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FOREIGN INVESTMENT, INDUSTRIAL LINKAGES, AND REGIONAL DEVELOPMENT

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Industry Endorsements

American Electronics Association
Automobile Importers Association
Computer and Communications Industry Association
Electronic Industries Association
Semiconductor Equipment and Materials Institute

Country Endorsements

British Embassy
Consulate-General of Japan
French Embassy
German-American Chamber of Commerce
Netherlands Chamber of Commerce in the United States

State Endorsements

State of Arizona	Arizona Department of Commerce
State of Arkansas	Arkansas Industrial Development Commission
State of California	Office of Foreign Investment California Department of Commerce
Commonwealth of Puerto Rico	Economic Development Administration

State of Delaware	Delaware Development Office
State of Georgia	Georgia Department of Industry and Trade
State of Hawaii	Department of Business and Economic Development
State of Illinois	Illinois Export Council
State of Louisiana	Department of Commerce
State of Maine	Department of Economic and Community Development
State of Maryland	Department of Economic and Employment Development
State of Michigan	Michigan Department of Commerce
State of Minnesota	Minnesota Trade Office Department of Trade and Economic Development
State of Mississippi	Department of Economic Development
State of Missouri	Department of Economic Development International Business Office
State of Montana	Department of Commerce
State of Nebraska	Department of Economic Development
State of Nevada	Commission on Economic Development
State of New Hampshire	Department of Resources and Economic Development Division of Economic Development
State of New Mexico	Economic Development and Tourism Department
State of New York	Department of Economic Development
State of North Carolina	Department of Commerce
State of North Dakota	Economic Development Commission
State of Oklahoma	Department of Commerce
State of Ohio	Department of Development
State of South Dakota	Governor's Office of Economic Development
State of Tennessee	Department of Economic and Community Development
State of Utah	Department of Community and Economic Development
State of Washington	Department of Trade and Economic Development
State of West Virginia	Governor's Office of Community and Industrial Development
State of Wisconsin	Department of Development

The principal investigator for this research effort was Norman Glickman, now Director of the Center for Urban Policy Research at Rutgers University. Dr. Glickman was responsible for the design and development of the manuscript--especially the overview sections on the role of FDIUS in the national economy, and the sections on the local and state policy implications of FDIUS. He was assisted by co-investigator, Amy Glasmeier, an assistant professor of Community and Regional Planning at the University of Texas's School of Architecture. Dr. Glasmeier provided insights on material input locations and markets and the economic impacts of FDIUS on nonmetropolitan areas. She was responsible for Sections 5 and 6. Geoffrey Bannister and William Luker assisted in the execution of the surveys and organization and analysis of resulting data. They also contributed written summaries of data analysis for early drafts of the report.

FOREIGN INVESTMENT AND INDUSTRIAL LINKAGES

EXECUTIVE SUMMARY

OVERVIEW

The present study focused on the regional and rural implications of foreign direct investment in the United States (FDIUS). In this regard, we analyzed existing government data on FDIUS and surveyed foreign and domestic firms in the auto, semiconductor, and computer industries about their operations. Our main goals were to understand the job creation potential and industrial linkages of foreign companies. We also examined state and local policies designed to attract foreign investment. We asked the firms in our sample to rank location factors and public industrial development incentives to determine which were most important to them. We administered a separate survey to state and local development officials to see which incentives they considered most useful.

TRENDS IN FOREIGN INVESTMENT IN THE UNITED STATES

1) Foreign direct investment amounts to more than $300 billion and has grown by nearly 20 percent per year in the 1980s: 50% increase in 1988 alone. More than 3 million Americans now work for foreign companies, twice the 1974 number. Nearly all investment comes from other industrial nations such as the United Kingdom, The Netherlands, Japan, and Canada.

2) Despite rapid growth, FDIUS remains but a small part of the U.S. economy--8 percent of assets and less than 3 percent of employment are controlled by foreign companies. In addition, very little new employment has been created by foreign investment. More than four-fifths of FDIUS came through

acquisitions and mergers which shifted ownership from American to foreign firms. Only a small part of FDIUS consists of investment in new plants and expansions of existing plants--what we call "employment-creating" investments.

FIRM SIZE, EMPLOYMENT, AND WAGES

1) Our survey of foreign companies showed that they are not very different from domestic companies in the same industries. For instance, aggregate data seemed to show that foreign firms were larger, less unionized, and paid lower wages than U.S. firms. However, when we disaggregated by industry, these apparent differences no longer held. The uneven sample size across industries and nationality was the cause of these differences.

THE LOCATION OF FOREIGN INVESTMENT

1) In the 1970s, foreign investment was centered principally in the northeastern industrial states, the South Atlantic, and Pacific. Over time, there was a spread of FDIUS to other regions, such as the Southwest. By the late 1980s, the regional distribution of FDIUS more closely resembled the distribution of domestic industry than it had 15 years earlier.

2) Employment-acquiring investments took place largely in the Northeast and Midwest. On the other hand, employment-creating investments, the result of new plants and plant expansions, occurred mainly in the South. Forty-nine percent of new plants and 53 percent of plant expansions were in the South.

3) We asked foreign firms to rank factors that influenced where they located their plants. Cost of labor, convenient transportation access, and quality of life were the three most important factors to foreign companies. Proximity

to markets was also considered important. Proximity to suppliers, proximity to markets, and government incentives were the least important factors.

4) The domestic investors we surveyed had location preferences similar to foreign firms. We found that the quality of life, cost of labor, and convenient transportation access were ranked as the three most important location factors. Proximity to suppliers, proximity to markets, and government incentives were the least important.

LINKAGES BETWEEN FOREIGN INVESTMENT AND THE REGIONS

1) Both foreign and domestic firms purchased a majority of their primary inputs from firms located within the U.S., but outside the state in which the plant was located.

2) Foreign firms which leased a facility purchased more inputs from non-local sources than firms which built new facilities.

3) Small firms--both foreign and domestic--purchased more inputs within 30 miles of the site than larger firms.

4) Regardless of industry, nationality, age, or size, firms purchased a majority of non-business services locally.

5) Domestic firms were almost twice as likely to use distributors for 10 percent or more of their purchases than were foreign firms.

6) Foreign firms using distributors were more likely to use the services of foreign distributors than were domestic firms.

7) Foreign firms manufacturing in the U.S. sell a majority of their output in domestic markets. Domestic firms export a larger share of their output to foreign markets compared with foreign firms.

FOREIGN INVESTMENT AND RURAL AMERICA

1) According to the International Trade Administration (ITA), 10 percent of all FDIUS took place in nonmetropolitan counties. Rural FDIUS constituted 20 percent of all new employment-creating investment and 7 percent of all investments through acquisitions. Most FDIUS in rural areas has occurred since 1980.

2) Rural FDIUS was concentrated in the South and secondarily the Midwest. The majority of employment-creating investments in rural areas occurred in the South, while the Midwest and the South gained comparable shares of FDIUS through acquisitions. FDIUS in rural manufacturing was similarly concentrated in the South and secondarily the Midwest.

3) The majority of FDIUS in rural areas occurred in rural counties adjacent to metropolitan areas.

4) Rural FDIUS was concentrated in a few industries, e.g., chemicals and machinery fabricated metals.

5) Foreign firms purchased almost none of their needed inputs locally. The majority purchased their inputs from firms located in the U.S.

6) Foreign companies produced products primarily destined for the U.S. market.

7) Foreigners making new investments in manufacturing facilities considered high-quality infrastructure, government incentives, and low wages as important factors influencing their location decision.

8) Auto parts plants located in non-adjacent rural counties; semiconductor and computer plants located in adjacent rural counties. Whereas for auto parts firms labor costs and access to appropriate labor pools were important, computer and semiconductor firms located within commuting distance of cities where technical labor could be found.

1) We asked state and local economic development officials to rank the importance of factors widely believed to influence plant location significantly. State officials thought the four most important location factors were convenient transportation access, attitude toward foreign investors, proximity to markets, and proximity to suppliers. They ranked government incentives last. Local officials ranked convenient transportation access, proximity to suppliers, proximity to markets, and attitude toward foreign investors as the four most important. Government incentives were ranked last by local officials, also.

2) Our comparison of rankings by government officials and foreign managers showed that state and local government officials regarded convenient transportation access and market proximity as important location factors, and government incentives as the least important. Foreign managers thought supplier proximity was unimportant while, to the contrary, state and local officials both ranked it among the top four criteria. Local attitudes toward foreign investors was also considered more important by government officials, whereas foreign investors were less concerned about this factor.

3) State and local officials were asked to rank the importance of different government incentives given to foreign investors. Local and state development officials both thought that the two most important incentives for foreign investors were site selection assistance and employee recruitment and training. Industrial access roads, employee relocation assistance, industrial revenue bonds, loans for building construction or purchase, and tax exemption for goods-in-transit were important for both groups. Foreign firms regarded employee recruitment and training as the most useful incentive. This was followed by state financial assistance (grants, loans, loan guarantees, or industrial revenue bonds),

and business assistance (site selection and "one-stop" government offices for licensing and permitting).

