

Role of Microenterprises in recovering U.S. Economy- Post 2008 Financial Crisis

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The purpose of this study is to assess the impact of micro enterprises in employment and income generation post-2008 financial crisis in United States. The paper uses a causal correlation research design employing Linear Regression and Kernel Regression analysis. It establishes a stronger positive correlation between employment and income creation as measured by annual payroll for micro firms than that for other firm sizes. The paper suggests that developing micro-enterprises have proven return on investment, making a case for further initiatives by the government and development organizations. Findings from this study will provide useful information to shape economic development policies.

Keywords: economic development, micro-enterprise, micro-financing, small business.

INTRODUCTION

The effect of small and micro-businesses on stimulating economic growth has been the focal point of many studies in the past three decades and gained more attention with the groundbreaking work of David Birch (Birch David, 1987) in which he emphasized that small businesses are the main source of job creation in U.S. economy. Recent studies (Muske & Woods, 2004) on the role of small business suggest the inclusion of micro-enterprise development in any comprehensive development plans in the economy as a method to further economic growth. Now in the face of financial crisis 2008, when the micro-sector has shown more resilience regarding employment generation, there is renewed interest in the role played by this sector in driving economic growth. The Organization for Economic Co-operation and Development (OECD) states that “In all countries, most businesses are micro-enterprises i.e. firms with less than ten employees; between 70%, and 95% of all firms are micro-enterprises” (OECD, p. 26, 2014). Given these facts, this study seeks to examine the role of micro-enterprises in employment and income generation in the recovery of U.S economy. Following the financial crisis of 2008, when big businesses have been shying away from new business ventures, the focus of national debates on business growth and job creation has been on the small businesses. The study evaluates the need for a shift in economic development strategies from big businesses to the small and micro businesses with an aim to generate sustainable growth.

Throughout the developing and the developed world, it is very common to find individuals engaged in small and informal business activities using very small amounts of capital and yielding very low income. These small business activities such as street vending, repair works, handicrafts, cleaning services, neighborhood eateries, are the existing micro-enterprises of the economy. Many times, these micro-businesses involve only one person who is the owner-employee of the business or includes unpaid members of the owner's family, commonly called the 'Mom and Pop' businesses. There are other participants such as limited paid employees as contractors, builders, caterers, etc. Thus, a micro-enterprise refers to very small businesses with minimal employees and capital.

There are varying definitions of the micro and small enterprises mainly based on two criteria: number of employees and capital used. The new threshold (effective 2005) which the European Commission uses to define micro, small and medium enterprises is based on the following criteria: the headcount, annual turnover and annual balance sheet total (Commission, European 2015). According to this criterion, a micro-enterprise is defined as a business which employs ten people or less and whose annual turnover or balance sheet total does not exceed 2 million euros. In the United States, the Small Business Administration (SBA) a government agency, defines a micro-enterprise as a small business employing five or fewer people and using not more than \$35,000 in startup capital. Since micro-enterprises are sometimes operated by a sole owner who is also the only employee, many refer to micro-enterprises as self-employment. They are often considered as a subset of 'small businesses' which by definition could include employees up to 500 in number.

Micro-enterprise development is an economic development strategy which focuses on the provision of technical and financial support for start-up and growth of very small businesses. The Association for Enterprise Opportunity (AEO), the trade association of microenterprise programs in the U.S, defines micro-enterprise development as "provision of support to businesses that require \$35000 or less to start up or expand, and that typically employs five or fewer individuals" (AEO, p.i 2003). Micro-enterprise development encompasses income generating strategies and services ranging from education, skill training, and financial capital to low-income and small entrepreneurs. The micro-enterprise programs are run by micro-enterprise development organizations (MDOs) which are mostly non-profit practitioners serving low-income, minority, and other disadvantaged people.

BACKGROUND OF MICROENTERPRISE DEVELOPMENT:

The emergence of the micro-enterprise sector in the United States has mostly taken place in the past three decades. Before the growth of the micro-enterprises, the business sector in the U.S. had traditionally been grouped into the large, medium and small business by the Small Business Administration (SBA) and all businesses employing less than 500 people were classified as Small Business by SBA. However, the SBA identified the micro firms as a distinct category in 1991.

Micro-enterprise development, as an income generating strategy, has a three-decade history in the U.S. The early micro-enterprise programs sprang up in the 1980s as a response to the inability of the traditional business system in offering economic opportunities to aspiring and needy small entrepreneurs who lacked access to mainstream financing.

Initially, micro-enterprise programs emerged in the U.S. in the form of community development and women empowerment programs, as the goal of the micro-enterprise development strategy was to promote businesses for people disadvantaged by gender, income or race. Prior to specific micro-enterprise programs in the 1980s, many women organizations had already started to provide education and self-employment opportunities to the women. At that time, the community development organizations had also identified self-employment as a viable option to raise the living standards of the low-income population. With the groundwork laid, these existing organizations started focusing on micro-enterprise development in the 1980s, and many more new MDOs emerged over a period. Community development organizations are increasingly using the micro-enterprise development strategy to alleviate poverty and to

develop local economies. Formal micro-enterprise training institutes were established across the country (e.g., The Micro-enterprise Development Institute at Carsey School of Public Policy and Economic and Community Development Institute (ECDI)). These institutes provide training and networking opportunities for practitioners in micro-enterprise development and micro-financing. In addition, SBA runs the Program for Investment in Microentrepreneurs (PRIME) which provides financial assistance to microenterprise development organizations or other organizations involved in delivering economic services to disadvantaged microentrepreneurs.

GROWTH OF MICRO-ENTERPRISE INDUSTRY

Since its beginnings in the 1980s, the micro-enterprise segment has emerged as a useful strategy for economic development. The micro-enterprise industry has grown tremendously, offering a broad range of financial and business services to the micro-entrepreneurs throughout the country. Microenterprise trade associations exist with increasing memberships, and many research and policy organizations have started focusing on the growing micro-enterprise field as a viable development strategy. The Association for Enterprise Organization is one of the pioneer trade associations which along with its hundreds of member organizations have been working on creating economic opportunities in this field. Another is the ASPEN Institute's Fund for Innovation, Effectiveness, Learning, and Dissemination (FIELD) project which intensively involves in researching, collecting and documenting data related to microenterprise field since its inception in 1991. FIELD, through its micro-tracker web-based program for aggregating data in the microenterprise field, makes it very easy for researchers and policy makers to get access to industry's data. FIELD releases a directory of micro-enterprise programs in the U.S every year which lists the financial data and other details about all such organizations. The first directory published in 1992 listed 108 organizations involved in this field which grew to 650 in 2002 and to 800 in 2010 (FIELD, FY 2010).

The AEO estimated that in the U.S, about 20.7 million micro-enterprises existed in 2001 according to a report by Aspen Institute in 2005 (Edgcomb & Klein, 2005). This report also estimates that 86% of all enterprises in the United States are micro-enterprises contributing about 16.6% to the total non-farm employment (Edgcomb & Klein, 2005). The growth of the micro-enterprise industry is also constantly tracked by FIELD through its micro-tracker program. However, FIELD's data is based on the micro-enterprises which respond to its annual surveys. FIELD's Census Fiscal Years 2008-2013 (based on micro-enterprises which reported) estimated that US micro-enterprise industry served about 357,958 individuals and disbursed 58,060 micro-loans amounting to \$ 361.7 million for the Fiscal Year- 2013. As compared to this only 116,944 individuals were served with 6,178 micro-loans amounting to \$ 68.6 million disbursed in the year 2008 (TABLE 4). An analysis of the SBA data shows that the number of micro firms (0-9 employee size) was 79.36% of the number of total firms in U.S in 2011 (TABLE 2). This analysis validates the OECD statement mentioned earlier in the paper that the share of micro enterprises is from 70% to 95% in the total enterprises.

ROLE OF MICRO-FINANCING IN THE GROWTH OF MICRO ENTERPRISES:

The terms micro-enterprise and micro-business are often used interchangeably. However, micro-enterprises are used more often to refer to a small business financed by micro-credit from microfinance institutions. Over the years, the microfinance industry has thrived and emerged as one of the major financial industry globally. The concept of microcredit was pioneered by Muhammad Yunus, founder of the Grameen Bank in Bangladesh, and recipient of Nobel Prize for his work in microfinance. Grameen Bank has been supporting micro-enterprise development by providing collateral free loans and other financial services to existing and potential micro-enterprises. The popularity of the Grameen Bank model led to the widespread growth of microenterprise development organizations (MDOs) all over the globe which is instrumental in providing comprehensive services to encourage the start-up and growth of micro-businesses.

