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PLANT LOCATIONS AND FEMALE LABOR RESOURCES: THE OKLAHOMA GARMENT INDUSTRY

The University of Oklahoma PH.D. 1984

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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

PLANT LOCATIONS AND FEMALE LABOR RESOURCES THE OKLAHOMA GARMENT INDUSTRY

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

By

BYUNG IL JUNG

Norman, Oklahoma

1984

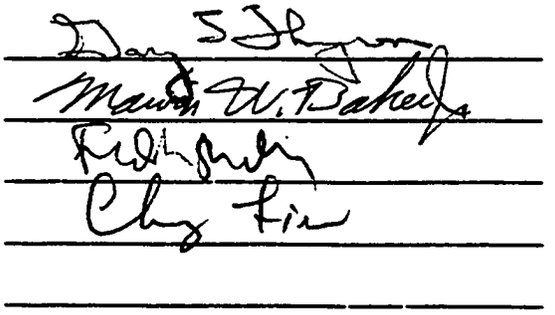
PLANT LOCATIONS AND FEMALE LBAOR RESOURCES

THE OKLAHOMA GARMENT INDUSTRY

A DISSERTATION

APPROVED FOR THE GRADUATE COLLEGE

By



ACKNOWLEGMENT

I often wondered if this dissertation could be finished after all. Yet, I have become a bit wiser and mature because of this long struggle. I wish I could share this small step forward with my father. He would have been the proudest father. Unfortunately, I could not finish it in time for him. Late though it is, I am sure he will receive the news with his hearty laughter and big grin even in the other world.

I owe many thanks to my advisor Dr. Gary Thompson, Committee member, Dr. Marvin Baker, and Dr. Fred Shelly. My good friends Bob Lehr, Jane Hisey, and Bill Reynolds also deserve my thanks.

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I realize that this is not an end. Rather a humble beginning on which tomorrow should be molded. Therefore, I shall remain a dreamer as always.

BIJ

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CHAPTER I

INTRODUCTION

A. Research Problem

The Oklahoma garment industry experienced extraordinary growth in employment during the 1960-1980 period by recording average annual growth rates of 10 percent, significantly higher than those of the general manufacturing sector of the state. By 1980, the garment industry had become the sixth largest manufacturing industry in Oklahoma, employing 11,100 workers. This rapid expansion of the industry resulted in a pattern of greater geographical dispersion throughout the state.

The Oklahoma garment industry was first concentrated in a few counties in the southeastern part of the state. The orientation to small towns was strengthened during subsequent growth periods, giving the industry a local importance far in excess of its significance to the economy of the state. This predominant orientation of the industry to small towns is intriguing from the standpoint of industrial location theory and bears practical importance for future management strategies and industrial development.

Garment manufacturing involves highly labor-intensive operations and, as a result, its work force has traditionally been characterized by minimal skill levels, low wages, and, hence, by female workers. The important role of the female labor force in locational decisions of the garment industry has been suggested by several studies (Haddad and Schwartzman, 1975; Ojala, 1976; Steed, 1980; Steed, 1982). However, other efforts to explain the locational shifts of garment plants have not been completely successful due to a failure to recognize the female labor supply as a critical location factor exerting far-reaching influences on competitive strategies within the industry. A comprehensive examination of the relationships between female labor resources and patterns of geographical growth should provide a better understanding of an industry which is critically important in the economies of many small towns. Although the garment industry is found throughout the southern United States, Oklahoma is used as an exemplary study area for purposes of this research.

In this study it is hypothesized that the garment industry seeks to locate or expand its capacity at locations where an adequate female labor supply is available. Under this hypothesis, the geographic dispersion of the garment plants in Oklahoma has been caused by persistent attempts to minimize production costs by locating new plants or expanding work forces in existing plants in small towns with sufficient female labor supplies.

This study is divided into two parts: first, the studies of female labor are to measure a historical relationship between the labor availability and the garment employment growth pattern, and, second, a demographic study addresses the availability of the female labor force in the state and its implications for industrial development during the 1980s.

In the first part, the following will be discussed: (1) locational factors important to manufacturing plants in general; (2) the cost structure of the garment industry; (3) the labor cost differentials in Oklahoma, 1960-1980; and (4) Oklahoma female labor force characteristics, 1960-1980. This study employs three analytical methods to test the female labor hypothesis. The analysis of Oklahoma female labor resources compares the varied growth rates of the county garment employment to the availability and costs of the county female labor resources during the 1960-1980 period. Regression analysis is supplemented to provide statistical evidence for the relationship. The aggregated growth of garment employment was decomposed by components of change to illustrate the growth process of the garment industry, that helps to further clarify the role of female labor in the garment industry.

The second half of this research presents a study of Oklahoma's female labor resources. The volume and geographic distribution pattern of the female labor force that is expected to be added to the existing female labor force

during the 1980s are projected. Based on the projections of the availability of female labor supply at the county level, the outlook for the development of the female labor intensive industries in the state is appraised.

B. Research Organization

This study is divided into seven chapters. Chapter I introduces the research problem and research organization. Chapter II provides some theoretical aspects of plant locations. Labor is the focal point of this discussion in the context of product maturation and external factors. Chapter III examines the current status of the garment industry in the United States and particular production functions. Chapter IV addresses the historical growth patterns of the Oklahoma garment industry. In this review the geography of garment employment and the product mix are examined. Chapter V undertakes studies for female labor factors and Oklahoma garment employment changes. Chapter VI contains a study of Oklahoma's female labor resources and their projected distribution patterns during the 1980-1990 period. The implications of the projected female labor force for industrial development are also ciscussed. Chapter VII summarizes the study and draws conclusions about the implications of the female labor force in locational decisions of the garment industry.

CHAPTER II

LABOR AND PLANT LOCATION

A. Labor in Classical Location Theory

Classical location theory has evolved from the contributions of Alfred Weber (1929) and has been integrated into neoclassical production theory. The minimization of production and transportation costs have become identified as key determinants of industrial location.

In spite of the overwhelming emphasis on transport costs in classical location theory, cheap labor is identified as capable of diverting the factory from the least-transport-cost location if the savings in labor costs compensate for increasing transfer charges. The theory implies that labor-intensive industries face the possibility of orientation to cheap-labor locations. Yet, the labor factor has remained secondary to transport costs in the theory. During the past few decades, however, the importance of transport costs as determinants of industrial location has been reduced significantly, giving the industry more freedom to locate with regard to criteria other than transport costs.

Historically, location theorists have been more concerned with labor costs than labor supplies. As a result, spatial variations of labor costs have attracted a great deal of attention in the literature. On the other hand, the availability of labor has not received such attention. Rather, the labor supply has been regarded as geographically mobile (Hoover, 1937; Greenhut, 1956; Smith, 1980) and replaceable by capital (Isard, 1956). Much of the literature assumes that labor availability is not a significant factor in the location of industry, and higher wages ensure required labor force for the firm.

While there has been an effort to redefine transport and labor costs as determinants of industrial location patterns, it does not fully recognize the importance of labor availability (Czmanski, 1981). Labor, however, must be recognized as a place specific variable in at least certain industries such as the garment industry for the mobility of labor is limited more for certain types of labor force. Moreover, low labor migration rates were found even in areas where economic conditions are unfavorable (Moriarty, 1980).

The notion that firms substitute capital for labor in the production process to reduce their dependence on place specific labor may not be taken categorically (Scott, 1980). Rather, the possibility of capital substitution varies from one industry to another, and it is more applicable to large-scale materials-intensive industries than small labor-intensive industries. On the other hand, low mobility labor

force such as unskilled female labor remains place specific. To avoid significant underutilization of these important labor resources in many small towns and rural areas, industrial developments are therefore often suggested.

B. Labor in Industrial Strategic Decisions

An industrial firm seldom has the benefit of an absolutely monopolized market. Rather, it is to face continuing market fluctuations. Consequently, every firm competing in an industry, explicitly or implicitly, will have a competition strategy, which represents a continuing search for comparative advantage in its industry. However, not all firms in an industry can be treated as identical. Different strategic alternatives are adopted to maximize the objectives of the particular firm depending on the initial position of each firm and the strategic choices of its competitors.

A firm can choose its competitive strategy from a large number of alternatives--product market, production, research and development, financial, and organizational strategies. Many strategic decisions include a varying degree of locational adjustments to be implemented. Yet, production strategies are the most significant industrial decision directly related with plant locations.

Capacity expansions in existing plants and entry into new business are two major forms of production strategies in which decisions of plant locations are directly involved.

The key issue in an expansion is where new or additional production capacity should take place to further the objective of the firm in improving its competitive position or market share. A particular option is likely to be chosen based on projected profits and cash flows from the new or expanded capacity. The profit margin is to be decided by input costs, because input costs affect not only product costs but also demands since consumer choice is heavily based on price when products are not differentiated (Porter, 1980). Therefore, forecasting future profits must take into account the possibility that input costs may vary with location.

Entry through internal development involves the creation of a new business entity in an industry, including new production capacity, distribution relationships, and others. Since new entrants must pay the price of overcoming structural entry barriers, a firm with lower production costs than other firms is more likely to survive. Lower production costs may be achieved through: 1) new technology; 2) a large plant that brings greater economies of scale; 3) more modern facilities; or 4) a new location at which input prices are lower (Porter, 1980).

Labor factors in plant location decisions have become more critical in recent years as the relative importance of non-labor factors has declined. The lower costs of transportation and communication, market standardization, reduced costs and greater availability of most inputs, the growth of

multiple component assembly systems and the reduced importance of raw materials in general are responsible for the shifting factor weights (Storper and Walker, 1983).

While locational differences in the availability, cost, and quality of non-labor location factors are diminishing, labor remains a major input consideration because of its degree of spatial differentiation (Hekman, 1982; Hekman and Smith, 1982; Storper and Walker, 1983). As a result, modern firms which face the mounting pressure of competition but also have greater choices in plant locations increasingly tend to exercise their locational mobility in a way by which the advantages of local labor factors are fully utilized.

Firms planning an expansion in production capacity at either an existing facility or a new facility are likely to give the priority to locations in which labor factors are most favorable. This is particularly critical for an industry with a production cost structure highly oriented towards labor inputs. In the United States, the impacts of cheaper labor on industrial plant locations were felt in less industrialized areas, as factories in established industrial areas were closed in favor of new facilities in non-unionized and low-wage areas in the South during the 1960s and 1970s (Hekman and Smith, 1982).

C. Product Maturation and Plant Locations

Like labor supply, the spatial differentiation of labor demand is also critical to industrial location patterns. In the product cycle model, dynamic changes in labor demand are set by evolving product stages as the possibilities for profits, growth potential, and technological requirements are affected by changes in product stages.

The product cycle model emphasizes a systematic relationship among product markets, production costs, and the organization. The model assumes that industries pass through a sequential development characterized by a pattern of introduction, rapid expansion, maturity, and eventual decline. Although Hoover (1948) was the first to link the cyclic pattern to the evolution of production stages, it was Vernon (1966) who elaborated the model by emphasizing the shifting external economies during the course of product standardization.

When a firm enters the stage of product maturation, it is often characterized by stable technological requirements, longer production runs, and a progressive deskilling of labor force. This transition is accompanied by an increase in the production scale and capital intensity of a plant. Because of these changes in the production sector, the firm can be freed from the locational requirements of the introduction stage, allowing production facilities to move to outside the industrial cores of cities where land and unskilled labor

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are to be found more cheaply. Thus, the product cycle is considered to lead to industrial decentralization (Schemenner, 1978; Rees, 1979; Massey and Meagan, 1978).

The product cycle model stresses a tendency in the nature of industrial production that is characterized by product innovation, productivity growth through standardization and mechanization, and the centralization of capital. However, the model is more applicable to industries associated with frequent introduction of new products and new technologies. In other industries the growth path of a product does not follow such an orderly transition as the product cycle model illustrates. The stage of decline could be deterred through management, marketing, and technological interventions an industry could undertake. Although the singular growth path assumption is a useful concept it tends to limit broader applicability of the model.

Nevertheless, the central theme of the product cycle model that changing product stages require different production inputs remains valid. The systematically linked components of product cycles, markets, production costs, and organization are essential determinants of the competitive structure of an industry (Storper and Walker, 1983). The product cycle model is equally applicable to interindustry as well as intraindustry dimensions. For example, a majority of industries that had moved into the South during the 1960s and 1970s were more standardized and automated

producers such as the garment industry (Hekman and Smith, 1982). In the garment industry, plants that produce staple items had involved with the locational shift more extensively than manufacturers of fashion items. As a result, large garment plants are found frequently in the rural South.

D. External Factors and Plant Locations

The comparative advantage of a location fluctuates constantly, affected by direct as well as indirect results of existing economic activities. When a location no longer serves as an economical plant site in a competitive sense, firms often relocate to more advantageous sites, leading to a spatial equilibrium condition between two locations. Through relocation, a firm could exploit a relatively immobile and under-utilized labor force in a less-developed area. The process tends to stabilize labor costs in more developed areas by reducing labor demands while improving wage levels in less-developed areas. The equilibrium notion thus contains the elements for achieving an equilibrium condition in the long run while assuming certain disequilibrium conditions presented in the short run (Sant, 1975). If the equilibrium process is working, a narrowing in regional economic disparities and thus a reconciliation between interregional equity and aggregate efficiency should be realized (Richardson, 1979).

In a completely open regional system, an economic equilibrium could be achieved through the movement of

either labor and capital. However, because of non-pecuniary considerations, the geographic mobility of labor is limited in reality. The mobility of capital is also somewhat restricted. Contrary to the common belief that industries undertake relocations solely based on profit maximization, irrationalities were found in actual location decisions (townroe, 1981). Industrial inertia which is particularly strong among industries with extensive capital investment and the psychic incomes attached to current locations were identified to exacerbate an imperfection in capital mobility (Todd, 1980).

While a comparative advantage available elsewhere is a powerful incentive for industries to undertake plant dispersions, the process can be accelerated by industrial competitions generated externally. Decisions for plant relocation can be affected by external factors, which exert pressure and set limits on individual firms. They are responsible for cyclical instability in capital accumulations and lead a firm to reorganize its production facilities through relocations which may involve the deskilling of labor force, a greater demand for less skilled workers. This process was found to result into non-metropolitanization of industries (Massey, 1978).

Foreign competition has been a preeminent external factor for many U.S. manufacturing industries. It has forced many labor-intensive industries to undergo drastic

reorganization. Lower foreign production costs have forced domestic producers to search for lower-cost locations with pools of untapped labor in which they can sustain the advantage of the relatively low wages (Hekman and Smith, 1982). For this reason plant location adjustments have been particularly extensive in industries which faced a strong foreign competition; these industries include the garment industry, footwear industry, and electrical assembly industries.

CHAPTER III

AN INTRODUCTION TO THE GARMENT INDUSTRY

A. Economics of the Garment Industry

The garment industry is one of the largest employers of women in the United States, providing jobs for 800,000 female workers in 1980. It is also an important entry-level employer that provides a training ground for inexperienced men and women entering the industrial labor market (U.S. Industrial Outlook, 1982). In 1980 the industry was widely distributed throughout the nation with forty-four states containing some garment workers. Nevertheless, locational preferences of the industry have been clearly established along product lines. A majority of garment plants which produce fashion items are clustered in the New York City and Los Angeles areas, while plants which produce more standardized clothing are widely dispersed. Many such plants are located in small towns of the South and in certain inner cities.

The garment industry, Major Group 23 in the Standard Industrial Classification (SIC), is divided into nine groups, each of which is comprised of a number of product lines

discernible by their similar utility. Among these groups the SIC 233 Group (Women's, Misses, and Juniors' Outwear) and the SIC 232 Group (Men's, Youth's, and Boys' Furnishing, Work Clothing, and Allied Garments) are the two largest garment employers in the United States. These two groups shared 60.8 percent of the nation's total garment employment in 1977. The industry is characterized by a large number of small plants (1 to 50 employees). The production mode of each product group is a decisive influence on plant sizes; the groups associated with quantity production usually have larger plants with more than 100 employees as is the case in the SIC 232 and SIC 234 Group (Women's, Children's Undergarments), while the groups with more specialized and stylish products tend to have much smaller plants. The productivity of the industry varies among the product groups; the SIC 239 Group (Miscellaneous Fabricated Textile Products) is the highest and the SIC 236 Group (Children's Outwear) is the lowest in the productivity measured by value added by manufacture. As a whole, the productivity per worker in the industry is one of the lowest among U.S. manufacturing industries (Statistical Abstract of the United States, 1982-1983, pp. 772-777). Frequent style changes and delicate production techniques make the application of automated production techniques difficult in the garment industry. On the other hand, high labor intensity and low productivity have kept the wage rate of the garment industry among the

lowest in the U.S. manufacturing sector. The average wage for garment workers was sixty-three percent of the average U.S. manufacturing wage in 1980 (U.S. Industrial Outlook, 1982, p. 319).

The U.S. garment industry undertook an extensive locational shift during the 1960-1980 period. During this period the number of garment workers in the Northeast and the Mid-Atlantic region shrank by twenty-three percent and twenty-eight percent, respectively. At the same time, the garment employment had expanded by more than forty percent in the South and West. Particularly, the South Central Region and Pacific Region had recorded impressive gains during the period (Table 1).

Staple garment plants are regarded as particularly suitable for rural industrial development because of their labor-intensive nature (Woolcock, 1982). Despite low wages and low prcductivity characteristics, the availability of entry-level employment generated by garment plants contributes significantly to rural economies.

The consumer market for garment products, which grew fast in the 1950s and 1960s, matured and grew by only about one percent annually in the United States during the 1970s. This leveling off of the domestic market was largely caused by sluggish demand and improvements in the quality of garments in terms of the useful life of fabrics (Context, 1983). The slower population growth and fashion changes among young

TABLE 1

GARMENT EMPLOYMENT DISTRIBUTION BY U.S. REGIONS
(1,000 Workers)

Region	1962	1967	1972	1977	Change 62-77(%)
Northeast	83.5	79.4	69.9	64.5	-22.8%
Mid-Atlantic	567.4	536.7	472.7	406.7	-28.0
East N. Central	96.1	99.8	91.8	89.9	- 6.5
West N. Central	50.2	52.7	48.6	48.3	- 3.8
South Atlantic	206.5	252.5	293.3	289.7	40.3
East S. Central	135.1	169.5	179.9	189.9	40.6
West S. Central	61.7	78.7	101.6	111.1	80.1
Mountain	6.9	9.4	15.6	18.9	173.9
Pacific	72.5	77.3	95.1	114.8	58.3
U.S. Total	1,279.9	1,356.9	1,368.5	1,333.8	4.2

Source: Tabulated from U.S. Census of Manufactures, 1962, 1967, 1972, and 1977. U.S. Department of Commerce, Bureau of the Census.

people in the 1970s were contributing factors for a falling demand for expensive clothing items. Because of this stagnating market growth and an increasing share of foreign imports, the number of U.S. garment workers declined by 7.7 percent in the 1970s. Foreign imports which were responsible for the drastic decline in a number of garment product lines accounted for more than 20 percent of all domestic consumption across the board in 1979 (Table 2).

The increasing market penetration of imported garment products has had wide economic implications. The shrinkage of the domestic garment industry has inflicted the greatest damage to such important labor sectors as women and minorities in rural areas. Limited employment opportunities available in rural areas, relatively poor job experience and training of the workers have made it particularly difficult to arrange alternative jobs for rural and inner city garment workers. Furthermore, depressed returns on sales and investments caused by heavy import penetration tend to inhibit the internal generation of capital essential for growth, thus increasing the vulnerability of the industry to cyclical economic changes (Uri and Mixon, 1981).

