An Emerging Computer Sector in the Tenth District

By Jason Henderson

Computer industries have been an important facet of the nation's current economic expansion. During the 1990s, the computer sector has added almost three-quarters of a million jobs across the country, creating high-paying new positions and spawning new opportunities for the American entrepreneur.

During the current expansion, the Tenth District has seen its economy expand significantly as well. But have the computer industries within the district grown as fast as their counterparts nationwide?

This article takes a look at the computer sector in the Tenth District. The article shows that not only has the computer sector grown faster in the district than in the nation as a whole, but the surge of new jobs in the computer sector has driven the economic expansions in many states and metropolitan areas, spreading into the smaller corners of the district. The computer sector has laid a solid foundation for expansions in other industries and created a host of new high-paying jobs. It is not surprising that a September 1997 article in *U.S. News and World Report* declared, "The cornfields are rocking."

What is the computer sector?

The computer sector consists of two parts: manufacturing and services. Manufacturing plants produce computer hardware and are grouped into two broad product categories: whole computers and accessories, and components. The whole computer and accessories category includes production and assembly of computers and the production of computer accessories, such as keyboards and monitors. Firms such as Gateway and Dell are commonly

known manufacturers of whole computers and accessories.[1] Computer components are the inner workings of the machine. Firms such as Intel, which produce computer chips and circuit boards, are grouped into the component category.[2]

Computer service firms typically produce computer programs for personal or business use or provide various computer services. Retail computer stores such as CompUSA are computer service firms. Data processing centers for airline reservations and consumer credit card customer service can also be classified as computer services. Two of the more widely known computer service firms are Microsoft and Sega. Some of the people who work in the computer service firms are computer programmers, technicians, and local area network (LAN) administrators.

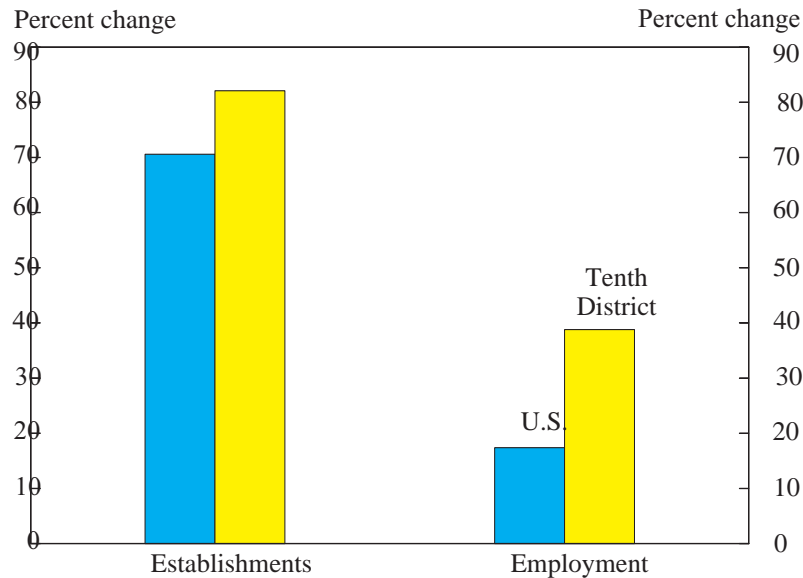## How rapidly has the district's computer sector grown?

The computer sector has been growing at a dramatic pace in the Tenth District. In fact, during the current economic expansion, computer sector businesses in the Tenth District have outperformed their counterparts in the rest of the nation. The number of computer sector businesses rose 82 percent from 1990 to 1995, the most current year for which data are available, compared with a 70 percent gain in the nation (Chart 1).[3] This business growth led to

---

[1] Firms producing whole computers are listed in Standard Industrial Classification code 357.

[2] Firms producing computer components are listed in Standard Industrial Classification code 367.

[3] Data is obtained from County Business Patterns data. Due to disclosure problems, employment in some states was given as a range by Country Business Patterns data. Therefore, the average value within the range was used as the actual employment number.

Chart 1
Computer Sector Growth
1990-95

Percent change

Tenth District

U.S.

Establishments   Employment

roughly 40 percent more computer sector jobs across the district during this time, while the national gain was only about half that. The job gains across the district were balanced, with growth strong in both manufacturing and services.