1. THE GROWING IMPORTANCE OF FOREIGN INVESTMENT

Foreign direct investment is among today's most important economic issues. Since 1980, the volume of foreign direct investment in the United States (FDIUS) has quadrupled to more than $300 billion.[1] Foreigners have bought a wide array of assets: factories, land, office buildings, and housing. They make loans, sell food and clothing, pump oil, and write advertising copy. In short, foreign firms now own and operate companies that cross the gamut of American industry. More than three million Americans now work for foreign companies, more than twice the number in 1974. As the 1980s come to a close, foreign corporations control such well-known companies as Carnation, Brooks Brothers, and Standard Oil of Ohio. Foreign firms make and sell such quintessential "American" products as Jolly Green Giant vegetables, Burger King Whoppers, and Firestone tires. Indeed, foreign investors have become a major component of the American economy.

The surge of investment has, in turn, brought with it political and economic controversy. Some observers argue that foreigners are adding to American jobs and increasing American productivity. Others counter that foreigners are "taking over" the economy, buying American assets cheaply, appropriating our technology, and threatening our economic security.[2] Political and economic controversies also surround foreigners' effects on the U.S. trade deficit, their labor and industrial relations practices, and ownership of crucial technologies. No matter where one stands in this debate, it is undeniable that foreign companies have become intimately involved in national and local politics, philanthropy, culture, and community life.

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1 The U.S. Commerce Department definition of foreign direct investment holds that a foreign firm has a controlling interest when it owns a ten percent interest in an American company.

2 Norman J. Glickman and Douglas P. Woodward, The New Competitors: How Foreign Investors Are Changing the U.S. Economy (New York: Basic Books, 1989).

In this report, we concentrate on three important concerns about foreign direct investors not fully addressed in previous research: how they affect regional change (especially in rural areas), what their linkages are to local economies, and how states and localities attempt to attract them to their areas. In the rest of this section, we provide an overview of these issues.

FOREIGN INVESTMENT, REGIONAL DEVELOPMENT, AND RURAL CHANGE

Regional questions are important in understanding the effects of foreign investment. Although, as we shall see, foreigners have not created many jobs nationally, they can be an important force in the revitalization of certain American regions. As Business Week put it:

> A new wave of Japanese investment is sweeping across America. Unlike earlier commitments to coastal areas, this second wave is reaching deep into the heartland. It is spawning Japanese industrial centers such as "Auto Alley," stretching into the mid-South and "Silicon Forest" in the Northwest. It is giving failing American companies a fresh start through infusions of capital and management. Also, it is providing new sources of financing to local and state governments, which were once suspicious and fearful of outsiders.[3]

What Business Week wrote about Japan, others have said about the investments by multinational corporations (MNCs) of other nations, particularly those based in the United Kingdom, Canada, West Germany, and the Netherlands.

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[3] Mike Borus, "How Overseas Investors Are Helping to Reindustrialize America," Business Week, 4 June 1984, p. 103.

In this report, we examine the relation between FDIUS and regional development. To date, there has been relatively little research on the subject.[4] We will review the evidence on the role foreign investment has played in regional development and examine where foreign firms have located and the rationale behind these locational decisions.

A second important spatial question we will address is the effect of foreign investment on rural economic development. Many Japanese auto firms locating in the mid-South and Midwest are in rural and semirural areas. With great fanfare, companies like Nissan and Honda have moved to small towns and created many jobs. Foreign electronics firms such as Mitsubishi Electric, Bell Canada, and Siemens have also settled in the rural South. But does the potential

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[4] Some previous studies about the regional effects of foreign investment include Edwin Coleman, "Regional Aspects of Foreign Direct Investment," mimeo, unpublished manuscript, U.S. Department of Commerce Economic Development Administration (paper presented at the 1986 Annual Meetings of the Southern Regional Science Association, March 6-8, 1986, New Orleans, LA); Norman J. Glickman and Douglas P. Woodward, Regional Patterns of Manufacturing Foreign Direct Investment in the United States, Final Report prepared for the U.S. Department of Commerce, Economic Development Administration (Austin, TX: Lyndon B. Johnson School of Public Affairs, May 1987); Douglas P. Woodward, Regional Location Patterns of Foreign Direct Investment in the U.S., 1974-83, unpublished doctoral dissertation, University of Texas at Austin, 1986; Cedric L. Suzman, "What Are the Trends for Foreign Direct Investment in the Southeast," Economic Review (Federal Reserve Bank of Atlanta), January 1986, pp. 42-47; Breandan O hUallachain, "Spatial Patterns of Foreign Direct Investment in the United States," Professional Geographer 37 (2): 154-162; Jane Sneddon Little, "Foreign Direct Investment in New England," New England Economic Review, March/April 1985, pp. 48-57; Blaine Liner and Larry Ledebur, Foreign Direct Investment in the United States: A Governor's Guide, prepared for the 79th Meeting of the National Governors' Association (Washington, D.C.: Urban Institute, July 1987); Takeshi Nakabayashi, A Study of Locational Choices of Japanese Manufacturing Companies in the U.S.: Guidelines for State and Local Governments to Attract Japanese Firms' Investments (Cambridge, MA: John F. Kennedy School of Government, Harvard University, 13 April 1987); and Michael F. Crowley, Foreign Direct Investment in the U.S.: Job Creation and Stimulation of Economic Linkages (Austin, TX: Lyndon B. Johnson School of Public Affairs, Professional Report, University of Texas, 1987).

contribution of foreign firms go beyond a few companies? We will take a hard look at the data in order to answer this question.

FOREIGN INVESTMENT AND INDUSTRIAL LINKAGES

We will also discuss the "industrial linkages" between foreign firms and the rest of the American economy. When a foreign firm sets up shop in this country, it buys inputs. For example, an auto firm purchases engine blocks, rearview mirrors, and carburetors. The effect on the American economy and on the region around the plant depends on whether the firm buys its inputs locally. If foreign companies purchase many goods from nearby suppliers, they add jobs in supplier companies, spreading their impacts beyond their own factory gates. We wanted to know if foreign companies bought more or less locally than their American counterparts and if foreigners imported more inputs from abroad. If foreigners have close industrial linkages with their local suppliers, then their impacts on jobs and production will be greater than if they import large portions of their inputs. If a foreign firm locates, say, in Kentucky, its effect on that state's economy depends largely on whether it buys its inputs from other Kentucky firms.

Commerce Department data tell us that foreigners tend to import significant amounts of their inputs. They thus are likely to have a lesser impact on the U.S. economy than they would have if they were buying more from domestically based producers. In 1986, for example, foreign companies operating in the United States imported $73 billion more than they exported; this amounted to fully half of the United States trade deficit. Foreign manufacturers imported $1.65 for each dollar of exports in 1986 and had a net trade deficit of $8 billion.[5] Although aggregate information on imports is available for the national economy, little or no information

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[5] Ned G. Howenstine, "U.S. Affiliates of Foreign Companies: Operations in 1986," Survey of Current Business, May 1988, pp. 59-75.

exists for localities and regions. There is no way of accurately measuring the local impacts of FDIUS because of this paucity of government data.

Since the issue of local linkages is so important, and because of the lack of published data, we surveyed foreign firms. We applied the results to an input-output model to calculate the local and national impacts and compared them with American companies.[6] We hoped that the survey and the input-output analysis would provide new insights into the relationship between foreign companies and local economies.

FOREIGN INVESTMENT AND LOCAL ECONOMIC DEVELOPMENT POLICY

Finally, we studied the role of public policies aimed at inducing foreigners to invest in particular places. States and localities have bid aggressively against each other for foreign firms, giving incentives to foreign companies to locate new facilities within their jurisdictions. Kentucky gave Toyota $325 million in incentives over 20 years, more than $100,000 per job, to set up shop in Georgetown, a small town outside of Louisville. Diamond Star-Mitsubishi received about $80,000 a job in subsidies to move to Bloomington, Illinois. Do the kinds of incentives given to foreigners really make a difference in their location decisions or do they care more about other location factors? We surveyed foreign firms to determine what incentives they thought were important to their site selections. We also surveyed state and local economic development officials to see what incentives they gave to foreigners and which they thought were most helpful in attracting them.

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6 Input-output models depict the relationships among industries showing which industries buy goods from other industries and which industries supply others.

THE TASK AHEAD

With this introduction, we turn now to the core of our report. In Section 2, we examine growth and change in foreign investment in this country. We look at why foreigners invest in the U.S., what industries they invest in, and what countries they come from. We report on the survey in Section 3. Since the data on foreign investment published by the government posed serious limitations to any FDIUS analysis, our survey of foreign firms aimed at finding out more about their employment, linkages, imports, and a variety of other economic variables. Our focus was on the kinds of jobs foreigners created, why they located where they did, and their likely effects on communities. We surveyed the computer, semiconductor, and auto parts industries because they have played a key role in the foreign investment picture. The auto assembly industry has been important for foreign investors and has received much publicity, due partly to the great amount of employment it generates and the significant incentives provided by states and localities to attract these plants. More than 300 auto parts plants have located in the mid-South and Midwest. Computers and semiconductors are not only important sectors for foreign investment, but are also central to discussions about international competitiveness because they use advanced technology. Many have set up shop in California, Massachusetts, and the Pacific Northwest. Overall, the industries that we chose provide a variety of technologies, markets, and regional concentrations. The regions include the Midwest, mid-South, California, Massachusetts, and parts of other areas which, in total, cover much of the U.S. economic landscape. In Section 3, we discuss several aspects of these companies' operations, including wages and occupations.