The stagnation of the industry in general and aggressive foreign competition have helped the U.S. garment industry to reorganize itself and to improve its productivity. To overcome the substantial wage difference existing between the domestic and foreign garment workers in third world countries,

TABLE 2

RATIO OF U.S. IMPORTS TO DOMESTIC MARKET
FOR TEXTILE AND APPAREL PRODUCTS
(Percent)

Year	Cotton	Wool	Man-made
1967	9.5	21.6	3.9
1968	10.7	25.4	4.6
1969	11.7	25.4	5.3
1970	11.2	24.7	8.2
1971	11.6	25.3	10.5
1972	14.6	22.0	9.4
1973	14.5	22.4	7.3
1974	14.7	22.6	6.3
1975	15.7	19.5	6.4
1976	19.1	23.5	7.1
1977	19.3	30.0	7.4
1978	23.9	31.7	7.8
1979	22.3	30.4	7.7

Source: U.S. Production, Imports & Import/Production Ratios for Cotton, Wool & Man-made Fibre Textiles & Apparel, U.S. Department of Commerce, International Trade Commission, 1982, p. 2.

the domestic garment industry is increasingly concentrating on the production of high value-added items such as jeans, hosiery, and underwear, which has proven strong against foreign competition (Context, 1983). Moreover, the industry has undertaken a significant locational shift of its plants from the industrialized Northeast to rural areas of the South and West to tap the plentiful and cheap female labor pools (Woolcock, 1982). Slow but continuous technological advances are also helping the industry to cut into labor costs in recent years.

Given the fact that scale economies are not significant in the industry as a whole, it is imperative that increasing costs of garment manufacturing be compensated through higher productivity. Only through higher productivity could the domestic garment industry compete effectively with low-priced imports. The relatively short-term wage relief the industry had achieved through the regional and rural shifts of its plants may not be sufficient to ensure the long-term survival of the U.S. garment industry in the face of foreign competition.

B. The Production Function of the Garment Industry

In garment manufacturing, raw materials account for about 50 percent of the total production costs, while direct labor, the second largest input, amounts to about 30 percent of the costs. The remaining 20 percent is spread among indirect labor costs and other overhead expenses (Steed,

1981). Total labor expenditures, including direct and indirect labor costs, may amount to 40 percent of the total production costs. Energy costs are relatively minor due to the heavy reliance on sewing machines, not a major user of electricity.

The majority of staple garment plants employ production techniques which do not require large machinery. Except for production lines of knit wears, fully automated production methods are not available at the present time. As a result, the capital investment of average garment plants is one of the lowest among manufacturing industries. The average capital investment per worker in the garment industry is less than 10 percent of that in the iron and steel industry (Turner, 1982). The small amount of fixed capital in garment plants may furnish the garment industry with less industrial inertia and thus better mobility. Nevertheless, the capital investment requirements are moving upwards somewhat as the industry adopts new computerized technologies.

Transportation, one of the most significant cost elements in heavy weight-loss industries, accounts for a small percentage of the total costs in the garment industry. Low transportation costs are the result of negligible weight-loss occurring in garment production processes, and of the light weight of the raw material. Consequently, garment plants located at either the source of raw material or at the market have only a minimal cost advantage over distant plants (Ojala, 1972; Steed, 1981).

Staple garment manufacturing processes require neither a high technology nor a highly-trained labor force. On the average, four to six weeks on-the-job training is sufficient to prepare an inexperienced worker. As educational requirements for garment workers are liberal, a post-high school education is rare among garment workers. The low education level reflects to some extent that women account for 78 percent of garment workers. A garment plant is a highly self-contained production unit as many engineering and marketing services are integrated into the production function. A typical plant can operate with minimum outside services required at the local level.

As competition among domestic as well as foreign producers intensifies, low production costs will become an increasingly critical factor. For the rigid cost structure in which costs for raw materials, transportation, and utilities tend to be stable, labor expenditure becomes the most serious cost pressure. Labor expenditure in the garment industry originates from two sources: direct expenditures in the form of wages and other compensation, and indirect expenditures related to the recruiting and maintenance of a work force.

Labor expenditures for wages and other compensation are critical inputs in garment manufacturing because:

- Wages and other compensation account for more than 30 percent of the total production costs. These expenditures are the industry's largest variable input cost.

- Wage increases are not likely to be offset by higher productivity in the industry. Thus wage hikes may transform to higher production costs.

- Fringe benefits are major sources of indirect labor costs in the garment industry. The higher unionization of the industry makes this expenditure increasingly expensive. The unionization rate of the industry was 51.3 percent in 1980 (Statistical Abstract of the United States, 1982).

- High local manufacturing wages make the garment industry less competitive to other manufacturing industries in recruiting and maintaning a quality work force. A work force of low quality reduces the productivity and thus increases production costs.

Labor availability becomes a source of indirect labor expenditure and a cost factor because:

- Insufficient local labor supply compels a plant to operate at less-than-optimum production level, which may lead to low productivity and thus higher per unit production costs.

- Insufficient local labor suppies tend to cause higher labor turnover rates and temporary under-staffings, a source of high production cost.

CHAPTER IV

THE OKLAHOMA GARMENT INDUSTRY: PATTERNS OF GROWTH 1960 - 1980

A. External Circumstances

The evolution of an industry is affected by patterns and trends of the overall economic system. In a complex system of industrial interreaction, one industry hardly stands unaffected by actions of other industries or societal institutions. Rather, the strategic decisions of an industry are to be influenced by pressures, stresses, and opportunities generated externally. In this section brief discussions of the external circumstances of the Oklahoma garment industry are presented to put the industry's growth trend into regional perspective.

Until the early 1900s, the American manufacturing industry was overwhelmingly concentrated in the Northeast and North Central regions. Since the 1920s, however, there has been a significant industrial dispersion to the West and South. The shift has progressed at the expense of the Northeastern and Midwestern regions (Petrulis, 1979). The extensive migration of industrial capital to the South and

West caused an unemployment problem in the traditional industrial centers of the North. The industrial shift caused primarily by old and inefficient labor-intensive industries exacerbated the unemployment problems in the North (Jackson and Masnick, 1983). On the other hand, this industrial shift has played an important role in narrowing interregional disparities in the nation (Jusenius and Ledebur, 1977; Paterson, 1982; Peet, 1983).

The interregional shift and urban-rural shift of U.S. manufacturing industries have progressed concurrently. Like the interregional shift, rapid industrial growth in nonmetropolitan areas was a spatial dimension of the industrial responses to evolving economic opportunities and stresses. Rural industrial development was extensive in the U.S. during the 1962-1978 period as nonmetropolitan manufacturing employment outgrew that of the metropolitan areas by 35 percent (Haren and Holling, 1979). Yet, rural industrial growth did not occur evenly among the regions of the nation. Rather, it was more pronounced in the South, which shared 53 percent of the total gain in nonmetropolitan manufacturing employment during the 1962-1978 period (Haren and Holling, 1979).

The availability of manufacturing jobs exerts a positive influence on family incomes and community well-being in rural areas for these jobs generate various indirect benefits through linkage and other spin-off effects (Hayter and Watts, 1983).

Because of the positive benefits expected from industrial development, industrial promotion efforts are extensive even in

rural areas. Local Chambers of Commerce often retain a professional staff for industrial promotion purposes even in small rural communities. Moreover, numerous state-level promotional programs are available to help to attract industries into a state (Industrial Development, 1978, pp. 3-10). Although the strong desire to cure local economic ills through industrial development continues to be popular, the number of industrial plants available for this endeavor is limited. Consequently, many rural communities resort to the slow-growth and low-wage industries (Hansen, 1980; Anderson and Barkley, 1982). These industries may fulfill the most basic objective of industrial development by providing jobs which might not otherwise be available. Yet, such industries provide only a poor basis for rehabilitating a rural economy (Heaton and Fuguitt, 1979).

Despite a slow beginning, rural industrial development became firmly established in Oklahoma during the 1960-1980 period. The growth of manufacturing employment was lower in nonmetropolitan areas of Oklahoma than in the rural areas of the nation as a whole. Industrial growth in Oklahoma was largely confined to the two major metropolitan areas until 1970. However, during the 1970-1980 period the trend was reversed and the rural areas outgrew the metropolitan areas; manufacturing employment grew by 34.8 percent in nonmetropolitan areas and 70.2 percent in metropolitan areas during the 1960-1970 period, whereas during the 1970-1980 period

non-metropolitan areas grew by 41.8 percent while Tulsa metropolitan area grew by 41.2 percent and Oklahoma City area by 40.9 percent (Oklahoma Employment Security Commission, 1983). Although the rural share of manufacturing employment rose significantly during the 1960-1980 period, the urban domination remains pronounced in the state. Nevertheless, the industrial shifts occurred in favor of the South and the rural areas must have been contributive to the rapid growth of the garment industry in rural Oklahoma. In the following section the growth pattern of the Oklahoma garment industry in the 1960-1980 period was examined.

B. The Growth Pattern of the Oklahoma Garment Industry

The Oklahoma garment industry experienced its first major expansion during the 1947-1954 period, in which total employment reached 2,368 workers. Afterwards, the industry expanded by relatively high growth rates until the late 1970s, when the trend reversed and stagnated (Table 3).

The garment industry provided 4.3 percent of manufacturing employment in the state in 1960. Garment plants were located in twenty-seven counties of the seventy-seven counties of the state. However, the urban domination, so pronounced in other manufacturing industries and the general population, was conspicuously absent in this industry. Instead, the garment plants were predominantly located in rural counties. In the more densely populated and industrialized urban counties the employment shares of the garment industry were

TABLE 3

CHANGES IN OKLAHOMA GARMENT EMPLOYMENT
(1960-1980)

Year	Number of Workers	Change in Percent	Year	Number of Workers	Change in Percent
1960	3,800		1970	9,600	
1961	4,100	7.9	1971	9,900	3.1
1962	4,600	12.2	1972	12,200	23.2
1963	5,000	8.7	1973	12,900	5.7
1964	5,300	6.0	1974	13,300	3.1
1965	5,800	9.4	1975	12,100	-9.0
1966	6,900	18.9	1976	13,200	9.1
1967	7,300	5.8	1977	13,000	-1.5
1968	7,700	5.5	1978	12,400	-4.6
1969	9,300	20.8	1979	11,600	-6.5
1970	9,600	3.2	1980	11,100	-4.3

Source: Handbook of Oklahoma Employment Statistics, Vol. II, Oklahoma Employment Security Commission, Oklahoma City, Oklahoma, 1983, pp. 5-25.

insignificant as only Oklahoma County shared a small number of garment workers. Tulsa and Comanche Counties did not share even such employment (Figure 1).

In 1960, the largest cluster of garment plants in Oklahoma was located in the east-central area of the state, a region centered in Seminole County and six other rural counties. This region furnished 48 percent of the total garment employment. Some rural counties between Tulsa and Oklahoma City were also represented with a substantial number of garment workers. This extensive rural orientation of garment plants indicates that the locational pattern of the Oklahoma garment industry did not follow the gradual urban-rural shift process in its development stage. Rather, most Oklahoma garment firms chose to locate their plants in rural counties from the beginning.

The spatial distribution pattern of garment plants and general manufacturing plants in Oklahoma displayed an extreme contradiction. Whereas the urban regions, Oklahoma City region and Tulsa region, dominated extensively the general manufacturing employment, the rural regions, Southcentral region and Southeast region, did the same for garment employment (Table 4).

During the 1960-1970 period, employment in the Oklahoma garment industry grew by 144.2 percent, the highest growth rate of any of the examined period. As a result, the industry became one of major manufacturing employers in the state,

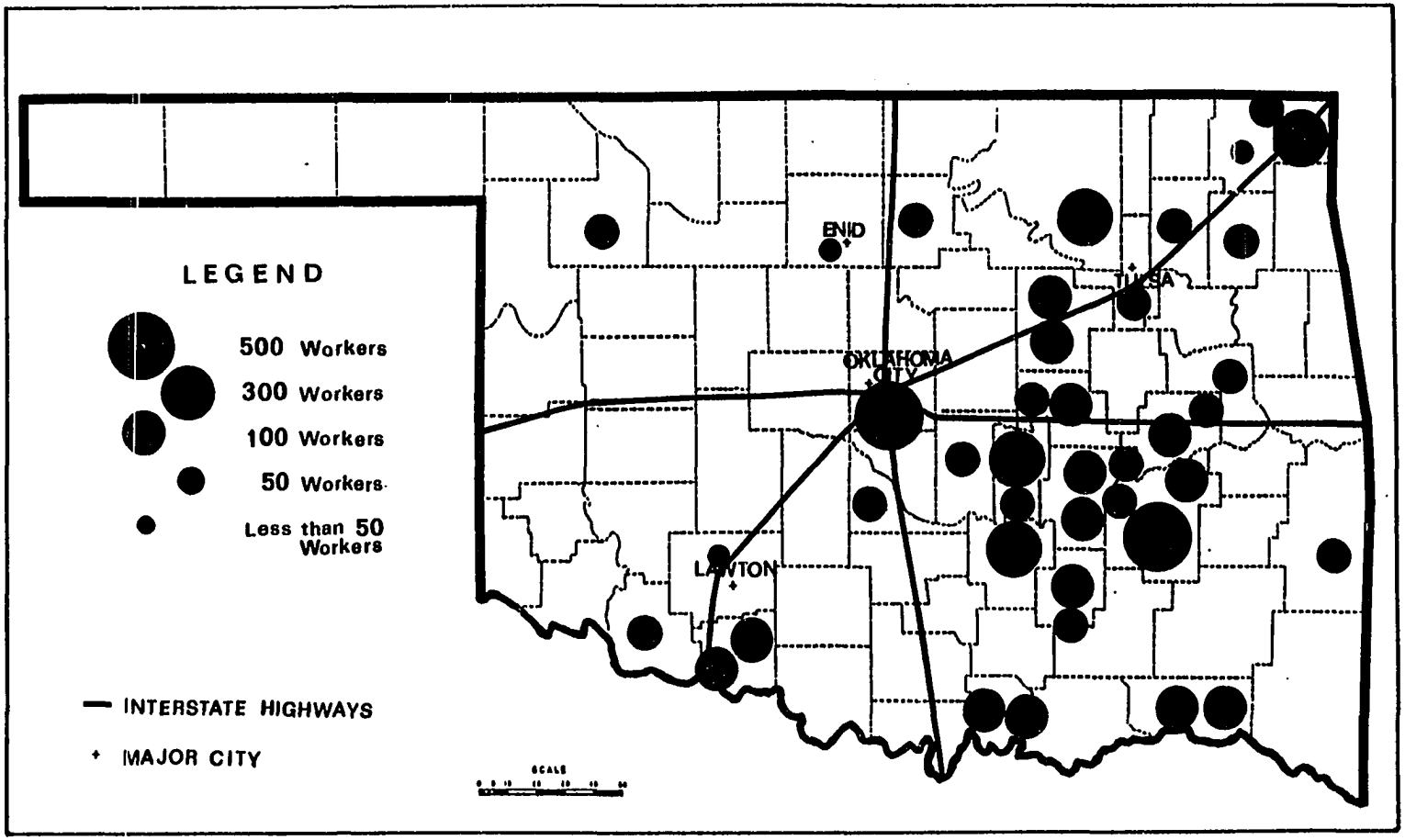

Fig. 1.--The Distribution Pattern of the Oklahoma Garment Industry by Workers, 1960.

Source: Oklahoma Directory of Manufacturers and Products, 1963, State of Oklahoma, Department of Commerce and Industry.

TABLE 4

REGIONAL SHARES OF GENERAL MANUFACTURING EMPLOYMENT (G.MFG) AND GARMENT EMPLOYMENT OKLAHOMA

Oklahoma Substate Region	1960 G. Mfg. Workers (%)	1960 Garment Workers (%)	1970 G. Mfg. Workers (%)	1970 Garment Workers (%)	1980 G. Mfg. Workers (%)	1980 Garment Workers (%)	Changes 1960-70/ 1970-1980
Northwest Region (A)*	2.2	1.1	1.8	6.6	1.9	6.5	-.3/5.4
Southwest Region (B)*	6.9	6.8	6.5	18.2	6.6	13.7	-.3/6.9
Southcentral Region (C)*	5.7	33.1	6.7	27.8	6.6	31.7	.9/-1.4
Southeast Region (D)*	7.1	20.4	8.3	14.2	4.1	15.1	-3.0/-5.3
Oklahoma City Region (E)*	34.1	14.6	34.4	14.3	35.1	13.5	1.0/-1.1
Tulsa Region (F)*	44.0	24.0	42.2	18.9	45.7	19.4	1.7/-4.6

Source: County Business Patterns, Oklahoma, 1960, 1070, 1980, U.S. Department of Commerce, Bureau of the Census.

*See the Figure in Appendix for substate boundaries.

providing 7.5 percent of the state manufacturing employment in 1970. This rapid growth not only resulted in the expansion of the workforce but also changed the spatial distribution pattern of the industry as large garment plants were established in many rural counties (Figure 2). This development also resulted in increases in the average size of garment plants. The extended spatial dispersion in the rural areas made the industry more of a statewide institution and reduced the share of the east-central region in garment employment by 13 percent during the 1960s.

The rapid expansion of the garment industry in rural areas, however, did not result in an even distribution among the state's rural counties. In western counties the growth of garment employment was only moderate. On the other hand, in counties along the Tulsa-Oklahoma City-Lawton axis the growth was more substantial. The rural counties along the Red River, the southern border of the state, also were beneficiaries of the continuing spatial dispersion. Although the dispersion was somewhat statewide, the penetration of the western counties, small number though it was, represented the most intriguing development in the locational practice of the industry. The incident indicates that unfavorable location factors such as limited labor supplies and relatively high wage levels did not completely deter the introduction of new garment plants in the region.

The industry suffered its first major employment decrease during the 1970-1980 period. The high growth rate of the

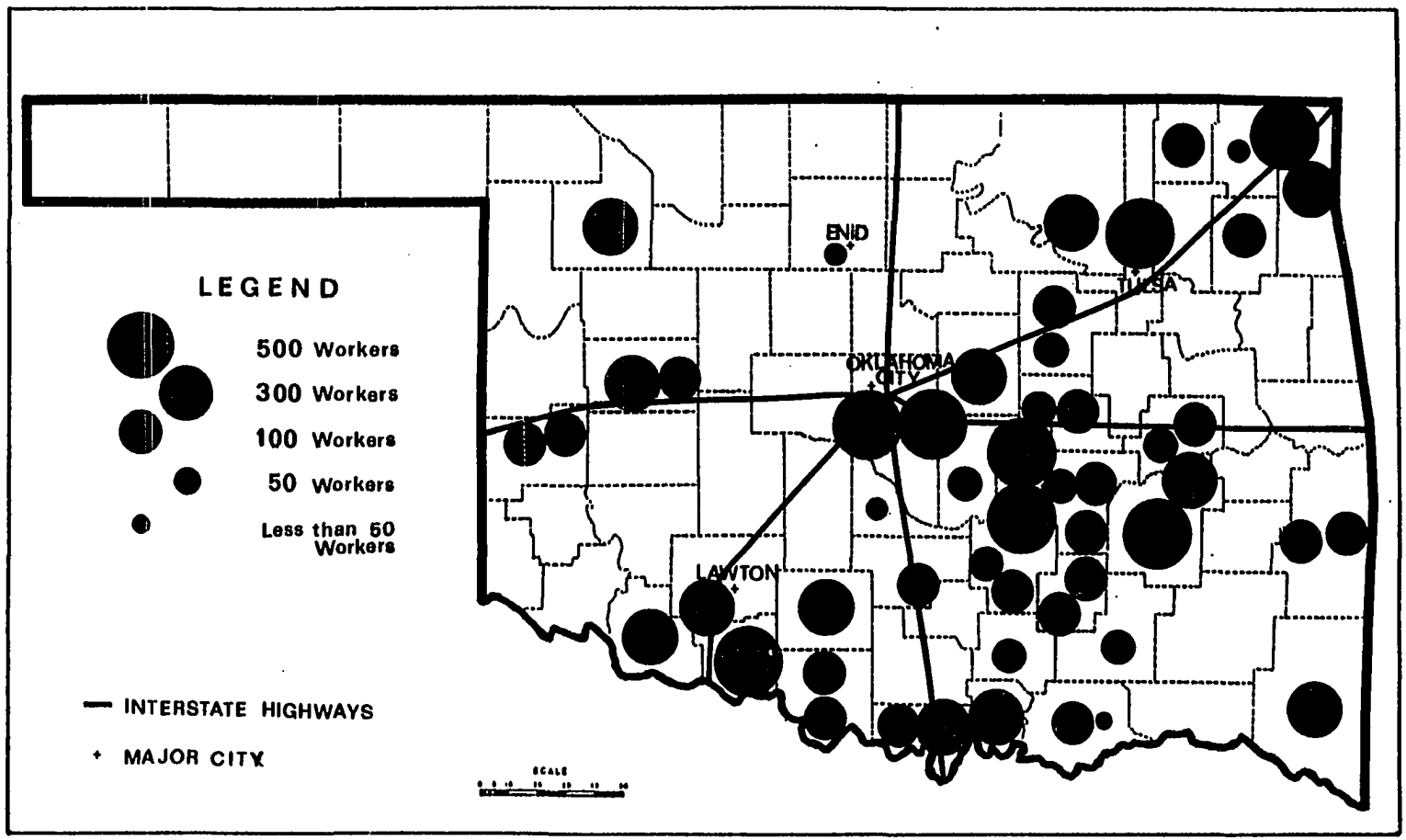

Fig. 2.--The Distribution Pattern of the Oklahoma Garment Industry by Workers, 1970.