The credit needs of the micro-enterprises are small, and it is not cost effective for the commercial banks to extend tiny loans to such enterprises. Typically these loans range from \$500 to \$50,000 in the USA. As a result, micro-enterprises have no access to formal banking systems and rely heavily on the micro-loans provided by microfinance institutions. Microfinance institutions offer a wide range of products from loans, insurance, savings accounts for the benefit of underserved and disadvantaged sections of the society. The most popular of the microfinance products are the micro-loans for the micro-entrepreneurs. In this research paper, we focus mainly on micro-loans or micro-credit for the purpose of our analysis. Early efforts in micro-financing in the U.S. were in the 1970s, with the starting of Shore Bank in Chicago, the country's first community development bank in 1973.

U.S Small Business Administration's PRIME program provides support to MDOs in the form of technical grants, capacity building grants and research and development grants to aid their clients' training and skill building program. Formal microfinance in the USA also flourished with the setting up of such MDOs in the 1980s. Many of the MDOs also have their indigenous loan programs designed specifically for the credit needs of micro businesses.

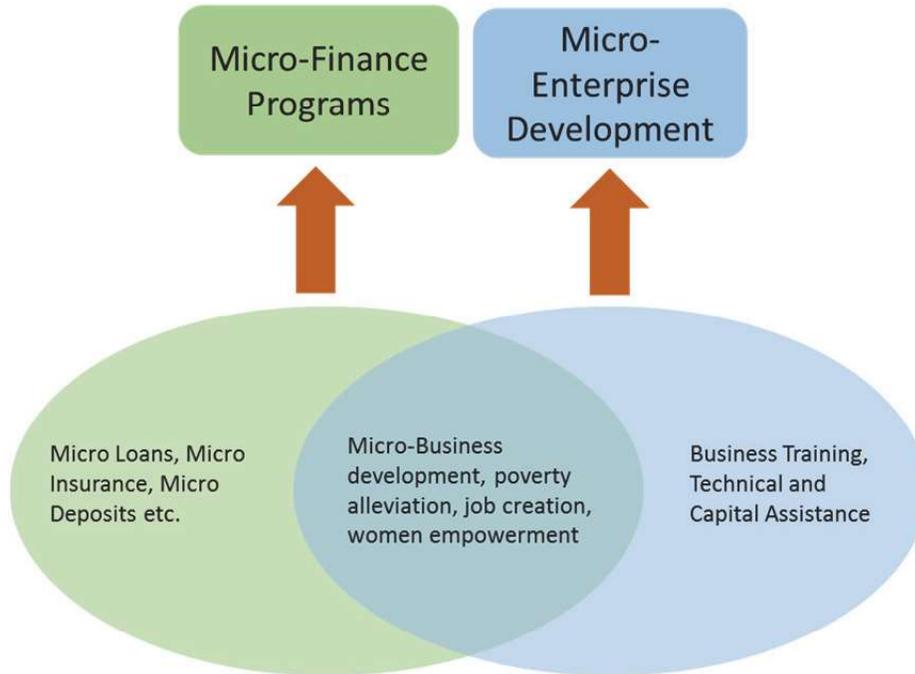
The classical model of microfinance, as adopted by the Grameen Bank, which offers collateral free small loans to groups of borrowers, has been successful and widely accepted. Most of the microfinance institutions all over the world are closely modeled after the elements of the classical model. Women and low-income entrepreneurs who were denied access to credit from formal financial institutions have been the main target clients of the microfinance institutions. Typically, the microfinance institutions not only provide micro-loan but also provide necessary business advice and training for running a business to its clients. Thus, micro-financing has become an important tool for promoting the growth of micro-enterprises resulting in the rise of living standards and stimulation of economic growth.

THE INTERDEPENDENCY OF MICRO-ENTERPRISES AND MICRO-FINANCE

Micro-finance and micro-enterprises have developed into two interrelated fields augmenting each other's growth. The broad goals of these fields overlap with respect to the target groups (women, working poor and other disadvantaged people), micro-business development, job creation and poverty alleviation schemes. The micro-financing institutions have now included business services with its lending programs, and micro-enterprise development institutions have included lending programs along with business and technical services for clients.

The interrelationship and interdependency of micro-finance and micro-enterprises are depicted in **FIGURE 1** which shows the common goals shared by both fields. The overlapping area highlights the focus of both micro-finance institutions and micro enterprises on business development, job creation, and poverty alleviation.

FIGURE 1
THE RELATIONSHIP BETWEEN MICRO FINANCE AND MICO-ENTERPRISE



In the United States, the micro-loans made by the MDOs and other microfinance institutions are characterized by very small size and flexible collateral requirements. The clients in microcredit are typically very low-income borrowers who lack verifiable credit history and the ability to provide collateral, and, therefore, have no access the traditional commercial banking. The access to microfinance institutions accelerates the process of micro-enterprise development and has become a major driver of the growth of micro-enterprises.

The microcredit practitioners in U.S typically follow two lending methods to make loans to micro-entrepreneurs: the individual lending model and the group lending model. The individual lending model comprises of loans provided directly to the individual micro-entrepreneurs or micro-business establishments. The collateral requirements are very flexible to facilitate the lending process to the low-income clients. In the group lending model, the loan is the collective responsibility of a group of borrowers. Loans are made to individual entrepreneurs who are members of a group which guarantees the repayment of the loans. On-time repayments qualify them for subsequent loans, but non-payment by one member prevents others from getting new loans. Some lending programs are hybrid programs and have credit services comprising both models. The microlending practitioners have also realized that micro-entrepreneurs need more than just credit to get their business running. Therefore, most microlending programs are coupled with other forms of business development assistance and services.

STUDY METHODOLOGY AND DATA

The main statistical techniques in this paper are linear and kernel regression for analyzing the data. The paper uses linear regression for calculating the correlation between the employment and the income (annual payroll) data for micro firms (0-9 employees) and large firms (500+ employees) in individual states as well as for the entire U.S. However, since the data for most of the states is sparse and scattered, linear regression could not give a clear picture of the relationship between the variables. Therefore, the study also performs 'Kernel Regression' as an estimation technique to fit the data. The Kernel regression methodology estimates the trends in the payroll growth for the micro firms and large firms and identifies the relationship between the payroll and employment variables.

Kernel regression methodology is a nonparametric estimation technique to fit in the data by using a kernel basis function $K_i(y_i, y_j)$ which assigns weight to each neighboring location y_i based on distance from the data point y_j where $i, j = 1$ to n . Here n are the total data points.

In this study, the dependent variable y_j is the income (annual payroll), and the independent variable x_j is the employment. The kernel regression gives \hat{y}_j which is the estimated value of income (annual payroll) for employment x_j . This estimated value of income (annual payroll) \hat{y}_j is the weighted average of all y_i points. The equation used in the Kernel Regression is Nadaraya-Watson Kernel weighted average (Wolberg, John 2000) as given below:

$$\hat{y}_j = f_j(y_j, y_j) = \frac{\sum_{i=1}^n y_i K_i(y_i, y_j)}{\sum_{i=1}^n K_i(y_i, y_j)} \quad (1)$$

This gives a set of points (\hat{y}_j, x_j) for $j = 1$ to n for fitting an Excel polynomial trend line.

Here the study uses the second order Gaussian Kernel $K_i(y_i, y_j)$ as the weight function in the kernel regression:

$$K_i(y_i, y_j) = \frac{1}{2\pi} e^{-\left(\frac{u_{i,j}^2}{2}\right)} \quad (2)$$

where $u_{i,j} = (y_i - y_j)/h$ and $h = C \sigma n^{-\frac{1}{5}}$

Here h is the bandwidth or tuning parameter which controls the degree of smoothing, n is the number of samples and σ is the standard deviation of y . The study uses Silverman Rule-of-Thumb constant $C = 1.06$ for Gaussian Kernel.

Once the Kernel regression analysis congregates the data and yields decent trend lines, the study performs cluster analysis on the data to group all states into three categories: high correlation (> 0.7) states, medium correlation (0.3-0.7) states and low correlation (< 0.3) states. The clustering is done on the data for two firm sizes: the 0-9 (micro-enterprises) and the 500+ (large enterprises). Since these two firm sizes exhibit distinct characteristics, they were purposely chosen for the comparison. The clusters B1, B2, B3, are made by grouping states with the high, medium and low correlation between employment and payroll with large firms (500+) as the criteria for selection. Whereas the clusters S1, S2 and S3 are made by grouping states with the high, medium and low correlation between employment and payroll with micro firms (0-9) as the criteria as shown in TABLE 5.