Computer manufacturers added jobs in the district at a robust pace during the 1990s despite a general contraction in the nation as a whole. District manufacturers posted strong job growth of roughly 15 percent during this period, as computer components industries established a strong foothold in the district economy (Chart 2). Unlike in the nation as a whole, job gains at district component manufacturers offset job losses at whole computer and accessories manufacturers.

While computer manufacturers have registered strong job gains, a booming computer service sector has helped create jobs at a rapid pace. Jobs at computer service businesses in the district rose 61 percent in the 1990s, as the number of establishments doubled (Chart 2). These gains outperformed the 45 percent job growth in the nation. As outsourcing became a prominent business practice in the 1990s, entrepreneurs established new firms to

handle businesses' computer servicing needs. Leading the way in computer service growth in the district have been freelance computer programming and data processing firms. For instance, in Colorado the number of jobs in freelance computer programming tripled in the 1990s. The production of prepackaged software also expanded tremendously to meet business and personal demand.

Not only have computer sector firms provided jobs in the district, but the jobs have been high-paying ones, especially in service employment (Chart 3). Annual wages for computer manufacturing workers are higher than wages for other manufacturing workers in the district, and wages in computer services are well above wages in other service areas. Contrary to most service areas, computer service wages are higher than computer manufacturing wages.

All seven states of the district have shared in the growth in the computer sector. Colorado engineered the largest gain in the number of computer sector jobs, due mainly to strong job gains in computer services (Table 1). The gains were so large that by 1995, four of every ten jobs in the district's

Chart 2
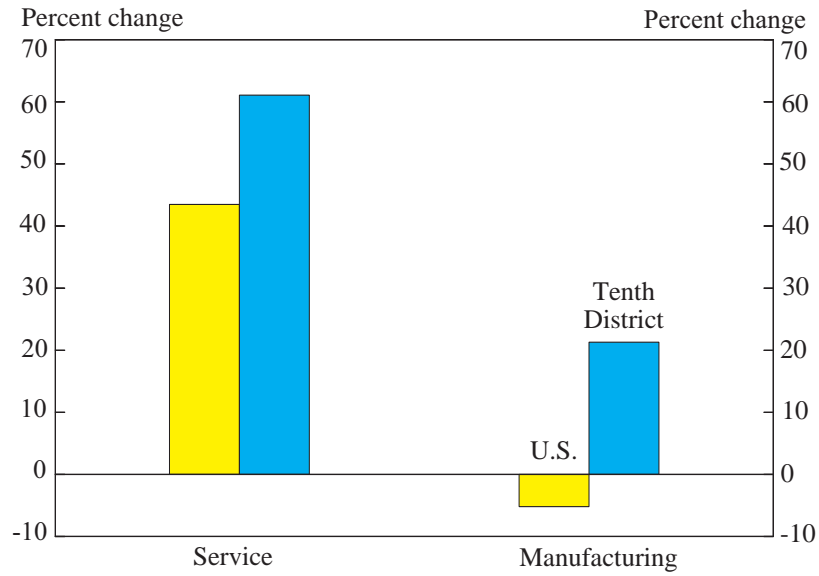**Computer Sector Growth**
Employment, 1990-95
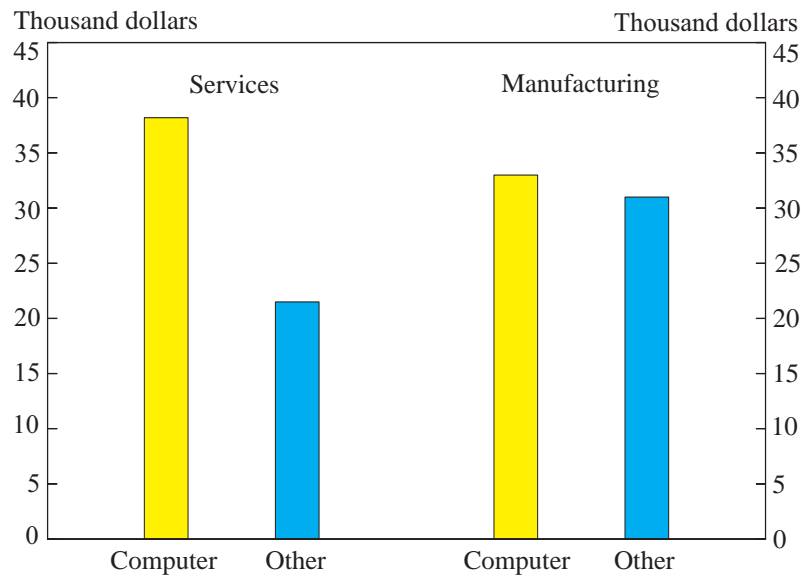
Percent change

