

ORIGINAL

HUD-0004042



**THE URBAN
INSTITUTE**

2100 M Street, N.W.
Washington, D.C. 20037

Project Report

ECONOMIC ANALYSIS OF EFFECTS OF
BUSINESS CYCLES ON THE ECONOMY OF CITIES

THE SENSITIVITY OF INCOME IN
CITIES AND SUBURBS TO NATIONAL
BUSINESS CYCLE FLUCTUATIONS

Donald M. Manson

Cooperative Agreement Number HA-5455
Cooperative Agreement Amount \$134,976

Submitted To:

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Henry Coleman
Economist
Economic Development and Public Finance
Room 8218
451 Seventh Street, S.W.
Washington, D.C.

Original Submission: January 1983

Submitted By:

THE URBAN INSTITUTE
2100 M STREET, N.W.
Washington, D.C. 20037
(202) 833-7200

George E. Peterson, Principal Investigator

Table of Contents

	Page
INTRODUCTION.....	1
CONSTRUCTION OF THE DATABASE.....	3
Source of Data.....	4
Imputation of Quarterly Income Estimates.....	7
SMSA Income.....	9
Suppressed Data.....	10
KEY ANALYTICAL CONCEPTS.....	16
Cycle Dates.....	16
Personal Income.....	18
Methods of Analysis.....	19
Cyclical Swing.....	20
Return-to-peak.....	21
Rates of Suburbanization.....	21
THE EXPOSURE OF METROPOLITAN AREAS TO BUSINESS CYCLE FLUCTUATIONS...	23
Comparison of the Two Cycles.....	24
Significant Destabilizing Sectors.....	27
Manufacturing.....	27
Construction.....	30
Significant Stabilizing Sectors.....	33
Transfer Payments.....	33
State and Local Governments.....	37
Income Fluctuations Since 1980:I.....	41
The Cyclical Exposure of SMSAs by Region.....	42
The Cyclical Exposure of SMSAs by Rate of Population Growth.....	52
The Cyclical Exposure of SMSAs by Sepcialization in Manufacturing.....	62

Table of Contents
(continued)

	Page
The Cyclical Exposure of Metropolitan Areas by Population Size.....	67
Consistency of Relative Cyclical Exposure.....	71
Cyclical Exposure and Industrial Composition.....	72
THE EXPOSURE OF CENTRAL AND SUBURBAN AREAS TO BUSINESS CYCLE FLUCTUATIONS.....	75
Identifying Central Cities.....	75
Differences in Central and Suburban Income Composition.....	80
Cyclical Exposure of Cities and Suburbs.....	81
Reasons for the Greater Cyclical Sensitivity of Suburban Economies.....	87
Stabilization by the Government Sector.....	93
Cyclical Exposure by Place of Residence.....	96
Cyclical Recovery of Income in Cities and Suburbs.....	98
Suburbanization During Recessions and Expansions.....	104
SUMMARY.....	110

List of Tables

Table	Page
1. Distribution of SMSAs by Ratio of Central City Population to Central County Population.....	6
2. Number of SMSA Counties with Suppressed Data, by Population-Size Class (1980) and Source of Income.....	13
3. Comparison of Industry Shares of Metropolitan Income: County Series Used in this Study and Universe Data.....	14
4. Cyclical Behavior Personal Income, Total United States.....	26
5. Cyclical Swing, by Income Component, All SMSAs.....	28
6. Cyclical Behavior of Wages and Salaries in Manufacturing, Total United States.....	31
7. Cyclical Behavior of Wages and Salaries in Durable Manufacturing, Total United States.....	32
8. Cyclical Behavior of Wages and Salaries in Construction, Total United States.....	34
9. Cyclical Behavior of Transfers, Total United States.....	36
10. Cyclical Behavior of State and Local Government Employee Compensation, Total United States.....	39
10.a Annual Rates of Change for Selected Components of Income, by Quarter, 1980:I to 1982:III.....	43
11. Share of Total Labor Income Originating in Manufacturing, SMSAs by Region.....	45
12. Cyclical Swing, Selected Income Aggregates, SMSAs by Region.....	46
12.a Cyclical Swing, Private, Construction, and Durable Manufacturing, SMSAs by Region.....	47
13. Cyclical Swing, Selected Income Aggregates, SMSAs by Rate of Population Growth.....	54
14. Cyclical Swing, Income from Manufacturing and Services, SMSAs by Rate of Population Growth.....	55
15. Cyclical Swing, Income from State and Local Government Employment, SMSAs by Rate of Population Growth.....	59
16. Cyclical Swing, Selected Income Aggregates, SMSAs by Degree of Specialization in Manufacturing.....	64

List of Tables
(continued)

Table	Page
18. Cyclical Swing of Transfer Payments, SMSAs by Degree of Specialization in Manufacturing.....	66
19. Cyclical Swing, Selected Income Aggregates, SMSAs by Population Size.....	69
20. Regression Analysis, Determinants of Cyclical Swing.....	74
21. Cyclical Swing, Selected Income Aggregates, Central Counties by Central City-Central County Population Ratios.....	77
22. Comparison of Private Sector Income Cyclical Swing, Central and Suburban Counties, by Central City-Central County Population Ratio.....	79
23. Cyclical Swing, Selected Income Aggregates, Central and Suburban Counties.....	83
24. Cyclical Swing, Selected Income Aggregates, Central and Suburban Counties, by Region.....	86
25. Cyclical Swing, Selected Income Aggregates, Central and Suburban Counties, by Rate of SMSA Population Growth.....	88
26. Cyclical Swing of Income Derived from Manufacturing, Central and Suburban Counties.....	90
27. Cyclical Swing of Income Derived from Construction, Central and Suburban Counties.....	92
28. Cyclical Swing of Income Derived from Government, Central and Suburban Counties.....	94
29. Cyclical Swing of Income Derived from Transfers, Central and Suburban Counties.....	99
30. Cyclical Increase in Income Peak-to-Peak, Central and Suburban Counties.....	101
31. Cyclical Private Sector Income Change, Peak-to-Trough, Central and Suburban Counties.....	102
32. Cyclical Private Sector Income Change Peak-to-Peak, Central and Suburban Counties.....	103
33. Annual Change in Central County Share of SMSA Income and Population.....	107
34. Annual Change in Central County Share of SMSA Income in the Private Sector, by Industry.....	108

INTRODUCTION

With the national economy in recession, concern about the sensitivity of local economic activity to national economic cycles has intensified. Jurisdictions facing high unemployment rates have searched for ways to insulate their labor markets and public sector budgets from the impact of national fluctuations in economic activity. The long-run consequences for local economies of steeper and more frequent cyclical troughs remains uncertain.

The purpose of this paper is to investigate the impact of national economic cycles on the economies of metropolitan areas. The analysis examines the response of all metropolitan areas in the country to the two business cycles which occurred between 1969 and 1980, and compares the differential effect of these cycles on the central and suburban portions of metropolitan areas. Special attention is devoted to sectors in the economy which are significant because of their consistent pattern of intensifying or attenuating income fluctuations during the business cycle.

Changes in personal income are used to determine the exposure of metropolitan economies to cyclical change. Personal income data provide rich detail on the sectoral source of labor income and also separately report non labor sources such as income from capital and transfer payments. These data contain sufficient geographic detail to examine changes in the central and suburban portions of metropolitan areas. While the original data source did not have adequate temporal detail, this study developed a procedure to synthesize a quarterly income series so that both cyclical expansions and contractions could be analyzed.

Metropolitan area response to business cycle fluctuations is examined for several descriptive classifications. These reveal differences or similarities among areas by their region, rate of population growth, degree of manufacturing activity, and population size. Differences in cyclical exposure between central and suburban areas are examined for both income from jobs located in these areas and the income of area residents.

The study generally finds broad agreement with results of previous studies. Substantial variation among regions is evident, and much of this is caused by sectors that have been traditionally identified as cyclically sensitive or cyclically stable. The relative cyclical exposure of central and suburban areas deviated from expectations developed by a review of the literature. Suburban area economies experienced greater cyclical exposure in the period studied, as a result of their industrial composition and the relative sensitivity of industries with suburban locations. The transfer of income between areas by worker commutation, however, reduces these differences when the income of area residents is considered. Other analysis showed that suburbanization is clearly affected by the business cycle so that expansions greatly accelerate this process.

This paper begins by briefly explaining how the data base was constructed and describing its characteristics. The analytical procedures used in the investigation are discussed and their relationship to the goals of the study is indicated. The findings of the analysis are then separately presented for all metropolitan areas and for central and suburban areas. Additional background work for this study is presented in two companion working papers which review the relevant literature and provide a detailed explanation of the methodology used to develop the data base.

CONSTRUCTION OF THE DATABASE

A central problem in a study of the effect of business cycles on cities and suburbs is identifying a source of data for the analysis. This source must have adequate detail along three dimensions--geographic, temporal, and industrial. Small area geographic coverage in the data is required so that the effect of business cycle fluctuations can be separately identified for cities and for suburbs within the structure of metropolitan areas. Ideally, the source would separately identify economic activity in cities and in suburbs, but no such readily available time series exists.

Secondly, the data source must have adequate temporal detail. The data in the time series must be reported with sufficient frequency that turning points in the business cycle can be accurately located. At the national level, business cycle turning points--peaks and troughs in the level of economic activity--are determined with monthly frequency. Thus, the point at which the economy turns from recession to recovery, or from expansion to contraction, is identified as a particular month. Quarterly data are also used to observe economic changes during the business cycle, but there is clearly some sacrifice in precision as turning points can only be identified within a range of three months. Recessions, which are generally much shorter than expansions, have lasted about five quarters in recent business cycles, so quarterly data provide acceptable temporal detail for their analysis.

Finally, the data must provide ample detail on economic activity since cyclical sensitivity shows substantial variation in different sectors of the private economy. As a rule, service industries are only

modestly sensitive to business cycle fluctuations while durable goods manufacturing and construction experience wide swings in their level of activity. Coverage must also extend beyond the private sector economy. Government employment, especially state and local, does not typically follow the pattern of cyclical fluctuation observed in the private sector and the behavior of this sector must be separately traced. Non labor sources of income must be identified in the data as well, since they comprise an important share of total income. In particular, transfer payments perform an important role in stabilizing income during business cycles.

Source of Data

Unfortunately no single source of data meets the requirements of small area (city) geographic coverage, a high frequency of data reporting, and extensive sectoral detail. These requirements are most closely approximated by the "Local Area Personal Income" estimates prepared by the Bureau of Economic Analysis (BEA). This source provides annual county level estimates of income by source. Sources are identified as thirteen major industrial categories of labor income, and non labor income categories such as transfer payments, and dividends, interest, and rent. An adjustment converting labor income by place-of-work to place-of-residence status is also separately identified.

While this source provides adequate detail on the separate components of personal income, it does not have either the desired geographic coverage or the minimum temporal frequency discussed above. The shortcoming on geographic coverage is a fixed limitation, since counties are the smallest geographic unit for virtually all sources of local area data. (To a large

extent this is because counties nearly always cover the same geographic area from one time to another. Due to annexation and other factors, the area included within a city frequently changes over time.) Conveniently, the central city (or cities) of a metropolitan area is usually contained within a single (central) county, and this city often accounts for a large proportion of the central county population. Therefore, with a reasonable degree of accuracy, the central city of a metropolitan area can be approximated by its encompassing central county, thus allowing the use of county level data.

The geographical match between central city and central county itself shows a good deal of variation. For a number of metropolitan areas the central city is coincident with county boundaries. San Francisco and New York City are two examples where this is true. In other cases the approximation is much weaker. See table 1. Among large metropolitan areas, Chicago and Detroit are places where less than 60% of the central county population is contained within the city. In some smaller metropolitan areas there is even less conformance between the central city and the central county. These differences in SMSA configuration are examined later when we analyze differences in central and suburban behavior over the economic cycle.

The annual frequency of the data, however, is more problematic. Annual data do not provide adequate temporal detail to capture important changes in economic activity during the business cycle. This is particularly true for recessions.

Table 1

Distribution of SMSAs by Ratio of
Central City Population to
Central County Population

Population Ratio	Number of SMSAs
1.00	16
0.80 - 0.99	17
0.60 - 0.79	45
0.40 - 0.59	42
less than 0.40	17
Total Multi-County SMSAs	137

Source: Derived from Office of Management and Budget, Statistical Policy Division, Standard Metropolitan Areas, 1975.

Imputation of Quarterly Income Estimates

Our approach to this problem was to synthesize a quarterly data series for counties. A detailed description of the procedure used to develop this series can be found in the companion working paper, "A Procedure to Impute Quarterly Estimates of Personal Income in Counties Contained in SMSAs".¹ In brief, a quarterly data series for county income was created by linking the county series to the state income series, for which quarterly data are reported. To account for differences in income composition among counties (share of income from the various sources, such as durable goods manufacturing, transfers, and so forth), each component of income was treated separately. Thus, state quarterly income fluctuations, by source, were separately imputed to the annual series of each county income component. The sum of each quarterly series, over the four quarters of a given year, was constrained to equal the originally reported annual figure as a control total. Quarterly income aggregates, such as total labor income or total personal income, were subsequently constructed by adding together the quarterly series of the relevant income components.²

Empirical testing demonstrated the validity of using state quarterly data to impute quarterly fluctuations to the components of annual county

1. Donald Manson, "A Procedure to Impute Quarterly Estimates of Personal Income in Counties Contained in SMSAs," (Urban Institute Working Paper, number 3165-03, August 1982).

2. The procedures finally adopted for imputing quarterly estimates for farm income and the residence adjustment do not follow those originally described in the working paper. Since both of these income components are extremely volatile and frequently assume negative values, the smoothing procedure described in the working paper was not applied because of occasional large overcorrections. Quarterly estimates for these items were based on a straight line interpolation between years instead.

income. Four simple models were estimated to determine the strength of the relationship between county economic fluctuations and fluctuations at the state and national levels. The four models are:

$$\text{Model A: County Income} = b_{0,a} + b_{1,a} * \text{Rest of State Income}$$

$$\text{Model B: } \log(\text{County Income}) = b_{0,b} + b_{1,b} * \log(\text{Rest of State Income})$$

$$\text{Model C: County Income} = b_{0,c} + b_{1,c} * \text{Rest of Nation Income}$$

$$\text{Model D: } \log(\text{County Income}) = b_{0,d} + b_{1,d} * \log(\text{Rest of Nation Income}).$$

Each model was estimated using annual time series data for total personal income, income from durables manufacturing and income from services for a subset of U.S. counties.

Models A and B test the relationship between county and state income fluctuations, while models C and D test the same relationship between county and national data. For each county in the sample, the four models were econometrically estimated using annual income data in constant dollars from 1969 to 1980.

The explanatory power (R-squared statistic) of the models relating county income fluctuations to state income fluctuations was superior to that for the models based on national income fluctuations. For personal income, the explanatory power of model A exceeded that of model C in 62 of 99 counties for which the models were estimated, and model B was superior to model D in 69 of the 99 estimates. For income originating from durable goods manufacturing and services industries, state income fluctuations were similarly superior in explaining local economic fluctuations as shown below.

Models with Greatest Explanatory Power

Highest R ²	Source of Income		
	Personal	Durable Mfg.	Services
Linear Models:			
Model A	62	19	13
Model C	37	4	7
Log models:			
Model B	69	18	16
Model D	30	5	4

In all cases the explanatory power of the models was high, indicating close correspondence between changes in the local economic activity and state and national changes. This superiority of models A and B provides an empirical justification for using state economic fluctuations as the bases for imputing quarterly income estimates in counties.

SMSA Income

Estimates of county quarterly income were combined to create quarterly income estimates for SMSAs. Throughout the study the geographic definition of SMSAs was based on their county composition as of 1975.³ Two SMSA databases were developed from the county quarterly income data. One contains quarterly estimates of the components of income for all SMSAs, while the other has separate quarterly estimates for the central

3. In New England SMSA definitions were replaced by New England County Metropolitan Areas (NECMAs). In New England, SMSAs are composed of "towns", for which income data are not available. NECMAs, as defined by the Office of Management and Budget, are based on county areas for which the basic data are available. It should be noted that NECMAs often encompass two or more SMSAs.

county portion and the suburban (non-central) county portion of each metropolitan area. The SMSA level data base contains estimates for 257 metropolitan areas, while the database which separately identifies central and suburban areas contains estimates for 137 metropolitan areas. The second file covers only multi-county metropolitan areas.⁴ Each of these files contains quarterly time series estimates for the years 1969 to 1980 for the components of income and other data listed in figure 1.

Suppressed Data

To avoid disclosing the activities of individual enterprises, the Bureau of Economic Analysis occasionally suppresses data items in the Local Areal Personal Income file. These suppressions occur when there is a chance that the activities of individual firms or reporting units could be identified from the data. The policies of BEA in this area are conservative, and the frequency of data suppression can be high in small counties and in industries with a low level of activity in a metropolitan area, or a high degree of concentration.

Suppressed items in the annual county income series from BEA are individually flagged and reported as zero values. In the series for a particular component (e.g., mining), where entries for certain years are suppressed while other years are not, these suppressions create spurious fluctuations in the level of industry activity. To prevent such errors from occurring, it was necessary to suppress the entire county time series

4. Eight multi-county SMSAs are not included in the data base because all counties in the area were either suburban or central counties. The omitted SMSAs are: Clarksville-Hopkinsville, TN-KY; Duluth-Superior, MN-WI; Fargo-Moorehead, ND-MN; Nassau-Suffolk, NY; Riverside-San Bernardino, CA; Seattle-Everett, WA; Vallejo-Fairfield-Napa, CA; and Youngstown-Warren, OH.

Figure 1.

