

# **THE ROLE OF SMALL BUSINESS IN ECONOMIC GROWTH AND POVERTY ALLEVIATION IN WEST VIRGINIA: AN EMPIRICAL ANALYSIS**

By

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**ABSTRACT:** The main objective of the study is to empirically evaluate the critical roles of small businesses in economic growth and poverty alleviation in West Virginia. In OLS and 2SLS regression analysis a positive relationship exists between small business and economic growth. A strong inverse relationship also exists between the incidence of poverty and small business and economic growth. Thus, the empirical result establishes the linkage between small business, economic growth and the incidence of poverty.

**KEY WORDS:** Small Businesses, economic growth, Incidence of Poverty

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# **THE ROLE OF SMALL BUSINESS IN ECONOMIC GROWTH AND POVERTY ALLEVIATION IN WEST VIRGINIA: AN EMPIRICAL ANALYSIS**

## **INTRODUCTION**

Urban and rural economic structure in the United States has changed significantly over the past two decades (Dissart and Deller, 2000). After a decade of unprecedented expansion of the economy of the United States, many regions in West Virginia are still suffering from high unemployment, shrinking economic base, deeply rooted poverty, low human capital formation, and out migration (Deavers and Hope, 1992). West Virginia ranks second to last in per capita income and lags the nation and the rest of the Appalachian region in almost any other indicators measuring income, wealth, and health, making a classic example of persistent poverty (Dilger and Witt, 1994; Haynes, 1997; Maggar, 1990).

West Virginia is one of the nation's most rural states and economic restructuring across the nation has affected it in ways that are significantly different from the experience of urbanized regions. For example, while the decline of employment opportunities in extractive industries has had little direct impact in urban areas, West Virginia has lost direct mining jobs, even while production remained high. The slow growth of income and employment in the state, out-migration and the disappearance of rural households are both causes and effects of persistent high rates of poverty. This lagging economic development negatively affect the economic and social well-being of West Virginia's rural population, the health of its local businesses, and the ability of its local government to provide basic human services (Cushing and Rogers, 1996).

Widely dispersed small communities with relatively small local and regional markets dominate West Virginia. The businesses that serve these markets also tend to be small. Thus, considering one-by-one count, it is therefore tempting to dismiss small businesses as unimportant. Collectively, however, they make a large contribution to the economic diversity of small communities. In fact, small business is a big business in West Virginia. Through their capital investments they create jobs and new opportunities to promote community-building and social activities. They also contribute to the development of a diversified economy by absorbing surplus labor resulting from economic restructuring.

Improving the state's economic basis requires an economic environment where business can prosper. West Virginia, however, despite efforts of multilateral, national and local policy programs to induce economic prosperity and ameliorate poverty, has many economically depressed areas and regions. To strengthen and diversify the economy, policy makers and local leaders need to know the characteristics and impact of small businesses on the local economy. Understanding the characteristics of poverty and the contribution of small businesses to economic growth of the local economy is crucial in designing specific and appropriate development policies. The targets of such policies are to improve and expand community-based capabilities and initiatives in order to assist small communities to retain and expand local small businesses.

Understanding the relationship between small businesses, economic growth and the incidence of poverty has been the interest of many researchers and there have been many attempts to establish statistical relationships between poverty rates and overall macroeconomic performance on the basis of aggregate time-series data. However, some

studies have not only indicated contradictory evidence about the role of small businesses but also produced results that rejected the view that small business are the engines of job creation and economic growth (Rosenzweig, 1988; Brown et al., 1990; Liedholm and Mead, 1987).

The main objective of this paper is, therefore, to empirically evaluate the critical roles of small businesses in economic growth and poverty alleviation in West Virginia. More specifically the objectives are to:

- 1) examine the impact of small business development on the rate of economic growth of West Virginia; and
- 2) empirically assess the relationships between macroeconomic performance and the incidence of poverty in West Virginia.

## **LITERATURE REVIEW**

The history of small business has been one of the most controversial stories in economic development in the world. The role of small business in an economy has frequently been undermined and even misinterpreted. In the past, small businesses were believed to impede economic growth by attracting scarce resources from their larger counterparts (Audretsch, et al., 2000).

