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An Evaluation of the Causes of Urban Poverty in America: A Cross Section Analysis

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AN EVALUATION OF THE CAUSES OF URBAN POVERTY IN AMERICA: A CROSS SECTION ANALYSIS

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science

By

JUAN LOREDO
Tecnologico de C. Madero, 1992

1998
Wright State University
I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION BY Juan Loredo ENTITLED An evaluation of the causes of urban poverty in America: A cross section analysis BE ACCEPTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF Master of Science.

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ABSTRACT


In this study, I analyze and evaluate the determinants of poverty rate differentials among 77 urban centers in the United States, as described by Isabel Sawhill (1988). The regression results show that demographic changes, education, welfare programs, unemployment rates, per capita income and income inequality are the most important factors that have a strong statistical link to urban poverty rates. Based on my analysis, the crime rate is not a statistically significant determinant of the rate of poverty among American families.
# TABLE OF CONTENTS

I. Introduction ................................................................................... 1

II. Literature Review ........................................................................... 3

Demographic Changes ............................................................ 3
Education ................................................................................... 5
Crime .......................................................................................... 6
Unemployment ........................................................................... 8
Earned Income .......................................................................... 8
Income Inequality ..................................................................... 9
Welfare Programs ..................................................................... 10

III. The model ......................................................................................... 13

Poverty Regression Equation ................................................... 13
Description of Variables ..............................................................15

IV. Results ........................................................................................... 17

Regression I, all variables ....................................................... 17
Correlation Diagnosis ............................................................. 19
Regression II, IQ constant ..................................................... 20
Regression III, FH constant ................................................... 23

V. Conclusion and Policy Implications ......................................... 25

Summary .................................................................................. 25
Policy Implications ................................................................ 27
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Results of Regression I</td>
<td>17</td>
</tr>
<tr>
<td>2. Correlation Analysis</td>
<td>20</td>
</tr>
<tr>
<td>3. Regression I (all variables included)</td>
<td></td>
</tr>
<tr>
<td>and Regression II (IQ constant)</td>
<td>21</td>
</tr>
<tr>
<td>4. Regression I (all variables)</td>
<td></td>
</tr>
<tr>
<td>and Regression III (FH constant)</td>
<td>23</td>
</tr>
</tbody>
</table>
I. INTRODUCTION

The high incidence of poverty in the United States urban areas has been a pervasive problem for many years. Many authors have argued about what economic and non-economic factors help to explain the persistence of inter urban poverty differentials. For example, according to some studies, one of the most important social factors that contribute to higher poverty rates is the growth in the proportion of the population of families headed by females.

Other authors explain the persistence of poverty as a result of the lower level of education in urban populations. Crime is a social factor that other economists cite as an explanation of poverty persistence. Still other economists argue that economic growth is accompanied not only by increases in income and employment rates of the poor families, but also by increased income inequality. On the other hand some factors such as a strong economy and the availability of government transfers reduce poverty rates. For example, studies have found that an increase in government expenditures on public welfare tends to increase the income of poor families.

This study will assess the possible reasons for the persistence of poverty in the United States in urban areas. Section II covers the literature
review on the topic of poverty. It will summarize the existing knowledge on the causes of poverty.

In Section III, I develop a general model to be used in formulating the regression equation and I set out the hypotheses to be tested. This section also provides a brief description of the data set. Section IV discusses the results from testing the model for the purpose of determining the significance of various causes of poverty. Finally, Section V presents the conclusions from this study and it explains what factors lead to increased or reduced poverty rates.
II. LITERATURE REVIEW

In this section, I describe different theories written by several authors concerned with poverty in urban centers. All of them have different explanations about the factors causing poverty.

Demographic Changes

This section focuses on the increasing poverty rate among women heads of households based upon the work of Sawhill (1988), Wrinkle (1979) and Ross (1987). I will then introduce my hypotheses which I will later substantiate with regression analysis.

According to Isabel Sawhill’s article “Poverty in the U.S.: Why is it so persistent?” demographic changes have resulted in increases in the overall poverty rate. Rapid growth in the number of households headed by women has the most evident impact of the demographic changes. Since this group is more susceptible to poverty, the overall poverty rate has increased over time.

Sawhill shows the impact of demographic changes on poverty rates from 1967 to 1985. For example, the poverty rate was 14.5 percent in 1967 and declined to 10.4 percent in 1973. The poverty rate then rose to 14.7 percent in 1983, which is the highest poverty rate registered. Her study
includes as demographic categories elderly heads, non-elderly male heads with children, non-elderly female heads with children and others heads.

The study concludes that overall poverty would have been 1.3 percent lower in 1985 if the proportion of households headed by women had not changed drastically compared with others heads of households (Sawhill, 1988, 1087).

Donald Wrinkle reaches a similar conclusion in his article “A Decline in Poverty in the United States, 1959-1974.” Through an empirical study, he explains that more poverty exists among households headed by women than by men. Wrinkle also found that poverty rates tend to be higher for unemployed heads of households than among employed heads. The purpose of Wrinkle’s paper is to explain the decline of the poverty rate of American families during that period. The poverty level has not been the same for all classifications of households. The decline in poverty rates for male heads of households has been almost double that of female heads of households (Wrinkle, 1979, 171).