Source: Oklahoma Directory of Manufacturers and Products, 1972, State of Oklahoma, Oklahoma Industrial Development and Park Department.

1972-1976 period (a 17.7 percent growth rate) ended between 1976 and 1980 when the industry suffered an employment contraction of 6.5 percent. The relative importance of the industry in the state declined as its share of the state manufacturing employment fell to 5.7 percent in 1980, down from 7.5 percent in 1970. This contraction occurred during the period in which the general manufacturing industry of the state was expanding at a rapid pace. This contradictory growth trend between general manufacturing and the garment industry illustrates that the growth of the garment industry was not in accord with that of the general manufacturing industries. Not only business cycle differs between two sectors but also the garment industry is adversely affected by labor competition generated by the general manufacturing sector. Because the contraction of garment employment occurred through the closings of large plants and the reduced workforce in other plants, the average plant size of the industry declined to some noticeable extent during the 1970-1980 period, from 138 workers in 1970 to 123 workers in 1980. The fluctuated growth in the 1970s, however, did not significantly alter the rural orientation of the industry. Rather, it continued to be dispersed into the many fringe rural counties during the period. By 1980 a majority of the counties in the state shared garment employment in various degrees (Figure 3). Urban counties, however, remained shunned by the industry in general and only Oklahoma County managed to receive a few large scale garment plants during the 1970-1980 period.

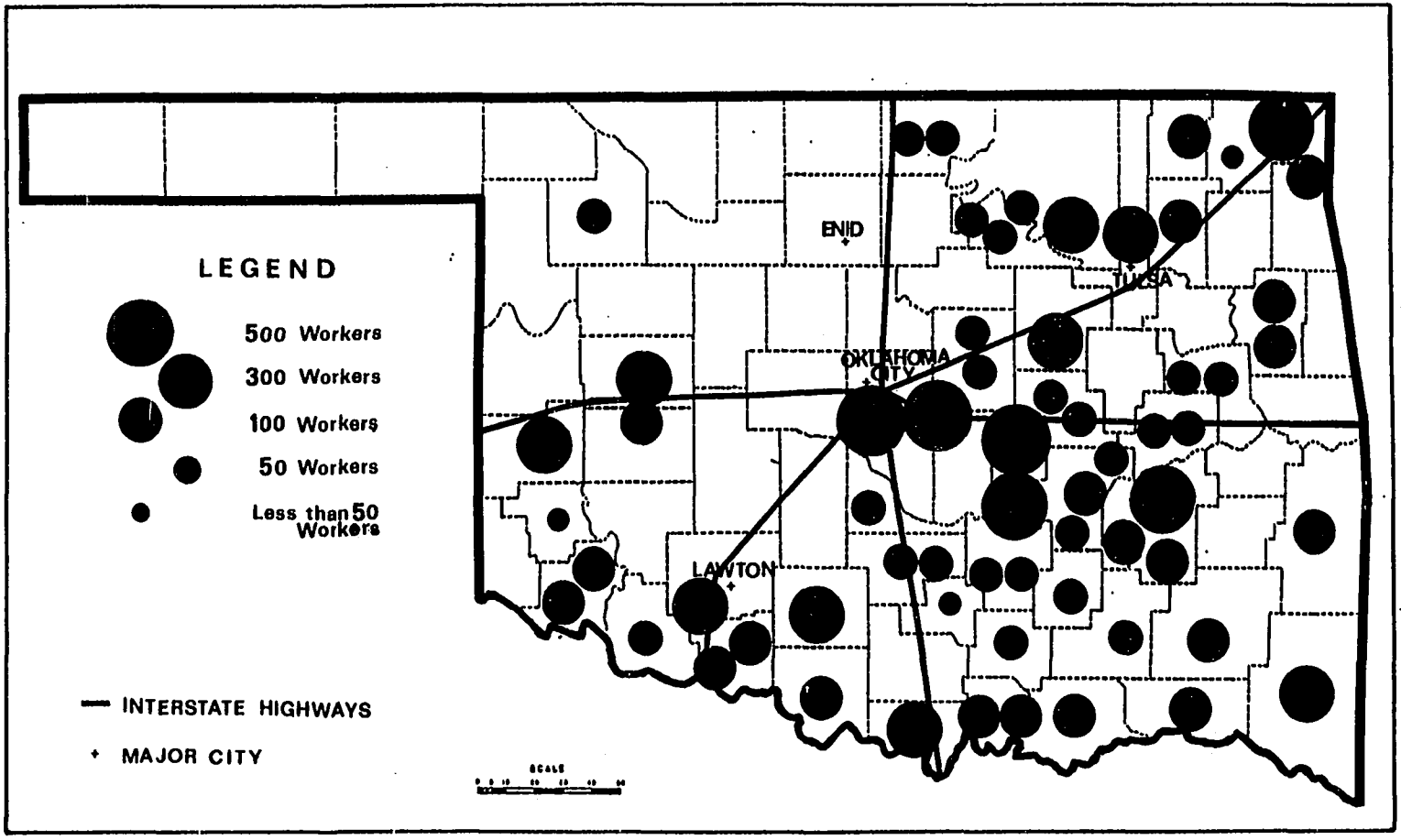

Fig. 3.--The Distribution Pattern of the Oklahoma Garment Industry by Workers, 1980.

Source: Oklahoma Directory of Manufacturers and Products, 1981, State of Oklahoma, Oklahoma Industrial Development Department.

The extensive rural orientation of the garment industry differed radically from the urban orientation of the population and general manufacturing industries. The rural orientation was driven by the labor-intensive and low-wage characteristics of the industry. It shunned unproductive labor competitions against high-wage manufacturing and service industries in urban areas. Rather, the garment industry had opted to locate in rural counties in which its low wages did not necessarily become a detrimental factor to the recruitment and maintenance of a quality work force. The rural orientation of the industry was further stimulated by the presence of large staple garment plants in the state. Because of large scale operations they were more suitable for rural locations. They can fully utilize the rural advantages and maintain competitiveness at the same time due to their regional and national consumer markets. On the other hand, most of small specialty producers were more suitable for urban locations, in which their limited consumer markets were often found.

The garment industry is composed of a number of product lines, each of which has a different production function to some extent. Each product line is likely to react differently to existing or anticipated economic changes. In the following section a review of the product mix of the Oklahoma garment industry is presented to illustrate the implications for patterns of plant locations.

C. The Product Mix of the Oklahoma Garment Industry

In 1960 the Oklahoma garment industry was dominated by three groups: SIC 232 Group (men's, youths', and boys' furnishings, work clothing, and allied garments), SIC 233 Group (women's, misses' and juniors' outwear), SIC 234 Group (women's, misses', children's, and infants' undergarments). These groups furnished 78 percent of the total garment employment in the state.

The product mix of the Oklahoma garment industry was significantly different from that of the nation as a whole (Table 5). Although these three groups were the most prominent product lines both in the United States and Oklahoma garment industry, the proportional share of the SIC 232 Group was much higher in Oklahoma than the national average. The SIC 232 Group accounted for 44 percent of the Oklahoma garment employment. On the other hand, in the share of the SIC 239 Group (Miscellaneous Fabricated Textile Products), the most productive sector of the industry, Oklahoma was lower than the national average to some significant degree. This product mix pattern was occasioned by the influx of plants relocating from the northern states during the 1940-1960 period (Petrulis, 1979). Among the various garment product lines, the most labor-intensive ones, the SIC 232 and SIC 234 groups were early participants in the extensive relocation to the rural areas in the South. As

TABLE 5

SECTORAL DISTRIBUTION OF THE GARMENT INDUSTRY
U.S. VERSUS OKLAHOMA
(Percent)

	U.S.			Oklahoma		
	1960	1970	1980	1960	1970	1980
SIC 232	23.9	26.6	27.3	43.9	53.3	54.6
SIC 233	31.7	31.6	33.5	12.4	10.9	14.4
SIC 234	8.9	7.7	6.9	21.7	17.0	12.3
SIC 239	11.6	13.6	13.9	5.1	13.5	9.8
Total	76.1	79.5	81.6	83.1	94.7	91.1

Source: County Business Patterns, Oklahoma, 1960, 1970, 1980
U.S. Department of Commerce
U.S. Census of Manufactures, 1958, 1963, 1967, 1972,
1977, U.S. Department of Commerce, Bureau of the Census

a result, from its infancy the Oklahoma garment industry was disproportionately shared with the SIC 232 Group.

The large share of the SIC 232 Group in the Oklahoma garment industry had significant implications on growth because:

- With standardized products and nationwide consumer markets the SIC 232 Group plants are large in size. These plants were owned mostly by out-of-state firms that had been aggressive in exploiting rural advantages in the state.

- Large plants are more likely to survive periodic business fluctuations and thus offer the economic stability to the community. On the other hand, because of the low wage levels of the industry, a rural economy may be affected adversely in areas where the garment industry dominates the local labor market.

- The SIC 232 products (trousers, shirts, etc.) are more mass-production oriented than other garment products. As a result, it is anticipated that domestic producers face intensifying competition from foreign producers. In the long run it is likely that the SIC 232 Group industries choose to transfer the facilities to developing countries.

During the 1960-1970 period the change in the product mix were rather moderate in the industry. Nevertheless, this change attested to an important growth pattern the industry experienced. During the period, the domination of the SIC 232 Group intensified as new plants and on-site

expansions were launched in this product line. At the same time, the SIC 239 Group, the most productive sector of the garment industry, also expanded to reach the national average in proportion. This change reflected a greater demand for specialty goods in the consumer markets of the region.

The product mix of the Oklahoma garment industry changed little during the 1970-1980 period. The noticeable changes were that the SIC 232 Group further extended its share of the industry and the share of the SIC 239 Group fell below the national average. The fluctuating share of the SIC 239 Group might have indicated that Oklahoma's manufacturing, mining, and service sector industries were large enough to absorb the surplus female labor force in the state. Although some changes occurred, the Oklahoma garment industry maintained basically the same product mix character throughout the 1960-1980 period. The industry was dominated by the less productive but perhaps more stable sectors. Contrary to the common belief that industries shall respond with product line adjustments when the best utilization of the evolving market requires changes in the product mix, the past experience of the garment industry indicates that a sweeping product change had not been a common phenomenon. The rigidity in product mix changes renders a strong possibility that the labor-intensive but low productivity sectors, particularly SIC 232 and SIC 234 groups, may dominate the Oklahoma garment industry for years to come. Overspecialization in these

product lines, however, poses a serious risk to the industry's prospects in the state. The industry shall be particularly vulnerable when foreign garment producers are able to compete successfully in the product lines the industry is so heavily specialized with.

This chapter illustrated that the Oklahoma garment industry had followed a spatial growth pattern significantly different from that of the general manufacturing industries in the state during the 1960-1980 period. While the bulk of the general manufacturing growth occurred in urban areas, the garment industry opted to locate in rural counties. This rural orientation of the industry was greatly affected by the presence of a large number of the SIC 232 Group plants. These plants were highly successful in adapting to rural environments in the state. The extensive locational shifts of the garment industry at the national level, its labor-intensive production modes, and the strong foreign competition it faced during the 1960-1980 period motivated the garment industry to locate in rural Oklahoma. Rural oriented growth pattern of the industry was contradictory to the general manufacturing sector in the state. This finding indicates that the location decisions of the industry were affected by factors with which rural areas were favorably endowed--a sufficient supply of cheap female labor. In the following chapter the female labor force is analyzed to illuminate its influences on the patterns of plant locations in the Oklahoma garment industry.

CHAPTER V

GARMENT PLANT LOCATIONS AND FEMALE LABOR RESOURCES IN OKLAHOMA

The Oklahoma garment industry experienced an extensive spatial dispersion of its plants during the 1960-1980 period. This development benefited many rural counties. Yet, the growth was extensive only in a limited number of counties indicating that the rural orientation of the industry was guided by certain factors that were distributed unevenly in the state. In view of the female labor intensiveness and low wage levels common in the industry, female labor factors in terms of availability and costs are hypothesized the primary location factors responsible for the extensive rural orientation of the industry in the state. In this chapter, the size, geographic distributions, and costs of female labor resources in the state were described to assess the influence of female labor factors on the growth pattern of garment employment during the 1960-1980 period. The first section of the chapter discusses female labor factors and garment employment changes at the county level. The second section identifies the employment change methods of the industry by using change

components. Industrial growth processes are considered to have varying implications on plant location practices.

A. Female Labor Factors and Plant Location

Location factors considered in plant location searches have become increasingly diverse, reflecting growing emphasis attached to the social and economic environment of a plant. Often socio-economic structure of a community as a whole is scrutinized for evaluation. The evaluation may include: labor skills and market, price and availability of energy, quality and availability of services, and quality of life (Levine, 1982). In addition, the business environment and local governmental attitudes are also receiving increasing attention (Fisher and Hanink, 1982).

These location factors can be divided into two categories by their spatial characteristics, ones with generally region-wide traits and the others with more narrowly defined local traits. Quality of life, energy and transportation, and business environment are likely to be region-wide characteristics, while the availability of service and labor resources represents characteristics of much smaller geographic units. The region-wide factors are indicative of the general conditions of a region which may have long term implications on industrial development. On the other hand, the local factors tend to affect more directly the operation of a plant.

Female labor is the most critical production input in the garment industry. High labor expenditures and the female

labor oriented work forces signify the importance of female labor factors in the industry. The female labor factors can exert influences over the industry in shaping its growth and plant distribution pattern through two production functions, labor supplies and costs.

1. Female Labor Supplies and Garment Employment Changes

The variations in local labor force available for industrial expansions are commonly measured by the unemployment indicator (Moriarty, 1980). The unemployment indicator, number of currently unemployed workers who participate in the active labor market searching for gainful employment but unable to find it, represents local labor supplies identified in public and available for employment at the given time. For the garment industry in which production workers' skill and educational requirements are minimal, the presence of a large number of unemployed female workers, regardless if they are identified unemployed or not, is a clear indication that the incoming industry will face little difficulty in recruiting and maintaining its work force in the area.

The unemployment indicator is, however, a more accurate measure of local labor availability for male labor forces in urban areas than for female labor forces and in rural areas. Unemployed male workers are more likely to be counted fully because they tend to participate in searching for jobs than female workers are. Female workers tend to be more easily discouraged in job searches and remain inactive

in labor force (A Data Book, U.S. Department of Labor, 1980). Because only those engaged in active job searches are classified as unemployed, published unemployment indicators tend to underrepresent local labor supplies available in practice. This is particularly pronounced for underemployed and discouraged workers in rural areas. On the other hand, the reserve labor force, which enumerates those who are not in labor force but may join the active labor force if opportunities are present, is a more extensive measurement of the local labor supply. In order to assess the influence of the county female labor supplies on the employment changes of the garment industry, the county reserve female labor forces were analyzed in detail in this section. The influence of the county female labor supplies on changes in county garment employment were discribed by identifying the size of female reserve labor pools for counties in which the growth of garment employment took place during the 1960-1980 period. Counties sharing similar growth rates were grouped together for the comparative purpose.

During the 1963-1980 period the number of Oklahoma garment workers grew by 7,155 workers or by 153 percent. Yet, the growth rate was not consistent for each subperiod; the highest growth occurred in the 1967-1972 period, and a decline in the 1976-1980 period. In spite of the fluctuated growth in employment the number of garment plants and counties that shared them increased during the period (Table 6).

TABLE 6

THE GROWTH OF THE OKLAHOMA GARMENT INDUSTRY

	1963-1967	1967-1972	1972-1976	1976-1980	Total
Net Change in* Number of Garment Counties	2	6	10	1	20
Net Change in Number of Garment Plants	15	16	16	2	49
Net Change in Number of Garment Workers	2,038	4,034	1,910	-827	7,155

*Number of counties which contain one or more garment plants during the period.

Source: Tabulated from Oklahoma Directory of Manufactures, 1963, 1967, 1972, 1976, 1980. Department of Industrial Development, State of Oklahoma.

The variations in garment employment growth were extensive among counties in each period. In view of the diversity, counties were classified by four groups. The first group included counties in which garment employment grew by more than 100 workers in a period. The second group consisted of counties with garment employment growth of 30 to 99 workers. The third group counties recorded garment employment growth of 0-29 workers. The fourth group was urban counties of the state including Comanche, Oklahoma, and Tulsa counties. The first and second group counties were the most significant growth areas for the Oklahoma garment industry during the 1963-1980 period.

The first group counties provided 63.9 to 96.7 percent of the state's net garment employment growth during the 1963-1976 period, while the second group counties supplied 14.7 to 34.7 percent. Average size of the growth per garment plant ranged from 266 to 179 workers in the first group counties and 64 to 51 workers in the second group counties (Table 7).

- Geographic and General Economic Characteristics of the Growth Regions

a. The first group counties--the major growth region

The number of counties of the group fluctuated during the 1963-1980 period, ranging from 13 counties in the 1967-1972 period to 4 counties in the 1976-1980 period. They amounted to 31 counties for the 1963-1980 period as a whole. These counties were scattered widely throughout the state.

TABLE 7

SHARES OF MAJOR GARMENT PRODUCING COUNTIES IN THE GROWTH OF THE OKLAHOMA GARMENT INDUSTRY

	1963 - 1967			1967 - 1972		
	Number of Counties	Percent of Net Growth (%)	Average Growth Size (worker)	Number of Counties	Percent of Net Growth (%)	Average Growth Size (worker)
The First Group Counties	5	63.9	188	13	86.5*	266
The Second Group Counties	6	14.9	51	6	9.0	60
	1972 - 1976			1976 - 1980		
The First Group Counties	9	96.7	179	4	N/A**	162
The Second Group Counties	9	34.7	64	3	N/A	53

*Because of the net growth used here, the figures do not round up to 100 percent.

**The net total growth in the period was negative.

Source: Tabulated from Oklahoma Directory of manufactures, 1963, 1967, 1972, 1976, 1980, Department of Industrial Development, State of Oklahoma.