The data used in the study are mainly secondary data collected from two sources: Statistics of U.S. Businesses (SUSB) from United States Census Bureau and U.S Small Business Administration (SBA). The study takes seven years of historical data on employment and income from 2006 to 2012. The study uses the SBA's classification of firm sizes based on the number of employees. SBA classifies the firms into many categories starting with 0-4 employees size and going up to 5000 +. For the purpose of our analysis, the firms are grouped into five categories- 0-9, 10-49, 50-199, 200-499, 500-999, 1000-4999 and 5000 plus. The study mainly focuses on firm size 0-9 and 500+ for the comparison purpose. The firm size with 0-9 employees represents the micro firms in the study. For each firm size, the data is comprised of growth in the number of enterprises, the number of employees and contribution to income. First, the study computes the relative share of each firm size in employment and income out of the total for the United States. Then, the study performs regression analysis to assess the relation between the growth of enterprises (employment) and consequent growth in income generation. The classification of data on this basis further extends to the different States in U.S.

RESULTS

Data analysis establishes a positive correlation between the size of employment and the size of income (annual payroll) for the large firms (500 +) and also for the micro firms (0-9) in U.S. depicted by the **FIGURE 5** and **FIGURE 6** respectively. But, this positive relationship between Income (payroll) and the size of employment is more prominent with an increasingly positive trend in the micro firm size (**FIGURE 6**) as compared to that in the large firm size (**FIGURE 5**). The Excel polynomial trend line through the data set (\hat{y}_j, x_j) for $j = 1$ to n from the kernel regression shows that micro sector has a strong positive income trend whereas the large sector income trend line starts to taper off as the size of employment grows.

TABLE 5 shows how cluster analysis groups various U.S states into three clusters of high, medium and low correlation between payroll and employment growth for both firm sizes. **TABLE 5** and **FIGURE 22** show that the number of states in high correlation cluster (S1) based on the 0-9 firm size is higher than the same in high correlation cluster (B1) based on the 500+ firm size. As states are not significantly common in each high, medium and low correlation clusters set $\{B1,S1\}$, $\{B2,S2\}$ and $\{B3,S3\}$ as shown in **FIGURE 19**, **FIGURE 20** and **FIGURE 21**, we decided to compare income vs employment growth trend in micro and large sector for each cluster : B1, S1, B2, S2, B3 ,S3 instead of cluster set: $\{B1,S1\}$, $\{B2,S2\}$ and $\{B3,S3\}$.

The **FIGURE 5** to **Figure 18** in the APPENDIX II show that most of the clusters have a positive trend for income vs. employment, but the micro firm size shows a more robust growth trend throughout in multiple clusters. In the high correlation clusters B1 and S1, the Figures representing 0-9 firm size (**FIGURE 8** and **FIGURE 10**) show a more robust positive relation between the two variables as compared to the 500+ firm size (**FIGURE 7** and **Figure 9**). Similarly, the medium correlation clusters B2 and S2 in **FIGURE 11** to **FIGURE 14** and low correlation clusters B3 and S3 in **Figure 15** to **Figure 18** show the same kind of trend between the two variables.

The results of this study also indicate that the micro sector is more resilient to economic shocks and crisis as compared to the larger sectors. The employment trend data (**TABLE 3**) depicts that the 2008-2009 recessionary phase hit all the business enterprises with a decline in the employment. However, the micro and small enterprises have shown more resilience to this crisis. The table shows that the percentage decline (from 2006 -2012) in employment in the micro firms is less compared to that in the other big firm sizes.

ROLE OF MICROENTERPRISES IN SUSTAINABLE ECONOMIC DEVELOPMENT:

The study evaluates the key role played by micro enterprises in promoting sustainable economic growth. The strategy of micro-enterprise development as a recovery tool for the slow-paced economy has some distinct advantages over the medium and large businesses. First, the micro-business development is a cost effective strategy regarding initial capital and financial services. Second, the development of micro-enterprises not only increases the total income in the economy but also smoothes the income in the face of crisis and shocks. Third, their tremendous job creation potential by creating opportunities for self-employment contributes significantly to economic activity. Micro-enterprise growth plays a key role as it helps in revitalizing local economies. Micro-enterprises with their low capital and investment costs are more resilient to economic shock and often contribute more towards a stable economy.

The study identifies the key elements in the micro sector which put together provide a viable and sustainable solution to the problem of slow economic recovery in U.S. The **FIGURE 2** below shows the characteristic features of the micro sector which serve as major drivers for sustainable economic growth.

FIGURE 2
MICROENTERPRISES AS MAJOR DRIVERS OF ECONOMIC GROWTH.



POLICY IMPLICATIONS

This paper validates the previous studies in establishing a positive correlation between the growth of microenterprise sector and the economic growth. As the number of enterprises increases, it leads to a rise in the employment and income in the economy. This relation is true for nearly all the firm sizes and reemphasizes the importance of business development at all enterprise levels. However, the economic growth achieved through the development of big business comes at a much greater cost to the economy

specifically in times of economic recovery. Therefore, this study evaluates the need for a shift in economic development strategies from big business sector to the micro business sector.

The policy implications underlying this research paper encourage investments in micro-sector as they are cost effective and provide a long-term sustainable solution to recovering U.S economy. The micro-enterprises have always been a part of the economy and with the existing micro-enterprise development programs, they have emerged as a large sector. However, basic framework conditions are required to facilitate their survival and growth. It is crucial that such conditions be made an integral part of the economic recovery plan. The results clearly show that federal, state and local policies focusing on micro-enterprise development would contribute to the country's gross domestic product growth. There is a critical role to play for MDOs, donors, and practitioners in fostering entrepreneurship among potential micro-entrepreneurs. There is also a pressing need for government programs and organizations to focus more intensely on developing services and assistance to micro-businesses.

CONCLUSION

The goal of this research paper is to examine the merits of micro-enterprises as a growth stimulant for the community and the economy. The results of this study demonstrate a positive relationship between the growth of micro-enterprises and economic growth by using employment and payroll data. The contribution of micro-enterprises is significant to the U.S economy and thus for sustained economic recovery, it is vital that micro-businesses be able to realize their full potential. The global financial crisis of 2008 has reinforced interest in micro-entrepreneurship as a key element in the economic recovery and employment growth. The expansion of the micro-sector promotes sustainability without causing undesirable externalities in the economy. The analysis of U.S micro-enterprise sector in this paper suggests that developing such enterprises has a proven return on investment and makes the case for further, more involved initiatives by the government and organizations promoting the growth of this sector. This research paper also highlights the pivotal role played by microfinance in empowering micro-entrepreneurship and fostering financial growth. Recognizing the key role played by micro-enterprises in sustainable economic development, a nation's economic growth strategy should increasingly incorporate pro-microenterprises initiatives.

FURTHER RESEARCH

The forward-looking analysis subsequent to this research paper is to increase the visibility of micro-enterprises as a growth tool in local communities and specific target groups such as immigrants, female micro-entrepreneurs, etc. By scaling down to specific target groups, further research can gain insight into the challenges they face and explore strategies for countering those challenges. The current research involves analysis of micro-entrepreneurial growth in all the U.S. States. Further research would analyze the different States in terms of concentration of micro-enterprises and their impact on development. Further research also aims at extending the analysis to field work by primary data collection using descriptive statistical techniques. The primary data would consist of well-structured questionnaires and surveys given to the specific target group population.