In Section 4, we study the location of investment, drawing on federal government data and our survey. We observe changing patterns across the regions and between metropolitan and nonmetropolitan areas. In Section 5, we focus on FDIUS in rural areas, and the employment possibilities resulting from it. The linkages between foreign firms and the rest of the economy are explored further in Section 6. We examine the location of major input purchases for materials and services by foreign firms. We also report on the nationality of firms from which

inputs are purchased. In Section 7, we look at public policies towards foreign investment. What policies has this country followed at the state and local as well as the national levels? How reasonable and effective are these policies, and how should they be changed? We provide some conclusions in Section 8.

2. THE NATURE OF FOREIGN INVESTMENT

To better understand the nature of foreign direct investment in the United States (FDIUS), it is useful to set forth a few key facts about it at the outset:

* FDIUS comes from the world's most advanced industrial countries--especially the United Kingdom, Continental Europe, Japan, and Canada (Figure 1). A popular misconception is that it is mainly a "Japanese phenomenon." It is not. Although Japanese investment is growing fastest (Figure 2), it still lags behind other nations.

* Foreign investors are very much like American firms investing abroad: they are large oligopolists seeking to exploit what economists call "ownership advantages"--that is, they use their management and marketing skills, technology, and other know-how to compete in this country. Foreigners come here for many reasons. Primarily, they want to capture and hold markets by producing goods in this country. They also want to avoid protectionism, tap technology and our skilled labor force, and take advantage of our open door policy towards FDIUS and our political stability. Nowadays, with the dollar at low levels compared

Figure 1

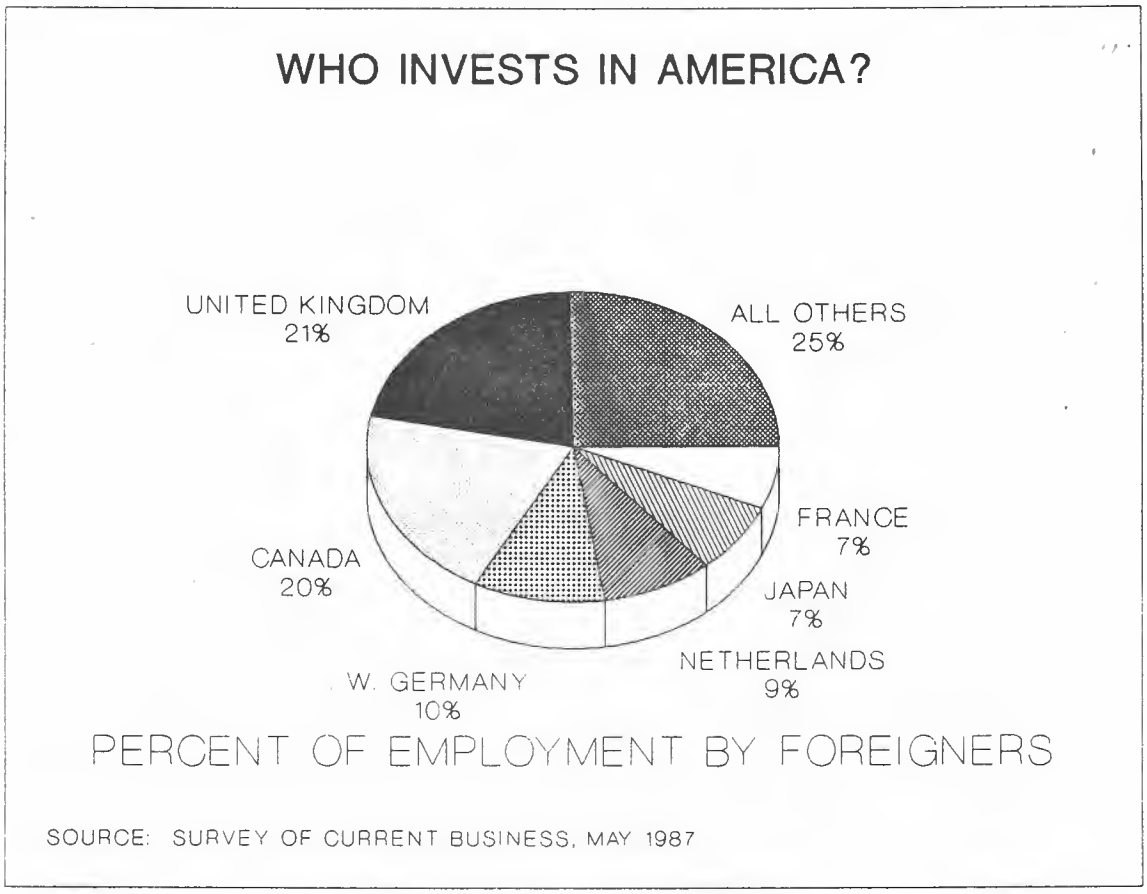
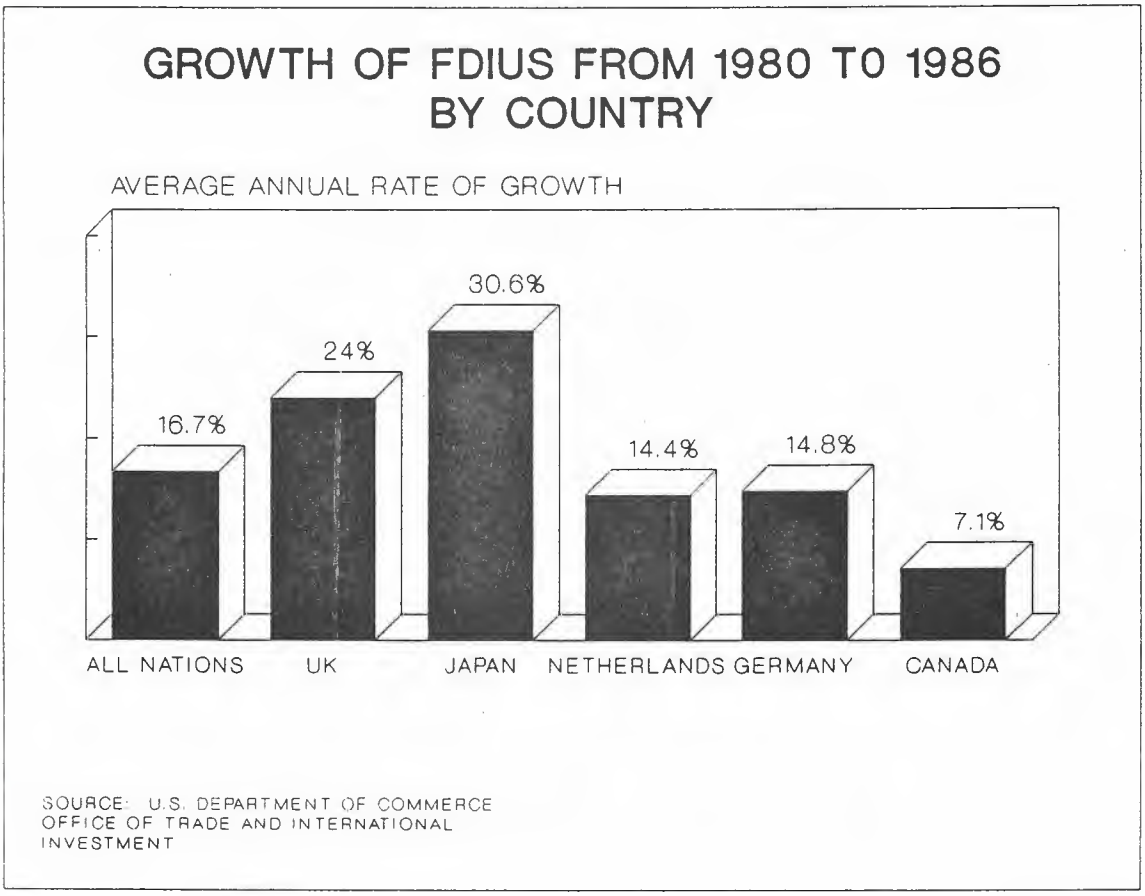


Figure 2



with foreign currencies, there is an added advantage: American assets are cheap compared to what they were just a few years ago.[7]

* FDIUS is fundamentally a takeover phenomenon, with little new plant construction. Of the $65 billion in new investment in 1988, foreigners committed $60 billion through takeovers of U.S. firms; only $5 billion went to the construction of new plants.[8] Of the 65 percent increase in FDIUS that year, four-

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[7] For studies of foreign investment in this country, see Glickman and Woodward, The New Competitors; Peter J. Buckley and Brian R. Roberts, European Direct Investment in the U.S.A. Before World War I (New York: St. Martin's, 1982); Lawrence G. Franko, The European Multinationals (Stamford, CT: Greylock, 1976); Martin and Susan Tolchin, Buying Into America: How Foreign Money is Changing the Face of Our Nation (New York: Times Books, 1988); David S. McClain, Foreign Investment in the United States: Manufacturing and the Theory of Direct Investment, unpublished Ph.D. dissertation, Massachusetts Institute of Technology, 1974; Stephen Hymer, The International Operations of National Firms: A Study of Direct Foreign Investment (Cambridge, MA: MIT Press, 1976); Erica Schoenberger, "Multinational Corporations and the New International Division of Labor: Incorporating Competitive Strategies Into Theories of International Location," unpublished dissertation, University of California, Berkeley, 1984. For appraisals of Hymer's contribution to the theory of FDI, see John H. Dunning and Alan M. Rugman, "The Influence of Hymer's Dissertation on the Theory of Foreign Direct Investment," American Economic Review 75 (2 [May 1985]): 228-32; and David J. Teece, "Multinational Enterprise, Internal Governance, and Industrial Organization," American Economic Review 25 (2 [May 1985]): 233-38. Also, see Peter Buckley and Mark Casson, The Economic Theory of the Multinational Enterprise (New York: St. Martin's Press, 1985); H. Peter Gray, ed., Uncle Sam as Host (Greenwich, Conn.: JAI Press, 1986); Arnold W. Sametz, "The Foreign Multinational Company in the U.S.," in Jules Backman and Ernest Block, eds., Multinational Companies, Trade and the Dollar in the Seventies (New York: New York University Press, 1974), pp. 87-105; and Arnold W. Sametz and Jules Backman, "Why Foreign Multinationals Invest in the United States," Challenge 17 (1) [1974]: 43-47.

