial Groups by States**

Variable	USA					Whites				Blacks				Hispanics			
	Obs	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
<i>Personal Income</i>																	
<i>Gini</i>	102	0.5385	0.0240	0.4892	0.5965	0.5334	0.0213	0.4863	0.5766	0.5252	0.0282	0.3953	0.6111	0.5467	0.0332	0.4037	0.6150
<i>Theil</i>	102	0.5399	0.0552	0.4197	0.6773	0.5270	0.0482	0.4140	0.6553	0.5039	0.0584	0.2849	0.7024	0.5649	0.0804	0.2699	0.8196
<i>Family Income</i>																	
<i>Gini</i>	102	0.5183	0.0353	0.4360	0.7319	0.5154	0.0385	0.4360	0.7496	0.5446	0.0479	0.3378	0.6644	0.4987	0.0453	0.4027	0.6828
<i>Theil</i>	102	0.5050	0.0831	0.3478	1.0663	0.5019	0.0945	0.3479	1.1472	0.5586	0.0966	0.2183	0.8724	0.4676	0.0911	0.2953	0.8809

**Table 2.b: Descriptive Statistics of Independent Variables for the Racial Groups by States**

Variable	USA					Whites				Blacks				Hispanics			
	Obs	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Personal Income, \$ (000)	102	34.02	6.53	22.07	60.52	36.77	9.91	22.07	97.47	24.97	5.76	8.28	45.52	23.07	4.62	14.43	41.85
Family Income, \$ (000)	102	62.91	11.25	42.86	100.57	66.13	14.18	22.07	107.38	43.98	10.21	20.71	75.21	50.12	9.67	30.33	75.44
Education	102	13.58	3.57	12.38	49.02	13.50	0.61	12.38	16.83	12.76	0.51	11.77	14.45	11.55	0.73	10.11	13.51
Percentage of Males	102	0.48	0.01	0.44	0.52	0.48	0.01	0.46	0.52	0.48	0.09	0.39	0.86	0.50	0.04	0.39	0.61
Unemployment Rate	102	0.06	0.01	0.02	0.09	0.05	0.01	0.02	0.08	0.12	0.04	0.00	0.23	0.08	0.02	0.00	0.15
Size	102	29.82	35.23	2.86	221.20	23.72	24.49	1.78	131.97	2.80	3.96	0.01	17.68	3.30	9.59	0.04	76.68
Marginal Vote	102	8.60	11.41	0.00	45.50												
Combined TANF	102	725.93	128.10	525.00	1191.00												

