**Disparities Of Entrepreneurial Activities Among Urban Industries –
An Exploratory Approach**

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Summary

The results of an on-going exploratory study focused on disparities in entrepreneurial activities
across 203 Metropolitan Statistical Areas among 18 industries in the US showed that there
existed variations in the path of entrepreneurial development among MSAs and different
industries. Resource allocation, market, policies, and supportive organizations could lead to
these variations.

Keywords

MSA, Entrepreneurship, urban, disparity, Gini coefficient

Introduction

"Wealth is created by Americans – by creativity and enterprise and risk-taking. But government can create an environment where businesses and entrepreneurs and families can dream and flourish." – President George W. Bush, Presidential Action, released by US Small Business Administration

Early Marxian and Weberian theories categorized any business activity as an action to make money – for both business owners and input suppliers (Flora & Flora, 2004). However, researchers have started to realize that classical assumptions of wealth creation and outcome-based approach might not be the primary incentives for new venture formation among small businesses (Carland & Carland, 2000; Liang, 2002; Liang & Dunn, 2002). A unique set of personality traits, seeking opportunities, seeking self-fulfillment, and striving to improve family welfare are a few non-economic factors that successfully drive entrepreneurial development in the world (Liang, 2002; Liang & Dunn, 2002). There seemed to be a strong correlation between national economic growth and the level of national entrepreneurial activity in prior year, according to the Global Entrepreneurship Monitor (US SBA, 2004). A summary of the development of the small firms (represented by independent businesses having fewer than 500 employees) in the United States stated (US SBA, 2004) that –

- Totaled approximately 23 million in the United States, with roughly 75 percent of the firms having no employees (non-employer firms).

- Represented 99.7 percent of all employer firms.

- Employed half of all private sector employees.

- Paid 44.3 percent of the total U.S. private payroll.

- Generated 60 to 80 percent of net new jobs annually.

Although these statistics seemed to be impressive, one would expect some discrepancies between industries in growing jobs and total receipts over time. For example, high tech industry and service industry might have relatively higher growth rates in number of business establishments and total receipts compared with other type of businesses.

There have been limited studies to explore levels of differentiations in entrepreneurial development for either rural entrepreneurs or urban entrepreneurs across industries. Several technical concerns have hindered researchers to examine the distribution and the discrepancies of the entrepreneurial activities in the United States: (1) no specific registration records are available for new businesses by county, by state, or by region, (2) no records of migrations of businesses in and out of any community are available, and (3) some family businesses or non-employer firms do not register with government agencies.

This paper presents some results of an on-going exploratory study to examine a research question that has not been studied – given the overall increasing trend in entrepreneurial activities in the United States, do all industries grow (or decline) evenly in number of establishments or total receipts? If not, what is the disparity level of each industry when comparing entrepreneurial activities among urban areas? This article presents some preliminary findings of this on-going exploratory study only focused on disparities in establishments of non-employer firms and total annual receipts of non-employer firms across 203 Metropolitan Statistical Areas (not including those MSA located across two or more states) in the United States by 18 industries. The U. S. Department of Commerce, Census Bureau, has defined urban areas as Metropolitan Statistical Areas (MSA). It would be reasonable to choose the category of "Non-employer firms" in Census data as sample entrepreneurs assuming the owners of the non-employer firms are primary decision makers in businesses, they control most of the businesses,

and they posses other entrepreneurial characteristics discussed in existing literature (e.g. willing to take risks, enthusiastic, optimistic, opportunity driven, etc.) (Liang, 2002).

Previous Studies Related to MSA and Entrepreneurial Activities

The American economy is moving towards a new way to engage more complex, dynamic, and dispersed industrial activities shaped by information technologies, global markets, and new communication networks (Progressive Policy Institute, 2004; Atkinson, 1998; Blau, 1987). Blau (1987) adopted a general equilibrium model to analyze self-employment and wage employment using aggregated U. S. time series data between 1948 and 1982. The results of Blau's study indicated that changes in technology, industrial structure, tax rates, and social security retirement benefits had contributed to the upward trend in nonagricultural labor force self-employment in the United States. While not focusing on any Metropolitan area or industry, Blau's study verified the increasing trend in self-employment in the U. S. given a combination of economic factors.