The main cluster of the group was in the eastcentral region, while the secondary cluster was located along the southern border of the state (Figure 4). The metropolitan counties were not represented in the first group, but two suburban counties of Oklahoma County--Lincoln and Pottawatamie counties--and three suburban counties of the Tulsa County--Creek, Pawnee, and Rogers counties--were included in the group. Counties along the Red River and the western region experienced the growth mainly during the 1963-1972 period, whereas counties in the eastcentral region were more pronounced during the 1972-1980 period.

Counties along the Red River were heavily oriented to agricultural economy. Farm incomes provided more than 20 percent of total county earnings in six counties, 7 to 19 percent in one county, and 6 percent or less in two counties in 1970 (A Profile of Oklahoma, 1977). Mining was the source of major earnings and employment in both Stephens and Carter counties during the 1960-1975 period. Several giant oil fields were located in these counties (Morris, 1982). Farm incomes were less pronounced in counties of the eastcentral region as modern agriculture was ill-suited in the region (A Profile of Oklahoma, 1977). Mineral extraction activities were strong particularly in Rogers, Creek, Seminole, and Garvin counties. In this region the relative importance of agriculture as a source of income and employment was projected to decline as changes led by increasing farm sizes, declining number of farms and farm workers were observed (A Profile of

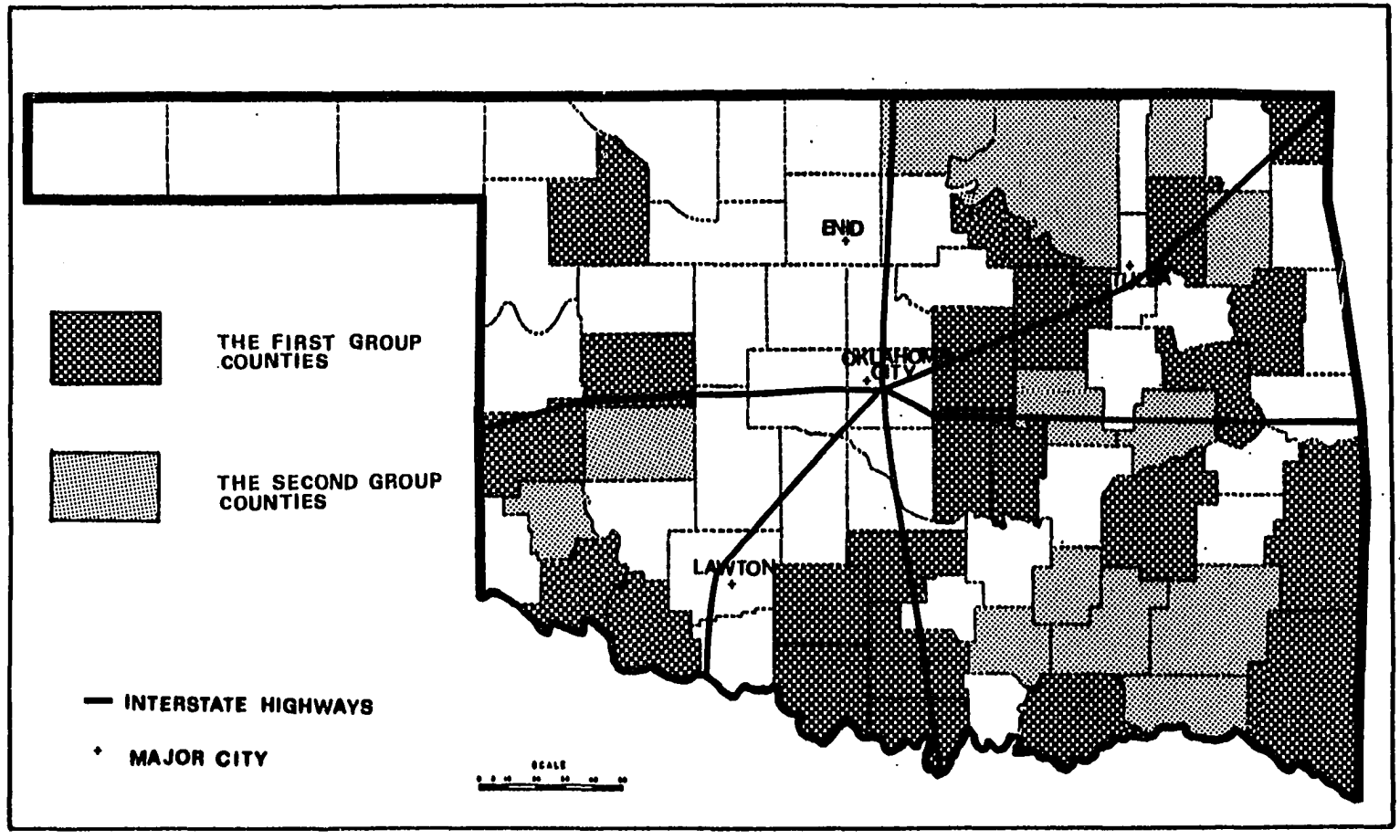

Fig. 4. Counties with Garment Employment Growth of More Than 30 Workers in a Period.

Source: Oklahoma Directory of Manufacturers, 1963, 1967, 1972, 1976, 1980, Department of Industrial Development, State of Oklahoma.

Oklahoma, 1977). Similar transitions may have occurred in the mining sector as a geographical shift of mining production continued in favor of the western regions of the state from early 1960s (A Profile of Oklahoma, 1977). The contracted farm and mining activities might have contributed to larger labor supplies available in the region.

b. The second group counties--the secondary growth region

This region includes seventeen counties in which the growth of garment employment ranged from 30 to 99 workers in a period. These counties were clustered in three regions of the state; seven counties in the northeastern region, seven counties in the southern region, and three counties in the western region.

Counties in the northeastern region were richly endowed with oil and gas resources. Some major oil and gas fields were located in the region (Morris, 1982). Mineral production was particularly significant in Creek, Kay, and Osage counties. Most counties in the region received more than 7 percent of total county earnings from agriculture in 1970 (A Profile of Oklahoma, 1977). Counties in the southern region were generally poor in endowment of mineral resources. Only Carter and Love counties were to share substantial gas and oil deposits. Farm incomes provided more than 20 percent of total county earnings in Love County, 7 to 19 percent for Johnston and Atoka counties, but less than 6 percent in other counties of the region (A Profile of Oklahoma, 1977). Counties in the

northeastern and the southern regions might have suffered adverse effects of shrinking agricultural and mining economies during the 1960-1980 period. Three counties in the western region were characterized by light mining activities but strong commercial agriculture. Farm earnings supplied more than 20 percent of total earnings in all three counties in 1970 (A Profile of Oklahoma, 1977).

- County Female Labor Supplies in Oklahoma

This study adopted the number of female labor, aged 16 years old and over but not in labor force, as an indicator for the county female labor supplies. It represented a pool of potential female labor force from which additional labor demands were to be drawn. Because of its inclusiveness, the county labor reserve measured by the number of female labor not in labor force is a more practical indicator than is the number of unemployed workers.

The presence of a large pool of female labor reserves, often an indication of a large population base, is expected to act as a positive signal to capital regarding the desirability of industrial expansion in the county. In such labor sufficient counties the incoming or expanding industries may easily meet their labor demands without risking high wages or extensive interindustry labor competitions.

For a size of local labor pool generally reflects the size of population, the urban areas are to be endowed with large labor reserves. Two metropolitan counties of Oklahoma,

Oklahoma and Tulsa counties, shared 32 percent of the state female labor reserve during the 1960-1980 period. In spite of the large female supplies available, however, these urban counties were only marginally successful in attracting large garment plants during the period (Table 8).

TABLE 8

MAJOR GARMENT PLANTS ESTABLISHED
IN URBAN COUNTIES*
(1963 - 1980)

	1963-1967	1967-1972	1972-1976	1976-1980
Oklahoma County	292/1	364/1	213/1	-274/1
Tulsa County	262/1	234/1	-73/1	-152/1
Comanche County		325/1	-25/1	

*Number of garment workers/number of garment plants.

**Source: Oklahoma Directory of Manufacturers, 1963, 1967, 1972, 1976, 1980, Department of Industrial Development, State of Oklahoma.

On the other hand, even with relatively small female labor reserves, Cklahoma's rural counties absorbed the major portion of the growth in garment employment during the 1963-1980 period. Yet, counties in the major and secondary growth regions had larger female labor

reserves than did the third group counties in which the garment employment growth was insignificant. Furthermore, even among growth regions female labor reserves were significantly larger in counties of the major growth area than in the counties of the secondary growth area, indicating that large female labor reserves were prerequisities of large scale garment employment expansions.

TABLE 9

NUMBER OF FEMALE LABOR NOT IN LABOR FORCE,
16 YEARS OLD AND OVER
(AVERAGE)

	1960	1970	1980
The First Group Counties	7,247	6,674	7,387
The Second Group Counties	4,804	4,304	4,668
The Third Group Counties	4,583	4,148	4,384
Urban ** Counties	66,292	69,511	70,019

*Included Comanche, Oklahoma, Tulsa counties.

Source: Tabulation from U.S. Census of Population, General Economic Characteristics, Oklahoma, 1960, 1970, 1980, U.S. Department of Commerce, Bureau of the Census.

The growth patterns of the industry indicate that there was a notable causal relationship between the availability of female labor and growth of garment employment during the 1960-1980 period. This conclusion was further supported by results of regression analysis, in which two labor resource variables were used (Appendix I).

Potential female labor supply of the county is affected by not only the size of county female population but also county female labor participation rate. Regardless of labor demand, the entire female labor of 16 years old or over can not be considered practical to participate in active labor force. Therefore, the lower the county female labor participation rate, the larger the potential county female labor supply is likely to be. Larger female labor supply shall be available in the county in which the size of female population is large and the female labor participation rate is low.

The growth patterns of the Oklahoma garment industry show that large scale garment employment expansions occurred in counties with relatively lower female labor participation rates in 1960. This relationship was somewhat reversed later as the influx of large garment plants into small rural counties contributed to raise their female labor participation rates. Consequently, since 1970 it was slightly higher among counties classified as the major and secondary garment employment growth areas than in the counties that experienced little or no garment employment growth (Table 10).

TABLE 10

COUNTY FEMALE LABOR PARTICIPATION RATES
IN OKLAHOMA (percent)

	1960	1970	1980
The First Group Counties	23.2	35.9	42.9
The Second Group Counties	21.4	34.1	41.0
The Third Group Counties	26.2	32.7	38.8
Urban Counties	35.0	42.3	52.4

Source: Tabulation from U.S. Census of Population, General Economic Characteristics, Oklahoma, 1960, 1970, 1980, U.S. Department of Commerce, Bureau of the Census.

The contributions of the garment industry in raising county female labor participation rates were significant in counties classified as the first and the second groups. The Oklahoma garment industry created 4,775 new jobs in the 31 first group counties, and 661 new jobs for the 17 second group counties during the 1963-1972 period. It also added 2,290 new jobs to the labor force of the first group counties and 739 jobs to that of the second group counties during the 1972-1980

period. As a result, by 1980 female labor participation rates became higher both in the first group and the second group counties than in counties with no or little expansion in garment employment.

One other labor characteristic that has a significant bearing on the local female labor supplies is the density of labor distributicn. A labor force dispersed in a wide geographic area may be a source of unstable labor supply. If other conditions are equal, high density labor markets--labor forces concentrated in a small geographic area--shall provide advantages in recruiting and maintaining workforces. The locational patterns of garment plants in Oklahoma revealed that the majority of large scale plants were attracted to counties with relatively high female labor density (Figure 5). Counties classified as the first group had the highest density in the endowment of rural female population in 1980. Rural female population, aged 16 years old and over, was 736 persons per hundred square mile in the first group counties, 501 persons in the second group counties, and 542 persons in the remaining rural counties in 1980. A few counties in which large scale plants were located had low density female labor. Most of them, however, were adjacent to counties with high density female population.

Educational levels of labor force may have some implications on locational decisions of the industry as wage levels correspond with educational levels of workers in general. The vast majority of workers with less than twelve years of

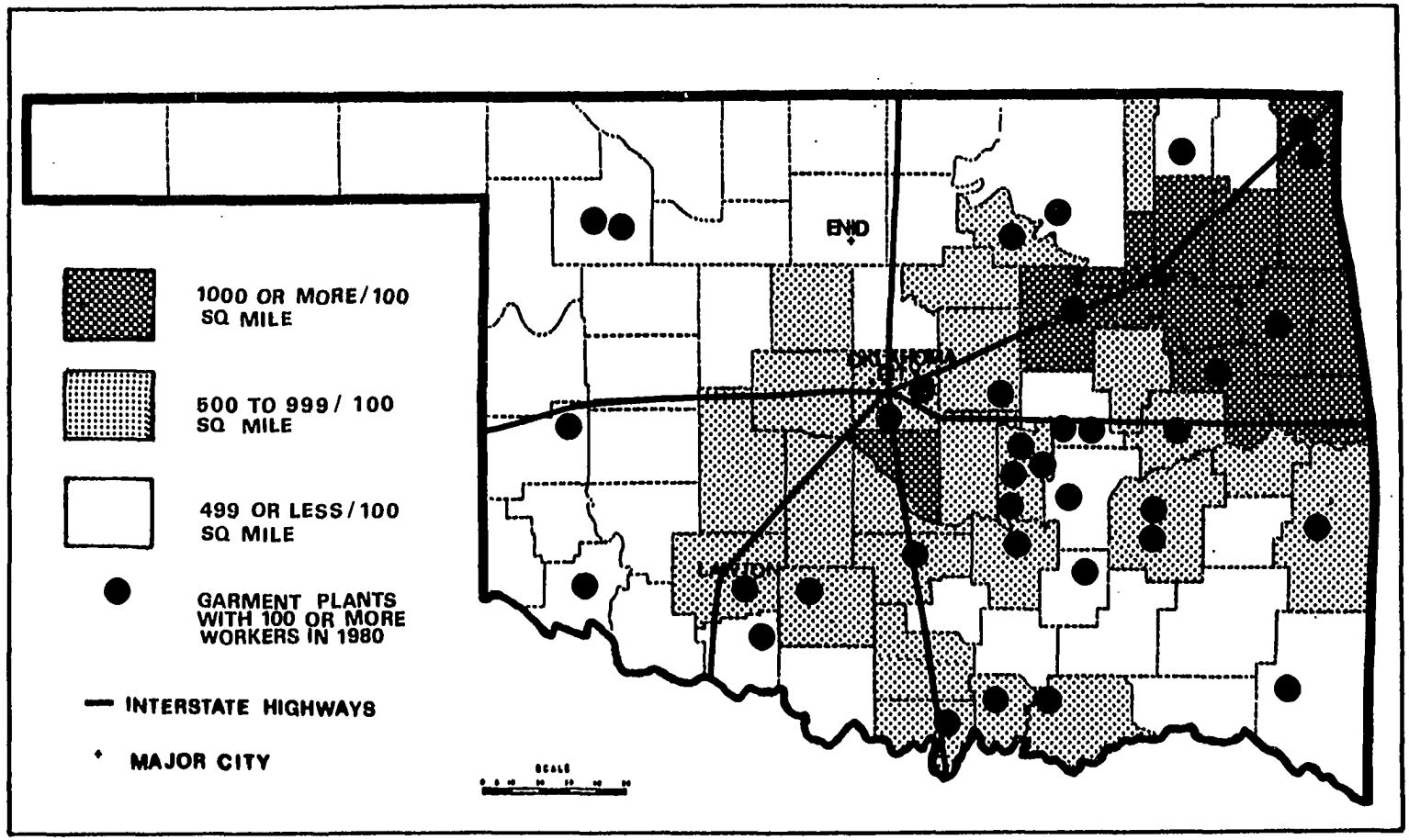

Fig. 5. Rural Female Population, 16 Years Old or Over, and Garment Plants With 100 or More Workers in 1980.

Source: U.S. Census of Population, General Economic Characteristics, Oklahoma, 1980, U.S. Department of Commerce, Bureau of the Census.

education are employed in blue-collar jobs, the lowest-paid occupations in the U.S. (Statistical Abstract of United States, 1980). For the garment industry of which workers' skill levels are generally low, large female labor pools with low educational levels represent favorable labor supplies of limited interindustry mobility and low wage levels. The growth pattern of the Oklahoma garment industry appeared to reflect the consideration attached to the educational levels. Educational levels for persons 25 years old and over were significantly lower in counties of the first group and the second group than in other counties in 1960 (Table 11). However, the phenomenon was pronounced only for early period. The gap in county educational levels became virtually imperceptible in the state both in 1970 and 1980.

As a whole, female labor supplies were significant growth determinants in the Oklahoma garment industry. Consistently, counties with a large number of female reserve labor recorded larger expansions in garment employment. On the other hand, in counties with smaller female reserve labor force the growth of garment employment was largely insignificant. From the preceeding observations, the following conclusions were drawn:

- Particularly large-scale expansions of the garment industry occurred in counties in which larger female labor pools were found.

- Counties with relatively large female labor supplies recorded higher growth rates in garment employment.

TABLE 11

EDUCATIONAL LEVELS IN OKLAHOMA--MEDIAN YEARS OF SCHOOL COMPLETED, FOR PERSONS 25 YEARS OLD OR OVER

	1960	1970	1980
The first Group * Counties	9.6	11.0	12.2
The Second Group ** Counties	9.4	10.5	12.0
The Third Group *** Counties	10.2	11.4	12.6
Urban **** Counties	12.0	12.3	12.

*Counties with major garment employment expansions.

**Counties with secondary garment employment expansions.

***The remaining rural counties.

****Includes Comanche, Oklahoma, Tulsa counties.

Source: Tabulation from U.S. Census of Population, General Economic Characteristics, Oklahoma, 1960, 1970, 1980, U.S. Department of Commerce, Bureau of Census.

- In spite of their large female reserve labor the urban counties experienced a minimal success in attracting large garment plants.

- Counties with high density female labor force recorded higher growths in garment employment. However, the relationship between county educational levels and the growth of garment employment was inconclusive.

2. County Female Labor Costs and Garment Employment Changes

Spatial labor cost variations can be measured by two separate indicators; local variations in real wages and the cost of living, an indirect source of production expenditure (Hoover, 1937). Real wage variations occur because of imperfect labor mobility, local variations of factor prices and productivity. The level of real wages is often used in projecting comparative advantages of locations. The labor costs are particularly important location factors in labor intensive industries.

In the garment industry, however, the local wage variations are, to all practical purposes, neutralized by the methods of wage administration. Wages for production workers in the garment industry are generally based on the legal minimum wage supplemented by individual productivity incentives commonly referred to as "piece work." Workers are paid for producing above a minimum daily quota. Hence, garment firms are expected to have similar per worker

labor expenditure regardless where they are located in the state.

On the other hand, low family incomes signify a labor market in which workers not in labor force can be easily drawn for work. Low family incomes are common in rural counties in which the availability of nonagricultural jobs is severely limited. Because of the scarcity in nonagricultural jobs, even low wage jobs the garment industry provides are more likely acceptable in low income counties. Therefore, the garment industry may face less difficulty in recruiting and maintaining work forces in these counties. In spite of the piece work system, low income levels shall affect the locational pattern of the garment industry mainly through their implications in local labor supplies.

Median family income in Oklahoma grew significantly during the 1960-1980 period, from $4,620 in 1960 to $17,668 in 1980. In spite of the rapid rise in the state family income as a whole. however, an extensive variation of family income persisted among counties. The income differences were particularly pronounced between urbanized counties and small rural counties (Table 12). High family income counties included urban areas--Oklahoma and Tulsa counties. relatively more industrialized area--Kay and Washington counties--, and commercial agriculture areas--Cimarron and Woodward counties. Some urban fringe areas such as Canadian, Cleveland, and Rogers counties also had high family incomes.