Components of the Metropolitan Area
Quarterly Personal Income Database

1. Farm
2. Non-Farm

3. Private
4. Ag. Services, For., Fish., and Other
5. Mining
6. Construction
7. Manufacturing
8. Non-Durable Goods
9. Durable Goods
10. Transportation and Public Utilities
11. Wholesale Trade
12. Retail Trade
13. Finance, Insurance, and Real Estate
14. Services

15. Government and Government Enterprises
16. Federal, Civilian
17. Federal, Military
18. State and Local

19. Total Labor & Proprietors Income by Place of Work
20. Less: Personal Contributions for Social Insurance by Place of Work
21. Net Labor & Proprietors Income by Place of Work
22. Plus: Residence Adjustment
23. Net Labor & Proprietors Income by Place of Residence
24. Plus: Dividends, Interest, and Rent
25. Plus: Transfer Payments

26. Personal Income by Place of Residence
27. Per Capita Personal Income
28. Total Population

of any component containing suppressed data. For example, the mining income component in Kings County, New York (Brooklyn) was suppressed in 1977 and 1978. To prevent this from appearing as though mining activity ceased during these two years, thereby creating an erroneous fluctuation, the entire mining series from 1969 to 1980 was suppressed for this county.

We were concerned that this suppression might alter the apparent industrial composition of the areas in the data base. The frequency of data suppression is shown in table 2, which reports the number of counties with suppressed data by industry, cross-tabulated with county population-size class. The most frequently suppressed industries were agricultural services, forestry and fishing, and mining. Neither of these industries plays a significant role in the economy of metropolitan areas, and their suppression should not distort the analytical findings.

The effect of the data suppression on the apparent industry mix of metropolitan areas was also tested. Table 3 displays the share of total labor earnings derived from each industry in central cities and central counties, and the remainder of the SMSA for each of these. The shares for the central and non-central portions of SMSAs using the central city definition are derived from a special tabulation of the Current Population Survey by the Bureau of the Census.⁵ The shares for the county-based definition are from the SMSA quarterly income estimates developed in this study. As shown by the table, the shares of income from the two sources are very close, confirming that data suppression did not seriously alter industrial composition.

5. Bureau of the Census, "Social and Economic Characteristics of the Metropolitan and Nonmetropolitan Population: 1977 and 1970," P-23, No. 75, 1978, Tables 15 and 16.

Table 2

Number of SMSA Counties with Suppressed
Data, by Population-Size Class (1980)
and Source of Income

	Population Size Class of County							
	TOTAL	10K	10K-25K	25K-50K	50K-100K	100K-250K	250K-500K	500K+
Farm	25	3	5	1	1	7	3	5
Ag. Svcs, Forestry & Fishing	518	9	46	100	110	144	66	43
Mining	523	10	51	103	114	147	64	43
Construction	128	5	15	25	28	31	11	13
Manufacturing	125	8	31	34	21	24	4	3
nondurables	125	8	31	34	21	24	4	3
durables	126	8	32	34	21	24	4	3
Tran & Util.	114	5	25	31	22	16	8	7
Wholesale	235	7	31	50	54	56	27	10
Retail	9	0	2	0	2	1	1	3
F.I.R.E.	97	5	17	27	19	23	5	1
Services	121	2	16	39	20	26	9	9
Total Number of Counties	656	10	53	110	124	182	93	84

Source: Urban Institute analysis of BEA Local Area Personal Income data.

Table 3

Comparison of Industry Shares
of Metropolitan Income: County
Series Used in this Study
and Universe Data

Source	Inside		Outside	
	Central City [Universe]	Central County [Study Series]	Central City [Universe]	Central County [Study Series]
Agricultural Services, Fishing & Forestry	0.5%	0.1%	1.4%	0.2%
Mining	1.2	0.7	0.6	0.3
Construction	5.1	5.1	6.2	6.1
Manufacturing	24.0	26.0	27.7	29.7
non-durables	9.3	9.4	8.9	9.6
durables	14.6	16.6	18.8	20.1
Transportation, Communi- cation & Utilities	8.3	9.0	8.6	6.1
Wholesale Trade	5.3	7.2	5.7	5.6
Retail Trade	11.3	9.9	10.5	11.4
Finance, Insurance & Real Estate	7.4	7.3	6.7	4.0
Services	28.7	16.8	25.4	15.7
Public Adm./Gov't	8.2	17.6	7.2	18.7

Note: See discussion in text for detail concerning comparability of sources.

Sources: County based data from the quarterly income data file. City based data are derived from Bureau of the Census, "Social and Economic Characteristics of the Metropolitan and Non-metropolitan Population: 1977 and 1970," P-23., No. 75; 1978, Tables 15 and 16.

The greatest degree of distortion occurred in the agricultural services and mining industries, where the frequency of suppression was highest. However, since these do not account for more than 2% of earned income in SMSAs when combined, this discrepancy can safely be ignored. Other differences are shown in the table, but many of these result from non-comparabilities in the data used in the sources. First, the two sources define central areas differently. The quarterly file is based on county definitions, while the Census file is based on a central city definition. Second, the Census file allocates many government workers to other sectors of the economy as if they were employed in the private sector. Accordingly, public school teachers are allocated to the service sector in the census file, while they are retained in the government sector in the quarterly BEA-based data. More uncertainty arises from different treatment of metropolitan areas in New England (SMSA by the Census vs. NECMA in this study), differences in the time period examined, and sampling errors present in the Current Population Survey, the source of the Census data.

KEY ANALYTICAL CONCEPTS

Cycle Dates

In many studies of business cycle fluctuations considerable effort is devoted to establishing the turning points--peaks and troughs--in the level of economic activity. At the national level, the National Bureau of Economic Research serves as the arbiter of business cycle dates and identifies peaks and troughs in a monthly framework.⁶ At the state and local level, the question of cyclical timing has also received attention, though this research has provided little consensus on the timing of local cycles.⁷ Since this is a study to assess the impact of national business cycle fluctuations on cities and suburbs, we have relied on the turning points in the national economy to identify the starting dates of recessions and expansions in SMSAs.

Differences in the timing of cycles among metropolitan areas, and between cities and suburbs, also deserve careful investigation. However, because of the linkage between the state quarterly data from BEA and the imputed quarterly data series for counties, the data base developed in this study is not well suited for such an analysis. In particular, this limitation applies to comparisons between the timing of cycles in central

6. These cyclical timing points are reported in Bureau of Economic Analysis, Business Conditions Digest.

7. Several works have examined the timing of local cycles. For a general discussion see Roger J. Vaughan, Public Works as a Countercyclical Device: A Review of the Issues (Santa Monica, Calif.: Rand Corp., July 1976) R-1990-EDA:28-36. Specific studies include L. King, E. Casetti, and D. Jeffrey, "Economic Impulses in a Regional System of Cities: A Study of Spatial Interaction," Regional Studies, 3, 1969: 213-218; P. Neff and A. Weifenbach, Business Cycles in Selected Industrial Areas (University of California Press, 1949); and T. Nicolaus Tideman, "Defining Area Distress in Unemployment," Public Policy, 24(4), Fall 1973: 441-492.

and suburban locations. Since the central and suburban counties in any given SMSA are usually in the same state, income components in these two areas in our series would show the same pattern of temporal fluctuation through their linkage to state quarterly fluctuations.

A more appropriate approach to identifying differences in the timing of local business cycle fluctuations would use employment data, such as county monthly employment in industries covered by unemployment insurance. While the degree of coverage by this source has changed somewhat over time, a sufficiently consistent series could be developed to identify significant turning points in area local employment. Moreover, the monthly framework would provide greater temporal detail and permit detection of more subtle differences in the timing of cycles in central and suburban areas.

The dates of economic turning points used in this study correspond to those used at the Bureau of Economic Analysis by Friedenbergr and Bretzfelder in their study of the regional sensitivity of non farm wages and salaries to national business cycles.⁸ They identified cyclical troughs as the quarter in which real GNP reached a low after a preceding peak, and peaks as the quarter in which real GNP reached a new high before again starting to decline. For the period covered by this study, peaks occurred in the third quarter of 1969, the fourth quarter of 1973, and the first quarter of 1980. Troughs occurred in fourth quarter of 1970 and the first quarter of 1975. If the NBER dates (based on a monthly series) are

8. Howard Friedenbergr and Robert Bretzfelder, "Sensitivity of Regional and State Nonfarm Wages and Salaries to National Business Cycles, 1948-1979," Survey of Current Business, May 1980: 15-27; and Robert B. Bretzfelder and Howard Friedenbergr, "Sensitivity of Regional and State Nonfarm Wages and Salaries to the National Business Cycle, 1980:I - 1981:III," Survey of Current Business, January, 1982:26-29.

translated to quarterly dates a small discrepancy arises in the timing of national business cycles. The first peak identified would have occurred in the fourth quarter of 1969, rather than in the third, as identified by BEA. Other NBER monthly dates coincide with the BEA quarterly dates.

Personal Income

The definition of several income components identified in the quarterly income series should be clarified. "Private" income is composed of all non farm labor income derived from work in the private sector. Included in this category are all earnings for the components "agricultural services, forestry, and fishing" through "services", items 3 through 11 as shown earlier in figure 1. The "government" sector covers all labor earnings from persons working in any of the three classifications of government employment--federal civilian, federal military, and state and local government. Unlike the practice followed by the Bureau of the Census in classifying industry of employment, earnings of government workers in this study are not allocated to the other sectors in which these workers would have been classified had they been employed in the private sector.

Together with "farm" income, private and government sector income are combined to form total labor income by place of work. This component identifies all labor income earned at places of employment within the county. Since workers in a county may reside elsewhere, a compensation known as a "residence adjustment" is required to account for commuting

patterns.⁹ When added to income by place of work, this produces labor income (net of social insurance contributions) by place of residence--the total labor income earned by persons living within the county. To this component "dividends, interest, and (real and imputed) rent" income, and "transfer" payments are added to derive "personal" income. Included in transfer payments are government payments to individuals for retirement, disability and health insurance, unemployment insurance payments, income maintenance payments, military retirement, payments to nonprofit institutions, and business transfer payments.

Methods of Analysis

To investigate the response of SMSAs to national business cycles, and the separate responses of their central and suburban areas, several simple analytical techniques have been employed. These measure the cyclical swing of the various components of income during a cycle; income levels at the trough and terminal peak of the cycle relative to their levels at the initial peak; the rate at which income suburbanizes during recessions and expansions; and the share of total SMSA income based in the central county. Throughout the study nominal income data have been converted to real (constant 1972 dollars) income amounts using the Gross National

9. The quality of the residence adjustment data at the county level is difficult to assess, though this item plays an important role in the central-suburban comparisons discussed later. BEA bases the residence adjustment on factors derived from the 1970 Census of Population commuting data. In general, this adjustment appropriately reflects the net flow of commuters' labor income in counties that have not experienced large economic or demographic changes since 1970. Residence adjustments are reviewed using Internal Revenue Service tax returns to isolate areas where major changes have occurred. When shifts are detected, adjustments are made in cases where they can be justified. For further discussion and detail see Bureau of Economic Analysis, Local Area Personal, Volume 1, "Summary," section on "Methodology," June 1982, pp xx - xxii.

Product Implicit Price Deflator reported by the Bureau of Economic Analysis.

Use of real income data eliminates (or at least greatly reduces) apparent changes in income that are caused by inflation. Since the rate of inflation changes over time, and may differ when expansions and recessions are compared, use of nominal income data can introduce apparent cyclical swings which do not actually exist. The GNP implicit deflator has been used to convert nominal to real income. This is more appropriate than using sector specific deflators since the income earned by workers is used to make purchases from the economy as a whole. In principle, it might be desirable to use separate regional or location-specific price deflators for the different SMSAs in the sample. Such price deflators do not exist, however. One activity scheduled for the second phase of this project is analysis of the interaction between metropolitan cycles and metropolitan area price trends, where such measures are available.

Cyclical Swing. Cyclical swing is a measure of the exposure of an area to business cycle fluctuations. It indicates the degree to which the economy of an area deviates from its secular pattern of growth in the two phases of the business cycle. This measure is equal to the difference between the rate of (quarterly) growth (at an annual rate) during the expansion, and the rate of growth (usually decline) during the recession.

When cycles are mild, these growth rates do not differ much from the secular trend, and the swing measure is correspondingly small. In more severe cycles, growth rates turn sharply negative in the recession, and if the recession is followed by a strong recovery, growth rates in the expansion will be commensurately large. The difference between the rate of

growth in each phase of a severe cycle will then be large, and the cyclical swing measure will be corresponding high. Thus, the cyclical swing measure provides an indication of the exposure, or sensitivity, of an area to business cyclical fluctuations. When the swing measure is small, changes in the level of economic activity during the cycle are modest, indicating mild cyclical exposure. When it is large, economic gyrations in the area are correspondingly great, signalling a high degree of cyclical exposure.

Return-to-peak. The degree to which an economy recovers after a business cycle is another important indicator of a cycle's impact. Economies severely damaged by deep recessions, those where a large number of businesses close permanently as a result of a sharp downturn, may not fully recover to their level of economic activity in the previous peak. The degree of recovery after a cycle can be measured by a peak-to-peak comparison--the ratio of income in the peak following a recession to its level in the initial peak. Using this measure, the level of recovery in central areas can be compared with the recovery level in suburban areas. When peak-to-peak comparisons are made among industries, shifts in the structure of an area's economy can also be identified.

Rate of Suburbanization. For some time population and economic activities have been shifting away from the central areas of SMSAs to locations that are more suburban. Decentralization and suburbanization are terms often used to describe this redistribution of activity. The rate at which this change occurs can be referred to as the rate of suburbanization. By computing rates of suburbanization during recessions and expansions, the

effect of business cycles on the process of suburbanization can be identified.

The rate of suburbanization can be measured as the annual change in the share of income (or population) attributable to the central portion of a metropolitan area.¹⁰ When an activity is suburbanizing, the share of SMSA activity in the central area will decline over time, and this measure will be negative. As the rate of suburbanization increases, this measure will become more strongly negative. Conversely, when an activity is becoming more concentrated in the central area this measure will be positive.

10. Spurious indications of decentralization caused by the redefinition of SMSA areas over time has been prevented by using constant SMSA boundaries as they were defined in 1975.

THE EXPOSURE OF METROPOLITAN AREAS
TO BUSINESS CYCLE FLUCTUATIONS

The exposure of metropolitan areas to economic fluctuations during business cycles varies substantially according to their characteristics. For example, it is well established that regions with large concentrations of durable goods manufacturing are highly sensitive to business cycles due to the highly cyclical nature of this industry.¹¹ For the same reason, metropolitan areas located in regions of durable goods manufacturing, or any metropolitan area with a concentration of durable goods manufacturing, will tend to have a high degree of exposure to cyclical fluctuations. In this section, the influence of several descriptive characteristics on metropolitan cyclical sensitivity will be examined. Four characteristics—region, rate of population growth, degree of specialization in manufacturing, and population size—will be used to classify metropolitan areas. The cyclical exposure of all SMSAs according to their classification by each of these characteristics is determined.

11. See George H. Borts, "Regional Cycles of Manufacturing Employment in the United States, 1914-1853," American Statistical Association Journal (March, 1960): 151:211; Robert B. Bretzfelder, "Sensitivity of State and Regional Income to National Business Cycles," Survey of Current Business, (April, 1973): 22-33; Robert B. Bretzfelder and Howard Friedenbergl, "Sensitivity of Regional and State Nonfarm Wages and Salaries to the National Business Cycle, 1980:I-1981:III," Survey of Current Business, (January, 1982): 26-29; Howard Friedenbergl and Robert Bretzfelder, "Sensitivity of Regional and State Nonfarm Wages and Salaries to National Business Cycles, 1948-1979," Survey of Current Business, (May, 1980): 15-27; Lynne Browne, "Regional Industry Mix and the Business Cycle," New England Economic Review, (November/December, 1978): 35-53; Bruce D. Phillips, "A Note on the Spatial Distribution of Unemployment by Occupation in 1968," Journal of Regional Science, 12(2), 1972: 295-298; and Georges Vernez, Robert Vaughan, Burke Burright, and Sinclair Coleman, Regional Cycles and Employment Effects of Public Works Investments (Santa Monica, Calif.: Rand Corp., January, 1977) R-2052-EDA.

Comparison of the Two Cycles

The period covered by this study encompasses two business cycles. The first had an initial peak in third quarter of 1969, and a trough in the fourth quarter of 1970. The initial peak of the second cycle as well as the final peak of the first, occurred in the fourth quarter of 1973. The trough of this second cycle was in the first quarter of 1975 with the expansion continuing into a final peak in the first quarter of 1980.

Both of these cycles have been characterized as "interest rate cycles", where interest rates rose to historically high levels. From the mid-1950s to the mid-1960s, a period that includes almost two full business cycles, interest rates for short term business loans moved in a narrow range between 4 and 6 percent.¹² In 1969, at the start of the recession in the first cycle examined in this study, this rate had climbed to 9 percent. After a decline to less than 6 percent in the following recovery, the rate again increased sharply to reach a high of more than 12 percent in the second recession.

By a wide margin the second cycle was more severe. From initial peak to trough, real GNP only declined by -0.7 percent in the five quarters (1969:III to 1970:IV) of the first cycle recession. In the following expansion (1970:IV to 1973:IV), GNP then grew by 16.8 percent. The recession in the second cycle (1973:IV to 1975:I) was much deeper, with a drop in GNP of -4.8 percent. In the second recovery (1975:I to 1980:I), which was considerably longer than the first, GNP increased by 23.9 percent. The greater severity of the second recession is apparent too by a -2.9 percent decline in real personal income in that period, which contrasts

12. Bureau of Economic Analysis, Business Conditions Digest, December 1992.

with a slight increase of 1.7 percent in real dollar terms during the first recession.

The greater severity of the second cycle is also evident by its increased breadth. In both the first and second cycles industrial production in durable goods manufacturing dropped sharply. By comparison, most other sectors, including non-durable manufacturing, construction, and retail trade, remained nearly flat in the first cycle, experiencing only slight growth or decline. In the second cycle, however, the recession was much more broadly felt. Construction declined sharply, and non-durable manufacturing and retail trade showed significant decreases.

