# AN ANALYSIS OF MIAMI-DADE INDUSTRIES: RELATIVE STRENGTH AND COMPETITIVE POSITION 1998 - 2006

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**Relative Strength and Competitive Position**
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Introduction

The purpose of this study is to analyze the industry characteristics of the Miami-Dade County's economy. This is a part of a series of such studies that have been produced by the Research Section of the County's Department of Planning and Zoning. More specifically, the objectives of this analysis is to help understand how dependent the local economy is on one or more sectors and which sectors have the greatest competitive advantage, how well the local economy compares to national averages, and what gaps in the industry mix could be filled to improve the local economy.

Within the framework of these objectives, the intention of the present report is to accomplish two tasks:

- To measure the relative strength of the local economy and to identify the export-oriented sectors of its economic base, and
- To analyze the competitive position of the local industries over time.

While there are various methods and statistical techniques that can be used in order to accomplish these objectives, the present analysis concentrates only on two of such techniques, namely, location quotient analysis and shift-share analysis. These two techniques, each of which is tied to the first and second task mentioned above, respectively, provide a tool to analyze the relative strength and diversity, as well as the industry characteristics of the local economic base over time. Although both methods attempt to quantify changes in employment and measure them relative to a "benchmark" economy such as the nation, the two methods sometimes produce significantly different results in regard to employment rankings that require caution in their interpretation.

The industries analyzed were presented within the structure of the U.S. Office of Management and Budget (OMB) North American Industry Classification System (NAICS).[1] The NAICS coding system classifies industries and all economic activity in the United States at different levels of aggregation ranging from the broadest detail at the two-digit level to the most detailed at the six-digit level. The focus of our analysis initially was on the two-digit level and then on the three-digit level.

This report will proceed in the following steps. First, we will set the stage by examining the general characteristics of the Miami-Dade's economy. Second, we will describe the concept of location quotients. This will be followed by an analysis of the various sectors based on the

1 In fact, there are two NAICS versions; the original version that was developed and adopted in 1997 to replace the Standard Industrial Classification (SIC) System and the first revised version adopted in 2002. For detail information related to the NAICS system, the reader is referred to the official 1997 and 2002 U.S. NAICS Manuals.

location quotient technique. After that, we will examine the concept of shift-share analysis. Through the use of that technique we will present the results of an analysis of employment growth from 1998 to 2006, using data from the U.S. Department of Commerce annual series entitled County Business Patterns.[2] Subsequently, we will combine the findings from the two techniques and present a broad evaluation of all major sectors in terms of their relative strength, competitive position, and potential contribution to achievement of improving the local economy. To this end, we will develop a list of the top industries that could be used as targets for future economic development plans and rank them accordingly. Finally, we will conclude with a summary and conclusions.

General Characteristics of Miami-Dade's Economy

Historically, Miami-Dade County developed as a tourist destination area with an economy dominated by strong service and trade sectors and a weak manufacturing sector. Relative to other areas of similar size, these characteristics still distinguish the local economy although tourism is no longer the monolith it once was. Between the economic census years 1982 and 2002 the County's economy underwent some significant structural changes that shift the area from a domestic tourism and regional service center to a financial, trade, and professional service based economy with strong international focus. In tandem with the census statistics, a recent study by the Department of Planning and Zoning entitled "Changing Industry and Wage Structure of the Miami-Dade Economy, 1998-2006"[3] presented additional evidence with respect to these changes and concluded that there were shifts in the industrial makeup of the County's economy reflecting its transition from a mixed service and light industrial economy to an economy dominated by trade and services.

As detailed in Table 1, the service and trade sector-groups currently represent over one half of Miami-Dade's total employment. Sixteen years ago the corresponding proportion was almost five and a half percentage points below. Within the service sector-group, the most notable shift has taken place in the *Administrative and support and waste management and remediation services* sector where the proportion of jobs has increased by three percentage points. Meanwhile, the *Manufacturing* employment proportion decreased by more than four percentage points over the same period and remains well below the corresponding national average.

Miami-Dade's departure from national proportions in employment for various economic subsectors is dramatically presented in Chart 1[4]. Since this chart graphically portrays the

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[2] U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau, County Business Patterns, 1998 and 2006, Florida, Washington, DC, 2000, 2008. The reports present data on the number of establishments, total employment, and payroll on an establishment basis. Employment coverage is limited to private, nonfarm wage and salary workers in establishments covered by the Federal Insurance Contribution Act. Major employment groups excluded are most government employees, self-employed people, domestic service workers, railroad employees, and agricultural production workers.

[3] Miami-Dade County, Department of Planning and Zoning, Research Section, Changing Industry and Wage Structure of the Miami-Dade Economy, 1998 – 2006, December 2008.

[4] The short titles for the three-digit NAICS codes appearing on Chart 1 are shown in Table 4.

characteristics of the County's economic structure, it is worthy of detailed interpretation for its economic development implications.

**Table 1**
**Employment by Major Sector**
**Miami-Dade County, 1990 and 2006**

| Economic Sector | Employment 1990 | Percent of Total | Employment 2006 | Percent of Total | Percentage Change 1990-2006 |
|---|---|---|---|---|---|
| Total Employment | 1,071,999 | 100.0 | 1,417,535 | 100.0 | 32.2 |
| Private Non-Farm | 932,945 | 87.0 | 1,252,694 | 88.4 | 34.3 |
| Forestry, Fishing, Other | 5,036 | 0.5 | 4,558 | 0.3 | -9.5 |
| Mining | 770 | 0.1 | 639 | 0.0 | -17.0 |
| Utilities | 3,698 | 0.3 | 3,294 | 0.2 | -10.9 |
| Construction | 62,161 | 5.8 | 85,455 | 6.0 | 37.5 |
| Manufacturing | 86,737 | 8.1 | 52,080 | 3.7 | -40.0 |
| Wholesale Trade | 70,777 | 6.6 | 80,551 | 5.7 | 13.8 |
| Retail Trade | 129,298 | 12.1 | 145,467 | 10.3 | 12.5 |
| Information | 25,061 | 2.3 | 27,399 | 1.9 | 9.3 |
| Real Estate, Rental, Leasing | 43,857 | 4.1 | 81,160 | 5.7 | 85.1 |
| Finance, Insurance | 58,633 | 5.5 | 64,844 | 4.6 | 10.6 |
| Transp, Warehousing | 59,573 | 5.6 | 82,024 | 5.8 | 37.7 |
| Profess, Tech Services | 59,412 | 5.5 | 92,433 | 6.5 | 55.6 |
| Mngmt of Co, Enter | 7,423 | 0.7 | 8,902 | 0.6 | 19.9 |
| Admin, Waste Services | 57,561 | 5.4 | 118,719 | 8.4 | 106.2 |
| Educational Services | 13,280 | 1.2 | 32,417 | 2.3 | 144.1 |
| Health Care, Social Asst | 89,458 | 8.3 | 137,432 | 9.7 | 53.6 |
| Arts, Enter, Rec | 15,049 | 1.4 | 23,216 | 1.6 | 54.3 |
| Accom, Food Services | 71,342 | 6.7 | 93,461 | 6.6 | 31.0 |
| Other Services (excl Gov) | 73,819 | 6.9 | 118,643 | 8.4 | 60.7 |
| Public Administration | 134,044 | 12.5 | 157,893 | 11.1 | 17.8 |
| Farm | 5,010 | 0.5 | 6,948 | 0.5 | 38.7 |

Source: REMI PI+ Florida v1.0

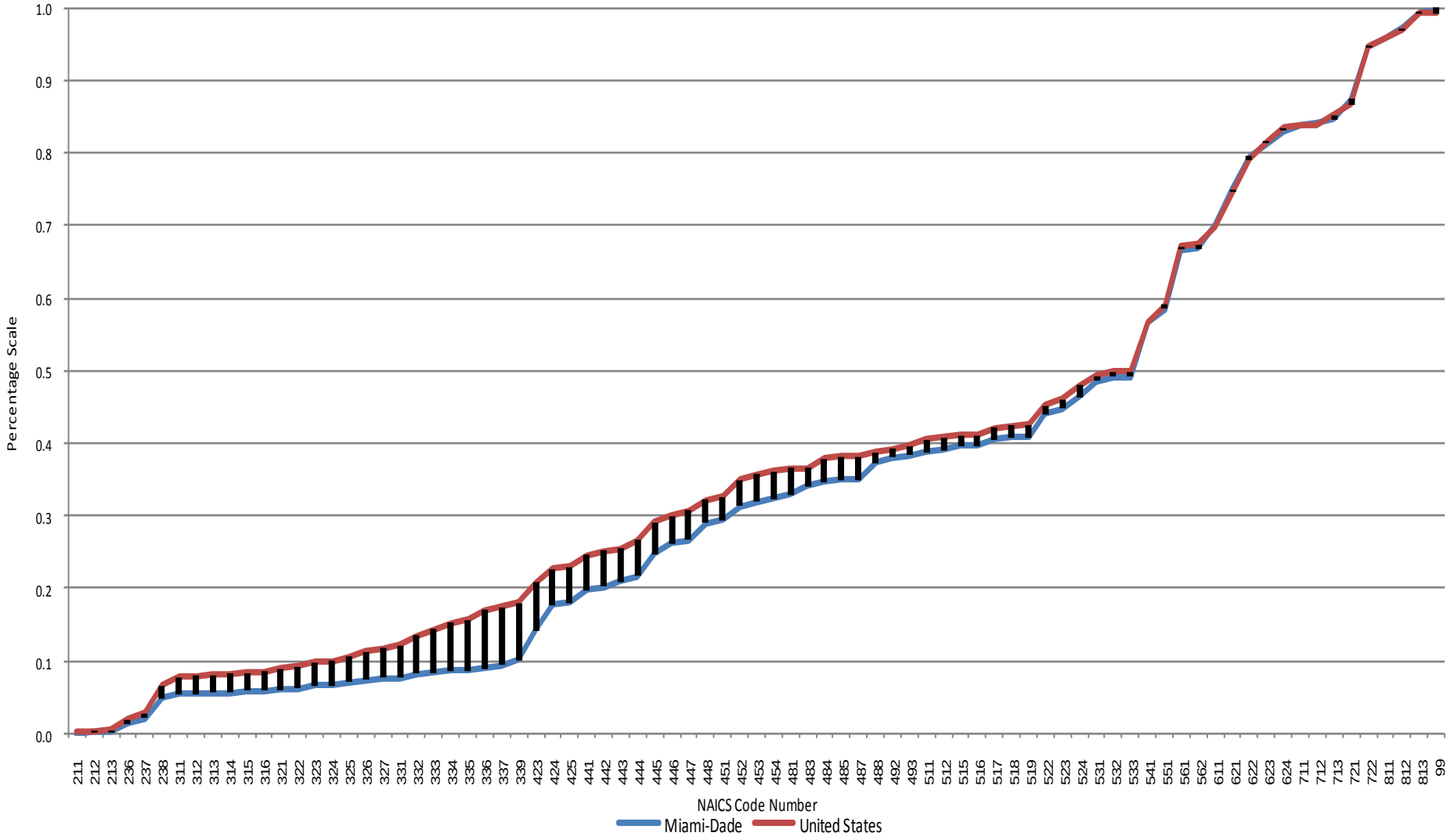
Miami-Dade County, Department of Planning and Zoning, Research Section, 2009.

The vertical scales of Chart 1 measure the cumulative percentage of total employment in the various private non-farm industries in the United States and Miami-Dade County. The base scale on this chart consists of three-digit NAICS code numbers for the industries (subsectors) covered. For purposes of interpreting Chart 1 the base scale sectors and the associated cumulative percentages are summarized at the two-digit level in Table 2.