TABLE 12

OKLAHOMA MEDIAN FAMILY INCOME
(Dollars)

	1960	1970	1980	Change 1960-1980
State	4,620	7,725	17,668	382%
Lowest County	1,919[1]	3,979[2]	9,930[3]	517%
Highest County	6,276[4]	9,984[5]	22,649[6]	360%
Oklahoma County	5,708	9,437	19,875	348%
Tulsa County	5,995	9,652	21,125	352%

1. Adair County
2. Pushmataha County
3. Johnston County
4. Washington County
5. Washington County
6. Washington County

Source: U.S. Census of Population, General Economic Characteristics, Oklahoma, 1960, 1970, 1980, U.S. Department of Commerce, Bureau of Census.

During the 1960-1980 period, counties experiencing sizeable expansions in garment employment had lower family incomes than did both rural counties that recorded no or little garment employment changes and urban counties. Counties that recorded growths of 30 to 99 workers, the secondary growth area, had the lowest family income in Oklahoma. Counties in the major growth area had the next lowest income level. The income gaps among four different groups of counties remain consistent during the 1960-1980 period (Table 13).

It was noted that family incomes were higher in the first group counties than in the second group counties--indicating that larger expansions in garment employment occurred largely in counties of somewhat higher incomes. However, this reflected the fact that larger and more densely populated counties were, in general, higher income counties. In spite of labor orientation the industry was not able to fully utilize the large pools of female labor available in major urban counties of the state in which labor competitions were keen. At the same time, it did not take full advantage of low wages and low living costs in some rural counties because of their light labor resources. These trade-off patterns indicate that labor supplies and labor costs were restrictive factors to the full utilization of favorable labor factors in practice. This interpretation was also supported by the substantial explanatory power of labor cost

TABLE 13

MEDIAN FAMILY INCOME IN OKLAHOMA

	1960	1970	1980
The First Group Counties *	$3,710 (80.3%) **	$6,320 (81.8%)	$15,601 (88.3%)
The Second Group Counties	$3,344 (72.4%)	$5,729 (74.2%)	$13,385 (75.8%)
The Third Group Counties	$3,844 (83.2%)	$6,608 (85.5%)	$16,153 (91.4%)
State	$4,620 (100%)	$7,725 (100%)	$17,668 (100%)
Urban Counties	$5,442 (117.8%)	$8,795 (113.8%)	$18,811 (106.5%)

*The first group counties: Major garment employment growth area.
The second group counties: Secondary garment employment growth area.
The third group counties: Rural counties with no garment employment growth.
Urban counties: Included Comanche, Oklahoma, Tulsa counties.

**Percent of state median income.

Source: U.S. Census of Population, General Social and Economic Characteristics, Oklahoma, 1960, 1970, 1980, U.S. Department of Commerce, Bureau of the Census.

factors in the regression analysis (Appendix I). From the preceeding observations the following conclusions were drawn:

- The majority of Oklahoma counties that recorded sizeable growth in garment employment had lower family income levels than both the remaining rural counties and urban counties did.

- High wages and difficulties in recruitment and maintenance of work force might have deterred the major expansion of garment employment in high income counties.

- Lower family income alone was not a sufficient factor in attracting large garment plants. Rather, counties with moderate income levels and relatively large female labor pools were the most successful in attracting large scale garment plants in the state.

As a whole, the growth patterns of the Oklahoma garment industry indicated that its rural oriented plant locations were motivated primarily by female labor factors. The industry sought plant locations in areas where sufficient female labor supplies were available at moderate costs. The full utilization of more plentiful labor supplies was hindered by high labor costs and competitions in urban areas. As a result, large scale garment plants shunned the metropolitan counties in favor of rural counties. The bulk of urban garment employment was furnished by small specialty producers in the state.

The growth patterns highly oriented to favorable rural female labor factors were greatly influenced by the way the Oklahoma garment industry grew. It was most fortunate for the Oklahoma garment industry to be able to attract a large number of out-of-state plants into the state. Only through this opportunistic capital were the favorable labor resources in those rural counties to become utilized during the 1960-1980 period. This development might not have been possible if the expansions of the industry were completely dependent upon the state firms. In the following section the growth of the Oklahoma garment industry was decomposed to identify the way the industry achieved its most significant growth during the period. The decomposed growth pattern shall help to further comprehend the rural orientation of the industry in the past and the growth and locational pattern of the industry in the future.

B. Garment Plant Locations in Growth Components Perspectives

In this section the aggregated growth of Oklahoma garment industry was dissected by two growth sectors, positive and negative growth sectors. The positive growth sector represented employment increases occurred by establishments of new plants and on-site expansions. On

the other hand, the negative sector stood for employment contractions caused by plant closings and on-site capacity reductions. The justification of this approach is that these growth components behaved characteristically in both capacity and location decisions.

In general, entry barriers are lower for small plants than for large ones. As a result, small plants are more numerous among new entrants and their locations are more widely dispersed (Porter, 1980). Unlike small plants, large plants usually face higher entry barriers, both in terms of the industrial competitions and available resources. Although by large they are more capable of adapting their operations to various local conditions due to greater financial and administrative resources, still large plants tend to locate in or near major urban areas. A plant ceases its operations for a variety of economic and non-economic reasons. Among them, a poor profit generation is often considered responsible for the vast majority of plant closings. The level of profit required to maintain a stable operation may differ among industries, but a sustained profit loss is likely to lead to a plant closing. Decisions affecting plant openings, closings, and on-site

capacity adjustments are based on not only the changing profit assumptions of the firm but the business philosophy of the management. The firm may take entirely different approaches from others in reaching capacity decisions depending on its strategic objectives.

- The growth components of the Oklahoma garment industry: The net employment growth of the Oklahoma garment industry was consistently smaller than the actual number of garment workers added to the work force during the 1960-1980 period. This deviation was caused by the calculation process in which a residual of offsetting changes amounts to a net employment change. Because some negative changes--plant closings and on-site capacity reductions--and new entries and on-site expansions were always occurring simultaneously, the net changes were invariably smaller than the actual employment additions (Appendix Tables A, B, C, D). The net employment growth of the Oklahoma garment industry represented only 20 to 57 percent of the actual employment changes that took place at the level of individual change components during the 1960-1980 period.

In terms of net employment changes, the garment industry marked the highest growth rate during the 1967-1972 period. Since then, growth slowed down noticeably. Yet, the growth performance based on changes of individual growth components clearly indicates that the recent stagnation was traced back to the 1963-1967 period. The strong employment gain-loss

ratio in the 1963-1967 period was followed by successive declines in both categories of plant openings-closings and on-site changes during the 1967-1980 period (Table 14).

TABLE 14

GAIN-LOSS IN OKLAHOMA GARMENT INDUSTRY

	Entry-Exit*	On-site*
1963-1967	2.38	13.34
1967-1972	2.24	4.31
1972-1976	1.92	1.56
1976-1980	.77	.50

*The number of garment employment increase by plant openings/the number of garment employment lost by plant closings.

**The number of garment employment increase on-site/the number of garment employment lost on-site.

The gradual changes of the gain-loss ratios during the 1960-1980 period exemplified the trend that the expansionary growth of the industry in the early 1960s was succeeded by deteriorating growth, reaching outright employment losses in the 1976-1980 period. The contraction of the garment employment was caused by worsened plant closings and reduced on-site operation levels. This trend was particularly pronounced during the period in which

plant openings and on-site expansions were slowed down considerably in the late 1970s. The exacarbated growth performance of the industry might have reflected the deteriorating comparative advantages of the state in garment manufacturing and the general stagnation of the industry as a whole.

The garment employment growth generated by the establishment of new plants outnumbered that added by on-site expansions by the ratio of 74 percent to 26 percent during the 1963-1980 period. Moreover, this pattern was affected little by the fluctuated growth rates of the industry during the period. This pattern of consistency in garment employment growth is a significant finding (Table 15). The fact that the industry grew largely through the establishment of new plants rather than by on-site workforce expansions indicates that the Oklahoma garment industry had been responsive to opportunities to expand its existing capacity in the state. This might have been the result of the structural weakness of the Oklahoma garment industry, a relatively small size and a high concentration of slow-growth product lines. On the other hand, out-of-state firms moved in to seize the opportunities and took advantage of the favorable labor factors. The influx of out-of-state garment firms into the state was motivated by the presence of favcrable female labor supplies and relatively cheap labor costs as identified in the preceeding section.

TABLE 15

THE GROWTH OF THE OKLAHOMA GARMENT INDUSTRY
BY CHANGE COMPONENTS

Change Components			1963-1967	1967-1972	1972-1976	1976-1980
Positive Change	Growth by new-entry	NW	2,026	4,892	2,788	1,352
		NP	24	37	32	23
	Growth by on-site expansions	NW	814	1,669	922	475
		NP	15	20	13	14
Negative Change	Contraction by closing	NW	715	2,180	1,452	1,743
		NP	9	22	18	20
	Contraction by on-site reductions	NW	61	387	591	955
		NP	4	8	11	12
Net Change		NW	2,064	3,994	1,667	-871

*NW: Number of workers
NP: Number of garment plants

Source: Oklahoma Directory of Manufacturers and Products, 1963, 1967, 1972, 1976, 1981, State of Oklahoma, Department of Industrial Development.

Ironically, the inability to expand its productive capability in existing plants might have contributed to keeping the entry barriers of the garment industry low in the state. This, in turn, might have further facilitated the migration of new garment plants to the state, resulting in the embracement of a large number of out-of-state garment firms. The out-of-state firms supplied 63.5 percent of total garment employment in 1980 (Table 16).

The contraction patterns of the garment employment were much different from that of the growth. Although employment contraction caused by plant closings was the main source of the garment employment loss throughout the period, the share of plant closings was reduced in proportion during the 1963-1980 period. On the other hand, the garment employment contraction caused by on-site reductions became a larger loss factor. This contraction trend infers that the performance of existing garment plants was progressively deteriorated, although the detriment was not extensive enough to cause sweeping plant closings during the period.

As a whole, garment employment created by the establishment of new plants better represented the growth trend of the industry. On the other hand, on-site reductions became an increasingly large change component in the employment loss. The particular growth process is indicative of that the state maintained certain interstate comparative advantages in garment manufacturing during the 1963-1980 period. However, extensive employment losses caused by

TABLE 16

OUT-OF-STATE OWNERSHIP OF OKLAHOMA GARMENT INDUSTRY (1980)

Major Firms	Ownership Location	Number of Oklahoma Plants	Total Workforce
Munshing Wear Co.	Minnesota	2	296
Blue Bell, Inc.	North Carolina	6	1,387
Haggar Company	Texas	3	880
Glen Oaks Company	New York	2	675
Kellwood Company	Missouri	3	786
Komar, Charles, & Sons	New York	2	650
Others (with one plant)		12	2,267
Total		30	6,941

Source: Oklahoma Directory Manufactures, 1980, Department of Industrial Development, State of Oklahoma.

on-site reductions at the time when on-site expansions were markedly slowed also imply that the competitive advantages of the Oklahoma garment industry were progressively deteriorated during the period.

The decomposition of growth components furnished valuable insights into the growth dynamics of the Oklahoma garment industry. The fact that the industry expanded largely by in-migrations of big out-of-state firms--new plants supplied 71 to 74 percent of the employment growth during the period--had significant implications for the location pattern of the industry. The rural orientation of the Oklahoma garment industry was largely pioneered by these firms as they sought locations in which the utilization of cheap labor can be sustained. Without these firms it would have been impossible for the state of Oklahoma to develop the garment industry at the current level. The impacts of the diminishing in-migration of out-of-state firms shall be profound in the Oklahoma garment industry in the 1980s. As the large influx of out-of-state garment firms are no longer expected, it will be even more critical for the industry to maintain a stable operation in existing plants. Moreover, on-site expansions may have to be stronger if the ill effects of the expected decline in new plant openings are to be minimized. However, neither the stagnating consumer market nor the deteriorating comparative advantages of garment manufacturing in the state appears favorable for

the strong performance of the Oklahoma garment industry in the 1980s.

A Summary of the Plant Locations in the Oklahoma Garment Industry

The results of the female labor studies strongly support the hypothesis that female labor factors were the most powerful growth determinants in the garment industry. The availability of female labor was the most consistent predictor of where the growth of garment employment took place. Although labor cost was a significant location factor, its explanatory power was considerably weaker than the labor supply factors. This finding is inconsistent with the widely accepted labor cost assumption by which labor cost is considered the most critical location factor. Rather, the location pattern of the garment industry was led primarily by the availability of female labor force. Yet, this labor force has to be purchasable at moderate costs. This phenomenon is a strong indication that female labor force was considered a place specific commodity in the garment industry. Therefore, it should be noted that the applicability of the labor cost assumption varies from one industry to another depending upon production modes and labor requirements of the industry.

The predominant rural orientation of the Oklahoma garment industry was the spatial manifestation of the dynamic search for female labor force in rural areas. Labor cost

variations had played an important but complementary role in this regard. Higher labor costs had restricted the industry from full utilization of female labor resources in urban and some high income agricultural counties. The intermediate level labor costs, however, did not prohibit the utilization of female labor resources. This partial restriction imposed by labor costs considerations is related to the piece work wage administration, an unique characteristic of the industry.

The importance of the female labor factors fluctuated over the period, indicating that the overall growth rates affected the relative importance of female labor factors. The female labor factors were more significant growth determinants during the period in which the growth rate was relatively low and vice versa. The trend implies that female labor factors shall assume a more critical role in the growth pattern of the Oklahoma garment industry in the 1980s, as the state is expected to suffer a slower growth due to the stagnating growth of the garment industry as a whole.

The major growth component had a direct bearing on the role of location factors. During the 1963-1980 period, in which the rural orientation of the garment industry was pronounced, new garment plants had been the most contributing growth component. The influx of large scale garment plants into the state made the large labor supply the most important location factor. Whereas the interstate advantages in female labor factors have been responsible for the influx of a large

number of new garment plants, the intrastate differentials of female labor factors were less influential to the location practices of the industry.

Findings of these studies enabled the researcher to draw two important conclusions. First, favorable female labor resources of Oklahoma had a strong interstate appeal, particularly during the 1963-1976 period. The availability of this labor resource in the rural areas led the predominant rural orientation of the industry in the state. The labor factor is expected to become even more critical for the industry in the 1980s, as its domestic and foreign competition intensifies. Second, the growth of the Oklahoma garment industry was overly dependent on the establishment of new plants. The employment growth generated by on-site expansions, which remained a secondary source of the growth during the 1963-1980 period, dwindled during the period. Conversely, the on-site capacity reductions progressively worsened. These trends indicate that favorable female labor factors that were conducive to the influx of large garment plants into the state was less effectual to the growth of existing garment plants. The comparative advantages of the state in garment manufacturing may have been insufficient to overcome the structural and competitive weakness of the industry, particularly during the late 1970s.

It is not clear why the Oklahoma garment industry was so ineffective in capitalizing the favorable growth opportunities in the state. However, the structural weakness of the

industry might have deterred the expansions of existing garment plants in the state. There is little indication that the industry has achieved structural improvements that may make it more competitive in the 1980s.

CHAPTER VI

ANALYSIS OF OKLAHOMA FEMALE LABOR RESOURCES 1980-1990

In the preceding chapters the availability of female labor supply was singled out as the most significant location factor of the garment industry. It is likely that this factor will remain as the most decisive consideration in the strategic capacity questions, since the labor-intensive production mode is expected to be used in the industry with little alteration.

In this chapter the prospects of the Oklahoma garment industry in the 1980s are assessed in relation to the spatial availability of female labor resources. The assessment is based on the projected size of the female labor forces and their geographic distribution pattern during the period. The first section of this chapter introduces a general trend of the female labor resources in the United States, which is important to understand the anticipated changes in the 1980s. The second section undertakes a study for the female labor resources in Oklahoma and their distribution pattern. A modified cohort survival method is utilized to calculate the

growth of female population in each county. The third section examined the size of female labor shed areas for rural garment plants. This study is needed to put the female labor distribution pattern into regional perspectives. The fourth section discusses implications of the female labor resources in the garment industry in the 1980s.

A. Female Labor Resources in the United States: A General Trend

Today, more than any time in history, women are firmly established members of work force in the United States. In spite of traditional household responsibilities generally detrimental to active labor participation, women accounted for 60 percent of the accumulated gain in the labor force during the 1970s (U.S. Department of Labor, 1980). This expansion was benefited by the phenomenal upsurge in the female labor participation rate during the 1960-1980 period.

The labor participation rate among female population has been on the rise for the last three decades in the United States. It reached 51.2 percent in 1980, narrowing the once vast gender gap to 26 percent. The female labor participation rate is expected to rise even higher in the 1980s. Economic necessity, the continuing societal acceptance of female employment, and expanding educational opportunities among the female population remain factors favorable for even higher female labor participation rate.

Furthermore, female workers also made significant progress in broadening their occupational base. Female workers accounted for 43.3 percent of the professional-technical occupations in 1979 (U.S. Department of Labor, A Databook, 1980). However, women's representation in the manufacturing industry was not significantly improved as women accounted for only 31.2 percent of the manufacturing employment in 1979 (U.S. Department of Labor, 1980). In spite of the progress the majority of women still work in the traditionally female dominated areas such as clerical and service occupations. Women amounted to 62.1 percent of the total employment in service occupations and 80.3 percent in clerical occupations in 1979.

In the 1980s the number of new female workers entering the labor market of the nation shall be fewer than that of the 1970s. This is anticipated because of a significant drop in the number of women reaching the work age in the 1980s, a result of the lower birth rate during the 1960s. As a result, the female labor force of the nation is projected to grow by 1.8 percent per year in the 1980s, a significantly lower rate than 3.2 percent a year experienced during the 1970s (U.S. Department of Labor, 1976).

The slower expansion of the female labor force in the 1980s will have a direct impact on the growth of the female labor force in Oklahoma. The following projection for the female labor force of the state is based on lower growth

rates of the labor force in the nation as a whole in the 1980s.

B. The Outlook for the Female Labor Force in Oklahoma

During the 1970s, Oklahoma's population expanded by 18.2 percent, of which in-migration was responsible for 63.3 percent of the growth. Two important trends were particularly beneficial for the high in-migration rate; the strong North-South movement of the population and industry, and the strong economic performance benefited by its booming energy industry and other manufacturing industries which were attracted to low-cost resources available in the state. The expanded employment opportunities in the high-paying industrial sectors further attracted the young workers into the state. As a result, young adults accounted for the majority of the population that migrated into the state during the 1970s.

Although it is likely that the state maintains a favorable migration balance in the 1980s, the work-age population migrating into the state is expected to be smaller than that of the 1970s. This projection is partially based on the discouraging economic conditions no longer conducive to extensive industrial expansions in the state. The rapid expansions of the manufacturing and mineral extraction industries in the past made the manufacturing wage level in the state parallel to the national average by 1980 (Warner, 1981). The high manufacturing wage shall become a significant

obstacle to industrial development in the state. During the 1980s Oklahoma shall have to pursue its industrial expansion without having the benefit of the substantial wage advantage it commanded in the 1960-1980 period. In addition, the stand on industrial promotions is often interpreted unfavorably by industries, putting the state in a more difficult position in attracting industries in the 1980s.[1]

Furthermore, the falling rate of the population growth in the nation as a whole and the aging of the baby boom generation shall supply increasingly smaller number of new entrants into the migration pool. The smaller migration pool of the nation shall reduce the in-migration flows into the state. These dual processes may become a significant encumbrance to the population growth in Oklahoma in the 1980s. Particularly because Oklahoma had grown in the past through heavy in-migration, these changes shall be felt acutely. Although in-migration is expected to be beneficial to the state, its volume shall be much smaller during the 1980s. The following projection for Oklahoma's female population is based on this lower rate of in-migration.