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APPENDIX I

TABLE 1
EMPLOYMENT AND INCOME DATA FOR DIFFERENT FIRM SIZES IN 2011

Employment size of firm	Firms	Establishments	Employment	Annual Payroll (\$1,000)
Total	5684424	7354043	113425965	5164897905
0-9	4511051	4533256	12289593	448507755
10-49	959347	1074173	18964303	706262009
50-199	167696	365676	15129667	633242834
200-499	28659	188953	8614749	381341375
500-999	8761	127257	6060684	280489990
1000-4999	7071	274197	14451424	745523016
5,000+	1839	790531	37915545	1969530926

source: U.S. Small Business Administration, Office of Advocacy, 2011

TABLE 2
PERCENTAGE SHARE OF FIRM SIZES 2011

Employment size of firm	Firms % in total	Establishments % in total	Employment % in total	Annual Payroll % in total
0-9	79.36	61.64	10.83	8.68
10-49	16.88	14.61	16.72	13.67
50-199	2.95	4.97	13.34	12.26
200-499	0.50	2.57	7.60	7.38
500-999	0.15	1.73	5.34	5.43
1000-4999	0.12	3.73	12.74	14.43
5,000+	0.03	10.75	33.43	38.13

source: U.S. Small Business Administration, Office of Advocacy, 2011

TABLE 3
EMPLOYMENT TREND (2006 TO 2012)

Firm Size (Employees)	2006	2007	2008	2009	2010	2011	2012	Percent change
0-4	5,959,585	6,139,463	6,086,291	5,966,190	5,926,452	5,857,662	5,906,506	-0.89%
5-9	6,973,537	6,974,591	6,878,051	6,580,830	6,358,931	6,431,931	6,527,943	-6.39%
10-19	8,676,396	8,656,182	8,497,391	8,191,289	8,288,385	7,961,281	7,974,340	-8.09%
<20	21,609,520	21,770,236	21,461,733	20,738,309	20,573,768	20,250,874	20,408,789	-5.56%
20-99	21,076,875	20,922,960	20,684,691	19,389,940	18,554,372	18,880,001	19,387,249	-8.02%
100-499	17,537,345	17,173,728	17,547,567	16,153,254	15,868,540	15,867,437	16,266,855	-7.24%
<500	60,223,740	59,866,924	59,693,991	56,281,503	54,996,680	54,998,312	56,062,893	-6.91%
500+	59,693,425	60,737,341	61,209,560	58,228,123	56,973,415	58,427,653	59,875,575	0.31%

source: United States Census Bureau- Statistics of U.S. Businesses

**TABLE 4
GROWTH OF MICRO-ENTERPRISE INDUSTRY**

Fiscal Year	Number of assisted individuals	Microloans disbursed	Value of micro loans disbursed (\$ millions)
2008	116,944	6,178	\$68.60
2010	163,535	12,547	\$138.20
2011	361,460	24,708	\$175.50
2012	329,538	36,936	\$292.20
2013	357,958	58,060	\$361.70

Census Highlights 2008-2013 FIELD, Aspen Institute

**TABLE 5
RESULTS OF CLUSTER ANALYSIS**

Firm Size: 0-9			Firm Size: 500+		
Cluster S1 corr > 0.7 # States: 21	Cluster S2 cor: 0.3 to 0.7 # States: 14	Cluster S3 corr < 0.3 # States: 16	Cluster B1 corr > 0.7 # States: 15	Cluster B2 cor: 0.3 to 0.7 # States: 20	Cluster B3 corr < 0.3 # States: 16
Vermont	Utah	Maryland	New Jersey	North Carolina	California
South Carolina	North Dakota	Kentucky	Arizona	Michigan	Indiana
New Jersey	Massachusetts	Montana	Idaho	Alabama	Mississippi
Georgia	Alabama	Virginia	Texas	Ohio	Kentucky
Rhode Island	New York	Texas	North Dakota	Utah	Montana
District of Columbia	New Mexico	Nebraska	South Carolina	Oregon	Wyoming
Idaho	Indiana	Minnesota	Florida	Tennessee	West Virginia
Nevada	Colorado	Pennsylvania	New York	Washington	Nebraska
North Carolina	Mississippi	Wyoming	Georgia	Massachusetts	South Dakota
Florida	South Dakota	Louisiana	Rhode Island	New Mexico	Iowa
Connecticut	Michigan	Delaware	Connecticut	Virginia	Alaska
Arizona	Tennessee	West Virginia	Hawaii	Illinois	Louisiana
Oregon	Ohio	Iowa	Nevada	Missouri	Oklahoma
Alaska	Wisconsin	Kansas	New Hampshire	Wisconsin	Delaware
Illinois		Oklahoma	Maine	Maryland	Arkansas
Missouri		Arkansas		Vermont	District of Columbia
California				Pennsylvania	
New Hampshire				Kansas	
Hawaii				Colorado	
Washington				Minnesota	
Maine					

APPENDIX II

FIGURE 3
PERCENTAGE SHARES IN TOTAL FIRMS (LEFT) AND ESTABLISHMENTS (RIGHT) IN 2011



FIGURE 4
PERCENTAGE SHARE IN TOTAL EMPLOYMENT (LEFT) AND ANNUAL PAYROLL (RIGHT)

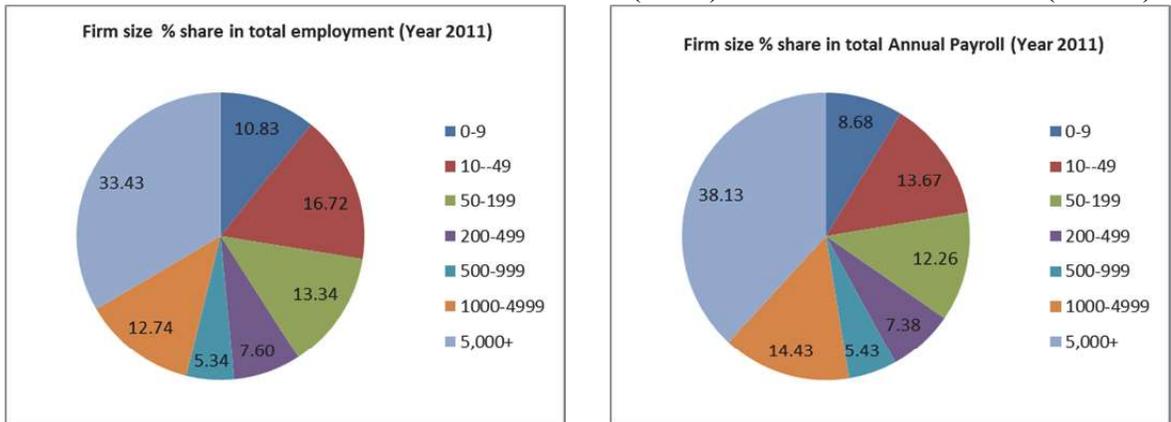


FIGURE 5
EMPLOYMENT VS. PAYROLL TREND FOR U.S. YEAR 2007-12 (FIRM 500+)

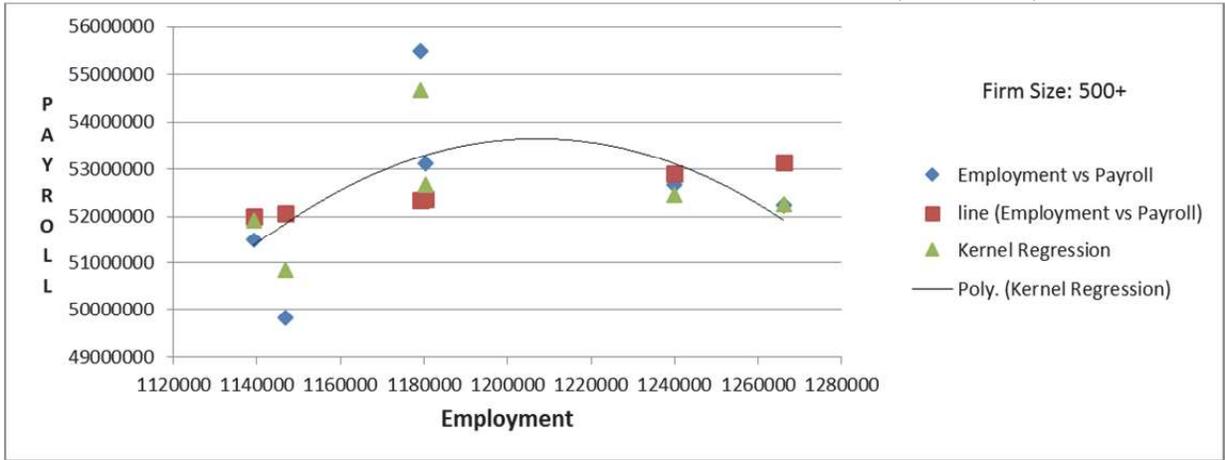


FIGURE 6
EMPLOYMENT VS. PAYROLL TREND FOR U.S. YEAR 2007-12 (FIRM 0-9)