Finally, Christine Ross, in her article “The Level and Trend of Poverty in the United States, 1973-1979”, uses census data from 1940 to 1980 to describe the proportion of groups living in poverty. Ross found that the overall poverty rate declined throughout the 40-year period, although the poverty rate for the different affected groups varied.

Ross studied the composition of heads of households by age, race, and sex from the census data from 1940 to 1980. She found that the percentage of families headed by white male heads of households between the ages of 25 to 64 dropped from 69.7 percent to 57.8 percent. In contrast,
the percentage of families headed by female heads of households, for all races, rose from 12.4 to 18.6 percent. The proportion of people living in categories most susceptible to poverty increased between 1969 to 1979.

She concludes that the increases in poverty due to the changes in demographic composition were primarily due to the increased number of female heads of households (Ross 1987, 587-596).

Education

Friederich Kahnert's 1986 study focuses on ways to improve urban incomes. Kahnert, in his article "Re-examining Urban Poverty and Employment", explains that education and health are the best ways to increase the worker's labor capacity and to achieve better incomes. Therefore, one of the main problems faced by residents of low-income urban neighborhoods, according to Kahnert, is access to primary education, compared for example to that access in rural areas.

The main point emphasized by Kahnert about education is that positive returns are obtained from primary education. These returns have an important impact mainly on labor productivity and hence on earnings. Kahnert suggests that programs created to improve the income-earning capacity of poor American families must focus first on improving the access to education. (Kahnert, 1986, 46)

Isabel Sawhill shares Kahnert's ideas about the implementation of social programs to improve education. Sawhill cites a 1964 statement from the United States Council of Economic Advisers. This Council was concerned with bringing poor families above the minimum income necessary to cover their most basic needs. One of the options it recommended, was
that the government provides help through social programs with the purpose of improving and expanding the nation’s education, and training. Ultimately these will increase the productivity and earnings of the poor. These programs included: Basic Educational Opportunity Grants (1972); the Job Corps (1964); and the Manpower Development and Training Act (1962). According to Isabel Sawhill, whether or not these programs have succeeded, is still unclear. She argues that human capital programs have not been adequately evaluated especially because their results have delayed effects. Therefore they can be analyzed only after many years of implementation (Sawhill, 1988, 1092).

Crime

James K. Stewart, in his article “The Urban Strangle: How Crime Causes Poverty in the Inner City,” argues that the crime rate has a strong influence on poverty rate. He theorizes that crime causes people to live under low income levels. Therefore, people cannot meet their basic needs and this occurs especially in urban centers. According to Stewart, poor people are honest and law-abiding but the existence of crime in their neighborhoods affects their economic progress.

When crime increases, property values of the poor decline. Stewart cites a study in Chicago where, for each one percent increase in crime rate, rents and homes values declined 0.2 to 0.3 percent. Additionally, one of the most important negative effects of crime is the decline in commerce and industry, which in turn affects the job market. Crime reduces the opportunities for employment, leading to an increase in poverty. According to Stewart, the majority of poor neighborhoods are located near the center of
inner cities where commerce is also mainly located. Crime results in diminishing investment in these areas, thereby reducing commerce and increasing costs for businesses that decide to stay. (Stewart, 1986)

Poverty forces poor people to stay in unsafe places making them more susceptible to the effects of crime. Therefore, the poor have to tolerate assaults, robbery, and burglary which over time reduces considerably the progress of the local economy. The effects of crime are long term. When increased crime arrives in a community, the first effect is a sense of fear. This reduces commercial activities because people commute to safer places. Local businesses decline even more. The businesses that decide to stay reduce the quality of their products and raise prices. People who are able, move to better places. Poor people often do not possess that ability. They have no options and must stay. This leaves the local economy in an increased state of deterioration and social life deteriorates as well (Stewart, 1986).

A vigorous attack on crime, according to Stewart, can stop the spiral of commercial decline and its incipient poverty. He argues that between 1980 and 1982 in East Brooklyn, the number of burglaries declined from 134 to 112 and street robberies dropped from 208 to 62. The results were the recovery of this community and attraction of more business investment. According to Stewart, twenty new firms moved into the area creating more jobs and improving the local economy (Stewart, 1986, 6-9).
**Unemployment**

Donald Wrinkle tries to answer the question, “Why did poverty rates in the United States declined sharply between the years 1959 to 1974?” I focus my attention on his analysis of the relationship between unemployment and families in poverty. According to his finding, a ten percent increase in the unemployment rate leads to a 2.3 percent increase in the poverty rate. Wrinkle concludes that policies designed to increase the employment level can be effective in reducing poverty (Wrinkle, 1979, 159-173).

Isabel Sawhill focuses her attention on the effects of recessions on the poor. A decrease in aggregate demand brings consequences such as increase in the unemployment rate, decrease in the number of hours worked and a reduction in the growth of real earnings. Sawhill cites the work of Gramlich and Loren in 1984. Using micro data, they found that when the unemployment rate rises, the income loss of families below the poverty line is three times larger compared to the loss for middle-income families. (Sawhill, 1988, 1089-1090).

Sawhill cites another important study made by Blank and Blinder in 1986. Using aggregate time-series regression they found that an increase of one percentage point in the male unemployment rate leads to an increase of 0.7 percentage points in poverty rate (Sawhill, 1988, 1089-1090).

