Industry clusters and economic development in the Seventh District's largest cities

Rick Mattoon and Norman Wang

Introduction and summary

In works such as Glaeser (2011) and Porter (1995), prominent economists have suggested that metropolitan areas are the key to economic growth. In this article, we examine the economic development strategies and performance of the largest metropolitan areas in the five states of the Seventh Federal Reserve District—Illinois, Indiana, Iowa, Michigan, and Wisconsin. The cities, from smallest to largest by metro population, are: Des Moines, Indianapolis, Milwaukee, Detroit, and Chicago. Theory suggests that cities that promote industry agglomeration (clusters) should be best positioned for growth. Industry agglomeration promotes synergies, whereby firms can be more productive by sharing resources (specialized labor and inputs) and benefiting from knowledge spillovers. Economic development professionals frequently use the concept of industry clusters to measure the type of firm agglomeration that exists within a city or metropolitan area.

We examine industry structure and agglomeration along several dimensions. We begin by reporting the industry and employment concentrations of each city in 2012 and how they compare to the nation as a whole. This will give us a sense of the levels of industry specialization in each economy. Then, we describe each city's "traded cluster" structure, which comprises its exporting industries, and the economic performance of these clusters over a period of 11 years ending in 2009 (the period for which Porter's cluster data are available). Based on long-standing economic theory, the traded cluster is likely to be a city's most important engine for economic success (Porter, 1998). These traded clusters often have smaller employment shares than nontraded, locally consumed business clusters, but they have a disproportionate impact on wealth generation for the metropolitan area. Porter (1998) defines clusters as "geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition. They include, for example, suppliers of specialized inputs such as components machinery, and services, and providers of specialized infrastructure" (Porter, 1998, p. 78; see box 1 for further details). In each case, we use Porter's definition of industry cluster, and we present the performance of the largest traded clusters (as measured by employment) over an 11-year period.[1] We argue that the performance of these clusters helps

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BOX 1

Why clusters?

Much of both past and recent literature on urban growth begins with the premise that cities succeed because they promote agglomerations that raise the productivity of firms locating within the city's boundaries (Florida, 2002; Henderson, 1988; Glaeser and Resseger, 2010; and Jacobs, 1984). Often this idea of agglomeration takes one of two forms. One form is cities that are highly specialized in their economic structure. These are the modern equivalent of one-industry towns, which are widely recognized for a particular industry, service, or product. In these places, like firms agglomerate to take advantage of shared labor markets, research, support services, and other features, such as tailored public policy that helps these firms to succeed. Another form of agglomeration is cities that have diversified industries but generally support a variety of high-skilled industries. In this case, agglomeration is often seen as a force in providing knowledge spillovers, where industries can learn from one another to increase innovation and productivity. In either case, the key factor is that density and agglomeration produces productivity enhancements that can more than compensate for any negative externalities, such as higher costs of living or congestion often associated with city life.

Regional growth theory suggests that there are two competing forces at play in explaining patterns of economic growth. This is the tension between convergence at the regional level in competition with comparative advantage as characterized by firm agglomeration (clusters). Delgado, Porter, and Stern (2011) used the data contained in the U.S. Cluster Mapping Project to test the interaction of cluster agglomeration and long-term convergence and found that strong industry clusters produced higher employment, wages, patenting, and establishment growth. In addition, they found that strong clusters enhanced growth in other industries and clusters, suggesting that a spillover effect may be operating.

Specifically, the data being tested consists of 41 traded clusters, which incorporate 589 traded industries. A traded industry is one that concentrates in a particular region and sells products or services across regions or countries, as opposed to local industries serving primarily local markets and whose employment is evenly distributed across regions (Porter, 2003). All data are drawn from County Business Patterns. As an example, the automotive cluster is defined as consisting of 15 industries that can be linked to six related clusters.

TABLE B1

Automotive clusters

Four-digit SIC	Industry	Clusters related to automotive cluster					
		Production technology	Metal manufacturing	Heavy machinery	Motor-driven products	Aerospace engines	Furniture
2396	Automotive and apparel trimmings						
3052	Rubber and plastic hose/belt						X
3061	Mechanical rubber goods					X	
3210	Flat glass						
3230	Products of purchased glass						
3322	Malleable iron foundries		X				
3465	Automotive stampings	X					
3519	Internal combustion engines			X	X		
3544	Special tools, dies, jigs, and fixtures	X	X				
3549	Metalworking machinery	X	X				
3592	Carburetors, pistons, rings, valves		X				
3711	Motor vehicles and car bodies	X					
3714	Motor vehicle parts and accessories		X				
3799	Transportation equipment n.e.c.						
3824	Fluid meters and counting devices	X					

Notes: These 15 industries constitute the narrow cluster definition. The automotive cluster has more than a 30 percent overlap with the production technology cluster (by the average of the percentage of narrow industries shared in each direction). Further, these clusters concentrate geographically. Again, using the automotive cluster, here are the cluster's geographic concentrations in 1990 as reported by Porter. The table shows the top 20 percent cluster specialization (defined by location quotient, LQ) and the top 10 percent share of U.S. traded cluster employment (SHR).

Source: Porter's (2003) cluster definitions.

BOX 1 (CONTINUED)

Why clusters?

TABLE B2

Automotive clusters' geographic concentrations

Metro	LQ	SHR percent
Detroit–Warren–Flint, MI	9.5	25.3
Toledo–Fremont, OH	6.5	2.7
Fort Wayne–Huntington–Auburn, IN	6.4	2.1
Dayton–Springfield–Greenville, OH	5.1	2.9
Grand Rapids–Muskegon–Holland, MI	4.5	3.0
Indianapolis–Anderson–Columbus, IN	3.6	4.3
South Bend–Mishawaka, IN–MI	3.6	1.3
Cleveland–Akron–Elyria, OH	3.2	6.1
Nashville–Murfreesboro–Columbia, TN	3.0	2.4
Milwaukee–Racine–Waukesha, WI	2.2	2.2
Columbus–Marion–Chillicothe, OH	2.1	1.8

Source: Porter (2003).

explain how the key industry sectors of the metropolitan economy are performing and how industry structure differs from city to city—for example, what is the type of industrial agglomeration that is occurring—as well as relative to the nation. It may seem desirable to policymakers to have a particular industry in their city. However, if a given industry cluster is underperforming the national average, it may be a source of weakness rather than strength for the local economy.