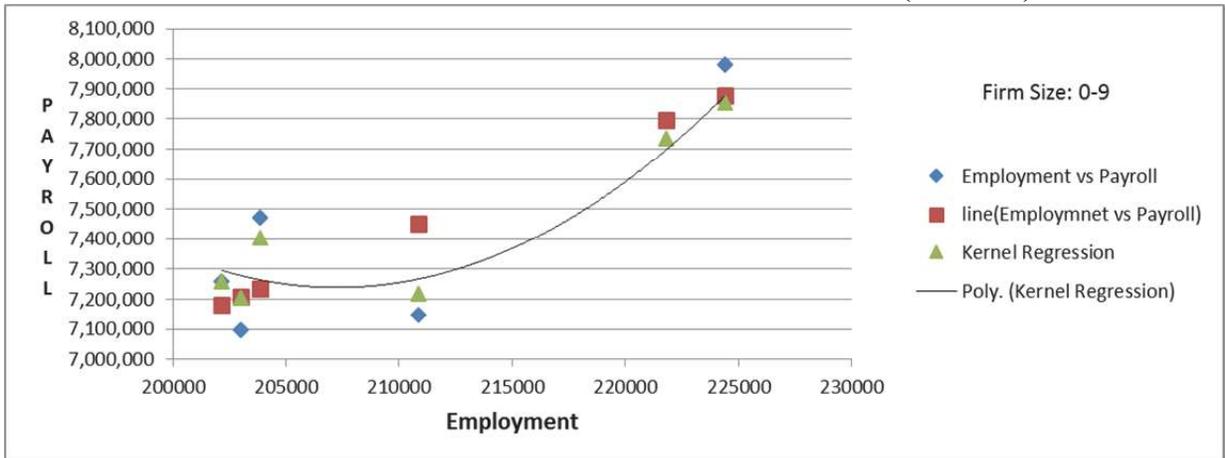


FIGURE 7
EMPLOYMENT VS. PAYROLL TREND FOR CLUSTER B1 STATES, YEAR 2007-12 (FIRM 500+)

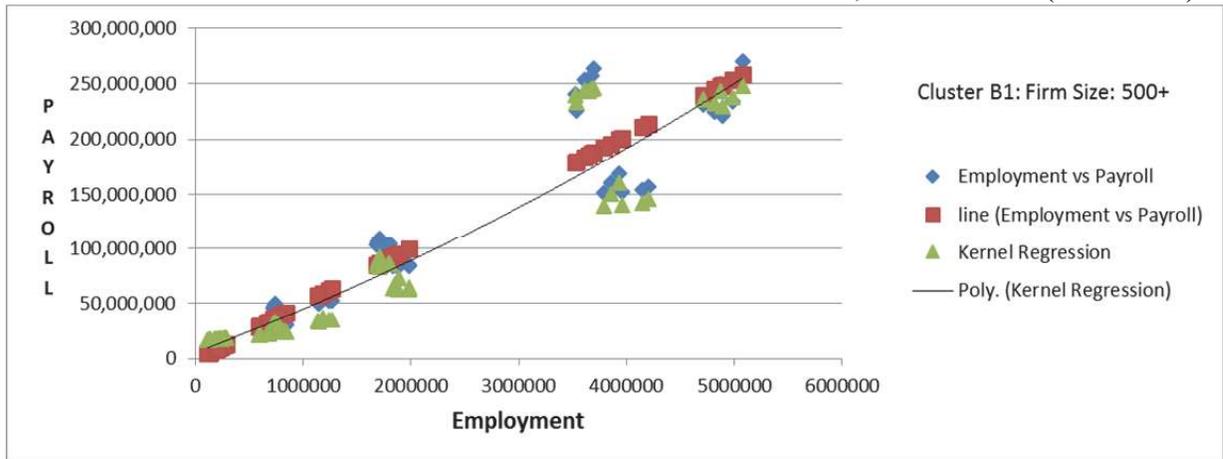


FIGURE 8
EMPLOYMENT VS. PAYROLL TREND FOR CLUSTER B1 STATES YEAR 2007-2012 (FIRM 0-9)

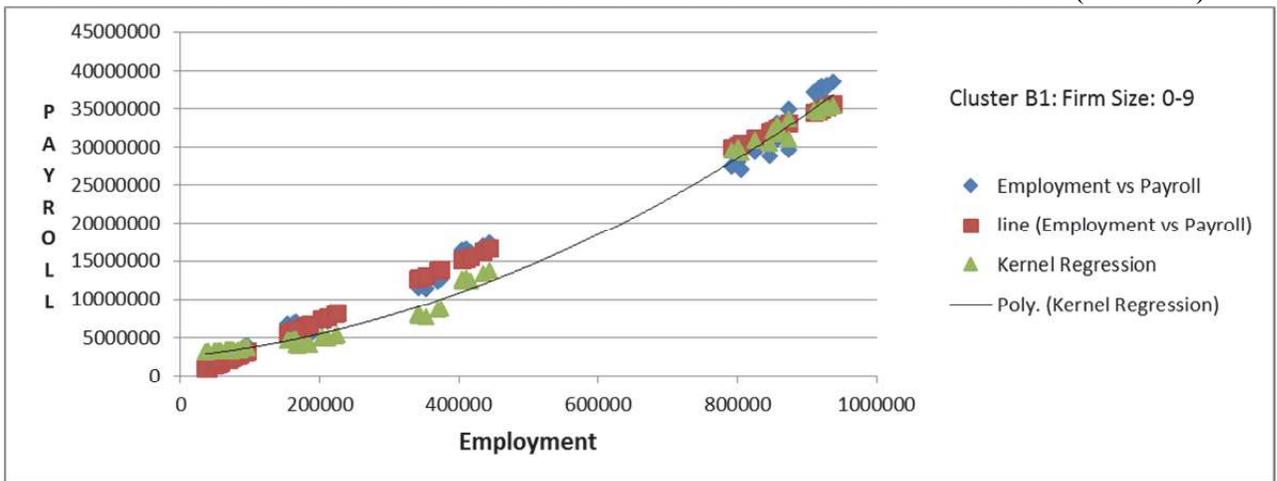


FIGURE 9
EMPLOYMENT VS. PAYROLL TREND FOR CLUSTER S1 STATES YEAR 2007-2012 (FIRM 500+)

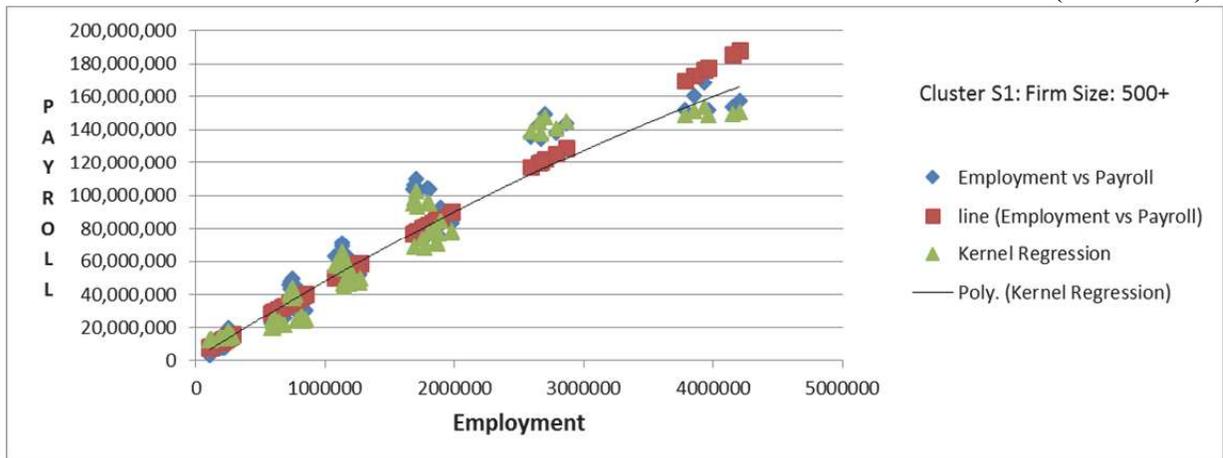


FIGURE 10
EMPLOYMENT VS. PAYROLL TREND FOR CLUSTER S1 YEAR 2007-2012 (FIRM SIZE 0-9)