**Earned Income**

Danziger (1986), in the article “The Impact of Secular and Cyclical Changes on Poverty”, establishes the relationships between earned income and poverty. According to Danziger, a continuous increment to income from
improved macroeconomic conditions results in a significant reduction in the poverty level.

Danziger states that income growth represents the main determinant for a significant reduction in the poverty rate over the past 30 years. However, the actual reduction in poverty has been offset due to a decline in the economic growth (Danziger, 1986, 408).

The relationship between the median family income earned and the number of families below the poverty line is established by Donald Wrinkle (1979) in a poverty model. Wrinkle (1979) tries to explain why the poverty rate in this 15 year period diminished drastically and what factors contributed to this fall. According to his results, a ten percent increase in family earned income leads to a reduction of twelve percent in the aggregate poverty rate for American families.

Furthermore, Wrinkle (1979) applies his investigation to different labor force classifications. Wrinkle (1979) found that a decrease in the poverty rate for heads of households who are employed occurs when earned income rises.

However, these increment earnings did not reflect any benefits for those who were unemployed. Wrinkle (1979) concludes that one possible interpretation of this result is that the effects of economic growth only provide benefits to the poor employed.

**Income Inequality**

Danziger (1986) discusses the effectiveness of economic growth in the reduction of the poverty rate. According to Danziger, the antipoverty effect of improved macroeconomic conditions can be offset by an increase
in income inequality. Changes in the shape of the income distribution as well as its mean alter the impact of economic growth on poverty. Danziger explains that according to some development economists, industrialization not only increases the median income but also increases inequality. Danziger concludes that in the absence of a more equal distribution of earnings, there is no reason to think that economic growth will substantially reduce poverty (Danziger, 1986, 405-407).

Sawhill (1988) states that the trend of income distribution powerfully influences poverty rate. Sawhill, like Danziger, concludes that economic growth cannot benefit the poor if this is accompanied by a less equal distribution of earnings. According to Sawhill, the phenomenon of income inequality is stronger and it continues to grow over time. Sawhill argues that some explanations for the growth of income inequality in the past 20 years are demographic changes, cyclical factors and changes in the industrial structure of the economy.

According to Sawhill, income inequality grows during recoveries as well as recessions. Therefore economic conditions got worse for poor American families between the period 1968-1988 making it even more difficult to lift these people out of poverty (Sawhill, 1988, 1089-1090).

**Welfare Programs**

According to some authors, one of the most significant ways to alleviate the persistence of poverty is through welfare programs. Christine Ross, a member of the Institute for Research on Poverty, studied the trend of poverty in the United States from 1939 to 1979. Ross made an analysis of the poverty reduction through increments in non-earned income. She found
an increase in the antipoverty effectiveness from 12.7 percentage point in 1949 to 15.8 in 1979. Ross concludes that government transfers were the main contribution to poverty reduction among other sources of non-earned income such as pensions, rents, dividends and interest in this period (Ross 1987, 589).

Donald Wrinkle studied the contribution of welfare payments on the reduction of poverty rate. Wrinkle’s model, relates the proportion of families below the official poverty line to real median family earned income. According to his findings, an increase of ten percent in welfare payments results in a decrease of two percent in the aggregate poverty rate. Therefore, Wrinkle concludes that the increase in welfare has a positive effect in the reduction of poverty rates (Wrinkle 1979, 161-173).

Morton Paglin in his article “Poverty in the United States: A Reevaluation,” discusses the significance of welfare programs. Paglin is concerned about the efficacy of income-transfer to the poor. He states that even when the main objective of the government is poverty reduction through welfare programs, this effort has been misdirected. According to Paglin, from 1959 to 1975, government increased its expenditures 7.0 times in housing transfers, 16.7 times in food and nutrition transfers and 15.3 times in medical services. As a result, the number of persons living in poverty declined by 15 million from 1959 to 1968. After this period according to Paglin, there was no decline, just fluctuations.

Paglin states that one possible explanation for this fluctuation is the work disincentive that transfers create through the substitution of earned income for non-earned income. Paglin argues that poor households receiving
a large part of their income from welfare tend to increase leisure and in consequence, to reduce hours of work. Furthermore, he points out that the provision of transfer income is free of inflation (Paglin 1986, 7-24).

Finally, Isabel Sawhill analyzes the impact of welfare programs. She cites an early study made by Danziger, Haveman, and Plotnick in 1981. According to the results obtained by these three economists, contradicting Paglin, welfare provides an important reduction in poverty rates and this effect grows as the amount of transfers rise. Sawhill in her own study found that social welfare expenditures between 1960 and 1984 reduced the number of poor families by 35 percent.

Sawhill also found that an increase in cash transfers payments from 1967 to 1985 reduced the poverty rate by 3 percentage points. The elderly group was the most benefited by this program, since the poverty rate declined by 12 percentage points over this period. Sawhill comes to two conclusions. First, she argues that poverty would be higher without the existence of transfer programs. Second, according to her, the increase of income transfers was an important factor in poverty reduction especially in the elderly group between the mid-1960s and the late 1970s (Sawhill 1986, 1096-1001).
II. THE MODEL

In this section, key determinants of poverty in the United States of American families are modeled. The model will be tested using cross section data for 77 urban cities in America.

