



*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

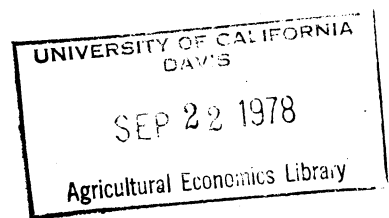
<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

*No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.*

Employment



THE SELF EMPLOYMENT BIAS IN THE UNEMPLOYMENT RATE:  
DIFFERENTIAL METROPOLITAN, NONMETROPOLITAN EFFECTS

by

SIGURD R. NILSEN

Economist

Economic Development Division

US Economics, Statistics and Cooperatives Service  
U.S. Department of Agriculture

Presented at the American Agricultural Economics Association  
Meetings, Blacksburg, Virginia, August, 1978.

**The Self Employment Bias in the Unemployment Rate:  
Differential Metropolitan, Nonmetropolitan Effects**

by

**SIGURD R. NILSEN**

**Economist  
Economic Development Division  
Economics, Statistics and Cooperatives Service  
U.S. Department of Agriculture**

**Abstract**

This paper investigates how the level of self employment effects the measurement of official unemployment statistics. The components of the unemployment rate are identified and the rate is recalculated to reflect the labor market performance for wage and salary workers only. Data from the Survey of Income and Education, conducted in 1976, are used to demonstrate that sub-national unemployment rates contain a systematic bias which is highly correlated with the level of self employed agricultural workers. After adjustment for self employment, rates increased by over 20 percent in nonmetropolitan areas and only 10 percent in metropolitan areas. The implications for manpower funding allocations resulting from this consistent understatement of rural unemployment rates are discussed.

The Self Employment Bias in the Unemployment Rate:  
Differential Metropolitan, Nonmetropolitan Effects

The unemployment rate is a macro index designed to monitor the health of the National economy. It is generally viewed as an indicator of the ability of the labor market to provide employment to those seeking work and since its inception in the 1940's has not experienced any great transformations of either concept or measurement. The 1962 Gordon Commission, charged with evaluating the measurement of employment and unemployment, recommended several methodological changes, a sharpening of concepts and an increase in the amount of information collected regarding the unemployed. <sup>1/</sup> The Commission, however, did not investigate the extent to which structural differences in labor markets could effect the consistency of the unemployment measure between metropolitan and nonmetropolitan areas.

In recent years the Congress has stipulated the use of unemployment statistics as allocators of manpower and economic development funding to State and substate areas. In 1976, about \$17 billion in program funding was allocated to state and local areas on the basis of unemployment statistics. The expansion in the use of unemployment statistics from an aggregate index of labor market performance to an allocator of program funds, provides sufficient justification for a further review of the components of the index. Specifically, how accurately does it reflect labor market activity in local areas characterized by different industry and occupational structures? Metropolitan-nonmetropolitan differences in structure and the effect these differences exert on job availability and worker incomes were recently discussed in an article published in the Monthly Labor Review. <sup>2/</sup>

This paper examines an additional aspect of nonmetropolitan and metropolitan labor markets - the incidence of self employment - and illustrates its impact on the measurement of unemployment in metropolitan and nonmetropolitan areas. In addition, regional differentials within metropolitan and nonmetropolitan areas are also examined.

#### Components of the Unemployment Rate

The unemployment rate is a simple ratio of the unemployed to the total civilian, noninstitutional labor force as measured by the monthly Current Population Survey (CPS). The labor force is comprised of the employed plus the unemployed. The unemployed are all those persons without a job who are actively seeking work. All persons working at least one hour per week for pay or an unpaid family member working 15 hours or more a week are defined as employed. All those with self employment activities are considered employed. However, only primary employment activities are identified in the survey. Thus, self employment activities are identified if they are either the primary activity, or if a person whose usual primary activity is a wage and salary job is unemployed from that position, but has a supplementary self employment activity. Therefore, a worker may be unemployed with respect to primary activity, but if the person engages in a supplementary activity, such as self employment, that worker is still considered employed.

