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Four Decades of Futility: Economic Development Policy and Industrial Decline in Chicago

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Abstract

The City of Chicago has tried, and still has in place, nearly every local, state, and federal policy that can be used in an attempt to increase and/or stabilize manufacturing jobs in the central city. The bottom line appears to be that this package of programs does not work at the level of the entire central city. Some of those policies, such as the Empowerment Zone, seem to help small areas, at least for a time, but also include negative spillover effects. This paper examines the long-term decline in manufacturing employment in the Chicago metropolitan area and in the central city of Chicago. An annual 1% decline of manufacturing employment in the nation translates into a 1% decline in the Chicago metropolitan area and a decline of 2% in the central city of Chicago.

1 Introduction

The decline in manufacturing employment in the U.S. has been widely noted (and decried) and is the focus of numerous recent studies. Manufacturing reached a high of 19.426 million employees in 1979, and declined to 17.695 million in 1990. Employment was down in the recession of the early 1990s, but recovered to 17.560 million in 1998, and stood at 17.263 million in 2000. From that point employment has declined rapidly to 13.879 million in 2007, followed by the 11.528 million in the recession year of 2010 and 12.005 million in 2013. The declines are 30.5% from 2000 to 2013 and 38.2% from 1979 to 2013.

Both supply and demand factors account for the employment decline. Research on the supply side has concentrated on increases in labor productivity and imports. Slow demand growth, when coupled with these supply-side factors, means sizable employment losses. Autor et al. (2013a,b) attribute about 25% of the decline in manufacturing employment from 1990 to 2007 to the huge increase in manufacturing imports from China (over 1,000%). Their procedure is to estimate the impact of an increase in Chinese imports on local labor markets in the U.S. An increase in Chinese imports of \$1,000 per worker in a local labor market is found to reduce employment by 0.60 percentage points. This effect is larger for 2000 to 2007 compared to 1990 to 2000. They also find that local labor markets with a higher percentage of employment in “routine” occupations experienced larger declines in manufacturing employment. In contrast, Edwards and Lawrence (2013) point out the similar job content of the U. S. trade deficit in both 2000 and 2012, and attribute very little of the manufacturing employment decline to trade after 2000. Instead Edwards and Lawrence (2013) suggest that the weak overall employment growth in the U.S. after 2000 translated into declining aggregate demand for manufacturing. They estimated for 1962-2010 an equation that relates the annual percentage change in manufacturing employment to the annual percentage change in total employment, with the result that:

$$PctChangeMfg. = -3.74 + 1.80PctChangeEmpl. \quad (1)$$

*The author thanks the two reviewers and the editor for helpful suggestions that improved the paper.

This equation states that, if employment in the nation does not change, manufacturing employment falls by 3.7%. Total employment must increase by about 2% to keep manufacturing employment constant. Baily and Bosworth (2014) have provided a review of these arguments.

The purposes of this paper are to examine the long-run record of manufacturing employment in one important urban area – metropolitan Chicago. Factors leading to the suburbanization of manufacturing are discussed. And assessments are made of the many economic development policies used by the City of Chicago in an effort to prevent (or at least slow) the decline in the central city.¹ One might question the need for a study of one particular central city given the general decline in manufacturing employment and the shift to the production of services over the past six decades. The fact is that the retention and possible expansion of manufacturing employment has been a major focus of economic development policy in Chicago since the 1960s. What are the reasons for this focus? First, it must be remembered that Chicago is a Democratic party and a labor union town. At one time the very large manufacturing sector in Chicago was heavily unionized, and the labor unions wielded political power. In addition, manufacturing jobs paid decent wages and are covered by the unemployment insurance system. One data source that is used extensively in this paper is known as *Where Workers Work*, an annual report issued by the Illinois Department of Employment Security (2013) enumerating by postal zip code employment covered by unemployment insurance. Back in the 1950s and 1960s manufacturing jobs were the majority of covered jobs located in much of the city outside the downtown area. For example, this data source shows that, for a group of 21 zip codes that make up the west side and most of the south side of the central city, in 1962 there were 294,000 covered manufacturing jobs and 228,000 covered jobs in all other industries combined.² The Mayors of the City of Chicago, starting with Richard J. Daley, acted on the notion that manufacturing jobs were important for the workers and voters of Chicago. This paper is not to be read as an endorsement of the efforts over many years to retain and expand Chicago's manufacturing sector. Rather, this paper questions the wisdom of the focus on manufacturing. The City of Chicago pursued many other economic development plans and policies, of course. Indeed, Chicago has been relatively successful, among older northern central cities, in making the transition to the service economy.

The urban areas of the Northeast are quite familiar with the phenomenon of employment decline in manufacturing. In 1947 much of the manufacturing in the U.S. was concentrated in the major central cities of the Northeast – New York, Chicago, Philadelphia, Detroit, etc. McDonald (2015) records the decline in manufacturing for all of the major urban areas of the Northeast, and shows that total employment changes for these urban areas were negatively related to the initial concentration in manufacturing. Data from the Census of Manufactures show that the top ten central cities of the northeastern “Rust Belt” lost a mean of 87.8% of their manufacturing jobs from 1967 to 2012. The city of Chicago, with a loss of 89.3%, is very close to this average. The record for the ten central cities for 1963 to 2012 is shown in Table 1.

Table 1: Manufacturing Employment in Selected Central Cities (1000s)

Central City	1963	1967	1992	2002	2007	2012
Cleveland	169	171	59	30	27	22
Detroit	201	210	62	38	23	18
Milwaukee	119	119	57	35	29	23
Philadelphia	205	268	73	43	33	23
Pittsburgh	82	86	23	13	8	13
St. Louis	68	96	49	26	21	17
New York	927	895	328	143	101	69
Buffalo	57	67	27	17	13	11
Baltimore	104	107	38	21	16	12
Chicago	509	546	187	98	73	58

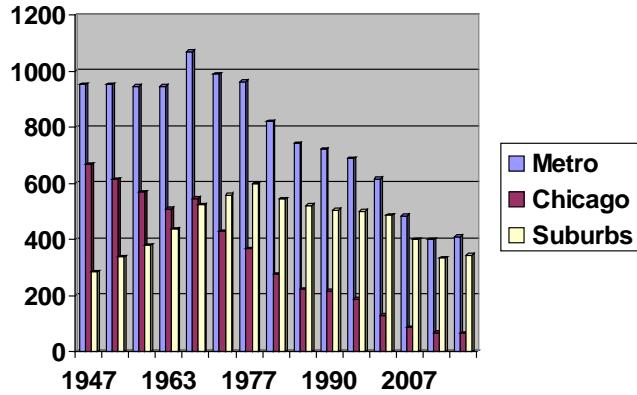
Source: Census of Manufactures.

Chicago had a highly diverse manufacturing sector in the immediate postwar period, and as shown in Figure 1 and Table 2, manufacturing employment in the metropolitan area was stable up through 1977.³

Since then manufacturing jobs at the metro level have declined continuously. The decline is 58.2% from 1977 to 2013. The decline in manufacturing employment in the central city is startling – from 668,000 in

¹In this paper the City of Chicago refers to the municipal government and the geographical city is denoted Chicago or the

Figure 1: Manufacturing Employment in Metro Chicago, Chicago, and Suburbs: 1947-2013 (1000s)



1947 to 66,000 in 2013.

The central city has largely made up for the loss of manufacturing jobs with large increases in the service sector. The purpose of this paper is to examine the manufacturing sector in some detail because, starting with Mayor Richard J. Daley in the 1960s, the city government has used just about every available policy in the attempt to preserve the manufacturing base. However, it is clear that older central cities that had relied on the manufacturing job base were destined to lose nearly all of those jobs. Further, the huge job losses did not stem from productivity increases. The old industrial base simply is not there anymore. In the end the policies were ineffective.

Table 2: Manufacturing Employment in Metropolitan Chicago and the U.S. (1000s)

Year	Metro Area	Central City	Illinois Suburbs	Lake County, Ind.	United States
1947	953	668	192	93	14,287
1954	952	615	238	99	15,002
1958	947	569	278	100	14,656
1963	947	509	340	98	15,631
1967	1,070	546	419	105	17,897
1972	989	430	473	86	17,669
1977	963	366	543	54	18,167
1982	820	277	467	76	17,363
1987	742	221	468	53	17,609
1990	721	216	428	59	17,695
1992	688	187	448	53	16,779
1996	713	203	470	39	17,237
2001	616	130	440	46	16,441
2004	470	94	347	28	14,315
2007	485	86	361	38	13,879
2010	401	68	299	34	11,528
2013	410	66	308	36	12,005

The metro area is defined as Cook, DuPage, Kane, Lake, McHenry, and Will Counties in Illinois and Lake Porter Counties, Indiana. Data for the metro area after 1997 include publishing to match the data for earlier years. Sources Census of Manufactures, Ill. Dept. of Employment Security (*Where Workers Work*), and Bureau of Labor Statistics.

central city. The central city is defined by the municipal boundaries.

²The details of this enumeration are available from the author upon request.

³The Chicago metropolitan area is defined as the six counties in northeastern Illinois (Cook, DuPage, Kane, Lake, McHenry, and Will) and Lake and Porter Counties, Indiana (i.e., Gary and neighboring towns).

A reviewer suggested, since the population of Chicago declined, that it would be interesting to see how the trends in manufacturing employment and population compared. Table 3 shows that, while population fell by almost 900,000 after 1950, the ratio of population to manufacturing employment increased dramatically from 5.6 in 1950 to 42.9 in 2013. The greatest increases in this ratio took place after 1990.

Table 3: Population and Manufacturing Employment; Chicago (1000s)

Year	Population Of Central City (1000s)	Manuf. Empl. of Central City (1000s)	Ratio: Population to Manuf. Empl.
1950	3621	641	5.6
1960	3550	524	6.8
1970	3363	476	7.1
1980	3005	314	9.6
1990	2784	216	12.9
2000	2896	123	23.5
2010	2696	68	39.6
2013	2700 (est.)	66	42.9

Census of Population and IDES (*Where Workers Work*).

The metro area now is no more concentrated in manufacturing than is the nation as whole. As for the city, in 2013 5.8% of private sector jobs in the city were in manufacturing compared to 10.8% for the Illinois portion of the metropolitan area (13% of jobs in the suburbs) and 10.5% for the nation.⁴ The central city has made a relatively successful transition from the manufacturing economy to the service economy.

Table 4: Private Employment in Chicago (1000s)

Industry	1970	1980	1990	2001	2010	2013
Total Private	1297	1250	1201	1142	1011	1089
Manufacturing	476	314	216	123	68	66
Non-manuf.	821	906	984	1019	946	1026
Construction	43	42	35	28	19	19
TCU*	108	122	103	127	91	99
Wholesale Tr.	103	98	88	46	34	37
Retail Tr.	183	176	176	90	86	90
FIRE**	100	132	174	156	131	129
Services	285	336	408	569	583	649
Ratio: Population to Total Employment	2.6	2.4	2.3	2.5	2.7	2.5

*Transportation, Communication, Utilities. **Finance, Insurance, Real Estate. Source: Ill. Dept. of Employment Security, *Where Workers Work* (various years). IDES does not report government employment.