Poverty Regression Equation

The poverty model postulates that the following factors are the primary causes for poverty within urban areas: Education (E), Violent Crime (C), Unemployment Rate (U), Income Inequality (IQ), Per Capita Income (I), Government Expenditures on Public Welfare (W), Female-Heads of Households (FH). The model takes the form:

\[ P = \beta_1 + \beta_2 E + \beta_3 C + \beta_4 U + \beta_5 IQ + \beta_6 I + \beta_7 W + \beta_8 FH + \epsilon \]

where \( \beta_1 \) is a constant term, \( \epsilon \) is an error term and \( \beta_2 - \beta_8 \) represent the regression coefficients for changes in education, crime, unemployment, income inequality, per capita income, government expenditures on public welfare and female headed households respectfully.

According to Frederich Kahnert and Isabel Sawhill and the Council of Economic Advisors, there is a link between level of education and income potential that reduces poverty rates. Thus, I hypothesize that the higher level of education, the lower the poverty rate will be.

According to the corresponding hypothesis for education, the response coefficient \( \beta_2 \) should show that an increase in education for urban
areas would tend to decrease poverty rates. I expect $\beta_2$ to have a negative sign.

James K. Stewart (1986) explains that there is a strong link between crime and poverty rates. Therefore, I hypothesize that reduction in crime rates in urban areas will reduce significantly poverty rates. I expect the parameter $\beta_3$ to have a positive sign. This will indicate that an increase in crime rates for urban areas will lead to an increase in poverty rates.

Wrinkle (1979) and Sawhill (1988) explain that unemployment rate is strongly linked to poverty rate. Therefore, I hypothesize that an increase in the level of unemployment rate leads to increase the number of poor families in the United States in urban areas. According to this conclusion, I expect $\beta_4$ to have a positive sign.

Danziger (1986) and Sawhill (1988) state that growing income inequality offsets the benefits yielded by improved macroeconomic conditions. Therefore, I hypothesize that the more unequal the distribution of income, the larger will be the number of families living in poverty. I expect $\beta_5$ to have a positive sign.

According to the literature, per capita income growth tends to offset the negative effects of poverty. From the analysis made by Danziger (1986) and Wrinkle (1979), I hypothesize that increments in earned income offset the growth of poverty. Therefore, I expect $\beta_6$ to have a negative sign.

According to Sawhill, Ross, and Wrinkle, welfare programs represent one of the major factors in poverty reduction. Therefore, I hypothesize that the larger government expenditures are in transfer programs, the lower the poverty rate. I expect the response coefficient $\beta_7$ to have a negative sign.
According to Sawhill, Ross, and Wrinkle, demographic changes have tended to increase the overall poverty rate. This is due to rapid growth in the number of households headed by women, since this group is more susceptible to poverty. Therefore, I hypothesize that an increase in the number of female headed households will lead to an increase in poverty rates. I expect \( \beta_8 \) to have a positive sign.

The primary source of data that I use to run this model was provided by the Center for Urban Policy Research (CURP). This agency provides data and information related to urban poverty, community development and forecasting and geographical information systems. It is mainly concerned with urban research into the design and implementations of policies.

The data set that I use in this study contains 2,570 variables corresponding to 77 cities in the United States. This data is a comprehensive description of social and economics conditions in America’s urban centers. I selected this data because it covers the variables included in my model and since it is updated, it can show current conditions about the factors discussed.

**Description of variables**

The array of variables to be used in this analysis are described as follows:

Poverty: It is the percent of families in poverty collected through 77 central cities in the United States in 1990.

Education: It is the percent of persons graduated from college in 1990. This variable corresponds to the data collection of 77 central cities in the United States.

Crime: It is the rate of violent crime in 1990. This rate corresponds to the number of offenses in a 100,000 population.
Unemployment: It is the rate of unemployment in 1990 in 77 central cities in the United States.

Income Inequality: It is a measure of income inequality (90-percentile/10 percentile) collected through 77 central cities in the United States in 1990.

Per Capita Income: It represents the per capita income collected through 77 central cities in 1990 in the United States and it is measured in current dollars.

Welfare: It represents the city government expenditures on public welfare in 1990 and it is measured in current dollars ($1000).

Female Headed of Households: It is the percent of female headed family households collected through 77 central cities in the United States in 1990.
III. RESULTS

In this section, the model described in the previous section is tested by using Ordinary Least Square (OLS) as the procedure to estimate the equation for a the cross section of 77 urban centers in the United States. Based upon the regression, I will evaluate the hypotheses set forth in the literature review section. My conclusions are to be discussed in Section IV.