Prior to the second cycle, economic fluctuations in the U.S. had been showing a trend towards lower cyclical sensitivity.¹³ As shown by the swing measures in table 4, there had been a rather steady decrease in cyclical sensitivity until the period of the second cycle. The sensitivity of personal income declined by more than half, from a swing of 7.10% in the 1948:III - 1953:III cycle, to 3.31% in the 1969:III - 1973:III cycle. This pattern was clearly broken in the second cycle that this study examines. In this period the swing of personal income almost doubled its magnitude of the previous cycle by reaching 6.44%, nearly equalling its high in the 1948:IV - 1953:III cycle.

13. The reduction in business cycle fluctuations over time has been noted repeatedly in the literature. See George H. Borts, "Regional Cycles of Manufacturing Employment in the United States, 1914-1953," American Statistical Association Journal, (March, 1960): 151-211; Stanley Engerman, "Regional Aspects of Stabilization Policy," in Richard A. Musgrave (ed.), Essays in Fiscal Federalism (Washington, D.C.: The Brookings Institution, 1965); and Georges Vernez, Roger J. Vaughan, Burke Burright, and Sinclair Coleman, Regional Cycles and Employment Effects of Public Works Investments (Santa Monica, Calif: The Rand Corp., January 1977) R-2052-EDA.

Table 4
Cyclical Behavior Personal Income,
Total United States

Cycle Dates	Swing	Quarterly growth of personal income, at annual rate	
		Recession	Expansion
1948:IV - 1953:III	7.10%	-1.25%	5.85%
1953:III - 1957:III	6.06	-2.30	3.76
1957:III - 1960:II	4.73	-0.59	4.14
1960:II - 1969:III	3.30	1.29	4.59
1969:III - 1973:III	3.31	1.33	4.64
1973:III - 1980:I	6.44	-2.38	4.06

Note: Analysis is for total United States; metropolitan and nonmetropolitan areas.

Source: Quarterly data for personal income are from Bureau of Economic Analysis, National Income and Product Accounts, Table 2.1. Nominal dollars were deflated using the GNP Implicit Price Deflator, National Income and Product Accounts, Table 7.1.

Significant Destabilizing Sectors

When the sensitivity of metropolitan areas is examined by each of the four descriptive characteristics, income from manufacturing, especially durable goods, and construction appear as very destabilizing sectors. During downturns the rate of decline of income earned in these sectors greatly exceeds the rate for total labor income. During recoveries their rates of growth also generally exceed the rate of growth for total labor income. Thus, these sectors act as destabilizing elements in the metropolitan economy--they tend to accentuate the cyclical swing of income during the business cycle.

Manufacturing. By a wide margin the most cyclically sensitive sector in metropolitan areas during the first cycle was manufacturing. During the recession income from this sector declined at an annual rate of -8 percent for all SMSAs, as shown in table 5. In the following recovery income grew at an annual rate of 4 percent, and the swing for manufacturing in the first cycle was therefore 12 percent.¹⁴

14. The findings in this study show broad agreement with other research in the literature on the relative stability of different industries during the business cycle. The cyclical swings reported here, however, are not always closely related to those reported by Friedenber and Bretzfelder (Howard Friedenber and Robert Bretzfelder, "Sensitivity of Regional and State Nonfarm Wages and Salaries to National Business Cycles, 1948-1979," Survey of Current Business (May, 1980): 15-27. One reason is that this study is limited to activity in metropolitan areas, whereas Friedenber and Bretzfelder, as well as most other reports in the literature, are based on data from metropolitan and nonmetropolitan areas. More significant, however, is that Friedenber and Bretzfelder based their analysis on wages and salaries in nominal dollars while this study uses broader labor income measured in constant dollars. Sensitivity tests indicated that there are important differences between results based on nominal income and those based on real constant dollar income.

Table 5
Cyclical Swing, by Income Component, All SMSAs
(computations in constant dollars)

Income Component	1969:III to 1973:IV			1973:IV to 1980:I		
	Cyclical Swing	Quarterly growth rate at annual rate		Cyclical Swing	Quarterly growth rate at annual rate	
		Recession	Expansion		Recession	Expansion
Farm	20.57	-4.87	15.70	13.23	-15.71	-2.48
Non-Farm	4.39	-0.65	3.74	7.82	-3.85	3.97
Private	5.46	-1.73	3.73	9.14	-4.55	4.60
Ag. Svcs., Ftry. & Fishg.	6.27	0.81	7.08	8.02	-2.32	5.70
Mining	3.38	1.77	5.16	-6.30	16.65	10.34
Construction	5.54	-1.11	4.43	16.00	-11.35	4.65
Manufacturing	11.94	-8.01	3.94	11.58	-7.32	4.26
Non-Durables	3.95	-2.55	1.41	9.86	-6.80	3.07
Durables	16.22	-10.91	5.31	12.43	-7.58	4.85
Trans. & Pub. Util.	-0.39	4.35	3.96	8.79	-4.22	4.57
Wholesale Trade	2.66	1.44	4.10	2.30	1.81	4.11
Retail Trade	2.24	0.65	2.89	8.21	-5.20	3.01
Finance, Insurance & Real Estate Services	2.17	0.42	2.59	9.61	-2.89	6.72
Services	0.85	3.01	3.86	6.27	-0.91	5.35
Government	-0.57	4.35	3.78	1.94	-0.82	1.12
Fed. Civilian	-0.79	2.97	2.18	0.96	-0.50	0.46
Fed. Military	8.89	-7.64	1.25	4.57	-6.45	-1.88
State & Local	-2.76	7.70	4.95	1.84	-0.00	1.84
Labor Inc. (POW)	4.57	-0.70	3.87	7.91	-4.01	3.90
Soc. Insur. Contributions	10.50	0.15	10.66	8.68	-4.20	4.48
Net Labor (POW)	4.25	-0.74	3.51	7.86	-4.00	3.86
Residence Adjustment	4.83	1.91	6.74	10.82	-4.02	6.80
Net Labor (POR)	4.24	-0.77	3.46	7.82	-4.00	3.82
Div., Int., & Rent	1.23	1.95	3.18	4.58	1.14	5.72
Transfers	-8.81	15.69	6.88	-9.66	12.93	3.27
Personal Income	2.63	1.13	3.76	5.23	-1.21	4.02

Note: POW = place of work; POR = place of residence.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

The volatility of this sector is attributable to the sensitivity of durable goods manufacturing, which comprises nearly two-thirds of all manufacturing in SMSAs. Durable goods had a swing of over 16 percent in the first cycle resulting from a rate of decline of nearly -11 percent in the downturn and a growth rate of better than 5 percent in the recovery. By comparison, the swing in nondurable goods manufacturing was very mild. In fact, the nondurables sector was actually mildly stabilizing in the first cycle, experiencing a swing of 4.0 percent compared to a 5.5 percent for private sector income.

In the second cycle manufacturing was again very destabilizing, though it experienced a smaller swing than construction in this period. The swing of income from manufacturing was about the same as in the previous cycle, almost 12.0 percent. But the balance between durable and nondurable goods manufacturing shifted. By comparison with the earlier cycle, the sensitivity of income from these two sectors was much closer. The swing in durables manufacturing declined to less than 13 percent, while nondurables increased to almost 10 percent.

The convergence is probably attributable to two factors. First, as noted earlier, the second cycle was much more broadly based and nondurable manufacturing, like most other sectors, was more severely affected in the recession, thereby sharply increasing its cyclical swing. The reduced sensitivity of durable manufacturing can be traced to a weak recovery in SMSAs during the first cycle. While SMSA private sector income increased by more than 8 percent across the entire cycle (a peak-to-peak comparison), income from durable goods manufacturing increased by less than 2 percent. At the start of the recession in the second cycle, durable goods manufacturing was already in a relatively weak position. As a

result, with less contraction activity in the industry was quickly reduced to a low level. The peak-to-peak recovery in this cycle was 12 percent for durables, and 16 percent for income in the private sector.

Income from the manufacturing sector has historically shown a high degree of sensitivity to the business cycle, and this is especially true for industries producing durable goods. For the six cycles between 1948 and 1980, tables 6 and 7 show the cyclical swing of wages and salaries for the total manufacturing and for durable goods manufacturing alone. These tables show that durable goods manufacturing has consistently experienced substantially greater swings than the manufacturing sector as a whole. (By inference, the swings in nondurable manufacturing have been less than total manufacturing.) They also suggest that there has been a general decline in the sensitivity of the manufacturing sector in the period since World War II.

Construction. Construction, which experienced a degree of cyclical exposure that was only slightly greater than the private sector as a whole in the first cycle, had the greatest sensitivity among all industries in the second. In the second recession, income in the construction industry declined at an annual rate of more than -11 percent. Although interest rates dropped from their peak in the recession, they remained at high levels throughout the following recovery, and income in construction only grew at a rate approximately equal to that for the private sector as a whole. Had interest rates declined even further, construction activity probably would have grown more rapidly, leading to an even larger cyclical swing for the industry.

Table 6
Cyclical Behavior of Wages and
Salaries in Manufacturing,
Total United States

Cycle Dates	Swing	Quarterly growth of wages and salaries, at annual rate	
		Recession	Expansion
1948:IV - 1953:III	18.66	-8.17	10.49
1953:III - 1957:III	13.73	-10.00	3.73
1957:III - 1960:II	18.68	-11.91	6.77
1960:II - 1969:III	10.66	-6.27	4.39
1969:III - 1973:III	11.68	-7.61	4.07
1973:III - 1980:I	12.65	-8.72	3.93

Note: Analysis is for total United States; metropolitan and nonmetropolitan areas.

Source: Quarterly data for wages and salary disbursements are from Bureau of Economic Analysis, National Income and Product Accounts, Table 2.1. Nominal dollars were deflated using the GNP Implicit Price Deflator, National Income and Product Accounts, Table 7.1.

Table 7

Cyclical Behavior of Wages and
Salaries in Durable Manufacturing,
Total United States

Cycle Dates	Swing	Quarterly growth of wages and salaries, at annual rate	
		Recession	Expansion
1948:IV - 1953:III	30.54	-15.33	15.21
1953:III - 1957:III	18.79	-14.28	4.51
1957:III - 1960:II	24.02	-15.94	8.08
1960:II - 1969:III	14.37	-9.24	5.13
1969:III - 1973:III	16.24	-10.70	5.54
1973:III - 1980:I	13.63	-9.17	4.46

Note: Analysis is for total United States; metropolitan and nonmetropolitan areas.

Source: Quarterly data for wage and salary disbursements are from Bureau of Economic Analysis, unpublished data. Nominal dollars were deflated using the GNP Implicit Price Deflator, National Income and Product Accounts, Table 7.1.

Construction has also traditionally shown a high degree of cyclical exposure. The historical record of swings for wages and salaries in the construction sector is presented in table 8. It is interesting to note that large swings which occurred in the first and last periods shown in the table are based in different parts of the cycle. In the first case, the large swing is the result of a very rapid expansion in the construction sector during the recovery, and a mild decline in the recession. This reflects the strong upward secular trend in housing starts resulting from the post war surge in demand for housing and the mortgage guarantees by the GI bill of rights. In contrast, the large swing in the final cycle shown in table 8 arises from a sharp downturn in housing starts during the recession, followed by a weak expansion in housing starts in the second half of the recovery.

Significant Stabilizing Sectors

Cyclical swings in total labor and personal income are generally significantly attenuated by two sources of income outside of the private sector--labor income from employment in state and local government, and transfer payments. Of the two, transfer payments is overwhelmingly the more stabilizing element.

Transfer Payments. In all of the investigations we conducted, the swing of transfer payments was always strongly negative, indicating its pervasive countercyclical stabilizing behavior. This negative swing arises from the rapid growth of transfer payments during recessions, and

Table 8

Cyclical Behavior of Wages and
Salaries in Construction,
Total United States

Cycle Dates	Swing	Quarterly growth of wages and salaries, at annual rate	
		Recession	Expansion
1948:IV - 1953:III	14.77	-4.75	10.02
1953:III - 1957:III	1.03	2.23	3.26
1957:III - 1960:II	8.89	-3.86	5.03
1960:II - 1969:III	6.10	-0.62	5.48
1969:III - 1973:III	4.35	0.16	4.51
1973:III - 1980:I	14.17	-10.37	3.80

Note: Analysis is for total United States; metropolitan and nonmetropolitan areas.

Source: Quarterly data for wages and salary disbursements are from Bureau of Economic Analysis, unpublished data. Nominal dollars were deflated using the GNP Implicit Price Deflator, National Income and Product Accounts, Table 7.1.

only moderate growth during expansions. As the economy weakens during recessions, unemployment insurance compensation and various types of welfare payments increase, accounting for the sharp rise in transfer payments. As the economy recovers and employment rises, transfer payments such as these decline.

Also included as transfer payments are consumer bad debts and some other types of business losses. While there is little direct data on these transfers, they too grow more rapidly during recessions than in expansions, thereby contributing to the countercyclical swing of transfer payments.

Transfer payments have historically exhibited strong countercyclical behavior as shown by the swing measures in table 9. In every cycle transfers experienced growth in both recessions and expansions, but their growth rate has always been substantially greater during recessions so that the swing of transfers is consistently countercyclical.

Transfer payments are composed of substantially more items than those discussed above. About two-thirds of all transfers are accounted for by retirement, disability, and health insurance transfers, a large proportion of which is social security benefits. Our data from BEA did not differentiate among these various types of transfer payments, and therefore the way in which the composition of transfer payments changes during the business cycle is unknown. More importantly, the contribution to stabilization from cyclically sensitive transfers such as unemployment insurance and AFCD payments is unknown at different phases of the business cycle. Since these forms of transfer payments are not separately identified in the

Table 9
 Cyclical Behavior of Transfers,
 Total United States

Cycle Dates	Swing	Quarterly growth rate of transfers, at annual rate	
		Recession	Expansion
1948:IV - 1953:III	-15.96%	21.07%	5.11%
1953:III - 1957:III	-9.03	15.86	6.83
1957:III - 1960:II	-22.71	24.72	2.01
1960:II - 1969:III	-10.02	16.02	6.00
1969:III - 1973:III	-8.45	15.57	7.12
1973:III - 1980:I	-9.24	12.88	3.64

Note: Analysis is for total United States; metropolitan and nonmetropolitan areas.

Source: Quarterly data for transfers are from Bureau of Economic Analysis, National Income and Product Accounts, Table 2.1. Nominal dollars were deflated using the GNP Implicit Price Deflator, National Income and Product Accounts, Table 7.1.

data, their individual cyclical sensitivity is not known. To be sure, the countercyclical swing of these components must be very large, and greatly exceed that of total transfers.

The data to identify the cyclical behavior of each component of transfer payments are available in another source from the Bureau of Economic Analysis. Unemployment insurance, and possibly AFDC payments, are important stabilizing elements of personal income during business cycles, and the cyclical nature of the individual components of transfer payment merits more detailed investigation.

State and Local Government. State and local governments historically have also stabilized local area personal income through countercyclical hiring practices. The behavior of state and local governments during business cycles has received a considerable degree of attention in the literature. Another study in this project has reviewed that literature and provided new analyses of state and local government response.

A lagging response by state and local governments to changes in the economic environment has frequently been cited as a major factor causing this countercyclical behavior.¹⁵ As the economy enters a recession, the state and local sector may have a substantial fiscal surplus from reserves built up in the preceding expansion. Sector employment may continue to grow into the recession, especially if it is comparatively short, even though some cyclically sensitive revenues fall. Delays in the budget adjustment process account for the lagged response, and the surplus which

15. See Advisory Commission on Intergovernmental Relations, State-Local Finances in Recession and Inflation, A-70, Washington, DC, May 1979 p. 28-29.

is carried over provides a source of funds to finance continuing high levels of employment.

By the time adjustments are made to prevent further erosion of the surplus, the economy may have turned around and entered the expansion phase. Thus, employment growth may be reduced in the expansion thereby producing a countercyclical response. This slower employment growth may continue into the expansion for some time as governments attempt to restore their surpluses to pre-recession levels.

The historical response of all state and local governments, including those in nonmetropolitan areas, is shown by the cyclical swing of employee compensation for each of the six business cycles between 1948 and 1980. See table 10. The strong countercyclical response of this sector is demonstrated by its consistently uniform negative swing in the first five cycles. In each of these cycles government employee compensation grew rapidly during the recession while private sector income declined. In the recovery phase the rate of government expansion declined to a level below the rate of growth during the recession, thus producing the countercyclical swing.

The decline in the countercyclical contribution of state and local government in the last four recessions was also revealed in the study by the Advisory Commission on Intergovernmental Relations. While the results of that study are slightly different because they are based on annual employment data, they show a similar pattern of changing cyclical behavior in the government sector. That study suggested that "the robustness of this source of countercyclical behavior may become less reliable in the

Table 10

Cyclical Behavior of State and
Local Government Employee Compensation,
Total United States

Cycle Dates	Swing	Quarterly growth rate of compensation, at annual rate	
		Recession	Expansion
1948:IV - 1953:III	-3.0%	8.5%	5.5%
1953:III - 1957:III	-2.5	9.3	6.8
1957:III - 1960:II	-3.2	9.4	6.2
1960:II - 1969:III	-1.4	8.7	7.3
1969:III - 1973:III	-1.9	7.2	5.3
1973:III - 1980:I	+1.7	0.7	2.4

Note: All state and local governments are included in this analysis, including governments in nonmetropolitan areas as well as those in SMSAs.

Source: Quarterly state and local government employee compensation data are from Bureau of Economic Analysis, National Income and Product Accounts, Table 3.7. Nominal dollars were deflated using the GNP Implicit Price Deflator, National Income and Product Accounts, Table 7.1.

future,"¹⁶ and the final cycle shown in table 10 provides a confirmation of this change.

In the last cycle shown in table 10 the response of state and local government broke with its historical behavior and was no longer countercyclical. This change is indicated by a +1.7 percent cyclical swing in the last cycle. This clear break with past behavior reflects the fiscal concerns of many state and local governments in the 1970s. In the deep recession from 1973:III to 1975:I state and local governments only increased payrolls by 0.7 percent, well below their earlier rates of better than 7 percent annually. In the following recovery, the rate of growth rose above the recession level to 2.4 percent producing a procyclical, though stabilizing, response for the cycle. Presumably, as the economy moved into the recovery, tax receipts increased allowing state and local governments to expand more rapidly as their fiscal conditions improved.