[8] "The Top 200 Deals," "The Business Week Top 1000," Special Issue, 1 April 1989, pp. 35-60.

fifths was represented by 12 acquisitions of a billion dollars or more.[9] Some foreign takeovers have been friendly, some unfriendly. Recent acquisitions by foreign countries include Federated Department Stores (by Canada's Campeau Corporation), Cheeseborough-Pond (by the Netherlands' Unilever), and Triangle Publications (by Australia's News Corporation). The Japanese have been somewhat different from other investors in that they have been most likely to build new plants and thus increase employment. However, this is beginning to change. Japanese investors are increasingly participating in the merger and acquisition movement, like their British, Canadian, and Dutch counterparts. Recently, Japanese companies have made major acquisitions like Firestone and CBS Records.

* Foreign investment has been particularly important for some regions. Historically, FDIUS has been concentrated in the East and the South. Over time, however, investment has fanned out across the country. Between 1974 and 1986, foreign investment was increasing fastest in the South and the West. Importantly, when we looked only at acquisitions, we found them overwhelmingly in the North. New plants and expansions of existing plants--the kinds of foreign investments that create jobs--were concentrated in the South.

* Most foreign investment is in manufacturing--especially chemicals, autos, and cement. Chemicals, for example, have drawn European investors such as BASF, Hoechst, and Ciba-Geigy. There is also considerable foreign investment in natural resources, particularly in oil and gas, and substantial increases in services investment like banking and finance. Finally, there has been considerable growth in urban real estate investment, especially in downtown office buildings in places like Los Angeles, Washington, New York, and Houston.

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9 "Foreign Investments in U.S. Swell to $65 Billion," AP wire story, Austin American-Statesman, 31 May 1989, p. B9.

However, purchases of rural land by Japanese and other investors have also increased dramatically in recent years.[10]

* It is not the size but the rate of growth of FDIUS that stands out: foreign investment remains a small part of the vast American economy. Commerce Department data show that foreign ownership of American companies is still small. Only about 3.5 percent of our workers and 8 percent of our productive assets are under foreign control. In manufacturing, foreign penetration is higher: 8 percent of employment and 12 percent of assets are in foreign-owned companies. These are small numbers compared with other countries (such as Canada), but they are much larger than at the beginning of the decade. FDIUS has grown quickly, nearly 20 percent a year during the 1980s. There is a strong likelihood that foreign companies will buy considerably more assets in the future because of the low value of the dollar.

Thus, foreign investment has grown as a result of a wave of takeovers by European and Japanese companies. Has foreign investment created jobs in this country? We address this question next.

FOREIGN INVESTMENT AND JOBS

One fallacy pervades the debate over investment more than any other: that foreigners have created millions of jobs in the U.S. True, almost three million Americans worked for foreign-owned companies in 1987, compared with only one million in 1974. But that does not mean that foreigners generated two million new jobs. The enormous confusion over this question is largely because of a fundamental misreading of available data. Recent research shows that much of the increase in employment on foreign payrolls was due to acquisitions of

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10 William Celis III, "Japanese Set Sights on American Farmland," Wall Street Journal, May 1989, p. B1.

domestic facilities by foreigners.[11] In 1986, for example, 81 percent of the value of foreign investment took place this way. Fully 97 percent of the employment added to foreign payrolls that year was through acquisitions. The remainder was in expansions of existing firms and construction of new plants.

Mergers and acquisitions represent, primarily, the shift of employment from American to foreign owners. Here, foreigners do not create new jobs--they simply control more. At worst, foreign mergers and acquisitions can result in the diversion of resources to speculative and unproductive uses. In this regard, foreign takeovers are no different from those of American companies. Mergers and acquisitions often result in corporate restructuring and job loss because of the debt incurred by the acquisition. The recent takeovers by the Canadian Robert Campeau of Allied Stores and Federated Stores, for example, resulted in 8,000 lost jobs at these companies, as Campeau struggled to reduce his large debt. Despite this, the Commerce Department registered an increase in foreign employment because of the acquisition by a foreigner. This is not to say that all foreign acquisitions result in job loss. Sometimes, the acquirer sets an ailing company back on its feet, saves jobs and possibly increases them. Bridgestone's takeover of Firestone is such an example: Bridgestone pumped in considerable capital and helped the flagging American tiremaker. Tengelmann's restructuring of A&P is another success story.

According to the Bureau of Economic Analysis (BEA), foreigners added 547,931 jobs to their payrolls between 1982 and 1986.[12] How many of these jobs were new, how many the result of the reshuffling of employment between American and foreign owners? As we've seen, this employment results from more than just the balance between new plants and expansions,

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11 Glickman and Woodward, The New Competitors, Chapter 5.

12 The period 1982 to 1986 was analyzed because these are the only years that the BEA breaks out the components of employment change: employment from new plants, expansions, cutbacks, and sales and liquidations. For more detail, see Appendix B of Glickman and Woodward, The New Competitors.

but includes acquisitions, mergers, liquidations, and cutbacks. Figure 3 allows us to understand how many of these jobs were new and how many were only the result of the selling of American assets to foreign companies--a transfer of control. Think of the process as a job employment "pool" into which jobs "pour in" through two faucets at the top and "flow out" through two drains at the bottom.[13]

First, let us look at the faucet at the upper left of Figure 3. We see that new plants (45,151) and plant expansions (341,281) "poured in" 386,432 new jobs. These are unambiguously new jobs created in the U.S. economy. Each new foreign job leads to other new jobs through the multiplier effect: when the foreign firm buys inputs, it increases employment in supplying firms and increases local spending on consumer goods. Therefore, the initial effect of a new job in a foreign company increases by the extent of this multiplier.

In addition to jobs from new plants and plant expansions, acquisitions from the right-hand faucet added 1,381,690 more slots. Some of them represented jobs saved by foreigners who bought American plants that otherwise would have been shut down by their owners because of poor performance. Other jobs simply represent the transfer of ownership from American to foreign companies. It is impossible to tell exactly how many of these jobs were saved and how many were transfers from one owner to another, but the latter is probably more prevalent. At any rate, taken together, new plants, plant expansions, and acquisitions increased the potential foreign job pool by 1,768,122 workers between 1982 and 1986.

Now observe what happens at the bottom of the pool, as cutbacks and sales and liquidations of firms "drain" jobs. Cutbacks from existing plants drained off 442,295 jobs. As the multiplier worked to increase jobs through added purchases when foreigners created