Methodology: The projection for Oklahoma's female population is prepared by using the cohort survival method (Irwin, 1977). This method is utilized to project the population growth based on each cohort group's specific

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[1]Oklahoma's tax abatement incentives to waive ad valorem taxes on industrial property was ruled improper by former Attorney General Jan Cartwright on July 31, 1979.

growth rate, which varies due to different survival rates among cohort groups. Moreover, the cohort method is particularly suitable in projecting the growth of a county female labor force, of which the total size is determined by both population size and labor participation rate of each cohort group. Yet, in view of the limited availability in detailed information of the migration and mortality rate in each county, the method is modified so that the growth rates of civilian labor force projected by the U.S. Department of Labor (1976) can be utilized instead. The methodology is expressed as follows:

$$\sum_{c=1}^{77} OFP\ 1990_{ct+2} = \sum OFP\ 1980_{ct+1} + [(\sum OFP\ 1980_{ct+1} - \sum OFP\ 1970_{ct}/\sum OFP\ 1970_{ct}) \times (USCLG\ 1980 - 1990/USCLG\ 1970\text{-}1980) \times \sum OFP\ 1970_{ct})]$$

where:

$\sum_{c=1}^{77} CFP\ 1990_{ct+2}$ = Oklahoma's female population, 1990, cohort group t+2

$\sum_{c=1}^{77} OFP\ 1980_{ct+1}$ = Oklahoma's female population, 1980, cohort group t+1

$\sum_{c=1}^{77} OFP\ 1970_{ct}$ = Oklahoma's female population, 1970, cohort group t

USCLG 1970-1980 = U.S. civilian labor force change, 1970-1980

USCLG 1980-1990 = Projected U.S. civilian labor force change, 1980-1990

- Female Population in Oklahoma, Its Age and Geographic Distribution

Oklahoma's work age female population, aged 16 to 64, is expected to grow to 1.24 million by 1990. This change represents a growth of 130,000 persons or 11.8 percent growth rate during the 1980-1990 period. The growth rates shall be diverse among cohort groups, ranging from 22.3 percent for the 40-49 age group to 3.4 percent for 20-29 age group. Two younger cohort groups, 16-19 age group and 20-29 age group, are expected to have the lowest growth rates during the 1980s as already shrunk teenage and youth groups reach the work age during the period. Contrary to the slower growth rates among young cohort groups, the major labor contributing cohort groups, 30-49 age groups, shall have significantly higher growth rates. Their relatively low mortality rate and low out-migration tendency are considered contributing factors for the higher growth rate. As two major cohort groups are expected to supply 67.4 percent of

the work age female population growth, the female labor supply of the state shall remain stable in spite of the slower growth in the 1980s (Table 15).

In the geographic distribution pattern the metropolitan areas of the state, Oklahoma and Tulsa counties, are expected to share 33.4 percent of the female work age population of the state in 1990. In addition, counties in the metropolitan fringe areas shall have generally large female population. Twelve SMSA counties that include metropolitan counties and their fringe counties are expected to provide 55.7 percent of the total female work age population, while the remaining 65 nonurban counties shall make up the other 44.3 percent of the female population in 1990.

The variation in the endowment of female work age population among Oklahoma counties is extensive. Only four counties--Oklahoma, Tulsa, Cleveland, and Comanche counties--are expected to have female work age population of larger than 30,000 persons in 1990. The other 73 counties shall have female work age population of less than 30,000 persons. Moreover, female work age population is expected to be less than 3,000 persons in 1990 in twelve small rural counties. In these labor deficient counties large scale industrial developments by labor-intensive industries shall be hindered by their inadequate labor supplies (Table 16).

TABLE 17

OKLAHOMA'S FEMALE POPULATION CHANGE

BY AGE COHORTS, 1980s

	Female Population		Change, 1980-1990	
Age Cohorts	1980	1990*	Persons	Percent
16 - 19	144,860	150,842	5,982	4.1
20 - 29	269,918	278,994	9,076	3.4
30 - 39	234,724	279,512	44,788	19.1
40 - 49	195,301	238,803	43,502	22.3
50 - 59	178,696	197,223	18,527	10.4
60 - 64	89,087	98,191	9,104	10.2
Total	1,112,586	1,243,565	130,979	11.8

*The writer's projection.

TABLE 18

OKLAHOMA'S FEMALE POPULATION DISTRIBUTION

BY COUNTY GROUPS IN 1990*

County Female Work Age Population	Number of Counties	Percent of Total	Accumulated Percent of Total
More than 100,000	2	33.4	33.4
30,000 - 99,999	2	8.0	41.4
10,000 - 29,999	32	43.7	85.1
Less than 9,999	41	14.9	100.0

*The writer's projection.

- Female Labor Participation Rate in Oklahoma

Female labor participation rate varies to some degree among different age cohort groups. The variation ranges from a high of 67.7 percent for 20-24 age group to a low of 41.6 percent for 16-17 age group in 1980. Yet, the labor participation rate of all female cohort groups of 16-64 age rose substantially during the 1960-1980 period in the United States. In 1980, three major labor contributing cohort groups had higher labor participation rates: 67.7 percent for 20-24 age group, 65.4 percent for 25-34 age group, and 65.5 percent for 35-44 age group (U.S. Department of Labor, 1980). Labor participation rate for these groups is expected to remain high during the 1980s since economic necessities for two income sources continue to be strong. A common view that labor participation rates for women at the primary childbearing ages are significantly lower than both those of younger and of somewhat older women shall have a limited validity in the 1980s. Rather, young female age groups are expected to take an active role in the female labor market by either postponing start of a family or abandoning the idea of having children (U.S. Department of Labor, 1976).

Oklahoma's female labor participation rate was 41.2 percent in 1980, which was lower than the nation as a whole by 10 percent. Natural resources oriented economy, its rural characteristics, and the age cohort pattern for work

age female population might have been responsible for the lower female labor participation rate in Oklahoma.

The proportional distribution pattern of work age female cohorts in Oklahoma differed substantially from that of the nation as a whole. Female age groups with the highest labor participation rates, 30-39 and 40-49 age groups, were smaller in proportion in Oklahoma than the national average to some noticeable extent. On the contrary, the groups with lower labor participation rates, 16-19 and 50-59 age groups, were larger in the state than the nation as a whole in proportion in 1980. This age cohort structure is expected to have substantial impacts on the female labor participation rate in the state during the 1980s.

The rural characteristics of the state shall also have some bearing on the female labor participation rate. In Tulsa and Oklahoma counties, female labor participation rate reached 54.3 percent in 1980, a substantially higher rate than that of the national average. Female labor participation rates were above the state average in the 12 SMSA counties, while they were lower than the state average in the 41 rural counties. In general, the gap between urban and rural counties in female labor participation rate exceeded 10 percent in 1980.

The female labor participation rate was obtained by extrapolating the change rate each cohort group experienced during the 1970-1980 period. In addition, in order to

incorporate the urban-rural variations in female labor participation rate, counties are classified by four categories and counties in each category are considered to have identical growth variations in the 1980s. It was estimated that the female labor participation rate shall increase by 75 percent in urban counties and 70 percent in urban fringe counties of what they recorded during the 1970s. As a whole, it was projected that the female labor participation rate shall continue tc rise in the 1980s, with similar geographic characteristics but at a much slower pace than in the 1970s.

Cklahoma's female labor participation rate shall reach 47.2 percent in 1990, which represents 6 percent increase from that of 1980. The extensive variation between rural and urban counties, however, are expected to remain unresolved, ranging from 33.6 percent in Haskell County to 66.6 percent in Cleveland County in 1990 (Table H, Appendix). The rate for Oklahoma and Tulsa counties shall reach 62.0 percent, while the average female labor participation rate in the state's 12 SMSA counties shall approach 55 percent in 1990.

- Oklahoma's Female Labor Force in 1990

Female labor force in a county expands through both enlargements in the base population of 16-64 age groups and higher labor participation rates. In the majority of the Oklahoma counties these dual increments shall occur during the 1980s. Yet, this phenomenon is expected to be more

significant in the large metropolitan counties and their fringe counties. Conversely, in some small rural counties both base population and female labor participation rate are projected to decline in the 1980s leading to a smaller female labor force. The growth pattern of the female labor force in the 1980s reflects the distribution pattern of population and general manufacturing industry, an urban concentration (Figure 4). The female labor force of the state is expected to expand by 28 percent or 128,526 workers in the 1980s. The growth shall originate from both sources; a 11.8 percent expansion in the female base population and a 6 percent hike in the female labor participation rate during the period. The bulk of this female labor force additions shall largely be centered in the two metropolitan regions of the state. The general distribution pattern is summarized as follows:

Primary female labor supply area (4 counties): The four major urban counties are expected to share more than 5,000 new female workers each, supplying 46.5 percent of the state female labor force that is projected to newly enter the labor market during the 1980s. These counties include Oklahoma County, Tulsa County, Canadian County (in Oklahoma City SMSA), and Cleveland County (in Oklahoma City SMSA). The variation among these counties are, however, substantial; Oklahoma County and Tulsa County are expected to have more than 16,000 workers, Cleveland County with 14,000 workers,

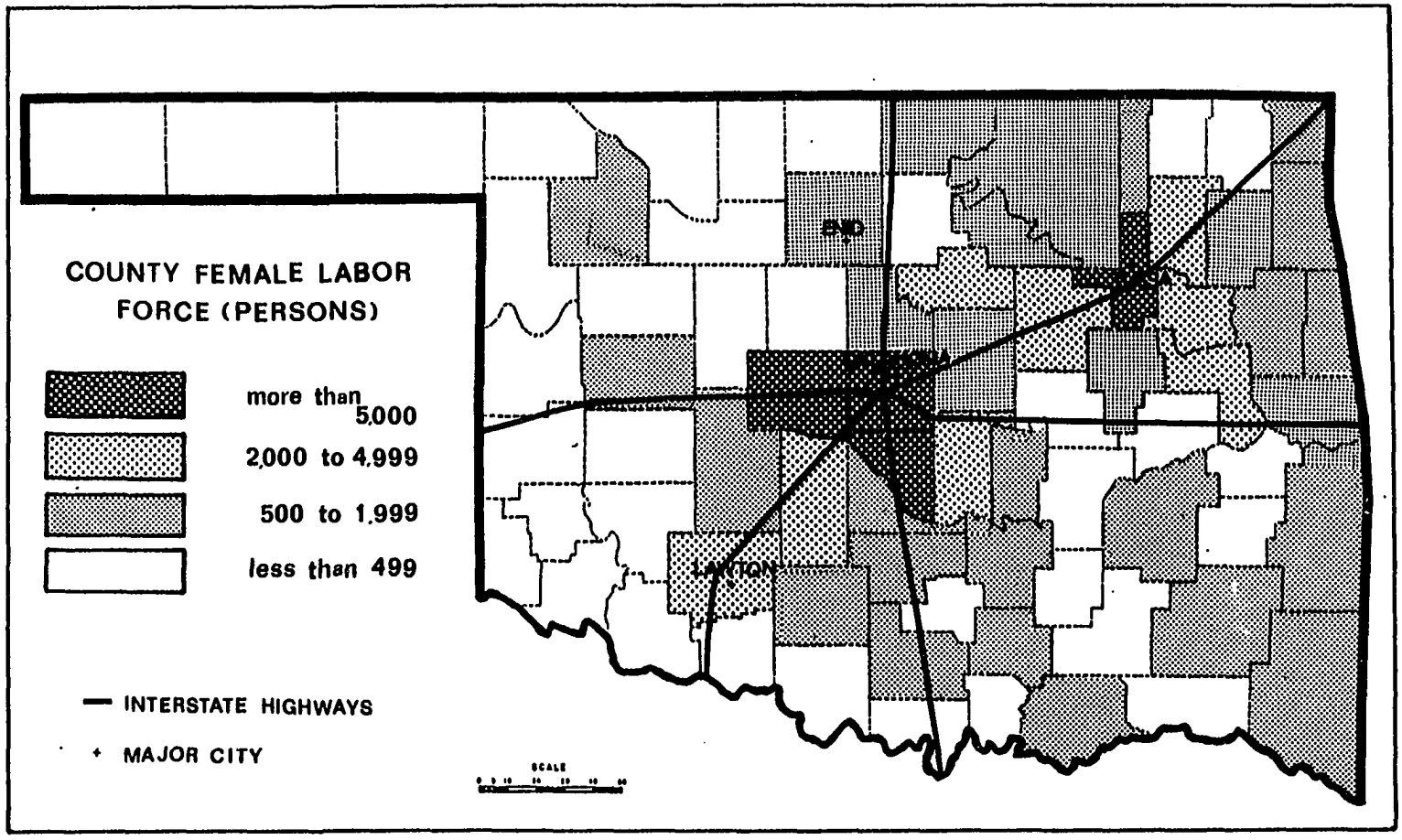

Fig. 6 County Reserve Female Labor Force in Oklahoma, 1980s

Source: The writer's projection.

and Canadian County with 6,000 workers. This distribution pattern further contributes to the enlargement of female labor supply in the two metropolitan regions of the state to some significant extent in the 1980s.

Secondary female labor supply area (8 counties): The area consists of 8 counties, each of which share 2,000-4,999 workers of the new female labor force expected to be added on the current labor force during the 1980s. The area, as a whole, is expected to supply 26,871 workers or 20.9 percent of the state total. It includes Comanche County (Lawton SMSA), Grady County, Muskogee County, and Payne County. The secondary female labor supply area which includes the most SMSA counties and other counties adjacent to the metropolitan regions further strengthens the mastery of the urban regions in the female labor supply during the 1980s. Twelve urban counties that include the secondary female labor supply area share 66.3 percent of the state female labor force addition during the period.

Tertiary female labor supply area (29 counties): In this area female labor supply is expected to be too limited to accommodate large scale female employment expansions, if they have to be supported by a single county. The counties in the area shall have new female labor additions of 500-1,999 persons. The majority of these counties are located in the rural east and central regions.

Insufficient female labor supply area (36 counties): Thirty-six counties are expected to add female labor force

of less than 500 workers to their existing female labor force during the 1980s. Among these labor insufficient counties eight small rural counties shall experience a contraction of female labor force during the period. These counties are scattered over the state, although most counties in the western part of the state fall into this category. In these counties even a moderate growth of female employment shall not be readily accommodated due to their meager labor resources.

The distribution pattern of female labor force that is expected to enter the labor market during the 1980s shall augment the existing urban-oriented female labor supply in the state. The two metropolitan regions are expected to share the greater portion of the female labor supply available during the period, and shall remain as the labor sufficient area capable to accommodate large scale expansions in female employment.

The availability of labor force alone did not preclude industrial development of the county in the past. On the contrary, some garment firms managed to locate their plants in counties where female labor resources were generally inadequate. This flexibility in plant locations were possible by female workers' high mobility in rural areas. Extensive commuting can extend the local labor market to beyond a county boundary and lessen the labor insufficiency in the county to some extent. In practice, a local labor market is often

larger than a county and industries assume their labor sheds extended beyond a county boundary. The following section examines the female workers' commuting pattern in rural Oklahoma to put the availability of the county female labor force into regional labor shed perspectives.

C. The Female Labor Shed Area in Rural Oklahoma

The elasticities of labor supply facing individual firms are affected by wage and population density (Nelson, 1973). Higher wages which may motivate workers to commute longer distance beyond the small local labor markets are prerequisite to an extended labor shed area. A large plant must offer a higher wage to maintain its large labor shed area than a small plant does. Therefore, wage differentials shall be greater in the sparsely populated area. The relationship between wages and commuting distances has been found to be positive (Fuchs, 1971; Hecht, 1974).

In comparison to male workers, female workers tend to have shorter journeys to work in general. This difference stems from women's housewife-worker status. Female workers prefer to commute shorter distances than male workers do largely because many women have to assume household responsibilities simultaneously. Furthermore, women's status as secondary income earners of a household makes female workers less mobile (Haddad and Schwartzman, 1975). Yet, female workers' shorter journeys to work is more noticeable in urban areas in which employment opportunities are more diverse

and spread geographically than in rural areas. In rural areas where the limited number of nonagricultural jobs are usually concentrated at a few small communities, female workers are often unable to find a job in the vicinity. Furthermore, rural households seldom relocate their residences to provide a proximity to women's jobs. As a result, rural female workers often have to commute a substantially longer distance than do urban female workers.

The labor shed areas of two Oklahoma garment plants are examined to illustrate female workers' commuting patterns in rural Oklahoma. These plants are located in substantially dissimilar regions of the state in respect to population density and general economic characteristics (Figure 5). The Big Yank Corporation is lcoated at Wewoka, Seminole County, a labor-sufficient region. The region attracted a number of large garment plants in the early 1960s and remained the most prominent center of the Oklahoma garment industry in 1980. In addition to its substantial garment industry, diversified agriculture, mineral extractions, and industries related to energy extraction and machinery products were the important income producers of the region.

The Woodward Manufacturing Company is located in close proximity to Woodward, Woodward County. Woodward is the commercial center for a region whose economy is traditionally dominated by commercial agriculture and ranching. However, the energy extraction industry became a major source of the

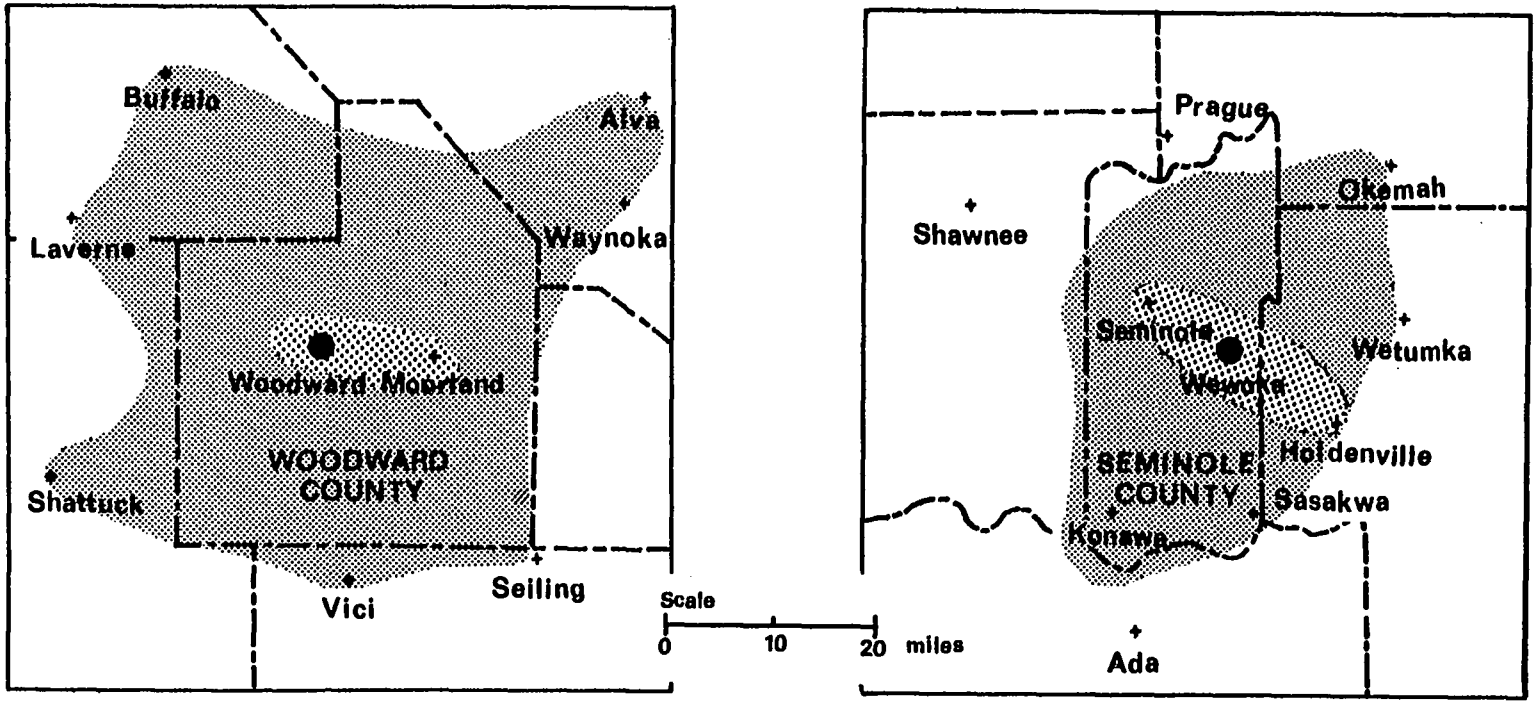

Fig. 7 Commuting Distances in Rural Garment Plants.