Regression I, all variables

Regression I in Table I, provides estimates of the rate at which the poverty rate changes in response to the independent variables. The results from the first regression are as follows:

<table>
<thead>
<tr>
<th></th>
<th>P</th>
<th>s.e.</th>
<th>t-stat</th>
<th>R^2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4.60</td>
<td>2.070</td>
<td>2.22</td>
<td>0.9234</td>
</tr>
<tr>
<td></td>
<td>-0.2116</td>
<td>0.0494</td>
<td>-4.279</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.000697</td>
<td>0.00060</td>
<td>1.157</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.5340</td>
<td>0.171</td>
<td>3.109</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.106</td>
<td>0.182</td>
<td>6.080</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-0.000375</td>
<td>0.00011</td>
<td>-3.381</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-0.000000603</td>
<td>0.00000029</td>
<td>-2.048</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.2467</td>
<td>0.059</td>
<td>4.151</td>
<td></td>
</tr>
</tbody>
</table>

Table I
Results of Regression I.
Education shows a coefficient equal to -0.2116 and a t-statistic = -4.279. This variable is significant and the negative sign is the expected. The results show that an increase in education by ten percentage points reduces the poverty rate by 2.11 percentage points.

The equation indicates a coefficient for crime equal to 0.00069 and a t-statistic = 1.157. The positive sign is the expected. To test the significance of this and the subsequent regressors, I use the results obtained from their t-statistic. For crime factor, I got a t-statistic = 1.157. Using 70 degrees of freedom and 5% significance level, the critical values that lead to an area of 0.025 in a two tail distribution are t-critic = 2.0 and -t-critic = -2.0. Since (t-statistic = 1.157) < (t-critic = 2.0). Therefore, I conclude that crime rate is not a significant variable in the model.

Unemployment rate shows a coefficient equal to 0.53490 and a t-statistic = 3.109. My results indicate that this variable is significant and the positive sign is the expected. According to this result a ten percentage points increase in the unemployment rate leads to an increase in 5.3 percentage points in the number of American families living in poverty.

Income inequality shows a coefficient equal to 0.000375 and a t-statistic = 6.080. The results indicate that income inequality is significant and the positive sign is the expected. According to my finding, a ten percentage points increase in inequality leads to an increase in 0.0037 percentage points in the poverty rate. Note that this regressor has the highest value in its t-statistic over the rest of the regressors included in the model.

Per capita income shows a coefficient equal to –0.000375 and a t-statistic = -3.38. According to these results, this variable is significant and
the negative sign is the expected. This means that, since per capita income is measured in thousand current dollars then, an increase in $1000 in per capita income leads to a decrease poverty rate in 0.373 percentage points.

The results show a coefficient corresponding to welfare equal to -0.000000603 and a t-statistic = -2.048. This coefficient is significant and the negative sign is the expected. Since expenditures in welfare program are measured in thousands of current dollars, then the result explains that an increase in welfare programs by one million leads to a decline in the family poverty rates by 0.603 percentage points.

Finally, the estimated coefficient corresponding to female headed households is equal to 0.002467 with a t-statistic = 4.151. According to these results, this variable is significant and the positive sign is the expected. The coefficient explains that an increase of ten percentage points in female headed households leads to an increase of 0.0246 percentage points in poverty rates.

**Correlation Diagnosis**

An analysis of collinerity is used to test the possible linear association among the variables in the regression equation. Correlation analysis for all variables is shown in Table II. A commonly used rule of thumb explains that correlation coefficient between two explanatory variables greater than 0.8 or 0.9 indicates a strong linear association and therefore, the likely presence of collinearity between them.
Table II
Correlation Analysis

<table>
<thead>
<tr>
<th></th>
<th>Education</th>
<th>Crime</th>
<th>Unemp.</th>
<th>Income Ineq.</th>
<th>Per Cap</th>
<th>Welfare</th>
<th>Female-Head</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>1.0000</td>
<td>-0.1569</td>
<td>-0.2755</td>
<td>-0.1831</td>
<td>0.1425</td>
<td>0.0528</td>
<td>-0.3594</td>
</tr>
<tr>
<td>Crime</td>
<td>-0.1569</td>
<td>1.0000</td>
<td>0.2860</td>
<td>0.3487</td>
<td>0.0797</td>
<td>0.3662</td>
<td>0.2664</td>
</tr>
<tr>
<td>Unemp.</td>
<td>-0.2752</td>
<td>0.2860</td>
<td>1.0000</td>
<td>-0.3118</td>
<td>0.0962</td>
<td>0.1432</td>
<td></td>
</tr>
<tr>
<td>Income In.</td>
<td>-0.1831</td>
<td>0.3487</td>
<td>0.2730</td>
<td>1.0000</td>
<td>0.0776</td>
<td>0.1951</td>
<td>0.8420</td>
</tr>
<tr>
<td>Per Cap.</td>
<td>0.1425</td>
<td>0.0797</td>
<td>-0.3118</td>
<td>0.0776</td>
<td>1.0000</td>
<td>0.1669</td>
<td>0.2076</td>
</tr>
<tr>
<td>Welfare</td>
<td>0.0528</td>
<td>0.3662</td>
<td>0.0962</td>
<td>0.1951</td>
<td>0.1668</td>
<td>1.0000</td>
<td>0.0909</td>
</tr>
<tr>
<td>Fem. Head.</td>
<td>-0.3594</td>
<td>0.2664</td>
<td>0.1432</td>
<td><strong>0.8420</strong></td>
<td>0.2076</td>
<td>0.0909</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Looking at the values shown in Table II, according to the rule of thumb, collinerity is found between “female heads households (FH)” and “income inequality (IQ).” The correlation coefficient is 0.8420. Other than this case the correlation analysis suggests that multicollinearity is not a severe problem in the regression model.