From the onset of the industrial revolution until the 1960s large corporations capitalizing on economies of scale were considered as the deriving force of growth and development (US Small Business Administration (SBA), 1998). The emergence of computer-based technology in production, administration and information has, however, reduced the role of economies of scale in many sectors. Many studies (Loveman and Sengenberger, 1991; Acs and Audretch, 1993) have shown a shift in industry structure

away from greater concentration and centralization towards less concentration and decentralization – a shift towards an increased role for small firms. This was mainly due to changes in production technology, in consumer demand, labor supply, the pursuit of flexibility and efficiency. These factors, in turn, led to the restructuring and downsizing of large enterprises and the entry of new firms. More and more evidence became available to indicate that economic activity moved away from large firms to small, predominantly young firms. Brock and Evans (1989), for example, provided an extensive documentation of the changing role of small business in the U.S. economy. Parallel with this literature, the changing patterns of consumer expenditure and demand patterns that resulted from rising living standards has contributed to the emergence of fragmented consumer markets. Moreover, many new business opportunities in small and medium size enterprises have been created as many large firms downsized their activities in an attempt to reduce costs. Thus, the alternative view is that small business is the key element and deriving force in generating employment and realizing economic development. This paradigm shift has, in turn, brought a revival in the promotion of small businesses and entrepreneurial initiative at local, national and international levels.

It is now well accepted both among academicians and policy makers that small businesses play a vital role in contributing to overall economic performance of countries (Dean et al.1996; Karlsson et al. 1993). Small businesses play an important role in community development by enticing private investment back into lagging areas and spread the benefits of economic growth to people and places too often left behind. Through their capital investments private small businesses and micro-enterprises create

jobs and new opportunities that promote community-building and social activities in the rural and small towns.

Hence, the economic contribution of small business to economic growth and job creation is now well recognized and established in the literature (Birch, 1979; Markusen and Teitz, 1985; Storey, 1994; O'Neill, 1993; Karlsson, et al., 1993). In his initial study, David Birch (1979), for example, reported that 80 percent of the jobs created between 1969 and 1976 in the U.S. economy were in firms employing less than 100 workers. Firms employing fewer than 20 workers generated 88.1 percent of net job growth and start-ups generated nearly as twice as many jobs as expansion of existing firms between 1980 and 1985 (Birch, 1987). Miller (1990) also found net employment growth in existing small rural firms to be much faster than in large firms over the period 1980-1986. Studies of the US economy in the 1990 showed that new firm births and small enterprise expansion were the major sources of job creation that played a significant positive role in regional economic change (Karlsson, et al., 1993). In most U.S. industries, small firms account for much of the capital stock, employment, and a large fraction of innovation (Acs and Audretsch, 1988, 1990). Research by the U.S. Small Business Administration showed that job creation capacity in the U.S. is inversely related to the size of the business. Between 1991 and 1995, the net job created in enterprises employing 1-4, 5-19, 20-99, 100-499 people were 3.843 million, 3.446 million, 2.546 million, and 1.011 million jobs respectively; whereas enterprises employing more than 500 people lost 3.182 million net jobs (U.S. Small Business Administration, 1999).

By creating jobs and promoting economic growth, small businesses play a critical role in poverty alleviation. Understanding the connection between small businesses,

economic growth and the incidence of poverty has been the interest of many researchers and there have been many attempts to establish statistical relationships between official poverty rates and overall macroeconomic performance on the basis of aggregate time-series data (Freeman, 2002; Haveman and Schwabish, 2000; Blank, 2000; Cain, 1998; Powers, 1995; Blank and Card, 1993; Cutler and Katz, 1991; Blank and Blinder, 1986; Gottschalk and Danziger, 1985). The results from these studies show an inverse relationship between economic growth and poverty rates. Blank and Blinder (1986), for example, found that both the unemployment rate and the inflation rate were positively related to poverty rate, with a high quantitative effect of unemployment. Cutler and Katz (1991), Blank (1993) and Powers (1995) also found similar results apart from the post recession period of the 1980s where unemployment rate was found to be inversely related to poverty rate. Using GDP growth rate as explanatory variable, Haveman and Schwabish (2000) tested the differential effect of macroeconomic performance on the poverty rate for various periods. Their result shows a strong inverse relationship between economic growth and poverty rate. They also showed that a one-percentage decrease in unemployment rate was associated with a 0.43 percentage point decrease in poverty rate between 1993 and 1998.