Source: Workers' place of residence tabulated from information provided by respective firm.

income and employment of the region during the 1970s. Spurred by the energy industry, the service sector industries also expanded during the period. Female labor resources were meager due to its light population density in the region.

Labor shed area of each plant was drawn based on the places of employees' residence, the information provided by respective firms. Those places represented by fewer than two employees were not considered to be in a labor shed area. The labor shed areas of the Big Yank Corporation and the Woodward Manufacturing Company were rather large in 1982 (Figure 5). Yet, there was an apparent size variation between the two labor shed areas; the average commuting distance was 23.8 miles for the Big Yank Corporation, while it was 41.3 miles for the Woodward Manufacturing Company. In a sense, these commuting distances did not correspond with the normally accepted notion of the maximum labor shed area that is considered to extend 30 miles from the plant location or within one hour of commuting time (Moriarty, 1980). In spite of the common assumption that commuting distance is longer in a rural area, workers in the Big Yank Company in Wewoka commuted a relatively short distance. Moreover, the substantial size difference found in labor shed areas of two garment plants indicate that geographical mobility of rural female labor was highly flexible and the commuting ranges were affected by the local population densities and the availability of alternative jobs. On the other hand, the primary labor shed areas, from which more than 60 percent of

the labor force is drawn, were generally similar in size for both garment plants. Commuting distances for both labor shed areas were less than 15 miles.

The difference observed in commuting distances of two plants reflected the differences in population density and the availability of alternative employment opportunities in respective region. The contrasting population density of these regions resulted to differing labor availability and labor participation rate. Female labor participation rate was 44.7 percent for lightly populated Woodward County, but 39.5 percent for moderately populated Seminole County in 1980. Although the high wage levels in the region might have affected indirectly the size of labor shed area for the Woodward Manufacturing Company, they were not considered directly responsible for the greater commuting distance observed among workers of that plant. Per worker labor expenditures were basically identical for both plants.

The substantial variation found in the size of labor shed areas of the garment plants indicates that the female labor supplies were significantly elastic in terms of geographic mobility in rural areas. Nevertheless, the maximum labor shed for the rural garment plants was not directly measurable. As an indirect approach, both labor shed areas were evaluated by using growth performance of respective firms to identify the workable labor shed area.

The Woodward Manufacturing Company experienced an acute labor shortage in late 1970s and early 1980s. The

company was unable to expand its operation to the level at which its production facility could be fully utilized due to its inability to secure an additional labor force. Furthermore, the excessive labor turnover caused by severe labor competitions in the region cost the firm frequent work stoppages. The instability in its work force which was exacerbated by the overly extended labor shed area became the most damaging factor responsible for its eventual closing in 1982.[2] The wage level of the garment industry was not high enough to compete with the then-prospering service industries, a new competitor for female labor in the region. The company was neither able to overcome the disadvantages of low-wage in the local labor market nor to expand its labor shed area into more remote areas. In view of the firm's incapacity to further expand its labor shed area, the 40 mile commuting distance shall be considered the limit for the geographic mobility of the female labor force in the industry. However, as the eventual closing of the plant indicates, a stable labor supply is expected to be sustainable only in a much smaller labor shed area.

A shorter commuting distance, on the other hand, was characterized with a stable labor supply. The Big Yank Corporation, which had an average commuting distance of 23.8 miles, maintained a stable production level. The labor turnover rate of the firm was relatively low and replacements

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[2]Personal Interview with Bill Johnson, Manager, Trego's Westwear, Inc. (Woodward, Oklahoma), 8 June, 1982.

were readily available (Table 17). The female labor supply was sufficient enough to minimize the interindustrial labor competitions in the region.

Female workers of Oklahoma rural garment plants commuted substantial distances. The average commuting distances were, however, significantly different between locations. Population density and the availability of alternative employment seemed to have more direct bearing over the commuting distance than wage did. Female workers in a sparsely populated and lightly industrialized areas commuted a longer distance than those who in a densely populated and industrialized areas did. Long-distance commuting among female workers could ease the adverse effects of urban oriented female distribution in the 1980s. It could open up counties in the secondary and even tertiary female labor supply areas for industrial development. Thus, if the extensive commuting practiced by rural female labor force prevails in the future, the availability of female labor force in Oklahoma shall be extended to the large portion of the state, including most counties in the central and northeastern part of the state in the 1980s (Figure 6).

D. Oklahoma's Female Labor Resources and Industrial Development in 1980s

Urban oriented female labor resources in Oklahoma shall have significant implications on its industrial development in the 1980s. Twelve urban and urban fringe counties are

TABLE 19

A COMPARATIVE OVERVIEW
(1982)

Characteristics		Big Yank Company Wewoka - Seminole	Woodward Manufacturing Company - Woodward
Regions' Characteristics	Population Density	Moderate	Low
	Labor Supply	Sufficient	Deficient
	Wage Level	Low	High
	Major Female Employer	Garment Industry	Service Industries
Firms' Characteristics	Product Line	SIC 2327*	SIC 2322**
	Total Employment	400 workers	350 workers
	Average Commuting Distance	23.8 miles	41.3 miles
	Labor From Local Labor Market	55-60 percent	40-45 percent
	Annual Labor Turnover	25-30 percent	80-85 percent
Operational Status		Normal Operation	Closed

*Men's, Youth's, and Boy's Separate Trousers.

**Men's, Youth's, and Boy's Underwear.

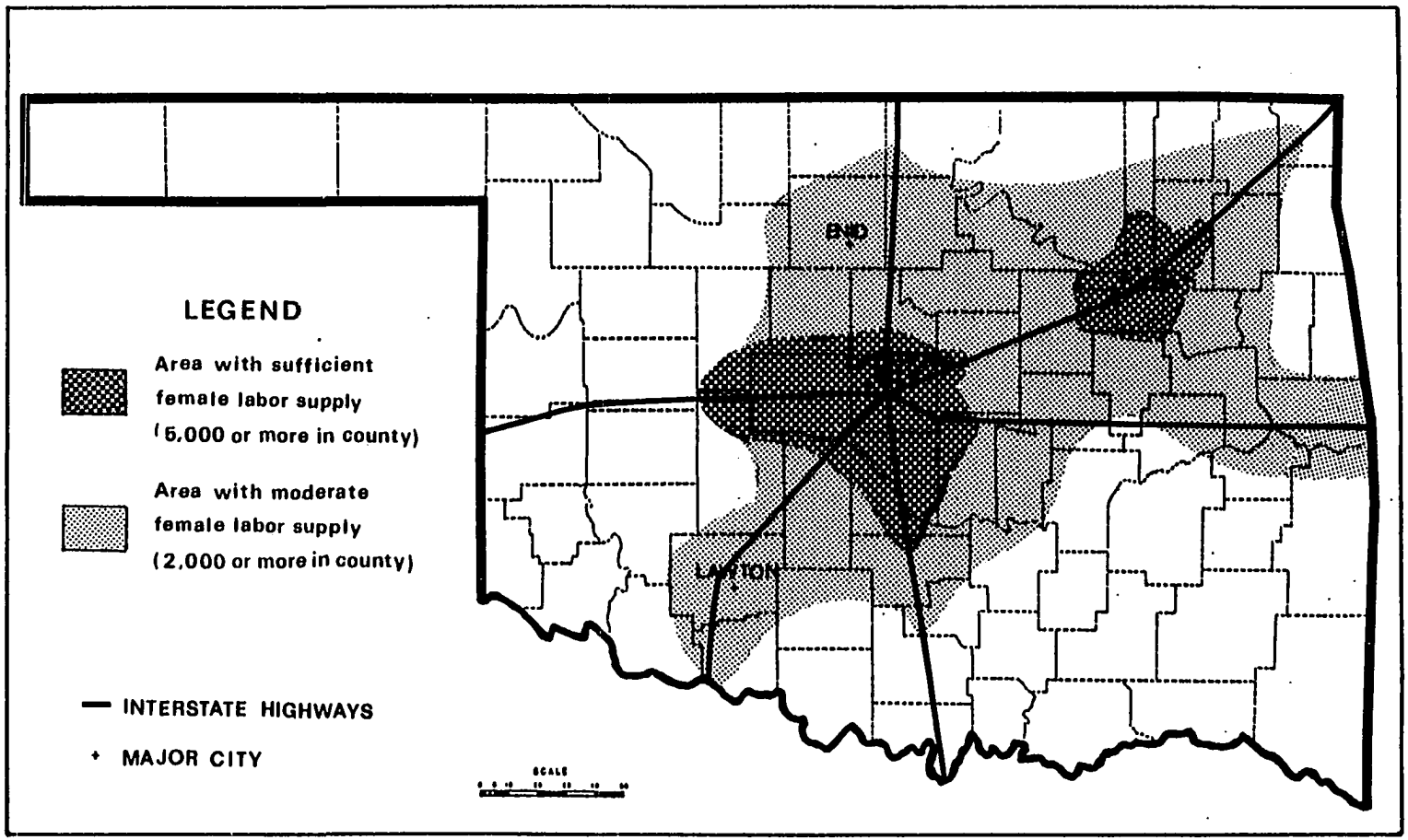

Fig. 8 The Availability of Female Labor Force in Oklahoma, 1980s.

Source: The writer's projection.

projected to share 66.3 percent of the female labor force expected to enter the labor market during the 1980s. This distribution pattern strongly favors the metropolitan regions to receive a large portion of female employment growth. Firms employing a large number of female workers may find the metropolitan regions most suitable for plant locations in the state. On the other hand, industrial expansions, particularly by large employers of female labor, shall be limited in scope in the most rural counties of the state due to their inadequate female labor supply.

During the 1980s, a total of less than 2,000 female workers is expected to be added to the existing labor force in 65 counties. Although a labor shed area tends to be larger than a county, the establishment of large garment plants or other large plants of female labor employer shall be effectively precluded in these counties. Particularly in the female labor deficient areas, which includes the 36 smaller rural counties, even limited expansion of existing plants might be difficult to accommodate. Only in the primary and secondary female labor supply areas which include the most urban and urban fringe counties of the state, the projected female labor supplies shall be substantial enough to ensure large scale female employment growth. In most rural counties of the state, plants that employ a large number of female workers may experience an unstable labor supply in the 1980s. Although long distance commuting may supplement local labor

supplies to some extent in some counties, female labor supply is likely to remain unstable at a time of business upturn. Because of this probability it shall be an oversight to treat the most rural counties suitable for plant locations of female labor employers in the 1980s. This shall have broad implications in industrial growth drive in Oklahoma.

The urban concentration of Oklahoma female labor force in the 1980s shall be a detrimental factor for the continuing promotion of low-wage industries in the state's rural areas. In most rural areas, large labor-intensive industries may face an insufficient labor supply or an extensive labor shed area which may become a source of unstable labor supply. On the other hand, in urban areas in which female labor supply is expected to be adequate, low-wage industries may face a steep labor competition from relatively high-wage service industries and manufacturing industries. As a whole, low productivity industries may find the state less attractive in locating their plants in the 1980s.

Considering the particular pattern of female labor force distribution, it is necessary for the state to incorporate policies appropriate to meet the emerging implications of the female labor supply into the current industrial development approach the policies may be directed:

- To strengthen the stability of existing rural industries by actively promoting a regional labor supply concept,

through which labor shed areas of existing plants are protected. This can be achieved by discouraging new openings of plants with similar labor requirement not only at the plant's immediate local area but also in locations within the commuting distance of the rural female labor force.

- To direct labor-intensive and low-wage industries to locate in the secondary female labor supply area in which wage competition may become less intense. In rural areas, on-site expansions of existing plants should be promoted instead of new plant openings. Even if necessary, only small scale labor-intensive industries can be introduced in the tertiary female labor supply area.

- To utilize growing female labor resources in the urban areas, high-technology industries should be promoted. These industries shall stabilize urban female labor markets because they are more competitive to service industries than low-technology industries do.

- to formulate a long range strategy to replace the garment industry. The loss of this vital industry, which has dominated economies of many rural Oklahoma counties, appears inevitable. Growing competitions coupled with stagnating growth of the consumer market put the survival of the Oklahoma garment industry in question.

CHAPTER VII

CONCLUSION

During the last two decades a number of large garment plants moved into the state and concentrated in rural counties in which female labor supplies were favorable. The extensive rural orientation of Oklahoma garment plants was a spatial manifestation of a dynamic search for sufficient female labor that can be hired at a reasonable cost. In the labor-intensive garment industry other location factors--the shared characteristics within the state such as industrial climate, labor productivity, and land availability--were insignificant in its location practices.

Female labor supply was found the most pronounced location factor in the garment industry. Yet, labor supply is a location question that classical location theorists have so far failed to adequately address. Preoccupied by the historical emphasis on transportation and labor costs, they have generally regarded labor supplies as a location factor with sufficient mobility to relocate and replaceable by capital. Contrary to these assumptions, the findings of this study furnish the strong evidence that the locational

pattern of the garment plants was governed primarily by the availability of female labor force. The female labor force of specific skill level and earnings capacity was treated as a place-specific location factor in the garment industry. However, labor factors are not expected to be equally potent for the industries across the board. Labor factors are more important location factors for the industries in which labor inputs are the major cost factor. In the garment industry the labor availability and labor costs acted as mutually restricting location factor. In this trade-off relationship the actual utilization of a female labor force was constrained by high labor costs. This compromise was most conspicuous in the major urban counties. In urban counties high labor costs tended to suppress full labor utilization, whereas labor deficiencies hindered taking advantages of low labor costs in rural counties. Instead, counties that offered adequate female labor supply at moderate costs were the most preferred plant locations for the Oklahoma garment industry.

The fluctuated values of the regression coefficients indicate that the location decisions were dynamic in nature, the point Epping (1980) had questioned. The locational practices of the industry were rather reactive to changing labor factors than static as commonly conceived. The relative importance of female labor factors fluctuated over the examined periods. They were less powerful location determinants in the period of rapid growth than in the slower

growth period. This phenomenon implies that the locational pattern of the industry was less affected by the intrastate differentials in female labor factors during the period of its rapid expansion.

The Oklahoma garment industry experienced more volatile growth trends than the low volume of the net employment change indicated during the 1960-1980 period. Extensive growth and contraction activities occurred simultaneously in the industry throughout the period. New plants were the primary source of expansions as the state attracted a large number of out-of-state garment firms during the period. However, the rate of new plant openings declined to a noticeable extent during the late 1970s. There was no association established between the frequency of new plant openings and the growth performance of existing plants. Yet, the growth efficiency measured by gain-loss ratio of garment employment changes progressively worsened in both entry-exit and on-site change categories during the period. The dual process of garment employment contraction, the dwindling in-migration of out-of-state firms and increasing on-site capacity reductions, may continue to impair the Oklahoma garment industry in the 1980s. This, in turn, may make the female labor an even more critical location factor in the garment industry as the industry is expected to increasingly ill afford unstable labor supplies and cost pressures.

Results of the regression analysis and the analysis of change components rendered strong supports to the view that industrial location inquiries be focused not only on net employment changes but also performance of each change component. Net employment change was an effective indicator of a general direction the industry was heading. But only through the examination of individual change components was the actual growth status of the industry determined.

The rural orientation of the Oklahoma garment plants was made possible by the presence of sufficient female labor forces in rural areas during the 1960-1980 period. However, this growth pattern is not expected to repeat itself as Oklahoma's rural counties shall provide with smaller female labor forces available for industrial employment in the 1980s. The female labor force to be added during the period is projected to amount to 128,526 workers, a moderate growth in comparison to that of the 1970s. The bulk of this female labor force additions is to accrue through increasing labor participation by persons currently not in the labor force. The growth of the working age population is expected to be low during the 1980s.

More than 60 percent of the female labor force to be added during the 1980s is projected tc locate in the urban and urban fringe counties. This distribution pattern shall be conducive to growth of urban oriented industries but detrimental to the promotion of female labor intensive industries in the rural areas. Moreover, the stability of

some large garment plants may be adversely affected in counties with dwindling female labor supplies. They may have to extend their labor shed areas to more remote rural areas to sustain labor forces at proper levels. This may be achieved at higher labor costs associated with a source of unstable female labor supply in rural areas. Oklahoma's female labor resources are not only limited in quantity and highly urban oriented in geographic distribution, but they may also become increasingly expensive during the 1980s. As the dynamic locational pattern of the industry exemplified in the past, this important change in the most pronounced location factor of the industry shall have severe impacts on the growth pattern of the industry in the future.[3] The impacts of deteriorating comparative advantages in garment manufacturing may be more pronounced in the state because of the overwhelming domination of the out-of-state firms in the Oklahoma garment industry. These firms shall make growth and locational decisions only to enhance their own interests. Furthermore, because of their weak attachment to local communities and strategic decision making that may be based on the increasingly internationalized consumer market, the state and local governments have little control over the fate of these large garment plants.

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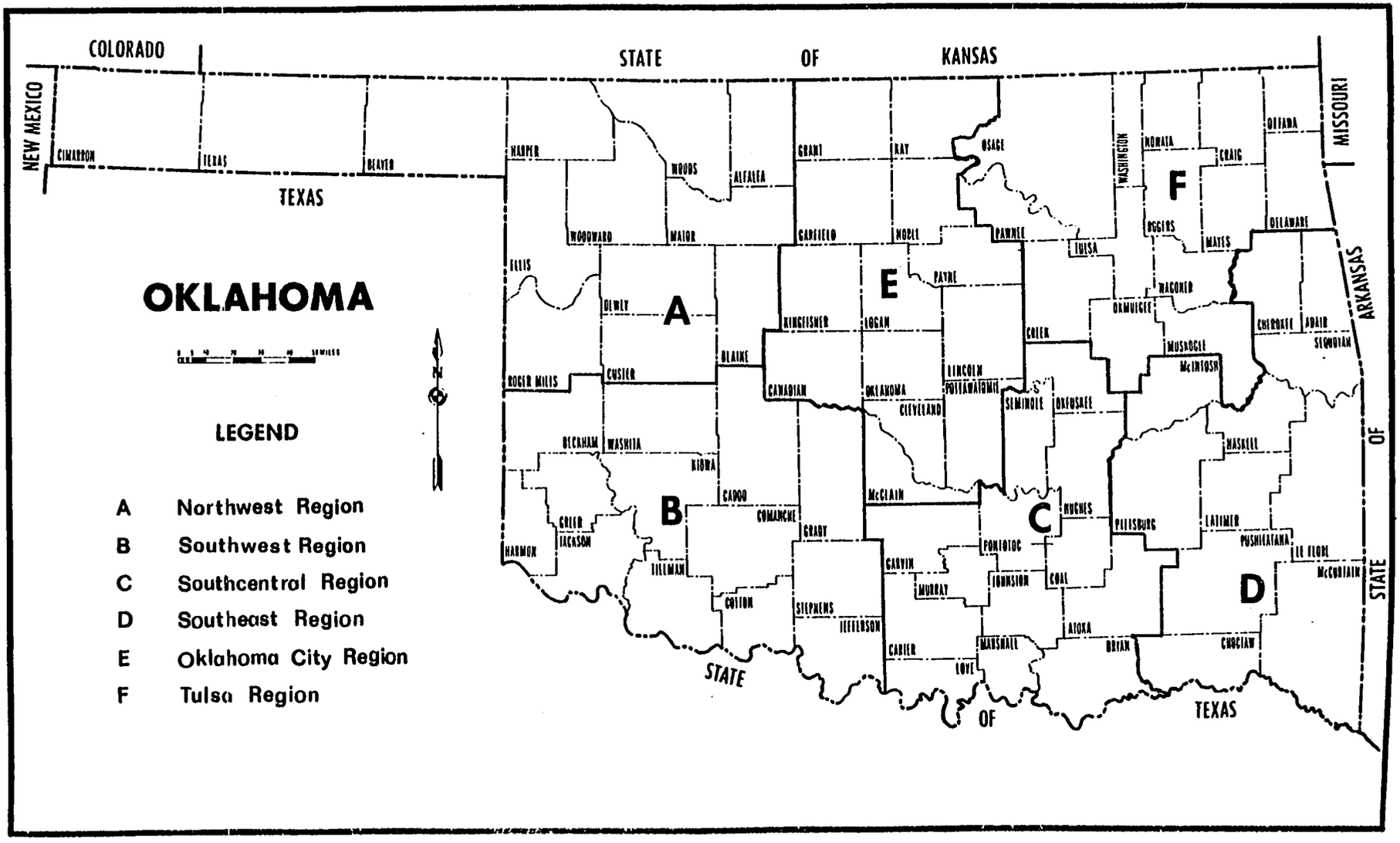
[3]The recent decision to close the Haggar plant in Oklahoma City verifies this conclusion (The Daily Oklahoman, Oklahoma City, Oklahoma, August 1, 1984), p. 5.