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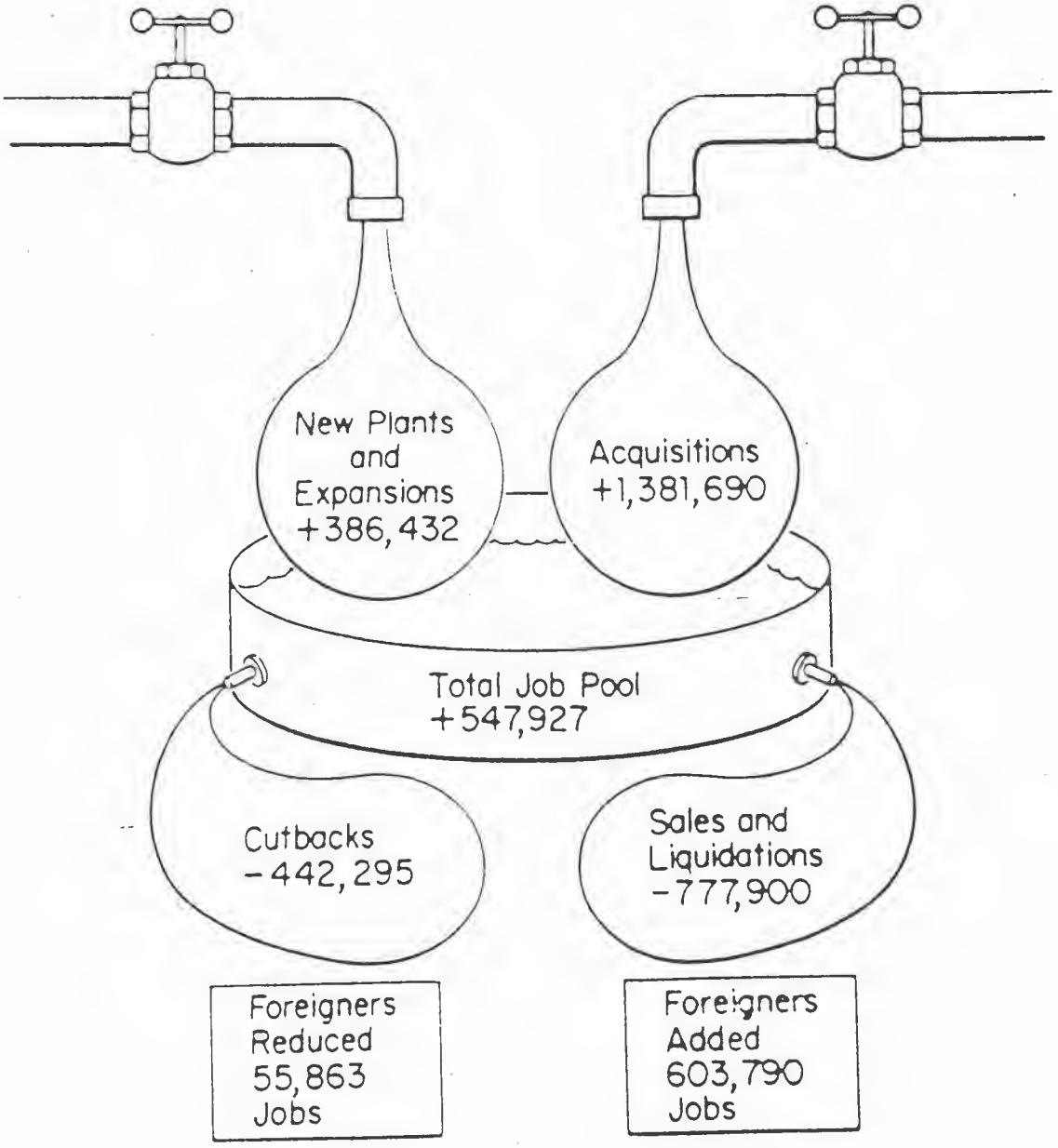
[13] The BEA data give consistent breakdowns of new plants and plant expansions, acquisitions, sales and liquidations, and cutbacks only for affiliates with 500 or more employees. The activities of smaller affiliates are not covered consistently. However, since the larger companies account for some 90 percent of all affiliate employment, the results presented here are not likely to be far off. Glickman and Woodward made estimates of the breakdowns for the smaller affiliates in Appendix B of The New Competitors.

Figure 3

DO FOREIGNERS CREATE NEW JOBS?



Source: U.S. Department of Commerce, Bureau of Economic Analysis

direct jobs, so the multiplier works to reduce (indirect) supplier jobs when cutbacks occur. Unfortunately, the BEA's reporting scheme lumps together sales and liquidations, so we cannot separate the two categories. Unquestionably, liquidations of firms mean jobs lost. But the largest segment of this category is sales.[14] When a foreign firm sells some assets, it is impossible to say much about job change. The new owner might save them and rebuild the company or might eventually close it down. Like the circumstances involving the "saving" of jobs through foreign acquisitions, it is impossible to tell whether there is job loss. All the data allow us to say is that sales and liquidations of firms taken together resulted in a loss of 777,900 jobs.

When we finish pouring in jobs from new plants, expansions, and acquisitions, then siphon off jobs from cutbacks and sales and liquidations from existing firms, we have a total increase of 547,927 jobs. The left-hand side of Figure 3 shows that if foreign investment was only a matter of new plants and expansions and cutbacks, there would have been a net loss of jobs from the economy of 55,863 jobs (386,432 jobs gained in new plants and expansions minus 442,295 lost in cutbacks).

Therefore, FDIUS both spawns and destroys jobs. The net result, though, is job loss from 1982 to 1986 unless one assumes that most acquisitions saved jobs that would have been lost if the acquired U.S. firm went out of business. There is little evidence that this is true. Therefore, the net gain in foreign employment in the economy is strictly through takeover activity. Acquisitions are responsible for whatever gains are attributable to foreigners.

The time period examined (the only years for which data are available) included 1982, part of the deepest recession since the 1930s. Foreigners fired 140,000 workers that year. Of course, American firms also laid off workers--about 1.6 million--during the lean years of the early 1980s. To get a sense of what happened after the recession ended, net job change was calculated for 1984 to 1986, when 5.1 million jobs were added nationwide. What was the foreigners' contribution to this jobs boom? There was a net increase of only 55,510 jobs (the

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14 Telephone interview with Ned Howenstine of the Bureau of Economic Analysis, June 1988.

employment gains from new plants and plant expansions minus cutbacks), an average of just under 18,500 per year.[15] Foreigners contributed less than one percent of all U.S. job growth from 1984 to 1986. In terms of the large American job pool, foreigners added only a few drops. Despite this, as we will see in Section 8, states and localities offer large subsidies to attract foreigners in the hope of attracting these jobs.

Having reviewed basic government data on foreign investment in this country, we know that there are many additional things to be learned. These data do not provide us with a detailed picture of the linkages and the location of foreign companies. To get a better handle on these and related issues, a survey was necessary.

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15 Once again, we leave out the net effects of acquisitions and mergers, and sales and liquidations, for the reasons discussed earlier.

3. A SURVEY OF FOREIGN INVESTMENT

DATA ON FOREIGN INVESTMENT

Because of deficiencies in government data, getting a comprehensive view of the location and other characteristics of foreign firms requires considerable detective work. These data deficiencies, which we discuss next, required us to survey foreign firms in order to develop a deeper understanding of their effects on the economy.

There are two major sources of data on foreign investment from different parts of the U.S. Department of Commerce, both of limited use. The first Commerce Department source is the Bureau of Economic Analysis (BEA) which provides the most complete and reliable information on FDIUS. All foreign affiliates must report to the BEA when they control more than a 10 percent voting interest in an American company.[16] The BEA data, though the most complete available, are of limited use for analysts.[17] For example, detailed data are not generally available for many industries. As a result, it is difficult to get a complete understanding of, say, auto parts or financial services companies. This problem is a direct result of the government's "disclosure" rules that prohibit the release of data about any

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16 Including ownership of real estate, except for personal use. The BEA surveys foreign companies and reports annually on employment, assets, sales, net income, expenditures on plant and equipment, exports, and imports. These data are reported in the May issue of the Survey of Current Business. See, for example, Ned G. Howenstine, "U.S. Affiliates of Foreign Companies: Operations in 1986," Survey of Current Business, May 1988, pp. 59-75 and Ellen M. Herr, "U.S. Business Enterprises Acquired or Established by Foreign Direct Investors in 1987," Survey of Current Business, May 1987, pp. 50-58.

17 These data systematically understate the amount of FDIUS. For instance, there is a large "statistical discrepancy," suggesting that the BEA misses many investments. In addition, the BEA lumps together all investment types--acquisitions, mergers, new plants, etc.--making it impossible to say whether a given investment creates new jobs or only shifts ownership from an American to a foreigner.

individual firm--foreign or domestic. With a relatively small number of foreign firms, disclosure problems occur often. This is especially true when looking at states and regions. If there are only a few firms in a state in a particular industry, the disclosure rules often prohibit the release of this information, severely limiting the amount of analysis of industrial and regional questions.[18] It is impossible, for instance, to use published BEA data to look at firms in rural areas because the agency does not release data on that geographic level.

The second major source of direct investment data is the International Trade Administration (ITA) of the Commerce Department.[19] The ITA tracks investment by tabulating reports of foreign investment in the business press: when a firm announces an investment in a newspaper or journal, the ITA records the reported amount of the investment, its location, and the number of expected employees. Investment is also given by "mode of entry": whether the investment is a new plant, plant expansion, merger, joint venture, or acquisition. Since these data are from public sources, the ITA can publish that information without being bound by disclosure rules; it can even report data about individual companies. This data source yields statistics on individual firms, industries, and regions, a distinct advantage over the more aggregate data from the BEA.

Though more detailed than the BEA's, the ITA data are not very accurate. For example, although an investment of (say) $4 million may be announced in a trade magazine, its value might turn out to be higher or lower; or the investment might even be cancelled. The ITA does not validate investments, and will record a $4 million investment whether or not it becomes

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18 On the sources of data and problems in using FDI data, see Glickman and Woodward, The New Competitors, Appendix A.

19 We put together a data set of the complete list of direct foreign investment transactions through 1986 compiled by the ITA. It is described in Appendix DATA Sources. These data represent the number of investments (or transactions) made by foreign companies.

reality. This method is nothing more than a compiling of secondary public data. It is informative, but must be interpreted with care.[20]

Because of these problems, it was impossible to glean crucial information about the location patterns, linkages, and local impacts of foreign companies. We cannot say very much about the purchasing patterns of foreign companies, nor can we look closely at the impacts of foreign firms on local economies. Therefore, we surveyed foreign firms in the auto parts, computer, and semiconductor industries. We also surveyed domestic companies in the same industries to compare their activities with those of foreigners.