**Table 3.a: 2SLS Estimation for the Income Inequality, Personal Income**

	USA			Whites			Blacks			Hispanic		
	2004	2008	Pooled	2004	2008	Pooled	2004	2008	Pooled	2004	2008	Pooled
Personal Income	0.0087 (0.84)	<b>0.0278**</b> <b>(2.16)</b>	<b>0.0130**</b> <b>(2.43)</b>	<b>0.0094**</b> <b>(2.05)</b>	<b>0.0092**</b> <b>(2.25)</b>	<b>0.0081***</b> <b>(3.05)</b>	0.0003 (0.04)	0.0153 (0.82)	0.0117 (1.54)	0.0048 (0.44)	<b>0.0296**</b> <b>(2.06)</b>	<b>0.0134**</b> <b>(2.06)</b>
Income Squared	0.0000 (0.18)	<b>-0.0003*</b> <b>(1.85)</b>	-0.0001 (1.55)	-0.0001 (1.32)	-0.0001 (1.44)	<b>-0.0001*</b> <b>(1.80)</b>	0.0000 (0.11)	-0.0002 (0.57)	-0.0001 (1.02)	0.0000 (0.05)	-0.0004 (1.66)	-0.0002 (1.65)
Education	-0.0228 (0.72)	-0.0003 (1.11)	<b>-0.0004*</b> <b>(1.82)</b>	0.0001 (0.01)	0.0009 (0.03)	0.0047 (0.34)	-0.0125 (0.57)	-0.0201 (0.57)	<b>-0.0308*</b> <b>(1.97)</b>	<b>-0.0274***</b> <b>(2.73)</b>	<b>-0.0509**</b> <b>(2.68)</b>	<b>-0.0270***</b> <b>(3.37)</b>
Percentage of Males	0.9428 (0.98)	0.2930 (0.26)	0.2940 (0.41)	0.5036 (0.60)	1.3151 (0.73)	0.9585 (0.99)	0.0344 (0.37)	0.0774 (0.23)	0.0906 (0.55)	<b>-0.5508***</b> <b>(4.87)</b>	<b>-0.6721***</b> <b>(2.72)</b>	<b>-0.4982***</b> <b>(5.26)</b>
Unemployment Rate	<b>0.8146**</b> <b>(2.41)</b>	-0.0162 (0.85)	-0.0077 (0.48)	<b>0.7954***</b> <b>(2.75)</b>	<b>0.9942*</b> <b>(1.95)</b>	<b>0.9527***</b> <b>(2.68)</b>	<b>0.4948***</b> <b>(4.78)</b>	0.9254 (1.36)	<b>0.6823**</b> <b>(2.57)</b>	0.1778 (0.65)	<b>1.2980**</b> <b>(2.15)</b>	<b>0.5803**</b> <b>(2.33)</b>
Combined TANF	<b>-0.0003*</b> <b>(1.89)</b>	<b>-0.0003**</b> <b>(2.51)</b>	<b>-0.0002***</b> <b>(3.14)</b>	<b>-0.0002*</b> <b>(1.88)</b>	<b>-0.0003*</b> <b>(1.81)</b>	<b>-0.0003***</b> <b>(2.80)</b>	0.0000 (0.15)	-0.0002 (0.84)	-0.0001 (1.19)	0.0000 (0.75)	<b>-0.0002**</b> <b>(2.14)</b>	<b>-0.0001**</b> <b>(1.99)</b>
Constant	0.2807 (0.59)	-0.0187 (0.03)	0.2638 (0.79)	0.1835 (0.36)	-0.1989 (0.23)	-0.0612 (0.12)	<b>0.5952***</b> <b>(3.04)</b>	<b>0.5322*</b> <b>(1.78)</b>	<b>0.6789***</b> <b>(4.50)</b>	<b>1.0564***</b> <b>(9.10)</b>	<b>1.0343***</b> <b>(3.99)</b>	<b>0.9106***</b> <b>(10.53)</b>
Observations	51	51	102	51	51	102	51	51	102	51	51	102

Dependent Variable is Gini Coefficient. Robust t statistics in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Table3.b: 2SLS Estimation for the Income Inequality, Personal Income**

	USA			Whites			Blacks			Hispanic		
	2004	2008	Pooled	2004	2008	Pooled	2004	2008	Pooled	2004	2008	Pooled
Personal Income	0.0198 (0.94)	<b>0.0652**</b> <b>(2.10)</b>	<b>0.0322**</b> <b>(2.54)</b>	<b>0.0199*</b> <b>(2.18)</b>	<b>0.0209**</b> <b>(2.76)</b>	<b>0.0196***</b> <b>(3.89)</b>	-0.0026 (0.15)	0.0353 (0.87)	0.0255 (1.56)	0.0126 (0.48)	<b>0.1022**</b> <b>(2.31)</b>	<b>0.0487***</b> <b>(2.85)</b>
Income Squared	-0.0001 (0.27)	<b>-0.0007*</b> <b>(1.78)</b>	-0.0003 (1.65)	-0.0002 (1.40)	<b>-0.0001*</b> <b>(1.83)</b>	<b>-0.0001**</b> <b>(2.33)</b>	0.0001 (0.28)	-0.0004 (0.59)	-0.0003 (0.99)	0.0000 (0.10)	<b>-0.0014**</b> <b>(2.03)</b>	<b>-0.0007**</b> <b>(2.49)</b>
Education	-0.0491 (0.80)	-0.0006 (1.15)	-0.0008 (1.65)	-0.008 (0.20)	-0.011 (0.20)	-0.0176 (0.64)	-0.0274 (0.62)	-0.0752 (1.00)	<b>-0.0844**</b> <b>(2.61)</b>	<b>-0.0605**</b> <b>(2.49)</b>	<b>-0.1488**</b> <b>(2.30)</b>	<b>-0.0707***</b> <b>(3.23)</b>
Percentage of Males	1.614 (0.83)	0.4779 (0.18)	0.621 (0.38)	0.7319 (0.42)	2.0115 (0.54)	1.6367 (0.83)	0.0558 (0.28)	0.3189 (0.44)	0.2901 (0.84)	<b>-1.1255***</b> <b>(4.53)</b>	<b>-1.6292**</b> <b>(2.11)</b>	<b>-1.0549***</b> <b>(3.85)</b>
Unemployment Rate	<b>1.6956**</b> <b>(2.35)</b>	-0.0217 (0.48)	0.0015 (0.04)	<b>1.4084**</b> <b>(2.36)</b>	<b>1.8364*</b> <b>(1.83)</b>	<b>1.6998**</b> <b>(2.48)</b>	<b>0.8794***</b> <b>(4.10)</b>	2.038 (1.42)	<b>1.4335**</b> <b>(2.57)</b>	0.3008 (0.47)	<b>3.9757*</b> <b>(1.99)</b>	<b>1.5784**</b> <b>(2.25)</b>
Combined TANF	<b>-0.0005*</b> <b>(1.95)</b>	<b>-0.0006**</b> <b>(2.61)</b>	<b>-0.0005***</b> <b>(3.57)</b>	<b>-0.0004*</b> <b>(1.84)</b>	<b>-0.0006*</b> <b>(1.65)</b>	<b>-0.0005***</b> <b>(2.64)</b>	0.000 (0.08)	-0.0005 (0.85)	-0.0003 (1.15)	-0.0001 (0.91)	<b>-0.0007**</b> <b>(2.07)</b>	<b>-0.0003**</b> <b>(2.39)</b>
Constant	0.1416 (0.15)	-0.6836 (0.55)	-0.1241 (0.17)	0.0391 (0.04)	-0.5473 (0.30)	-0.2653 (0.26)	<b>0.7182*</b> <b>(1.85)</b>	0.7857 (1.22)	<b>0.9963***</b> <b>(3.18)</b>	<b>1.6329***</b> <b>(6.08)</b>	<b>1.6321**</b> <b>(2.09)</b>	<b>1.2376***</b> <b>(5.15)</b>
Observations	51	51	102	51	51	102	51	51	102	51	51	102