Several researchers had examined different economic factors and how they impact on Metropolitan areas. Giuliano (1998) looked into changes in information and communications technology influences on the structure of the workplace and the organization of work, such as commuting patterns and metropolitan forms. Using 1990 Public Use Micro Sample data for the Los Angles region, Giuliano compared the commuting and location patterns of various backgrounds of the workers, and discovered that self-employed have the shortest commutes.

A recent report released by the Progressive Policy Institute argued that the fast growing and changing structure in entrepreneurial development had reshaped the nation's Metropolitan area, where people live and work in these areas that included historical central cities and dispersed suburban areas (Progressive Policy Institute, 2004). Several forces that drive the new

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economic movement – new industries, new jobs, globalization, competition, dynamism, and the information technology revolution were also driving a new reordering of the Metropolitan areas (Progressive Policy Institute, 2004). Both positive influences (e.g. job creation, increase in income) and negative influences (e.g. sprawl, increase in population density) of the development of the new economy had brought conflicting social outcomes to Metropolitan areas. Atkinson & Gottlieb (2004) attempted to create 16 indicators including 5 categories (knowledge jobs, globalization, economic dynamism and competition, transformation to a digital economy, and technological innovation capacity) that would best capture the structure of the new economy in Metropolitan areas. Based on the scores that Atkinson & Gottlieb (2004) calculated, the top 10 Metropolitan areas in new economic development were San Francisco, Austin, Seattle, Raleigh-Durham, San Diego, Washington, Denver, Boston, and Salt Lake City. Some general observations Atkinson & Gottlieb (2004) concluded regarding the top Metropolitan areas revealed the distribution of technology innovations, high concentration of high-tech professionals, and institutional support of innovation infrastructure in specific areas. While it is important to understand the driving forces of the new economy, Atkinson & Gottlieb (2004) failed to discuss potential discrepancies in number of business establishments, number of jobs, and total receipts by industry among different Metropolitan areas.

Zlatkovich and Putnam (2001) presented a business index for 276 Metropolitan areas in the United States. Their business opportunity index consisted of 12 components – population change, population percent change, private employment change, private employment percent change, per capita income, per capita income trend, per capita wealth, per capita wealth trend, government cost, government cost change, proprietor percentage, and proprietor/employee earnings ratio. The top 10 Metropolitan areas with the highest business opportunity indices were

Naples, Denver, Boise, Fort Collins, Nashville, Atlanta, Raleigh, Medford, Fort Walton Beach, and Las Vegas; which were quite different from what Atkinson & Gottlieb (2004) had derived. Even this business opportunity index covered several conventional and unconventional factors, this index only represented a generalized economic situation without considering potential differences in economic activities and contributions by industry in various Metropolitan areas.

Data And Methodology

The US Census Bureau has collected data of number of non-employer firms and total annual receipts of non-employer firms for 1997, 1998, 1999, 2000, and 2001. This study focused on 203 MSA's (not including consolidated MSA and Primary MSA) and 18 industries. The non-employer business was defined as one that had no paid employees, had annual business receipts of $1000 or more, and was subject to federal income taxes (U. S. Census, 2001). Each distinct non-employer business income tax return filed by a non-employer business was defined as an "establishment" (U. S. Census, 2001).

Disparities in three categories between MSA's by industry have been calculated for 1997, 1998, 1999, 2000, and 2001 using the Gini Coefficient approach: (1) number of non-employer firms, (2) total annual receipts of non-employer firms, and (3) ratios of annual receipts to number of non-employer firms. The Gini Coefficient has been a popular method to capture the distribution and disparities of various economic variables relating to income issues, employment issues, trade issues, and other macro economic policies. For example, Madden (2000) identified and quantified the characteristics of Metropolitan economies, including demographics, labor market, and geographic characteristics that were associated with changes in economic inequality in the 1980s. Madden (2000) analyzed data from 182 Metropolitan areas to measure the relationships between intra-MSA changes in the distribution of household income from 1979 to

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1989 and changes in other MSA characteristics using Gini coefficients. This study differs from Madden's article by examining disparities among non-employer firms across industries.