Table 4 shows that total private employment in the city has declined by almost 200,000 since 1970, but that the ratio of population to private employment has remained stable at 2.5 (except for the recession year of 2010). The central city has seen large gains in private employment in services of 364,000 since 1970

⁴Employment data switched from the SIC system to the NAICS system in 1997. Publishing employment was removed from the manufacturing category. Publishing employment is added to the data after 1997 for the metro area so as to be comparable with data for the earlier years.

even as it has lost jobs in wholesale and retail trade as well as manufacturing. The largest increases have been in health care and social assistance and education services (“eds and meds” as the saying goes) as well as accommodation and food services. Employment in the central business district (CBD) has remained relatively stable in the neighborhood of 500,000 (490,000 in 1979 and 527,000 in 2013). At this point the CBD contains almost one-half of the private sector jobs in the city.

2 A High Point for Manufacturing Employment in Chicago: 1947

In 1947 the war was over and the U.S. economy was recovering quickly from the end of wartime production. The Chicago metropolitan area was a center of manufacturing in the nation exceeded only by metropolitan New York. The Chicago metro area was home to 946,000 manufacturing workers (paid employees), including 756,000 production workers, and 668,000 (70.6%) of paid employees were located in the central city. The eight leading general industry categories (with top specific industries in each category) in the metro area are shown in Table 5.

Table 5: Leading industry categories

	employees		employees
Primary metals	137,800	Fabricated metals	90,200
Blast furnaces & steel mills	73,800	Metal stamping & rolling	19,900
Non-electrical machinery	133,500	Structural metal	13,400
Tractors & farm equipment	18,900	Printing and publishing	63,500
Metal working machines	18,500	Commercial printing	34,300
General industrial (e.g., pumps, compressors, power transmission)	18,400	Apparel	48,100
Electrical machinery	116,800	Transportation equipment	42,200
Communication equipment	80,400	Railroad equipment	24,800
Food products	96,800	Motor vehicles	13,700
Meat products	31,900		

Source: Census of Manufactures (1947).

Together these eight industries account for 77.1% of metro area manufacturing employment. Note the dominance of durable goods industries among the leaders (four of the top five). According to the 1950 Census of Population, manufacturing accounted for 38% of all employment in the Chicago metro area. Only Detroit (46.9%), Milwaukee (42.8%), Cleveland (40.5%), and Buffalo (40.3%) among the major urban areas had higher concentrations in manufacturing. Manufacturing employment in the New York metro area was 30.5% of total employment in 1950.

In short, the Chicago metro area had a highly diversified manufacturing sector with specializations in several durable and nondurable industries. Leading industrial locations included the Chicago South Works and the Gary plant of U.S. Steel (plus other steel plants in South Chicago and Lake County, Indiana), the Union Stockyards and nearby meat packers (Armour, Swift), the International Harvester Tractor Works, the Hawthorne Works of Western Electric (subsidiary of AT&T), the agglomeration of apparel firms near downtown Chicago (Hart, Schaffner and Marx, Formfit), and the agglomeration of printing and publishing firms to the South of downtown (Donnelly, Lakeside Press).

In 2013 there were 410,000 manufacturing jobs in the metro area, with only 66,000 (16%) located in Chicago. And, with the exception of the steel plants in Gary and the rest of Lake County, Indiana, all of the industrial locations mentioned in the previous paragraph have long since been converted to other uses or are vacant. How did this happen? Table 6 displays the employment data for 10 manufacturing industries in the central city for various years from 1967 to 2103, including the top eight industries in the metro area as of 1947. These are the years of the most drastic declines that amount to the almost total disappearance of most industries from the central city. Primary metals included the basic steel plants on the South Side - U.S. Steel (Chicago South Works), Wisconsin Steel, Republic Steel, Acme Steel, Youngstown Sheet and Tube – all gone and sites abandoned.⁵ Both non-electrical and electrical machinery are gone, and the fabricated

⁵The steel industry has experienced large increases in labor productivity. Collard-Wexler and De Loecker (2015) found that

metals and furniture industries have little left. The best recent performer is transportation equipment, which came back to 5,645 jobs in 2013 thanks to the Ford plant. The food products industry is now the largest manufacturing industry in the central city, but jobs are down by 74% since 1967.

Table 6: Manufacturing Employment in Chicago (1000s)

Industry	1967	1972	1990	2001	2007	2010	2013
Primary Metals	36.0	31.1	9.5	4.1	2.3	1.8	1.9
Non-Elec. Machinery	58.4	36.2	9.2	4.8	2.8	2.6	2.7
Electrical Machinery	72.9	46.8	11.5	10.7	6.1	5.0	4.7
Food Products	56.3	50.9	31.9	23.8	19.8	17.1	14.9
Fabricated Metals	57.9	48.0	23.9	21.8	12.8	9.2	9.0
Printing	n.a.	n.a.	n.a.	8.6	5.7	3.8	3.2
Apparel	22.0	18.2	7.9	5.0	2.6	1.7	1.5
Plastics & Rubber	14.2	10.1	8.0	3.6	1.8	1.8	1.9
Furniture	11.3	9.7	6.0	5.8	4.0	3.2	3.0
Transport. Equipment	12.7	12.1	10.9	6.1	4.7	3.6	5.6
Total	546.7	430.1	216.0	122.6	81.6	64.7	63.1

Source: Census of Manufacturers and IDES (*Where Workers Work*).

3 Industrial Policies: City of Chicago

To gain an understanding of the industrial policies undertaken by the City of Chicago, it is helpful to turn the clock back to the 1950s. Richard J. Daley became mayor in 1955 and immediately undertook a comprehensive approach to renewing the downtown area. Only one major building (the Prudential Building) had been built since the 1920s. As shown in Table 2, at that time the manufacturing sector in the city was strong; the problem appeared to be downtown. Over the next three years Mayor Daley put in place a series of changes designed to defend and revitalize a compact downtown core, attract residents to the fringes of downtown, and enhance public transit. Among those changes was a change in the zoning ordinance to permit the construction of modern skyscrapers that include the Sears Tower (Willis Tower), Water Tower Place, Standard Oil Building (now Amoco Building), First National Bank Building, residential towers such as Marina City and Outer Drive East, and many others. The mayor also was behind the development of the Federal Center and the Daley Center municipal building. He centralized the planning function in his city planning department, and the department produced the 1958 Development Plan that focused on strengthening the core office, residential, and institutional developments. The mayor was supported by business leaders by their membership in the Central Area Committee.

The modern history of the efforts to preserve and expand the manufacturing base probably begins with the study conducted of the stockyards area by the Mayor's Committee on Economic and Cultural Development in 1966.⁶ By then it was clear that downtown was reviving, the central city was losing manufacturing jobs in large numbers, and the stockyards area was particularly depressed. The major meat packers had left in the 1950s, and the stockyards were on the road to being closed down completely in 1971. A total of 55,000 jobs were in the stockyards area in 1950, including 35,000 directly connected to the stockyards and meat packers. The major study, the Mayor's Committee for Economic and Cultural Development (1966), defined the mid-Chicago was most of the south side of the city down to 79th Street. The study area included the traditional African-American neighborhoods on the south and west sides of Chicago, but the focus of industrial development efforts was on the stockyards area, which was adjacent to the largest concentration of African-American population. The Mayor's Committee was well aware of research showing that racial segregation resulted in reduced employment opportunities for African-American workers in Chicago. They

employment in the U.S. fell from about 500,000 to 100,000 over 1963-2002 as output fell only from 130 tons in 1960 to 110 tons in 2000. This drastic transformation of the industry evidently meant that the industry moved out of Chicago.

⁶This committee had been formed by Mayor Richard J. Daley in 1962 and consisted of some business and labor leaders and City of Chicago public officials.

had read an early version of John Kain's classic 1968 study that estimated a job loss of 24,000 for African-Americans from racial segregation in 1956. The huge loss of jobs in the stockyards area was expected to have a sizable negative impact on the African-American population of the city. Here we have Kain's "mismatch hypothesis" – the idea that residential location patterns for African-Americans did not match the spatial pattern of employment. This idea is still alive and well in Chicago.

The Mayor's Committee made several recommendations that included coordination of public infrastructure improvements and job training programs with the needs of commercial and industrial firms, particularly in the stockyards area. For example, a normal street pattern was constructed in the former stockyards area (for the first time). The Mayor's Committee (1966) had hoped to retain 5,000 to 7,000 jobs in the area. The efforts to attract employers met with some success in the late 1960s and 1970s. The stockyards zip code was home to 15,694 jobs in manufacturing in 1979. Manufacturing employment fell to 8,978 in 1986, but increased to 10,160 in 1993. In 1994 the (former) stockyards area was included in the Chicago Empowerment Zone, which is discussed below.

Several other policies have been pursued in the city intending to attract and/or retain manufacturing employment. Table 7 contains a list of programs that have attempted, among other purposes, to increase manufacturing employment in the city along with any impact of each one (if known) and references to studies of those impacts in Chicago. See Neumark and Simpson (2015) for a detailed review of place-based programs that concludes the programs accomplish very little.

Table 7: Programs to Increase Manufacturing Employment in Chicago

Policy	Date Started	Impact if Known	Reference
Coordination of Public Works and Training	1966	Street grid put in stockyards area results in reuse of land. Manuf. jobs up maybe 5,000.	Mayor's Committee (1966) No study done
Survey of 1000 manuf. firms	1976	Intention to relocate related to need for added space.	Efforts to recycle land, no study
Industrial Revenue Bonds	1977	Reduction in interest helped a few manuf. firms expand. 3,400 jobs planned.	McDonald (1984a)
Property Tax Incentive	1977	Reduces taxes for 8 years on new or rehabed industrial buildings.	Has never been studied.
State Enterprise Zones	1983	Attracted wholesale and transportation jobs to zones during 1985-1989.	McDonald (1993) No effect on manufacturing jobs
Industry Task Forces	1984 -1987	Studies intended to lead to infrastructure and job training programs, but little was accomplished.	Hunt and DeVries (2013) No impact on jobs.
Tax Increment Financing Districts	1983	Increases value of commercial and residential but not industrial property.	Weber et al. (2003), Smith (2006) No manuf. jobs impact
Planned Manufacturing Districts and Industrial Corridors	1988	Manufacturing job losses were less in IC than rest of central city during 2002-2010. Maybe saved 4,900 jobs.	Hunt and DeVries (2013). Job loss of 32% less than in rest of central city.
Brownfields Program	1993	40 sites completed, 1400 manuf. jobs added on sites.	Hamm and Walzer (2007), Higgins (2008)
Federal Empowerment Zone	1994	Wage subsidy increases jobs for residents for a few years. Negative spillover effects offset the gains. Maybe saved 4,200 jobs.	Oakley and Tsao (2007), Busso et al. (2013), Hanson and Rohlin (2013)
Industrial Parks	1995	Two industrial parks created, but they fail. No jobs	Hunt and DeVries (2013)
Cut in Property Tax Rate	2000 -2008	Cut rate from 4.34% to 1.61% on industry property	Has not been studied.

The next step was the formation in 1974 of the Mayor's Council of Manpower and Economic Advisors.