The response of state and local governments located in metropolitan areas was shown earlier in table 5 for the two cycles between 1969 and 1980. The pattern for this sector in metropolitan areas follows that for all state and local governments in the nation as shown in table 10--countercyclical in the first cycle, and procyclical in the second. Although the response of state and local governments in the second cycle was procyclical, the 2 percent swing of income in this sector was considerably less than the 9 percent swing for the private sector as a whole. Thus, while the state and local sector was procyclical in the

16. Ibid., p. 9-10.

second cycle, it was nonetheless stabilizing and helped to reduce the swing of total labor income to 7.91% from a swing of 9.14% for the private sector.

In the second cycle, mining showed behavior that was strongly countercyclical--a response not generally characteristic of this sector. This was caused by the rapid expansion of energy mining activities following the oil embargo and the ensuing sharp rise in the price of crude oil. During the expansion the energy situation stabilized somewhat, and the rate of mining income growth eased, producing the apparent countercyclical behavior of the industry.

Income Fluctuations Since 1980:I

Although unemployment rates have risen to new post-war highs and industrial capacity utilization has reached a new post-war low, the cyclical behavior of the economy since the first quarter of 1980 has not followed an historically typical pattern. Following the terminal peak of the second cycle the National Bureau of Economic Research designated July 1980 as the trough of a recession lasting only two quarters. There has been no announcement of a subsequent peak, and there appears to be no strong consensus among economists that the economy has entered any sort of sustained recovery since the initial downturn.

Inspection of real GNP quarterly estimates does not provide any additional insight. Minor peaks and troughs have occurred in the period, but neither an upward nor a downward trend is clearly evident in these data. Thus, in the ten quarters since the last cyclical peak, real GNP has remained more or less constant. Since the cyclical nature of recent changes in the economy has not yet been established, quarterly fluctu-

ations for the major stabilizing and destabilizing sectors of the economy are presented in table 10.a, rather than their cyclical swing measures.

To an even greater extent than the two previous cycles, this period has been characterized by exceptionally high interest rates, and the impact of these on long term capital goods is clearly apparent in the table. During this period income from durable goods manufacturing and construction has declined in every quarter except for two, and real personal income from these industries has declined by -11.55% and -13.26% respectively.

Income from the state and local government sector has remained approximately flat in the period. Although there have been slight increases and decreases, these fluctuations have more or less cancelled out one another until the most recent quarters, and income from the sector has increased by only 1.70% over the period. Transfers show an erratic pattern, but this reflects cost of living adjustments (in real terms) in social security and other government transfers which are not seasonally adjusted in the data. (These adjustments are effective in July of any given year and cause sharp third-quarter increases in transfers.) Throughout this period of poor economic performance transfer payments have increased by a total of 14.84%.

The Cyclical Exposure of SMSAs by Region

Like the differences among regions themselves, there is a wide range in the cyclical sensitivity of SMSAs according to their regional location. The East North Central Region has traditionally been the most sensitive region due its high concentration of cyclically sensitive durable

Table 10.a

Annual Rates of Change for Selected
Components of Income,* by Quarter,
1980:I to 1982:III
(change in constant dollar income)

Period	Personal Income	All Manufacturing	Durable Goods Manufacturing	Construction	State & Local Government	Transfers
1980:I - 1980:II	-5.32%	-13.18%	-17.63%	-21.57%	1.13%	3.27%
1980:II - 1980:III	5.02	-2.64	-3.18	-6.65	0.75	32.67
1980:III - 1980:IV	3.50	6.76	9.62	0.97	-0.38	-3.69
1980:IV - 1981:I	1.87	-0.40	-0.63	4.82	-0.75	-4.65
1981:I - 1981:II	1.99	3.83	4.70	-9.52	0.75	-1.41
1981:II - 1981:III	4.25	-2.40	-2.48	-3.90	-1.50	12.76
1981:III - 1981:IV	-2.51	-12.46	-14.34	-3.94	-1.13	-1.60
1981:IV - 1982:I	-1.65	-7.88	-10.99	-3.98	3.41	0.23
1982:I - 1982:II	1.66	-4.02	-4.99	-5.03	3.38	7.12
1982:II - 1982:III	2.91	-6.62	-8.08	-7.12	1.12	12.42

* Note: Data are for wages and salaries except for personal income and transfers.

Source: Urban Institute analysis of BEA National Income and Products Accounts data and BEA unpublished data.

goods manufacturing. See table 11. Other regions, with less dependence on durable goods manufacturing and a greater reliance on the service sector as a source of income, generally exhibit less exposure to business cycle fluctuations.

The cyclical sensitivity of income in SMSAs by region is shown in table 12. The sensitivity of three aggregates of income is shown in the table. This distinguishes the swing of private sector income from the swing of total labor income, since the latter may have been stabilized by public sector employment. Swings in personal income are also separately displayed to account for differences in sensitivity after the stabilizing effects of capital based income and transfers have been included.¹⁷

The extreme sensitivity of SMSA economies in the East North Central region in the first cycle is clearly apparent. Private sector income in the region experienced a swing of 9.05 percent while the average for all regions was only 5.46 percent. Not only was the reliance of SMSAs on durable goods manufacturing greatest in this region--28.3 percent compared to an average of 18.0 percent for all regions--but the swing experienced by this sector was also greatest in this region. Income from durable goods manufacturing had a swing of 20.9 percent in the East North Central region compared with a swing of 16.2 percent in all regions. These swings are shown in table 12.a, along with the regional swings for income from construction.

17. In general the relative sensitivity of SMSAs by region corresponds closely with the rankings of regional sensitivity found by other studies. Differences shown here are attributable to variations in the way regions have been defined (BEA uses a somewhat different definition than Census) and to the restriction of geographic coverage in this study to only those counties located in metropolitan areas.

Table 11

Share of Total Labor Income
Originating in Manufacturing,
SMSAs by Region

Region	1969:III to 1973:IV			1973:IV to 1980:I		
	All Mfg	Nondurable	Durable	All Mfg	Nondurable	Durable
New England	36.8%	12.2%	24.6%	37.0%	11.0%	26.1%
Mid Atlantic	29.0	12.4	16.7	28.0	11.4	16.6
S Atlantic	16.2	8.0	8.1	15.4	7.6	7.8
E N Central	37.7	9.4	28.3	37.3	8.9	28.4
E S Central	26.4	11.7	14.8	25.5	10.7	14.8
W N Central	29.4	11.1	18.3	29.2	10.4	18.8
W S Central	20.3	8.9	11.2	20.0	8.6	11.4
Mountain	15.7	4.6	11.1	15.9	4.5	11.4
Pacific	23.4	6.8	16.6	23.0	6.7	16.4
All Regions	27.7	9.7	18.0	26.8	9.0	17.9

Source: Urban Institute analysis of BEA Local Area Personal Income data.

Table 12
 Cyclical Swing, Selected Income Aggregates,
 SMSAs by Region

Region*	N	1969:III to 1973:IV			1973:IV to 1980:I		
		Private	Labor (POW)	Personal Income	Private	Labor (POW)	Personal Income
New England	13	4.17	3.44	1.46	10.41	9.69	5.95
Mid Atlantic	30	2.14	1.49	-0.05	7.28	6.43	4.16
S Atlantic	43	4.61	4.51	2.97	11.44	8.64	5.42
E N Central	52	9.05	7.80	5.51	10.35	9.23	6.77
E S Central	20	5.59	5.46	3.44	8.20	7.79	4.73
W N Central	20	4.88	3.98	2.49	8.43	7.94	6.42
W S Central	39	4.30	3.48	2.26	5.62	5.49	3.28
Mountain	15	3.46	2.73	1.32	13.33	10.30	6.80
Pacific	25	7.12	5.73	3.06	8.69	7.18	4.23
All SMSAs	257	5.46	4.57	2.63	9.14	7.91	5.23

*Note: The Census definition of "divisions" is used in this study.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

Table 12.a

Cyclical Swing, Private, Construction,
and Durable Manufacturing,
SMSAs by Region

	<u>1969:III to 1973:IV</u>			<u>1973:IV to 1980:I</u>		
	Private	Construction	Durables	Private	Construction	Durables
New England	4.17	-2.52	11.54	10.41	17.85	9.83
Mid Atlantic	2.14	-3.35	10.92	7.28	13.97	7.71
S Atlantic	4.61	10.53	15.03	11.44	21.91	18.32
E N Central	9.05	9.79	20.90	10.35	13.08	15.99
E S Central	5.59	10.12	10.50	8.20	8.23	12.21
W N Central	4.88	-0.79	16.24	8.43	12.07	12.01
W S Central	4.30	5.49	15.18	5.62	7.08	8.91
Mountain	3.46	4.16	10.97	13.33	35.82	16.35
Pacific	7.12	9.51	18.28	8.69	17.51	9.75
All SMSAs	5.46	5.54	16.22	9.14	16.00	12.43

*Note: The Census definition of "divisions" is used in this study.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

In New England, where heavy industries have a smaller role and high technology products are of greater importance, durable goods manufacturing had a swing of only 11.5 percent, although this region had the second highest dependence, 24.6 percent, on durables manufacturing. The extreme sensitivity of durables in the East North Central region can be attributed to the nature of the goods produced there, such as automobiles, and to the integration and interdependence of the heavy industries in the region.

The countercyclical behavior of state and local government (-3.38 percent) helped to stabilize total labor income in the East North Central region, reducing the swing of private sector income from 9.05 percent to 7.80 percent for total labor income. This was further stabilized by capital and transfer income so that the swing in personal income was reduced to 5.51 percent.

The importance of durable goods manufacturing to cyclical behavior in the first cycle is shown by the difference among regions in the cyclical swing of income. The Pacific region, which had the second largest swing in income from durables and about average reliance on this sector, was second only to the East North Central in labor income cyclical sensitivity.

A high degree of cyclical sensitivity, however, was not strictly a product of regional dependence on durable goods manufacturing. Metropolitan areas in both the East South Central and South Atlantic regions had large swings in income from construction that further contributed to sensitivity in both regions. In each region, income from the construction industry had a swing in excess of 10 percent. The East North Central and Pacific regions, already hit hard by their dependence on durable goods manufacturing, also experienced swings of more than

9 percent in construction. In the remaining regions, the swing in the construction industry was either very small, or in a few cases actually countercyclical.

The business cycle from the fourth quarter of 1973 through the first quarter of 1980 was more severe in all regions, and for all of the income aggregates shown in table 12. Not only did all regions experience larger income swings in this second cycle, but the relative ranking by sensitivity among the regions changed substantially. This shift in the relative degree exposure by region, as well as the general increase in cyclical sensitivity, arises because this cycle more broadly affected metropolitan economies. Whereas the first cycle was primarily concentrated in durable goods industries, the second cycle produced large income swings in nearly all industries. This led to disproportionate increases in the exposure of regions without high concentrations of durable goods manufacturing.

The reshuffling in the order of regions ranked by their degree of cyclical sensitivity is rather startling. The East North Central region dropped from its traditional position of greatest sensitivity, and was replaced by the Mountain region. When ranked according to the swing in private sector income, SMSAs in the East North Central region were fourth in degree of exposure among all regions. Due to very large countercyclical swings in transfers accounting for a larger than average share of personal income in New England and the South Atlantic regions, and to a countercyclical swing in state and local government in the South Atlantic region (the only region with a countercyclical swing in this sector in the second cycle), SMSAs in the East North Central region were the second most sensitive when measured in terms of personal income.

One reason for the reduced relative sensitivity in the East North Central region is the smaller swing in durables in the second cycle. In the first cycle, durables manufacturing declined at an annual rate of almost -13 percent in the recession, and grew at nearly 8 percent during the recovery, thereby producing an industry swing of 21 percent. In the second recession, the rate of industry income decline was nearly as sharp, at greater than -12 percent, but the rate of growth in the recovery was down substantially by comparison with the previous cycle, with an annual rate of increase of less than 4 percent in the region. Thus, the slow growth of durables during the recovery in the second cycle decreased regional sensitivity.

The most striking change in relative SMSA cyclical exposure was for the Mountain region. Metropolitan areas in this region went from a position of second least sensitive among all regions to being the most sensitive nationally. Although all industries, except for mining and wholesale trade, experienced larger swings in the second cycle, finance, insurance, and real estate, and the construction industry had overwhelmingly large increases that sharply increased the overall sensitivity of SMSAs in the Mountain region.

The construction industry, which accounted for an unusually large 8 percent share of the economy in this rapidly growing region, had a swing of almost 36 percent compared to just over 4 percent in the earlier period. This contributed heavily to the dramatic increase in the overall sensitivity of the region. Finance, insurance, and real estate was also up sharply between the two cycles, with an increase in its cyclical swing from 5 percent to 18 percent. Durable goods manufacturing industries, which showed reduced sensitivity nationally in the second cycle, exper-

lenced a larger swing in the Mountain region during this period. This is almost certainly linked to the extreme sensitivity of the construction industry in Mountain region SMSAs.

The West South Central region improved its position in terms of its relative cyclical sensitivity, showing the least exposure of all regions in the second cycle by a rather wide margin. The stability SMSAs in this region during the second cycle had its base in the growth of industries related to energy development. As a result of the oil embargo and the sharp rise in crude oil prices, activity levels of industries engaged in domestic energy production increased dramatically in the recession. In the expansion which followed, energy exploration activities continued to increase, though at a slower pace, thus this industry exhibited an atypical countercyclical response.

Mining activities in SMSAs in the region accounted for over 4 percent of their economic activity, well above the level in the SMSAs of other regions. During the recession in the second cycle income from this industry increased by almost 20 percent, and continued to increase at an annual rate of 13 percent during the expansion. As a result, the cyclical swing of income in SMSAs was stabilized by a countercyclical swing of -7 percent in this sector.

But the stabilization that came with the increase in energy development extended beyond just the mining sector. Industries that provide support for crude oil production were also stabilized. Undoubtedly these support industries served drilling operations in locations outside of their metropolitan areas. The linkages of these other industries to energy exploration are most obvious in the construction and durable goods manufacturing sectors. For all regions, the swing of income originating

in durable goods manufacturing was greater than 12 percent, while it was less than 9 percent for SMSAs in the West South Central region. Only the Mid Atlantic region experienced a smaller swing in durable goods manufacturing. Similarly, the all-region construction sector swing was 16 percent, but it was only 7 percent in the West South Central region, the smallest swing among all regions.

The stability arising from energy based industries was transmitted to other sectors as well. Retail trade, with no obvious direct linkages to the energy sector, showed a level of stability that was only barely exceeded by the Mid Atlantic region, where retail stability was greatest. The service sector, including both business and personal services, was least sensitive in this region. For all SMSAs, income from service industries had a swing of 6.27 percent, but this was only 4.23 percent in the region.

The Cyclical Exposure of SMSAs by Rate of Population Growth

There are suggestions in the literature which we reviewed that cyclical sensitivity varies with the rate of regional population growth.¹⁸ To summarize that review, it has been suggested that regions enjoying rapid growth experience less severe cyclical fluctuations. Labor hoarding due to tight labor markets, a high concentration of income from

18. See George H. Borts, "Regional Cycles of Manufacturing Employment in the United States, 1914-1953," American Statistical Association Journal, (March, 1960): 151-211; Stanley Engerman, "Regional Aspects of Stabilization Policy," in Richard A. Musgrave (ed.), Essays in Fiscal Federalism (Washington, DC: The Brookings Institution, 1965); A.P. Thirivall, "Regional Unemployment as a Cyclical Phenomenon," Scottish Journal of Political Economy (1960): 205-219; and T. Nicolaus Tideman, "Defining Area Distress in Unemployment," Public Policy (Fall, 1973): 441-492.

local industries, and newer capital stocks have been advanced as factors in support of this hypothesis. Recent empirical testing, however, has not provided any strong confirmation for these postulates, and it has been noted that there is no well-developed theory concerning the relationship between growth rate and degree of cyclical exposure.¹⁹

We investigated the relationship between the rate of growth in SMSAs and the cyclical swing of income. A summary of the results is shown in table 13. The most immediately striking result is the remarkable stability in the relationship between rate of growth and swing in private sector income. In the first cycle, with an exception for the 5 to 15 percent growth rate category, the spread between the highest and lowest swing barely exceeds 1 percent. In the second cycle, the range is similarly narrow, making an exception this time for the open-ended highest growth rate category.

The apparent stability among areas with different rates of growth arises because of offsetting differences in the industrial structure between areas with high rates of growth and those that are declining or growing only very slowly.

The cyclical swing of income from durable and nondurable manufacturing, construction, and service industries classified by rate of SMSA population growth is tabulated in table 14, along with the share of total

19. The absence of a well-developed theory concerning this factor has been noted by Roger J. Vaughan, Public Works as a Countercyclical Device: A Review of the Issues (Santa Monica, Calif.: The Rand Corp., July 1976) R-1990-EDA. Howland did not find a significant relationship between long run regional growth and recession severity or length. See Marie Howland, "The Business Cycle and Long-Run Regional Growth," in William C. Wheaton, Interregional Movements and Regional Growth (Washington, DC: The Urban Institute, 1979) URI-2600.

Table 13
Cyclical Swing, Selected Income Aggregates,
SMSAs by Rate of Population Growth

Population Growth Rate 1970 to 1980	N	1969:III to 1973:IV			1973:IV to 1980:I		
		Private	Labor (POW)	Personal Income	Private	Labor (POW)	Personal Income
Decline	24	4.92	3.97	2.19	8.83	7.78	5.36
0 - 5%	55	4.79	3.92	2.08	8.32	7.39	5.08
5 - 15%	72	7.01	5.99	3.65	8.89	7.83	5.12
15 - 25%	47	5.88	5.45	3.31	9.22	7.87	4.76
25 - 50%	43	4.77	3.96	2.32	9.49	7.61	4.62
50+%	16	5.34	4.58	2.77	16.55	13.69	8.22
All SMSAs	257	5.46	4.57	2.63	9.14	7.91	5.23

Source: Urban Institute analysis of BEA Local Area Personal Income data.