## Chart 1

### Cumulative Percentages of Total Employment

**United States Compared to Miami-Dade County for All Three-Digit Subsectors, 2006**




Source: U.S. Department of Commerce, U.S. Census Bureau, County Business Patterns, 1998 and 2006, United States and Florida. Miami-Dade County, Department of Planning and Zoning, Research section, 2009.

**Table 2**

**Cumulative Percentages of Total Employment**

**For United States and Miami-Dade County Private Non-Farm Sectors, 2006**

| NAICS Code | Economic Sector | Cumulative Percent | | |
|---|---|---|---|---|
| | | United States | Miami-Dade | Difference |
| 11 | Forestry, Fishing, Other | 0.1 | 0.0 | -0.1 |
| 21 | Mining | 0.6 | 0.1 | -0.5 |
| 22 | Utilities | 1.1 | 0.4 | -0.7 |
| 23 | Construction | 7.2 | 5.2 | -2.0 |
| 31-33 | Manufacturing | 18.6 | 10.4 | -8.2 |
| 42 | Wholesale Trade | 23.6 | 18.3 | -5.3 |
| 44-45 | Retail Trade | 36.8 | 32.7 | -4.1 |
| 48-49 | Transportation & warehousing | 40.4 | 38.6 | -1.8 |
| 51 | Information | 43.2 | 41.1 | -2.1 |
| 52 | Finance & insurance | 48.7 | 46.7 | -2.0 |
| 53 | Real estate & rental & leasing | 50.6 | 49.5 | -1.1 |
| 54 | Professional, scientific, & tech. services | 57.3 | 56.9 | -0.4 |
| 55 | Management of comp. & enterprises | 59.7 | 58.9 | -0.8 |
| 56 | Admin. & support & waste man. & rem.serv. | 68.1 | 67.2 | -0.9 |
| 61 | Educational services | 70.6 | 70.4 | -0.2 |
| 62 | Health care & social assistance | 84.3 | 83.4 | -0.9 |
| 71 | Arts, entertainment, & recreation | 85.9 | 85.0 | -0.9 |
| 72 | Accommodation & food services | 95.4 | 95.1 | -0.3 |
| 81 | Other Services (excl Gov) | 99.9 | 99.8 | -0.1 |
| 99 | Industries not classified | 100.0 | 100.0 | 0.0 |

Source: U.S. Department of Commerce, U.S. Census Bureau, County Business Patterns, 1998 and 2006, United States and Florida.

Miami-Dade County, Department of Planning and Zoning, Research Section, 2009.

Chart 1 and Table 2 show Miami-Dade County to have a fairly diversified economy but with pronounced underrepresentation in manufacturing, distinctive strength in transportation and an atypically high concentration in service industries relative to the nation. This is made explicit in the paragraphs that follow. Closer examination of the more detailed data underlying Chart 1 (not shown) reveals that Miami-Dade is an area dominated by a large number of small employers concentrated mainly in low paying industries and paying lower than national average wages and salaries even in transportation and service industries.

The lines representing cumulative U.S. and Miami-Dade County percentages in Chart 1 are necessarily co-terminal at the zero origin and the 100 percent limit. To the extent they diverge between these points the Miami-Dade County economy differs from the U.S. economy in the measured employment aggregates.

The unique characteristics of Miami-Dade's economic structure have been examined in previous studies, but the shaded area in Chart 1, in particular, highlights the gaps, as well as the strengths and weaknesses in the local economy relative to the nation. Moreover, this presentation advances a different perspective on the interconnection of the unique features of Miami-Dade's economic base.

The large diverse U.S. economy is thought to be as close to a self-sufficient economy as exists in the world. No local economy would be expected to be anywhere near as self-sufficient as the national economy. Local areas generally specialize in economic activities for which they have advantage and rely on other areas as sources of goods and services in which they do not specialize.

The broadening gap between the U.S. and the Miami-Dade County economy depicted in Chart 1 between industry code number 311 (*Food manufacturing*) and 339 (*Miscellaneous manufacturing*), indicates the lack of local self-sufficiency in the *Manufacturing* sector. This gap is evident in the employment measure between the two economies as it reflects the very low level of manufacturing activities in Miami-Dade.

The employment gaps are closed rather significantly over the range of industry codes 423 (*Merchant wholesalers, durable goods*) and 493 (*Warehousing and storage*). This is due mainly to the heavy transportation service employment in Miami-Dade County.

In the *Information* and *Finance and insurance* sectors, industry code groups 511 (*Publishing industries, except internet*) to 524 (*Insurance carriers and related activities*), the gaps change little indicating broad general similarity between the U.S. and Miami-Dade economy.

All the gaps begin to close as the chart covers the *Real estate* sector and all the service sector-groups coded 541 (*Professional, scientific, and technical services*) and above. Within this area there is some indicated local specialization particularly in the *Educational services* subsector (industry code 611) and the *Ambulatory health care services* and *Hospital* subsectors (codes 621 and 622) and somewhat less in the *Arts, entertainment, and recreation* and *Other services* sectors mostly in the tourist and personal service dominated industries (codes 711 to 813).

The most compelling feature of Chart 1 is, of course, the large gaps in the aggregates related to the *Manufacturing* sector. Another way of examining the employment gaps analyzed above is through the technique of a "location quotient" mentioned in the introductory section of this report.

Location Quotients

*Concept*

Briefly, a location quotient (LQ) measures the degree of specialization in any given economy relative to another economy, Miami-Dade's economy relative to the U.S. economy, for example. The quotients are computed for an economic aggregate such as employment to measure the relative position of the area's economy to the aforementioned benchmark economy.

An employment LQ of 1.0 for any given industry means that both the subject economy and the benchmark economy report the same percentage of total employment and are considered equally specialized in that particular industry. An employment LQ greater that 1.0 is taken to describe greater specialization in that particular industry for the subject economy than in the benchmark economy. An employment LQ of less than 1.0 is interpreted to mean that the subject economy is less specialized than the benchmark economy in that particular industry.

Primarily, location quotient analysis is a statistical method that provides a key measure of local specialization in a specific industry. Existing specialization can be a key ingredient in a successful economic development program. For example, a high location quotient can signal opportunities for increasing concentration of a particular industry in the local area. In a large, relatively diverse economy such as Miami-Dade's the location quotient is a reasonably good indicator of local economic base activities.

Another important use of the location quotient is to provide information about the market orientation of the various local industries and to estimate the number of export or "basic" employees in the local economy. Export employees are those that produce goods sold outside of the area and are distinguished from employees that satisfy the local demand for goods and services. Industries associated with export employees are often seen as the source of growth in a local economy.

In general, a LQ equal to 1.0 is taken to describe an industry producing goods and services for localized needs and meeting those needs. A LQ greater than 1.0 implies the industry is at least large enough to meet the region's demand and is likely exporting goods or services outside the region. A LQ less than 1.0 indicates the region is not self-sufficient in that industry and is probably importing its goods or services.

While the location quotient approach serves a useful purpose in measuring the adequacy of a particular industry in a local area, it is important to remember a few key assumptions of location quotient analysis in any interpretation of the results. For example, the quotients assume identical productivity/employee ratios, as well as equal product demand of the products of the relevant industry in both the county and the nation. As a result, it should be clear that there are certain limitations regarding the use of location quotients.

Finally, caution must be observed in comparing location quotients over time. Although such a comparison for different time periods could show whether the local economy is becoming more or less diversified, at the same time, industrial structures and technologies change and vary

among areas so that the benchmark level of self-sufficiency may be at a different scale than that of the local economy.

Despite their limitations, location quotients remain useful tools in analyzing local economic opportunities. They are useful broad indicators of local economic base activities. In addition, they identify the important broad structural departures of the local economy from the national economy, they signal possible missing links (or gaps) in the local economy, and they highlight areas of strength in the local economy.

*Formulas*

A simple formula is used to establish relative position in the calculation of employment location quotients. Stated from the Miami-Dade County perspective, this formula is expressed in the following equation:

$$\frac{(Ei_{MD} / E_{MD})}{(Ei_{US} / E_{US})}$$ [5]

*Results of Location Quotients*

Table 3 presents the results of applying the method to Miami-Dade's major industry groups.

Based on this analysis, it is clear that while Miami-Dade County is to a large degree diversified and has many export employees in several sectors, it is generally not exporting large volumes of goods produced by the *Manufacturing* sector. This is reflected in its low employment location quotient relative to the nation. Local concentration is apparent in: *Transportation and warehousing*, *Wholesale trade*, *Real estate and rental and leasing*, and *Educational services*. In these four industries Miami-Dade's proportion of total employment exceeds the national average by at least 28.37 percent.

A visual representation of the results shown in Table 3 is seen in Chart 2. This chart shows the changes of Miami-Dade's location quotients between 1998 and 2006. Each bubble represents a two-digit NAICS sector. Its vertical position represents the location quotient in 2006 while the horizontal position represents the change in that location quotient over the 1998 to 2006 period in percentage terms, respectively. The size of the bubble represents the size of the industry in terms of its employment in 2006. The industries are divided into four quadrants according to where they fall within these quadrants. Sectors that fall in the upper quadrants indicate more concentration in the region than average and their position to the left or to the right quadrant indicates the degree of concentration. Industries located in the bottom quadrants are less concentrated in the region than average and are becoming less or more so if they are on the left or on the right of the vertical axis, respectively.

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[5] That is, the percentage of Miami-Dade County's total employment ($E_{MD}$) which is accounted for by industry ($Ei_{MD}$) divided by the percentage of total United States employment ($E_{US}$) which is accounted for by the same industrial group ($Ei_{US}$).

**Table 3**

**Employment Location Quotients**

**Miami-Dade County Relative to the United States, 1998 and 2006**

| NAICS * | | Industry | United States Employment 1998 | United States Employment 2006 | Miami-Dade Employment 1998 | Miami-Dade Employment 2006 | Miami-Dade Location Quotient 1998 | Miami-Dade Location Quotient 2006 | Rank by 2006 LQ |
|---|---|---|---|---|---|---|---|---|---|
| | | Total for all sectors ** | 108,117,731 | 119,917,165 | 835,903 | 868,560 | | | |
| 21 | c | Mining | 497,843 | 554,333 | 390 | 1,009 | 0.1013 | 0.2513 | 17 |
| 23 | c | Construction | 5,798,261 | 7,338,799 | 32,924 | 41,092 | 0.7344 | 0.7731 | 15 |
| 31-33 | | Manufacturing | 16,945,834 | 13,631,683 | 62,468 | 45,168 | 0.4768 | 0.4575 | 16 |
| 42 | c | Wholesale trade | 5,884,946 | 6,030,647 | 71,394 | 68,624 | 1.5691 | 1.5711 | 2 |
| 44-45 | | Retail trade | 14,240,726 | 15,767,866 | 114,044 | 125,025 | 1.0358 | 1.0947 | 6 |
| 48-49 | | Transportation & warehousing | 3,462,472 | 4,306,405 | 64,177 | 51,927 | 2.3974 | 1.6648 | 1 |
| 51 | c | Information | 3,141,957 | 3,396,246 | 21,526 | 21,454 | 0.8861 | 0.8721 | 13 |
| 52 | | Finance & insurance | 5,770,209 | 6,647,098 | 44,730 | 48,776 | 1.0026 | 1.0131 | 9 |
| 53 | | Real estate & rental & leasing | 1,812,621 | 2,216,803 | 18,964 | 23,910 | 1.3532 | 1.4891 | 3 |
| 54 | | Professional, scientific, & technical services | 6,051,636 | 8,054,094 | 45,105 | 64,405 | 0.9640 | 1.1040 | 5 |
| 55 | | Management of companies & enterprises | 2,703,798 | 2,915,644 | 14,635 | 17,578 | 0.7001 | 0.8324 | 14 |
| 56 | c | Admin. & support & waste manag. & rem. serv. | 7,774,610 | 10,003,626 | 83,560 | 72,300 | 1.3901 | 0.9978 | 10 |
| 61 | | Educational services | 2,323,744 | 2,979,514 | 21,435 | 27,703 | 1.1931 | 1.2837 | 4 |
| 62 | | Health care & social assistance | 13,757,996 | 16,451,361 | 101,798 | 112,674 | 0.9570 | 0.9456 | 12 |
| 71 | | Arts, entertainment, & recreation | 1,583,783 | 1,973,655 | 9,027 | 13,797 | 0.7372 | 0.9652 | 11 |
| 72 | | Accommodation & food services | 9,466,088 | 11,381,226 | 76,530 | 88,189 | 1.0457 | 1.0698 | 7 |
| 81 | | Other services (except public administration) | 5,037,866 | 5,458,558 | 37,031 | 40,202 | 0.9507 | 1.0168 | 8 |

* NAICS: "North American Industry Classification System". Data for 1998 is Classified based on the 1997 NAICS while data for 2006 is classified according to 2002 NAICS.