For the purposes of this article, we examine the performance of each city's traded clusters by employment and wages. Depending on the city, the analysis will either examine its top five traded clusters (by employment) or, at a minimum, the clusters that represent at least 50 percent of the employment in that city's traded cluster structure. In some cities, such as Detroit, the traded clusters are concentrated in a relatively narrow group of industries, implying that these are highly specialized economies. In addition, over the period from 1998 to 2009, the rank of the traded clusters changes as particular clusters grow or decline in economic importance.

Finally, we outline the most recent economic development plans identified by the cities and discuss how these align with current economic performance. In general, the plans tend to focus on specific industry clusters as a source of comparative advantage, as well as on efforts to enhance productivity through improvements in work force development, infrastructure, and regional intergovernmental cooperation. Another common goal across economic development plans is that of transitioning the economy away from older manufacturing industries toward more knowledge-intensive manufacturing and services businesses.

Understanding industry structure—location quotients

As a starting point for examining economic performance in the five large cities selected, we first present the industry structure for each city. To do this, we use location quotients (LQs) to identify whether, based on employment share, an industry is either more or less concentrated in a given metropolitan statistical area (MSA) than nationally. The U.S. Bureau of Labor Statistics (BLS) defines LQs as "ratios that allow an area's distribution of employment by industry to be compared to a reference or base area's distribution."[2] In this case, we are comparing the employment concentration of the metropolitan area with that of the United States as a whole. We obtained our results using the location quotient calculator, which is available on the BLS website.[3] Any score above 1 indicates that an industry in a metro area has an employment concentration above the U.S. average. For example, an LQ of 1.30 suggests that employment in a given industry and location is 30 percent above the U.S. average. We use LQs to identify which industries matter most to the employment base of each MSA's economy in 2012. For the purposes of this article, we consider a metropolitan area as having a significant concentration in a particular industry if the LQ is above 1.05 (that is, a concentration that is 5 percent above the U.S. average. We then examine the performance of traded clusters in each of the five metropolitan economies.

TABLE 1

Des Moines MSA employment shares and location quotients, 2012

Industry	U.S. employment share	MSA Des Moines	Location quotient
NAICS 11: Agriculture, forestry, fishing, and hunting	1.08	0.37	0.35
NAICS 21: Mining, quarrying, and oil and gas extraction	0.72	0.06	0.09
NAICS 22: Utilities	0.50	0.17	0.34
NAICS 23: Construction	5.05	4.86	0.96
NAICS 31–33: Manufacturing	10.76	6.84	0.64
NAICS 42: Wholesale trade	5.11	**6.48**	**1.27**
NAICS 44–45: Retail trade	13.43	12.20	0.95
NAICS 54: Professional and technical services	7.14	5.29	0.74
NAICS 55: Management of companies	1.81	**2.15**	**1.19**
NAICS 56: Administrative and waste services	7.22	7.00	0.97
NAICS 61: Educational services	2.36	1.95	0.83
NAICS 62: Health care and social assistance	15.18	13.17	0.87
NAICS 48–49: Transportation and warehousing	3.76	3.19	0.85
NAICS 51: Information	2.42	ND	ND
NAICS 52: Finance and insurance	5.03	ND	ND
NAICS 53: Real estate and rental and leasing	1.76	ND	ND
NAICS 71: Arts, entertainment, and recreation	1.79	**1.85**	**1.03**
NAICS 72: Accommodations and food services	10.63	8.79	0.83
NAICS 81: Other services, except public administration	4.11	ND	ND
NAICS 99: Unclassified	0.16	ND	ND

Notes: NAICS indicates the North American Industry Classification System. ND indicates nondisclosure rules prevent reporting of the data. Employment shares and location quotients above the U.S. average are in boldface.
Source: U.S. Bureau of Labor Statistics.

Des Moines

The Des Moines metropolitan economy has developed a strong mix between financial and professional service firms and manufacturing. In addition, the city benefits from being the capital of the state, leading to a high concentration in state government employment. Large employers in the area include Wells Fargo (banking), Principal Financial (financial services), Mercy Medical and United Point Health (both health care), DuPont Pioneer (agribusiness), John Deere (agricultural machinery), Marsh (insurance), and UPS (shipment and logistics), among others.

As table 1 shows, Des Moines has above-average employment concentrations as measured by LQs in management of companies (1.19) and wholesale trade (1.27). Nondisclosure rules prohibit the release of data for finance and insurance, which is a key industry in the region. However, its importance is evident in table 2, which shows the industry clusters.

Des Moines's traded clusters

Des Moines's traded clusters show significant concentration in a relatively small group of clusters. By 2009, three traded clusters, financial services (27.82 percent of trade cluster employment), business services (17 percent), and education and knowledge creation (9.62 percent) make up more than 50 percent of total traded cluster employment (table 2). In addition, there is significant turnover in sectors, as processed food, hospitals, and tourism, which were relatively large clusters in 1998, drop off the list, and education and knowledge creation emerges as a top cluster.

Also worth noting is that the employment and wage growth patterns for the Des Moines clusters are quite different from those of the other cities. The three top clusters in 2009 all add employment at rates significantly faster than the U.S. averages. However, Des Moines wages are significantly lower. Specifically, while Des Moines financial service employment grew by 15 percent versus 2 percent for the United States, financial service wages were 37.5 percent below the U.S. average. In business services, employment grew by 55 percent versus 36 percent for the United States, while wages were 24 percent below the U.S. average. Finally, in education and knowledge creation, Des Moines employment growth led the United States 68 percent to 46 percent, while wages lagged at 49.20 percent. There are several possible explanations for the wage disparity across the clusters. First, a lower cost of living will likely be reflected in the level of wages paid. Second, even within a cluster, the nature of the work performed and the type of firms located within a specific metropolitan area will differ. The more specialized are the functions performed, the higher the wages are likely

TABLE 2

Des Moines MSA traded clusters

Cluster	Employment share, 2009	Change in employment, 1998–2009	U.S. change in employment, 1998–2009	Change in wages, 1998–2009	U.S. change in wages, 1998–2009	Average wage, 2009	U.S. average wage, 2009
Financial services	27.82	**15.03**	1.69	*38.37*	50.65	*64,875*	103,751
Business services	16.90	**54.80**	35.66	*32.28*	43.02	*48,966*	64,310
Education and knowledge creation	9.62	**67.93**	45.82	*3.45*	66.97	*24,560*	48,391
Total employment	54.34						

Notes: Industry cluster growth rates above the U.S. average are in boldface. Industry cluster growth rates below the U.S. average are in italics.
Sources: U.S. Cluster Mapping Project and authors' calculations.

to be. For example, Chicago's financial services cluster contains highly specialized functions, such as the commodity and risk exchanges, resulting in wages that are significantly above the U.S. average and the average for the other four cities in this article.