Table 14

Cyclical Swing, Income from
Manufacturing and Services, SMSAs
by Rate of Population Growth

Population Growth Rate, 1970 to 1980	N	Manufacturing				
		All	Non-durables	Durables	Construction	Services
-----1969:III to 1973:IV-----						
Decline	24	12.29 (31.9)	3.59 (11.4)	17.17 (20.5)	1.66 (4.9)	-0.36 (17.0)
0-5%	55	10.83 (2.92)	3.61 (9.5)	14.32 (19.6)	3.93 (5.3)	0.75 (15.5)
5-15%	72	13.84 (29.7)	5.01 (9.9)	18.19 (19.7)	6.25 (6.2)	2.25 (14.8)
15-25%	47	9.93 (22.1)	4.65 (10.2)	14.45 (11.9)	10.10 (6.3)	1.55 (14.1)
25-50%	43	10.64 (19.0)	2.42 (6.9)	15.20 (12.1)	7.63 (6.9)	0.95 (14.9)
50+%	16	12.54 (15.0)	4.24 (3.8)	15.25 (11.1)	10.14 (11.6)	1.08 (22.3)
All SMSAs	257	11.94 (27.7)	3.95 (9.7)	16.22 (18.0)	5.54 (5.9)	0.85 (15.7)
-----1973:IV to 1980:I-----						
Decline	24	12.24 (31.4)	10.08 (10.5)	13.33 (20.8)	14.49 (4.1)	6.02 (18.8)
0-5%	55	10.75 (28.6)	9.26 (8.8)	11.42 (19.8)	12.24 (4.5)	5.63 (16.7)
5-15%	72	11.06 (28.9)	10.36 (9.6)	11.39 (19.5)	12.03 (5.8)	6.31 (15.8)
15-25%	47	12.70 (22.5)	11.25 (9.5)	13.63 (12.9)	14.67 (6.3)	6.60 (14.6)
25-50%	43	10.35 (18.7)	7.80 (6.7)	11.77 (11.9)	19.53 (7.0)	6.28 (15.8)
50+%	16	17.33 (14.7)	9.40 (3.9)	20.17 (10.8)	41.95 (9.8)	9.58 (23.6)
All SMSAs	257	11.58 (26.8)	9.86 (9.0)	12.43 (17.9)	16.00 (5.4)	6.27 (16.8)

Note: Figures in parentheses are the percentage shares of total labor income originating in the corresponding sector.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

labor income originating in each of these sectors. It is immediately apparent that declining and slowly growing metropolitan areas derive a much larger share of their income from the cyclically sensitive manufacturing sector. In declining areas durable goods manufacturing, traditionally the most cyclically sensitive industry, accounts for 21 percent of labor income, contrasting with only 11 percent in the most rapidly growing places. Although the degree of sensitivity in this industry shows no significant variation by area growth rate, the cyclical exposure of declining and slow-growing metropolitan areas is based to a large degree on their heavy reliance on income from this sector. Rapidly growing areas are proportionately less affected by the large swings characteristic of durable goods manufacturing owing to their lower reliance on this sector as a source of income.

This good fortune, however, does not permit their escape from cyclical fluctuations any more than metropolitan areas with slow rates of growth. Offsetting the stability gained by a low degree of specialization in the manufacturing sector is the heightened exposure brought on by the greater importance of the construction sector.

In the first cycle, income from construction accounted for approximately 5 percent of total labor income in slow growing areas, increasing to 11 percent in the most rapidly growing areas. A similar pattern was found for the second cycle, but the importance of construction was lower by about one percent.

The cyclical sensitivity of economies in rapid growth areas is not only accentuated by their greater reliance on the construction sector, but the sensitivity of the sector itself increases with the rate of growth. In the first cycle, construction in declining areas experienced a very

small swing--less than 2 percent--but the sensitivity of this industry increased to more than 10 percent in areas with the greatest growth. Except for SMSAs in the decline category, a similar pattern of sensitivity occurred in the second cycle. In this period, the swing in construction increased from 12 percent in slow growth areas to 42 percent in SMSAs with the most rapid growth.

The heightened sensitivity income from the construction industry at higher rates of growth arises from differences in the nature of construction among areas. In any metropolitan area, whether growing rapidly or not, certain types of construction activity--perhaps most often public works or nondeferable repair work--must continue more or less constantly regardless of business cycle conditions. Other stabilizing construction activity may arise from countercyclical government spending programs. Work done under such programs is concentrated in the private sector, and therefore does not show up as income from government (especially federal) employment.

In areas of rapid growth the cyclically sensitive portion of the construction sector accounts for a much larger part of total labor income. In these places a larger share of construction activity may be deferred in recessions or periods of high interest rates, and later accelerated when conditions are more favorable. In addition to the problems created by high interests, expectations in rapidly growing areas may change during recessions so that speculative construction diminishes sharply. It is possible that additional capacity required during the recessionary period can be met through excess capacity established during the expansion in anticipation of continued rapid growth. In declining or slowing growing areas, such volatility in the construction sector would not occur since

large amounts of speculative overbuilding would not normally be generated with the expectation of meeting future capacity requirements.

Service industries are most often cited as a desirable stabilizing element because of their low cyclical sensitivity. It has also been suggested that rapidly growing areas are less exposed to cyclical fluctuations because they are more specialized in these industries.

Indeed, as shown in table 14 and earlier in table 5, service sector industries do exhibit low cyclical sensitivity, and this stability does not change significantly or in any clear way with the rate of metropolitan growth. Rapidly growing areas show only slightly more service-oriented (tertiary sector) economies, except those in the highest growth rate category, where service industries play a significantly larger role. Thus, while the service sector may act to stabilize economic fluctuation during business cycles, areas of rapid growth benefit only slightly more from this sector than other areas.

Metropolitan areas with rapid growth, however, do experience greater stabilization from the cyclical behavior of the state and local government sector. Table 15 shows the cyclical swing of income from state and local governments in metropolitan areas classified according to rate of population growth between 1970 and 1980. The "All places" line recalls the earlier finding that state and local governments acted countercyclically in the first cycle, but were only stabilizing in the second. This weakening in the capacity of state and local government to dampen cyclical fluctuations was linked to a deterioration in the fiscal strength of governments in metropolitan areas over the period.

Table 15

Cyclical Swing, Income from
State and Local Government Employment,
SMSAs by Rate of Population Growth

Population Growth Rate 1970-1980	N	1969:III to 1973:IV			1973:IV to 1980:I		
		Cyclical Swing	Quarterly Growth Rate at annual rate		Cyclical Swing	Quarterly Growth Rate at annual rate	
			Recession	Expansion		Recession	Expansion
Decline	24	-3.56 (9.9%)	8.04	4.47	1.90 (10.4%)	-2.69	-0.79
0 - 5%	55	-2.65 (11.4)	7.48	4.83	2.85 (11.8)	-1.46	1.39
5 - 15%	72	-2.78 (11.5)	6.88	4.10	2.17 (11.7)	0.08	2.25
15 - 25%	47	-1.84 (12.1)	7.17	5.32	1.32 (12.5)	2.28	3.60
25 - 50%	43	-2.31 (12.6)	8.56	6.25	-0.15 (13.1)	4.01	3.86
50+%	16	-2.50 (11.8)	10.99	8.49	-1.28 (12.6)	5.51	4.23
All SMSAs	257	-2.76 (11.2)	7.70	4.95	1.84 (11.7)	0.00	1.84

Note: Figures in parentheses are shares of total labor income originating in the state and local government sector.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

As shown in table 15, the pattern of response by this sector in the first cycle was rather uniform across all rates of growth. In each category the response was countercyclical, and there is no clear pattern of change among rates of growth in the strength of this stabilization. Metropolitan areas at all rates of growth, however, increased the rate of expansion in state and local government during recessions, thereby producing a countercyclical response and reducing the cyclical swing of total labor income.

In the second cycle the response of this sector was markedly different. No longer were state and local governments in metropolitan areas at all growth rates able to act countercyclically. Although no group was able to respond with the same countercyclical force as it did in the first cycle, even though the need for stabilization was greater, metropolitan areas in the two highest categories did manage to provide countercyclical stabilization.

Table 15 shows that there was a steady increase by rate of population growth in the strength of the stabilizing response of state and local governments, except in metropolitan areas that experienced decline. From a cyclical swing of 2.85 percent for the most slowly growing areas, the stabilizing influence of state and local governments increased steadily to a countercyclical swing of -1.28 percent in metropolitan areas with the most rapid growth.

This difference in the degree stabilization provided by state and local government may derive from differences among areas in their need to provide services and their ability to do so. In areas where there is little change in the size of population, service provision levels are likely to be in reasonable balance with the requirements of the area.

Over an extended period when population remains at roughly a constant size, supply and demand in the public service sector may reach an approximate equilibrium. The situation may be quite different in metropolitan areas with rapid population growth where public service provision levels generally lag behind the growth of population. Similarly, the tax collections of local governments in these areas--especially property taxes in places where assessments are relatively infrequent--also tend to lag behind the growth of population.

The pattern of state and local government response observed in the second cycle may be related to these differences. In areas where population size showed little change there would be little need to increase service levels, and no large lagged increase in revenues to do so. With a decline in cyclically sensitive revenues such as sales and income taxes, governments in declining and slowly growing areas may actually have been forced to cut back their levels of employment. Compared to levels of government growth during the expansion, even a reduction to a moderate growth rate would produce a stabilizing, but still procyclical response.

Growing areas, on the other hand, would be expected to have a significant backlog of service requirements to fill, and may accomplish this by accelerating the rate of "catching-up" during the recession. Since these places have a lagged increase in revenues, and may have larger reserves as well, they have the capacity to respond in this countercyclical manner.

A study prepared for the Joint Economic Committee of Congress also found variation among local governments in their response to the sharp

contraction of the second cycle recession.²⁰ Budget adjustments in large cities were made through both expenditure reductions and tax increases, but the adjustments in small jurisdictions were much more likely to be accomplished by enacting tax increases alone. The increasing rate of state and local government expansion in the second recession by rate of population growth may be a reflection of this, since small metropolitan areas have generally been growing more rapidly.

Further explanation is offered in the Congressional testimony of Roy Bahl concerning the regional impact of recessions on state and local governments. He notes that these governments in

the older parts of the country--those that are declining and are poorer--are going to hurt most. These are the old northeastern and industrial mid-western cities. Their taxes will grow more slowly. They will be reduced most in a recession because they will lose most in terms of economic activity, but also these are the states that are more local government dominated, where cities are much more dependent on State aid and they will suffer because State aid will grow more slowly.²¹

The Cyclical Exposure of SMSAs by Specialization in Manufacturing

Places with economies that are specialized in manufacturing activities, especially durable goods manufacturing, have long been recognized as having a high degree of exposure to business cyclical fluctuations. It has been further hypothesized that a sharp downturn in manufacturing is

20. Joint Economic Committee, Congress of the United States, Subcommittee on Urban Affairs, "The Current Fiscal Position of State and Local Governments," December 17, 1975, pp. 19-20.

21. Statement of Roy Bahl in hearings on the Regional Impact of Current Recession before the Subcommittee on Fiscal and Intergovernmental Policy of the Joint Economic Committee, Congress of the United States, Ninety-sixth Congress, October 16, 1979, p. 26.

transmitted to other sectors of the economy linked to manufacturing, further intensifying the magnitude of the swing.

We have stratified SMSAs by their degree of specialization in the manufacturing sector. As shown in table 16, there is a general rise in the cyclical swing of income aggregates as the degree of manufacturing specialization increases. This is especially true for the first cycle owing to its concentration in durable goods industries. In this cycle the sensitivity of private sector income increased steadily with the degree of manufacturing specialization, rising from a very low value of 2 percent in areas with little dependence on manufacturing to almost 9 percent in the most specialized areas. With slight variation, this pattern also appears in the swing of total labor income and personal income, but with the difference in sensitivity among the categories reduced respectively by the stabilizing influence of the government sector and transfer payments.

This pattern of increasing cyclical exposure with manufacturing concentration is repeated in the second cycle, but with some variation due to the large swing in private sector income in "10 - 20%" specialization category. Metropolitan areas in this group had the greatest reliance on the construction sector, by a 3 to 2 margin, and construction industries in these areas had the largest swing--22 percent compared with 16 percent for all SMSAs. Thus private sector income sensitivity in this category, which had a large concentration of areas with rapid growth, was disproportionately increased by the destabilizing influence of the construction sector.

The increase in cyclical exposure at higher levels of manufacturing concentration was more apparent in the patterns of total labor income and

Table 16
 Cyclical Swing, Selected Income Aggregates,
 SMSAs by Degree of Specialization
 in Manufacturing

Manufacturing Specialization*	N	1969:III to 1973:IV			1973:IV to 1980:I		
		Private	Labor (POW)	Personal Income	Private	Labor (POW)	Personal Income
less than 10%	27	1.99	2.67	1.63	7.42	5.50	3.10
10 - 20%	34	3.88	3.79	2.29	10.11	7.93	4.93
20 - 30%	56	3.28	2.63	1.22	8.27	7.15	4.75
30% - 40%	49	5.17	4.27	2.33	8.72	7.61	5.04
40% - 50%	48	8.16	6.96	4.47	10.77	9.70	6.54
more than 50%	43	8.99	7.95	4.78	9.04	8.37	5.74
All SMSAs	257	5.46	4.57	2.63	9.14	7.91	5.23

* Note: Manufacturing specialization is the percent of private sector income that is derived from manufacturing (SIC 20 to 39). Data suppression imposed by the Bureau of Economic Analysis may have affected this measure. Many places in the category "less than 10%" may have been so classified when manufacturing income data had been suppressed in some of the counties constituting the SMSA.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

personal income. The large swing in private sector income observed in the "10 - 20%" specialization category was substantially stabilized by the state and local government sector. As noted earlier, the stabilizing influence of this sector increased steadily with the rate of population growth. The "10 - 20%" manufacturing category contains a high concentration of rapidly growing areas, and the strong stabilizing influence of the state and local government sector is again apparent. The swing of state and local governments in this category during the second cycle was countercyclical at -0.53 percent compared to a swing of 1.84 percent for all metropolitan areas. The influence of this sector was further strengthened because the proportion of income originating there was greatest for the SMSAs belonging to this category.

The magnitude of swing in labor income, and its range among the categories of manufacturing specialization, is further reduced by the countercyclical influence of transfer payments. In both cycles, the countercyclical swing of transfer payments showed a steady increase with the degree of manufacturing specialization, as shown in table 17. In the first cycle, the cyclical swing of transfers went from -4.88 percent in the group with the least reliance on manufacturing to -10.31 percent in the category where the importance of manufacturing was greatest. In the second cycle, the swing in transfers went in steady progression from -8.23 percent to -11.28 percent, making an exception for the -10.18 percent swing in group with the greatest specialization. The effect of the greater breadth of the second cycle is reflected in the cyclical behavior of transfer payments. By comparison with the first cycle, the stabilizing swing of transfers greatly increased in this period for SMSAs

Table 17

Cyclical Swing of Transfer Payments
SMSAs by Degree of Specialization
in Manufacturing

Manufacturing Specialization	Cyclical Swing of Transfer Payments	
	1969:III to 1973:IV	1973:IV to 1980:I
less than 10%	-4.88	-8.23
10 - 20%	-5.85	-8.95
20 - 30%	-8.03	-9.19
30 - 40%	-9.72	-9.42
40 - 50%	-10.28	-11.28
more than 50%	-10.31	-10.18

Source: Urban Institute analysis of BEA Local Area Personal Income data.

with a low reliance on the manufacturing sector. This is the result of the greater sensitivity of nonmanufacturing industries in the second cycle.

A surprising degree of stability in the cyclical sensitivity of income from other sectors was observed among areas with different degrees of specialization in manufacturing. Retail trade, finance, insurance and real estate, and services all showed rather consistent cyclical behavior among degrees of manufacturing specialization, although there were substantial differences among the sectors and between the two cycles. This is due to the strong consumer orientation of these non-manufacturing industries. Since differences in cyclical sensitivity of personal income (an approximation of what individuals have to spend before taxes) were greatly reduced by the influence of transfer payments, the large differences observed in the cyclical sensitivity of private sector income were not transmitted to these consumer oriented sectors.

The Cyclical Exposure of Metropolitan Areas by Population Size

The significant finding in the relationship between metropolitan area population size and cyclical sensitivity is the stability of the relationship. Among all size categories there is remarkable consistency in the degree of cyclical exposure in each of the cycles. This stability was observed for the aggregates of private sector, total labor, and personal income. Within the private economy there was also remarkable stability for the major industrial sectors among the various population size categories.

In both the first and second cycles sensitivity in the private sector increased slightly by SMSA population size up to about 500,000, beyond which sensitivity decreased slightly. See table 18. The range between the extremes of the private sector income swings was small in each cycle-- between 4.74 percent and 6.36 percent in the first cycle, and from 7.87 percent to 10.23 percent in the second.

Variations in sensitivity among the SMSA size classes were mostly attributable to differences in the sensitivity and relative importance of durable goods manufacturing. In the first cycle, durable goods manufacturing experienced the least swing in the smallest size category, and the greatest swing in the largest. In contrast, there was little variation among the groups in the second cycle. The overall pattern of sensitivity by size was set by the degree of specialization in durable goods manufacturing among the size groups. Specialization increased steadily from 16.6% in the smallest category to a high of 20.8% in the 500,000 to 1,000,000 class, and then declined to 15.9% for the largest group.

State and local governments in metropolitan areas played a more important role in cyclical stabilization in the first cycle as population size increased. In areas with less than 100,000 people, the cyclical swing of income from the state and local government sector was modestly countercyclical at -1.26 percent. As population size increased, the countercyclical influence of this sector improved rather consistently to a level of -3.75 percent for SMSAs with more than three million residents.