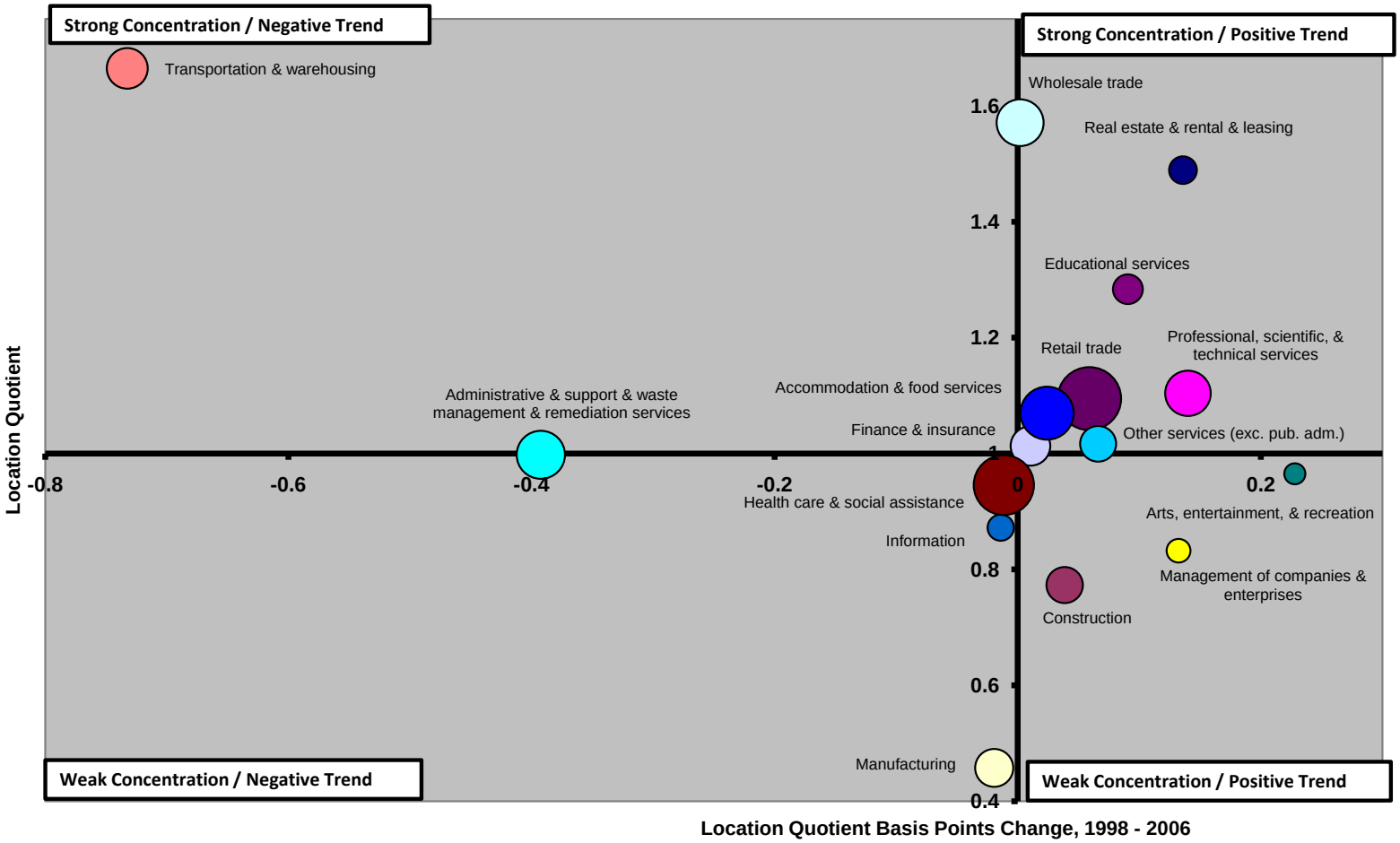
** Totals include sectors for which data was withheld to avoid disclosing information for individual companies.

c: Data for 1998 and 2006 are not 100% compatible due to changes in NAICS definitions between 1997 NAICS and 2002 NAICS.

Source: U.S. Department of Commerce, U.S. Census Bureau, County Business Patterns, 1998 and 2006, United States and Florida.

Miami-Dade County, Department of Planning and Zoning, Research Section, 2009.

## Chart 2
### Miami-Dade Location Quotients by Industry, 2006




Source: U.S. Department of Commerce, U.S. Census Bureau , County Business Patterns, 1998 and 2006, Miami-Dade County, Department of Planning and Zoning, Research Section, 2009.

As can be seen, the *Retail trade*, *Health care and social assistance*, *Accommodation and food services*, *Wholesale trade*, *Finance and insurance,* and *Information*, sectors have held steady in relation to their relative position, while the *Transportation and warehousing* and *Administrative and support and waste management and remediation services* sectors, where Miami-Dade had a heavier concentration than at the national level, have been losing ground. For example, the location quotient in *Transportation and warehousing* went from 2.40 to 1.66 due to a market decline in the air and truck related employment during the 1998 to 2006 period.

On the bright side, there are a number of smaller industries that have gained some competitive advantage with respect to the national scene over the same period. These are: *Professional, scientific, and technical services*, *Management of companies and enterprises*, as well as *Arts, entertainment, and recreation*. The location quotient in these sectors have gone up from 0.96, 0.70, and 0.74 in 1998 to 1.10, 0.83, and 0.97 in 2006, respectively.

Carrying the analysis of location quotients a bit further in detail, Table 4 displays the quotients at the three-digit classification or subsector level in 2006.

In aggregate, Table 4 shows a diversified Miami-Dade economy with many areas of relative specialization. Local concentration is evident in: *Water transportation, Support activities for transportation*, *Broadcasting (except internet)*, and *Performing arts, spectator sports, and related industries*. In these four industries Miami-Dade's proportion of total employment is more than double the national average. By contrast, the *Manufacturing* sector comprises fourteen of the twenty-one industries where Miami-Dade has less than half the national proportion of total employment. Only *Apparel manufacturing* and *Miscellaneous manufacturing* from the same sector-group come close to self-sufficiency. The remaining subsectors have scores between 0.5 and 1.0 on the location quotient scale. It is also worth mentioning here that nearly 73.7 percent of the very low three-digit industry location quotients within the NAICS coding system are those of manufacturers.

Overall, no matter how one views the industry composition of Miami-Dade County, it is obvious that manufacturing does not have a strong presence within the local economy and is the missing link to greater self-sufficiency. While this is not a serious deficiency, filling the gap in the *Manufacturing* sector with suitable industries, especially medical and tourism compatible manufacturing, could enhance the diversity of the local economy.

Two of the manufacturing industries, *Plastics and rubber products manufacturing* and *Non-metallic mineral product manufacturing*, could be suitable candidates and part of an industry retention or even expansion development program. Both of these industries fall short of meeting the local demand for products produced by those industries. Both of them have relatively small presences within the County; however, they do have stronger location quotient ratios when compared to the nation. And, most importantly, these two sectors are growing locally in the face of nationwide decline. This latter fact is not of surprise given that manufacturing, as a whole, continue to decline in the U.S. over the last few decades. Thus, Miami-Dade might be able to fill the wide gap in the *Manufacturing* sector and perform better in these industries than the nation.