The Gini coefficient, as proposed by Gini in 1912 in France, was developed to measure the degree of concentration (inequality) of a variable in a distribution of its elements. It compares the Lorenz curve of a ranked empirical distribution with the line of perfect equality. This line assumes that each element has the same contribution to the total summation of the values of a variable. The Gini coefficient ranges between 0 (where there is no concentration and implies perfect equality) and 1 (where there is total concentration and implies perfect inequality). The greater the degree of inequality, the larger the Gini coefficient will be.

The Gini coefficient can be used to measure the degree of inequality among 203 MSAs by industry given number of establishments and total receipts of non-employer firms. To define mathematically the Lorenz curve and Gini coefficient, the formulation of elements can be either discrete or continuous. The discrete form was chosen for this study, and the distribution of number of establishment or total receipts for non-employer firms in 203 MSAs in each of the 18 industries could be represented as

$$y_1 \leq y_2 \leq y_3 \leq ... \leq y_N$$

where y represents the number of establishment and total receipts for non-employer firms, and N equals 203 (the number of the MSAs) in the following equation which involves the rank-weighted sum of different variables (Pearce, 1986):

$$G = 1 + \frac{1}{N} - \frac{2(y_1 + 2y_2 + 3y_3 + ... + Ny_N)}{N^2 \mu}$$

The sequence of $y_1, y_2,...$ to y_N represents individual values in decreasing order of the size of the relevant variable, y (either the number of establishment, the total receipts, or the ratio of total receipts to total establishment). Finally μ is the mean value of y_1 to y_N. The results of the calculations yield a set of the Gini coefficients representing the estimated annual disparity levels between MSAs (1997, 1998, 1999, 2000, 2001) in each industry.

Preliminary Results The Category Of Number Of Non-employer Firms Between 1997 And 2001

The role played by agglomeration economies on the productivity of firms dated back to Marshall (1919) who envisioned clear increases in competitiveness for firms clustered in limited geographical areas (Capello, 2002). Which industry, however, revealed a higher level of entrepreneurial disparity in urban areas? The results of the Gini coefficients corresponding to the total number of non-employer firms indicated that some industries had higher disparity levels in urban areas compared to others (Table 1). Between 1997 and 2001, not all industries have grown in a uniform manner in urban areas.

Agricultural industry had the smallest disparity across 203 MSAs compared to other industries, and the Gini coefficients of Agricultural industry were very close to the perfect equality level (zero). This might imply that the number of non-employer firms in Agricultural industry had distributed pretty evenly among 203 studied MSAs, and there was no significant increasing or decreasing trends between 1997 and 2001. The largest disparity existed in Information industry, where the Gini coefficients were approximately 0.74 between 1997 and 2001. Giuliano (1998) pointed out that Information industry had changed dramatically over the past 10 years due to the changes in structure of the workplace and the organization of work, especially noticed that temporary work and self-employment were increasing while job tenure

was declining. Each MSA offers different work opportunities, business potentials, living environments, and other resources to attract various levels of the information technology firms. The high level of the Gini coefficients could represent a composite evaluation of these factors that created the disparity levels of the non-employer firms associated with Information industry among 203 MSAs.

Other industries such as Mining, Professional-Scientific-Technical Services, Arts-Entertainment-Recreation, and Wholesale Trade also revealed relatively higher disparity levels (over 0.7) in the number of non-employer firms consistently between 1997 and 2001. The Utilities industry had the second lowest Gini coefficient ranged from 0.57 in 1997 to 0.54 in 2001, which was still significantly higher than the Gini coefficients of Agricultural industry.

The disparities in the number of non-employer firms changed in a different pattern for individual industries between 1997 and 2001 (Table 1). An increasing disparity level existed in 8 industries: Agriculture, Construction, Retail Trade, Transportation-Warehouse, Professional-Scientific-Technical Services, Healthcare-Social Assistance, Arts-Entertainment-Recreation, and Accommodations. Ten industries revealed a declining level of disparities. This situation could be explained by the moving trend of the non-employer firms among different MSAs, given various concerns of social demographics of the locations, public policies that would either encouraging or discouraging non-employer firms in certain industries, and other economic drivers that each business location would offer.