Table 18
Cyclical Swing, Selected Income Aggregates,
SMSAs by Population Size

Population Size	N	1969:III to 1973:IV			1973:IV to 1980:I		
		Private	Labor (POW)	Personal Income	Private	Labor (POW)	Personal Income
less than 100K	16	4.75	5.33	3.55	7.87	7.80	4.89
100K - 250K	91	6.26	6.41	4.05	8.56	7.37	4.79
250K - 500K	70	6.36	5.53	3.33	8.96	7.51	4.78
500K - 1M	41	5.85	5.07	2.98	10.23	8.94	5.78
1M - 3M	31	5.53	4.50	2.42	9.18	8.01	5.31
3M+	8	4.74	3.63	2.06	8.69	7.49	5.08
All SMSAs	257	5.46	4.57	2.63	9.14	7.91	5.23

Source: Urban Institute analysis of BEA Local Area Personal Income data.

This pattern of increasing stabilization by the state and local sector was not repeated in the second cycle. No consistent pattern of stabilization by population size was apparent, and in no category did this sector respond countercyclically. Medium-size SMSAs experienced the least stabilization in the second cycle, as a result of a swing of 2.83 percent for income in the state and local sector. The greatest amount of stabilization occurred in the largest SMSAs where the swing for income from this sector was 1.22 percent.

The stabilizing influence of transfer payments also strengthened with population size in the first cycle, going from -7.39 percent in the smallest SMSAs and -6.89 percent in the 100,000 to 250,000 size class, to -9.53 percent for SMSAs with populations of more than three million. As was the case for the state and local government sector, this pattern of increasing stabilization with population size did not carry over into the second cycle.

Curiously, in the first cycle this pattern of increasing countercyclical swings in transfer payments was negatively correlated with the degree of cyclical sensitivity in total labor income. Thus, in the size categories with the smallest cyclical swing in total labor income the countercyclical influence of transfer payments was the greatest. Conversely, in the size categories where the swing of income was largest the countercyclical stabilization of transfers was the weakest. In the second cycle the cyclical response of transfer payments more closely followed the need for stabilization. In size classes where labor income experienced the greatest exposure the countercyclical force of transfers was largest. Where exposure was not as great, transfer payments provided less stabilization.

As a result of these patterns of stabilization by population size, the relationship between the sensitivity of total personal income and population size was somewhat different between the two cycles. In the first, except for the smallest size category, sensitivity decreased steadily as metropolitan population size increased. In the second, the sensitivity of personal income followed the response of the private sector, with only minor differences among the size categories.

Consistency of Relative Cyclical Exposure.

The relative sensitivity among SMSAs was tested for consistency between the two cycles. The Spearman rank correlation coefficient between the two cycles was computed for private sector labor income to compare the relative ranking of cyclical exposure. For all 257 SMSAs the rank correlation between cycles was 0.28. Although this is a statistically significant correlation (there is better than a 0.99 probability the correlation is not equal to zero), this low value indicates that there was little consistency between the cycles in the relative exposure among SMSAs. This suggests that the relative degree of exposure for an SMSA in one cycle will probably be a poor predictor of its relative exposure in other cycles.

A similar result was found by Vernez, Vaughan et al. for the consistency among labor markets in relative cyclical behavior between 1960 and 1975.²² They were unable to identify a consistent pattern among regions in terms of cyclical severity, although they did find that the largest

22. See Georges Vernez, Roger Vaughan, Burke Burright, and Sinclair Coleman, Regional Cycles and Employment Effects of Public Works Investment, (Santa Monica, Calif: The Rand Corp., January 1977) R-2052-EDA, pp. 62-69.

absolute amplitudes generally occurred in the Northeast and East North Central regions.

Cyclical Exposure and Industrial Composition.

The industrial composition of an area in part determines how sensitive the area is to business cycle fluctuations.²³ Metropolitan areas with heavy concentrations of cyclically sensitive industries, such as durable goods manufacturing will naturally experience large swings during cycles. This is readily apparent in many of the metropolitan areas in Michigan.

At one extreme, the sensitivity of an area would be completely determined by its industrial composition. If all industries experienced the same degree of fluctuation in every location, labor income sensitivity in SMSAs would depend purely on the share of income originating in each industry. However, our analysis found substantial regional variation in cyclical sensitivity by industry. For example, durable goods manufacturing experienced a high degree of sensitivity in the East North Central region, but significantly lower sensitivity in the Mid Atlantic region. Thus, regional industry sensitivity, as well as industry composition, contributes to total cyclical exposure.

23. Engerman and Richardson view industrial composition as being an incomplete explanation of regional sensitivity. They caution that other factors such as the differences between local and national industries, transportation costs, age of industrial facilities, type of markets served, and so on must also be considered. We agree, but inclusion of variables for these factors was beyond the scope of this analysis. See Stanley Engerman, "Regional Aspects of Stabilization Policy," in Richard A. Musgrave (ed.), Essays in Fiscal Federalism (Washington, DC: The Brookings Institution, 1965); and Harry W. Richardson, Regional Economics (New York: Praeger, 1969), Chapter 11.

The importance of industrial composition was investigated by regression analysis. Using metropolitan areas as the unit of observation, the dependence of labor income cyclical swing in each cycle was determined as a function of industrial composition, rate of growth, and region. The results from the analysis are shown in table 19. It is clear that a high concentration of durable goods manufacturing in each cycle was an important determinant of cyclical swing. Other than that, however, industrial composition alone appears to be of limited importance in determining SMSA cyclical exposure. Thus, it would seem that the individual sensitivity of industries in an area is an important determinant of its cyclical exposure.

In the second cycle population growth rate is also an important factor in metropolitan area sensitivity. Earlier in the discussion the relationship between growth and construction activity was noted. In the regression analysis this relationship is more clearly revealed. Population growth rate is positively related to cyclical swing, while construction is negatively related. At first this result seems surprising since construction has high cyclical sensitivity. But the regression results indicate the contribution of construction after controlling for the effect of growth. The slight stabilizing impact of a higher concentration of construction unrelated to growth may reflect the effect of countercyclical public works construction that is contracted to the private sector through government.

All in all, the regressions reported in table 19 further reinforce the conclusion that differences in metropolitan cyclical sensitivity do not have routine explanation, and vary considerably from one cycle to the next. The R-squared in both equations is not high. There is only one variable that is significant in both equations (share of durable manufacturing.)

Table 19

Regression Analysis, Determinants
of Cyclical Swing

Variable	-----First Cycle-----			-----Second Cycle-----		
	Coefficient	Beta	t-statistic	Coefficient	Beta	t-statistic
Intercept	4.5	0.000	0.7	-2.5	0.000	-0.4
Population growth rate ^a	-15.5	-0.071	-0.7	58.5	0.206	1.8
Share of income from: ^b						
Construction	-2.1	-0.017	-0.2	-11.2	-0.090	-1.0
Nondur. mfg.	-8.1	-0.134	-1.1	2.4	0.037	0.3
Durable mfg.	15.3	0.486	2.4	12.0	0.378	1.9
Trans, Comm., & Util.	-16.1	-0.130	-1.3	3.5	0.028	0.3
Retail trade	17.0	0.174	1.5	15.8	0.150	1.2
F.I.R.E.	-8.4	-0.057	-0.7	16.6	0.116	1.3
Services	-0.6	-0.009	-0.1	13.3	0.208	1.6
Fed. Civilian	-2.5	-0.061	-0.7	-8.6	-0.175	-1.9
Fed. Military	-0.4	-0.017	-0.2	4.6	0.144	1.7
State & Local	-3.2	-0.079	-1.0	1.9	0.045	0.5
Regional Dummy: ^c						
New England	-2.7	-0.106	-1.4	4.7	0.186	2.2
Mid Atlantic	-3.6	-0.265	-2.7	1.9	0.139	1.3
S Atlantic	0.4	0.030	0.3	5.0	0.402	3.3
E N Central	0.2	0.018	0.2	3.1	0.283	2.2
E S Central	-0.2	-0.011	-0.1	2.4	0.147	1.4
W S Central	0.6	0.052	0.5	-0.0	-0.002	-0.0
Mountain	-1.6	-0.094	-1.0	3.3	0.191	1.8
Pacific	0.7	0.050	0.5	1.0	0.074	0.6
R-squared		0.42			0.27	

a. Rate of population growth computed separately for each cycle.

b. Agricultural services, forestry, and fishing; mining; and wholesale trade are omitted because of high frequency of missing data.

c. West North Central region is the dummy reference region.

THE EXPOSURE OF CENTRAL AND SUBURBAN AREAS
TO BUSINESS CYCLE FLUCTUATIONS

This section examines the relative sensitivity of the central and suburban portions of SMSAs to national business cycle fluctuations. There is a lingering sense in the literature that the central portions of metropolitan areas experience greater exposure to the fluctuations of national economic activity than do the surrounding suburban areas.²⁴ This may not be the case now because of a transformation in the structure of central city economies that has seen manufacturing activities move to more suburban locations, where sites and structures are more suited to modern manufacturing practices. As the following discussion will show, central cities are actually less exposed to cyclical fluctuations than suburban areas. This finding requires close examination, however, as there are important differences in the sensitivity of income derived from jobs located in central cities, and the income earned by central city residents.

Identifying Central Cities

Earlier discussion in this report noted that personal income data are available only at the county level, and central cities have been

24. "For reasons related to labor-market conditions, to the age of the central core, and to the preferences of businessmen, central-city employment is likely to be more sensitive to changes in the business cycle" according to Roger Noll, "Metropolitan Employment and Population Distribution and the Conditions of the Urban Poor," in John P. Crecine (ed.), Financing the Metropolis, Vol. 4, (Beverly Hills, Calif.: Sage, 1970) p. 501. However, Noll does not clearly distinguish between business cycle effects by place of work and by place of residence. See also John F. Kain, "The Distribution and Movement of Jobs and Industry," in John F. Kain, Essays on Urban Spatial Structure (Cambridge, Mass.: Ballinger, 1975), p. 107.

accordingly approximated by the central county in which they are located. The result is that the comparison of central city and suburban exposure to business cycles is a comparison between the central county (or counties) in a metropolitan area, and the remainder of the SMSA counties. In so structuring the analysis, only multi-county metropolitan areas are considered in the discussion below. This reduces the study population from the 257 metropolitan areas investigated earlier, to 137 metropolitan areas with more than one county where central and suburban counties can be separately identified. Throughout the discussion central city, central area, and central county will be used interchangeably to designate the central county portion of the SMSA.

Resorting to this county approximation of central cities posed some uncertainty about its effect on the analysis. In many metropolitan areas this approximation accurately reflects the city-suburban dichotomy, or very closely approximates it. In other areas, especially in small SMSAs, the central county embraces a far larger population than the central city alone. In a few cases, part of the central city lies outside of the central county, though it accounts for only a small proportion of the suburban county population.

To test the effect of this approximation, and its importance to the findings, the cyclical swings of three income aggregates in central counties were examined according to the share of county population that was located in the central city. The results are shown in table 20. There is no clear indication from this stratification that a central county approximation to the central city produces either serious or consistent bias. The "100%" category, where central cities coincide perfectly with central

Table 20

Cyclical Swing, Selected Income
Aggregates, Central Counties by
Central City-Central County Population Ratio

Central City- Central County Population Ratio for SMSA	N	1969:III to 1973:IV			1973:IV to 1980:I		
		Private (POW)	Labor (POW)	Personal Income (POR)	Private (POW)	Labor (POW)	Personal Income (POR)
-----Central Counties-----							
100%	16	1.32	1.15	0.44	6.47	5.32	3.36
80 - 99%	17	5.68	4.95	3.13	9.01	7.95	4.56
60 -79%	45	4.85	3.86	2.35	7.55	6.75	4.66
40 - 59%	42	7.96	6.57	4.12	10.44	9.03	6.22
less than 40%	17	4.72	4.44	2.65	7.48	6.36	4.14
All Central Counties	137	4.91	4.02	2.53	8.26	7.15	4.84
-----Suburban Counties-----							
100%	16	3.22	2.84	0.84	8.90	7.83	4.84
80 - 90%	17	7.99	5.31	3.81	11.74	9.64	7.19
60 - 79%	45	6.27	5.06	3.28	10.22	9.29	5.83
40 - 59%	42	9.18	7.68	4.72	13.94	12.23	7.52
less than 40%	17	7.30	6.52	3.51	6.91	7.15	3.62
All Suburban Counties	137	5.64	4.70	2.50	10.37	9.19	5.73

Source: Urban Institute analysis of BEA Local Area Personal Income data.

counties, does stand out as being substantially less sensitive than other categories. While this finding may reflect the greater stability of central areas, the "100%" category contains New York, San Francisco, and Washington, which have strongly service oriented economies and account for a major share of the activity in this group.

Although the greater stability found for this group may seem significant, it is not necessarily a consequence of the coincidence between the central city and county. Not only did these central counties show the least sensitivity, but so did the suburban counties of the metropolitan areas in which they were located, as shown by a comparison of the "100%" category in the upper and lower panels of table 20. Similarly, the high degree of sensitivity in the "40-59%" category can be traced to places such as Detroit, Cleveland, and Buffalo, which have economies with a heavy reliance on cyclically sensitive durables manufacturing. Again this reflects the structural nature of these metropolitan areas since both central and suburban counties in this category show the highest degree of sensitivity.

The effect of the central city-central county approximation was also tested by comparing the relative cyclical swing of private sector income between central and suburban counties for each of the population ratio categories. As shown in table 21 there is again no clear or consistent pattern in relative sensitivity by class of population ratio. In each period suburban counties were generally more volatile during the cycle, both in terms of the number of times that they experienced a larger swing than their corresponding central county, and in terms of the average of their swings during the cycle. As found earlier in table 20, the second

Table 21

Comparison of Private Sector Income Cyclical Swing,
Central and Suburban Counties, by Central
City-Central County Population Ratio

Central City/ Central County Ratio	Number of SMSAs where:		Simple (Unweighted) Average of Swings	
	Central County More Volatile	Suburban Counties More Volatile	Central	Suburban
-----1969:III to 1973:IV-----				
100%	6	10	2.92	4.69
80 - 99	7	10	4.23	5.46
60 - 79	21	24	4.77	4.52
40 - 59	21	21	6.88	7.18*
Less than 40	4	13	4.64	6.39
All SMSAs	59	78	5.12	5.70
-----1973:IV to 1980:I-----				
100%	2	14	6.54	8.61
80 - 99	6	11	7.59	8.81
60 - 79	13	32	7.93	11.27
40 - 59	13	29	10.01	12.03
Less than 40	6	11	7.49	10.00
All SMSAs	40	97	8.31	10.73

*Note: The suburban portion (Brunswick County) of the Wilmington, NC SMSA has been dropped from this average because of its extremely large swing (-128.9%) and small population size (24,000) in the first cycle. This large countercyclical swing was caused by a ten-fold increase between 1969 and 1970 in income from the transportation, communications, and utilities sector followed by a decline of 80% between 1970 and 1973. Had this county been included, the average swing would have been 3.94%.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

cycle hit suburban areas harder by comparison with the first. In the first cycle central areas were more volatile than suburbs in 59 of the 137 SMSAs in the sample. In the more severe, and broader, second cycle greater volatility in central counties was found in only 40 SMSAs.

In both cycles, the frequency with which central counties were the most volatile was low for the "100%" category. This probably reflects a generally greater stability of private sector income (by place of work) in central cities, since these central counties are coincident with their central cities. Beyond that, however, no pattern among the classes appears to exist in either cycle. Differences in central and suburban swing by category between these tables arise because the swings in table 20 are based on weighted averages of the areas, whereas the averages in table 21 are unweighted. Thus, in the second table the largest and smallest SMSAs contribute equally in the computation of average swing in a category.

Differences in Central and Suburban Income Composition

The analytical focus of this section shifts from the earlier examination of differences among metropolitan areas to a comparison between cities and suburban areas. This shift makes it necessary to examine more closely the adjustment to net labor income used to account for commuting patterns, and how the importance of transfer payments varies between central and suburban areas as a component of personal income.

The net exchange between central and suburban counties of income earned in each area is such that total labor income in central areas is reduced by 17% through the adjustment used to account for interarea commutation. Correspondingly, labor income in suburban areas is augmented by

this flow, so that 41% above what is earned in suburbs is assigned to area residents through the residence adjustment.

The transfer of income from central to suburban areas is not uniform among regions. Through variations in annexation policy and the patterns of residence by income level, income earned in central areas is reduced by the residence adjustment to a much larger extent along the Eastern Seaboard, especially in New England, than it is in the South (defined here as the East South Central and West South Central regions). Metropolitan area population size is also a factor, with the importance of the residence adjustment increasing with SMSA size.

The importance of transfer payments as an element of personal income also varies between cities and suburbs. As a whole, about 3% more of personal income comes from transfers in central counties than it does in suburbs, with this source accounting for about one-seventh of total personal income in both areas. Again there is an important regional variation. Metropolitan areas in the South show transfer payments to be a higher share of income in suburban counties, reverse of the national pattern. Another regional difference that sets the South apart from the rest of the nation is the intrametropolitan distribution of per capita income. Higher per capita levels of income in this region are found in central rather than suburban counties, as is the case in other regions.

Cyclical Exposure of Cities and Suburbs

The relative degree of exposure to national business cycle fluctuations varies by location within metropolitan areas and also according to the geographic base--place of work, or place of residence--of the income aggregate considered. Thus, there are differences between central cities

and suburbs in the sensitivity of income received from jobs in those areas, and other differences in the sensitivity of income received by the residents in each of the areas.

Based on the approximation of central cities to counties, the private sector economy in central cities shows less sensitivity to business cycle fluctuations than does the economy in suburban areas. The cyclical swing of various income aggregates for each of these areas is shown in table 22. In each cycle, the swing of private sector income in suburban areas and total labor income by place of work exceeded that in central areas. In the first cycle, differences in the swings between central and suburban areas were modest, suggesting that the economies in cities and suburbs experienced somewhat similar degrees of cyclical exposure. In the second cycle these differences widened, and suburban areas clearly experienced a greater level of exposure.

Although the income from suburban jobs exhibited greatest sensitivity, the sensitivity of income received by the residents of each of these areas showed a different pattern of variation. In the first cycle, where the income from suburban jobs was more sensitive than it was for centrally located jobs, the fluctuation of central city residents' income exceeded that of suburban residents. In the second period, where suburban economies clearly experienced higher exposure to the national business cycle, the difference in degree of exposure was greatly reduced when the income received by area residents is considered. Further discussion on these points is provided in a subsequent section.