**Table 4**

**Employment Proportions and Employment Location Quotients**

**Miami-Dade County Relative to United States, 2006**

| NAICS * | | Industry | Proportions of Total Employment | | Miami-Dade Location Quotient |
|---|---|---|---|---|---|
| | | | United States | Miami-Dade | |
| 212 | | Mining, except oil and gas | 0.0017 | 0.0011 | 0.6461 |
| 236 | ** | Construction of Buildings | 0.0142 | 0.0121 | 0.8514 |
| 237 | ** | Heavy and civil engineering construction | 0.0083 | 0.0065 | 0.7855 |
| 238 | ** | Specialty trade contractors | 0.0387 | 0.0287 | 0.7416 |
| 311 | | Food mfg | 0.0122 | 0.0054 | 0.4432 |
| 312 | | Beverage & tobacco product mfg | 0.0013 | 0.0006 | 0.4424 |
| 313 | | Textile mills | 0.0016 | 0.0006 | 0.3625 |
| 314 | | Textile product mills | 0.0013 | 0.0012 | 0.9371 |
| 315 | | Apparel mfg | 0.0018 | 0.0027 | 1.4768 |
| 316 | | Leather & allied product mfg | 0.0003 | 0.0001 | 0.3255 |
| 321 | | Wood product mfg | 0.0048 | 0.0010 | 0.2182 |
| 322 | | Paper mfg | 0.0037 | 0.0010 | 0.2709 |
| 323 | | Printing & related support activities | 0.0053 | 0.0048 | 0.9025 |
| 324 | | Petroleum & coal products mfg | 0.0009 | 0.0001 | 0.0751 |
| 325 | | Chemical mfg | 0.0067 | 0.0037 | 0.5551 |
| 326 | | Plastics & rubber products mfg | 0.0075 | 0.0030 | 0.3951 |
| 327 | | Nonmetallic mineral product mfg | 0.0040 | 0.0033 | 0.8081 |
| 331 | | Primary metal mfg | 0.0038 | 0.0004 | 0.1111 |
| 332 | | Fabricated metal product mfg | 0.0130 | 0.0061 | 0.4670 |
| 333 | | Machinery mfg | 0.0094 | 0.0016 | 0.1733 |
| 334 | | Computer & electronic product mfg | 0.0088 | 0.0017 | 0.1872 |
| 335 | | Electrical equipment, appliance, & component mfg | 0.0035 | 0.0009 | 0.2480 |
| 336 | | Transportation equipment mfg | 0.0135 | 0.0030 | 0.2212 |
| 337 | | Furniture & related product mfg | 0.0045 | 0.0035 | 0.7695 |
| 339 | | Miscellaneous mfg | 0.0057 | 0.0075 | 1.3066 |
| 423 | ** | Durable goods merchant wholesalers | 0.0286 | 0.0412 | 1.4416 |
| 424 | ** | Nondurable goods merchant wholesalers | 0.0189 | 0.0345 | 1.8249 |
| 425 | ** | Wholesale electronic markets & agents & brokers | 0.0028 | 0.0033 | 1.1754 |
| 441 | | Motor vehicle & parts dealers | 0.0162 | 0.0176 | 1.0808 |
| 442 | | Furniture & home furnishings stores | 0.0048 | 0.0052 | 1.0886 |
| 443 | | Electronics & appliance stores | 0.0041 | 0.0064 | 1.5612 |
| 444 | | Building mat. & garden equip. & supplies dealers | 0.0114 | 0.0084 | 0.7372 |
| 445 | | Food & beverage stores | 0.0244 | 0.0301 | 1.2320 |
| 446 | | Health & personal care stores | 0.0093 | 0.0150 | 1.6162 |
| 447 | | Gasoline stations | 0.0076 | 0.0041 | 0.5326 |
| 448 | | Clothing & clothing accessories stores | 0.0136 | 0.0236 | 1.7347 |
| 451 | | Sporting goods, hobby, book, & music stores | 0.0053 | 0.0043 | 0.8061 |
| 452 | | General merchandise stores | 0.0234 | 0.0186 | 0.7943 |
| 453 | | Miscellaneous store retailers | 0.0070 | 0.0063 | 0.8982 |
| 454 | | Nonstore retailers | 0.0044 | 0.0045 | 1.0355 |
| 481 | | Air transportation | 0.0040 | 0.0063 | 1.5965 |
| 483 | | Water transportation | 0.0006 | 0.0114 | 20.0001 |
| 484 | | Truck transportation | 0.0128 | 0.0060 | 0.4675 |
| 485 | | Transit & ground passenger transportation | 0.0035 | 0.0026 | 0.7330 |
| 487 | | Scenic & sightseeing transportation | 0.0002 | 0.0002 | 0.7041 |
| 488 | | Support activities for transportation | 0.0048 | 0.0234 | 4.8428 |
| 492 | | Couriers & messengers | 0.0048 | 0.0068 | 1.4295 |
| 493 | | Warehousing & storage | 0.0050 | 0.0031 | 0.6329 |
| 511 | | Publishing industries (except Internet) | 0.0087 | 0.0048 | 0.5569 |
| 512 | | Motion picture & sound recording industries | 0.0028 | 0.0025 | 0.9062 |
| 515 | ** | Broadcasting (except Internet) | 0.0025 | 0.0060 | 2.3742 |
| 516 | ** | Internet publishing & broadcasting | 0.0003 | 0.0003 | 0.9030 |
| 517 | ** | Telecommunications | 0.0097 | 0.0089 | 0.9237 |
| 518 | ** | Internet serv. prov., web search port., & data proc. | 0.0039 | 0.0019 | 0.4925 |
| 519 | ** | Other information services | 0.0005 | 0.0002 | 0.4752 |
| 522 | | Credit intermediation & related activities | 0.0274 | 0.0325 | 1.1873 |
| 523 | | Securities intermediation & related activities | 0.0078 | 0.0067 | 0.8593 |
| 524 | | Insurance carriers & related activities | 0.0198 | 0.0165 | 0.8338 |
| 531 | | Real estate | 0.0130 | 0.0216 | 1.6641 |
| 532 | | Rental & leasing services | 0.0053 | 0.0059 | 1.1118 |
| 533 | | Lessors of nonfin.intang. assets (exc copyr. works) | 0.0002 | 0.0001 | 0.3840 |
| 541 | | Professional, scientific, & technical services | 0.0672 | 0.0742 | 1.1040 |
| 551 | | Management of companies & enterprises | 0.0243 | 0.0202 | 0.8324 |
| 561 | c | Administrative & support services | 0.0805 | 0.0809 | 1.0040 |
| 562 | | Waste management & remediation services | 0.0029 | 0.0024 | 0.8264 |
| 611 | | Educational services | 0.0248 | 0.0319 | 1.2837 |
| 621 | | Ambulatory health care services | 0.0474 | 0.0491 | 1.0356 |
| 622 | | Hospitals | 0.0448 | 0.0462 | 1.0313 |
| 623 | | Nursing & residential care facilities | 0.0250 | 0.0174 | 0.6986 |
| 624 | | Social assistance | 0.0201 | 0.0170 | 0.8488 |
| 711 | | Performing arts, spect. sports, & related industries | 0.0035 | 0.0090 | 2.5386 |
| 712 | | Museums, historical sites, & similar institutions | 0.0010 | 0.0011 | 1.0715 |
| 713 | | Amusement, gambling, & recreation industries | 0.0119 | 0.0058 | 0.4870 |
| 721 | | Accommodation | 0.0157 | 0.0277 | 1.7691 |
| 722 | | Food services & drinking places | 0.0792 | 0.0738 | 0.9314 |
| 811 | | Repair & maintenance | 0.0109 | 0.0103 | 0.9426 |
| 812 | | Personal & laundry services | 0.0113 | 0.0146 | 1.2859 |
| 813 | | Religious/grantmaking/civic/prof. & similar org | 0.0233 | 0.0215 | 0.9208 |

* NAICS: "North American Industry Classification System". Data for 1998 is Classified based on the 1997 NAICS while data for 2006 is classified according to 2002 NAICS.

c: Data for 1998 and 2006 are not 100% compatible due to changes in NAICS definitions between 1997 NAICS and 2002 NAICS.

** 1998 Values estimated from "Bridge Between 1997 NAICS and 2002 NAICS" Tables based on National Revenew figures.

Source: U.S. Department of Commerce, U.S. Census Bureau, County Business Patterns, 1998 and 2006, United States and Florida. Miami-Dade County, Department of Planning and Zoning, Research Section, 2009.

Apart from manufacturing, the County could consider development efforts toward a more diversified economy by developing policies to encourage growth in other industries in which enjoys a competitive advantage. For example, industries, such as in *Professional, scientific, and technical services* and *Education services*, represent sectors which, are not only experiencing positive growth in employment, but also offer opportunities for growth in the subsectors that comprise them. In addition to employment growth, these two sectors, especially the latter, contains the possibility of contributing a wealth of knowledge and new innovative ideas that can be an important factor in Miami-Dade's economic development. After all, educational institutions within the County potentially provide the area's future workforce.

As mentioned earlier, location quotients serve as indicators of which industries represent a relatively large component in a given economy. As a result, the industries with high location quotient noted above are simply industries that have a strong presence within the Miami-Dade area and should receive special attention in any future economic planning within the County. In the same way, other industries that do not seem to be a local strength within the Miami-Dade's economy, could still contribute to the County's economy. A more detailed discussion related to these industries is provided in the findings section of this report.

Shift-Share Analysis

*Concept*

The second analytic technique used in the present study is known as shift-share analysis.[6] The technique provides information about changes in local industry composition and about the competitive position of local industries vis a vis other locations.

Shift-share analysis evaluates three components of total employment change over any specific time period. These three components are: national growth, industrial mix, and the local area's competitive share.

The national economy is used as a standard against which local economic growth is measured in shift-share analysis. The comparisons are made by relating changes in the ratio of local employment to national employment. The local mix of industries is evaluated as a rapid- or slow-growth mix relative to the national industrial composition. Finally, growth performance of individual industries is related to comparable industry performance nationwide.

The technique reveals local industries which are relatively weak or strong compared to nationwide competition. While shift-share does not explain why local industrial changes are occurring, it does signal conditions which merit further investigation. That investigation may

[6] The discussion of shift-share analysis and the formulas used to make the required calculations herein are adapted from: Patricia L. McKay and Tracy Burrows revision of Microcomputers and Economic Analysis: Spreadsheet Templates for Local Governments, (original authors Neil G. Sipe and Robert W. Hopkins), Bureau of Economic and Business Research, University of Florida, October 1987).

lead local policy makers to support strong industries and to explore ways of correcting conditions of weakness.

*Formulas*

Three formulas and an identity are used to establish relative competitive position in the shift-share framework. Stated from the Miami-Dade County perspective for the 1998 to 2006 period these are:

$$\text{National growth} = (Y_2E_{US} / Y_1E_{US}) * Y_1Ei_{MD}$$

$$\text{Industrial mix} = \{(Y_2Ei_{US} / Y_1E_{US}) - (Y_2E_{US} / Y_1E_{US})\} * Y_1Ei_{MD}$$

$$\text{Competitive share} = \{(Y_2Ei_{MD} / Y_1E_{MD}) - (Y_2Ei_{US} / Y_1E_{US})\} * Y_1Ei_{MD}$$

$$\text{Total change} = (Y_2Ei_{MD}) - (Y_1Ei_{MD})$$ [7]

In concept, national growth assumes that local employment in each industry changes at the rate of change of total employment in the nation. It allocates a portion of the Miami-Dade County industry's employment change to the national employment trend.[8]

Industrial mix stratifies industries nationwide into those growing faster and slower than national average. The industries growing faster than average produce a positive industrial mix percentage while those growing slower produce a negative industrial mix percentage. These percentages applied to Miami-Dade's 1998 employment in the industry compute the employment change attributable to that industry's national growth and identify the positive and negative mix factors.

The competitive share is the only portion of total employment change which provides information unique to the Miami-Dade economy. This compares Miami-Dade's employment growth in a specific industry with that industry's growth elsewhere in the country. A positive competitive share indicates Miami-Dade's competitive increase in a particular industry whereas loss of competitive share is signaled when the percentage growth (or decline) is less than (or more than) the national change in that industry.

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[7] National growth is the United States percent change in total employment ($E_{US}$) times the 1998 Miami-Dade employment in the specific industry ($Ei_{MD}$). Industrial mix is the percent change of United States in the specific industry ($Ei_{US}$) minus the United States percent change in total employment ($E_{US}$) times the 1998 Miami-Dade employment in the specific industry ($Ei_{MD}$). Competitive share is the Miami-Dade percent employment change in the specific industry ($Ei_{MD}$) minus the United States percent employment change in the same industry ($Ei_{US}$) times the Miami-Dade employment in the specific industry ($Ei_{MD}$). Total change is the 2006 Miami-Dade employment in the specific industry minus the 1998 Miami-Dade employment in that industry or the sum of the three components of shift-share, respectively.

[8] Other areas could be used as comparison; e.g. the state. Also, the results of a shift-share analysis are sensitive to the time period utilized and the level of industry detail.

Total change is the sum of national growth, industry mix and competitive share. It is the difference between Miami-Dade's 1998 and 2006 employment in the industry.

*Results of Shift-Share Analysis*

Given the overview of shift-share analysis, Table 5 presents the results of applying the method to Miami-Dade's major industry groups.

In aggregate, Table 5 shows national employment growing at 10.9 percent from 1998 to 2006 while Miami-Dade's employment grew 3.9 percent. If Miami-Dade employment had grown at the national rate, the local economy should have added 91,226 jobs due to national growth.

Overall concentration of Miami-Dade County employment in 1998 was in industries with a positive industrial mix. In these industries Miami-Dade should have expected to increase employment by another 25,419 due to that favorable concentration.

In the absence of competition from other areas and maintaining growth at the national level in each industry Miami-Dade should have added 116,645 jobs between 1998 and 2006. This is composed of the total of 91,226 from national growth and 25,419 from Miami-Dade's positive industrial mix concentration.

Since Miami-Dade grew by only 32,657 jobs between 1998 and 2006, it lost a potential 83,988 jobs (116,645 minus 32,657) to competing areas. The percentage amount of the hypothetical employment growth for the eight-year period is consistent with the corresponding percentage assumed in the Department's employment projections over the same period.

It is this area of lost job potential which provides fruitful territory for local leaders to look for job expansion possibilities. McKay and Burrows cite the following as some of the reasons for loss of competitive share:[9]

- Population increases or decreases affecting demand;
- Technology improvements which decrease jobs while increasing production;
- Changes in market demand due to imports at competitive prices;
- Changes in market preferences for goods and services;
- Increased labor costs.