This group of business and labor leaders, academic members, and public officials focused on industrial retention.⁷ Mayor's Council of Manpower and Economic Advisors (1974) issued a major report titled *Chicago's Economy* that identified economic development opportunities and policies for 14 sub-areas encompassing the industrial areas of the entire central city. Industrial conservation or industrial development (or both) are among the suggested policies for 13 out of 14 sub-areas (the central business district the exception).. The other standard policies identified are linking manpower programs to employers and "one stop" for obtaining building permits and other required approvals. Mayor's Council of Manpower and Economic Advisors (1974) stated (p. 52) its basis for its development strategy as follows:

- As indicated previously in this report, manufacturing increased its importance as a source of employment for minority residents of Chicago in the decade from 1960 to 1970. Wage rates in manufacturing continue to be high, and, because of the structure of occupations within manufacturing industries, these jobs still offer more economic and social mobility for lower skilled workers than most other kinds of employment.
- Though service occupations have increased in number, and total employment in service has grown, this kind of work does not typically offer the continuous acquisition of skills necessary for increasing social mobility, particularly for workers at the lower end of the occupation ladder. Clearly this generalization does not apply toward more technical and skilled service occupations.
- It is also true that manufacturing is a "basic" industry. Economic theory suggests, and most data indicate that each job in manufacturing creates secondary employment. Strategy planning for the next fiscal year tends to focus on the manufacturing sector.

The Council made an effort to reach out to the manufacturers to find out their problems, and discovered that the intention to relocate was related to inadequate space for expansion and to traffic problems. The City of Chicago made further efforts to recycle industrial sites and to coordinate street improvements with the needs of employers. In addition, a program of industrial revenue bonds (IRB) was adopted. The IRB is a bond issued by the City of Chicago (with federal tax exemption) on behalf of a firm. The reduction in the interest rate could be a substantial benefit, especially in the time of very high interest rates of the late 1970s and early 1980s. A study by McDonald (1984a) found that the IRB helped manufacturers with their expansion plans, which included employment increases.⁸

Cook County adopted an ordinance in 1977 that provided for lower property taxes for new, substantially rehabilitated, or abandoned industrial property. The program reduces property taxes by 60% for ten years by reducing the assessment ratio from 25% to 10% of market value, and is available to any site in the county upon application to the Cook County Assessor. The program is also available for any type of property that involves redevelopment of brownfield sites. The application process is rather onerous, and the incentive is not used very much. Furthermore, as noted in Table 7, a report by the Civic Federation (2010) shows that the effective property tax rate on industrial property market value in the central city was cut from 4.34% in 1999 to 1.90% in 2004 (and 1.61% in 2008) compared to about 2% in various municipalities in neighboring DuPage County. The suburbs of Cook County have very high property tax rates for industrial property such as 5.1% in Arlington Heights and 6.84% in Oak Park. A conclusion is that the property tax system is a serious disadvantage for the Cook County suburbs, but currently not for the central city.

The State of Illinois followed dozens of other states in establishing an enterprise zone program in 1983. Six enterprise zones have been created in the city. The program eliminates the state and local sales tax on building materials, provides a state income tax credit of 0.5% for investment in the zone, and offers a \$500 state income tax credit for each job created in the zone (if at least five jobs are created) and certified dislocated or disadvantaged workers are hired to fill them. Cook County cooperated by offering the property tax incentive for manufacturers to industrial firms more broadly defined (e.g., wholesale trade firms and transportation firms). The evaluation of the program for the years 1985-1989 found that the property tax incentive for wholesale trade and transportation firms attracted these types of firms to the enterprise zones in Cook County. There was no impact on total employment or on manufacturing employment in the zones.

⁷The author was a member of this group.

⁸During 1977-1981 the City of Chicago issued 69 IRBs, including 51 to manufacturing firms. Average employment was 201 and the average planned employment increase was 67. The average IRB was \$1.5 million with an interest rate of 8.62% compared to the prime rate of 15.91%. It was a time of very high interest rates.

The State of Illinois in 1983 created a program of Tax Increment Financing Districts for municipalities. The program designates any increases in property tax revenue from a TIF district to uses within the district. Illinois gives wide latitude in the use of TIF funds. TIF districts became the leading economic development tool used by the City of Chicago under Mayor Richard M. Daley. As of 2011 Chicago had 163 TIF districts that include about 30% of the land area of the central city and about 10% of the property tax base. According to Hunt and DeVries (2013) on page 252, the TIF districts generate about \$500 million per year, and since 1983 about \$3.7 billion had been spent on projects in the districts. About half of these funds have been spent on public works, and half on private projects. The most successful TIF districts are located in and near the downtown area and are not zones of manufacturing. Unfortunately, the program needs to be more transparent and is not part of overall capital planning. Research on the Chicago TIF districts has shown that location within a TIF district enhances the value of commercial and residential property, but does not increase the value of industrial property.

Mayor Harold Washington, who served from 1983 to his death in 1987, undertook a serious effort to promote economic development outside the downtown area, and his Department of Economic Development concentrated on industrial development. Industry task forces were formed to study the printing, apparel, and steel industries. These studies led to proposals to concentrate infrastructure and job training programs, but a lack of funding prevented implementation. The City of Chicago adopted an ordinance creating Planned Manufacturing Districts (PMD) in 1988. Officials were well aware that, in some locations, residential or commercial land values exceeded the value of land for industrial use, so this ordinance prohibited changing the zoning in these districts from industrial use to other uses. Zoning changes typically were proposed by the alderman of the ward in which the property is located, and those zoning changes often involved changing from industrial to commercial or residential use. The ordinance took the authority for zoning changes out of the hands of the alderman. The intent is to assure manufacturers that land use would not change. In particular, manufacturers complained that permitting people to live in industrial areas led to complaints about noise, traffic, etc. and tended to hem in the manufacturers. The PMD ordinance was followed by the creation of Industrial Corridors under the administrations of Eugene Sawyer (1987-1989) and Richard M. Daley (1989-2011). The Industrial Corridors ordinance added another layer of land-use regulation, included funding for industrial development organizations in the corridors, and prohibited residential use in these corridors of five acres or more. As of 2011 15 PMDs and 24 Industrial Corridors had been established.

The study by Hunt and DeVries (2013) finds (p. 290) that manufacturing in the 24 Industrial Corridors declined by 32.2% from 2002 to 2010, compared to a decline of 41.5% in the rest of the central city. The manufacturing employment data (1000s) from Hunt and DeVries are presented in Table 8.

Table 8: Manufacturing employment data

	2002	2010	Change
City of Chicago	102.2	64.8	-36.6%
Industrial Corridors	53.6	36.3	-32.2%
Rest of City	48.7	28.5	-41.5%
Rest of Cook County	185.7	131.9	-29.0%

If jobs in the Industrial Corridors had declined by 41.5%, then employment would have been 31,400 instead of the actual 36,300, a possible saving of 4900 jobs. As of 2002 the Industrial Corridors contained just 9.7% of total employment in the central city, but contained 54.4% of manufacturing employment. The finding for job loss from 2002 to 2010 is consistent with the hypothesis that clustering of manufacturing may have reduced decline during the 2001-2007 period.

The City of Chicago initiated a brownfields program in 1993. The goals of the program are to clean up the city and to redevelop the sites. City officials selected some of the most polluted sites, identified private developers, and paid for the cleanup through a variety of sources – state and federal grants, TIF funds, and municipal bonds. Higgins (2008) noted that, as of 2007, 40 sites had been redeveloped containing 13,000 acres (20.3 square miles, about 9% of the land area of the central city). The focus of redevelopment is commercial and industrial use rather than housing. The brownfields program has produced new jobs on the sites; 2,000 at the ATA Chicago Airline Training Center and about 1900 new jobs on various other sites in

the city (in a central city with total private employment of 1.09 million in 2013). No more than 1400 of those jobs are in manufacturing. However, Hamm and Walzer (2007) pointed out that, in some cases, the brownfields program may have simply relocated jobs that would have been in the city anyway. The program has removed potentially dangerous contamination from a sizable portion of the central city.

The City of Chicago was awarded one of the first six federal Empowerment Zones in 1994. An Empowerment Zone is a depressed portion of an urban area with no more than 200,000 people residing in the zone. The Empowerment Zone in Chicago consists of three separate areas on the near south (stockyards area), southwest, and west sides. As shown by McDonald (1998), the population of the Chicago zone was 71.5% non-Hispanic African American and 24.2% Hispanic in 1990. The employment rate for males age 18 and over was 46.2% (for females 30.7%), and 55.9% of adults age 25 and over had not graduated from high school. Most of the households in the zone did not have a checking account (79%), a credit card (87%), or own the home (90%). Almost half of the households were thinking of moving (47%), and 42% received some form of housing assistance.

The incentives for business offered in a federal Empowerment Zone include a federal income tax credit of \$3,000 for each employee hired who lives in the zone, accelerated depreciation on equipment purchases, and tax exemption for a new category of municipal bonds issued on behalf of private firms to purchase real estate in the zone. The federal wage subsidy feature makes the Empowerment Zone program stronger than the state income tax credit in the Enterprise Zone program. The program also included \$100 million in direct federal funding for various social programs directed at residents of the zone.

Research by Oakley and Tsao (2007) and Busso et al. (2013) used census data to show that residents of Empowerment Zone census tracts gained in employment in relation to comparison areas. Oakley and Tsao (2007) found that unemployment in the empowerment zone census tracts fell by 3.75% compared to other similar census tracts. In addition, Busso et al. (2013) found that employment located in the Empowerment Zone census tracts increased by 13% in relation to comparison areas from 1992 to 2000. However, Hanson and Rohlin (2013) found that the Empowerment Zone program had negative spillover effects on neighboring zones that offset the positive effects in the zone.⁹

An additional question is whether the positive effect of the Empowerment Zone lasted beyond 2000. A preliminary answer to this question can be provided by examining the employment data by postal zone from *Where Workers Work*. The five postal zones that have the largest shares of their areas included in the Empowerment Zone are compared to five nearby postal zones. The five Empowerment Zone zip codes have an average of 57% of their areas included in the empowerment zone. Total employment changes are presented in Table 9.

Table 9: Total employment changes

	Five Empowerment Zone Zip Codes	Five Nearby Zip Codes
1993-2001	6.20%	-7.00%
1993-2007	2.80%	-12.90%
1993-2010	-1.00%	-21.40%
1993-2013	-3.50%	-24.30%

We see that the early employment gain in the Empowerment Zone areas does not last, but that employment in the comparison areas declined sharply. It seems that the Empowerment Zone is able to hold on to employment far better than nearby comparison areas. The composition of employment in the Empowerment Zone changed along with the rest of the central city. The five zip codes contained 24,315 manufacturing jobs in 1993, but this total fell to 23,888 in 2001, 13,664 in 2007, and 12,764 in 2013. Manufacturing employment in these areas fell by 47.5% in the twenty years from 1993 to 2013, compared to a decline of 64.7% from 1992 to 2013 for the city as a whole (from Table 2). If manufacturing jobs in those five zip codes had declined by 64.7%, then employment in 2013 would have been 8,583. Possibly about 4,200 jobs were saved in those zip

⁹Oakley and Tsao (2007) studied the Chicago Empowerment Zone, and Busso et al. (2013) and Hanson and Rohlin (2013) studied the first five empowerment zones, including Chicago.

codes, but the Hanson and Rohlin (2013) study suggests there were negative impacts on other parts of the city. Other sectors showed employment gains, particularly in health care. The five Empowerment Zone zip codes gained 6,400 jobs in health care from 1993 to 2007.