However, a number of studies have not only indicated contradictory evidence about the role of small businesses but also produced results that rejected the view that small business are the engines of job creation and economic growth (Armington and Odle, 1982; Dunne et al., 1989; Brown et al., 1990; Acs and Audretsch, 1993; Duncan and Handler, 1994; Harrison, 1994). Such studies show that although small firms exhibit higher growth rate in percentage terms, most new firms don't grow at all, and large start-

ups account for the larger share of new firm growth. Besides, while the gross rate of job creation and loss of jobs are higher in small firms; there is no systematic relationship between net job creation and firm size (Davis et al., 1993). Small businesses provide low quality jobs to their employees compared to large businesses. Empirical evidence indicates that large firms provide more stable employment, higher wages, and more non-wage benefits than small businesses (Rosenzweig, 1988; Brown et al., 1990). In addition, average firm size distribution does not indicate a growing dominance of small firms. Many small firms are established as last resort rather than as first choice and have limited growth potential (Liedholm and Mead, 1987). Recent research evidence also shows that small firms are not more innovative than large firms. Using a sample of European industries, Pagano and Schivardi (2001), for example, concluded that larger firm size is associated with faster rates of innovation.

Much of the empirical evidence on the relationship between small business and economic growth is derived from firm-level and cross-country studies. However, unlike the bulk of such studies, this study tries to establish a statistical relationship between small business development and economic growth using state-specific aggregate time-series data. Unlike much of the poverty studies at national level in the US, this study also tries to test the evidence from the time-series based poverty literature on the relationship between macrocosmic performance and poverty using new aggregate time-series data from West Virginia.

## METHOD OF ANALYSIS

### Empirical Model

The methodology employed in this paper involves the macroeconomic analysis of the linkages between small business development, economic growth and the incidence of poverty in West Virginia. The main objective of the study is to investigate the impacts of small business (Small and Medium Enterprise) expansion on the rate of growth of Gross State Product and on the incidence of poverty, while simultaneously controlling for other macroeconomic factors affecting economic growth and level of poverty. A priori, a change in small business employment leads to change in Gross State Product per capita, and a change in Gross State Product per capita in turn leads to change in the incidence of poverty, assuming other things to remain constant. But a change in small business employment may lead to a change in poverty without necessarily affecting the rate of growth in Gross State Product per capita. To evaluate these interrelationships, the following four econometric models are specified:

$$LRGSPPC_t = \alpha + \beta_1 LSME_t + \beta_2 LUNEMP_t + \beta_3 LGTPC_t + \beta_4 CLCPI_t + \beta_5 T + \varepsilon_{1t} \dots \dots \dots (1)$$

$$LPVT_t = \alpha + \beta_6 LDLRGSPPC_t + \beta_7 LDLPVT_t + \beta_8 LGTPC_t + \beta_9 CLCPI_t + \beta_{10} T + \varepsilon_{2t} \dots \dots (2)$$

$$LPVT_t = \alpha + \beta_{11} LSME_t + \beta_{12} LUNEMP_t + \beta_{13} LGTPC_t + \beta_{14} CLCPI_t + \beta_{15} LDLPVT_t + \beta_{16} T + \varepsilon_{3t} \dots \dots \dots (3)$$

$$LPVT_t = \alpha + \beta_{17} LSME_t + \beta_{18} LDLRGSPPC_t + \beta_{19} LGTPC_t + \beta_{20} CLCPI_t + \beta_{21} LDLPVT_t + \beta_{22} T + \varepsilon_{4t} \dots \dots \dots (4)$$

The descriptions and expected signs of the variables included in the above listed equations are given in Table 1.

Beside SME, the specification in equation (1) includes UNEMP as a proxy for business cycle effect on the rate of growth of Real Gross State Product per capita. Government Transfers to Persons per capita (GTPC) and the rate of inflation (CPI) are also included as control variables. The trend variable (T) is also included to reflect any aggregate trend in RGSPPC and  $\varepsilon_1$  is an error term.