Table 5 shows that Miami-Dade lost competitive share in all but seven of the major industrial groups - *Mining, Real estate and rental and leasing, Management of companies and enterprises, Educational services, Arts, entertainment, and recreation*, as well as *Other services*. In these seven groups Miami-Dade's absolute percentage change was greater than the corresponding industry nationwide. In all other industrial groups the industries nationwide turned in a better growth rate or showed fewer declines than its counterpart in Miami-Dade.

[9] Ibid.

**Table 5**

**Shift-Share Analysis of Changes in Employment by Industry**

**Miami-Dade County, 1998 and 2006**

| NAICS * | | Industry | United States Employment | | Percentage Change | Miami-Dade Employment | | Percentage Change | Employment Change by Source | | | Total Change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1998 | 2006 | | 1998 | 2006 | | National Share | Industry Mix | Competitive Share | |
| | | Total for all sectors | 108,117,731 | 119,917,165 | 10.9 | 835,903 | 868,560 | 3.9 | 91,226 | 25,419 | 83,989 | 32,657 |
| 21 | c | Mining | 497,843 | 554,333 | 11.3 | 390 | 1,009 | 158.7 | 43 | 2 | 575 | 619 |
| 23 | c | Construction | 5,798,261 | 7,338,799 | 26.6 | 32,924 | 41,092 | 24.8 | 3,593 | 5,154 | -580 | 8,168 |
| 31-33 | | Manufacturing | 16,945,834 | 13,631,683 | -19.6 | 62,468 | 45,168 | -27.7 | 6,817 | -19,035 | -5,083 | -17,300 |
| 42 | c | Wholesale trade | 5,884,946 | 6,030,647 | 2.5 | 71,394 | 68,624 | -3.9 | 7,792 | -6,024 | -4,538 | -2,770 |
| 44-45 | | Retail trade | 14,240,726 | 15,767,866 | 10.7 | 114,044 | 125,025 | 9.6 | 12,446 | -216 | -1,249 | 10,981 |
| 48-49 | | Transportation & warehousing | 3,462,472 | 4,306,405 | 24.4 | 64,177 | 51,927 | -19.1 | 7,004 | 8,638 | -27,892 | -12,250 |
| 51 | c | Information | 3,141,957 | 3,396,246 | 8.1 | 21,526 | 21,454 | -0.3 | 2,349 | -607 | -1,814 | -72 |
| 52 | | Finance & insurance | 5,770,209 | 6,647,098 | 15.2 | 44,730 | 48,776 | 9 | 4,882 | 1,916 | -2,752 | 4,046 |
| 53 | | Real estate & rental & leasing | 1,812,621 | 2,216,803 | 22.3 | 18,964 | 23,910 | 26.1 | 2,070 | 2,159 | 717 | 4,946 |
| 54 | | Professional, scientific, & technical services | 6,051,636 | 8,054,094 | 33.1 | 45,105 | 64,405 | 42.8 | 4,923 | 10,002 | 4,375 | 19,300 |
| 55 | | Management of companies & enterprises | 2,703,798 | 2,915,644 | 7.8 | 14,635 | 17,578 | 20.1 | 1,597 | -451 | 1,796 | 2,943 |
| 56 | c | Admin. & support & waste manag. & rem. serv. | 7,774,610 | 10,003,626 | 28.7 | 83,560 | 72,300 | -13.5 | 9,119 | 14,838 | -35,217 | -11,260 |
| 61 | | Educational services | 2,323,744 | 2,979,514 | 28.2 | 21,435 | 27,703 | 29.2 | 2,339 | 3,710 | 219 | 6,268 |
| 62 | | Health care & social assistance | 13,757,996 | 16,451,361 | 19.6 | 101,798 | 112,674 | 10.7 | 11,110 | 8,819 | -9,053 | 10,876 |
| 71 | | Arts, entertainment, & recreation | 1,583,783 | 1,973,655 | 24.6 | 9,027 | 13,797 | 52.8 | 985 | 1,237 | 2,548 | 4,770 |
| 72 | | Accommodation & food services | 9,466,088 | 11,381,226 | 20.2 | 76,530 | 88,189 | 15.2 | 8,352 | 7,131 | -3,824 | 11,659 |
| 81 | | Other services (except public administration) | 5,037,866 | 5,458,558 | 8.4 | 37,031 | 40,202 | 8.6 | 4,041 | -949 | 79 | 3,171 |
| 99 | c | Industries not classified ** | 1,863,341 | 809,607 | -56.6 | 16,165 | 4,727 | -70.8 | 1,764 | -10,905 | -2,296 | -11,438 |

* NAICS: "North American Industry Classification System". Data for 1998 is Classified based on the 1997 NAICS while data for 2006 is classified according to 2002 NAICS.

c: Data for 1998 and 2006 are not 100% compatible due to changes in NAICS definitions between 1997 NAICS and 2002 NAICS.

** Includes sectors for which data was withheld to avoid disclosing information for individual companies.

Source: U.S. Department of Commerce, U.S. Census Bureau, County Business Patterns, 1998 and 2006, United States and Florida. Miami-Dade County, Department of Planning and Zoning, Research Section, 2009.

In only six industries – *Mining, Manufacturing, Wholesale trade, Transportation and warehousing, Information,* as well as *Administrative and support and waste management and remediation services* - did Miami-Dade County show an absolute decline. All other industries showed gains either due to favorable national employment growth and/or a favorable industry mix.

A favorable industry mix is enjoyed when the percentage change in national employment in a given industry exceeds the average overall rate of growth in national employment. The size of the favorable mix component depends on the number of local employees engaged in that industry during the initial year of the study, as well as the differential of the industry growth rate compared to the national average.

Miami-Dade County's employment during 1998 was well represented by industries that had a favorable industrial mix over the next eight years so that an expected net increase of 25,419 local jobs was attributable to the mix factor over this period.

Table 5 is a useful tool for explaining the nature of shift-share analysis. However, at the major industrial group level of aggregation the analysis suffers from detail that is masked.

The present study was actually carried out at a much more revealing level of aggregation, where a more detailed establishment industry classification code was used. That is, the three-digit code. This disaggregated data is a much more useful set since shift-share analysis is very sensitive to the detail at which it is conducted.

Thus, between 1998 and 2006, Miami-Dade County suffered large losses in such industries as: *Administrative and support services* (11,764 jobs), *Truck transportation* (9,525 jobs), *Apparel manufacturing* (7,718 jobs), *Air transportation* (6,711 jobs), *Wholesale electronic markets and agents and brokers* (3,663 jobs), and *Insurance carriers and related activities* (2,890 jobs).

Table 6 presents the results of the shift-share analysis at the three-digit disaggregated level. An examination of individual industries in Table 6 reveals many industries in which the reasons for loss of competitive share cited above are manifest. For example, changes in labor markets and the economic impact of shifting jobs to lower-wage countries – offshore outsourcing – in recent years are well known. At the same time, financial difficulties in the airline industry overall and increased competition from other airports in South Florida, respectively, had a significant effect on the local employment. These are reflected in the absolute decline of employment and loss of competitive share in *Apparel manufacturing*, *Air transportation*, *Truck transportation*, *Insurance carriers and related activities,* as well as *Administration and support services*. The loss of competitive share in *Food services and drinking places* is obscured by the total employment increase in that industry.

As of the end of 2006, 42 of all the three-digit industries showed gains in total employment where 34 subsectors from the same group showed a positive level of competitive share; however,