The City of Chicago created two industrial parks in the 1990s, one on the south side and one on the west side. Funding for the industrial parks included TIF money, which can be shifted from TIF districts that make money to other TIF districts. Hunt and DeVries (2013) find that both of these parks had brownfield problems, failed to attract new employers, and lost some existing jobs.

What can be concluded from this review of policies intended to shore up the manufacturing sector in the central city? Clearly there have been some (small) successes. The jobs estimates in Table 7 suggest that about 9,800 manufacturing jobs might have been created and 9,100 jobs saved by the various programs, but these numbers are not all based rigorous evaluation research. Industrial revenue bonds helped a few firms expand. Manufacturing employment did better in the Industrial Corridors than in the rest of the city. The Empowerment Zone program boosted employment in the zone, but had negative spillover effects. As Hunt and DeVries (2013) note, the Ford plant on the south side (4,100 jobs) and the expansion of Finkl Steel (with 350 jobs at the old site) as the firm moved from the north side to the south side are notable successes. But as a whole the programs are hardly a success. Indeed, the Enterprise Zone, Empowerment Zone, Industrial Corridors, and brownfields programs focus assistance on particular small areas of the city, so that any success that these programs may have had possibly came at the expense of other areas of the central city. The property tax rate on industrial property in the city was cut substantially early in the 2000 decade. Was there any effect? No study has been conducted.

What is a fair assessment of the overall effort since the 1970s? Start with 1954 (Table 2) on the grounds that the employment figure for the city in 1947 is inflated by wartime restrictions on construction, and end with 2007 (before the great recession). Clearly the various programs for Chicago are mainly intended to direct manufacturing to the central city from the rest of the metro area. The metro area is selected as the comparison area on the grounds that the demand for manufacturing first is a demand for manufacturing to be located somewhere in the metro area. The issue is whether policies aimed at the central city were able to improve its ability to induce manufacturers to stay and/or locate there. Assume that 1972 is the date at which these policies began. From 1954 to 1972 the central city lost 30.1% of its manufacturing jobs as manufacturing in the metro area increased by 3.90%. From 1972 to 2007 the central city lost 80.0% of manufacturing employment while the metro area fell by 50.9%. On an annual basis the central city lost 1.97% per year from 1954 to 1972 and 4.49% from 1972 to 2007. The comparable figures for the metro area are +0.22% from 1954 to 1972 and -2.06% from 1972 to 2007. The differences are negative 2.25% per year for 1954 to 1972 and negative 2.43% per year for 1972 to 2007. In short, the central city did not do better compared to the metro area after 1972.

Suppose that the effects of the policies to support manufacturing in the central city did not really kick in until 1977, 1982, 1987, or 1990. Table 10 shows the comparisons of annual rates of employment change for the central city and the metro area from 1954 to each of these dates and from each of these dates to 2007. In no case is the difference in annual percentage change smaller in the later period (with manufacturing support policies). Indeed, the central city did somewhat worse after the policies had been in effect.¹⁰

4 Possible Causes of the Collapse of Manufacturing in the Central City

A fundamental question is, “Why did both the central city and the metropolitan area have long-term rates of decline in manufacturing employment?” Most likely the answer is the same for both. In the case of the central city, if manufacturing employment is held constant at the metropolitan level, the city declines because economic activity is spreading out over a wider area (i.e., suburbanization). As for the metropolitan area, if manufacturing employment in the nation is constant, the metro area declines because economic activity is spreading out geographically away from the Northeast in favor of the South and West. As shown below, the basic rate of suburbanization of manufacturing was 2% per year, while the long-term rate of decline of

¹⁰Extension of the data to 2013 does not change the nature of the results.

Table 10: Manufacturing Employment Changes: Chicago and Metro Area

Time Periods	Annual Percentage Change Central City	Annual Percentage Change Metro Area	Difference in Percentage Changes
1954-1972	-1.97	+0.22	-2.25
1972-2007	-4.49	-2.06	-2.43
1954-1977	-2.30	-0.00	-2.30
1977-2007	-4.66	-2.27	-2.39
1954-1982	-2.81	-0.54	-2.27
1982-2007	-4.57	-2.12	-2.45
1954-1987	-3.05	-0.76	-2.29
1987-2007	-4.61	-2.15	-2.46
1954-1990	-2.86	-0.81	-2.05
1990-2007	-5.27	-2.29	-2.98

Source: Table 2.

manufacturing employment at the metro level was about 1% per year, and these two rates did not change appreciably over the 66 years from 1947 to 2013. In addition, employment percentage changes at the metro level followed the percentage changes at the national level on a one-for-one basis.

Manufacturing employment on net moved from the central city to the suburbs throughout the period under study. The possible causes of the suburbanization of manufacturing employment are numerous and include:

- Construction and use of the expressway system,
- Increased reliance on trucking rather than rail transportation,
- Shift from multi-story factory buildings to single-story factories,
- Opening of O'Hare Airport (outside the existing city limits),
- Emergence of suburban employment centers,
- Movement of population to the suburbs,
- Old, obsolete facilities in the city,
- Cost and risk of redeveloping old industrial (brownfield) sites,
- Lack of room for expansion and traffic flow problems in the city,
- Expansion of the downtown area,
- Relatively high property taxes on business property in the city up through 2000,
- Central city crime – and the major riot in 1968, and
- Some industries' lack of industry clusters.

This long list of possible causes suggests that City of Chicago policy efforts to retain manufacturing were overmatched. Consider each of these forces for suburbanization in turn. A short assessment of the importance of each factor is included.

The era of expressway construction began in the late 1950s as part of the Eisenhower Interstate Highway program, four radial expressways and the circumferential Illinois Tollway were built, and the program essentially ended in 1971 with the completion of the extension of the Eisenhower Expressway to the West. The construction of these highways required the removal of some manufacturing facilities in the central city. The expressway system was a major factor in the suburbanization of both population and employment, and research by Baum-Snow (2007) supports this conclusion. The construction of the entire Interstate Highway

system meant that trucking could compete very effectively with the railroads for the movement of many types of freight, so suburban manufacturing could rely entirely on trucking to assemble inputs and deliver outputs. Indeed, suburban plants could be built to facilitate trucking and many central city locations presented difficult access conditions for large trucks. But the first decade of the 21st century was 30 plus years removed from the completion of the system. The full response to the construction of the expressways and interstate highways was going to take a long time, but how long will it take? Indeed, in recent years the expressways have become heavily congested. The effect of the expressway system was very large in the beginning, and likely has declined over time.

Factories of the 19th century relied on mechanical power sources in which power is transmitted most efficiently vertically. Hence, factories were built with multi-stories. In contrast, as pointed out by Meyer et al. (1965), modern factories rely on electric power, which frees factories to be laid out horizontally to accommodate efficient assembly line production. This was another powerful reason for shifting manufacturing jobs to the open suburban spaces. However, most multi-story factory buildings were taken out of service (some converted to other uses such as housing) many years ago. McDonald (1985) studied the density of floor space and employment in Chicago's manufacturing sector for 1970, and found that some zones with old industrial buildings were under-utilized in that employment density was far less than expected given the amount of floor space. Such was not the case in suburban zones in the study. But can this be an important reason for the suburbanization of manufacturing since 1990 or 2000? Firms could have had an opportunity to build low-rise facilities in the central city.

O'Hare Airport has been a powerful magnet for manufacturing and warehouse facilities since the major airlines shifted from Midway Airport to O'Hare in 1962. The airport property was annexed by the City of Chicago, but the surrounding area was not. The airport location provides immediate access to air freight and rail freight, and is an intersection of expressways and interstate highways. The O'Hare area has the second-largest concentration of employment in the metro area. McDonald and Prather (1994) found that there were 307,000 total jobs located within five miles of O'Hare Airport in 1990, compared to 507,000 jobs located in downtown Chicago. More recent data discussed below indicate that O'Hare still exerts a strong influence on manufacturing.

McDonald and McMillen (1990) used data from Chicago Area Transportation Study (CATS) in an effort to find employment centers other than downtown in 1956 and 1970. They defined an employment center as a CATS zone with gross employment density greater than in the adjacent zones. CATS zones increase in size as distance to downtown increases. A CATS zone typically has four adjacent zones, one nearer to downtown, one farther away from downtown, and two at the same distance to downtown. So a zone cannot be an employment center if employment density declines with distance to downtown. For 1956 no zone (other than the downtown zone) qualified as an employment center based on the density of total employment, but three zones were found to be centers of manufacturing employment. These include the Cicero Industrial District just to the West of the central city (with the Hawthorne Works of Western Electric), the Clearing Industrial District adjacent to Midway Airport in the near southwest suburb of Clearing, and the zone that contained the US Steel South Chicago Works. In 1970 the zone that included the Cicero Industrial District qualified as an employment center based on the density of total employment as well as manufacturing employment. Manufacturing employment centers in 1970 were located near the US Steel South Chicago Works and a zone located on the northwest side of the central city about seven miles to the East of O'Hare Airport. Note that all of these employment zones were manufacturing zones. As of 1970 the Clearing zone had lost its earlier prominence.

A newer type of employment center began to emerge in the 1970s. This newer type is an agglomeration based to some degree on office employment, and relies on highways for transportation. Garreau (1991) popularized this new type in his book *Edge City*. Research on these centers has been underway since the 1980s to identify centers, to explain their existence and growth, and to study their impacts on the surrounding area. The basic idea is that both accessibility and positive external effects exist for the various firms that cluster in the suburban centers. Using data on quarter sections, McDonald and Prather (1994) identified three suburban employment centers for metropolitan Chicago in 1980. They defined their search to exclude the old satellite cities in order to concentrate on the new phenomenon of suburban centers. The zones are the O'Hare Airport area, Schaumburg to the west-northwest of O'Hare Airport, and central DuPage County, just west of Cook County. The O'Hare center is located 18 miles northwest of downtown, and contains

employment in transportation, wholesale trade, and manufacturing (and some government employment too). Schaumburg is located 26 miles from downtown to the northwest, and is home to the largest shopping center in the metro area (Woodfield Mall) and Motorola and other manufacturers. The area also includes some employment in financial and other services. Central DuPage County, located 26 miles west of downtown, had an employment base consisting of financial and other services and hi-tech manufacturing (known as “Silicon Prairie”).

McDonald and Prather (1994) found that these three employment centers captured a significant share of employment growth in the metropolitan area from 1979 to 1989. Most of the employment growth in the metro area during those years took place in the northwest suburbs and DuPage County. The area defined by six counties in Illinois (Cook, DuPage, Kane, Lake, McHenry, and Will) added 394,000 private sector jobs over that decade, and 65% of that growth took place in northwest Cook County and DuPage County. Of those 257,000 jobs, 106,000 of the increase took place in the O’Hare, Schaumburg, and Central DuPage employment centers. Employment growth within five miles of O’Hare was 59,000 (from 248,000 to 307,000), 21,000 in Schaumburg, and 26,000 in the two major towns in central DuPage (Naperville and Wheaton). The three centers captured 27% of total employment growth in the six-county area, indicating the benefits of clustering.