**Table 1: Explanatory Variables used in the Empirical Analyses**

Name of Variable	Description of Variable	Expected Sign in equations	
		1	2-4
LSME	Log of Small Business Employment	(+)	N/A
LUNEMP	Log of Unemployment Rate	(-)	(+)
LGTPC	Log of Government Transfers to Persons per capita	(+)	(+/-)
CLCPI	Log difference of Consumer Price Indices	(-)	(+)
LDLPVT	One-period lagged Poverty Rate	N/A	(+)
LDLRGSPPC	One-period lagged Real Gross State Product per capita	N/A	(-)
T	Trend Variable	(+/-)	(-/+)

N/A = not applicable

In equations 2-4, a statistical relationship between the official West Virginia poverty rate and the overall macroeconomic performance as well as the employment generation capacity of small businesses is established. The explanatory variables are selected to reflect the various aspects of the macro-economy that are considered to affect the incidence of poverty in the state from 1980 to 2001. A lag in the dependent variable (LDLPVT) is included in the three equations to capture the dynamic effects of

macroeconomic shocks. Poverty tends to persist at the household level (Sawhill, 1988; Steven, 1990) and thus the impacts of changing macroeconomic performances on the incidence of poverty are expected to be sluggish. The official unemployment rate for the state (UNEMP) is included in equation 3 to capture the labor market opportunities among the poor.

The total Government Transfers to persons per capita (GTPC) is included in all the equations to capture the effects of government transfer on economic growth and incidence of poverty. The log difference of consumer price index (CPI) is included in the equations to control for any differential effect of the rate of inflation on economic growth and the level of poverty. A trend variable (T) is included to measure any drift in the poverty rate that is not explained by the macroeconomic-poverty relationship.

In equation 2, the linkage between the level of poverty and the growth rate of RGSPPC is specified. It is assumed that a high rate of economic growth leads to sustained increase in the productive capacity of the economy, which in turn leads to increasing employment opportunities. This process allows the progressive absorption and integration of the unemployed and the under-employed into the expanding economic activities with high levels of productivity. In the process, the poor may be able to achieve increases in their incomes in their existing employment or shift to new jobs involving higher skills and hence higher wages. Thus, RGSPPC is assumed to have a positive impact on the incidence of poverty. A one-year lag in RGSPPC is also used because it takes some time before the above-described process works out.

In equation 3, the linkage between the level of poverty and small business development is established. It is conceptualized that employment expansion in small

businesses leads to higher output productive capacity and higher wage expenditure. The increase in productive capacity in the small business sector affects the growth rate of the economy as specified in equation 1, which in turn affects the incidence of poverty as specified in equation 2. The employment expansions in small business also give wage-employment opportunities for the unemployed and under-employed. In the process, the poor may earn incomes that improve their poverty status. To evaluate the differential effect of the relative size of small business on the incidence of poverty, equation 4 is specified, which includes both SME and RGSPPC as explanatory variables.

The regression equations are estimated in double-log form using OLS on annual observations of time series data from 1980 to 2001. The estimates for the coefficients of the regression equations provide a direct measure of elasticity of the dependent variables with respect to each of the explanatory variables of the model.

In estimating regression equations using OLS it is assumed that the error terms are uncorrelated with the dependent variables. If this condition is not fulfilled, however, the estimates of OLS coefficients are biased and inconsistent. A typical case where this assumption does not hold true is when a variable that appears endogenous to the model is included into the equation as an explanatory variable. Our first regression equation is prone to this type of regression problem. Many empirical studies show that the rate of small business ownership or small business development depends primarily on the rate of economic growth measured by GDP per capita (Carree et al, 2002;Beck et al., 2003). Small business employment expansion is expected to be favorably influenced by the growth rate in RGSPPC.

To determine the problem of simultaneity bias, the two-stage Hausman (1978) procedure is applied. In the first stage, the suspected variable (SME) is regressed on all exogenous variables and instruments and the residuals are retrieved. In the second stage, equation 1 is estimated again by including the residuals from the first stage regression as an additional explanatory variable. If the problem of simultaneity bias is not present, the coefficient from the first-stage residuals should not be significantly different from zero. A lagged SME is used as an instrument since it is highly correlated (86%) with SME and is unlikely to correlate with the error term. The result of this test is given in Appendix 1.

To assess the robustness of the results from OLS estimation of equation 1 and to circumvent any simultaneity bias, Instrumental Variable (IV) regression is used. Equation 1 is estimated again using Two-Stages Least Squares (2SLS) technique with lagged SME as an instrumental variable. This procedure extracts the exogenous component of SME development in explaining the variations in RGSPPC.