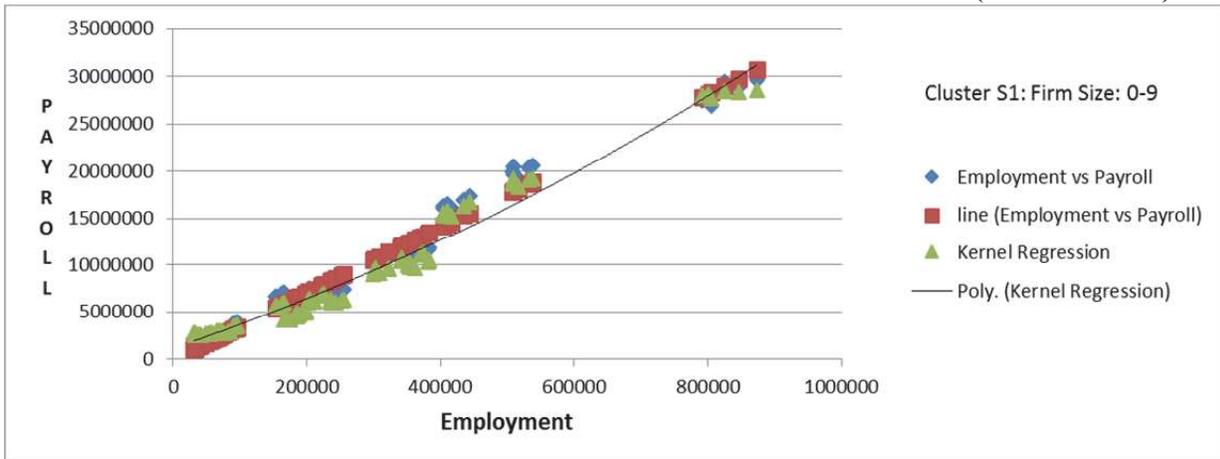


FIGURE 11
EMPLOYMENT VS. PAYROLL TREND FOR CLUSTER B2 YEAR 2007-2012 (FIRM SIZE 500+)

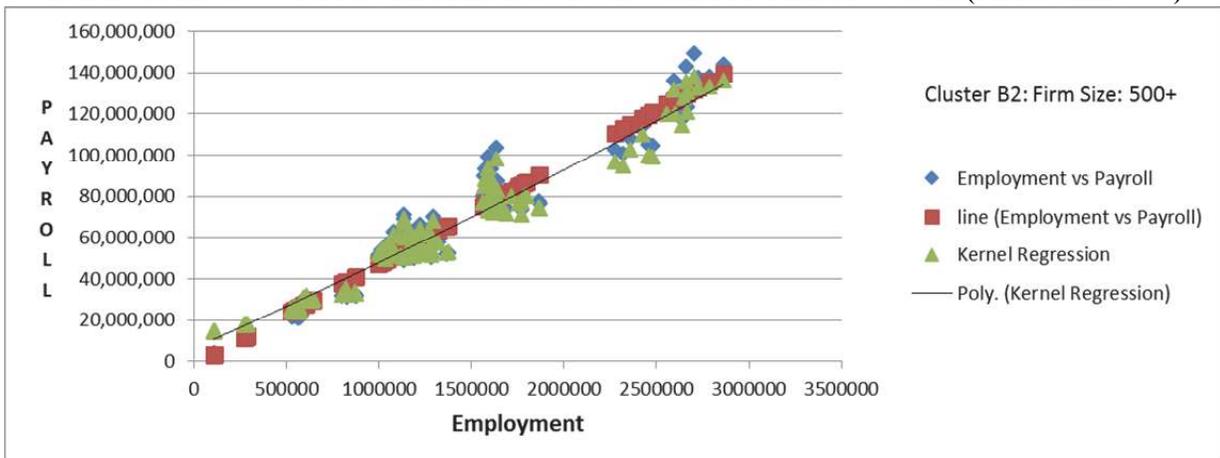


FIGURE 12
EMPLOYMENT VS. PAYROLL TREND FOR CLUSTER B2 YEAR 2007-2012 (FIRM SIZE 0-9)

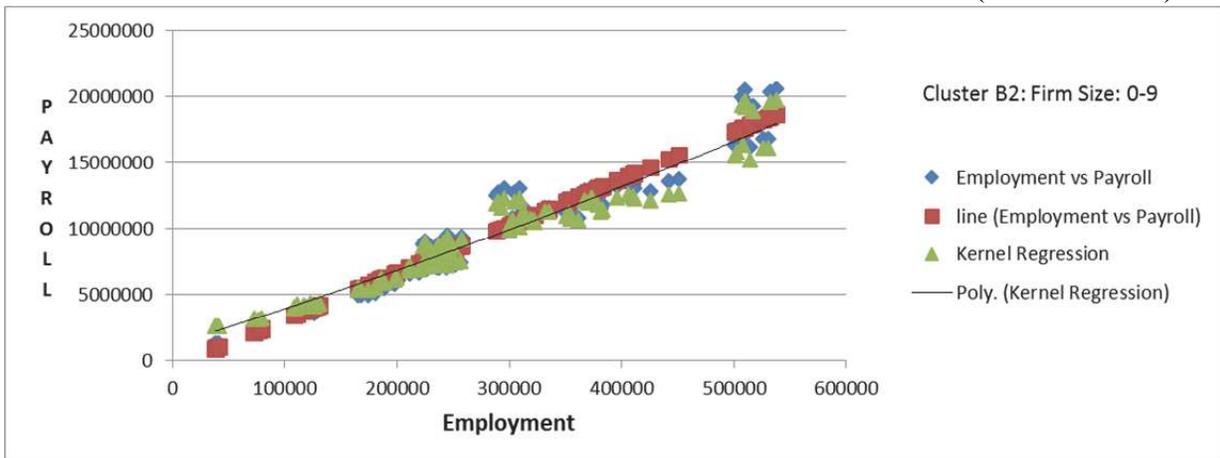


FIGURE 13
EMPLOYMENT VS. PAYROLL TREND FOR CLUSTER S2 STATES YEAR 2007-12 (FIRM 500+)

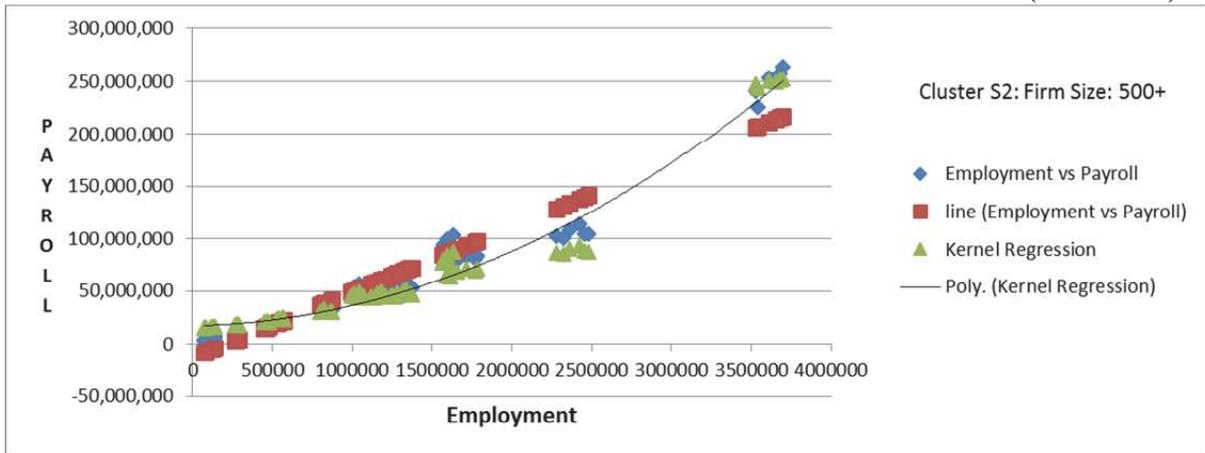


FIGURE 14
EMPLOYMENT VS. PAYROLL TREND FOR CLUSTER S2 STATES YEAR 2007-12 (FIRM 0-9)