Des Moines's economic development strategy

The Greater Des Moines Partnership led an effort to develop a five-year plan for Des Moines and the capital region. The plan aims to position Des Moines as a midsized city with a specialized industry base. It focuses on an industrial and demographic comparison with other similar regions, including Omaha, Nebraska; Madison, Wisconsin; and Denver, Colorado. The plan identifies key clusters in which the region is most competitive and recommends that the region market itself specifically to these sectors: finance and insurance; information solutions; health and wellness; agribusiness; manufacturing; and logistics.

The other elements of the plan are similar to most of the other cities' development plans in stressing appropriate human capital development and work force training. In particular, the Des Moines plan emphasizes developing an employment and training pipeline that meets the needs of local businesses. There is also a geographic component to the plan, targeting growth along the I-35 corridor.

Reviewing the strategy relative to the data on industry structure, it becomes clear that the targets for development consist of a mix of large employment centers (finance and insurance) and logistics-related wholesale trade, as well as historically important industries such as manufacturing and agribusiness. Manufacturing does not currently represent a high employment concentration in Des Moines, so its inclusion may signal a hope to revive the sector. The plan does not target the education and knowledge creation cluster, which has shown rapid employment growth in the recent past.

Indianapolis

Indianapolis has emerged as having a diverse economic base and high quality of life, and it has developed niche markets in amateur athletics and, of course, auto racing. The city also benefits from being both a state capital and having a significant university located within its boundaries. This helps stabilize economic performance during downturns. In addition, Indianapolis arguably has a more-integrated regional governance structure, as it adopted Unigov in 1970[4] in an effort to promote regional metropolitan integration.

The BLS figures for 2012 have nondisclosure issues for some large sectors, such as manufacturing and accommodations and food services, which likely make significant contributions to the metropolitan economy (table 3). Based on the available sectors, Indianapolis's metropolitan employment shows above-national-average concentrations in real estate and rental and leasing (LQ 1.10), finance and insurance (1.07), transportation and warehousing (1.66), administrative and waste services (1.29), and construction (1.06).

Indianapolis's traded clusters

Indianapolis has a diversified traded cluster structure. In both 1998 and 2009 all six clusters are needed to equal more than 50 percent of traded cluster employment. There is some churn among the clusters represented, with automotive (number two in 1998) and metal manufacturing (number 6) dropping off the list while transportation and logistics and education and knowledge creation appear in 2009 at numbers two and three (table 4).

Indianapolis employment growth exceeds the U.S. average in three clusters; however, wages are lower than the U.S. average in all of these, as shown in table 4. No clear pattern emerges in the three other clusters. In the largest, business services, employment growth is 19 percent for Indianapolis versus 36 percent for

TABLE 3

Indianapolis MSA employment shares and location quotients, 2012

Industry	U.S. employment share	Indianapolis MSA	Location quotients
NAICS 11: Agriculture, forestry, fishing, and hunting	1.08	0.26	0.24
NAICS 21: Mining, quarrying, and oil and gas extraction	0.72	ND	ND
NAICS 22: Utilities	0.50	0.48	0.96
NAICS 23: Construction	5.05	**5.33**	**1.06**
NAICS 31–33: Manufacturing	10.76	ND	ND
NAICS 42: Wholesale trade	5.11	**5.34**	ND
NAICS 44–45: Retail trade	13.43	12.43	0.93
NAICS 54: Professional and technical services	7.14	6.00	0.84
NAICS 55: Management of companies	1.81	1.54	0.85
NAICS 56: Administrative and waste services	7.22	**9.30**	**1.29**
NAICS 61: Educational services	2.36	1.92	0.82
NAICS 62: Health care and social assistance	15.18	14.88	0.98
NAICS 48–49: Transportation and warehousing	3.76	**6.24**	**1.66**
NAICS 51: Information	2.42	ND	ND
NAICS 52: Finance and insurance	5.03	**5.38**	**1.07**
NAICS 53: Real estate and rental and leasing	1.76	**1.94**	**1.10**
NAICS 71: Arts, entertainment, and recreation	1.79	ND	ND
NAICS 72: Accommodations and food services	10.63	ND	ND
NAICS 81: Other services, except public administration	4.11	ND	ND
NAICS 99: Unclassified	0.16	ND	ND

Notes: NAICS indicates the North American Industry Classification System. ND indicates nondisclosure rules prevent reporting of the data. Employment shares and location quotients above the U.S. average are in boldface.
Source: U.S. Bureau of Labor Statistics.

TABLE 4

Indianapolis MSA traded clusters

Cluster	Employment share, 2009	Change in employment, 1998–2009	U.S. change in employment, 1998–2009	Change in wages, 1998–2009	U.S. change in wages, 1998–2009	Average wage, 2009	U.S. average wage, 2009
Business services	14.86	*19.32*	35.66	**51.76**	43.02	*59,990*	64,310
Transportation and logistics	10.18	**84.64**	37.98	*20.34*	26.23	*38,881*	44,659
Education and knowledge creation	8.53	**76.97**	45.82	**73.68**	66.97	*46,233*	48,391
Financial services	6.93	*–31.37*	1.69	*41.13*	50.65	*70,532*	103,751
Hospitality and tourism	6.93	**4.53**	2.82	*30.33*	37.20	*24,244*	25,001
Distribution services	6.13	*–4.65*	19.90	*24.88*	44.51	*55,418*	66,397
Total employment	53.56						

Notes: Industry cluster growth rates above the U.S. average are in boldface. Industry cluster growth rates below the U.S. average are in italics.
Sources: U.S. Cluster Mapping Project and authors' calculations.

the United States, while wage growth is faster than the United States. However, average wages still lag the United States by 6.70 percent. The financial services sector in Indianapolis did poorly over the period, shedding 31 percent of employment versus a 2 percent gain for the United States; and wages were also significantly lower, underperforming the national average by a hefty 32 percent in 2012. Finally, distribution services also underperformed across the board.