### **Types of Data and Sources**

In the empirical analysis, measures of economic growth and levels of poverty are used as dependent variables. The growth in the Real Gross State Product per capita (RGSPPC) is used as a proxy for the growth rate in the economy. RGSPPC for West Virginia is calculated by dividing Real Gross State Product by the total resident population for each year for the years from 1980 to 2001. The data for Gross State Product is in 1996 dollar value whereas the data for the population are inter-census estimates of the total population for the state. Data from U.S. Census Bureau, Bureau of Economic Analysis and Population Estimate Branch are used for analysis.

The Headcount measure of poverty (PVT) is used as a proxy to the level of poverty in the economy. This is the percentage share of the population below the national poverty line. The official U.S. poverty rates for West Virginia from 1980 to 2001 are used and the data are collected from the Current Population Survey of the US Bureau of Census.

Small business (SME), lagged Real Gross State Product per capita (LDRGSPPC), Government Transfers to Persons per capita (GTPC), unemployment rate (UNEMP), and consumer price index (CPI), lagged poverty rate (LDPVT) and an aggregate trend variable (T) are used as explanatory variables in the empirical model.

SME is used to measure the impact of small businesses on economic growth and poverty alleviation. It is the percentage share of the total employment by private firms employing less than 500 workers in the total official private civilian labor force for the state. The data does not include railroad employees and self-employed persons. Although for consistence purpose the national less than 500 employees cut off point is considered to define the small and medium enterprises (SME), more than 60 percent of the employment in the state is in firms employing less than 100 workers. The sources for data employed to estimate SME are the U.S. Bureau of the Census, County Business Pattern in West Virginia from 1980 to 2001.

GTPC is the total amount of Government Transfers to persons divided by the total resident population. The source of data for Government Transfers to persons is the Regional Economic Information System of the Bureau of Economic Analysis.

UNEMP is the annual average unemployment rate, which measures the proportion of unemployed people of working age in the total civilian labor force. The

Consumer Price Index for all items (CPI-U) is used as a proxy to reflect historical estimates of inflation. The data for these measures are derived from the Bureau of Labor Statistics of U.S. Department of Labor.

## EMPIRICAL RESULTS AND ANALYSIS

### Small Business Development and Economic Growth

Table 2 depicts the results of OLS and 2SLS estimations of equation 1. The figures in column two are the OLS estimates and those in column three are 2SLS estimates. Since the equation is specified in double-log form, the coefficients represent elasticity of the dependent variable with respect to each of the explanatory variables. The log of RGSPPC is the dependent variable.

**Table 2: Results of OLS and 2SLS Regressions**

Variable	OLS: Equation 1	2SLS: Equation 1
Constant	4.599*** (1.353)	5.276*** (1.605)
LSME	0.826*** (0.286)	0.663** (0.364)
LUNEMP	-0.088** (0.039)	-0.089*** (0.033)
LGTPC	0.210** (0.099)	0.217*** (0.085)
CLCPI	-0.653* (0.372)	-0.744** (0.352)
T	0.004 (0.007)	0.004 (0.006)
Adjusted R <sup>2</sup>	0.988	0.987
Number of Observations	21	21

The numbers in parenthesis are robust standard errors

\*\*\*, \*\* and \* indicate level of significance at 1, 5 and 10 percent, respectively

According to the OLS results, the economic growth elasticity of small business employment expansion is 0.83. This indicates that the percentage share of small business employment (firms employing less than 500 workers) in the total civilian labor force

employment is highly associated with growth rate of Real Gross State Product per capita (RGSPPC). The coefficient ( $\beta_1$ ) for the log of SME is significant at one-percent level of significance with positive expected sign.

The relationship between SME employment expansion and economic growth is robust to controlling for other potential determinants of economic growth. The unemployment rate shows a strong counter-cyclical effect on economic growth. That is, it is significant at one-percent level of significance with the expected negative sign. A one-percentage point increase in the unemployment rate leads to a 0.088 percent decline in the Real Gross State Product per capita. The direction and strength of the relationship are also economically significant.

Government Transfers to persons per capita (GTPC) has the expected positive effect on economic growth. It is significant at one-percent level of significance. A one-percentage point change in GTPC leads to 0.21 percent change in RGSPPC in the same direction. This indicates that government transfer payment policy had a strong positive effect on the state's economic performance. The elasticity of RGSPPC with respect to the rate of inflation is  $-0.653$ , but, CLCPI is not significant.

From the OLS results presented in Table 2, it is possible to conclude that the relationship between the relative size of small business employment and the growth rate of the economy are robust. Since OLS is used, it is not possible, however, to determine whether small business development has a causal impact on economic growth. The results are subjected to the concerns of simultaneity bias.