**Table 6**

**Shift-Share Analysis of Changes in Employment by Industry**

**Miami-Dade County, 1998-2006**

| NAICS * | | Industry | United States Employment Percentage Change 1998 - 2006 | Miami-Dade Employment Percentage Change 1998 - 2006 | Employment Change by Source | | | Total Change |
|---|---|---|---|---|---|---|---|---|
| | | | | | National Share | Industry Mix | Competitive Share | |
| 212 | | Mining, except oil and gas | -8.9 | 179.4 | 38 | -68 | 647 | 617 |
| 236 | ** | Construction of buildings | 22.9 | 29.5 | 888 | 974 | 540 | 2,401 |
| 237 | ** | Heavy and civil engineering construction | 20.2 | 41.8 | 433 | 369 | 856 | 1,658 |
| 238 | ** | Specialty trade contractors | 28.9 | 24 | 2,193 | 3,620 | -982 | 4,831 |
| 311 | | Food mfg | -0.4 | -4.5 | 535 | -554 | -204 | -223 |
| 312 | | Beverage & tobacco product mfg | -10.3 | -52.9 | 115 | -224 | -449 | -558 |
| 313 | | Textile mills | -51.3 | -71 | 186 | -1,058 | -336 | -1,208 |
| 314 | | Textile product mills | -28.4 | -51.3 | 236 | -852 | -495 | -1,111 |
| 315 | | Apparel mfg | -67.8 | -76.9 | 1,095 | -7,894 | -919 | -7,718 |
| 316 | | Leather & allied product mfg | -51.3 | -95.6 | 223 | -1,274 | -905 | -1,955 |
| 321 | | Wood product mfg | -0.7 | -0.4 | 100 | -106 | 2 | -4 |
| 322 | | Paper mfg | -22.3 | -33.3 | 142 | -431 | -143 | -432 |
| 323 | | Printing & related support activities | -24.1 | -23.1 | 595 | -1,910 | 57 | -1,258 |
| 324 | | Petroleum & coal products mfg | -7.2 | -48.1 | 12 | -20 | -44 | -52 |
| 325 | | Chemical mfg | -10.6 | 48 | 239 | -471 | 1,282 | 1,050 |
| 326 | | Plastics & rubber products mfg | -12.6 | 16.7 | 241 | -519 | 646 | 368 |
| 327 | | Nonmetallic mineral product mfg | -5.1 | 23.6 | 249 | -365 | 656 | 540 |
| 331 | | Primary metal mfg | -26.9 | -26 | 53 | -185 | 4 | -127 |
| 332 | | Fabricated metal product mfg | -13.9 | -10 | 641 | -1,458 | 231 | -586 |
| 333 | | Machinery mfg | -22 | -43.3 | 272 | -822 | -533 | -1,082 |
| 334 | | Computer & electronic product mfg | -37.1 | -45 | 284 | -1,250 | -205 | -1,171 |
| 335 | | Electrical equipment, appliance, & component mfg | -30.3 | -36.2 | 129 | -487 | -69 | -427 |
| 336 | | Transportation equipment mfg | -15.1 | -32.7 | 421 | -1,005 | -678 | -1,261 |
| 337 | | Furniture & related product mfg | -10 | -26 | 447 | -857 | -653 | -1,064 |
| 339 | | Miscellaneous mfg | -7 | 17.8 | 602 | -985 | 1,363 | 979 |
| 423 | ** | Durable goods merchant wholesalers | 9.3 | -2.3 | 4,003 | -582 | -4,281 | -860 |
| 424 | ** | Nondurable goods merchant wholesalers | 3.2 | 6.2 | 3,080 | -2,169 | 842 | 1,753 |
| 425 | ** | Wholesale electronic markets & agents & brokers | -39.6 | -56.4 | 709 | -3,280 | -1,092 | -3,663 |
| 441 | | Motor vehicle & parts dealers | 10.8 | 11.6 | 1,491 | -11 | 101 | 1,581 |
| 442 | | Furniture & home furnishings stores | 13.4 | 15.7 | 430 | 99 | 92 | 620 |
| 443 | | Electronics & appliance stores | 35.1 | 48.6 | 406 | 899 | 502 | 1,807 |
| 444 | | Building mat. & garden equip.& supplies dealers | 20.8 | 9.7 | 726 | 657 | -738 | 645 |
| 445 | | Food & beverage stores | -0.6 | 2 | 2,794 | -2,943 | 663 | 514 |
| 446 | | Health & personal care stores | 18.4 | 13.2 | 1,257 | 867 | -602 | 1,522 |
| 447 | | Gasoline stations | -3.5 | -3.5 | 398 | -526 | 0 | -127 |
| 448 | | Clothing & clothing accessories stores | 27.4 | 33.4 | 1,677 | 2,536 | 920 | 5,133 |
| 451 | | Sporting goods, hobby, book, & music stores | 10 | -10.2 | 452 | -36 | -838 | -421 |
| 452 | | General merchandise stores | 13 | -1.3 | 1,783 | 348 | -2,344 | -214 |
| 453 | | Miscellaneous store retailers | 5.5 | -6.8 | 640 | -316 | -721 | -397 |
| 454 | | Nonstore retailers | 1.2 | 8.8 | 392 | -348 | 274 | 318 |
| 481 | | Air transportation | -15.2 | -55 | 1,332 | -3,189 | -4,854 | -6,711 |
| 483 | | Water transportation | -5.9 | 25.4 | 863 | -1,331 | 2,479 | 2,010 |
| 484 | | Truck transportation | 15.5 | -64.7 | 1,606 | 670 | -11,800 | -9,525 |
| 485 | | Transit & ground passenger transportation | 19.9 | 13.9 | 213 | 175 | -117 | 271 |
| 487 | | Scenic & sightseeing transportation | 15.6 | -56.8 | 34 | 15 | -228 | -179 |
| 488 | | Support activities for transportation | 37.4 | 12 | 1,982 | 4,815 | -4,624 | 2,172 |
| 492 | | Couriers & messengers | 5.9 | -23.2 | 841 | -386 | -2,247 | -1,792 |
| 493 | | Warehousing & storage | 398.2 | 122.8 | 134 | 4,744 | -3,374 | 1,504 |
| 511 | | Publishing industries (except Internet) | 3.9 | -5.4 | 484 | -312 | -412 | -240 |
| 512 | | Motion picture & sound recording industries | 17.6 | -3.5 | 246 | 150 | -474 | -78 |
| 515 | ** | Broadcasting (except Internet) | 9.6 | 19.6 | 474 | -56 | 434 | 852 |
| 516 | ** | Internet publishing & broadcasting | 234.1 | 377.2 | 6 | 127 | 82 | 215 |
| 517 | ** | Telecommunications | -2.1 | -6.9 | 912 | -1,091 | -401 | -580 |
| 518 | ** | Internet serv. prov., web search port., & data proc. | 33.4 | -14 | 211 | 434 | -916 | -271 |
| 519 | ** | Other information services | 54.6 | 18.2 | 17 | 70 | -58 | 29 |
| 522 | | Credit intermediation & related activities | 22.1 | 24.6 | 2,471 | 2,526 | 582 | 5,579 |
| 523 | | Securities intermediation & related activities | 30 | 33.4 | 479 | 838 | 149 | 1,466 |
| 524 | | Insurance carriers & related activities | 2.8 | -16.8 | 1,883 | -1,394 | -3,378 | -2,890 |
| 531 | | Real estate | 29.7 | 43.6 | 1,423 | 2,453 | 1,806 | 5,682 |
| 532 | | Rental & leasing services | 7 | -13 | 640 | -231 | -1,169 | -760 |
| 533 | | Lessors of nonfin. intang. assets (exc cop. works) | 30.5 | 41.4 | 6 | 11 | 6 | 24 |
| 541 | | Professional, scientific, & technical services | 33.1 | 42.8 | 4,923 | 10,002 | 4,375 | 19,300 |
| 551 | | Management of companies & enterprises | 7.8 | 20.1 | 1,597 | -451 | 1,796 | 2,943 |
| 561 | c | Administrative & support services | 29 | -14.3 | 8,949 | 14,828 | -35,541 | -11,764 |
| 562 | | Waste management & remediation services | 20.2 | 32.2 | 171 | 144 | 189 | 504 |
| 611 | | Educational services | 28.2 | 29.2 | 2,339 | 3,710 | 219 | 6,268 |
| 621 | | Ambulatory health care services | 26.8 | 13.9 | 4,085 | 5,946 | -4,836 | 5,196 |
| 622 | | Hospitals | 7.2 | -2.2 | 4,478 | -1,537 | -3,859 | -918 |
| 623 | | Nursing & residential care facilities | 19.2 | 21 | 1,366 | 1,036 | 226 | 2,628 |
| 624 | | Social assistance | 37.1 | 36.7 | 1,180 | 2,835 | -45 | 3,970 |
| 711 | | Performing arts, spect. sports, & related ind. | 36.2 | 90.2 | 448 | 1,037 | 2,219 | 3,705 |
| 712 | | Museums, historical sites, & similar institutions | 27.6 | 28.8 | 81 | 124 | 9 | 214 |
| 713 | | Amusement, gambling, & recreation industries | 21.3 | 20.4 | 456 | 434 | -39 | 851 |
| 721 | | Accommodation | 10.1 | 8.3 | 2,428 | -179 | -397 | 1,852 |
| 722 | | Food services & drinking places | 22.5 | 18.1 | 5,924 | 6,268 | -2,385 | 9,807 |
| 811 | | Repair & maintenance | 0.3 | -14.9 | 1,144 | -1,109 | -1,596 | -1,561 |
| 812 | | Personal & laundry services | 8.9 | 10.5 | 1,249 | -236 | 187 | 1,200 |
| 813 | | Religious/grantmaking/civic/prof. & similar org | 12.3 | 23.4 | 1,648 | 209 | 1,675 | 3,532 |
| | | Total for all subsectors *** | 12.1 | 5.5 | 89,330 | 29,462 | -73,870 | 44,923 |

* NAICS: "North American Industry Classification System". Data for 1998 is Classified based on the 1997 NAICS while data for 2006 is classified according to 2002 NAICS.

** 1998 Values estimated from "Bridge Between 1997 NAICS and 2002 NAICS" Tables based on National Revenew figures.

c: Data for 1998 and 2006 are not 100% compatible due to changes in NAICS definitions between 1997 NAICS and 2002 NAICS.

*** Totals in Table 6 are different from those in Table 5 because of the exclusion of certain three-digit industries with no data.

Source: U.S. Department of Commerce, U.S. Census Bureau, County Business Patterns, 1998 and 2006, United States and Florida. Miami-Dade County, Department of Planning and Zoning, Research Section, 2009.

recent economic events as a result of the current recession have impacted most or some of these industries. With an unemployment rate, 8.0 percent in April, 2009, reaching the highest point in several years and the labor market shedding large numbers of jobs, it is expected that it will take time for these industries to return to pre-recession employment levels.

A poor competitive showing is also not readily apparent in several industries that had a net increase in employment. The most notable example is in *Ambulatory health care services* where 5,196 local jobs were created between 1998 and 2006. But this industry grew by 26.8 percent nationally while Miami-Dade employment grew by only 13.9 percent. Miami-Dade lost a potential of 4,836 *Ambulatory health care services* jobs to other areas during this period. Likewise, *Specialty trade contractors*, *Health and personal care stores*, *Support activities for transportation*, and *Warehousing and storage* all show competitive losses accompanied by increased total employment.

Most of Miami-Dade's leading manufacturing industries show decreases in both total employment and competitive share. On the other hand, production of *Chemical manufacturing* products has shown positive competitive and total employment changes (an increase of 48.0 percent) in the face of a 10.6 percent decrease in national activity. *Management of companies and enterprises* is another interesting positive case. Nationally, the industry had an increase of 211,846 jobs (7.8 percent) but locally the industry enjoyed a net increase of 2,943 jobs (20.1 percent), 1,796 of which came from competitive share.

The problem with the detailed level of analysis is that it makes interpretation difficult. A useful illumination on the underlying shifts in employment over the period covered can be gained by examining the data shown in Table 6 in a graphical form. Charts 3 through 5 present the data sorted by each of the three components of the shift-share analysis in descending order. These charts are more useful as "look-up" charts than as organized data sets.

Since Charts 3, 4 and 5 are sorted by national growth, industrial mix, and competitive share, respectively, some highlights of the analyses are immediately discernible. In reading these charts it should be noted that they are as revealing read from the bottom up as they are read from the top down.

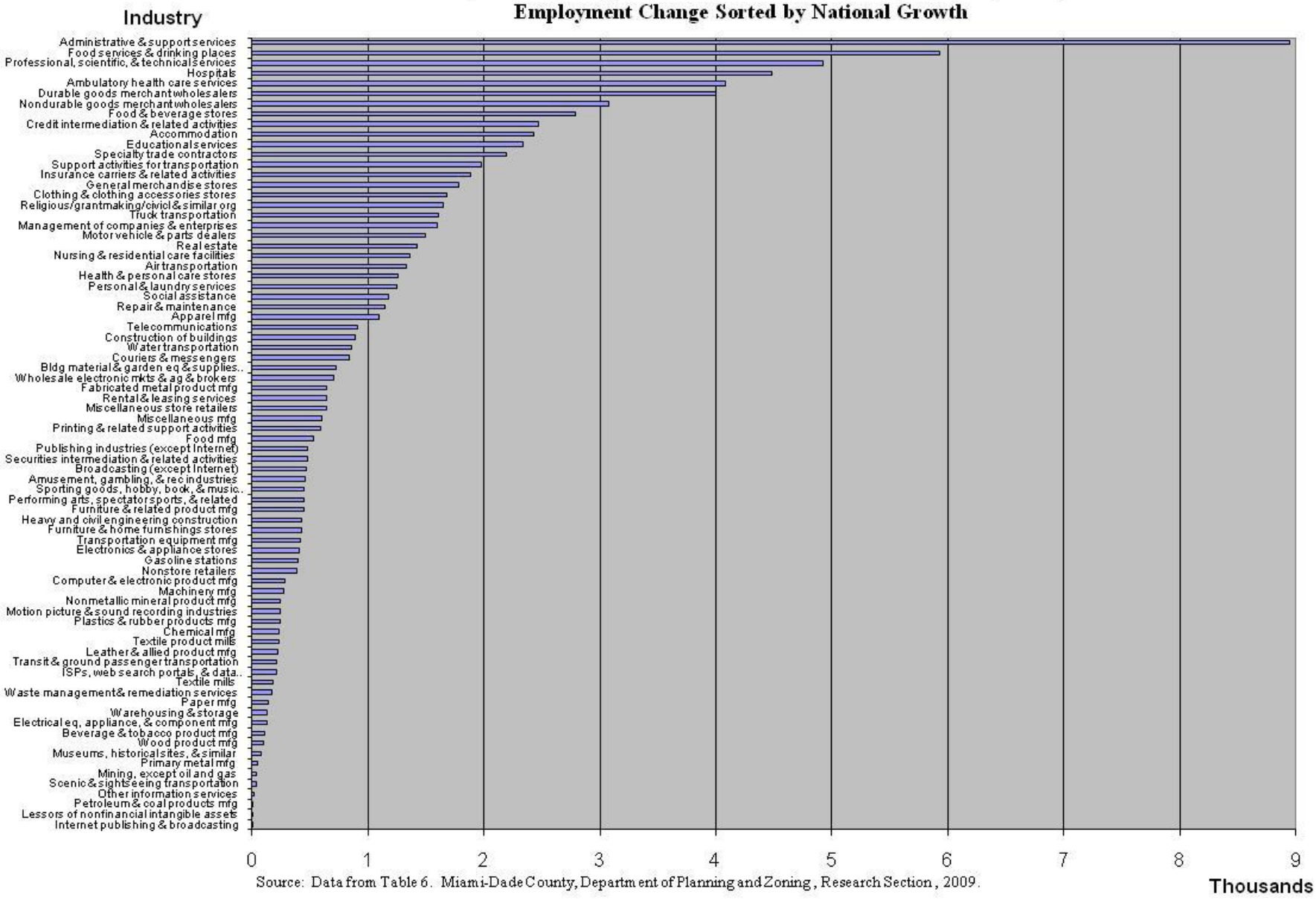
First, reading from the top down Chart 3 identifies industries with a high growth rate nationally and which have significant local employment. As can be seen, the *Administrative and support services* subsector was highest in employment growth. The other large industry gainers were *Food services and drinking places*, *Professional, scientific, and technical services*, and *Hospitals*.