Indianapolis's economic development strategy

Develop Indy is a business unit of the Indianapolis Chamber of Commerce that partners with a wide array of local agencies to identify the region's competitive advantages and target industries for growth.[5] The initiative has identified five factors that provide a competitive edge to the region: 1) low cost of doing business, including favorable taxation rates (lowest sales tax

rate in the Midwest), real estate prices, and utility rates; 2) superior transportation infrastructure, including five major interstate connections, a new airport terminal with significant cargo operations, the second-largest FedEx hub in the nation, more than 100 trucking companies, five major rail lines, and three maritime ports; 3) available and well-trained work force, with skills focused in life sciences, digital technology, advanced manufacturing, logistics, motor sports, and clean technology; 4) global appeal, with large foreign direct investment as evidenced by more than 500 foreign companies in the state; and 5) excellent higher education and cultural institutions, including Indiana University–Purdue University Indianapolis, Butler University, University of Indianapolis, and Ivy Tech Community College, amateur and professional sports teams, museums, zoo, and many public parks.

Based on these strategic advantages, Indianapolis is targeting advanced manufacturing and technology industries for growth. Specifically, the city aims to increase its share of advanced manufacturing characterized by leading-edge production techniques and high-value-added industries, as well as in logistics, which takes advantage of the comprehensive transportation infrastructure the region contains. Also targeted are technology industries. Indianapolis is ranked the fourth-fastest for high-tech growth and is developing a niche in clean technologies, including hybrid systems, renewable batteries, and wind and solar energy production. Two other sectors capitalize on the city's historical strengths—life sciences, which has always benefited from the presence of the Lilly Company, and motor sports because of the Indy 500. Finally, the plan identifies emerging strength in areas as diverse as fashion and sports.

Indianapolis's strategy is well attuned to the diversity of its industrial base and comparative advantages. Looking at the city's cluster structure, we find concentrations in business services, transportation and logistics, education and knowledge creation, financial services, hospitality and tourism, and distribution services. Much of the plan focuses on transportation infrastructure, which would benefit the logistics and distribution clusters that are heavily represented by firms such as FedEx, Amazon, and UPS. Focusing on specialized amenities such as the Indy 500, museums, and the zoo would likely support the hospitality and tourism cluster. Finally, the plan focuses on developments in life sciences, which can be supported by existing large firms, such as Lilly, and manufacturing, given the presence of large firms such as Rolls Royce and Raytheon.

Milwaukee

Milwaukee has historically been associated with manufacturing and beer production but, over time, the metropolitan area has attracted and developed large professional service firms, such as Northwestern Mutual, Robert Baird and Company, Foley and Lardner, and health care and related businesses. Recently, the city has made a large investment in leveraging freshwater research conducted at the University of Wisconsin–Milwaukee to promote a water technology industry.

If we look at the industry structure based on employment, we see that Milwaukee's employment stands out in three industries—manufacturing (17 percent), health care and social assistance (16.70 percent), and retail trade at 10.90 percent (table 5). However, based on its location quotients, Milwaukee shows concentrations in four sectors—management of companies (1.91), manufacturing (1.58), educational services (1.30), finance and insurance (1.18), and health care and social assistance (1.10)—indicating a relatively broad economy with manufacturing and educational services ranking particularly high.

Milwaukee's traded clusters

Milwaukee exhibits a broad array of traded clusters. In 1998 seven clusters were needed to reach 50 percent of the traded cluster total employment, and by 2009 six clusters were needed to reach 50 percent. In addition, the largest cluster, financial services, accounted for a smaller share of cluster employment (12.53 percent) than was the case for the top-ranked cluster in any of the other cities in this study. In sum, the traded clusters in Milwaukee are more diversified and less concentrated than in the other cities. However, as in the other cities, there is churn in the composition of the top traded cluster. By 2009, automotive and production technology (ranked fourth and fifth, respectively, by employment in 1998) had dropped off the ranking and medical devices had been added (see table 6).

Milwaukee's cluster performance is about on par with the U.S. average. Its largest cluster, financial services, saw a 1.30 percent gain in employment (versus a U.S. average of 1.70 percent), while wages rose 60 percent versus 51 percent for the United States. Still, average wages for Milwaukee's financial services sector were $13,536 (13 percent) lower than the United States. The city's second-largest cluster, business services, also experienced slower employment growth than the United States, 22 percent versus 36 percent, but wage growth was virtually identical and average wages were only $1,126 (1.70 percent) below the U.S. average. Education and knowledge creation was also roughly in

TABLE 5

Milwaukee MSA employment shares and location quotients, 2012

Industry	U.S. employment share	Milwaukee MSA	Location quotients
NAICS 11: Agriculture, forestry, fishing, and hunting	1.08	ND	ND
NAICS 21: Mining, quarrying, and oil and gas extraction	0.72	ND	ND
NAICS 22: Utilities	0.50	0.49	0.99
NAICS 23 Construction	5.05	3.32	0.66
NAICS 31–33: Manufacturing	10.76	**16.97**	**1.58**
NAICS 42: Wholesale trade	5.11	**5.13**	**1.00**
NAICS 44–45 Retail trade	13.43	10.89	0.81
NAICS 54: Professional and technical services	7.14	5.39	0.75
NAICS 55: Management of companies	1.81	**3.46**	**1.91**
NAICS 56: Administrative and waste services	7.22	**7.48**	**1.04**
NAICS 61: Educational services	2.36	**3.06**	**1.30**
NAICS 62: Health care and social assistance	15.18	**16.70**	**1.10**
NAICS 48–49: Transportation and warehousing	3.76	3.28	0.87
NAICS 51: Information	2.42	2.11	0.87
NAICS 52: Finance and insurance	5.03	**5.91**	**1.18**
NAICS 53: Real estate and rental and leasing	1.76	1.37	0.78
NAICS 71: Arts, entertainment, and recreation	1.79	1.62	0.91
NAICS 72: Accommodations and food services	10.63	8.41	0.79
NAICS 81: Other services, except public administration	4.11	**4.23**	**1.03**
NAICS 99: Unclassified	0.16	0.00	ND

Notes: NAICS indicates the North American Industry Classification System. ND indicates nondisclosure rules prevent reporting of the data. Employment shares and location quotients above the U.S. average are in boldface.
Source: U.S. Bureau of Labor Statistics.