To detect the problem of endogeneity, the two-stage Hausman's procedure is used. First, LSME is regressed on all exogenous variables and one-year lagged LSME

(LDLSME) as an instrument and the residuals are retrieved. Second, equation 1 is estimated again by including the retrieved residuals as additional explanatory variable. The results from the second regression show that the coefficient on the retrieved residuals is not significantly different from zero. This indicates that there is no endogeneity problem in our specification of equation 1 (see Appendix 1).

The 2SLS regression results also support the finding of the test of endogeneity. LSME is still positively related and significant at 5 percent level of significance even after controlling for endogeneity bias (see Table 2). This indicates that the exogenous component of small business employment expansion is strongly associated with economic growth in West Virginia.

### **The Linkage between Small Business, Economic Growth, and Poverty Alleviation**

To investigate the linkage between small businesses, economic growth, and poverty alleviation, three related OLS regression equations are used. First, we assessed whether RGSPPC growth rate has an impact on the incidence of poverty. Second, we examined the relationship between small business development and the incidence of poverty. Finally, we explored whether small business development affects poverty differently from its relation with the growth rate of the economy. The results of these OLS regressions are given in Table 3.

Column 2 in Table 3, presents the results of the regression of the log of poverty rate (LPVT) on the log of RGSPPC lagged by one period (LDLRGSPPC) plus one-period lagged poverty rate (LDLPVT), LGTPC, CLCPI, and T. These results show that RGSPPC demonstrates strong counter-cyclical effect on the incidence of poverty. The

poverty elasticity of lagged RGSPPC is  $-2.553$ . This confirms the expected inverse relationship between economic performance and poverty rate.

**Table 3: OLS Regression Results of Small Business, Economic Growth, and Poverty**

Variable	Equation 2	Equation 3	Equation 4
Constant	19.684*** (6.103)	15.686*** (5.986)	20.784*** (6.367)
LDPVT	-0.359* (0.220)	-0.380 (0.239)	-0.361 (0.233)
LDRGSPPC	-2.553*** (0.643)		-2.106*** (0.885)
LSME		-3.819*** (1.272)	-1.215 (1.625)
LUNEMP		0.325* (0.174)	
LGTPC	1.245*** (0.356)	0.664 (0.452)	1.252*** (0.362)
CLCPI	-7.499*** (2.090)	-5.003** (2.026)	-7.612*** (2.127)
T	-0.039* (0.023)	-0.044 (0.032)	-0.049* (0.027)
Adjusted R <sup>2</sup>	0.79	0.75	0.78
Number of Observations	21	21	21

The numbers in parenthesis are robust standard errors

\*\*\*, \*\* and \* indicate the levels of significance at 1, 5 and 10 percent, respectively

Government Transfers to persons per capita (GTPC) was included in the model to capture the effect on the incidence of poverty of any government transfer payment programs. LGTPC shows positive relationship and significant at one-percent level of significance, indicating a strong association between government transfer payment programs and poverty rate. This positive relationship is an indication that either Government Transfer Programs acted as disincentive to work and hence lead to lower income, or they have been in response to life maintenance rather than poverty reduction. It means that the amount of the government transfer payment was not enough to place the recipient above the poverty line.

Inflation rate (CLCPI) is negatively related to the poverty rate. Although this is contrary to our expectation based on economic theory, we feel that West Virginia provides a unique situation. The home ownership rate in West Virginia is 75.2 percent compared to the national average at 66 percent (2000). But since 42 percent of CPI is composed of housing, any change in consumer price index (CPI) is highly accounted by a change in costs associated with housing. One possible reason for this negative relationship could, thus, be an increase in inflation which favors homeowners through appreciation of values and rents. Since more than 75 percent of West Virginians own houses, the aggregate poverty rate tends to be negatively correlated with inflation.

The coefficient for the trend variable (T) is negative and significant at 10 percent level of significance, indicating a downward decline in the poverty rate. That is, the incidence of poverty in the state of West Virginia showed a declining trend from 1980 to 2001. Although insignificant, lagged poverty rate (LDLPVT) is inversely related with the current rate of poverty. A negative coefficient for the lagged dependent variable indicates a resistance to the declining trend in poverty rate.