Table 1. Gini Coefficients – Number Of Non-employer Firms By Industry

Sector	Establishment 1997	1998	1999	2000	2001
agri	0.0738752	0.0844471	0.075013	0.0758218	0.0962327
mining	0.7275535	0.7516473	0.735027	0.733464	0.7342496
utilities	0.5762057	0.5659701	0.5755746	0.5506066	0.5476252
construction	0.6454394	0.6452208	0.6457727	0.6467149	0.6517894
manufacturing	0.6982173	0.6967485	0.6956186	0.6967262	0.6933583
wholesale trade	0.7120791	0.7108029	0.7096634	0.7098609	0.7081186
retail trade	0.6366154	0.6380939	0.639111	0.639535	0.6412247
transportation &warehousing	0.6776702	0.6777745	0.6793577	0.6829717	0.6892672
information	0.7463114	0.7445989	0.742625	0.7399446	0.7377354
finance &insurance	0.7010455	0.7022453	0.7002826	0.7003578	0.700575
Real estate &rental &leasing	0.7010207	0.6997119	0.7075908	0.7059233	0.7056845
Professional,scientific&technical services	0.7275233	0.7307551	0.7333576	0.7343873	0.7339831
Administrative&support&waste management&remediation serv	0.6987971	0.7010202	0.7031616	0.7032832	0.7048115
Educational services	0.6929878	0.6894898	0.6950772	0.6923928	0.6849278
Health care&social assistance	0.6781222	0.6782192	0.6780753	0.684586	0.684586
Arts,entertainment&recreation	0.7137437	0.718711	0.7198352	0.7225518	0.7218835
Accommodation&foodservices	0.6758715	0.679463	0.6789563	0.681419	0.6866513
Other services(except public administration	0.6316841	0.6270632	0.6261161	0.629129	0.6375655

Preliminary Results In The Category Of Total Annual Receipts Of Non-employer Firms Between 1997 And 2001

When comparing the disparity levels of total receipts of the non-employer firms among 203 MSAs, the results were somewhat different from the disparity levels of the number of establishments (Table 2). Blau (1987) discussed a variety of causes of the increasing trend of the self-employment in recent years, and the most important one would be changes in industrial structure and information technology that had favored industries in which small firms were viable and scale of economies were relatively unimportant. Given the results of the Gini

coefficients, Agricultural industry had the smallest disparity across 203 MSAs in terms of total receipts of non-employer firms, ranged from 0.07 to 0.1 (Table 2). These Gini coefficients were very close to zero, which implied the total receipts of non-employer firms in Agricultural industry were somewhat equally distributed across 203 MSAs.

The largest disparity levels of the total receipts for non-employer firms existed in Information industry (almost 0.8). This would not be a surprise given the uneven growing trend in information technology and communication technology in some urban areas, such as San Francisco, Austin, Seattle, and Raleigh-Durham (Atkinson & Court, 1998). Other industries consistently showed higher disparity levels in total receipts of non-employer firms included Arts-Entertainment-Recreation, Professional-Scientific-Technical Services, Wholesale Trade, and Mining industries between 1997 and 2001. Utility industry had the second lowest Gini coefficient that represented the second lowest disparity level in total receipts of non-employer firms.

Several industries did not show consistent ranks in the disparity levels between number of non-employer firms and total receipts of non-employer firms. For example, Mining industry had the second highest inequality in the number of non-employer firms, yet Arts-Entertainment-Recreation industry had the second highest inequality in total receipts. Some potential factors influencing the differentiated distributions of establishments might not be the same factors influencing the differentiated distributions of total receipts. Factors influencing total receipts usually relate to out prices, input costs, marginal tax rates, and various market characteristics. These factors contributed to the inequality of total receipts of non-employer firms among 203 MSAs in a different manner compared with factors influencing business locations such as evaluation of workplace and industry organizations.