**Regression II, IQ constant**

Regression II in table III, represents an attempt to reduce collinearity between FH and IQ in the model and estimate the independent influence of female headed households on poverty. As the reader can note, the income inequality regressor is constant keeping six variables in the model compared to Regression I. For female headed households, the resulting coefficient has increased from 0.2467 to 0.5590. The t-statistic also shows an increase from 4.151 to 14.82; that is, female headed households shows a stronger influence on the percentage of American families in poverty.
The results indicate that holding income inequality constant in the model affects also the result related to other variables. For example, education shows a negative sign and a decline in its coefficient from -0.2111 to -0.1024. The value for t-statistic declines from -4.27 to -1.763 that compared to a -t-critic = -2.0 means that education variable becomes insignificant in this model.

The estimated coefficient for crime rate rises from 0.00069 to 0.0015 and it shows a positive sign. The increase in t-statistic from 1.157 to 2.063 indicates the significance of this regressor in the model. According to this result, a ten percentage points increase in number of offenses per 100,000 population increases poverty rate in 0.015 percentage points.

The estimated coefficient for per capita income shows a negative sign and an increase in its coefficient from -0.000375 to -0.00055. The
value for t-statistic has increased from $-3.38$ to $-4.11$ indicating that per capita income is more significant.

The welfare coefficient shows a positive sign and a decrease in its coefficient from $-0.000000603$ to $-0.000000033$. The corresponding t-statistic has increased from $-2.04$ to $-0.903$. According to this result, welfare variable becomes insignificant in the model.

The female headed of household coefficient is positive and it shows an increase from $0.2467$ to $0.5590$. The corresponding t-statistic also shows an increase from $4.15$ to $14.85$. According to this result, female headed of household variable is more significant.

Changes in estimated coefficients and their significance can be explained by the coefficient of determination or R-square. In Regression II for example, the resulted R is equal to $0.8762$. According to this result $87.62\%$ of the variation of the percentage of families in poverty is explained by education, unemployment, per capita income, and female headed households (welfare and education resulted statistically insignificant and income inequality is constant). It means that only $12.38\%$ is left unexplained and it is due to the variation in the error term.

In Regression I, the Error Sum of Squares (ESS) is equal to $171.67$ with an R-square $= 0.9234$. Regression II resulted with an ESS $= 283.90$ and $R^2 = 0.8762$. Comparing the ESS of Regression I with Regression II is obvious that exists an increase in the error when income inequality is held constant. As a consequence, the imprecision of the model due to this increment in the error term in Regression II, affects the estimated coefficient and their significance.
Table IV
Regression I (all variables) and Regression III (Female-head of household constant)

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<tr>
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<td>s.e.</td>
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<td>(0.049)</td>
<td>(6.02E-4)</td>
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<tr>
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<td>(3.109)</td>
<td>(6.08)</td>
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<td>(-2.04)</td>
<td>(4.15)</td>
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</tbody>
</table>

R^2 = 0.9234

| III  | 4.88  | -0.3187 | 0.00047 | 0.4099 | 1.760     | -0.000193   | -7.85E-7 |       |
| s.e. | (2.325)| (0.0474) | (6.7E-4) | (0.190)| (0.1030) | (1.14E-4)   | (3.3E-7) |       |
| t-stat| (2.09)| (-6.715)| (0.709) | (2.154)| (17.075) | (-1.168)    | (-2.395) |       |

R^2 = 0.9014

Regression III, FH constant

In Regression III, referred in Table IV, female headed households is dropped in order to reduce collinearity in the model. The resulting coefficient for income inequality shows a positive sign and it has increased from 1.10 to 1.76. The t-statistic also shows an increase from 6.080 to 17.075 compared to the first regression. That is, inequality has a stronger positive influence on poverty.

The estimated coefficient for crime shows a positive sign and a decrease in its coefficient from 0.000697 to 0.000479. The corresponding t-statistic shows a decrease from 1.157 to 0.705. According to this result, crime variable becomes insignificant in Regression III.

The education coefficient is negative and it shows an increase from
-0.2116 to -0.3187. The t-statistic indicates an increase in significance from -4.27 to -6.71 when the female headed households variable is held constant.

The unemployment coefficient is positive and it shows a decrease from 0.5340 to 0.4099. Its t-statistic shows a decrease from 3.10 to 2.15 indicating the less significance of unemployment rate.

The estimated coefficient for per capita income is positive and it has declined from -0.000375 to -0.000193. The t-statistic has also declined from -2.048 to -1.68. According to this finding, per capita income is an insignificant variable in the model.

The welfare coefficient is negative and it has increased from -0.000000603 to -0.000000785. The t-statistic also shows an increase from -2.048 to -2.39 indicating that welfare variable is more significant.

Finally the coefficient of determination corresponding to Regression III has declined from 0.9234 to 0.9014. This reduction in the value of the R-square can explain again the changes in the coefficients and their significance. The ESS for this regression is equal to 226.11 compared to the ESS = 175.67 of Regressor I. This explains the lower value obtained for R-square in Regression III and how this increase in the imprecision of the model affects the estimated coefficient and making some regressors more significant than others or even insignificant.
V. CONCLUSIONS AND POLICY IMPLICATIONS

The paper examined different theories that try to explain why poverty is still a problem in the United States. According to the literature and the results from my regressions, the following factors are the most important influences on poverty: education, unemployment, earned income, income inequality, welfare programs and demographic changes. My results in section III did not support the theory that crime is one of the fundamental problems that must be solved to reduce poverty.