Dependent Variable is Theil Index. Robust t statistics in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

## APPENDIX

**Table A1.a: 2SLS Estimation for the Income Inequality, Family Income**

	USA			Whites			Blacks			Hispanic		
	2004	2008	Pooled	2004	2008	Pooled	2004	2008	Pooled	2004	2008	Pooled
Family Income	0.0013 (0.41)	<b>0.0081**</b> <b>(2.47)</b>	<b>0.0049***</b> <b>(3.01)</b>	0.0009 (0.41)	0.002 (0.64)	0.0024 (1.54)	<b>-0.0077**</b> <b>(2.10)</b>	0.0019 (0.21)	-0.0019 (0.64)	-0.0041 (0.54)	<b>-0.0128*</b> <b>(1.84)</b>	-0.003 (0.60)
Income Squared	0.0001 (0.76)	<b>-0.0001***</b> <b>(2.71)</b>	<b>-0.0000***</b> <b>(3.21)</b>	0.0001 (0.80)	0.0001 (0.75)	0.0001 (1.35)	0.0001 (1.50)	0.0001 (0.27)	0.0001 (0.15)	0.0001 (0.20)	0.0001 (1.53)	0.0001 (0.18)
Education	0.0271 (0.94)	<b>0.0004***</b> <b>(4.08)</b>	<b>0.0003***</b> <b>(3.12)</b>	<b>0.0421**</b> <b>(2.16)</b>	<b>0.0629***</b> <b>(4.03)</b>	<b>0.0239**</b> <b>(2.24)</b>	<b>0.0464**</b> <b>(2.13)</b>	0.0493 (1.61)	<b>0.0247*</b> <b>(1.88)</b>	<b>0.0444***</b> <b>(4.61)</b>	<b>0.0494**</b> <b>(2.42)</b>	<b>0.0388***</b> <b>(4.02)</b>
Percentage of Males	<b>-1.4276*</b> <b>(1.79)</b>	<b>-1.4827**</b> <b>(2.31)</b>	<b>-1.3931***</b> <b>(2.74)</b>	-1.6441 (1.55)	-0.9373 (0.64)	-1.4159 (1.59)	-0.2277 (0.91)	0.0344 (0.12)	-0.1344 (0.90)	0.0345 (0.15)	-0.0546 (0.18)	-0.0532 (0.26)
Unemployment Rate	<b>0.7211*</b> <b>(1.89)</b>	<b>0.0464***</b> <b>(7.23)</b>	<b>0.0523***</b> <b>(7.39)</b>	0.0501 (0.14)	0.7125 (1.40)	0.1512 (0.47)	0.0548 (0.27)	0.7666 (1.17)	0.0405 (0.22)	0.4931 (1.59)	-0.4343 (0.48)	<b>-0.7435*</b> <b>(1.75)</b>
Combined TANF	0.0001 (0.56)	0.0001 (0.71)	0.0001 (1.02)	0.0001 (0.89)	0.0000 (0.34)	0.0001 (1.00)	<b>0.0002*</b> <b>(1.90)</b>	-0.0001 (0.42)	<b>0.0001*</b> <b>(1.75)</b>	0.0000 (0.32)	0.0001 (0.69)	0.0001 (0.96)
Constant	0.7139 (1.36)	<b>0.8864**</b> <b>(2.62)</b>	<b>0.9546***</b> <b>(3.96)</b>	0.6496 (1.30)	0.0677 (0.09)	0.7147 (1.63)	0.1723 (1.17)	-0.1357 (0.35)	<b>0.2817***</b> <b>(2.85)</b>	0.053 (0.21)	0.3655 (1.03)	0.2018 (0.86)
Observations	51	51	102	51	51	102	51	51	102	51	51	102