The disparities in the total annual receipts of non-employer firms also changed in a different pattern for individual industries between 1997 and 2001. An increasing inequality level existed in Agriculture, Mining, Construction, Retail Trade, Transportation-Warehouse, Healthcare-Social Assistance, and Accommodations. Other industries revealed a declining level of disparities. Price shifters, such as changes in input costs, changes in input availabilities, changes in output compositions, and changes in consumer preferences, were a few potential contributors to the increasing or declining patterns in inequality for individual industries.

Table 2. Gini Coefficients – Total Receipts of Non-employer Firms By Industry

Sector	receipt 1997	1998	1999	2000	2001
agri	0.0907296	0.0849819	0.0738081	0.0716322	0.1085338
mining	0.7575076	0.7656673	0.7565737	0.7671982	0.7674782
utilities	0.6025153	0.5961256	0.6203551	0.5942574	0.5735807
construction	0.6697913	0.6727473	0.7413993	0.6768801	0.6765449
manufacturing	0.7478172	0.7434678	0.7413993	0.739943	0.73692
wholesale trade	0.7580624	0.7561919	0.7557472	0.7569578	0.7524169
retail trade	0.665529	0.6670012	0.6661628	0.6686732	0.6701336
transportation &warehousing	0.6571111	0.6592982	0.6614054	0.6648627	0.6725244
information	0.7988414	0.7897977	0.7896995	0.7819694	0.779801
finance &insurance	0.755294	0.7558467	0.767687	0.7684512	0.7521549
Real estate &rental &leasing	0.7335795	0.7343428	0.73833	0.7369363	0.7333113
Professional,scientific&technical services	0.7716426	0.7745772	0.7775657	0.77966	0.7747419
Administrative&support&waste management&remediation serv	0.7488614	0.7485772	0.7463561	0.746817	0.7438307
Educational services	0.7412312	0.7426783	0.7485296	0.7394039	0.7287228
Health care&social assistance	0.7099901	0.7084536	0.7070039	0.7093653	0.7130938
Arts,entertainment&recreation	0.7740754	0.774395	0.7763653	0.7769299	0.7765663
Accommodation&foodservices	0.7092193	0.716436	0.7062007	0.7095353	0.7127376
Other services(except public administration	0.6534452	0.6551943	0.655225	0.6577476	0.6591677

Preliminary Results In The Category Of Ratios Of Total Annual Receipts To Number Of Non-employer Firms Between 1997 And 2001

The third way to examine the distribution of the entrepreneurial development was to compare the disparity levels of the ratios of total receipts to total number of non-employer firms

establishments in 203 MSA. This ratio reflected the share of the receipts per establishment by industry, which would be interpreted similarly as "the value of per capita income for non-employer firms" (Table 3).

Agricultural industry still had the smallest disparity levels given the total receipts per establishment among 203 MSA's (ranged from 0.02 to 0.05). This implied that each non-employer firm in Agricultural industry had almost equal share of receipts between 1997 and 2001, regardless the output combinations and input characteristics. Although some farmers would be more profitable compared to others due to scale of economics, the average receipts per agricultural non-employer firm seemed to be equally distributed in 203 MSA given the Census information. The largest inequality existed in Utility industry, not Information industry (ranged from 0.27 to 0.33). This could be the result of variable geographical distributions of the utility establishments, differentiated pricing strategies by the location of the utility establishments, and public policies. Other higher disparity levels in the receipts per establishments included Mining, Accommodation-Food Services, and Finance-Insurance industries.

The disparities of the ratios also changed in a different pattern for individual industry between 1997 and 2001. The only industries that revealed a declining trend were Agriculture, Mining, Utilities, Information, Real Estate, and Health Care-Social Assistance industries. Others were either increasing in disparity levels or maintained constant levels.