TABLE 6

Milwaukee MSA traded clusters

Cluster	Employment share, 2009	Change in employment, 1998–2009	U.S. change in employment, 1998–2009	Change in wages, 1998–2009	U.S. change in wages, 1998–2009	Average wage, 2009	U.S. average wage, 2009
Financial services	12.53	*1.35*	1.69	**60.24**	50.65	*90,215*	103,751
Business services	12.14	*21.96*	35.66	*42.39*	43.02	*63,184*	64,310
Education and knowledge creation	10.85	**53.00**	45.82	*64.70*	66.97	*40,959*	48,391
Metal manufacturing	7.20	*–34.93*	–32.61	*13.71*	23.33	*43,425*	44,432
Processed food	5.71	**–0.02**	–8.15	**60.90**	32.55	**44,144**	41,355
Medical devices	4.63	**91.97**	11.91	*1.73*	49.98	*43,908*	64,717
Total employment	53.06						

Notes: Industry cluster growth rates above the U.S. average are in boldface. Industry cluster growth rates below the U.S. average are in italics.
Sources: U.S. Cluster Mapping Project and authors' calculations.

line with the United States with stronger employment growth and equivalent wage growth, but wages underperformed by 15.30 percent. Cluster four, metal manufacturing, suffered a 35 percent drop in employment, on par with the 33 percent drop reported nationally, but saw wages grow more slowly; however, average wages were roughly equal to the United States with a difference of only $1,007, or 2.30 percent. Processed food suffered a more modest decline in employment in Milwaukee than in the nation—down 0.02 percent versus 8.15 percent for the United States. Wages in this cluster rose 61 percent in Milwaukee versus 33 percent for the United States. Milwaukee's processed food cluster also has slightly higher wages than the United States, on average, by 6.7 percent. The newcomer to the list, medical devices, showed explosive

employment growth of 92 percent versus 12 percent for the United States, but wage growth in the sector was poor at under 2 percent versus a U.S. average of 50 percent; wages were also significantly lower than the national average—by 32 percent.

Milwaukee's economic development strategy

The Milwaukee 7 Regional Economic Development Partnership released a strategy plan in November 2013.[6] The plan was developed over 18 months and was based on the work of five cross-sector working groups. The plan recognizes that Milwaukee's economy has been lagging that of the nation for the past decade and is in a state of transition, with growth favoring knowledge-intensive products, services, and processes over traditional manufacturing.

The specific plan identifies nine strategies that are focused on improving regional productivity. The first is to "become a leading innovator, producer, and exporter of products and services related to energy, power, and controls." The plan anticipates that underlying dynamics in the United States and world economy will create demand for these products and services. This will include a resurgence in U.S. manufacturing, increased emphasis on energy efficiency, and new investments in electric power and infrastructure. The region can take advantage of this through its large traded cluster of energy and power control firms. The Milwaukee region has 200 firms with 19,000 employees in this field, including global names such as Rockwell, Eaton, Cooper Power and Waukesha Electric, and Johnson Controls. In addition, research support for these firms can be found through the Mid-West Energy Research Consortium and the University of Wisconsin–Milwaukee/Johnson Controls Partnership in Energy Research.

The second strategy is to "become a global hub for activity in water technology." The plan identifies water and wastewater technology as a rapidly growing market, and the city has been able to attract and grow 130 to 150 water-related companies, including five of the 11 largest in the world. This segment employs 3,600 people. The Water Council, consisting of 100 corporate members, supports research and development efforts. A key advantage is the city is home to the only graduate school in the nation dedicated to the study of freshwater—the University of Wisconsin–Milwaukee's School of Freshwater Sciences.

Strategy three is to "grow the food cluster by leveraging geographic, supply chain, and human capital advantages." With growing national and international demand, Milwaukee's food and beverage cluster of 300 firms, employing 14,000 people, is well positioned, particularly considering its export orientation. Wisconsin food manufacturers exported $1.7 billion of goods in 2012, representing a 156 percent increase since 2005. The state's supply chain advantage rests on its strong agricultural base, providing processing firms with easy access to crops, dairy, and animals. In addition, a Food and Beverage Milwaukee (FaB) network has been established to focus on talent, innovation, and business development.

The fourth strategy is to "increase export capacity particularly for small- and medium-sized firms." The strategic plan notes that the Milwaukee region does not export at a level commensurate with its manufacturing activity and its exports are dominated by a handful of large firms. Increasing opportunities for other firms to export is seen as a key to future economic strength. Part of this emphasis is based on the success Milwaukee has found in industries that have aggressively promoted exports, such as the food cluster.

The fifth strategy is to "align work force development with growth in high-potential clusters." The plan suggests this may be the most critical factor in enhancing productivity. To be effective, work force programs need to align curricula with workplace needs. Part of this is to create certificate and credential programs that certify workers' skill levels.

Strategy six is to "foster an innovation and entrepreneurship ecosystem." Much of this strategy is designed to better link universities to industry needs and to strengthen research and development ties, particularly focused on the needs of clusters. In addition, there is a need to create incubator space for entrepreneurs.

The seventh strategy is to "catalyze 'economic place-making.'" This strategy calls for recasting the region's economy in a more dynamic, knowledge-based image. In particular, it means promoting next-economy firms and enhancing the productivity with which goods, people, and ideas move. This includes enhancements to physical and virtual (broadband) infrastructure.

The eighth strategy is to "modernize regional infrastructure." This strategy focuses on enhancements to traditional mass transit, highway, and airport infrastructure, with the goals of improving workers' ability to get to work and enhancing national (notably to northeastern Illinois) and international connections.

And strategy nine is to "enhance inter-jurisdictional cooperation and collaboration." This calls for more cooperation and less competition across governmental entities, as well as streamlining the costs of providing government services.