#### Self Employment Levels

A higher proportion of workers in nonmetropolitan areas have earnings from self employment activities than in metropolitan areas. In 1975, 17.4 percent of the nonmetropolitan labor force had self employment earnings compared with 8.9 percent of metropolitan workers (table 1). 3/

Table 1--Source of Earned Income for the Metropolitan and Nonmetropolitan Labor Force, 1975

Region	Labor Force <sup>b</sup>	Self Employed						
		Total	Also had wage and salary income			Only self employment income		
			Total <sup>a</sup>	Nonfarm	Farm	Total <sup>a</sup>	Nonfarm	Farm
Thousands								
Nation								
Metropolitan	71513	6376	2624	2238	447	3752	3374	441
Pct. of Labor Force		8.9	3.7	3.1	0.6	5.2	4.7	5.0
Nonmetropolitan	31109	5514	2028	1076	1054	3386	1960	1593
Pct. of Labor Force		17.4	6.5	3.5	3.0	10.9	6.3	4.6
Northeast								
Metropolitan	18768	1438	522	472	54	916	871	54
Pct. of Labor Force		7.7	2.8	2.5	0.3	4.9	4.6	0.3
Nonmetropolitan	4771	533	204	160	46	329	254	82
Pct. of Labor Force		11.2	4.3	3.4	1.0	6.9	5.3	1.7
North Central								
Metropolitan	18700	1530	647	509	155	883	735	163
Pct. of Labor Force		8.2	3.5	2.7	0.8	4.7	3.9	0.9
Nonmetropolitan	9448	2033	731	338	434	1302	596	784
Pct. of Labor Force		21.5	7.7	3.6	4.6	13.8	6.3	8.3
South								
Metropolitan	19420	1841	766	635	153	1075	968	132
Pct. of Labor Force		9.5	3.9	3.3	0.8	5.5	5.0	0.7
Nonmetropolitan	12845	2140	804	393	460	1336	826	576
Pct. of Labor Force		16.7	6.3	3.1	3.6	10.4	6.4	4.5
West								
Metropolitan	14625	1567	689	623	85	878	800	92
Pct. of Labor Force		10.7	4.7	4.3	0.6	6.0	5.5	0.6
Nonmetropolitan	4045	709	290	185	113	419	284	150
Pct. of Labor Force		17.5	7.2	4.6	2.8	10.4	7.0	3.7

a-Components sum to more than total since some persons had both farm and nonfarm self employment earnings.

b-The labor force is defined as those with earnings in 1975.

Source: Survey of Income and Education, 1976.

Although farm related self employment activities account for much of the difference, nonfarm self employment is also proportionately more prevalent in nonmetropolitan areas, accounting for 9.8 percent of the nonmetropolitan labor force versus 7.8 percent of the metropolitan labor force.

The difference in the rates of self employment results from major differences in the structure of the two labor markets. This is clearly illustrated by the direct relationship between the proportion of the labor force employed in agriculture, forestry and fisheries and the percent self employed (table 2).

The Northeast, having the lowest proportion of the labor force employed in agriculture, 1.1 percent in metropolitan areas and 4.7 percent in nonmetropolitan areas, also has the lowest levels of self employment, 7.7 percent in metropolitan areas and 11.2 percent in nonmetropolitan areas. The North Central region, having 1.6 percent of the metropolitan labor force employed in agriculture and 13.5 percent of the total nonmetropolitan labor force, has the highest levels of self employment, 8.2 percent in metropolitan areas and 21.5 percent in nonmetropolitan areas. The West has the highest rate of self employment for metropolitan areas, 10.7 percent, and also the highest level of agricultural employment in metropolitan areas, 2.5 percent.