The paper is concluded with a brief discussion of the factor or determinants of poverty as well as the policy implications of the study.

Summary

The literature states that increases in education have an important impact on earnings. Therefore, a higher level of education will reflect a reduction in poverty rates.

My results do not support Steward’s theory that crime plays an important role in poverty for urban centers. In my regression presented in Section III, crime as the independent variable was insignificant since the data set does not support its inclusion in the model. Furthermore, there is not a vast amount of literature explaining the importance of crime as a determinant of poverty among urban areas. Crime rate is important as a
social problem but my research did not support its link to poverty rates in urban areas.

The study suggests that unemployment is strongly linked to poverty. Authors such as Wrinkle (1979) and Sawhill (1988) concur that an increase in this factor tends to reduce earnings, hours of work and therefore makes it harder to reduce poverty.

A factor frequently discussed by some authors, such as Danziger (1986) and Sawhill (1988), is income distribution. They argue that if economic growth is accompanied by a less equal distribution of earnings then economic conditions for families in poverty will not improve. My study found that on average, poverty level rises by 14 percentage points when income inequality increases by ten percentage points. Sawhill (1988) concludes that this phenomenon has been increasing over time even when macroeconomic conditions improve.

In contrast, authors such as Danziger (1986) and Wrinkle (1979) explain that per capita income growth is the main determinant in order to reduce poverty rate. The literature states that increases in income growth only yield benefits to the poor employed.


On the other hand, Ross (1987) and Wrinkle (1979) and Sawhill (1988) agree that welfare expenditures over time have reduced poverty rates and many people have left poverty thanks to these programs.
Finally, one of the strongest factors that increases poverty is the increase in the number of female-heads of household. Ross (1987) and Sawhill (1988) reinforce this theory when they found that this group of households tends to be highly susceptible to poverty effects. According to my results, a ten percent increase in the number of female-heads of households leads to an increment of four percentage points in the number of families living in poverty.

**Policy Implications**

The research suggests that government programs on education in the long run would improve the standard living for American families. Therefore, policies designed to increase investment in education should be effective in reducing poverty rates.

My research suggests that when unemployment rises by 10 percentage points, the number of families living in poverty rises by 5.6 percentage points on average. The literature used in my research indicates that policies designed to offset unemployment rates would lead to a significant reduction in the number of poor families.

According to the results, an increase of ten percentage points in per capita income leads to a decrease of 0.003 percentage points in the number of families living in poverty. Therefore, I conclude that a significant reduction in poverty can be affected by policies designed to increase per capita income through economic growth in the absence of income inequality.

My research supports this theory since I found that poverty declines by 0.00057 percentage points on average for every $1000 dollars invested.
Public expenditures on welfare programs have been demonstrated to be an effective means to alleviate poverty, since “The New Deal Legislation” of the 1930s.
APPENDIX

The following pages contain the results of the group of regressions used in this study. Each model was estimated in the Statistical Analysis System (SAS) and the original estimations are explained in Tables 5, 6 and 7. In this section, the reader would find parameters estimated for three different models. Table 5 contains the results for Regression I with all variables included. On other hand, Tables 6 and 7 contain the evaluation of Regressions II and III when variables FH and IQ are constant. Finally, Table 8 describes the correlation coefficients for seven variables.
**Table 5. Model and results corresponding to Regression I**

* families in poverty (all variables) *

libname in '1:\shared\classdata\fichtenbaum';

data trial;

set in.snc_21la;

proc reg;
model cc9pvfam = cc9coll fvcrm90 bm90uer cc9finq cm9pcap gf901wel cc9fhh;
run;

The SAS System

Model: MODEL1; All Variables Included
Dependent Variable: CC9PVFAM  Pct. of families in poverty

---

### Analysis of Variance

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<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
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<td>C Total</td>
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<td>2293.85104</td>
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### Root MSE: 1.71111  R-square: 0.9234

### Dep Mean: 14.03090  Adj R-sq: 0.9145

### C.V.: 12.19526

---

### Parameter Estimates

| Variable   | DF | Parameter Estimate | Standard Error | T for HO: Parameter=0 | Prob > |T| |
|------------|----|--------------------|----------------|-----------------------|--------|---|
| INTERCEP   | 1  | 4.603856           | 2.07079548     | 2.223                 | 0.0300 |
| CC9COLL    | 1  | -0.211644          | 0.04946075     | -4.279                | 0.0001 |
| FVCRM90    | 1  | 0.000697           | 0.00060277     | 1.157                 | 0.2520 |
| BM90UER    | 1  | 0.534058           | 0.17176183     | 3.109                 | 0.0029 |
| CC9FINQ    | 1  | 1.106941           | 0.18206690     | 6.080                 | 0.0001 |
| CM9PCAP    | 1  | -0.0000375         | 0.00011093     | -3.381                | 0.0013 |
| GF901WEL   | 1  | -0.000000603       | 0.00000029     | -2.048                | 0.0449 |
| CC9FHH     | 1  | 0.246720           | 0.05944231     | 4.151                 | 0.0001 |
Table 6. Model and results corresponding to Regression II

