Winners and Losers in the Economic Downturn: Child Poverty from 1990 to 2009

By

Carla Shoff
Department of Agricultural Economics and Rural Sociology
and The Population Research Institute
The Pennsylvania State University
13 Armsby Building
University Park, PA 16802-6211 U.S.A.
cms534@psu.edu

Diane K. McLaughlin
Department of Agricultural Economics and Rural Sociology
and The Population Research Institute
The Pennsylvania State University
110C Armsby Building
University Park, PA 16802-6211 U.S.A.
dkk@psu.edu

Tse-Chuan Yang
Social Science Research Institute
The Pennsylvania State University
803 Oswald Tower
University Park, PA 16802-6211 U.S.A.
tuy111@psu.edu

Vivian Yi-Ju Chen
Department of Statistics
Tamkang University
151 Ying-Chuan Road
Tamsui, Taipei County 251 Taiwan
viviyjchen@stat.tku.edu.tw

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Introduction

Almost one-fifth of children in the United States are poor, but rates of child poverty across counties in 2006-2008 showed substantial variation from 2.6 to 59.1 percent. The prevalence of child poverty has varied from decade to decade, at least in part, in response to economic conditions and demographic forces such as increases in female-headed households with children and shifts in jobs to a larger share of lower-wage employment opportunities. These shifts across decades also have varied across counties with different demographic and economic conditions. Equally interesting and useful to consider for understanding the forces behind child poverty are how the level or extent of change in child poverty varies across counties in the United States. Child poverty rates across counties in the US vary by over fifty percentage points, while changes in those rates from 1990 to 2000, for example, vary from -36 percentage points to almost 18 percentage points (Shoff and McLaughlin 2010). Even during a period of relative economic prosperity, the 1990s, over twenty percent of counties experienced marked increases in child poverty, while most showed declines. There is every reason to expect that these differences in change in child poverty across counties reflect both variations in the change in characteristics of these counties, but also potentially different processes by which changes in county demographic and economic characteristics are associated with growth or decline in child poverty. Beginning to understand these processes is the focus of this paper.

During the 1990s, the US economy experienced remarkable growth. Changes in global trade and increases in technology helped fuel this economic growth. However, this economic boom was followed by a time of slower growth and greater market instability in the 2000s, leading to the 'great recession' that began in 2007. Due to the economic differences between these two decades, it is essential to separately examine the changes in child poverty for the 1990 to 2000 and 2000 to 2009 time frames to better assess the potential processes associated with changes in child poverty.

Previous studies have concentrated on the spatial distribution of county-level child poverty rates (Friedman and Lichter 1998; Voss, Long, and Hammer 2006), however, these studies do not look at the changes in child poverty rates over time and the data used in these studies are from 1990. This study will look at the change in county-level percentages of children in poverty and whether demographic factors such as the changes in family structure, racial composition, immigrant influx, educational attainment, economic restructuring, the industry and employment base, and metropolitan status of counties are associated with changes in child poverty. This study adds to the existing literature by using the most recent county-level data on percentages of children in poverty—the 2005/2009 American Community Survey estimates, and examines whether the factors associated with change in child poverty differ across two time periods with different economic conditions.

To understand the forces affecting child poverty, it is critical to examine the factors associated with changes in county-level percentages of children in poverty in the United States. Because of the large variation in the percent of change, we are interested in identifying how these factors vary across the distribution of the change in child poverty (e.g., is demographic change more influential in counties with larger increases or decreases in child poverty). We are equally interested in how the determinants of change in child poverty vary spatially. While there are strong spatial patterns in child poverty rates across counties in the US, these patterns weaken when change in child poverty rates is examined (Shoff and McLaughlin 2010). In order to explore how the factors associated with change in child poverty vary spatially, but also

simultaneously vary across the distribution of change in child poverty, we use a geographically weighted quantile regression approach (Chen, Deng, Yang, and Matthews 2010).

With this analysis, we hope to answer the following research questions: (1) What are the factors that are associated with the largest decrease in child poverty (lower tail) and greatest increase in child poverty (upper tail) across counties in the US, and how do these factors simultaneously vary spatially? (2) How do the factors that are associated with largest decreases and increases in child poverty vary over two time periods with very different economic conditions? In addition, this paper will briefly review the methodology behind quantile regression (QR), geographically weighted regression (GWR), and then describe the modeling framework of the geographically weighted quantile regression (GWQR) approach.

Literature Review

Over the past few decades, poverty rates have remained high, with the majority of high poverty counties in nonmetropolitan areas (Lichter and Johnson 2007). Poverty rates in the persistently poor counties, which are counties with poverty rates of 20 percent or higher over the past four census decades, have remained very high, but the number of counties with very high poverty rates declined between 1990 and 2000 (Lichter and Johnson 2007).

Poverty rates among children are more likely to be highly concentrated and persistent over several decades than poverty rates among other age groups, and poor children in rural areas are more likely to be significantly over-represented in high poverty areas compared to the child age population overall (Lichter and Johnson 2007). Over half of nonmetropolitan children who are poor live in counties with child poverty rates over 20 percent (Lichter and Johnson 2007).