The much more comprehensive study was done by McMillen and McDonald (1998). This study investigated suburban employment centers in the Illinois portion of metro Chicago for 1980 and 1990, and included a wider area than examined by McDonald and Prather (1994). Using data on quarter sections, they identified centers as groups of quarter sections with at least 10 employees per acre and employment of at least 10,000 in either 1980 or 1990. Gary, Indiana would have been on the list of subcenters (as an old satellite city) if the data source had included the Indiana portion of the metro area. The twenty centers identified are grouped into six types:

- Old satellite cities (3)
- Old industrial suburbs (3)
- Post World War II industrial suburbs (6)
- New industrial/retail suburbs (2)
- Edge cities (3)
- Service and retail centers (3)

In addition to the three satellite cities, three industrial suburbs reached prominence shortly after 1900. Manufacturing still dominated these six centers in 1990. Six industrial centers emerged after World War II and after the opening of O’Hare Airport to all of the passenger flights in 1962. Two centers emerged since 1970 that combine industry with retail trade. All eight of these newer industrial subcenters are located in the general O’Hare Airport area to the Northwest of downtown Chicago. The three edge cities (Naperville, Oak Brook, and Schaumburg) come next, followed by three centers that combine service and retailing. Burbank and Maywood specialize in health care services, and of course Evanston is the location of Northwestern University. The 11 subcenters that include the post war industrial suburbs, the new industrial/retail suburbs, and the edge cities together had manufacturing employment of 91,400 in 1980, and the six old satellite cities and old industrial suburbs were home to 59,000 manufacturing jobs. Together these 17 subcenters contained 29% of the manufacturing employment located in the Illinois suburbs in 1980.

The five centers with the most rapid growth in employment from 1980 to 1990 are the three edge cities and the two newer industrial/retail centers. Indeed, these five centers added 131,000 jobs from 1980 to 1990 (with 57,000 added in the Oak Brook edge city). Two centers near O’Hare Airport also grew (Addison and O’Hare), as did seven of the others. However, six of the centers declined in employment. Five out of these six had concentrations in manufacturing (and the sixth is Evanston, with Northwestern University and retailing). Additional research by McDonald and McMillen (2000) found that subsequent industrial and commercial real estate development in the suburbs during 1990 to 1996 was attracted to locations near O’Hare Airport and highway interchanges. McMillen and McDonald (1998) found that employment density declined with distance to transportation facilities (O’Hare Airport, highway interchanges, and commuter rail stations) and to the suburban employment subcenters in both 1980 and 1990. The density gradient did not

change much over these ten years, but did become steeper for the three edge cities and one other subcenter. So, some suburban subcenters (in addition to O'Hare) have been a factor in manufacturing location since the 1980s.

The suburbanization of the population is an incentive for some manufacturers to set up shop in the suburbs. Some manufacturers, such as certain types of food products (e.g., bakeries) produce largely for the local market. More importantly, the suburban population provides the labor force for the suburban employers. However, the suburbanization of the population is not as great as the suburbanization of manufacturing employment. In 2010 the central city contained 30.0% of the population and 17.0% of the manufacturing jobs. Suburban population growth does not seem to have been an important independent cause of manufacturing employment suburbanization. See McDonald (2017) for a study of the suburbanization of minority population groups – African Americans, Hispanics, and Asians.

The central city suffered from old, obsolete manufacturing facilities. Some of the facilities at the Chicago South Works of U.S. Steel had been modernized, but some had not. Bensman and Lynch (1987) told the story of the managerial inefficiency (and pilfering) and ultimate closing at South Works. But the main story is that the old steel factories in Chicago were eliminated by more efficient suppliers both in the U.S. and abroad. In addition, sites that had been manufacturing locations in the past are now called "Brownfields," with serious environmental cleanup requirements. According to the governing federal law from 1980, owners of such sites, even if they were not responsible for the environmental problems, are liable for remediation costs. Many sites simply remain vacant in spite of the fact that the State of Illinois and the City of Chicago have a progressive brownfields program for reusing old industrial sites. A detailed study of industrial parcels sold in Chicago from 1983 to 1993 by McGrath (2000) showed that the probability that a site was contaminated did not affect whether the site was sold for redevelopment. In fact, the selling prices were significantly reduced by the probability of contamination in amounts that could cover the cleanup costs upon resale of the sites. However, he did point out that the burden of cleanup costs increased the capital needed to undertake redevelopment. Furthermore, the cleanup costs may in fact be highly variable and present a significant risk to a prospective redeveloper, a risk that does not exist if a "greenfield" site is chosen. The decision to redevelop was found to be a function of the difference between the current value of the parcel and the value in its hypothetical new use. Environmental cleanup significantly enhances parcel value, and therefore increases the probability that a site will be redeveloped. In the end McGrath (2000) suggests that the public sector might engage in the cleanup work so as to increase the amount of redevelopment of brownfield sites (and to reduce environment hazards for the public), but the increase in the value of the parcel means that the financial resources required to redevelopment a site are not reduced for a private firm. The overall conclusion from the McGrath (2000) study is that the contamination of old industrial sites may present a prospective redeveloper with a sizable risk, but in some cases may not really be a barrier to redevelopment. The studies cited in Table 7 show that 1400 manufacturing jobs were placed on the redeveloped brownfield sites.

Some manufacturers in the central city found that their current sites left no room for expansion, and this was mentioned as an incentive to intend to relocate in a survey conducted by the Mayor's Council of Manpower and Economic Advisors in the 1970s. A site that was considered inadequate for the firm's needs increased the probability of intending to relocate by 25%. The survey also found that inadequate traffic flow increased the probability of intending to relocate by 10%. See McDonald (1984b) for the study of the intention to relocate based on this survey. This factor was important in the 1970s and perhaps for some later years, but in recent years vacant industrial land has been available.

Downtown Chicago has expanded to the North, South, and West. The area to the South of Congress Street had been the center of the printing industry, and apparel firms concentrated to the West of the Loop. The area north of the Chicago River was home to a variety of small manufacturers. Now these areas have been converted to housing and office buildings. Rast (1999) told (Chapter 3) the story of these industries. The number of print shops in the central area of Chicago fell from 401 to 216 from 1983 to 1991, and the number of apparel firms in the garment district just to the West of the Loop fell from 183 in 1951 to 116 in 1960 to 57 in 1970 and 26 in 1981. Land values at a key location in the printing district to the South of the Loop increased from \$17.00 per square foot in 1970 to \$70.00 per square foot in 1990, and a somewhat similar increase took place in the garment district (\$12.00 per square foot in 1965 and \$60.00 per square foot in 1980), changes that signal a change in the use of land.¹¹ The expansions of downtown is no longer a

¹¹The book by Rast (1999) was written in advocacy of the neighborhood industrial development policies of the administration

factor in relocation of manufacturing because very little of those jobs remain.

Cook County, the county in which Chicago is located, has a property tax system that imposes higher taxes on business property than is found in the other counties of the metro area. This situation arises from the use of a “classification” system that imposes a higher assessment rate on commercial and industrial property than on residential property in Cook County. A report by the Civic Federation (2010) shows effective property tax rates (property tax bill as a percentage of the value of the property) for industrial property in the city and selected suburbs as shown in Table 11.

Table 11: Property Tax Rates on Industrial Property

	1992	1999	2000	2004	2008	County
Chicago	5.85%	4.34%	2.91%	1.90%	1.61%	Cook
Arlington Hts.	5.52%	7.20%	6.63%	4.97%	5.10%	Cook
Evanston	8.50%	7.70%	7.03%	4.76%	4.81%	Cook
Oak Park	9.01%	8.59%	7.63%	5.78%	6.84%	Cook
Wheaton	2.19%	2.14%	2.05%	1.80%	1.93%	DuPage
Oak Brook	n.a.	1.05%	0.96%	0.87%	0.90%	DuPage
Naperville	2.05%	1.78%	1.69%	1.81%	1.84%	DuPage
Waukegan	2.61%	2.54%	2.44%	2.58%	3.28%	Lake

Civic Federation (2010).

These figures show that the property tax rate on industrial property in Chicago was very high compared to suburbs outside Cook County in 1992 and 1999, but a major reduction in the rate took place between 1999 and 2004 that makes the rate in Chicago close to the rates imposed in those suburbs outside of Cook County (except for Oak Brook, which has a very low property tax rate because of the sales taxes that come from the Oak Brook Shopping Mall). Industrial properties in suburban Cook County face very high property tax rates. These figures suggest that high property taxes were a negative factor for Chicago up through 2000, but the recent cut in the rate changed the picture.¹²

McDonald and Yurova (2006) studied industrial property values in the O’Hare Airport area for 2001-2004, and found that the property tax rate on industrial property averaged 4.32% of market value in Cook County and 1.69% on industrial property in neighboring DuPage County. The result of this differential is that industrial property in Cook County sold for 16.2% less than similar properties in DuPage County. This study was picking up property tax rates in both the central city and suburban Cook County. Cook County does have an incentive program for new or substantially rehabilitated industrial buildings that reduces the property tax substantially for ten years, but this program does not apply to existing buildings. A study by Dye et al. (2001) found that higher property tax rates led to significantly slower growth rates for employment, commercial property values, and industrial property values in suburban municipalities during 1990-1996. (The central city is not included in the study.) The across-county differences are particularly strong for commercial property value growth. Within-county differences are more important for industrial property value growth, and both across-county and within-county differences are implicated for employment growth. The property tax was a negative factor on manufacturing employment in the central city prior to 2000, but the rate differential between the central city and the suburbs outside of Cook County has been eliminated. No study has been conducted of the impact of the tax rate reductions after 2000. But the decline of manufacturing employment in Chicago continued unabated after 2000.

Then there are the general problems associated with the central city. Crime increased dramatically after

of the late Mayor Harold Washington, who served from 1983 until his death in 1987. Rast (1999) stated (p. 88) that “... it was not until the 1970s and early 1980s that manufacturing jobs experienced sharp decline.” His Table 11 (p. 88) shows that manufacturing employment in the central city increased from 329,000 to 389,000 from 1958 to 1972 (and then fell to 258,000 in 1983). The correct figures are listed in Table 2 above, and show a decline from 569,000 to 430,000 from 1958-1972. His figures were intended to show that the central city was capable of attracting manufacturing jobs in large numbers, but City of Chicago policy that focused on downtown development stood in the way. McDonald (1984b) is listed among Rast’s references, and this source contains the correct figures.