Higher rates of self employment for the nonmetropolitan labor force are not limited to differences in the level of agricultural employment alone, however. The proportion of the nonmetropolitan labor force with self employment income from nonfarm activities is also higher. This ranges from 8.7 percent of the nonmetropolitan labor force in the Northeast, to 11.6 percent of the nonmetropolitan workers

Table 2--Metropolitan and Nonmetropolitan Self Employment, 1975

Area	Metropolitan			Nonmetropolitan		
	Employment	Self employed		Employment	Self employed	
	in			in		
	Agriculture			Agriculture		
	Forestry			Forestry		
	& Fisheries	Total	Non-farm	& Fisheries	Total	Non-farm
	<u>Percent of total employed</u>					
Nation	1.6	8.9	7.8	9.8	17.4	9.8
Northeast	1.1	7.7	7.1	4.7	11.2	8.7
North Central	1.6	8.2	6.6	13.5	21.5	9.9
South	1.6	9.5	8.3	8.4	16.7	9.5
West	2.5	10.7	9.8	11.9	17.5	11.6

Source: 1976 Survey of Income and Education.



in the West. The differential rate of nonfarm self employment between the metropolitan and nonmetropolitan labor force ranges from a high of 3.3 percent in the North Central region, to 1.2 percent in the South.

Within regions the distribution of self employment between those who also have wage and salary income and those who only have self employment income does not vary a great deal. For the Nation, 41 percent of metropolitan self employed workers also have wage and salary income, while the corresponding figure for nonmetropolitan areas is 37 percent. The lowest rate of these multiple activities is in the nonmetropolitan North Central region where only 35 percent of the self employed also have wage and salary income. This lower rate may be due to the heavy concentration of large-scale agriculture in this region, also the access to alternate nonfarm employment opportunities is somewhat limited. The Western region has the highest levels of workers engaged in both self employed and wage and salary activities with 44 percent of the self employed in the metropolitan areas and 41 percent in nonmetropolitan areas earning income from both activities.

#### Self Employment and the Unemployment Rate

In all cases the presence in the labor force of the self employed workers reduced the unemployment rate as it is now measured. The self employed enter the denominator of the unemployment rate calculation as part of the labor force, but, by definition, become unemployed only if they cease business. Therefore, the self employed rarely enter the numerator. The potential impact of this structural constraint can be demonstrated with a simple example. In an area with a labor force of 10,000 people, of whom 1,000 are unemployed, the unemploy-

ment rate would be 10 percent. If however, the labor force contains 1,000 self employed workers, the unemployment rate for those in the labor force who are more likely to become unemployed (i.e. the wage and salary workers) is  $1,000/9,000$ , or 11 percent.

The self employment bias inherent in the unemployment rate is a particularly critical factor when the statistic is used as a micro level indicator. Funding allocations based on unemployment statistics for programs designed to increase the employability of workers and the availability of jobs, will result in an inequitable distribution of program support in local areas containing high rates of self employment.

The effect of this self employment bias is illustrated in table 3. The first column under the metropolitan and nonmetropolitan heading records the unemployment rate. The second shows the unemployment rate adjusted for self employment (i.e. the unemployment rate of wage and salary workers). <sup>4/</sup> Data for metropolitan and nonmetropolitan areas for the first quarter, 1975 through the fourth quarter, 1976 are presented. The unemployment level for nonmetropolitan areas was generally lower than the metropolitan level for 1975 and 1976. Only in the first quarter of 1975 did the actual unemployment rate in nonmetropolitan areas exceed the metropolitan rate. After adjusting for self employment, however, the nonmetropolitan unemployment rate is greater than the metropolitan level for three of the eight quarters. In addition, the adjusted unemployment rate for nonmetropolitan areas increased by 20 percent, compared to only 10 percent for metropolitan areas. Furthermore, the differential between the two rates decreased, except

Table 3--Actual and adjusted unemployment rates for metropolitan and nonmetropolitan areas (not seasonally adjusted).

Quarters	:	Metropolitan		:	Nonmetropolitan	
	:			:		
	:			:		
	:	actual	adjusted <sup>a</sup>	:	actual	adjusted
1975 I		9.1	10.0		9.2	11.1
II		8.8	9.7		8.3	10.1
III		8.7	9.6		7.5	9.1
IV		8.1	8.9		7.0	8.5
1976						
I		8.7	9.6		8.1	9.8
II		7.7	8.5		6.5	7.9
III		8.0	8.8		6.7	8.1
IV		7.6	8.4		6.6	7.9

<sup>a</sup> The adjusted figures are derived by applying the levels of self employment from the SIE data to the labor force estimates from CPS.

when the two rates are nearly equal or the nonmetropolitan rate was greater, in which case the differential increased.