APPENDICES

Appendix, Figure



OKLAHOMA

LEGEND

A	Northwest Region
B	Southwest Region
C	Southcentral Region
D	Southeast Region
E	Oklahoma City Region
F	Tulsa Region

Regions and Counties of the State of Oklahoma (see text)

Appendix, Table A

GARMENT EMPLOYMENT BY COUNTY IN OKLAHOMA
(1960)

County	Number of Garment Workers	Percent of County Population	Percent of County Mfg. Workers	Remarks
Coal	167	2.9	90-100*	
Cotton	220	2.7	90-100*	
Creek	190	-	6.8	Tulsa SMSA
Hughes	250	1.7	58.8	
McIntosh	180	1.5	85.3	
Marshall	250	3.4	90-100*	
Oklahoma	500	-	2.4	Metropolitan
Osage	285	-	23.5	Tulsa SMSA
Ottawa	350	1.2	16.1	
Pittsburg	665	1.9	51.8	
Pontotoc	300	1.1	24.2	
Seminole	370	1.3	43.5	

*A range is adopted when the employment data do not provide a specified number.

Source: County Business Patterns, 1900, Oklahoma, U.S. Department of Commerce, Bureau of the Census.

Appendix, Table B

GARMENT EMPLOYMENT IN COUNTY LABOR FORCE
(1970)

County	Number of Garment Workers	Percent of County Population	Percent of County Mfg. Workers	Remarks
Comanche	363	-	25.8	Lawton SMSA
Custer	400	1.8	64.5	
Jackson	300	1.0	49.8	
Lincoln	290	1.5	34.3	
Love	400	7.1	87.9	
McCurtain	300	1.0	12.4	
Oklahoma	1100	-	3.6	Metropolitan
Osage	300	1.0	17.1	Tulsa SMSA
Ottawa	783	2.6	23.5	
Pittsburg	900	2.4	49.6	
Seminole	1082	4.3	84.2	
Stephens	330	-	14.1	
Tillman	570	4.0	80.7	
Tulsa	545	-	1.7	Metropolitan
Woodward	320	2.1	90.0	

Source: County Business Patterns, 1970, Oklahoma, U.S. Department of Commerce, Bureau of the Census.

Appendix, Table C

GARMENT EMPLOYMENT IN COUNTY LABOR FORCE
(1980)

County	Number of Garment Workers	Percent of County Population	Percent of County Mfg. Workers	Remarks
Coal	275	4.6	90.0	
Comanche	340	-	12.0	Lawton SMSA
Custer	300	1.1	18.5	
Garvin	395	1.4	31.7	
Lincoln	320	1.2	34.1	
Love	400	5.3	40.0	
McCurtain	323	-	10.2	
McIntosh	248	1.6	55.0	
Marshall	275	2.6	45.3	
Okfuskee	290	2.6	76.7	
Oklahoma	1035	-	2.1	Metropolitan
Osage	250	-	36.4	Tulsa SMSA
Ottawa	853	2.6	18.0	
Pittsburg	690	1.7	62.7	
Seminole	1339	4.9	75.5	
Stephens	355	-	7.9	
Tulsa	334	-	-	Metropolitan

Source: County Business Patterns, 1980, Oklahoma, U.S. Department of Commerce, Bureau of the Census.

Appendix, Table D

GROWTH COMPONENTS ANALYSIS, 1963-1967

County	Garment Employment Changes by				Net Change
	Entry of Firms	Exit Firms	On-site Growth	On-site Decline	
Oklahoma	218(8)	10(1)	119(4)	35(1)	292
Stephens	350(1)				350
Love	365(1)				365
Nowata	53(1)	14(1)			38
Osage	100(1)	135(1)			- 35
Lincoln	10(1)				10
Tulsa	265(5)			3(1)	262
Atoka	32(1)				32
Creek	172(1)	190(1)			- 18
Carter	163(1)				163
Muskogee	28(1)				28
Tillman	275(1)	50(1)			225
Coal			76(1)		76
Rogers		86(1)			- 86
Seminole		185(1)	398(3)		213
Noble		30(1)			- 30
Ottawa		15(1)	15(1)	20(1)	- 20
Le Flore			25(1)		25
Woodward			54(1)		54
Craig				3(1)	- 3
Mayes			15(1)		15
Comanche			5(1)		5
Okfuskee			43(1)		43
Choctaw			60(1)		60
Total	2026(24)	715(9)	814(15)	61(4)	2064

Appendix, Table E

GROWTH COMPONENTS ANALYSIS, 1967-1972

County	Garment Employment Changes by				Net Change
	Entry of Firms	Exit of Firms	On-site Growth	On-site Decline	
Oklahoma	538(8)	474(12)	265(3)	25(1)	304
Garfield	14(1)			10(1)	4
Seminole	548(3)		57(2)	100(1)	505
Pontotoc				140(1)	-140
Coal				50(1)	- 50
Tulsa	167(4)	20(1)	117(2)	30(1)	234
Stephens				20(1)	- 20
Bryan	148(2)				148
Johnston	75(1)				75
Beckham	185(1)				185
Pittsburg	600(1)	500(1)	135(1)		235
Tillman	510(2)	275(1)			235
Ottawa			433(3)		433
Le Flore			110(1)		110
Comanche	325(2)				325
McCurtain	300(1)				300
Jackson	300(1)				300
Hughes	200(1)	250(1)			- 50
Custer	400(1)				400
Garvin	110(2)				110

Appendix, Table E--continued

County	Garment Employment Changes by				
	Entry of Firms	Exit of Firms	On-site Growth	On-site Decline	Net Change
Osage			50(1)		50
Marshall			25(1)		25
Love			73(1)		73
Nowata			35(1)		35
Muskogee	15(1)	58(2)			- 43
Washita	80(1)				80
Woodward	200(1)		16(1)		216
McIntosh	145(1)	180(1)			- 35
Lincoln			280(1)		280
Mayes			45(1)		45
Atoka			28(1)		28
Logan	16(1)				16
Creek				12(1)	- 12
McClain	22(1)				22
Carter		163(2)			-163
Choctaw		260(1)			-260
Total	4892(37)	2180(22)	1669(20)	387(8)	3994

Appendix, Table F

GROWTH COMPONENTS ANALYSIS, 1972-1976

County	Garment Employment Changes by				
	Entry of Firms	Exit of Firms	On-site Growth	On-site Decline	Net Change
Oklahoma	335(4)	110(4)	58(2)	70(2)	213
Okfuskee	250(2)	183(1)			67
Seminole	10(1)	20(1)	140(1)		130
Pontotoc				16(1)	- 16
Lincoln	300(1)			40(1)	260
Cleveland	15(1)				15
Tulsa	49(1)	176(4)	115(3)	61(1)	- 73
Stephens	25(2)				25
Pittsburg			50(1)	130(1)	- 80
McIntosh	95(1)			20(1)	75
Tillman	408(1)	450(1)		24(1)	- 66
Kay	92(2)				92
Le Flore	63(1)			80(1)	17
Comanche		25(1)			- 25
Choctaw	85(1)				85
Carter	40(1)				40
Garvin	260(1)	50(1)	50(1)		260
McCurtain			200(1)		200
Custer				140(1)	-140

Appendix, Table F--continued

County	Garment Employment Changes by				
	Entry of Firms	Exit of Firms	On-site Growth	On-site Decline	Net Change
Osage			70(1)		70
Pawnee	166(1)				166
Pushmataha	75(1)				75
Kiowa	13(1)				13
Greer	31(1)				31
Cherokee	105(2)				105
Jefferson	123(2)				123
Washita			44(1)		44
Woodward			175(1)		175
Craig				10(1)	- 10
Pottawatomi	193(1)				193
Atoka			20(1)		20
Bryan	45(2)	62(1)			- 17
Mayes	10(1)				10
Ottawa		180(1)			-180
Creek		160(1)			-160
Garfield		14(1)			- 14
McClain		22(1)			- 22
Total	2788(32)	1452(18)	922(13)	591(11)	1667

Appendix, Table G

GROWTH COMPONENTS ANALYSIS, 1976-1980

County	Garment Employment Changes by				
	Entry of Firms	Exit of Firms	On-site Growth	On-site Decline	Net Change
Oklahoma	47(2)	360(4)	48(1)	9(1)	-274
Tulsa	108(4)	103(3)		157(1)	-152
Okfuskee			40(1)		40
Seminole	45(1)	10(1)	110(1)	18(1)	127
Pontotoc			28(1)		28
Coal			82(1)		82
Lincoln	170(2)	250(1)		150(1)	-230
Washita	30(2)			12(1)	18
Choctaw	29(1)				29
Rogers	120(1)				120
Bryan	50(1)	45(2)	19(1)		24
Atoka	75(1)	80(1)			- 5
Pittsburg	94(1)			224(2)	-130
Muskogee	160(1)				160
Jefferson	14(1)	48(1)			- 34
Comanche	40(1)	38(1)			2
Carter			20(1)		20
Garvin			49(1)	30(1)	19
McCurtain				177(1)	-177

Appendix, Table G--continued

County	Garment Employment Changes by				
	Entry of Firms	Exit of Firms	On-site Growth	On-site Decline	Net Change
Jackson				33(1)	- 33
Custer			40(1)		40
Osage				120(1)	-120
Creek	240(1)				240
Cherokee	110(1)	35(1)	11(1)		86
Pushmataha			21(1)		21
McClain			17(1)		17
Murray	20(1)				20
Woodward				25(1)	- 25
McIntosh			28(1)		28
Kay			10(1)		10
Tillman		408(1)			-408
Pottawatomie		193(1)			-193
Mayes		100(1)			-100
Le Flore		63(1)			- 63
Logan		10(1)			- 10
Total	1352(23)	1743(20)	475(14)	955(12)	-871

Appendix, Table H

OKLAHOMA FEMALE LABOR RESOURCE
(1980 - 1990)

			1	2	3	4	
County	Female Population (16-64) (1990)	Female Labor Force (1990)	FLEPR (%)	FEGR (%)	GPR (%)	Labor Force Added	
Adair	7,699	3,488	45.3	70.4	32.9	864	
Alfalfa	2,602	1,010	38.8	22.2	-5.1	-54	
Atoka	4,816	2,018	41.9	68.4	32.2	492	
Beaver	2,438	1,121	46.0	51.4	8.7	90	
Beckham	8,153	3,163	38.8	38.6	16.1	439	
Blaine	5,026	2,166	43.1	40.5	4.1	83	
Bryan	13,219	6,160	46.6	42.8	27.6	1,331	
Caddo	11,923	5,282	44.3	47.2	18.7	831	
Canadian	26,677	16,139	60.5	155.2	60.5	6,082	SMSA
Carter	18,291	8,688	47.5	54.2	20.1	1.455	
Cherokee	13,815	6,452	46.7	74.9	34.2	1,646	
Choctaw	7,141	2,642	37.0	25.1	22.1	479	
Cimarron	1,049	506	48.2	32.9	-12.3	-71	
Cleveland	62,979	41,944	66.6	119.2	54.4	14,783	SMSA
Coal	2,370	816	34.4	26.7	7.4	56	
Comanche	37,036	20,296	54.8	53.6	27.8	4,417	SMSA
Cotton	2,736	985	36.0	13.1	-1.7	-17	
Craig	5,917	2,408	40.7	14.6	6.8	153	

Appendix, Table H--continued

			1	2	3	4	
County	Female Population (16-64) (1990)	Female Labor Force (1990)	FLEPR (%)	FEGR (%)	GPR (%)	Labor Force Added	
Creek	26,172	12,615	48.2	70.2	34.5	3,238	SMSA
Custer	10,396	6,071	58.4	56.0	16.5	861	
Delaware	10,540	4,258	40.4	90.5	31.9	1,031	
Dewey	2,215	795	35.9	2.7	6.4	48	
Ellis	2,074	1,145	55.2	46.6	11.7	120	
Garfield	25,566	13,243	51.8	44.0	17.6	1,985	SMSA
Garvin	11,197	4,837	43.2	45.8	13.3	567	
Grady	17,929	8,014	44.7	64.2	33.8	2,025	
Grant	2,141	850	39.7	26.4	-8.4	-78	
Greer	2,263	892	39.4	15.6	-12.8	-132	
Harmon	1,482	536	36.2	2.4	-16.8	-108	
Harper	1,476	624	42.3	9.6	-18.2	-139	
Haskell	4,349	1,461	33.6	29.4	15.3	194	
Hughes	5,859	2,490	42.5	24.9	18.3	386	
Jackson	10,045	4,912	48.9	33.2	10.6	470	
Jefferson	3,493	1,502	43.0	34.3	18.2	231	
Johnston	4,667	1,941	43.6	82.8	34.9	502	
Kay	18,640	9,717	52.1	38.8	7.8	703	
Kingfisher	5,539	2,420	43.7	36.7	15.3	322	

Appendix, Table H--continued

			1	2	3	4	
	Female Population (16-64) (1990)	Female Labor Force (1990)	FLEPR (%)	FEGR (%)	GPR (%)	Labor Force Added	
Kiowa	4,857	1,860	38.3	21.4	1.4	26	
Latimer	3,940	1,509	38.3	45.6	17.9	229	
Le Flore	15,975	7,125	44.4	72.9	31.7	1,714	
Lincoln	11,941	5,242	43.9	70.3	37.9	1,441	
Logan	12,082	6,222	51.5	66.4	32.9	1,541	
Love	3,258	1,508	46.3	63.9	24.3	295	
McClain	9,296	4,927	53.0	107.6	48.1	1,601	
McCurtain	15,230	6,458	42.4	72.1	36.9	1,741	
McIntosh	6,623	2,452	37.0	50.2	20.7	220	
Major	3,493	1,516	43.4	61.2	18.4	236	
Marshall	4,873	1,866	38.3	64.3	27.7	405	
Mayes	13,899	6,574	47.3	93.2	40.5	1,896	SMSA
Murray	5,070	2,205	43.5	33.8	16.4	311	
Muskogee	27,598	13,661	49.5	51.5	24.9	2,725	
Noble	4,847	2,229	46.0	44.5	20.7	382	
Nowata	4,827	2,124	44.0	40.7	24.3	416	
Okfuskee	4,224	1,892	44.8	61.4	16.1	263	
Oklahoma	221,215	136,268	61.6	35.8	14.1	16,830	SMSA
Okmulgee	15,732	6,922	44.0	48.4	22.4	1,269	
Osage	16,770	8,284	49.4	69.3	30.5	1,935	SMSA

Appendix, Table H--continued

			1	2	3	4	
County	Female Population (16-64) (1990)	Female Labor Force (1990)	FLFPR (%)	FEGR (%)	GPR (%)	Labor Force Added	
Ottawa	13,383	5,915	44.2	35.0	14.4	746	
Pawnee	6,903	3,555	51.5	81.1	41.3	1,040	
Payne	27,346	13,673	50.0	45.3	22.1	2,480	
Pittsburg	16,018	6,471	40.4	27.6	12.0	695	
Pontotoc	14,035	7,003	49.9	55.7	21.7	1,249	
Pottawatamie	26,844	13,046	48.6	59.6	45.4	4,076	SMSA
Pushmataha	5,112	1,983	38.3	69.1	33.9	502	
Roger Mills	1,807	833	46.1	70.4	23.8	160	
Rogers	21,617	11,587	53.6	121.8	49.2	3,824	SMSA
Seminole	11,075	4,718	42.6	27.0	14.3	590	
Sequoyah	13,189	6,449	48.9	97.8	40.7	1,865	
Stephens	18,295	8,635	47.2	54.7	21.9	1,552	
Texas	6,379	3,132	49.1	27.6	6.6	195	
Tillman	4,495	1,753	39.0	7.2	2.0	34	
Tulsa	194,462	120,566	62.0	62.7	22.4	22,044	SMSA
Wagoner	19,592	10,678	54.5	168.2	62.0	4,086	SMSA
Washington	19,133	10,026	52.4	48.9	10.2	931	

Appendix, Table H--continued

County	Female Population (16-64) (1990)	Female Labor Force (1990)	1 FLFPR (%)	2 FEGR (%)	3 GPR (%)	4 Labor Force Added
Washita	5,463	2,404	44.0	48.0	16.2	336
Woods	3,652	1,629	44.6	3.1	-16.4	-20
Woodward	9,075	4,156	45.8	44.6	22.4	761
State	1,243,565			52.4	20.2	128,526

1. Projected female labor force participation rate, 1990
2. Female employment growth rate, 1970-1980
3. Female employment growth potential, 1980-1990
4. Projected female labor growth, 1980-1990

Appendix I

REGRESSION ANALYSIS

1. Method: Stepwise Regression

2. Run Period: 1963-1967 1967-1972
   1972-1976 1976-1980

3. Regression Model:

$$NECG_T = f(CPCI_T, PSI_T, UNEMP_{T1}, UNEMP_{T2}, RLF_T)$$

4. Regression Variables:

$NECG_T$ = County garment employment change in number of workers for the period T

$CPCI_T$ = County per capita income change rate in percent for the period T

PSI_T = County income as percent of the state income for the period T

$UNEMP_{T1}$ = Number of unemployed female workers for T-1 period, a preceding period

$UNEMP_{T2}$ = Number of unemployed female workers for T-2 period, a current period

RLF_T = County female reserve labor force in number of workers for the period T

Appendix I

REGRESSION ANALYSIS

EXPLAINED VARIANCE--GARMENT EMPLOYMENT AND SELECTED VARIABLES

Independent Variables	R^2	R^2 Change
Unemployment (2)	0.45625	0.45625
Income Change	0.49261	0.03636
Income Level	0.52250	0.02989
Reserve Labor	0.56414	0.04164
	(1967 - 1972)	
Unemployment (2)	0.14419	0.14419
Income Change	0.24926	0.10507
Unemployment (1)	0.25831	0.00905
Reserve Labor	0.28459	0.02628
Income Level	0.28708	0.00249
	(1972 - 1976)	
Reserve Labor	0.25551	0.25551
Unemployment (2)	0.37178	0.11627
Income Change	0.43025	0.04147
Unemployment (1)	0.47224	0.00052
	(1976 - 1980)	
Unemployment (2)	0.32319	0.32319
Unemployment (1)	0.41762	0.09443
Income Change	0.48426	0.06664
Reserve Labor	0.52439	0.04013
Income Level	0.53197	0.00758

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