¹²McDonald (1984b) included data showing industrial property taxes in 1973 of 2.76% to 3.45% in the central city, 1.98% to 2.75% in Downers Grove (DuPage County) and 1.50% to 2.33% in Waukegan (Lake County).

the early 1960s. The murder rate in the central city tripled from 10 per 100,000 population in 1960 to 24 in 1970 and 31 in 1990, and the other forms of crime increased as well. Since then crime has declined; murders were 16 per 100,000 in 2010. And the west side of Chicago experienced a major urban riot in 1968 in the wake of the murder of Dr. Martin Luther King, Jr. How much suburbanization was caused by these factors? The survey of manufacturing establishments conducted by the Mayor's Council summarized in McDonald (1984b) indicated that crime has not a factor in the intention to relocate.

Another possible cause of the collapse of manufacturing employment is a lack of industry clusters. An extensive literature has investigated whether Marshallian industry clusters promote growth. And, because such clusters are supposed to contain firms that are more productive than firms not in clusters, perhaps clusters prevent (or reduce) decline as well. Suburban employment centers have been discussed. An empirical test is done for the ten manufacturing industries in the central city that can be identified with employment measured consistently from 1990 to 2013.¹³ Total manufacturing for the central city is also included. Data pertain to the Illinois portion of the metro area, and are divided into four subperiods – 1990-2001, 2001-2007, 2007-2010, and 2010-2013. The measure of clustering is the percentage of industry employment located in the top two sub-areas of the central city (out of eight sub-areas into which the central city is divided). The tests are reported in Table 12. First of all, the basic results resemble the equations estimated for total manufacturing from 1947 to 2013. In this case an industry in the central city has a suburbanization effect of -1.36% per year, and follows change at the metro level with a coefficient of 1.0. The coefficients for the top two clusters indicate that there may have been a positive effect of clustering in the city. The coefficient of 5.0 for the central city has a t-value of 1.65, which is statistically significantly different from zero at the 90% level. Further tests with each of the four time periods show that the cluster effect is statistically significant and positive for the 2001-2007 time period, but not during the other time periods. This pattern suggests that the positive cluster effect operated from 2001 to 2007, but not in the other years.

Table 12: Models of Annual Percentage Employment Change Eleven Industries, 1990-2013

	Chicago 1990-2013	Chicago 1990-2013		
Constant	-1.360 (2.62)	*	-4.030 (2.38)	*
Annual industry percentage change, metro area	0.991 (8.99)	**	0.980 (9.05)	**
Percent employment in top 2 clusters, central city	—		5.000 (1.65)	
R-squared	0.658		0.679	
Adjusted R-sq.	0.650		0.664	
Sample size	44		44	

Illinois Dept. of Employment Security. Unsigned t values in parentheses; * indicates significance at 5% level. and ** at the 1% level.

The results in Table 12 suggest that clustering may have been an advantage for industries in the central city. However, it happens that the extent of clustering was negatively related to the employment level in the industry. A linear regression of the percentage of employment in the top two clusters as a function of employment in the industry for ten industries (n=40), employment in 1000s (total manufacturing excluded) yields: $\text{Top2\%} = 62.702 (20.21) - 0.956 (1.70) \text{ Empl.}^{14}$ The t-statistic of 1.70 indicates statistical significance at the 91% level. The equation says that an industry with 1,000 more employees had a percentage of employees in the top two clusters that was about one percent smaller. The mean value for the percentage in the top two clusters for 2001-2013 was 59.04. For example, the largest industry in the central city was fabricated metals, with the lowest cluster values (42.6% in 1990, 43.6% in 2001, 45.1% in 2007, 48.4% in 2010, and 47.6% in 2013). Employment in this industry fell from 23,890 in 1990 to 21,779 in 2001 to 9,002 in 2013, a decline of 7.10% per year from 2001 to 2013 compared to 2.58% per year for the ten industries

¹³The industries are Wood Products, Furniture, Paper, Petroleum and Coal Products, Chemicals, Rubber and Plastics, Nonmetallic Mineral Products (stone, clay, glass), Primary Metals, Fabricated Metals, and Transportation Equipment.

¹⁴T-statistics in parentheses. $R^2 = 0.071$ and Adjusted $R^2 = 0.046$.

as a group. A tentative conclusion is that industries with lower cluster values were larger and higher cluster values were advantageous in reducing employment decline. So manufacturing employment in the central city fell faster in the larger industries.

This is a long list of reasons for the decline of manufacturing in the central city. It is helpful to divide the time from 1947 to 2013 into two periods – the years in which manufacturing employment in the metro area was roughly constant (1947 to 1977) and the years of decline at the metro level (after 1977). The most influential reasons for manufacturing decline in the central city may be different in these two time blocks. Some tentative conclusions are suggested in the next two sections. Unfortunately, no research has tested the relative importance of all these various factors.

5 The Jobs Move to the Suburbs as the Total Remains Roughly Constant

During the thirty years up through 1977 the number of manufacturing jobs in the Chicago metro area had its ups and downs with the national business cycles, but on the whole remained pretty constant. Jobs in Chicago declined almost continuously even when the rest of the metro area increased. The basic picture is shown in Table 2 and Figure 1; the total number of manufacturing jobs in the metro area in 1977 was about the same as in 1947 and up through 1963 – about 940,000 to 980,000. The exception is the increase at the time of the Viet Nam War in the late 1960s and early 1970s. In contrast, jobs located in Chicago fell from 668,000 in 1947 to 366,000 in 1977 (down 43.6%). The exception to the continuous decline in the central city was during the Viet Nam War era. The temporary increase seen in 1967 was followed by precipitous decline. Table 2 also shows that manufacturing employment grew briskly in the suburbs that are located in the Illinois portion of the metropolitan area. Lake County, Indiana (including Gary) experienced no growth in manufacturing jobs up through 1972, and then suffered a huge decline from 1972 to 1977 as a result of layoffs in the steel industry.

A simple regression can describe data in Table 2 as follows. The annual percentage change in manufacturing jobs in the central city is made a function of the annual percentage change in manufacturing jobs in the metro area, with these results for 1947 to 1977 shown in Table 13. The equation says that, if manufacturing employment in the metro area does not change, manufacturing in the city will decline by 1.97% per year.

This is the underlying suburbanization trend over the 1947-1977 period. If manufacturing jobs at the metro level increase by one percent, jobs in the city will increase by 1.24% as well (from a smaller base). However, one ominous sign for the central city is that, from 1972 to 1977, jobs in the central city fell by 2.98% per year as jobs in the metro area fell by 0.54% per year, a difference of 2.44% rather than the average of 1.97% for the whole period.

So far the data refer to jobs by employment location. What about manufacturing employment by place of residence? How many manufacturing jobs were held by residents of Chicago compared to suburban residents? Data from the Census of Population can be used to answer this question. The Census recorded 922,000 manufacturing jobs in the metro area in 1950, of which 593,000 were held by central city residents. In 1970 city residents held 404,000 of the 978,000 jobs, and in 1980 they held only 329,000 of the 1,102,000 jobs in the metro area. In short, the number of manufacturing jobs held by central city residents fell in step with the decline in jobs located in the central city.

The decline in manufacturing jobs located in the central city and the increase in the suburbs resulted from the following catalog of causes:

- Firms move from central city to suburbs
- Employment declines in central city firms and increases in suburban firms
- Firms in central city go out of business (deaths exceed births)
- New firms start in the suburbs (births exceed deaths)

Chicago has a long history of industrial relocation studies. The earliest study was conducted by Mitchell (1933), who examined new plants in the suburbs for 1926-1931. He found (p. 69) that most of the 249 new

Table 13: Regression results

Dependent Variable:	Percent Change in Manuf. Empl. in	Constant	Independent Variable	Coefficient (t value)	R-square (adj. R2)	Sample Size
City of Chicago 1947-2013	-1.858 (5.75)	**	Metro Manuf. Empl., Pct. Change	1.065 (7.86)	** (0.824)	14 (changes)
City of Chicago 1947-1977	-1.972 (8.89)	**	Same	1.238 (8.26)	** (0.931)	6
City of Chicago 1977-2003	-2.002 (3.08)	*	Same	0.998 (4.17)	** (0.672)	8
Metro Area 1947-2013	-0.891 (4.26)	**	US Manuf. Empl., Pct. Change	0.913 (9.35)	** (0.869)	14
Metro Area 1947-1977	-0.699 (1.90)		Same	0.973 (4.34)	** (0.781)	6
Metro Area 1977-2013	-1.178 (4.24)	**	Same	0.813 (6.79)	** (0.849)	8

Source: Table 2. Unsigned t values in parentheses; * indicates significance at 5% level. and ** at the 1% level.

plants, 192 (77%), were located in the Chicago Switching District, which "... enabled these new industries to enjoy all of the advantages of the superior transportation to be found within the city without suffering the disadvantages of a congested city location." Of these new plants in the Chicago Switching District, 109 (57%) had relocated from the city to a suburban location still inside the district. New plants located outside the Chicago Switching District numbered 57, of which 18 (32%) had relocated from Chicago. In other words, this first study showed that about half (127) of new plants in the suburbs had relocated from Chicago. The other new plants were entirely new or had moved from suburb to suburb or from outside the urban area.

Mitchell (1933) advocated the suburbanization of industry to escape the crowded conditions in the central city. His study led him to conclude (p. 69):

"If, then, by some relatively simple expedient such as the extension of additional motor highways, belt-line facilities, and switching services into the outlying areas of the region these could be made attractive to industry, the result in time might be a rather thoroughgoing decentralization of industry throughout the region without resort to questionable expedients."

It is not clear what the questionable expedients might have been, but Mitchell (1933) saw (p. 69) the benefits of decentralization:

"Such efforts would, there is reason to believe, yield vast benefits in improved living standards for industrial workers and at the same time would not do such great violence to those economic considerations which in the final analysis always have determined where industries should locate."

Urban analysts and reformers of that day had suburbanization as an objective, and one can suppose that the expressway system that was planned in the late 1930s and early 1940s had this goal in mind. Indeed, as Cohen (1990) discussed at length, residential communities had already grown up around centers of employment located at sizable distances from downtown.

The period after World War II brought even more relocation of industrial establishments from the central city to the suburbs, and most new firms located in the suburbs as well. Industry was attracted to the northern, northwestern, and western suburbs, areas that had not been heavily developed by industry in the past. The firms that relocated to the suburbs tended to be light manufacturers of durable goods. An

interview study by Melvin (1965) revealed that the suburban firms sought spacious facilities, while firms that selected a location within the central city were seeking accessibility. Over time the accessible periphery was not so much defined by the Chicago Switching District, but rather by the Chicago Commercial Trucking Zone and the new highway system. The O'Hare Airport area, with immediate access to rail, highway, and air transportation, became a major location for industry and warehousing.