THE SURVEY INSTRUMENT

We administered a lengthy questionnaire designed to shed light on the level of integration of the foreign firms in the U.S. economy, the factors that affected their location decisions, and the importance of government incentives in determining locations. (Details of the survey and the sample are given in Appendix A.) The survey was carried out by telephone after the firms had a chance to review a written copy of the questions. We divided the questionnaire into six parts. In part 1, we asked basic questions about the firm, such as when it began manufacturing in the U.S. and how it invested in the United States;[21] questions about production and markets took up the second part. We asked for the value of the firm's

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[20] Data collected in a similar manner are available from the Japan Economic Institute (JEI) for Japanese companies. The JEI seems to do more checking of the accuracy of investments. In addition, many states compile lists and directories of foreign investors. We used both the JEI and state sources to compile our sample of foreign companies.

[21] for instance, whether it invested in a new plant, bought an existing factory, or whether its "mode of entry" was of some other type.

production, the location of its markets, and whether it used subcontractors and distributors.[22] Inputs in the production process were the main topic of the questionnaire's third part.[23] Manufacturers identified the three highest-value material and service inputs and the location and nationality of the suppliers of these inputs. The fourth part of the survey contained questions about employment (including the amount of part-time employment, and research and development workers), wages and salaries, occupations, and unionization. Our main aim was to see if there was a difference between domestic and foreign firms in any of these categories.

The last two parts of the survey dealt with the location decisions of the companies and their perception of the importance of government incentives to location. Part 5 consisted of questions about the factors that were most important in the firm's location decision. The respondents were asked to evaluate each of eleven location factors.[24] In addition to finding the factors most important for location, we wanted to know if there were any differences between foreign and domestic firms' perceptions of the relative importance of these factors. The final part of the survey involved public programs to attract foreign firms. We asked

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[22] We classified the locations of markets within thirty miles of the plant; in the same state but farther than 30 miles from the plant; elsewhere in the U.S.; and, abroad. The firms were also asked to identify the nationality of their suppliers.

[23] We classified material inputs into semi-finished goods, subassemblies and components; business services; and non-business services. Business services were those directly related to financial operations, such as accounting, legal or financial services. Non-business services were custodial, food, and maintenance services. We did not ask questions about raw-material inputs because these constitute a very small portion of the inputs into production in the industries that concerned us.

[24] Domestic firms rated only 10 factors (see Section 4).

firms to evaluate each of ten commonly used industrial development incentives given by public agencies and how important these were in their location decisions.[25]

SURVEY AND SAMPLE CHARACTERISTICS

Like any survey research, ours had some problems. Although the technical description of the sample composition (Appendix A) adequately points up the shortcomings of our data, it is important to state a few of them here. We believe our list of firms constituted the universe of foreign investments in the three industries we studied. Of the population listing, we completed 170 interviews in total. In all, 118 foreign and 52 domestic firms answered the questions. Nonetheless, readers should note a number of important limitations in the sample. First, the number of foreign and domestic plants in the sample was uneven. There were twice as many foreign as domestic establishments. Second, the distribution of plants by industry was skewed. We were more successful interviewing foreign auto parts firms (73 foreign versus 13 domestic), while the domestic sample consisted of relatively more firms in the computer and semiconductor industries (21 domestic chip producers, 18 domestic computer producers). This sample distribution made industry-by-ownership comparisons difficult, as we will see later. Since these problems existed, we analyzed the data by intentionally controlling for the industry type in the analysis. Finally, although there were 170 firms in the sample, fewer answered questions on particular issues, like inputs or unionization. Therefore, for example, the total sample size for the analysis of linkages in Section 6 was 129 firms (88 foreign and 41 domestic).

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[25] The incentives were: state financial incentives, local financial incentives, state tax incentives, local tax incentives, business assistance programs, labor force assistance programs, employee recruitment assistance, state or locally financed investments in physical infrastructure, and location in a foreign trade zone or enterprise zone.

OVERVIEW OF SURVEY RESULTS: LESS THAN MEETS THE EYE

It is useful to summarize some of the important findings from the survey. These aggregate results give an overview of how foreign and domestic firms compared. But it is important to keep in mind that broad aggregates sometime obscure facts that a more detailed industry analysis yields because of the industry bias in our sample. Although we will qualify these findings later, some are worth mentioning here.

* Foreign companies were slightly larger than domestic firms (Figure 4). Foreigners averaged 344 employees, compared to 329 among American companies. Figure 4 shows, however, that American auto parts firms had many more employees than foreigners did, while foreign semiconductor and computer companies were larger. Average production in 1988 was about the same: $498 million for foreigners compared to $474 million for domestic companies.

* Domestic companies paid higher wages: average wages were $26,340 among American companies, compared to $23,900 for foreign multinationals (Figure 5).

* Foreign and domestic firms hired the same percentage of part-time workers (1.9 percent) (Figure 6). Domestic firms hired a greater percentage of R&D workers (6.6 percent for domestics versus 3.1 percent for foreigners) and were more likely to be unionized (17.3 percent for domestics versus 9.6 percent for foreigners).

* American companies had a higher percentage of management, technical staff, and professionals than foreign companies. Foreigners, on the other hand, employed more production workers (especially those who did precision work), service workers, and low-skilled handlers and assembly workers.

* Foreigners obtained 24 percent of their inputs from factories within their state; domestic companies purchased 41 percent of their inputs from in-state sources.