Reading Chart 4 from the top down identifies industries which have good development potential because of the national potential and the apparent ability of the local area to satisfy location requirements. Competitive share figures for these industries must be carefully evaluated to determine if there is a realized or realizable competitive advantage.

## Chart 3

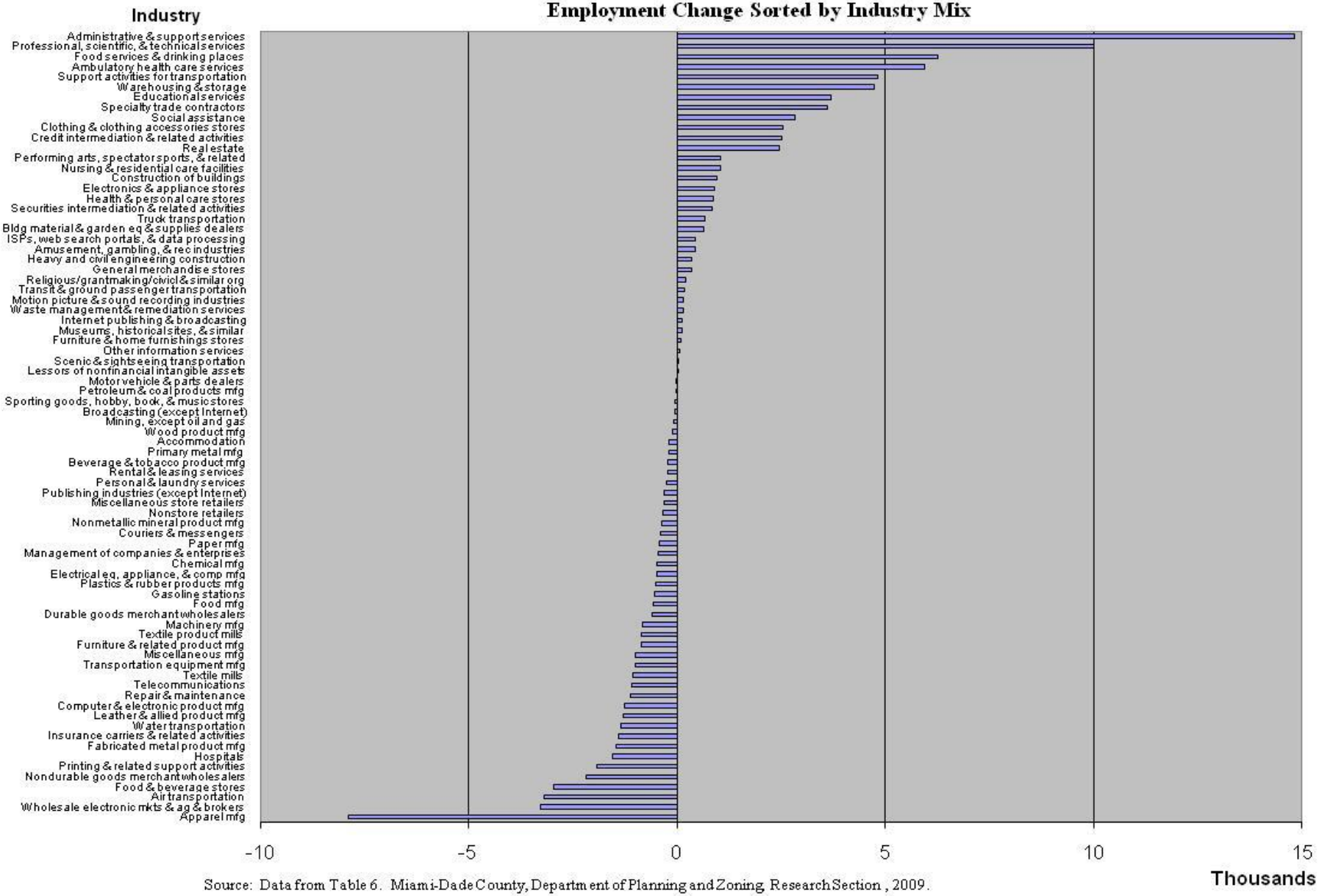
## Shift-Share Analysis of Changes in Miami-Dade County Employment, 1998-2006

**Employment Change Sorted by National Growth**



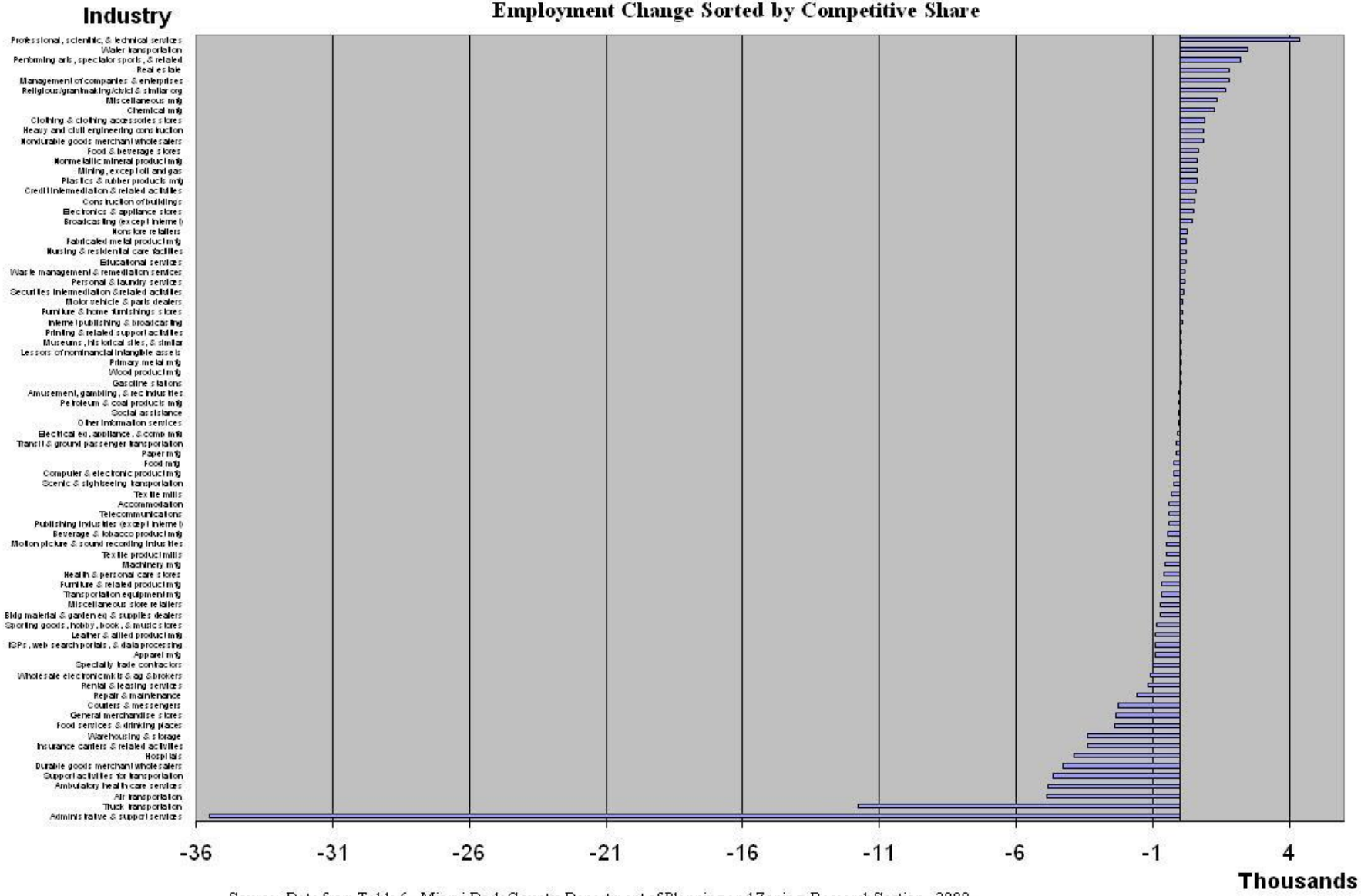

Source: Data from Table 6. Miami-Dade County, Department of Planning and Zoning, Research Section, 2009.

## Chart 4
## Shift-Share Analysis of Changes in Miami-Dade County Employment, 1998-2006
### Employment Change Sorted by Industry Mix




Source: Data from Table 6. Miami-Dade County, Department of Planning and Zoning, Research Section, 2009.

## Chart 5
## Shift-Share Analysis of Changes in Miami-Dade County Employment, 1998-2006
### Employment Change Sorted by Competitive Share




Source: Data from Table 6. Miami-Dade County, Department of Planning and Zoning, Research Section, 2009.

In the middle range of Chart 4 the industrial mix component of employment change is near zero. This is the range in which each industry grew at about the national average of all industries. Since Miami-Dade grew slower than the national average during the 1998-2006 period, some development opportunities are indicated where a favorable competitive share is recorded in this mid-range of industry mix. Negative competitive share in this range flags industries which should be examined to determine why Miami-Dade failed to achieve the national rate of growth.

Read from the bottom up Chart 4 identifies industries which are suffering decline or slow growth in employment. These industries offer little growth potential. Indeed, where Miami-Dade registers a moderate or greater positive competitive share (Chart 5) there is the implication that this growth rate may not be sustainable in the face of national decline.

Reading from the top down Chart 5 reports the industries in which Miami-Dade County did particularly well against the national competition during the 1998 to 2006 period. These industries are worthwhile investigating for their development potential since Miami-Dade has an apparent competitive advantage of one sort or another. In the middle range of industries where the competitive share is near zero, Miami-Dade industries are performing more or less as well as the competition and opportunities are present where the industrial mix component indicates a national growth industry. Reading from the bottom up Chart 5 indicates industries worthy of investigation for explanation of the relatively poor competitive showing. Miami-Dade might be able to do better than it is in these industries and it may be that local policy efforts could induce a turnaround in some of them.