The most comprehensive study of the 1950 to 1970 period was conducted by the Northeastern Illinois Planning Commission (1965). This study covered components of manufacturing employment change for the years 1955 to 1963 broken down into 38 geographic areas in the Illinois portion of the metro area (excluding Lake County, Indiana). The data source reportedly covered 99% of manufacturing employment, and classified changes in establishments that did not relocate, employment in new establishments, employment in establishments that moved into or out of an area, and employment in establishments that terminated. Total manufacturing employment for the metro area as recorded in this study was 866,000 in 1955 and 835,000 in 1963, a decline of 31,000 jobs. During this eight-year period 1,073 establishments moved out of the eight zones in the central city. Other zones in the central city were the destinations for 615 of those establishments, and 458 moved to the suburbs. A total of 688 establishments moved into one of the eight central city zones; 625 moved from another central city zone, and 63 moved in from the suburbs. (The 615 and 625 figures should be equal of course, but there is a small error.) Establishments that moved out of the central city to the suburbs outnumbered those that moved in by a factor of 7.3 to 1. Manufacturing employment in the central city zones fell from 599,000 in 1955 to 468,000 in 1963. Net relocations accounted for 30.5% of the decline in employment of 131,000. The remaining 69.5% of the decline was net employment losses in establishments that remained and net deaths of firms. Of those establishments that moved out of the central city, 175 went to the western suburbs, 242 had the north and northwest suburbs as their destinations, and only 38 moved to the south and southwest suburbs. A total of 196 establishments moved from one suburban zone to another. Employment changes (1000s) for these three suburban areas are shown in Table 14.

Table 14: Employment changes in three suburban Chicago areas

	Manuf. Employment 1955	Employment 1963	Change	Percent Due to Net Relocations
West	154.6	189.4	34.8	38.8%
North/NW	65.1	122.2	57.1	63.9%
South/SW	43.0	52.0	9.0	20.0%

Manufacturing employment almost doubled in the north and northwest suburbs from 1955 to 1963, and the employment growth was mostly due to relocations. Otherwise, changes in employment in the central city and the other suburban areas were dominated by employment changes in existing establishments or net firm births (births minus deaths), not relocations.

Which of the several factors that cause the suburbanization of manufacturing employment had the most influence during 1947-1977? Surely the construction and use of the radial expressway system and the circumferential Illinois Tollway tops the list. The largest absolute decline in manufacturing employment in the central city of 116,000 took place from 1967 to 1972, the years immediately following the opening of the expressway system. The decline in the central city was partly matched by an increase in manufacturing employment in the Illinois suburbs of 54,000. The next five years saw a drop of 64,000 jobs in the central city and 32,000 in Lake County, Indiana as the Illinois suburbs gained 70,000 jobs. Other factors clearly played a role. As noted, modern manufacturing plants are built as low-rise buildings that accommodate trucking. The data on establishment relocation appears to be consistent with this factor. When the central city had over 500,000 manufacturing jobs it is likely that supply of vacant large industrial sites was limited. Indeed, the survey conducted by the Mayor's Council cited by McDonald (1984b) identified lack of room for expansion as an important reason for planning to relocate. The emergence of O'Hare Airport as a center of employment is related to the expressway system and the Illinois Tollway. O'Hare is located at the intersection of the Kennedy Expressway and the tollway, and also is adjacent to the very large Bensenville rail yards. When O'Hare was opened in 1962 it was surrounded largely by vacant land. It was a huge, modern, multi-modal

transportation center with plenty of land available nearby.

6 The Collapse of Manufacturing Employment

The years after 1977 present a very different picture for the Chicago metropolitan area. Manufacturing employment declined continuously at the metro level, and the central city saw its manufacturing base shrivel. The data in Table 2 can be used to estimate the same basic model for the annual percentage change in manufacturing employment in the central city as a function of the annual percentage change at the metro level for 1977 through 2013, with the results shown in Table 13. The coefficients are slightly different from those estimated for 1947-1977, and the level of explanatory power is somewhat less, but the nature of the results is the same. Manufacturing employment in the central city declined by about 2% per year, and moved by about 1% for each change at the metro level of 1%. The basic finding is that the underlying suburbanization trend is about 2% per year and the effect of a percentage change in manufacturing employment at the metro level is matched by the same percentage change in the city. The model was estimated for other sub-periods (such as 1954-1967, 1982-2013), and in no case could the hypotheses be rejected that the suburbanization trend is 2% per year and the effect of percentage change at the metro employment is 1.0.

The annual percentage change in manufacturing employment in the Chicago metropolitan area is driven by annual percentage change in manufacturing at the national level, but metropolitan Chicago also has a significant long-term rate of decline that is not driven by the national manufacturing data. National manufacturing employment figures are shown in Table 2. The basic estimated equation for 1947 to 2013 is shown in Table 13. This equation says that, if manufacturing employment at the national level does not change, manufacturing employment in metropolitan Chicago would decline by 0.90% per year. And the percentage change at the metropolitan area follows the national percentage change closely (coefficient of 0.91). The metropolitan area does not lose manufacturing jobs if employment at the national level increases by 1.0%. But, as Table 2 shows, manufacturing employment in the nation remained roughly constant from 1977 to 1990, and started to decline after 1990.

The results are a bit different for the 1947-1977 and 1977-2013 time periods. For 1947 to 1977 the estimated equations in Table 13 show that the built-in annual rate of decline in metropolitan Chicago is larger in the later period, and the impact of the national annual change is smaller, but basic pattern is the same. Furthermore, the basic pattern is still the same for 1990 to 2013, with an annual built-in decline of 0.81% per year and a response to national decline of 0.84 percent per one percent decline at the national level. The pattern for metro Chicago does not really change after the penetration of imports from China began in 1990.

The years of urban crisis in Chicago began the early 1970s, and manufacturing employment in the metro area began to decline in the later 1970s. The jobs losses for 1977 to 1982 were 89,000 in the central city and 76,000 in the Illinois suburbs (as Lake County, Indiana gained 12,000 jobs). The large declines from 1977 to 1982 in both central city and suburbs surely are the result of the deep recession of 1982, and the jobs lost in the metro area did not come back. Manufacturing jobs in the nation recovered only 30.6% of the jobs lost by 1987. Note that the jobs lost in the central city and the Illinois suburbs of 165,000 constitute 20.5% of the manufacturing employment decline in the nation although the metro area had only 5.3% of total manufacturing jobs in 1977. One might suggest that the decline in the central city during these years was not so much suburbanization as it was national decline concentrated in older metro areas such as the Chicago area.

From 1982 to 2001 the Illinois suburban counties maintained manufacturing employment of at least 428,000 and the central city lost a total of 147,000 jobs over these 19 years. The forces producing job losses in the central city include the emergence of suburban employment subcenters in addition to the O'Hare Airport area. These subcenters helped the suburbs maintain the manufacturing total. As discussed above, the 20 suburban subcenters identified by McMillen and McDonald (1998) for 1980 and 1990 are different types. Two types of subcenters – new industrial/retail and edge cities – grew rapidly during 1980 to 1990. Total employment in these five subcenters more than doubled from 118,000 to 249,000, and 43,000 manufacturing jobs were located in them in 1990. Add to that the disadvantages of the central city that include residual effects of the opening of the expressway system, the cost of redeveloping brownfield sites, and reliance on

old facilities.

After 2001 both the central city and the suburbs lost manufacturing employment. The decline at the metro level from 2001 to 2013 was 206,000 jobs (33.4%) as the decline at the national level was 27.0%. During these years metro Chicago was largely just reflecting the national job losses. But manufacturing employment in the central city fell by 49.2% during these years. Jobs were still relocating to the suburbs on net.

7 Industry Mix Effect

As suggested by the study by Autor et al. (2013b), one possible source of the collapse is that the central city and/or the metro area may have had an unfavorable mix of manufacturing industries. For example, the central city had a concentration in steel mills, and had lost all of them by the 1980s. This idea can be tested by estimating what employment would have been if the mix of industries in the central city had been equal to that of the entire metro area (or the nation). Then let each industry in the central city change by the actual percentage. The years 1963 and 1990 are chosen for this test because the suburbs had developed a substantial manufacturing base by 1963, and because substantial decline in both the central city and the metro area had taken place by 1990. Also, data for both years are based on the older SIC system. The data source is limited to the Illinois portion of the metropolitan area.

A basic test for the effect of industry mix is to divide manufacturing into durable goods and nondurable goods categories. The results for the central city versus the Illinois portion of the metro area are shown in Table 15.

Table 15: Industry Mix Effect for the City of Chicago

	Central City 1963	Central City 1990	Metro Area 1963	Central City Hypothetical	US 1963	Central City Hypothetical
Durable Goods	271.3 54.4%	103.8 63.7%	532.2 63.7%	121.7	9,304 59.3%	113.3
Nondurable Goods	227.7 45.6%	112.4 6.3%	303.73 6.3%	89.6	6,396 40.7%	100.3
Total	499.0	*	216.2	835.9	*	211.3
					15,700	213.6

*Industry for a small number of employees not identified. Source: Illinois Dept. of Employment Security.

Perhaps surprisingly, in 1963 the central city had a smaller percentage of its manufacturing employment in durable goods than did the metro area. The computations are as follows. If the central city had the same industry mix as the metro area, employment in durable goods would have been 317,900 (instead of 272,300). Actual employment in durable goods in 1990 was 38.3% of its level in 1963 so $317,900 \times 0.383 = 121,700$, compared to the actual figure 103,800. The heavier concentration in nondurable goods was an advantage for the central city. Actual employment in nondurables in the central city fell to 49.4% of its 1963 value. The hypothetical employment in nondurable goods is 89,600 compared to the actual employment of 112,400 in 1990. The net effect is that actual employment and hypothetical employment differ by just 2.3%. The similar calculation for the central city versus the nation produces an even smaller net effect on total manufacturing employment in the central city for 1990 of 1.2%. In short, the industry-mix effect overall had little impact on total manufacturing employment in the city.

The industry-mix effect for the metro area versus the nation for 1963-1990 is shown in Table 16. In this case the net effect is 1.1%. The appendix includes the extension to 2007 of the computations displayed in Tables 15 and 16, and a more detailed examination of the industry mix effect for 1963 to 1990 using data on individual industries.

Table 16: Industry Mix Effect for the Chicago Metro Area: 1963 – 1990
(Employment in 1000s)

	Employment 1963	Employment 1990	US 1963	Metro Hypothetical
Durable Goods	532.2 63.7%	375.3	9,304 59.3%	349.6
Nondurable Goods	303.7 36.3%	278.1	6,396 40.7%	311.3
Total	835.9 *	653.4	15,700	660.9

*Industry for 25,000 employees not identified. Source: Illinois Dept. of Employment Security.

8 Conclusions

This paper documents the collapse of manufacturing employment in Chicago along with the very large decline in manufacturing jobs in the Chicago metropolitan area. An annual 1% decline of manufacturing employment in the nation translates into a 0.9% decline in the Chicago metropolitan area and a decline of 2.0% in Chicago. The decline in manufacturing in the central city and the metropolitan area was not caused by an unfavorable mix of industries. Since the 1960s several public programs have tried to retain and/or increase manufacturing jobs in the central city, but have achieved only marginal success, if any. Policies targeted at specific zones within the central city may have simply helped those zones at the expense of other places in the central city itself. The paper provides no evidence that the battery of policies boosted manufacturing employment overall in the central city. The forces of manufacturing decline in the central city were far greater than the available policy options.