Milwaukee's strategy appears to be more targeted than most of the other cities'. The Milwaukee MSA has a diverse economic base, with LQs above 1.05 in five industries. Its traded cluster sector is also diverse,

TABLE 7

Detroit MSA employment shares and location quotients, 2012

Industry	U.S. employment share	Detroit MSA	Location quotients
NAICS 11: Agriculture, forestry, fishing, and hunting	1.08	ND	ND
NAICS 21: Mining, quarrying, and oil and gas extraction	0.72	ND	ND
NAICS 22: Utilities	0.50	ND	ND
NAICS 23: Construction	5.05	3.43	0.68
NAICS 31–33: Manufacturing	10.76	**13.83**	**1.29**
NAICS 42: Wholesale trade	5.11	ND	ND
NAICS 44–45: Retail trade	13.43	12.52	0.93
NAICS 54: Professional and technical services	7.14	**10.32**	**1.45**
NAICS 55: Management of companies	1.81	**2.42**	**1.34**
NAICS 56: Administrative and waste services	7.22	**8.31**	**1.15**
NAICS 61: Educational services	2.36	1.63	0.69
NAICS 62: Health care and social assistance	15.18	**16.60**	**1.09**
NAICS 48–49: Transportation and warehousing	3.76	3.24	0.86
NAICS 51: Information	2.42	1.60	0.66
NAICS 52: Finance and insurance	5.03	4.12	0.82
NAICS 53: Real estate and rental and leasing	1.76	1.72	0.98
NAICS 71: Arts, entertainment, and recreation	1.79	1.38	0.77
NAICS 72: Accommodations and food services	10.63	9.76	0.92
NAICS 81: Other services, except public administration	4.11	3.54	0.86
NAICS 99: Unclassified	0.16	0.16	**1.06**

Notes: NAICS indicates the North American Industry Classification System. ND indicates nondisclosure rules prevent reporting of the data. Employment shares and location quotients above the U.S. average are in boldface.
Source: U.S. Bureau of Labor Statistics.

with six industries represented. Rather than focusing on broader categories, the plan looks at subsectors within large groups, such as energy and energy controls, water science and management, and food production. The other elements of the policy are designed to create economic conditions (through productivity policies) that would benefit almost any industry. These infrastructure and work force policies seem designed to create a platform for growth for many types of firms.

Detroit

Detroit has long been synonymous with the U.S. auto industry and related supply chain companies. However, recent growth has occurred in services, with large downtown developments by Quicken Loans and investments in hotels and casinos. Detroit unquestionably faces a steeper economic development challenge than the other large cities in our District. Having lost more than half of its population since its peak in the 1950s, the city is currently in bankruptcy court—the largest municipal bankruptcy filing in U.S. history. Currently, Detroit is characterized by a strong downtown business district with very low vacancy rates that is surrounded by large tracts of abandoned properties and depopulated residential neighborhoods. Not surprisingly, much of the city's economic development emphasis is simply on stabilizing the economy as a prerequisite to growth.

Detroit has relatively high employment shares in health care and social assistance (16.60 percent), manufacturing (13.80 percent), professional and technical services (10.30 percent), and retail trade (12.50 percent) (see table 7). In terms of LQs that are above the U.S. average, Detroit's concentrations are in health care and social assistance (1.09), administrative and waste services (1.15), management of companies (1.34), professional and technical services (1.45), and manufacturing (1.29).

Detroit's traded clusters

Like Des Moines, Detroit has a relatively high concentration in its traded clusters, with four comprising more than 50 percent of its traded cluster performance in 2009. Two clusters alone (business services and automotive) comprise almost 40 percent of traded cluster employment. Churn is also present. By 2009, automotive has dropped to number two in traded cluster employment (from 27.20 percent to 17 percent), while business services had risen to number one (17.40 percent to 22.83 percent in 2009). Metal manufacturing dropped off the list, while education and knowledge creation and transportation joined (table 8).

TABLE 8

Detroit MSA traded clusters

Cluster	Employment share, 2009	Change in employment, 1998–2009	U.S. change in employment, 1998–2009	Change in wages, 1998–2009	U.S. change in wages, 1998–2009	Average wage, 2009	U.S. average wage, 2009
Business services	22.83	*–0.25*	35.66	*24.54*	43.02	*63,507*	64,310
Automotive	17.06	*–52.24*	–42.59	*12.25*	13.02	**61,162**	47,418
Education and knowledge creation	8.22	**102.84**	45.82	*21.00*	66.97	*31,902*	48,391
Transportation and logistics	8.11	*26.11*	37.98	*18.70*	26.23	*36,780*	44,659
Total employment	56.22						

Notes: Industry cluster growth rates above the U.S. average are in boldface. Industry cluster growth rates below the U.S. average are in italics.
Sources: U.S. Cluster Mapping Project and authors' calculations.

In terms of change in employment and change in wages from 1998 to 2009, no clear pattern emerges. The largest cluster, business services, underperforms the U.S. average growth in both employment and wages, although average wages are only 1.20 percent lower than nationally. The second-most-significant cluster, automotive, shows a lackluster performance for both Detroit and the United States. Not surprisingly, given Detroit's role as a headquarters city for domestic auto manufacturers, average wages are much higher—by 29 percent—in Detroit for this sector. Education shows explosive employment growth (103 percent versus 46 percent for the United States), but poor wage growth (less than one-third of the U.S. average). Average wages in education also lag by 34 percent. Finally, in transportation and logistics, both employment and wage growth lag the U.S. averages and average wages trail by 17.60 percent.

Detroit's economic development strategy

In December 2012, the Detroit Strategic Framework Plan was released.[7] The long-term planning aspect of the report was led by a 12-member steering committee drawn from the business, community, faith-based, government, and philanthropic communities, and appointed by the mayor. The Detroit Economic Growth Corporation managed the project. The plan is designed to recognize the city's core assets and examine ways to leverage those assets to restore and stabilize the Detroit economy. The plan creates four benchmark goals for the city by 2030. They are as follows: 1) stabilize the residential population at between 600,000 and 800,000; 2) increase the number of jobs available to city residents from the current level of 27 per 100 people to 50 per 100 people; 3) enhance the regional transportation network in order to better integrate Detroit and the rest of the MSA and develop land-reuse plans that will repurpose existing vacant tracks for new types of development; and 4) establish an ongoing framework for civic involvement.

The plan also has specific economic development elements that are captured by the following five implementation strategies: First, emphasize support for four key sectors with highest potential growth—educational and medical, industrial, digital/creative, and local entrepreneurship. To support growth in these sectors, the plan calls for aligning private and civic investments to support the four areas. This includes having work force development strategies specific to these four industry clusters.

Second, use a place-based strategy for growth. In practice, this would target "employment districts," where resources would be channeled to promote growth. The plan establishes seven of these districts, based on the concept that these geographic areas have the greatest ability to bring job growth to scale. This would be complemented by growth in industrial business improvement districts and developing capacity for green business.