* families in poverty (cc9finq constant)
*

```
libname in '1:\shared\classdata\fichtenbaum';
data trial;
set in.snc_211a;

proc reg;
model cc9pvfam = cc9coll fvcrm90 bm90uer cm9pcap gf901wel cc9fhh;
run;
```

The SAS System

Model: MODEL1
Dependent Variable: CC9PVFAM  Pct. of families in poverty

```
Analysis of Variance

Source    DF    Sum of Squares   Mean Square   F Value
Prob>F

Model      6    2009.94993   334.99166   71.977   0.0001
Error      61    283.90111    4.65412   
C Total    67    2293.85104   

Root MSE    2.15734
Dep Mean    14.03090
Adj R-sq    0.8762
C.V.        15.37563

Parameter Estimates

Variable    DF    Parameter Estimate    Standard Error    T for H0: Parameter=0    Prob > |T|

INTERCEP    1    5.874783    2.59749617    2.262    0.0273
CC9COLL     1    -0.102435   0.05810183   -1.763    0.0829
FVICRM90    1    0.001527    0.00074022    2.063    0.0434
BM90UER     1    0.755069    0.21164974    3.568    0.0007
CM9PCAP     1    -0.000555   0.00013479   -4.118    0.0001
GF901WEL    1    -0.000000332 0.00000037   -0.903    0.3699
CC9FHH      1    0.559042    0.03770820   14.825    0.0001
```

31
libname in '1:\shared\classdata\fichtenbaum';
data trial;
set in.snc_211a;

proc reg;
model cc9pvfam = cc9coll fvcrm90 cc9finq bm90uer cm9pcap gf901wel;
run;

The SAS System

Model: MODEL1
Dependent Variable: CC9PVFAM  Pct. of families in poverty

Analysis of Variance

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<th>Source</th>
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<td>2293.85104</td>
<td>3.70676</td>
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</tr>
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</table>

Root MSE 1.92530  R-square 0.9014
Dep Mean 14.03090  Adj R-sq 0.8917
C.V. 13.72183

Parameter Estimates

| Variable  | DF | Parameter Estimate | Standard Error | T for H0: Parameter=0 | Prob > |T| |
|-----------|----|--------------------|----------------|-----------------------|--------|---|
| INTERCEP  | 1  | 4.885890           | 2.32875591     | 2.098                 | 0.0400 |
| CC9COLL   | 1  | -0.318786          | 0.04747150     | -6.715                | 0.0001 |
| FVCRM90   | 1  | 0.000479           | 0.00067564     | 0.709                 | 0.4811 |
| CC9FINQ   | 1  | 1.760002           | 0.10307419     | 17.075                | 0.0001 |
| BM90UER   | 1  | 0.409977           | 0.19031264     | 2.154                 | 0.0352 |
| CM9PCAP   | 1  | -0.000193          | 0.00011459     | -1.680                | 0.0980 |
| GF901WEL  | 1  | -0.0000000785      | 0.000000033    | -2.395                | 0.0197 |

Table 7. Model and results corresponding to Regression III
* families in poverty (cc9fhh constant)
*;

The SAS System

Model: MODEL1
Dependent Variable: CC9PVFAM  Pct. of families in poverty

Analysis of Variance

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<th>F Value</th>
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<td>3.70676</td>
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</table>

Root MSE 1.92530  R-square 0.9014
Dep Mean 14.03090  Adj R-sq 0.8917
C.V. 13.72183

Parameter Estimates

| Variable  | DF | Parameter Estimate | Standard Error | T for H0: Parameter=0 | Prob > |T| |
|-----------|----|--------------------|----------------|-----------------------|--------|---|
| INTERCEP  | 1  | 4.885890           | 2.32875591     | 2.098                 | 0.0400 |
| CC9COLL   | 1  | -0.318786          | 0.04747150     | -6.715                | 0.0001 |
| FVCRM90   | 1  | 0.000479           | 0.00067564     | 0.709                 | 0.4811 |
| CC9FINQ   | 1  | 1.760002           | 0.10307419     | 17.075                | 0.0001 |
| BM90UER   | 1  | 0.409977           | 0.19031264     | 2.154                 | 0.0352 |
| CM9PCAP   | 1  | -0.000193          | 0.00011459     | -1.680                | 0.0980 |
| GF901WEL  | 1  | -0.0000000785      | 0.000000033    | -2.395                | 0.0197 |

32
Table 8. Correlation Diagnosis

* Correlation Analysis
* families in poverty
*

libname in 'l:\shared\classdata\fichtenbaum';

data trial;

set in.snc_211a;

proc corr;
var cc9coll fvcrm90 bm90uer cc9finq cm9pcap gf901wel cc9fhh;
run;

The SAS System
Correlation Analysis

7 'VAR' Variables: CC9COLL FVCRM90 BM90UER CC9FINQ CM9PCAP GF901WEL CC9FHH

Simple Statistics

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The SAS System
Correlation Analysis

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

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BIBLIOGRAPHY