The differences in cyclical exposure between central and suburban economies is better understood by examining the response of both areas

Table 22
Cyclical Swing,
Selected Income Aggregates,
Central and Suburban Counties

Cycle Dates and Location	Private (POW)	Labor (POW)	Labor (POR)	Personal Income (POR)	Per Capita Personal Income (POR)
1969:III to 1973:IV					
Central Counties	4.91	4.02	4.09	2.53	3.41
Suburban Counties	5.64	4.70	3.72	2.50	3.37
1973:IV to 1980:I					
Central Counties	8.26	7.15	7.40	4.84	4.74
Suburban Counties	10.37	9.19	8.14	5.73	5.18

Source: Urban Institute analysis of BEA Local Area Personal Income data.

during the recession and expansion phases of the cycles. Differences between the areas in their response during each phase reflect their different patterns of secular change. The modest difference in the swings experienced by cities and suburbs in the comparatively mild first cycle masks the differences between the effect of recession and expansion on each area. In the first cycle, the private economy in central counties declined by -1.98% at an annual rate while suburban areas experienced little more than a temporary halt in growth as income declined by only -0.48%. In terms of the labor income received by area residents, suburban areas actually managed to sustain growth at the low rate of 0.64% annually during the recession, while the labor income of city residents declined by -1.50%. In the following recovery, the rate of private sector economic growth in suburban areas surpassed that in central areas by a margin of 5.16% to 2.93% annually.

Both locations experienced sharp declines in private sector income in the second recession, -4.72% annually in central areas and -4.57% in the suburbs. The larger cyclical swing experienced by suburban counties in this cycle reflects the resumption of a faster rate of expansion during the recovery, 5.80% annually in suburbs compared to 3.54% for central counties.

The difference in sensitivity by location in the second cycle is reduced when the swing for the income of area residents is considered. In the recession, the labor income of central area residents declined at a rate of -4.46%, slightly more than the decline of -3.81% for suburban residents. During the expansion, greater differences emerged as the income of suburban residents grew at an annual rate of 4.33%, well-exceeding the 2.94% annual rate of central county residents.

These figures also suggest that employment, or at least income, is growing more rapidly in suburban areas than population, implying that jobs are suburbanizing more rapidly than population. The discussion in another section examines differences in the rate of suburbanization of population and income during each phase of the business cycle. The findings from that analysis substantiate these indications.

The pattern of varying sensitivity by region and rate of population growth observed earlier for entire SMSAs is repeated, though with some variation, for metropolitan central and suburban areas. Table 23 shows the cyclical sensitivity of private sector, total labor, and personal income in central and suburban areas for each of the cycles. In both the first and the second cycle similar rankings by regional sensitivity are shown for central and suburban areas. The lowest sensitivity in the first cycle occurs in the Mid Atlantic region for both central and suburban areas, while the greatest sensitivity is found in the East North Central region, again for both areas. This repeats the pattern observed for SMSAs in the earlier discussion.

In the second cycle a similar relationship between central and suburban sensitivity holds, although the relative rankings by region are reordered as they were for entire SMSAs. In this period private sector income in the West South Central area experienced the greatest stability. Central areas in this region were the most stable by a substantial margin, while the suburban areas were in a virtual tie for greatest stability with the Mid Atlantic region. The least stability was found in both central and suburban areas of the Mountain region in this period.

Table 23

Cyclical Swing, Selected Income Aggregates,
Central and Suburban Counties, by Region

Region*	N	1969:III to 1973:IV			1973:IV to 1980:I		
		Private (POW)	Labor (POW)	Personal Income (POR)	Private (POW)	Labor (POW)	Personal Income (POR)
-----Central Counties-----							
New England	5	3.20	2.39	2.64	8.39	8.15	4.42
Mid Atlantic	15	1.71	1.00	-0.09	6.66	5.65	3.63
S Atlantic	31	3.75	4.02	2.80	9.95	7.53	5.10
E N Central	31	8.44	7.18	4.98	9.59	8.64	6.30
E S Central	14	5.01	4.50	2.83	7.76	7.15	4.66
W N Central	11	4.97	3.89	2.57	8.66	7.74	6.57
W S Central	21	4.23	3.36	2.04	5.37	4.91	3.12
Mountain	4	1.86	2.28	0.16	11.75	9.10	4.36
Pacific	5	4.87	3.34	1.69	6.51	5.53	3.10
All Central Counties	137	4.91	4.02	2.53	8.26	7.15	4.84
-----Suburban Counties-----							
New England	5	3.66	3.07	0.53	12.03	11.13	6.33
Mid Atlantic	15	3.12	2.57	0.32	7.72	7.26	4.68
S Atlantic	31	5.25	4.02	2.29	11.13	8.47	4.67
E N Central	31	10.73	9.61	6.59	13.15	11.43	7.99
E S Central	14	9.70	9.25	4.90	13.02	13.62	5.84
W N Central	11	4.13	3.36	1.82	9.51	8.94	6.41
W S Central	21	5.31	3.91	2.84	7.73	9.17	3.50
Mountain	4	8.73	2.53	2.59	13.37	7.12	7.54
Pacific	5	5.33	4.10	1.98	8.81	7.55	4.05
All Suburban Counties	137	5.64	4.70	2.50	10.37	9.19	5.73

*Note: The Census definition of "divisions" is used in this study.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

In almost all cases central areas experienced greater stability than their associated suburbs. In the case of private sector income the only exception to this was in the West North Central region during the first cycle. For personal income, which has been stabilized by public sector income, transfer payments, and the residence adjustment, exceptions are also found for the New England and South Atlantic regions.

Less consistency in rankings between central and suburban areas is observed when SMSAs are grouped according to their rate of growth. As table 24 shows, suburban areas again show generally greater cyclical sensitivity than central counties, although exceptions are found in the "0-5%" and "50+%" growth rate categories. Differences in the relative ranking between central and suburban areas may be attributable to differences in the character and rate of growth between these areas. This is particularly likely in the most rapid growth rate category where only two SMSAs are included and they are undoubtedly of small size. The suburban areas of these SMSAs may have been small and experienced sustained growth and relative stability across both cycles.

Reasons for the Greater Cyclical Sensitivity of Suburban Economies

The higher degree of cyclical sensitivity in the economies of suburban areas derives from both a greater reliance by suburbs on cyclically sensitive industries as a source of income, and on a higher degree of sensitivity for those industries in suburban locations during the second cycle. The government sector, while somewhat more important to suburban economies and slightly more countercyclical in the first cycle, maintained this larger share into the second cycle, but was significantly less stabilizing in suburbs in that period.

Table 24

Cyclical Swing, Selected Income Aggregates,
Central and Suburban Counties,
by Rate of SMSA Population Growth

SMSA Population Growth Rate 1970 to 1980	N	1969:III to 1973:IV			1973:IV to 1980:I		
		Private (POW)	Labor (POW)	Personal Income (POR)	Private (POW)	Labor (POW)	Personal Income (POR)
-----Central Counties-----							
Decline	16	4.53	3.47	2.03	8.20	7.08	4.85
0 - 5%	33	4.81	3.95	2.68	7.44	6.71	4.72
5 - 15%	40	6.03	5.39	3.41	8.49	7.29	5.15
15 - 25%	24	4.43	3.88	2.49	8.93	7.48	4.74
25 - 50%	22	4.25	3.35	1.86	8.07	6.68	3.97
50+%	2	9.70	8.85	6.15	17.96	14.56	10.31
All Central Counties	137	4.91	4.02	2.53	8.26	7.15	4.84
-----Suburban Counties-----							
Decline	16	5.75	4.83	2.19	9.99	9.16	6.18
0 - 5%	33	4.30	3.44	1.77	9.81	8.39	5.24
5 - 15%	40	7.32	7.05	4.94	10.87	9.89	5.46
15 - 25%	24	7.49	7.37	3.42	12.54	12.35	5.31
25 - 50%	22	8.28	5.28	3.34	12.64	10.00	6.07
50+%	2	7.79	10.04	5.38	10.72	7.34	4.28
All Suburban Counties	137	5.64	4.70	2.50	10.37	9.19	5.73

Source: Urban Institute analysis of BEA Local Area Personal Income data.

One of the significant transformations that has occurred in the structure of metropolitan economies in recent decades has been the shift of manufacturing jobs out of central city locations. A number of explanations for this have been advanced, including movement of the labor force, improved transportation linkages in suburban locations, congestion in central cities that hampers the movement of trucks, and the need for large tracts of land compatible with the construction of single story modern manufacturing facilities. While this has meant the loss of a substantial number of jobs in many metropolitan areas, central cities have seen their economic vulnerability to business cycles through this sensitive industrial sector diminish as a consequence of the change.

In both the first and second cycles suburban locations were more dependent on manufacturing, especially durable goods manufacturing, as a source of income than were central locations. In both cycles, durable goods manufacturing accounted for 20% of income in suburban counties, but only 17% in central counties. See table 25. The share of more stable nondurable goods manufacturing, however, was nearly identical in each location at about 10%.

While income from centrally located manufacturing activities, particularly from durable goods industries, was more cyclically sensitive in the first period, its destabilizing effect on total income was less significant because it was a smaller share of total labor income than in suburban areas. In the second cycle, the sensitivity of income in suburbs was intensified by durables manufacturing relative to central areas because the share-swing relationship was reinforcing, rather than offsetting, in this period. Not only did suburban areas have greater reliance on

Table 25

Cyclical Swing of Income
Derived from Manufacturing,
Central and Suburban Counties

Source	<u>1969:III to 1973:IV</u>		<u>1973:IV to 1980:I</u>	
	Central	Suburban	Central	Suburban
Total Manufacturing				
Swing	11.45	11.39	11.63	12.46
Share*	26.9	30.5	26.0	29.7
Nondurables				
Swing	3.65	4.35	10.01	10.15
Share*	10.2	10.1	9.4	9.6
Durables				
Swing	16.24	14.90	12.53	13.57
Share*	16.7	20.4	16.6	20.1

* Note: Share is the percent of total labor income derived from the source.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

durables, by a margin of 3%, as a source of income, but the swing experienced by this industry was also greater in suburbs.

Construction is also traditionally identified in the literature as a major destabilizing component of income. As discussed in an earlier section, construction did not significantly destabilize metropolitan economies in the first cycle since extreme cyclical sensitivity was essentially confined to durable goods manufacturing. In the second cycle, on the other hand, the construction sector experienced the largest swing among all the components of income. As was the case for manufacturing, the larger destabilizing swing in construction income was further reinforced through its greater importance to suburban economies, as shown in table 26.

The higher degree of sensitivity and greater importance of construction in the suburbs is reminiscent of the relationship noted earlier among regions classified by rate of population growth. Suburbs, which are generally growing faster than central cities, accordingly have a larger share of their income based in the construction sector. To the extent that a considerable portion of this construction activity is to accommodate growth during an expansion, or in anticipation of continuing growth, a larger share of it is likely to be deferred in suburbs when conditions are unfavorable. Thus, this sector is another major destabilizing force in the economy of suburban areas.

Other sectors also contributed to differences between the two cycles in the sensitivity of central and suburban locations. Transportation, communication and public utilities, and retail trade were both sectors in the suburbs that showed less cyclical sensitivity in the first cycle.

Table 26
 Cyclical Swing of Income
 Derived from Construction,
 Central and Suburban Counties

Source	<u>1969:III to 1973:IV</u>		<u>1973:IV to 1980:I</u>	
	Central	Suburban	Central	Suburban
Construction				
Swing	4.54	4.43	12.30	15.72
Share*	5.5	6.7	5.1	6.1

* Note: Share is the percent of total labor income derived from the source.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

compared to the second, when these sectors had become more sensitive in the suburbs. Finance, insurance, and real estate, and service industries were more stabilizing in central economies in each of the cycles. However, this gap widened considerably in the second cycle, increasing further the relative sensitivity of suburban economies.

Stabilization by the Government Sector

The cyclical stabilization from government sector labor income has been discussed in detail earlier. The cyclical swing of income from the government sector was found to be consistently stabilizing in the first cycle, with state and local government always responding countercyclically. In the second cycle, income from government was again stabilizing, but state and local government did not continue its consistent countercyclical behavior. This section will compare the response of government sector income between central and suburban locations.

Table 27 shows the cyclical swing of income from the government sector by location and level of government for each cycle. In the first cycle, total government response was very similar between central and suburban locations, providing substantial stabilization in both cities and suburbs through a swing that was just barely countercyclical. This stabilization reduced the swing of labor income in central locations from 4.91% to 4.02% (refer to table 22), and from 5.64% to 4.70% in suburban areas.

State and local government responded with strong countercyclical swings in both central and suburban areas in the first cycle. In central areas the -2.98% swing of income from the state and local sector was more

Table 27

Cyclical Swing of Income
Derived from Government,
Central and Suburban Counties

Source	<u>1969:III to 1973:IV</u>		<u>1973:IV to 1980:I</u>	
	Central	Suburban	Central	Suburban
Total Government				
Swing	-0.81	-1.18	1.77	3.17
Share*	17.4	19.7	17.6	18.7
Federal Civilian				
Swing	-0.09	-4.01	0.48	2.57
Share*	5.3	5.7	5.1	5.1
Federal Military				
Swing	7.97	4.87	3.64	9.15
Share*	1.7	2.4	1.4	1.7
State and Local				
Swing	-2.98	-1.67	2.04	2.47
Share*	10.5	11.7	11.1	12.1

* Note: Share is the percent of total labor income by place of work that is derived from the source.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

strongly countercyclical than the -1.67% swing in suburban areas. Stabilization in suburban areas, however, was aided by a larger share of income originating in this sector.

In the second cycle, total government, including the state and local sector, turned procyclical, though still providing substantial stabilization because of its small swing. Again, central areas experienced a more stabilizing swing in this sector than did suburban locations. The swing of income from all levels of government was 1.77% in central areas, compared with 3.17% in suburban locations. In both areas, this sector provided a significant contribution to income stabilization. The swing of labor income in central counties was reduced from 8.26% to 7.15% by government sector employment, and from 10.37% to 9.19% in suburban locations. As was the case in the first cycle, state and local government accounted for a slightly larger share of total labor income in suburban areas, but the swing in this sector was more stabilizing in central counties.

A speculative explanation for the difference in cyclical behavior is that there are significant differences between central and suburban governments in how quickly they can respond to cyclical change. Inasmuch as central county local governments are larger, more complex, and probably less flexible than local governments in suburban areas, they may have longer lags in adjusting to cyclical change. If suburban area governments are able to track cyclical fluctuations more quickly, then they will exhibit the higher sensitivity observed in both cycles.

The higher sensitivity of state and local sector in suburbs may also reflect the type of local government in these areas. City-type governments may account for a larger share of local government activity in

central counties than in suburban ones. The Advisory Commission on Intergovernmental Relations reports that a study by the Office of the Comptroller General of the United States found that "the impact of the second recession varied by type of jurisdiction. Cities appeared to be the most adversely affected. States were second, and counties retained their relatively good financial conditions from 1974 to 1976."²⁵ If the superior position of counties is attributable to more rapid cyclical adjustment, this could account for the higher sensitivity of the state and local sector in suburban counties.

Cyclical Exposure by Place of Residence

The relative degree of exposure that cities and suburbs have to business cycle fluctuations changes substantially when the examination shifts from the sensitivity of income earned from jobs in an area to the sensitivity of income earned by area residents, regardless of where they work. Differences in the sensitivity of income by place of work and income by place of residence arise from commuting patterns that create a net transfer of labor income from central to suburban areas. Since the characteristics of jobs held by commuters differ from those of area residents in terms of cyclical stability and level of compensation, the income adjustment for patterns of commuting plays an important role in the central-suburban comparison of cyclical sensitivity.

The typical pattern of commuting is such that suburban residents who commute to the central city hold high income jobs that enjoy relative

25. Advisory Commission on Intergovernmental Relations, "State-Local Finances in Recession and Inflation", A-70, Washington, D.C. May 1979, p. 22.

cyclical stability. Differences in the cyclical stability of jobs held by commuters can be inferred from table 22. In both the first and the second cycle, the swing of income earned by central area residents, "Labor (POR)", was greater than swing of income from employment in the area, "Labor (POW)". Conversely, the sensitivity of income from suburban jobs was considerably greater than the sensitivity of income for suburban residents. These differences result from the adjustments to income by place of work to account for commutation in deriving income by place of residence. In the case of central areas, this adjustment increases sensitivity because some income from cyclically stable central city jobs is removed to the suburbs through commutation between place of work and place of residence. For suburban locations this effect is reversed. The income earned at centrally located jobs and transferred to the suburbs by commutation is more cyclically stable than the income earned by workers holding suburban jobs. In summary, commuting by workers between central and suburban locations has the effect of increasing the sensitivity of residents' income in cities, and reducing the sensitivity of residents' income in suburbs.

In the first cycle this effect was sufficiently strong that suburban area residents, regardless of where they worked, enjoyed greater cyclical stability than city residents, even though the suburban economy experienced greater instability. In the second cycle, both income by place of work and income by place of residence were more sensitive in suburbs than in cities, but the difference was greatly reduced after the adjustment for the pattern of commuting had been taken into account.

The importance of transfer payments in stabilizing metropolitan area income has been examined in some detail in an earlier section. As shown

by table 28, transfer payments are strongly countercyclical in both areas and play an important role in stabilizing the personal income of both city and suburban area residents, as was shown earlier in table 22. In each cycle, the size of the countercyclical swing was greatest in the area where the income of residents was most cyclically sensitive. Thus, the countercyclical swing of transfers was larger in central areas in the first cycle, and greater in suburbs in the second. However, transfers are a sufficiently greater share of personal income in central areas that these places received the greatest degree of stabilization from transfer payments in both cycles.