Third, encourage local entrepreneurship and minority business participation. The strategy here is to develop local business clusters that serve the Detroit market. Some of this includes using local suppliers to feed existing businesses, as well as an expectation that this will diversify the economic base of the city. Part of encouraging these businesses is based around providing low-cost shared space. A further assumption is that local services are currently being underprovided in Detroit.

Fourth, improve skills and support education reform. Much of this focuses on improving existing work force training by linking it more closely to the private sector and aligning training to local industry needs. It also calls for better integrating work force development with transportation. The plan also encourages hiring

of Detroit natives and calls for a study designed to improve citywide graduation rates.

And fifth, review land regulations, transactions, and environmental actions. This is a broad land-reuse program that focuses on land banking for industrial and commercial property as well as improving development outcomes by speeding the permit-granting process in employment districts and identifying alternative sources of capital for development.

It is clear that much of the plan emphasizes stabilizing the current economic base as a necessary step to attract new investment. Based on LQs, Detroit has employment concentrations in a broad range of industries, including health care and social assistance, management of companies, professional and technical services, manufacturing, and administrative and waste services. Business services, automotive, education and knowledge creation, and transportation and logistics are Detroit's most important traded clusters. The plan focuses to an extent on three of these—education, health care, and the industrial sector (which would include autos and would likely be heavily supported by transportation and logistics). The plan also emphasizes the creation of home-grown businesses, which is likely necessary to fill in declines in retail and other services found in many Detroit neighborhoods. Business services, the sector that has driven much of the investment in downtown Detroit as well as being its largest traded cluster, does not receive specific attention in the plan.

Chicago

Chicago is unlike the other large cities in the District, in the sense that its economic size places it in the list of global cities. With a metropolitan gross product of over $570 billion (which would make it the 23rd-largest economy in the world if it were a country), the city's influence reaches well beyond its state borders. Chicago's economy is specialized in professional services of all types and features major headquarters operations in the metro area, including Walgreens (pharmaceuticals), Boeing (aerospace), Kraft (food), Sears (retail merchandise), Abbott Laboratories (pharmaceuticals), United Airlines (transportation), Allstate Insurance (financial services), McDonald's (restaurants), Exelon (utilities), and Baxter (pharmaceuticals). These diverse companies range from a rank of 32 to 195 in the list of largest U.S. publicly traded companies.

Equally impressive is that Chicago has eight industry sectors with above-national-average employment concentrations, based on LQs. These are: finance and insurance (1.16), transportation and warehousing (1.24), educational services (1.44), administrative and waste services (1.20), management of companies (1.28), professional and technical services (1.13), manufacturing (1.04), and wholesale trade (1.14) (see table 9).

Chicago's traded clusters

The data show that some churn has occurred in Chicago's traded clusters. While business services has the largest share of employment in both 1998 and 2009, metal manufacturing and food processing were among the largest traded clusters in 1998 but were no longer in the top five by 2009. In addition, the relative concentration of jobs had increased the importance of specific clusters by 2009. For example, employment in the business services sector now captures 18.95 percent of all traded cluster jobs, up from 13.40 percent in 1998 (table 10). Gains in concentration are also apparent in education and knowledge services (11.16 percent versus 6.75 percent), transportation and logistics (7.13 percent versus 5.24 percent), and distribution services (6.68 percent versus 5.46 percent). The only traded cluster to remain roughly constant in terms of share of traded cluster jobs is financial services at 9.40 percent versus 9.18 percent (and given the decline in financial service firms associated with the Great Recession, this relatively stable performance is perhaps better than one might have expected).

Two other observations are worth making. Employment growth in these traded clusters in Chicago significantly underperformed the U.S. average over the period. U.S. employment growth levels in business services, transportation and logistics, and distribution were all more than double Chicago's experience. In financial services, Chicago lost nearly 14 percent of its jobs, while the United States eked out a small gain of less than 2 percent. Even in the fastest-growing cluster, education and knowledge services, Chicago's nearly 40 percent growth was below the 46 percent recorded by the United States. All of this would seem like glum news if it were not for the wage figures. In all clusters, Chicago's wages bested the U.S. averages and often by a significant amount. In three out of the five clusters, even the rate of wage growth in Chicago was either better or roughly equivalent to the U.S. average. The largest wage gains were, ironically enough, in the sector that recorded the largest employment decline—financial services. Financial services wages in Chicago rose 88 percent over the period (versus 51 percent for the United States) and average wages in the sector topped $132,000, well above the U.S. average of $103,000.[8]

Chicago's economic development strategy

In 2012, Chicago unveiled a new economic development strategy that was based on a study conducted by World Business Chicago (WBC), which is the city's

TABLE 9

Chicago MSA employment shares and location quotients, 2012

Industry	U.S. employment share	Chicago MSA	Location quotients
NAICS 11: Agriculture, forestry, fishing, and hunting	1.08	0.14	0.13
NAICS 21: Mining, quarrying, and oil and gas extraction	0.72	0.03	0.05
NAICS 22: Utilities	0.50	0.40	0.81
NAICS 23: Construction	5.05	3.86	0.76
NAICS 31–33: Manufacturing	10.76	**11.21**	**1.04**
NAICS 42: Wholesale trade	5.11	**5.81**	**1.14**
NAICS 44–45: Retail trade	13.43	12.09	0.90
NAICS 54: Professional and technical services	7.14	**8.07**	**1.13**
NAICS 55: Management of companies	1.81	**2.31**	**1.28**
NAICS 56: Administrative and waste services	7.22	**8.63**	**1.20**
NAICS 61: Educational services	2.36	**3.39**	**1.44**
NAICS 62: Health care and social assistance	15.18	14.29	0.94
NAICS 48–49: Transportation and warehousing	3.76	**4.65**	**1.24**
NAICS 51: Information	2.42	ND	ND
NAICS 52: Finance and insurance	5.03	**5.83**	**1.16**
NAICS 53: Real estate and rental and leasing	1.76	1.65	0.94
NAICS 71: Arts, entertainment, and recreation	1.79	ND	ND
NAICS 72: Accommodations and food services	10.63	ND	ND
NAICS 81: Other services, except public administration	4.11	ND	ND
NAICS 99: Unclassified	0.16	0.12	0.79

Notes: NAICS indicates the North American Industry Classification System. ND indicates nondisclosure rules prevent reporting of the data. Employment shares and location quotients above the U.S. average are in boldface.
Source: U.S. Bureau of Labor Statistics.