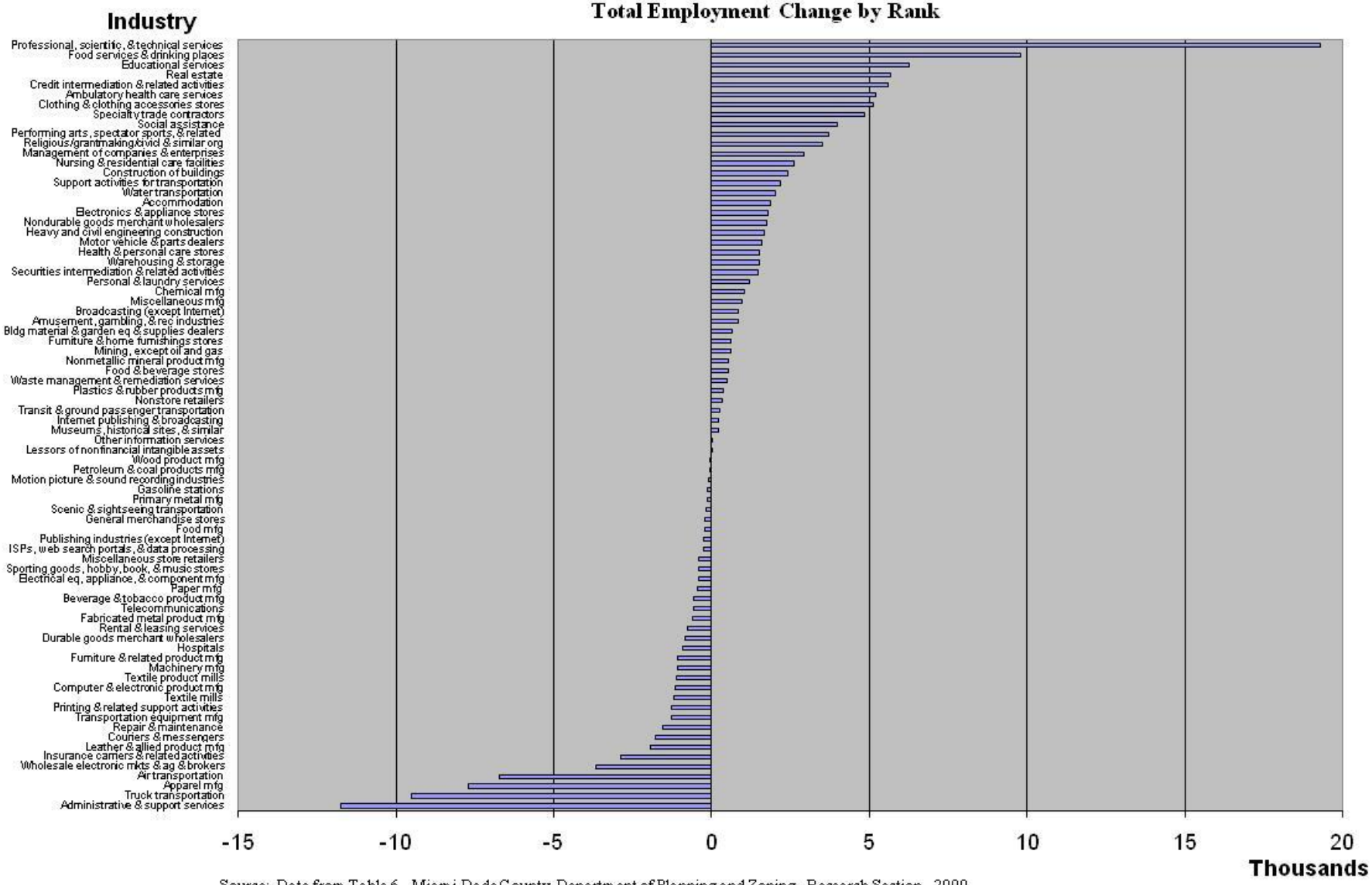
The final chart (Chart 6) presents the total change in Miami-Dade's employment over the covered period. As can been seen by referring back to Chart 5, the bulk of the losses occurred in those industries which lost employment due to the competitive share component.

There are many factors that contribute to those job losses and some are unpredictable and outside any local control. During the last eight years, for example, Miami-Dade County has undergone the effects of globalization that resulted in the loss of labor market and good-paying jobs, and, as mentioned earlier, the continuing flight of jobs to other regions and off-shore locations with lower production cost.

Examining the data in Table 6, reveal six of these industries that some of these factors, one way or the other, have adversely impacted their employment growth: *General merchandise stores, Truck transportation, Scenic and sightseeing transportation*, *Motion picture and sound recording industries, Internet service providers, web search portals, and data processing*, and *Administrative and support services*. What these industries have in common is a negative employment growth locally that did not keep pace with the positive national employment growth during the 1998 to 2006 period. At the same time, while all six of these industries showed a positive industrial mix, they experienced significant employment loses in competitive share. The *Truck transportation* subsector alone accounted for more than 11.8 percent of all job losses due to the competitive share factor.

In short, shift-share analysis provides a method for monitoring local employment trends relative to their national conditions. It provides a signaling system to determine if the local area is

## Chart 6
## Shift-Share Analysis of Changes in Miami-Dade County Employment, 1998-2006
### Total Employment Change by Rank




Source: Data from Table 6. Miami-Dade County, Department of Planning and Zoning, Research Section, 2009.

maintaining competitive share. It is a valuable screening guide to local economic development policy.

Findings

The picture of the Miami-Dade economy revealed by the findings of the two analysis methods discussed above, the location quotient and shift share analysis, are summarized in Tables 7 and 8. What these tables show are two lists of industrial sectors/subsectors that essentially represents the County's top ranked industries in terms of these findings and identifies the strong and lagging subsectors within its economy.

The industrial subsectors appearing in Table 7 represent the outcome of a ranking process that consists of and concentrates on the following three criteria: first, whether or not the industrial subsector is a local specialization based on the location quotient analysis and, second, on whether or not the industrial subsector is experiencing employment growth locally and/or, third, the industrial subsector is gaining a competitive share in the market based on shift-share analysis. It should be emphasized that only industries that have a location quotient higher than 1.0 are included in the table. The industries are presented and classified in levels according to the NAICS code for major sectors.

As shown in Table 7, there are a total of 29 industrial subsectors with high employment concentration reflected in the value of location quotient. Although there is some correspondence between the location quotient and shift-share analysis industrial rankings, there are a number of significant differences. As can be seen, the top ranked list of industries include only 17 out of the 29 subsectors (marked in bold) that meet all three of the aforementioned criteria, namely, location quotient greater than 1.0, and industries that have exhibited positive competitive and total employment changes as determined by the shift-share analysis. A closer look at the table reveals industries that, with a few exceptions, portray the characteristics of the Miami-Dade County's economic structure. Among these subsectors, the top ranked are: *Water transportation*, *Performing arts, spectator sports, and related industries*, *Broadcasting (except internet)*, *Nondurable goods merchant wholesalers*, and *Accommodation*.

The second group of industries in Table 7 includes four subsectors (underlined) which, in addition to the high location quotient, meet at least one of the other two criteria mentioned above by showing employment increases in either of the total employment or competitive share measures. These are *Building material and garden equipment and supplies*, *Health and personal care stores*, *Support activities for transportation*, and *Ambulatory health care services*.

The remaining eight industries in the list shown in Table 7, though they possess a significant presence within the county, all eight did not see employment growth during the 1998 to 2006 period and did not gain a competitive share compared to the nation. The top ranked subsectors in this group are: *Air transportation*, *Apparel manufacturing*, *Durable goods merchant wholesalers*, and *Couriers and messengers*.

**Table 7**
**Industries with Location Quotient Greater than One**
**Ranked by NAICS Code for Major Sectors**
**Miami-Dade County, 2006**

| NAICS Code | Sector/Subsector | Location Quotient |
|---|---|---|
| | Manufacturing | |
| 315 | Apparel mfg | 1.4768 |
| 339 | **Miscellaneous mfg** | 1.3066 |
| | Wholesale Trade | |
| 423 | Durable goods merchant wholesalers | 1.4416 |
| 424 | **Nondurable goods merchant wholesalers** | 1.8249 |
| 425 | Wholesale electronic markets & agents & brokers | 1.1754 |
| | Retail Trade | |
| 441 | **Motor vehicle & parts dealers** | 1.0808 |
| 442 | **Furniture & home furnishings stores** | 1.0886 |
| 443 | **Electronics & appliance stores** | 1.5612 |
| 445 | **Food & beverage stores** | 1.2320 |
| 446 | Health & personal care stores | 1.6162 |
| 448 | **Clothing & clothing accessories stores** | 1.7347 |
| 454 | **Nonstore retailers** | 1.0355 |
| | Transportation and Warehousing | |
| 481 | Air transportation | 1.5965 |
| 483 | **Water transportation** | 20.0010 |
| 488 | Support activities for transportation | 4.8428 |
| 492 | Couriers & messengers | 1.4295 |
| | Information | |
| 515 | **Broadcasting (except Internet)** | 2.3742 |
| | Finance and Insurance | |
| 522 | **Credit intermediation & related activities** | 1.1873 |
| | Real Estate | |
| 531 | **Real estate** | 1.6641 |
| 532 | Rental & leasing services | 1.1118 |
| | Services | |
| 541 | **Professional, scientific, & technical services** | 1.1040 |
| 561 | Administrative & support services | 1.0040 |
| 611 | **Educational services** | 1.2837 |
| 621 | Ambulatory health care services | 1.0356 |
| 622 | Hospitals | 1.0313 |
| 711 | **Performing arts, spectator sports, & related industries** | 2.5386 |
| 712 | **Museums, historical sites, & similar institutions** | 1.0715 |
| 721 | Accommodation | 1.7691 |
| 812 | **Personal & laundry services** | 1.2859 |

Source: Data from Tables 4 and 6. Miami-Dade County, Department of Planning and Zoning, Research Section, 2009.

**Table 8**

**Industries Gaining National Employment and Losing Miami-Dade County Employment**

**1998 - 2006**

**Ranked by NAICS Code for Major Sectors**

| NAICS Code | Sector/Subsector | Miami-Dade County Location Quotient 2006 |
|---|---|---|
| | Retail Trade | |
| 451 | Sporting goods, hobby, book, & music stores | 0.8061 |
| 452 | General merchandise stores | 0.7943 |
| 453 | Miscellaneous store retailers | 0.8982 |
| | Transportation and Warehousing | |
| 484 | Truck transportation | 0.4675 |
| 487 | Scenic & sightseeing transportation | 0.7041 |
| | Information | |
| 512 | Motion picture & sound recording industries | 0.9062 |
| 518 | Internet serv. providers, web search portals, & data proc. | 0.4925 |
| | Finance and Insurance | |
| 524 | Insurance carriers and related activities | 0.8338 |
| | Services | |
| 811 | Repair & maintenance | 0.9426 |

Source: Data from Tables 4 and 6. Miami-Dade County, Department of Planning and Zoning, Research Section, 2009.

Finally, the industrial subsectors showing in Table 8 represent a set of industries that appear to merit special attention because of their potential to grow. This group of industries, which had location quotients lower than 1.0, includes nine subsectors that had exhibited positive employment growth at the national level for the period 1998 to 2006 but failed to advance locally over the same period.

Summary and Conclusions

In summary, the study provides an analysis of the industry characteristics of the Miami-Dade County's economy by using the location quotient and shift-share techniques to show which industries are important to the local economy and which of those industries have the most competitive strength and the resources to grow and create more jobs. The techniques used here provide a reasonable analysis of the local industrial sectors based on employment growth and competitive share.

There exist a large number of economic development strategies that might be guided by the results of the location quotient analysis and the shift-share analysis presented in this report. These strategies would be pursued by gearing development priorities to the rank ordering of, first, those industries which have high valued employment location quotients and second, those that have the potential to grow given the national gains in employment during the period from 1998 to 2006 but failed to realize these gains at the local level. Some of the reasons for the latter phenomenon could be associated with shifting labor markets, consolidations, and regional as well as foreign competition.

The analysis of the results reveals that Miami-Dade County employment will benefit by concentrating efforts toward those three-digit industries that have above average performance relative to comparable industries nationwide. While these industrial subsectors should be the main focal point of economic development efforts, this should not discourage new developments in other industrial subsectors that would help diversify the County's economy. As has been demonstrated by studies done in other areas, strong support for education and improvement of our infrastructure will be instrumental in enhancing the strength and diversity and improving the economic competitiveness of Miami-Dade County.