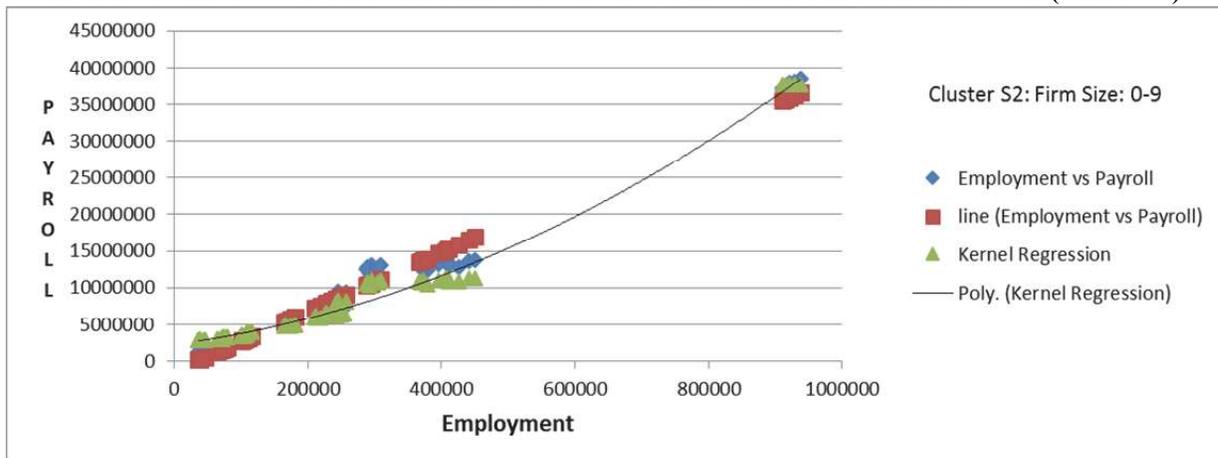


FIGURE 15
EMPLOYMENT VS. PAYROLL TREND FOR CLUSTER B3 STATES YEAR 2007-12 (FIRM 500+)

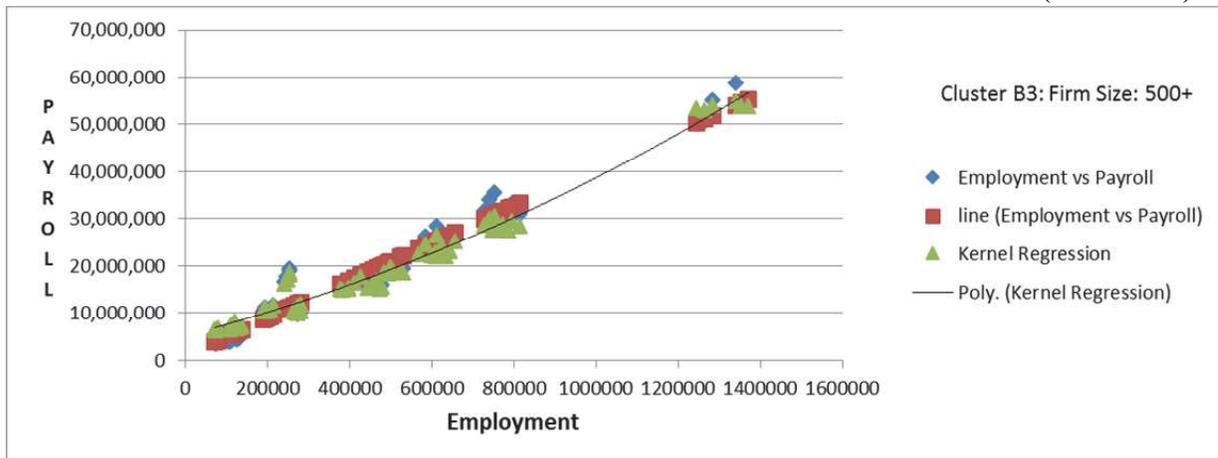


FIGURE 16
EMPLOYMENT VS. PAYROLL TREND FOR CLUSTER B3 STATES YEAR 2007-12 (FIRM 0-9)

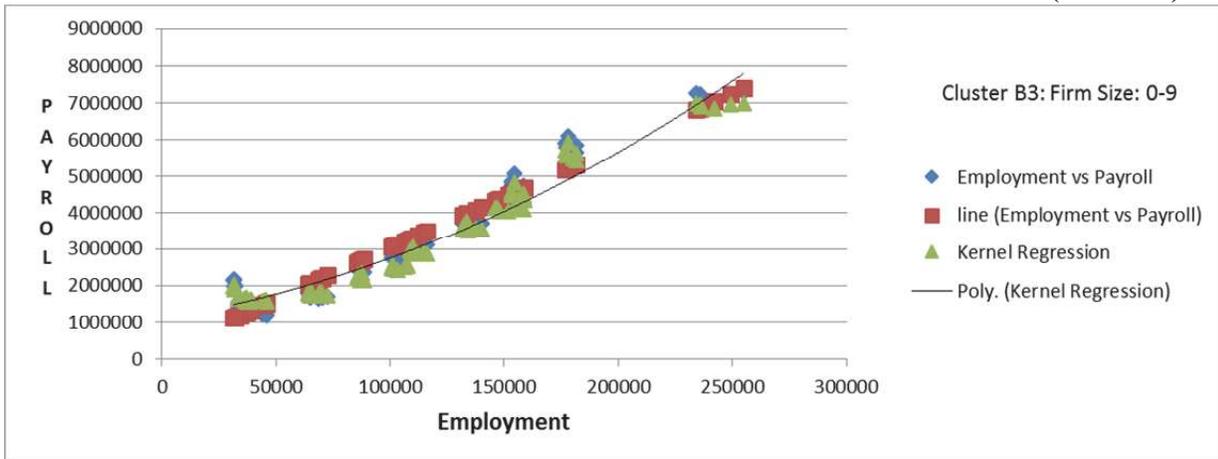


FIGURE 17
EMPLOYMENT VS. PAYROLL TREND FOR CLUSTER S3 STATES YEAR 2007-12 (FIRM 500+)

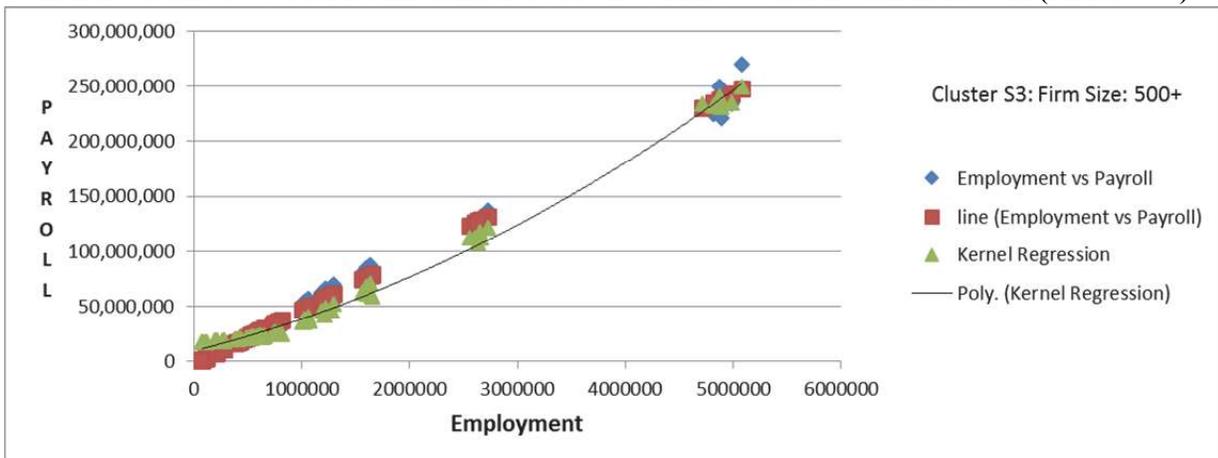


FIGURE 18
EMPLOYMENT VS. PAYROLL TREND FOR CLUSTER S3 STATES YEAR 2007-12 (FIRM 0-9)