The effect of adjusting metropolitan and nonmetropolitan unemployment rates within the four Census regions is illustrated in table 4. Initial unemployment rates of 10.0, 7.0 and 5.0 percent were assumed before adjustment for self employment. After adjustment, the effect is least for the Northeast region, which has the lowest levels of self employment. The wage and salary unemployment rate increased by 8 percent in the metropolitan areas and by 13 percent in nonmetropolitan areas.

The differential effect on the unemployment rate adjusted for self employment across and within regions is directly related to the proportion of the labor force employed in the Agriculture, Forestry and Fisheries industry group, table.2. The nonmetropolitan West and North Central regions have the highest rates of employment in agriculture, 11.9 and 13.5 percent, respectively. These regions also have the highest rates of self employment, 17.5 percent in the West and 21.5 percent in the North Central, and also have the greatest change in the unemployment rate when adjusted for self employment, 21 and 27 percent, respectively.

### Conclusion

Stating the unemployment rate only in terms of wage and salary employment resulted in an increase in the unemployment rate of over 20 percent in nonmetropolitan areas, but only 10 percent in metropolitan areas. The greatest effect was a 27 percent increase in the unemployment rate in the nonmetropolitan portion of the North Central Region. The

Table 4--Examples of Unemployment rates  
adjusted for self employment

Assumed unemployment levels	Ten Percent	Seven Percent	Five Percent	Percent change
Adjusted Unemployment levels				
Nation				
metropolitan	11.0	7.7	5.5	10
nonmetropolitan	12.1	8.5	6.1	21
Northeast				
metropolitan	10.8	7.6	5.4	8
nonmetropolitan	11.3	7.9	5.6	13
North Central				
metropolitan	10.9	7.6	5.4	9
nonmetropolitan	12.7	8.9	6.4	27
South				
metropolitan	11.0	7.7	5.5	10
nonmetropolitan	12.0	8.4	6.0	20
West				
metropolitan	11.2	7.8	5.6	12
nonmetropolitan	12.1	8.5	6.1	21

smallest effect was an 8 percent increase in the metropolitan Northeast. This differential effect is due primarily to the higher levels of agricultural and related self employment activities in nonmetropolitan areas. However, agriculture is not the only factor effecting the level of self employment. The level of nonfarm self employment is nearly 10 percent in nonmetropolitan areas and about 8 percent in metropolitan areas.

This adjustment has implications for manpower program funding. Unemployment statistics are used to allocate manpower funds. The bias in the official statistics due to self employment results in the allocation of manpower funds that is inherently inequitable. Areas with high levels of self employment activity, in particular nonmetropolitan areas, are likely to receive less than a fair share of funds for manpower programs. A more appropriate allocation device, focusing exclusively on the wage and salary labor force, would provide for more effective and equitable distribution of these funds.

1/ See, Measuring Employment and Unemployment, Report of the Gordon Committee, USGPO, 1962. Also, the Congress has established a new commission to review employment and unemployment statistics. See Breggar, John F. "Establishment of a New Employment Statistics Review Commission" Monthly Labor Review, March, 1977, pp 14-20.

2/ See Nilsen, Sigurd R. "How Occupational Mix Inflates Regional Pay Differentials" Monthly Labor Review, Vol. 101, No. 2, February, 1978 pp. 45-49, and Adams, John F. et. al. Employment, Income and Welfare in the Rural South, New York, Praeger Publisher, 1977.

3/ The data cited in this paper, except for table 3, are from the Survey of Income and Education (SIE) which was conducted for the Department of Health, Education and Welfare by the Bureau of the Census in the Spring of 1976. The data on self employment reflected workers who had income from self employment activities in 1975. All rates of self employment are calculated as a percent of the number of persons with earnings in 1975.

4/ To adjust the unemployment rate for the effects of the self employed labor force, those with only self employment earnings are eliminated from the labor force. Next, a proportion of those with both wage and salary and self employment earnings equivalent to the unemployment rate for those with only wage and salary earnings are added to the unemployed. An adjusted unemployment rate is then calculated as the ratio the adjusted level of unemployment to the labor force, minus those with only self employment earnings.