The larger cyclical swing of personal income for suburban area residents does not necessarily mean that suburban areas were more injured than central areas during the recession. Although the cyclical swing was greater for suburban areas, this measure indicates larger fluctuations around a secular trend of more rapid growth. In absolute terms, central areas experienced a greater decline in total personal income by place of residence. Between the peak and trough of the second recession personal income declined -2.09% in central areas while suburbs experienced a smaller decline of -1.48%. Thus, central areas show a somewhat greater exposure to cyclical downturns when this is measured by the reduction in total personal income.

Cyclical Recovery of Income in Cities and Suburbs

In both the first and second cycles total income in the private sector declined in cities and suburbs during the recession. In the first recession the decline was moderate in central areas and very mild in the suburbs. The second recession was more severe, and both areas experienced

Table 28
 Cyclical Swing of Income
 Derived from Transfers,
 Central and Suburban Counties

Source	<u>1969:III to 1973:IV</u>		<u>1973:IV to 1980:I</u>	
	Central	Suburban	Central	Suburban
Transfers				
Swing	-8.69	-7.69	-9.02	-10.56
Share*	11.1	8.8	14.1	11.2

* Note: Share is the percent of personal income derived from the source.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

sharp declines in total private sector income. When the change in area income is measured between starting and ending peaks, both central and suburban areas more than recovered their initial levels of income in each cycle.

In both periods, the economy of suburban areas experienced peak-to-peak income gains that exceeded those in central cities by a factor of about two to one, as shown by the figures in table 29. In the first cycle total labor income in both area economies expanded more than private sector income, indicating a more rapid rate of growth in the public sector. In the next period this situation reversed, further confirming earlier indications of retrenchment in government.

Although the economies of suburban areas grew more rapidly than in central areas, the welfare of central county residents, as measured by the per capita personal income figures in table 29, actually improved relative to the change for suburban residents. In the second cycle, per capita labor income of central area residents grew more rapidly than it did in the suburbs, and per capita personal income grew more rapidly in both periods.

The performance of private sector industries by peak-to-trough and peak-to-peak measures in each of the cycles is shown in tables 30 and 31. The figures in these tables indicate the percent change of income in each of the sectors as a result of both cyclical fluctuation and

Table 29
 Cyclical Increase in Income
 Peak-to-Peak,
 Central and Suburban Counties
 (in constant dollars)

Income Component	1969:III to 1973:IV		1973:IV to 1980:I	
	Central	Suburban	Central	Suburban
	-----Total-----			
Private (POW)	6.43%	15.87%	12.31%	25.85%
Labor (POW)	8.37	17.12	10.36	20.75
Labor (POR)	6.00	14.75	9.37	18.21
Personal (POR)	9.92	17.81	14.70	23.55
	-----Per Capita-----			
Labor (POR)	4.29	5.02	8.71	7.85
Personal (POR)	9.92	7.82	14.70	12.71

Source: Urban Institute analysis of BEA Local Area Personal Income data.

Table 30

Cyclical Private Sector Income
Change, Peak-to-Trough,
Central and Suburban Counties
(in constant dollars)

Component	<u>1969:III to 1970:IV</u>		<u>1973:IV to 1975:I</u>	
	Central	Suburban	Central	Suburban
Private	-2.46%	-0.62%	-5.81%	-5.62%
Ag. Services, F&F	*	*	*	*
Mining	*	*	*	*
Construction	-1.93	1.10	-10.97	-12.28
Manufacturing	-9.80	-7.92	-10.15	-8.76
non-durables	-4.02	-2.03	-9.32	-7.27
durables	-13.22	-10.74	-10.61	-9.47
Trans., Comm. & Util.	4.16	9.18	-5.91	-3.89
Wholesale	0.25	7.41	0.23	7.07
Retail	-0.59	3.71	-7.07	-5.56
F.I.R.E.	0.38	2.43	-2.04	-6.34
Services	3.53	5.30	-1.15	-1.63

* Note: These industries were subject to extremely high levels of data suppression and have been deleted since their importance in total metropolitan area income is minor.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

Table 31
 Cyclical Private Sector Income
 Change, Peak-to-Peak,
 Central and Suburban Counties
 (in constant dollars)

Component	1969:III to 1973:IV		1973:IV to 1980:I	
	Central	Suburban	Central	Suburban
Private	6.43%	15.87%	12.31%	25.85%
Ag. F&F	*	*	*	*
Mining	*	*	*	*
Construction	7.22	18.47	3.67	14.09
Manufacturing	-0.46	6.46	5.73	18.86
non-durables	-2.90	6.26	1.75	14.50
durables	0.99	6.56	7.99	20.94
Trans. & Util.	14.81	29.75	13.04	32.66
Wholesale	8.81	34.78	13.92	51.45
Retail	5.69	18.78	2.75	14.84
F.I.R.E.	5.51	20.28	25.26	56.91
Services	14.04	22.37	22.50	34.30

* Note: These industries were subject to extremely high levels of data suppression and have been deleted since their importance in total metropolitan area income is minor.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

secular trend. All industries (except for those noted in the table) in central areas suffered greater deterioration during the first recession than did those in suburban locations, and central area private income dropped -2.46% while private income in suburbs declined only -0.62%. In the second cycle, both locations experienced nearly a 6% decline in private sector income. In this period, construction, finance, insurance, and real estate, and services declined more rapidly in suburban areas than in suburbs.

The peak-to-peak changes in income by industrial sector in table 31 reflect differences in secular growth rates by area. This comparison shows all sectors of the private economy to be growing more rapidly in suburban areas. Wholesale trade, and finance, insurance, and real estate, two highly centralized industries, stand out in this table as having the largest gap between central and suburban secular rates of growth.

Suburbanization During Recessions and Expansions

Many mechanisms have been hypothesized as contributing to the suburbanization of population and economic activities in metropolitan areas.²⁶ Factors such as superior access to transportation in suburban areas, modern plant requirements, and site availability have all been cited as factors which make suburban sites more attractive. Evidence in

26. For a general background see Daniel B. Creamer, Is Industry Decentralizing? (Philadelphia: University of Philadelphia Press, 1935); Edgar M. Hoover and Raymond Vernon, Anatomy of a Metropolis (Cambridge, Mass.: Harvard University Press, 1959); Edwin S. Mills, Studies in the Structure of the Urban Economy (Baltimore: The Johns Hopkins Press, 1972); Leon Moses and Harold F. Williamson, Jr., "The Location of Economic Activity in Cities," American Economic Review, Papers and Proceedings, (May, 1967): 211-222; and Richard F. Muth, Cities and Housing (Chicago: University of Chicago Press, 1969).

the literature suggests that the decentralization of economic activities occurs because firms seeking to locate facilities generally prefer suburban over central locations. Additionally, the evidence indicates that enterprises do not terminate their activities at a greater rate in either central or suburban locations. Thus, the suburbanization of employment is a function of the location decisions of new activities rather than greater rates of failure for centrally located activities.

Cyclical changes in the level of economic activity in metropolitan areas should influence the rate at which business enterprises are initiated or terminated. During recession there should be relatively fewer initiations of new business activity and relatively more terminations than during expansions. Thus, location decisions will play a comparatively larger role in shaping the distribution of employment during expansions than during recessions. To the extent that suburban areas are disproportionately selected in new location decisions, the rate of suburbanization will be greater during expansions than during recessions.

The changes in the central county share of total SMSA income and population during each cycle are shown in table 32. These annual rates of change show the rate of population and income suburbanization during the recessions and the expansions. To the extent that interarea and interindustry wage ratios remain constant between the two cycles, the rate of income suburbanization also serves as a proxy for employment. Since the quarterly population estimates represent straight line interpolation between annual estimates, the population suburbanization rates reflect approximate rates of change during each period.

The results in table 32 show clearly that income, and by proxy employment, suburbanize more rapidly during expansions than during recessions.²⁷ About three-fourths of private sector income is earned in central locations. In the first cycle this share dropped at an annual rate of -0.26% during the mild recession. As economic activity increased in the expansion, the rate of suburbanization increased to -0.39%. The second recession was considerably more severe, and especially so in suburban areas. In this period the process of suburbanization briefly came to a halt as the decline in the share of SMSA income originating in the central area momentarily stopped. Since this was a deep recession, the rate of new business formation would have dropped sharply, resulting in comparatively fewer new location decisions. When the level of activity increased again in the recovery, the rate of suburbanization increased to -0.42%, almost identically equal to the rate in the previous recovery.

Within the private sector economy there is considerable variability among industries in their rates of suburbanization. Table 33 shows the annual change in the central county share of SMSA income for the industrial sectors in the private economy. The results are mixed, in that not all industries follow the pattern of suburbanization set by the private sector as a whole.

27. The findings in this section confirm those of several other researchers who have examined the process of employment suburbanization. In particular, they show a pattern of change very similar to that observed by Nelson and Patrick in their study of employment decentralization. (Kathryn P. Nelson and Clifford H. Patrick, Decentralization of Employment During the 1969-1972 Business Cycle: The National and Regional Record (Oak Ridge, Tenn.: Oak Ridge National Laboratory, June 1975) ORNL-UR 123.) See our companion literature review for additional discussion of other research on the suburbanization of population and employment.

Table 32
Annual Change in Central
County Share of SMSA
Income and Population

Income Components	1969:III - 1973:IV		1973:IV - 1980:I	
	Recession	Expansion	Recession	Expansion
Private (POW)	-0.26% (77.5%)	-0.39% (76.8%)	-0.03% (76.1%)	-0.42% (74.9%)
Labor (POW)	-0.25 (76.6)	-0.37 (75.9)	0.03 (75.3)	-0.35 (74.3)
Labor (POR)	-0.48 (65.8)	-0.40 (65.0)	-0.16 (64.2)	-0.32 (63.1)
Personal (POR)	-0.37 (66.8)	-0.36 (66.1)	-0.11 (65.4)	-0.31 (64.4)
Population	-0.37 (67.5)	-0.38 (66.8)	-0.23 (66.0)	-0.33 (65.0)

Note: Figures in parentheses are central county shares of SMSA.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

Table 33

Annual Change in Central
County Share of SMSA Income
in the Private Sector,
by Industry

Industry	1969:III - 1973:IV		1973:IV - 1980:I	
	Recession	Expansion	Recession	Expansion
Private	-0.26% (77.5%)	-0.39% (76.8%)	-0.03% (76.1%)	-0.42% (74.9%)
Ag. Svcs., F&F	*	*	*	*
Mining	*	*	*	*
Construction	-0.47 (73.7)	-0.46 (72.4)	0.24 (72.1)	-0.46 (70.6)
Manufacturing	-0.32 (74.0)	-0.30 (73.5)	-0.24 (72.7)	-0.41 (71.6)
non-durables	-0.30 (76.6)	-0.43 (75.9)	-0.34 (74.8)	-0.37 (73.7)
durables	-0.45 (72.5)	-0.17 (72.1)	-0.21 (71.6)	-0.42 (70.5)
Trans., Comm., and Util.	-0.52 (83.7)	-0.36 (82.7)	-0.25 (82.2)	-0.43 (80.7)
Wholesale	-0.74 (84.1)	-0.70 (82.4)	-0.82 (81.2)	-0.74 (78.4)
Retail	-0.64 (74.9)	-0.48 (73.6)	-0.26 (72.9)	-0.39 (71.5)
F.I.R.E.	-0.18 (87.0)	-0.44 (86.0)	0.44 (85.8)	-0.72 (83.7)
Services	-0.24 (77.5)	-0.32 (76.9)	0.07 (76.5)	-0.36 (75.5)

Note: Figures in parentheses are central county shares of SMSA income.

* Note: These industries were subject to extremely high levels of data suppression and have been deleted since their importance in total metropolitan area income is minor.

Source: Urban Institute analysis of BEA Local Area Personal Income data.

In the first cycle when there was only a minor difference between rates of suburbanization during the recession and expansion, many industries actually experienced higher rates of suburbanization during the recession. By comparison, there was much more uniform behavior among industries in the more severe second cycle. Wholesale trade was the only exception to the pattern among all industries of a greater rate of suburbanization during the expansion.

The most rapid rates of suburbanization were found for two of the most centrally concentrated industries--wholesale trade, and finance, insurance, and real estate. The share of wholesale trade located in the central portion of SMSAs was 84.1% at the time of the first recession and had declined to 78.4% by the final expansion. Finance, insurance, and real estate had its share of SMSA income originating in the central area drop from 87.0% to 83.7% in the same period. By comparison, the central area share of total private sector income decreased less rapidly, experiencing a decline from 77.5% to 74.9% during the period.

.. SUMMARY

Business cycles represent a composite of economic fluctuations in many different subdivisions of the national economy. This study has examined the behavior of metropolitan areas with the rise and fall of economic activity in the two business cycles between 1969 and 1980. Although unemployment rates are perhaps most popularly recognized as an indication of cyclical exposure, this study uses changes in personal income to measure the impact of cyclical fluctuations on metropolitan areas. Personal income was selected because it is a broader measure that captures changes in hours worked by employed persons as well as changes in the level of employment. It also provides information on the behavior of non labor sources of income, such as transfer payments.

The impact of business cycles is examined for metropolitan areas grouped by several descriptive categories. These trace the cyclical exposure of metropolitan economies by region, rate of population growth, population size, and degree of specialization in manufacturing. Another major thrust of the study considers differences between central and suburban locations in their degree of cyclical exposure, and separately examines the sensitivity of income by place of work and income by place of residence. Other comparisons address the relative recovery of central and suburban areas after the business cycle, and the effect of the cycle on the process of suburbanization.

A source of data that met the study requirements of geographic, temporal, and industrial detail was not available from known sources. To meet these requirements, a procedure was developed to synthesize a data file with quarterly estimates of income by industrial and non labor

sources for metropolitan areas, and for their central and suburban areas. In this procedure state quarterly fluctuations in economic activity were imputed to an annual series of income estimates for counties located in metropolitan areas.

The analysis of these data found broad agreement with the findings of previous studies. Durable goods manufacturing was highly sensitive to cyclical fluctuations, and areas with high concentrations of this industry experienced a high degree of cyclical exposure. The construction sector is also traditionally volatile during business cycles, and the analysis found this to be the most sensitive sector in the 1973-1980 cycle. Metropolitan areas experiencing rapid growth were especially affected by the sensitivity of this sector. The stability that these areas might otherwise enjoy because of a low concentration of durable goods manufacturing was largely offset by high concentrations of this sensitive industry.

In both of the cycles studied income in metropolitan areas was stabilized by the strong countercyclical behavior of transfer payments and by earnings from the state and local government sector. Although the state and local government sector was initially strongly countercyclical, it did not generally maintain this response into the second cycle. It was found, however, that the strength of this sector's stabilizing influence in that period increased progressively with the rate of metropolitan area population growth. There was also some evidence that the sensitivity of the construction sector may have been reduced somewhat by government sector countercyclical spending.

The exposure of SMSAs to cyclical fluctuations showed substantial variation by region. In the first cycle the sensitivity of the private

sector economy was greatest in the East North Central region due to its high concentration of heavy manufacturing, and was least in the Mid Atlantic region where the swing of income from durable goods manufacturing was smallest. A substantial reordering of metropolitan sensitivity by region occurred in the second cycle. Although all sectors of the economy were more severely affected in this cycle, construction was especially hard hit. As a result, the rapidly growing Mountain region experienced the largest swing because of its greater reliance of the construction sector. The West South Central region was least affected in this cycle, and this appeared to be a consequence of an increase in energy production activities caused by the oil embargo and the dramatic rise in energy prices. The low correlation among metropolitan areas in their relative exposure between the two cycles that is suggested by these findings was further confirmed by statistical analysis.

There has been a sense in the literature that central cities are more exposed than their suburbs to business cycle fluctuations, but this was not found to be true for the private sector economies in the two cycles studied. In each cycle, the swings of private sector income in suburban areas, and total labor income by place of work, exceeded their swings in central areas. These differences were modest in the first cycle, but widened significantly in the second cycle so that cyclical sensitivity was clearly greater in suburban areas. While cities have generally suffered a loss of jobs through the suburbanization of employment, their economies have been transformed so that they now depend less on cyclically sensitive durable goods manufacturing than do suburbs, and this partially accounts for their greater stability. Consequently, the higher degree of cyclical exposure in suburban areas arises because they now have a greater

concentration of cyclically sensitive industries, and because many industries experienced greater sensitivity in suburban locations.

Although income from suburban jobs exhibited the greatest sensitivity, the commuting patterns of workers substantially altered this pattern in both periods. In the first cycle, where the income from suburban jobs was somewhat more sensitive than it was for centrally located jobs, the fluctuation of central city residents' income actually exceeded that of suburban residents. In the second period, where suburban economies experienced substantially greater exposure to the national business cycle, the difference in this exposure was greatly reduced when income by place of residence is considered.

The larger cyclical swing of private sector income for suburban areas does not necessarily mean that their economies were more injured during recessions than those of the central areas. Although cyclical swing was greater in suburban areas, this measure indicates their larger fluctuation around a secular trend of more rapid growth. In absolute terms, central areas experienced a greater decline in their economies between the initial peak and the trough in the recessions. In each cycle both central and suburban areas experienced real economic growth between peaks, but the stronger secular growth of suburban areas was clearly evident by their superior peak-to-peak performance.

The process of suburbanization is affected by business cycles through fluctuations in the rate of growth. In periods of expansion when many businesses are initiated, there is a high frequency of new location decisions. Since suburban areas are disproportionately selected as sites for these activities, suburbanization occurred most rapidly during the expansions, and only slowly, if at all, in the recessions.

Additional research is needed to provide a more complete understanding of how metropolitan areas are affected by business cycles. The difference in the timing and duration of cycles between cities and suburbs needs attention, but other sources of data must be developed for such an investigation. Similarly, differences in cyclical timing should also be considered for the various industries included in the study. Further detail on the behavior of individual components of transfer payments is also desirable. The data to investigate this exist, but they must be integrated with the data files developed for this study. Data on other factors should also be linked to the basic data file. These might include measures of the age of capital stock, transportation and other local costs, demographic and labor force profiles, labor union activity and so forth. With such data, variations in cyclical sensitivity among individual metropolitan areas can be more completely explained.