Figure 4

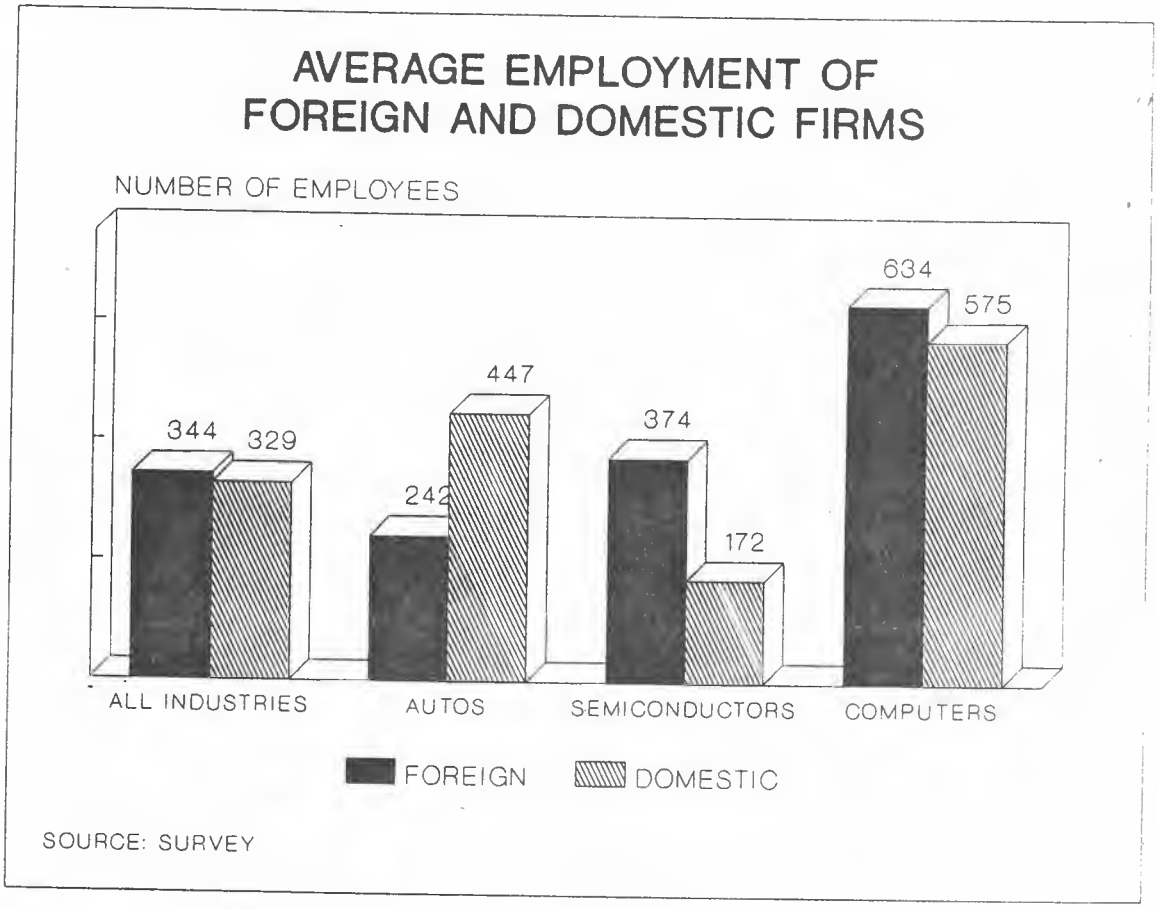


Figure 5

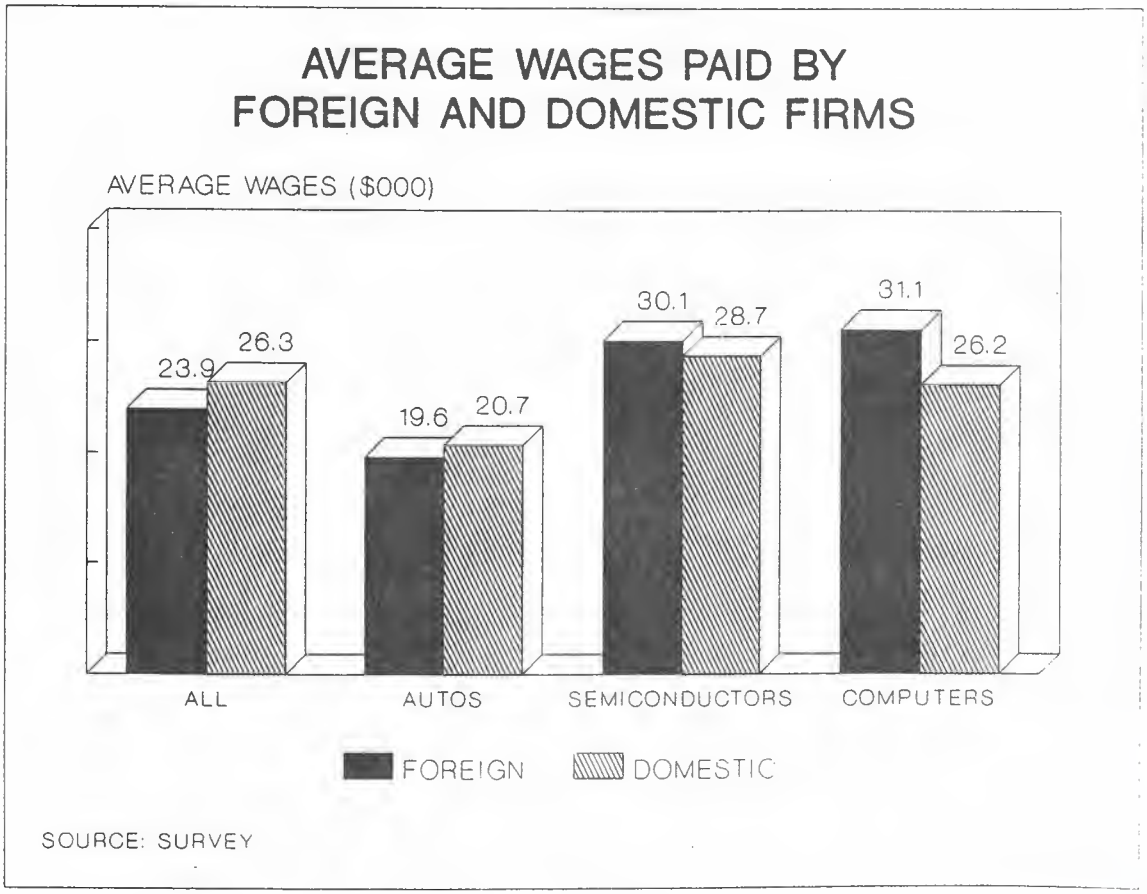
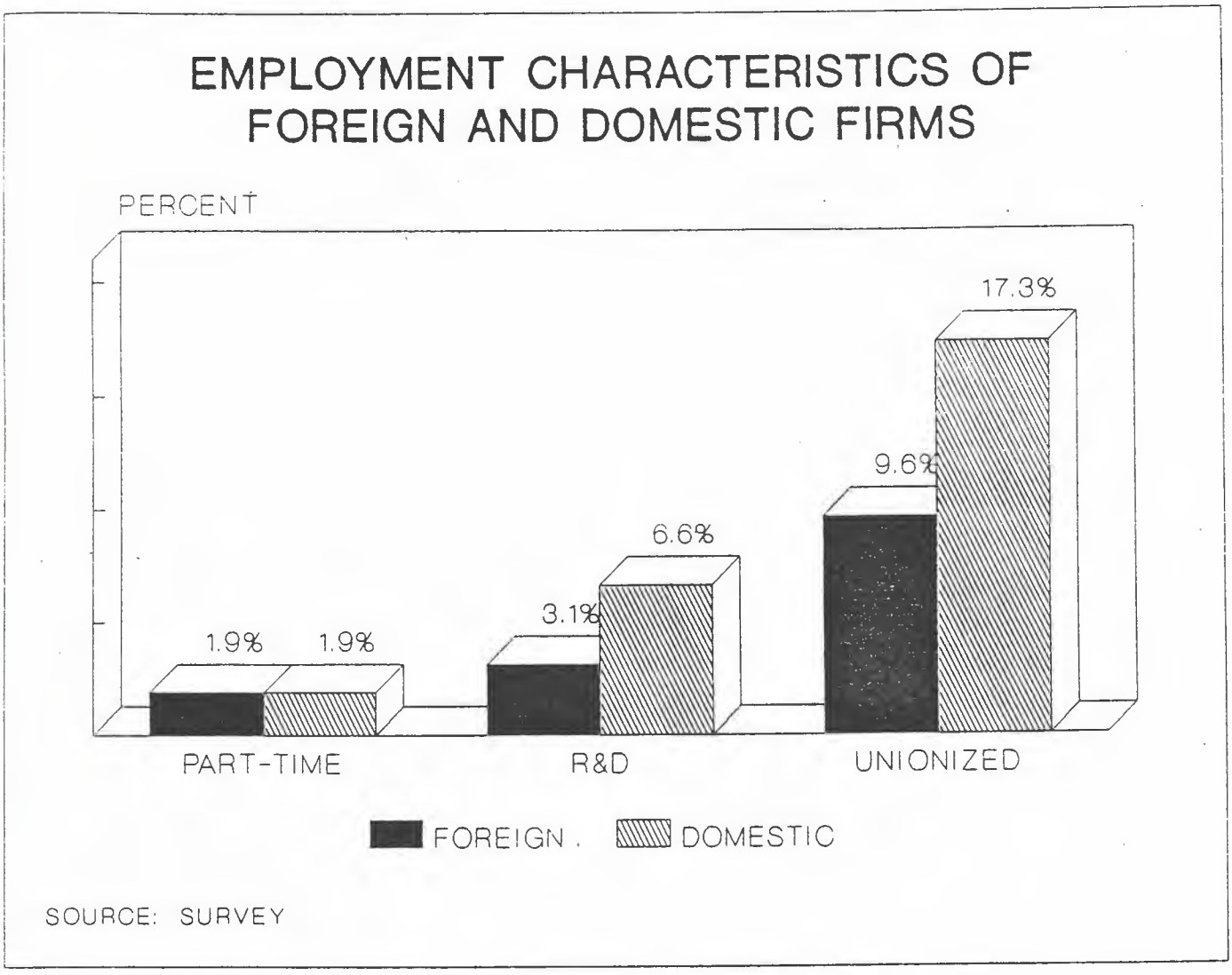


Figure 6


EMPLOYMENT CHARACTERISTICS OF FOREIGN AND DOMESTIC FIRMS
PERCENT
1.9%
1.9%
3.1%
6.6%
9.6%
17.3%
PART-TIME
R&D
UNIONIZED
FOREIGN
DOMESTIC
SOURCE: SURVEY

* Foreigners imported a higher proportion of their inputs from abroad. On average, they imported 40 percent of their largest material input, 33 percent of their second largest input, and 32 percent of their third largest input.[26] Domestic firms imported 31 percent, 15 percent, and 12 percent of each inputs, respectively.

* Domestic firms exported relatively more of their products. More than 16 percent of their production went to overseas markets, compared to less than 10 percent for foreign companies. At the same time, foreign companies marketed more of their products locally: 9 percent of their output was sold within 30 miles of the plant, compared to only 5 percent for domestic companies.

* The aggregate data showed that foreign companies were more likely to locate in nonmetropolitan areas than domestic companies. Twenty-five percent of the foreign investors in our sample have nonmetropolitan plants while only 11 percent of the domestic firms in our sample were located there.

Having outlined the main findings of the survey, we now turn to a more detailed analysis of occupations, wages, firm size, and labor force characteristics. This more microscopic view alters some of the findings of our overview when we look at how individual industries influenced the more general results.[27]

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26 We measured input size by dollar value.

27 Additional analyses of the survey data are in Sections 4-6.

RESEARCH APPROACH

In order to test for differences in occupations, wages, and other variables, we used student t-tests[28] to see if there was a significant difference in the mean proportion of each occupational category between foreign and domestic firms.[29] A level of significance of 0.10 was used.[30] Our investigation proceeded from the general to the specific, seeking to verify or reject significant differences found in the aggregate at a more disaggregated level. We did this to eliminate the industry effects discussed earlier. We tested the whole sample and sub-sections of the sample, controlling for industry, size of firm, unionization, part-time work, the number of research and development employees, and mode of entry.

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[28] The t-tests depended on two assumptions about the data for their validity. First, the distribution of the data in both samples must be unimodal. In order to check the data from the survey for unimodality, histograms were created comparing the distribution of the data points. We found that the distributions were unimodal and fairly similar for all occupations across nationality except for sales employees, machinery operators, and handlers and workers' assistants. In these categories, further tests, in which we disaggregated by industry, showed that the differences in the distributions were due to industry composition. Before each t-test was conducted, tests for the difference in the variance of the two samples were run. On the bases of these tests, the regular t-test was used if the variances were shown to be sufficiently similar. If the variances were shown to be different, an asymptotic t-test was used.

[29] In all the tests, observations that could not be used were deleted (i.e. missing observations, information not available, respondent did not know, and refusal observations), leaving a reduced sample.

[30] This represents the probability that the differences found in the data between domestic and foreign firms could have occurred by chance.