Previous research that examined the spatial distribution of county-level child poverty rates found concentrations of high child poverty rates in the Mississippi Delta and the historical "black belt," central Appalachia, the lower Rio Grande Valley, rural counties where Indian reservations are located, and some central city counties of major metropolitan areas (Friedman and Lichter 1998; Voss, Long, and Hammer 2006). These areas tend to have higher than average percentages of black and Hispanic populations, with one exception—Appalachia. Appalachia has a largely white population, but has historically been dependent on extractive industries for its economic base. Both high percentages or concentrations of minority populations (Lichter 1997) and reliance on extractive industries have been associated with high levels of poverty (Rural Sociological Society Task Force on Rural Poverty 1993). As minority populations have become more dispersed since the 1990s, the percentage of children in poverty may have increased in counties experiencing increases in minority populations. Increases in reliance on extractive industry employment, have a less clear relationship with child poverty. Such increases may be associated with a boom in natural resource extraction, which tends to temporarily improve economic conditions, possibly reducing child poverty. Loss of jobs in manufacturing and increases of jobs in services and retail trade tend to correspond with increases in poverty among female-headed families with children (McLaughlin and Coleman-Jensen, fc).

Family structure also has been associated with child poverty (Lichter 1997; Lichter and Eggebeen 1992) and with poverty generally (Lichter and McLaughlin 1995). Female-headed households with children living in nonmetropolitan areas experience high poverty rates (Snyder and McLaughlin 2004; Snyder, McLaughlin, and Findeis 2006), with two of every five such families and one of every four rural children under five years of age living in poverty (Albrecht and Albrecht 2000). Snyder et al. (2006) found female-headed households with a racial or ethnic

minority female household heads have even higher rates of poverty, as do those with low educational attainment. Increases in female-headed households with children are expected to be associated with increases in child poverty. Family poverty can cause child developmental problems and a decline in child and family well-being (Snyder, Brown, and Condo 2004).

Snyder and McLaughlin (2004) examine the factors that are associated with the likelihood of a female-headed family with children being poor using data from the 1980, 1990, and 2000 March Current Population Survey. They find that black female-headed families with children are .859 times and Hispanic female heads are .612 times more likely than white female-headed families to be poor. Snyder and McLaughlin (2004) also find that work effort and job quality are associated with poverty, such that female-headed families with children where the head had no job are 3.56 times more likely to be in poverty than those where female heads had a full-time good job (Snyder and McLaughlin 2004). Female family heads with less than a high school education are 1.34 times more likely to be in poverty than female family heads with more than a high school education (Snyder and McLaughlin 2004). The findings from these family-level analyses and from earlier studies (Lichter and McLaughlin 1995) support the importance of educational attainment and quality of local jobs as important factors affecting poverty of female-headed families with children. They also suggest factors, such as local job availability and changes in job availability that may be associated with changes in county-level child poverty.

Cotter (2002) examined the household and labor market area effects on poverty using data from the 1990 Census PUMS-L sample. He found that families in nonmetropolitan labor markets are .172 times more likely to be poor than families in metropolitan labor markets (Cotter 2002). He also found that a higher percentage of women in the labor force is associated with a lower likelihood that a family would be in poverty. Both the percentage in good jobs and the percentage in manufacturing decrease the likelihood that a family will be in poverty (Cotter 2002).

Higher poverty in a county can result in fewer resources being available or allocated to social services, education, and support for low-income families and children, further worsening circumstances for these children. Rural poor children often go without the resources they need to live a safe and healthy life. Poor children in counties with high poverty rates are likely to be the worst-off in terms of access to services and their parents are less likely to be able to attain the human capital or find jobs that will enable them to leave poverty. Increases in child poverty place the children living in these areas at greater risk for worse outcomes. If counties that already have characteristics associated with higher poverty are also those most negatively affected during periods of economic stress, then families and children in these counties are especially at risk.

Data and Methodology

The data used in this analysis come from multiple data sources. The 1990 and 2000 county-level Decennial Census data (US Census Bureau 1990; US Census Bureau 2000) and the 2005/2009 American Community Survey (American Community Survey 2005-2009) county estimates will be used to measure the dependent variable, *change in the percentage of children in poverty*, and the independent variables, with the exception of metropolitan status. The Economic Research Service 2003 Rural-Urban Continuum codes will be used to classify the metropolitan status of counties (Economic Research Service 2003). The dependent variable as well as all of

the independent variables (with the exception of the dichotomous independent variables) will be measured as first differences, for example, the 2000 (time 2) value minus the 1990 (time 1) value. First differences measure change in the variables, with a positive value indicating an increase in child poverty, for example, from time 1 to time 2 and a negative value indicating a decrease from time 1 to time 2.

This is a county-level analysis that includes all counties in the continental United States (N=3,109). For the analysis, two GWQR models will be used to explore the spatial non-stationarity in spatial quantile-based regression analysis for the change in child poverty from 1990 to 2000 and 2000 to 2009. This approach will allow us to describe the changing spatial patterns in the relationships among variables by constructing a set of conditional quantiles. GWQR takes into account both the distribution of the dependent variable as well as the spatial structure (Chen, Deng, Yang, and Matthews 2010). Following the procedure by Chen et al. (2010), the adaptive bisquare kernel weighting function will be used throughout the modeling process. By testing for spatial non-stationarity in spatial quantile-based regression, we will be able to determine if different relationships between variables exist in different geographical areas and across different parts of the distribution of change in child poverty (Chen, Deng, Yang, and Matthews 2010). The GWQR results will be estimated and summarized in a table along with the results of the spatial non-stationarity test. The local linear quantile estimates of the regression coefficients for five of the percentiles (5, 25, 50, 75, and 95) will be summarized into maps for each of the independent variables and the findings will be discussed. This approach will be particularly useful for examining the change in child poverty, because it focuses on the most extreme cases (high and low ends of the distribution) where the most change in child poverty has occurred, while classical regression approaches (i.e. OLS) and GWR only consider the mean.

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