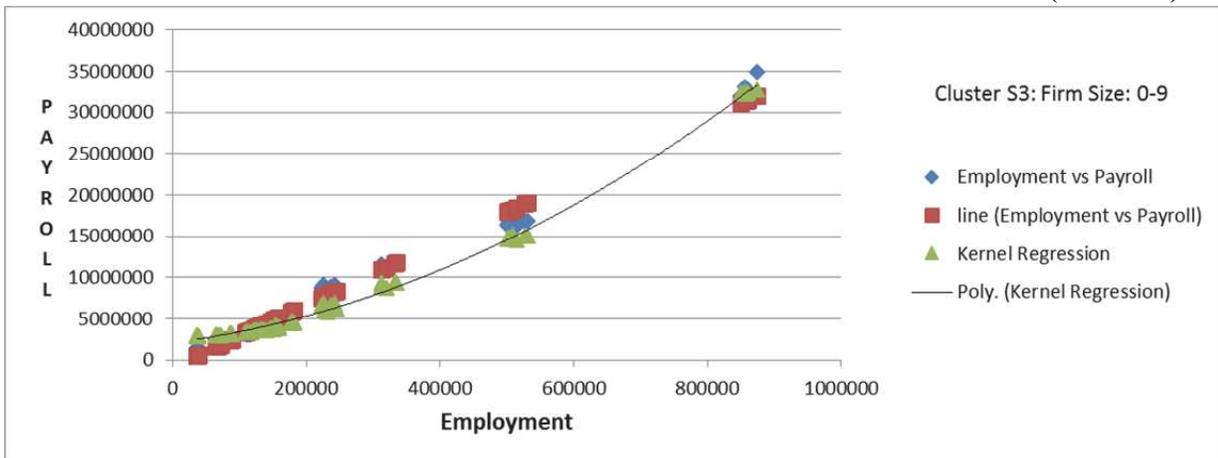


FIGURE 19
24 STATES WITH HIGH EMPLOYMENT-PAYROLL CORRELATION (>0.7) FIRMS: 0-9, 500+

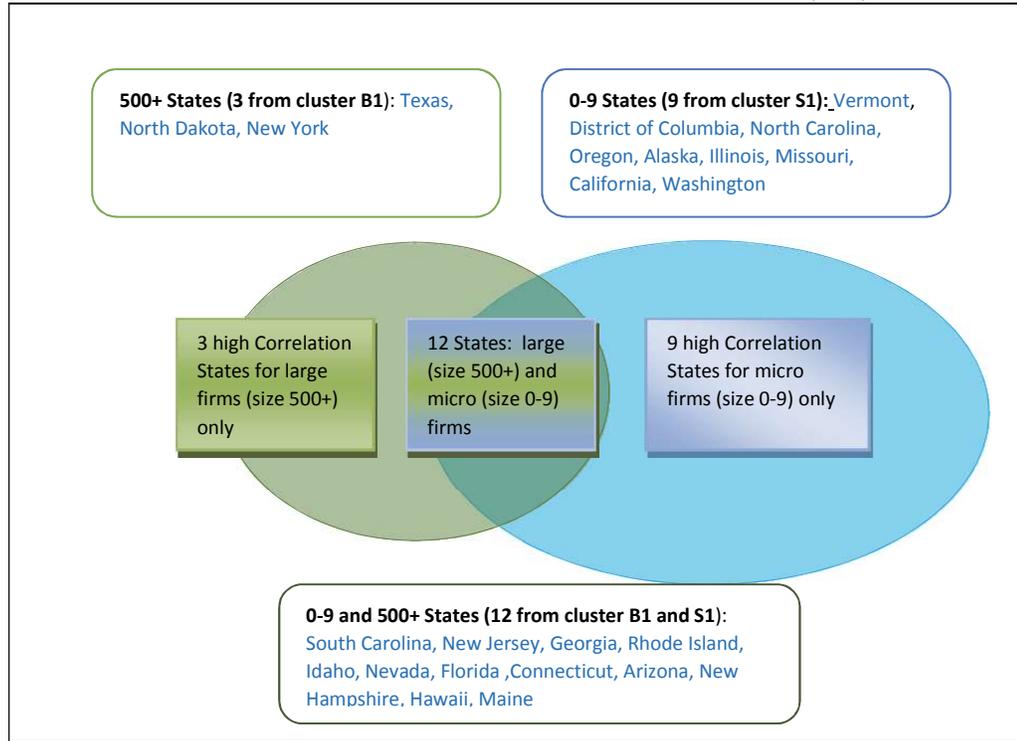


FIGURE 20
25 STATES WITH MEDIUM EMPLOYMENT-PAYROLL CORRELATION (0.3 TO 0.7) FIRMS: 0-9, 500+

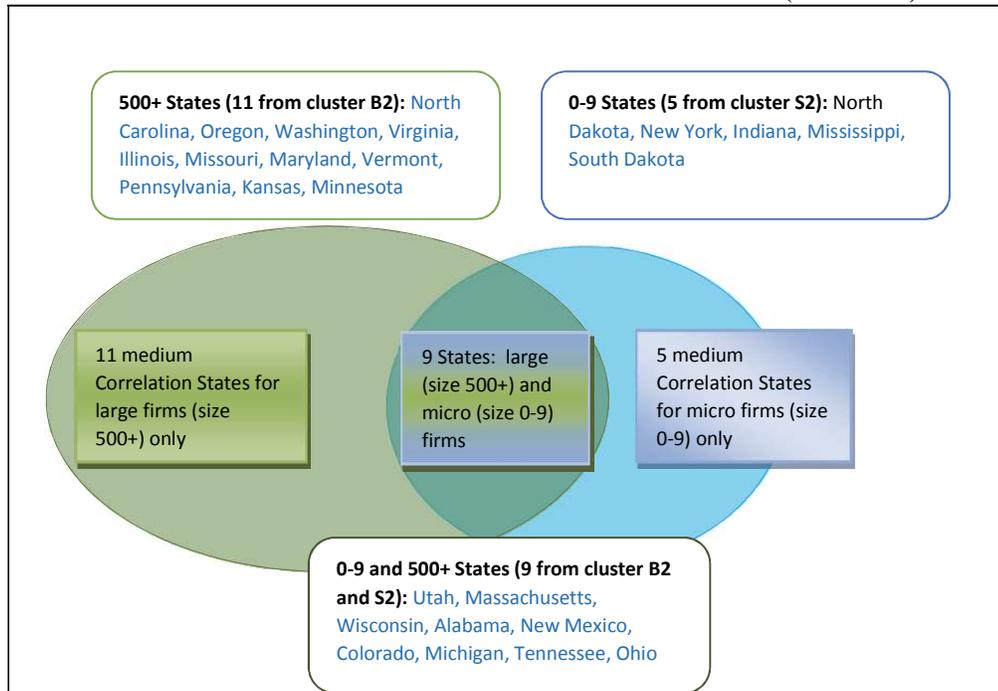


FIGURE 21
22 STATES WITH LOW EMPLOYMENT VS PAYROLL CORRELATION (<0.3) FOR FIRMS: 0-9, 500+

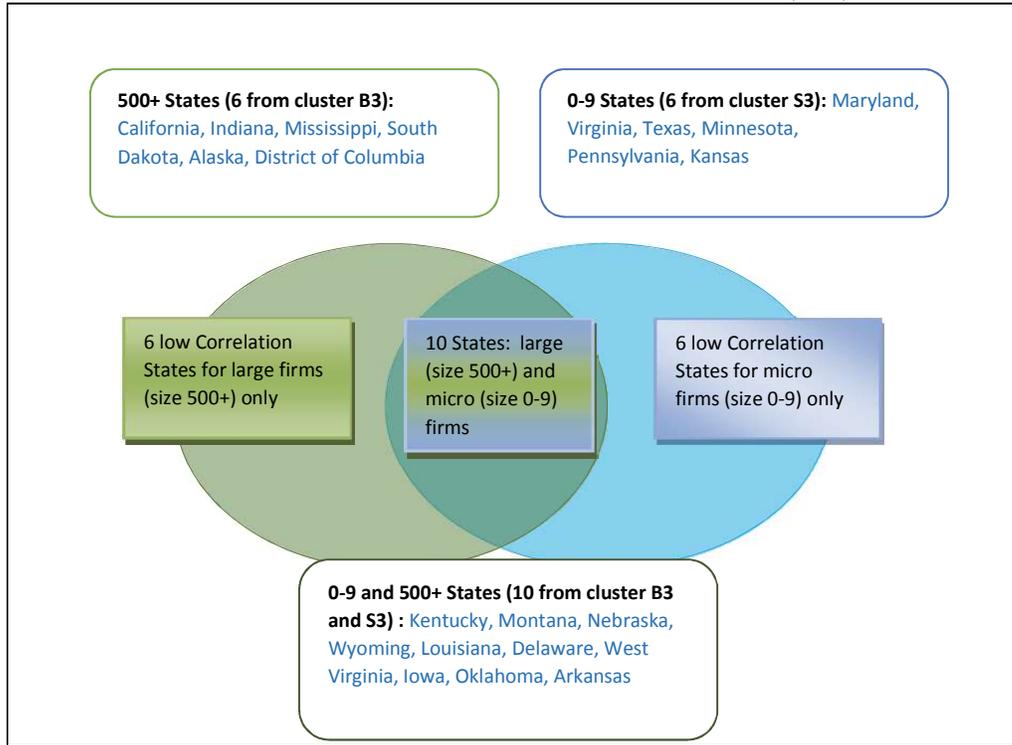


FIGURE 22
DISTRIBUTION OF STATES IN CORRELATION BUCKETS FOR 0-9 AND 500+ SIZE FIRMS