Table 3. Gini Coefficients – Ratio of Total Receipts Versus Number of Non-employer Firms By Industry

Sector	receipt vs. establishment 1997	1998	1999	2000	2001
agri	0.0518089	0.0287729	0.0166551	0.023119	0.0316437
mining	0.2863766	0.2549756	0.2843238	0.2612	0.2618089
utilities	0.3235643	0.3335457	0.3070338	0.2772461	0.2753028
construction	0.1208088	0.1201834	0.1248185	0.1259204	0.1292173
manufacturing	0.1525978	0.1525978	0.1574275	0.1571663	0.160476
wholesale trade	0.119257	0.1117211	0.1229617	0.1260036	0.1325327
retail trade	0.1216636	0.1261692	0.1264651	0.1302126	0.1311877
transportation &warehousing	0.0979355	0.095162	0.0929701	0.093517	0.0990142
information	0.1832199	0.1788379	0.1656747	0.1781483	0.1751731
finance &insurance	0.2149827	0.182824	0.2501639	0.2613617	0.2292799
Real estate &rental &leasing	0.1131179	0.1010493	0.1021887	0.1050026	0.1052829
Professional,scientific&technical services	0.105444	0.1034417	0.1065526	0.1101295	0.1111287
Administrative&support&waste management&remediation serv	0.1232445	0.1308808	0.1332971	0.1338644	0.1378995
Educational services	0.1526991	0.1653599	0.1686104	0.1740897	0.1610049
Health care&social assistance	0.1536788	0.1589861	0.1487637	0.1472875	0.1472875
Arts,entertainment&recreation	0.1811374	0.1804007	0.1748036	0.1706305	0.1729538
Accommodation&foodservices	0.2304842	0.27891	0.2636592	0.2690159	0.2644606
Other services(except public administration	0.081705	0.0852865	0.0883958	0.0913768	0.0926799

Conclusions and Implications

Small businesses continue to be an important part of the American economy, contributing to new jobs, innovations, and opportunities for minorities, women, and immigrants to enter the economic mainstream (US SBA, 2004). While entrepreneurial ventures have become a driving force to the increasing share of the economic contributions, there are some differences between number of businesses and total annual receipts when we look into different industries by locations. According to Blau's article (1987), there could be a variety of causes of the increasing trend of the self-employment in recent years: (1) recent changes in industrial structure had favored industries in which small firms were viable and scale of economies were relatively unimportant; (2) relative prices had shifted in favor of industries in which self-employment was relatively common, inducing growth in such industries relative to others; (3) rising marginal tax

rates had made self-employment more attractive because of the ease of underreporting income from self-employment compared with wage-salary earnings; (4) increased wage rigidity had increased the proportion of the labor force that resorted to self-employment as a response to being rationed our of wage jobs; (5) rising real retirement benefit levels under the Old Age Security and Disability Insurance (OASDI) program had increased the rate at which older workers shifted from wage0salary to self-employment in order to obtain greater flexibility in hours worked and "partially retired". These factors further disaggregated the entrepreneurial ventures into smaller segments that would contribute to various disparity levels in business activities.

This study revealed some interesting outcomes based on the Census information that had not been discovered before. Number of non-employer firms distributed quite evenly in 203 MSAs only for Agricultural industry. Non-Agricultural industries seemed to have much higher disparity levels in terms of number of non-employer firms in 203 MSAs. Similar results in total receipts also showed that Agricultural industry had much smaller inequality in total receipts compared with Non-Agricultural industries in 203 MSAs. More results showed that the number of establishments and total annual receipts seemed to have various impacts on the changes in the disparity levels of the share of the receipts per establishment. For Agricultural industry and Mining industry, the declining trend of the disparity levels across 203 MSAs in receipts per establishment could be influenced by a slower growth rate in total annual receipts, discrepancies in the changes of the establishments, and public policies. In the Utility industry, the declining trend of the disparity levels across 203 MSAs in receipts per establishment might relate to a more dramatic change in total annual receipts. The increase in inequality of receipts per establishment for Accommodation and Food Services industry might be due to the increasing disparity levels in

total receipts, given a constant disparity level in number of establishments. For most of the industries where the disparity levels of the receipts per establishment were constant, there were proportional changes in inequality levels of the total annual receipts and the number of establishment.

Several implications could be derived from this study:

1. While entrepreneurial activities have generally increased in recent years, there are variations in the path of entrepreneurial development in different MSAs and different industries.

2. The various disparity levels across MSAs or industry should be further studied to examine critical factors leading to these changes, such as resource allocation, location of the enterprises, local environment, local policies, community supportive organizations, and other business aspects.

3. More discussions should evolve from this study to understand the relationship between classical economic theories and assumptions that might lead to either consistent or controversial findings.

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