TABLE 10

Chicago MSA traded clusters

Cluster	Employment share, 2009	Change in employment, 1998–2009	U.S. change in employment, 1998–2009	Change in wages, 1998–2009	U.S. change in wages, 1998–2009	Average wage, 2009	U.S. average wage, 2009
Business services	18.95	*19.13*	35.66	*38.94*	43.02	**74,315**	64,310
Education and knowledge services	11.16	*39.32*	45.82	*48.43*	66.97	**49,000**	48,391
Financial services	9.40	*–13.79*	1.69	**88.53**	50.65	**132,145**	103,751
Transportation and logistics	7.13	*14.58*	37.98	*25.99*	26.23	**51,891**	44,659
Distribution services	6.68	*3.11*	19.90	*17.10*	44.51	**71,597**	66,397
Total employment	53.32						

Notes: Industry cluster growth rates above the U.S. average are in boldface. Industry cluster growth rates below the U.S. average are in italics.
Sources: U.S. Cluster Mapping Project and authors' calculations.

public–private economic development agency. The study was based on a series of reports by subcommittees that focused on the recent strengths and weaknesses of Chicago's economy. In the end, the report identified ten strategies, which included a focus on specific industry clusters—advanced manufacturing, professional services, and headquarters operations—as well as infrastructure improvements. The strategies are as follows. 1) Support advanced manufacturing—high-value-added manufacturing can be competitive in higher cost urban areas, when this type of manufacturing has a high knowledge component and service needs. It also can support job creation for non-college-educated populations. 2) Increase the region's attractiveness for business services and headquarters. These are two clusters in Chicago's economy that have had considerable growth since the 1990s. 3) Enhance the competitive position as a transportation and logistics hub. Chicago's

concentration of air and rail assets provides the city with a major advantage. 4) Make Chicago a premier destination for tourism and entertainment. Capitalize on cultural assets that are unique to the city and continue to use convention business to attract visitors. 5) Make the city a leading exporter—support export activities of industries. Like most cities, export activities tend to be concentrated in large firms. Use large firms to connect smaller and medium-sized companies to markets. 6) Develop a work force in a demand-driven and targeted manner. Businesses need to identify what skills are needed in the workplace and work force training institutions need to align their programs to provide these skills. 7) Support entrepreneurship and innovation in both mature and emerging sectors (with an emphasis on product commercialization). 8) Develop next-generation infrastructure and new models of public–private funding. Not only does this mean developing technology and energy-efficient infrastructure, but it also means leveraging private sector resources to help pay for the development. 9) Support neighborhood vitality that supports regional growth (small- and medium-sized enterprises). And 10) Develop a good business climate. This includes streamlining regulation and providing businesses with a supportive infrastructure.

To implement the plan, WBC has created a series of task forces to develop specific metrics to measure progress toward each goal.

Reviewing the industry structure data, it is clear that Chicago's plan emphasizes the diversity of its employment concentrations, with eight sectors having LQs over 1, and emphasizes its considerable strength in businesses services, which has become a hallmark of the city's economy. The related strategy of recruiting headquarters is also based on having a strong business service sector to provide necessary accounting, legal, and marketing expertise that would be attractive to a headquarters operation. The emphasis on the potential for advanced manufacturing is perhaps rooted in the area's legacy as a manufacturing center and its ability to exploit a strong logistics and transportation system to move both finished products and parts.

Conclusion

In this article, we have described the current industry structure and recent economic development strategy for the largest MSA in each state of the Seventh Federal Reserve District. In addition, we have focused on the recent performance of the key export-oriented clusters of the metropolitan area as an indicator of the health of the most important sectors of each area's economy. As the cluster data show, large District cities differ in terms of their relative industry concentrations and even wages within the same cluster. Chicago's higher wage averages may be indicative of both higher costs of living and higher worker productivity. Even within the same cluster, employment profiles may vary, and this likely needs to be translated into economic development plans.

There are several paths for future research. One is to determine the predictive power of industry clusters on future economic growth. If researchers such as Porter are correct and these clusters represent sources of comparative advantage, their performance should help predict the future health of these metropolitan areas. Establishing this link will be important as cluster-based economic development strategies multiply. Another avenue of research is to better understand the rise and fall of specific clusters within a particular metro. Is this a type of creative destruction that cluster-based agglomeration can promote?

An important aspect of economic development not touched on in this article is the role of government finance in supporting economic growth and the challenge of maintaining government services when government finances are extremely tight. Detroit provides a real-time example of this. Even if clusters can be readily identified and a clear economic development plan put in place, can they overcome a turbulent fiscal condition? At a minimum, any local government needs to be able to provide services that are demanded by local businesses as part of an economic development strategy. In the case of Detroit, it can be argued that the level of services currently provided to businesses is inadequate, given statistics about slow police response times and the inability to repair street lighting.[9] In this case, businesses are being taxed to pay for services that were consumed in the past, which has the effect of making the current level of taxation unrelated to the value of the services provided. A starting point for any local government economic development strategy should be to make sure that taxation and service provision are clearly delineated. For example, businesses would be taxed to pay for business services they consume and residents would pay for residential services. Governments that are in financial trouble may try to shift the burden for residential services to businesses. When this occurs, businesses have an incentive to relocate. In the long run, economic development strategies that first take into consideration the efficient provision of essential government services may prove more successful than strategies that start by trying to offer incentives to lure new business or focus on building new amenities, such as stadiums and convention centers.

NOTES

[1]See Porter (1998). For a description of the cluster data used in this article, see U.S. Cluster Mapping Project, available at www.clustermapping.us/.

[2]See www.bls.gov/help/def/lq.htm.

[3]See http://data.bls.gov/location_quotient/ControllerServlet.

[4]See http://archive.indystar.com/article/99999999/NEWS06/302200019/RetroIndy-Uni-Gov.

[5]See www.developindy.com/.

[6]See http://mke7.com/~/media/Documents/M7RegionalPlanExecSummary.ashx.

[7]See http://detroitfuturecity.com/wp-content/uploads/2014/02/DFC_ExecutiveSummary_2ndEd.pdf.

[8]Chicago's wage advantage by sector is as follows: business services, $10,005 (15.5 percent); education and knowledge creation, $609 (1.2 percent); financial services, $28,394 (27.4 percent); transportation and logistics, $7,232 (16.2 percent); and distribution, $5,200 (7.8 percent).

[9]See http://money.cnn.com/2013/07/19/news/economy/detroit-streetlights-police/.

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