What conclusions for policy are suggested by this study? Perhaps the first is to be realistic about the prospects for manufacturing in the central city. Programs can be touted for various reasons, but one of those reasons is not manufacturing employment growth. For example, the brownfields program has cleaned up a good portion of the central city, but it turns out not to be much of a program for manufacturing jobs. Enterprise Zones and the Empowerment Zone have attracted other sorts of jobs to these zones, but negative spillover effects for the rest of the central city seem to have canceled out the positive impacts. The most widely-used program, Tax Increment Financing, has vague goals and the operation of the program is not transparent. No study has been done of the impact property tax incentives on jobs. A more general point is that the City of Chicago needs to have specific realistic economic development goals, and programs should be proposed based of their actual effects. Can manufacturing employment growth be included in the economic development goals for the central city? Can retention of manufacturing jobs be included? Those cannot be realistic goals if we do not know which policies to propose, and we do not. Perhaps a manufacturing employment goal is realistic for the metropolitan area as a whole, which still had 410,000 jobs as of 2013. These points do not mean that the City of Chicago should abandon efforts to help manufacturers find a home in the central city on an individual basis. Success stories are few, but the renovation of the Ford plant and the expansion and movement of Finkl Steel from the north side to the south side are notable.

References

- Autor, D. H., Dorn, D., and Hanson, G. H. (2013a). The China syndrome: Local labor market effects of import competition in the United States. *American Economic Review*, 103(6):2121–2168.
- Autor, D. H., Dorn, D., and Hanson, G. H. (2013b). The geography of trade and technology shocks in the United States. *American Economic Review*, 103(3):220–225.
- Baily, M. N. and Bosworth, B. P. (2014). US manufacturing: Understanding its past and its potential future. *Journal of Economic Perspectives*, 28(1):3–26.
- Baum-Snow, N. (2007). Did highways cause suburbanization? *Quarterly Journal of Economics*, 122(2):775–805.

- Bensman, D. and Lynch, R. (1987). *Rusted Dreams: Hard Times in a Steel Community*. University of California Press, Berkley, CA.
- Busso, M., Gregory, J., and Kline, P. (2013). Assessing the incidence and efficiency of a prominent place based policy. *American Economic Review*, 103(2):897–947.
- Civic Federation (2010). *Effective property tax rates 1999–2008: Selected municipalities in Northeastern Illinois*. Civic Federation, Chicago, IL.
- Cohen, L. (1990). *Making a New Deal: Industrial Workers in Chicago, 1919–1939*. Cambridge University Press, New York, NY.
- Collard-Wexler, A. and De Loecker, J. (2015). Reallocation and technology: Evidence from the US steel industry. *American Economic Review*, 105(1):131–71.
- Dye, R. F., McGuire, T. J., and Merriman, D. F. (2001). The impact of property taxes and property tax classification on business activity in the Chicago metropolitan area. *Journal of Regional Science*, 41(4):757–777.
- Edwards, L. and Lawrence, R. Z. (2013). *Rising Tide: Is Growth in Emerging Economies Good for the United States?* Peterson Institute for International Economics, Washington, DC.
- Garreau, J. (1991). *Edge City: Life on the New Frontier*. Doubleday, New York, NY.
- Hamm, G. F. and Walzer, N. (2007). Returns from redeveloping Brownfields: Preliminary estimates. *Community Development*, 38(2):87–98.
- Hanson, A. and Rohlin, S. (2013). Do spatially targeted redevelopment programs spillover? *Regional Science and Urban Economics*, 43(1):86–100.
- Higgins, J. (2008). Evaluating the Chicago Brownfields Initiative: The effects of city-initiated Brownfield redevelopment on surrounding communities. *Northwestern Journal of Law & Social Policy*, 3:240–262.
- Hunt, D. B. and DeVries, J. B. (2013). *Planning Chicago*. Planners Press, Chicago, IL.
- Illinois Department of Employment Security (1990–2013). *Where Workers Work*. IDES, Springfield, IL.
- Kain, J. F. (1968). Housing segregation, Negro employment, and metropolitan decentralization. *Quarterly Journal of Economics*, 82(2):175–197.
- Mayor's Committee for Economic and Cultural Development (1966). *Mid-Chicago Economic Development Study*. City of Chicago, Chicago, IL.
- Mayor's Council of Manpower and Economic Advisors (1974). *Chicago's Economy*. City of Chicago, Chicago, IL.
- McDonald, J. (1993). Tax expenditures for local economic growth: an econometric evaluation of the Illinois enterprise zone program. *Public Budgeting and Financial Management*, 5(2):477–505.
- McDonald, J. (1998). Business and economic development in Chicago's empowerment zone. In *Empowerment in Chicago: Grassroots Participation in Economic Development and Poverty Alleviation*, chapter 6, pages 153–182. University of Illinois Press, Urbana, IL.
- McDonald, J. (2015). *Postwar Urban America*. Routledge, New York, NY.
- McDonald, J. F. (1984a). An economic analysis of industrial revenue bonds and the demand for labor. *Annals of Regional Science*, 18(1):39–50.
- McDonald, J. F. (1984b). *Employment Location and Industrial Land Use in Metropolitan Chicago*. Stipes Publishing Co., Champaign, IL.
- McDonald, J. F. (1985). The intensity of land use in urban employment sectors: Chicago 1956–1970. *Journal of Urban Economics*, 18(3):261–277.
- McDonald, J. F. (2017). Minority groups in the metropolitan Chicago housing market: 1970–2015. *Urban Studies*, 55(11):2431–2450.
- McDonald, J. F. and McMillen, D. P. (1990). Employment subcenters and land values in a polycentric urban area: the case of Chicago. *Environment and Planning A*, 22(12):1561–1574.
- McDonald, J. F. and McMillen, D. P. (2000). Employment subcenters and subsequent real estate development in suburban Chicago. *Journal of Urban Economics*, 48(1):135–157.
- McDonald, J. F. and Prather, P. J. (1994). Suburban employment centres: The case of Chicago. *Urban Studies*, 31(2):201–218.
- McDonald, J. F. and Yurova, Y. (2006). Are property taxes capitalized in the selling price of industrial real estate? *Appraisal Journal*, 74(3):250–256.
- McGrath, D. T. (2000). Urban industrial land redevelopment and contamination risk. *Journal of Urban Economics*, 47(3):414–442.

- McMillen, D. P. and McDonald, J. F. (1998). Suburban subcenters and employment density in metropolitan Chicago. *Journal of Urban Economics*, 43(2):157–180.
- Melvin, E. (1965). Factors relating to recent industrial movements and expansions in the Chicago area. *Bulletin of the Illinois Geographical Society*, 8:1–10.
- Meyer, J. R., Kain, J. F., and Wohl, M. (1965). *Urban Transportation Problem*. Harvard University Press, Cambridge, MA.
- Mitchell, W. N. (1933). *Trends in Industrial Location in the Chicago Region since 1920*. University of Chicago Press, Chicago, IL.
- Neumark, D. and Simpson, H. (2015). Place-based policies. In *Handbook of Regional and Urban Economics*, volume 5, pages 1197–1287. Elsevier, New York, NY.
- Northeastern Illinois Planning Commission (1965). *Metropolitan Planning Guidelines, Phase One: Background Documents: Industrial Development*. NIPC, Chicago, IL.
- Oakley, D. and Tsao, H.-s. (2007). Socioeconomic gains and spillover effects of geographically targeted initiatives to combat economic distress: An examination of Chicago's empowerment zone. *Cities*, 24(1):43–59.
- Rast, J. (1999). *Remaking Chicago: The Political Origins of Urban Industrial Change*. Northern Illinois University Press, DeKalb, IL.
- Smith, B. C. (2006). The impact of tax increment finance districts on localized real estate: Evidence from Chicago's multifamily markets. *Journal of Housing Economics*, 15(1):21–37.
- Weber, R., Bhatta, S. D., and Merriman, D. (2003). Does tax increment financing raise urban industrial property values? *Urban Studies*, 40(10):2001–2021.

Appendix: Industry Mix Effects

This appendix provides additional calculations of the industry mix effect for the central city and the metropolitan area. The first two tables (A1 and A2) extend the analysis presented in the main text to 1990–2007. Manufacturing employment is divided into durable and nondurable goods. Table A1 shows a very small industry mix effect for the central city versus the metro area and the nation. Table A2 produces a similar result for the metro area compared to the nation.

Table A1: Industry Mix Effect: Chicago vs Metro Area and Nation (Employment in 1000s)

	Central City Empl. 1990	Central City Empl. 2007	Metro Area Empl. 1990	Central City Hypothetical for 2007	US Empl. 1990	Central City Hypothetical for 2007
Durable Goods	103.8 (48.0%)	35.1 (57.4%)	375.3 (57.4%)	41.9	10,737 (60.7%)	44.4
Nondurable Goods	112.4 (52.0%)	42.0 (42.6%)	278.1 (42.6%)	34.4	6,958 (39.3%)	31.8
Total	216.2	77.1	653.4	76.3	17,695	76.2

Sources: Illinois Department of Employment Security, *Where Workers Work* for 1990 and 2007, and Bureau of Labor Statistics.

Table A3 provides a summary of computations of the industry mix effect using data on individual manufacturing industries. Standard disaggregation into 16 industries is used, and the dates are 1963 and 1990. The data pertain to the industries for which data are available for both years. The result of the exercise is that the industry mix effect is slightly positive.

Table A2: Industry Mix Effect: Metro Area vs Nation (Employment in 1000s)

	Metro Empl. 1990	Metro Empl. 2007	US Empl. 1990	Metro Hypothetical for 2007	US Empl. 1990	Central City Hypothetical for 2007
Durable Goods	375.3 (57.4%)	216.3	10,737 (60.7%)	228.4	10,737 (60.7%)	44.4
Nondurable Goods	278.1 (42.4%)	180.6	6,958 (39.3%)	166.7	6,958 (39.3%)	31.8
Total	653.4	396.9	17,695	395.1	17,695	76.2

Sources: Illinois Department of Employment Security, *Where Workers Work* for 1990 and 2007, and Bureau of Labor Statistics.

Table A3: Industry Mix Effect: Metro Area vs Nation (Employment in 1000s)

Industry	Central City Empl. 1663	Central City Empl. 1990	Metro Area Empl. 1963	Central City Hypothetical for 1990
Durable Goods	247.1	95.7	514.3	114.2
Wood Products	4.7	3.0	6.6	2.4
Furniture	13.1	6.0	22.6	5.9
Stone, Clay, Glass	7.5	2.8	19.4	4.2
Primary Metals	33.8	9.5	64.8	10.4
Fabricated Metals	50.1	23.9	94.5	25.9
Non-Elec. Mach.	53.8	14.2	108.8	16.5
Elec. Machinery	59.3	18.9	133.2	24.4
Transport Equip.	13.2	10.9	24.7	11.7
Instruments	11.6	6.5	39.7	12.8
Nondurable Goods	216.4	107.7	293.8	86.5
Food	66.8	31.9	83.7	22.9
Apparel	29.0	7.9	32.6	5.1
Paper	18.6	10.7	28.6	9.4
Print & Publish.	66.0	34.3	81.1	24.2
Chemicals	21.3	13.7	39.6	14.6
Petroleum Product	2.1	1.3	5.8	2.1
Rubber & Plastic	12.6	8.0	22.4	8.2
Total	471.6	203.4	808.1	200.7

Sources: Illinois Department of Employment Security, *Where Workers Work* for 1990 and 2007, and Bureau of Labor Statistics.