Chart 3
Average Annual Wages
Tenth District, 1995

Thousand dollars

Table 1
Computer Sector Growth, 1990-95
Tenth District States

	Share of 1995 district employment	Computer sector growth	
		Establishment	Employment
District	100.0	82.1	38.8
Colorado	42.1	111.7	35.2
Kansas	6.4	47.2	28.1
Missouri	20.6	67.7	28.6
Nebraska	12.0	73.2	42.9
New Mexico	8.4	75.1	93.3
Oklahoma	10.0	67.9	49.5
Wyoming	.6	125.0	11.1

computer sector were located in the state of Colorado. New Mexico enjoyed the fastest job growth of any district state in the 1990s, with jobs nearly doubling, due to a sharp rise in computer component manufacturing and solid gains in the service sector. Oklahoma enjoyed the second-fastest job growth, as computer services sparked a 50 percent gain in computer sector growth. Gains were also robust in Nebraska, Kansas, and Missouri, while growth in Wyoming was more modest.

The high tech impact on district states

In addition to leading to strong job growth in the computer sector of district cities, the strength in the industry has served as a cornerstone for growth in other industries as well. The Mountain states emerged as a high tech corridor in the early 1990s. Recently, in smaller metro areas of the district the growing computer sector has set a solid foundation for expansion in other related industries.

The high tech corridor that emerged in the Mountain states of the district was made possible in large part by growth in the computer sector. Beginning in the early 1990s, the Denver metro area began to see tremendous growth in computer sector firms and other high tech industries. Since then, firms such as Hewlett Packard and Sun Microsystems have revitalized the Colorado economy, making it one of the fastest growing states in the nation during the 1990s. Albuquerque has also received a boost from the computer sector, particularly from computer component manufacturers. The early 1990s brought an influx of computer chip manufacturers into the Albuquerque area and allowed New Mexico to become a leading employment-growth state in the district during this time.

After establishing a solid foothold in the district's Mountain states, computer service firms have now begun to spread to some of the smaller metro areas of the district. Omaha has enjoyed large gains in computer service jobs as numerous data processing firms have expanded into the area. Tulsa and Oklahoma City have seen a jump in computer services jobs led by information service firms.

Computer sector growth has also laid a solid foundation for expansion of other related industries that require vast amounts of computer servicing. Banks and other financial institutions have

expanded as the demand for data processing has increased. In Omaha, for example, First Data Resources has created a large amount of data processing jobs. Data processing centers associated with the banking industry have also generated numerous jobs in other parts of the district. Moreover, telecommunication firms, which conduct large amounts of their own computer servicing, have also undergone significant expansion in the district. Sprint, which has grown from a smaller long distance carrier into one of the biggest employers in the Kansas City area, is now building a central campus to house over 14,500 employers in a centralized location. Jobs such as these are classified in other sectors, but their basic function is often computer or data processing, which if contracted to outside firms, would be classified as computer services.

Conclusions

The computer sector has grown faster in the district than the nation as a whole due to solid manufacturing growth and a boom in computer services. Computer industries have created numerous high-paying jobs for district workers. Computer sector growth has been widely shared across the district and has revitalized many district cities by providing a solid foundation for expansions in other industries.

While computer sector expansions have driven job growth dramatically, growth in the future may not be as rapid. Currently, the Tenth District and the nation are enjoying one of the lowest unemployment rates in history, creating a general tightness in the labor market—including a shortage of computer specialists. This shortage is inhibiting the ability of some firms to expand and grow. If the computer sector should continue to expand, however, the Tenth District is poised to become a major computing center.

Jason Henderson is a research associate at the Federal Reserve Bank of Kansas City.

REFERENCES

Holstein, William. 1997. "They'd Rather Be in Omaha: As the Heartland Goes High Tech, the Cornfields are Rocking," *U.S. News and World Report*, Sept., pp. 53-56.