Dependent Variable is Gini Coefficient. Robust t statistics in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Table A1.b: 2SLS Estimation for the Income Inequality, Family Income**

	USA			Whites			Blacks			Hispanic		
	2004	2008	Pooled	2004	2008	Pooled	2004	2008	Pooled	2004	2008	Pooled
Family Income	0.0004 (0.07)	<b>0.0167**</b> <b>(2.59)</b>	<b>0.0108***</b> <b>(3.22)</b>	0.0012 (0.30)	0.003 (0.42)	0.005 (1.58)	<b>-0.0184**</b> <b>(2.23)</b>	0.0021 (0.12)	-0.006 (0.86)	-0.0074 (0.51)	-0.0218 (1.59)	-0.0032 (0.33)
Income Squared	0.0000 (0.49)	<b>-0.0001***</b> <b>(2.76)</b>	<b>-0.0001***</b> <b>(3.26)</b>	0.0000 (0.88)	0.0000 (0.60)	0.0000 (1.40)	<b>0.0001*</b> <b>(1.68)</b>	0.0000 (0.15)	0.0000 (0.16)	0.0000 (0.18)	0.0001 (1.32)	0.0000 (0.08)
Education	0.0786 (1.18)	<b>-0.0007***</b> <b>(4.56)</b>	<b>-0.0005***</b> <b>(2.97)</b>	<b>0.0984**</b> <b>(2.25)</b>	<b>0.1372***</b> <b>(3.66)</b>	<b>0.0457*</b> <b>(1.79)</b>	<b>0.1059**</b> <b>(2.06)</b>	0.0975 (1.66)	0.0478 (1.55)	<b>0.0850***</b> <b>(4.54)</b>	<b>0.0908**</b> <b>(2.29)</b>	<b>0.0733***</b> <b>(3.96)</b>
Percentage of Males	<b>-2.9608*</b> <b>(1.94)</b>	<b>-3.0341**</b> <b>(2.36)</b>	<b>-2.7532**</b> <b>(2.63)</b>	<b>-3.4224*</b> <b>(1.75)</b>	-1.9936 (0.67)	-2.9752 (1.63)	-0.4886 (0.83)	0.1739 (0.30)	-0.2297 (0.66)	0.2097 (0.51)	-0.0645 (0.11)	0.0075 (0.02)
Unemployment Rate	<b>1.4578*</b> <b>(1.80)</b>	<b>0.1007***</b> <b>(7.99)</b>	<b>0.1160***</b> <b>(8.30)</b>	-0.0326 (0.05)	1.2677 (1.25)	0.0188 (0.03)	-0.0349 (0.07)	1.6014 (1.24)	-0.0347 (0.08)	0.8118 (1.37)	-0.6689 (0.37)	<b>-1.5078*</b> <b>(1.88)</b>
Combined TANF	0.0002 (0.64)	0.0001 (0.85)	0.0002 (1.15)	0.0002 (1.08)	-0.0001 (0.22)	0.0002 (1.33)	<b>0.0004**</b> <b>(2.00)</b>	-0.0002 (0.38)	<b>0.0004**</b> <b>(2.08)</b>	0.0001 (0.35)	0.0002 (0.56)	0.0002 (0.92)
Constant	0.6943 (0.69)	<b>1.2408*</b> <b>(1.91)</b>	<b>1.3128***</b> <b>(2.71)</b>	0.6599 (0.70)	-0.4522 (0.32)	0.9635 (1.09)	-0.2867 (0.87)	-0.8272 (1.10)	0.0492 (0.22)	-0.4684 (1.03)	0.1623 (0.24)	-0.2135 (0.48)
Observations	51	51	102	51	51	102	51	51	102	51	51	102

Dependent Variable is Theil Index. Robust t statistics in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%