The results of OLS regression of equation 3 are given in column 3 of Table 3. The coefficients for LGTPC, CLCPI, and T variables are similar to that of column 2. The coefficient for LSME is negative (-3.819) and significant at one-percent level of significance. A one-percentage point increase in the share of small business employment leads to 3.819 percentage point decrease in the incidence of poverty.

The results in column 3 of Table 3 also show that aggregate unemployment rate has a strong cyclical effect on the incidence of poverty. A one-percentage point increase in unemployment rate is associated with 0.325 percentage point increase in poverty rate.

The positive coefficient for LUNEMP variable is significant at 10 percent level of significance.

Column 4 in Table 3 presents the results of OLS regression of equation 4, which includes LDRGSPPC and LSME as macroeconomic determinants of the incidence of poverty. The rest of the explanatory variables in the equation are similar to those in equations 2 & 3. This procedure helps us to extract the autonomous component of small business effect on poverty. The results show that, while LDRGSPPC is negatively and significantly related, LSME is insignificantly related but with the expected sign to the incidence of poverty. This indicates that the autonomous effect of small business on poverty alleviation is not strong. Thus, much of the effects of small business on poverty alleviation reflected in the regression of equation 3 are through economic growth.

Overall, the results in Tables 2 & 3 provide the evidence that there is a strong link between small business development, economic growth and poverty alleviation. An increase in the percentage share of small business employment had a positive impact on economic growth and consequently reduced poverty in West Virginia from 1980 to 2001.

## **CONCLUSIONS**

In this study, the relationship between small business development, economic growth, and poverty alleviation in West Virginia is analyzed using time-series data from 1980 to 2001. Four econometric equations in double-log form are regressed using OLS and 2SLS. The results of these regressions show that:

- 1) There is a robust, positive relationship between the relative size of small business and economic growth, even when controlling both for a number of many other growth determinant variables and for simultaneity bias;

- 2) There is a strong inverse relationship between the relative size of small business and the incidence of poverty;
- 3) There is a strong inverse relationship between the per capita Real Gross State Product growth and the incidence of poverty;
- 4) The autonomous impact of the relative size of small business on poverty rate is mild and insignificant, indicating that the strong inverse relation given in (2) is through economic growth rather than a direct one. Thus, the anti-poverty impact of small business development is mainly through its impact on economic growth of the economy as given in (1). The empirical result establishes the link between small business development, economic growth, and poverty alleviation.

The study supports the anti-poverty impacts of small business development research findings. Besides, the empirical results and analysis show that unemployment rate has a strong counter-cyclical impact on economic growth and cyclical effect on the incidence of poverty. Government Transfer programs are positively related with the incidence of poverty, which may be because they act as disincentive to work or not high enough to put the recipient above the poverty line. This indicates that strong macroeconomic performance is a key factor for poverty alleviation.

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## APENDIX 1:

### Regression used for retrieving the residuals

Dependent variable: LSME

Variable	Coefficient	Standard Error	t-ratio	P[ T >t]	Mean of X
Constant	1.750333289	.80623386	2.171	.0464	
LDLSME	.6518547834	.18515797	3.521	.0031	4.4341545
LUNEMP	.3274110408E-01	.27937924E-01	1.172	.2595	2.2398271
LGTPC	-.3910507676E-01	.69263776E-01	-.565	.5807	8.0224075
CLCPI	-.2382194889	.24215226	-.984	.3408	.36434720E-01
T	.3529836498E-02	.48206686E-02	.732	.4753	12.571429

(Note: E+nn or E-nn means multiply by 10 to + or -nn power.)

### Regression for Testing Endogeneity

Dependent variable: LRGSPPC

Variable	Coefficient	Standard Error	t-ratio	P[ T >t]	Mean of X
Constant	5.276349072	1.9273018	2.738	.0160	
LSME	.6626341777	.43666437	1.517	.1514	4.4360713
LUNEMP	-.8882285348E-01	.39984213E-01	-2.221	.0433	2.2398271
LGTPC	.2173385369	.10199357	2.131	.0513	8.0224075
CLCPI	-.7444755031	.42234676	-1.763	.0998	.36434720E-01
T	.4101146032E-02	.70922370E-02	.578	.5723	12.571429
RESIDUAL	.2989990502	.59010741	.507	.6203*	-.71900158E-15

(Note: E+nn or E-nn means multiply by 10 to + or -nn power.)

\* Coefficient for residuals variable is insignificant indicating absence of endogeneity