OCCUPATIONS

There has been little research on the occupational structure of foreign firms. This is due mainly to the lack of disaggregated government data on employment in foreign firms (see in Section 2). We wanted to see if there were differences in the occupational structures of foreign and domestic firms and if foreign firms investing in the U.S. create different kinds of jobs--in terms of wages and occupational status--than domestic firms. The Bureau of Labor Statistics occupation classifications system was employed to categorize jobs. These categories were: executives and managers; professionals; technicians; sales employees; administrative support staff; security personnel; service employees; precision production, craft, and repair employees; machinery operators; transportation operators; and handlers and workers' assistants.

From what we know about foreign investment and the nature of the three industries in our survey, little difference should exist in the occupational structure of foreign and domestic plants within industries. The auto parts, semiconductor, and computer industries share many of the organizational characteristics of modern manufacturing, leading us to expect that they have similar workforces. One of the most important factors is the presence of large multilocational firms with branch plant production, characterized by the spatial and organizational separation of production facilities from administrative and innovation activities.[31] This separation is part of an international strategy to decentralize production and lower costs in the face of increasing international competition. By searching out those regions where labor is least expensive for the establishment of production facilities (e.g., the South), firms are able to lower costs and become more competitive. In addition, some firms have "de-skilled" their labor force by adopting production technologies and mechanization that employ

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[31] Edward J. Malecki, "Industrial Location and Corporate Organization in High Technology Industries," Economic Geography 61: 345-369 (1985).

only less skilled workers, thus allowing more flexibility in the firm's location decision.[32] All this means is that in the types of plants we surveyed--branch production facilities of large multinational firms--a similar labor force structure should exist. In the case of technical industries, foreigners have set up manufacturing in the U.S. to be near centers of industrial innovation and pools of trained labor. Thus we expected foreign firms to take on the profile of domestic firms, although there are some important differences that we will discuss later.

Another reason to expect a homogeneous workforce is the standardization of production technology. Larger segments of the industries we studied have well-established production technologies. Competition is based on technology of production as well as on the organization of the production process (e.g., just-in-time inventory techniques in the case of Japanese firms). Therefore, within each industry, the technology of production is quite similar across firms, and therefore we can expect the amount and type of labor used also to be similar.

Differences in Occupational Structure

We first tested the difference in occupational structure between foreign and domestic companies. As we saw in our summary in Section 2, American firms appeared to have a higher proportion of managerial workers while foreigners had more production workers. However, this apparent difference was not confirmed by statistical tests. We found significant differences only in two occupations: sales employees (domestic firms had a higher proportion) and machinery operators (foreign firms had a higher proportion). Further disaggregation by industry indicated that even these minor differences were spurious. When we compared foreign and domestic firms in each of the industries alone, there were no significant differences at the 0.10 level. The large number of foreign auto parts and domestic semiconductor firms heavily influenced the aggregate findings. Because foreign auto parts and domestic

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[32] Erica Schoenberger, "Technological and Organizational Change in Automobile Production: Spatial Implications," Regional Studies 21: 199-214 (1987).

semiconductors were over-represented in our sample, the aggregate results reflect the differences between the occupational structure of these two industries. Thus, foreign and domestic companies did not have different occupational characteristics when we accounted for industrial mix.

Our next step was to control for firm size to see if the lack of difference in occupations held for firms of all sizes. We divided the sample into firms with fewer than 100 employees, firms with 100 to 249 employees, firms with 250 to 499 employees, and firms with 500 employees or more. Small domestic firms with fewer than 100 employees had a higher proportion of management (professionals and technicians) jobs, while small foreign firms had a higher proportion of manufacturing and assembly jobs.[33] Further tests, however, showed that industry composition was responsible for the differences shown in the aggregate data. For those cases that could be tested with a sufficient sample size (automobiles and semiconductors), no significant difference was found. For the computer industry, the significant difference could not be rejected statistically.

For firms with 100 to 249 employees, only the machinery operators occupation had a significantly higher proportion of employees in foreign firms than in domestic firms. No other occupations had significant differences. These results could not be further confirmed or rejected controlling for industry composition because of the size of the sample. For firms with 250 to 499 employees there were no significant differences between foreign and domestic firms. For firms with 500 or more employees, foreign firms had a higher proportion of professionals. Once more, because of the size of the sample, this result could not be confirmed or rejected controlling for industry.

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[33] For example, foreign firms had higher proportions in machine operators and handlers and transportation operators. American companies had a higher proportion of professionals and technicians.

Research and Development Workers

In addition to the information on occupations, firms were asked to identify the number of research and development (R&D) workers at their plants. Foreign firms hired only 3.1 percent of their workers for research and development positions, less than half the percentage of R&D workers in domestic companies (6.6 percent) (Figure 6). This difference was statistically significant at the .02 level. But, when we disaggregated by industry, the higher propensity for domestic firms to employ R&D workers was significant only in autos. Domestic computer firms also hired a higher proportion of R&D workers, but the difference was not significant. Foreign semiconductor firms employed a higher percentage of R&D workers, although again the difference was not significant. As in the case of occupations, what appeared to be a big difference was less important when we looked more closely at the industries.[34]

Unionization

After examining differences in occupational structure, we looked at another dimension of the labor force: the extent of unionization. While the foreign firms in our sample tended to discount the importance of unionization in choosing a plant location (see Section 4), unions affect the cost of labor, a factor that many authors agree is important to the location decision

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[34] We expected to find firms with significant R&D employment to employ a greater proportion of technicians and technical staff than those that did not. Testing for differences, we found a significant difference in the proportion of service employees: Foreign firms had a higher proportion than domestic firms at a level of significance of 0.09. For firms with R&D employment, however, there was no significant difference in occupational structure between foreign and domestic firms. Therefore, when we examined firms and took into account whether or not they undertook R&D, nationality did not matter.

of foreign firms.[35] This is confirmed by our survey, where firms ranked the cost of labor consistently among the three most important determinants of their location decisions. On the strength of this evidence, we expected firms in our sample to have a low rate of unionization. Indeed, only 12 percent of the firms in our sample had a unionized work force. As Figure 6 shows, foreign firms were less unionized (10 percent of all firms) than were domestic firms (17 percent of all firms). This difference, however, was not significant in chi-square tests.[36] When we looked at unionization among different industries, however, we found a significant difference between foreign and domestic firms only in the automobile industry. Here, 54 percent of all domestic firms were unionized, while only 10 percent of foreign firms were. In the computer and semiconductor industries, we found no significant difference.

Part-Time Employment

Recent trends in the U.S. have shown a dramatic increase in the level of part-time employment, due, among other things, to changes in the organization of work by corporations and the entrance of more women into the workforce. We wanted to see if there was any difference between foreign and domestic firms in the level of part-time employment. We found that there was virtually no difference: 1.89 percent of the labor force in foreign firms was employed part-time, while the figure was 1.86 percent in domestic firms, an insignificant

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35 Jane Sneddon Little, "Location Decisions of Foreign Investors in the United States," New England Economic Review, July/August, 1978, pp. 43-63; John E. McConnel, "Foreign Direct Investment in the United States," Annals of the Association of American Geographers 70: 2, 259-270 (1980); Norman J. Glickman and Douglas P. Woodward, "The Location of Foreign Direct Investment in the United States: Patterns and Determinants," International Regional Science Review 11: 2, 137-154 (1988).

36 The chi-square test measures the strength of the relationship between two variables. It computes the difference between the actual distribution of the data and a random distribution. If the difference is large, the test indicates that a significant relationship exists.

difference. When we looked at the difference between foreign and domestic firms in each industry, we also found no significant differences.

DIFFERENCES IN WAGES

Another aspect of employment is the level of compensation. We calculated the average wage for occupations to determine whether foreign firms paid more (or less) than domestic firms.[37] In aggregate, domestic firms paid about $2,400 more per worker, but this turned out to be largely a result of the industry composition of our sample. Foreign auto firms, a large proportion of the foreign sample, paid slightly less than domestic autos. This brought down the foreign average substantially. As Figure 5 shows, foreign firms paid higher wages in semiconductors and computers.

As in the case of occupational structure, we found no significant statistical differences when we looked at the detailed wage data. Foreign firms paid more for precision production craft and repair workers, perhaps because they found it more difficult to attract skilled workers. Domestic firms paid more for some lesser skilled workers such as transportation operators. It is difficult to judge whether these differences are really not significant simply because they lie slightly above the arbitrary limit for the statistical tests. The availability of skilled labor was said to be a significant factor in the location decisions of foreign firms in our sample. However, when we ran the tests and controlled for industry, either the significant differences disappeared or the number of firms reporting was too small to render the tests reliable.

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[37] These calculations were based on questions asked only about blue-collar occupations.

FIRM SIZE

We also wanted to know if foreign and domestic firms differed in size. We tested for differences for the total sample and by industry. We found that foreign firms were larger than domestic firms at the 0.10 level of significance only in the semiconductor industry. No other tests yielded significant results. In fact, for the sample as a whole, the level of significance was 0.9, strongly in favor of accepting the null hypothesis that there is no perceptible difference in the mean size of firm. We then examined the difference in size, controlling for the mode of entry (lease, purchase, or construction of new facilities). Again, no significant differences were found.

SOME FINAL WORDS ABOUT LABOR FORCES

The results from the tests confirmed our expectations that foreign and domestic companies had similar occupational structure and wages. Initial tests on aggregated samples indicated some differences, but these were due mostly to the industry composition of the sample. Further tests for firms with R&D employees also showed no significant differences. American and foreign companies looked very much alike.

4. WHERE FOREIGN FIRMS LOCATE

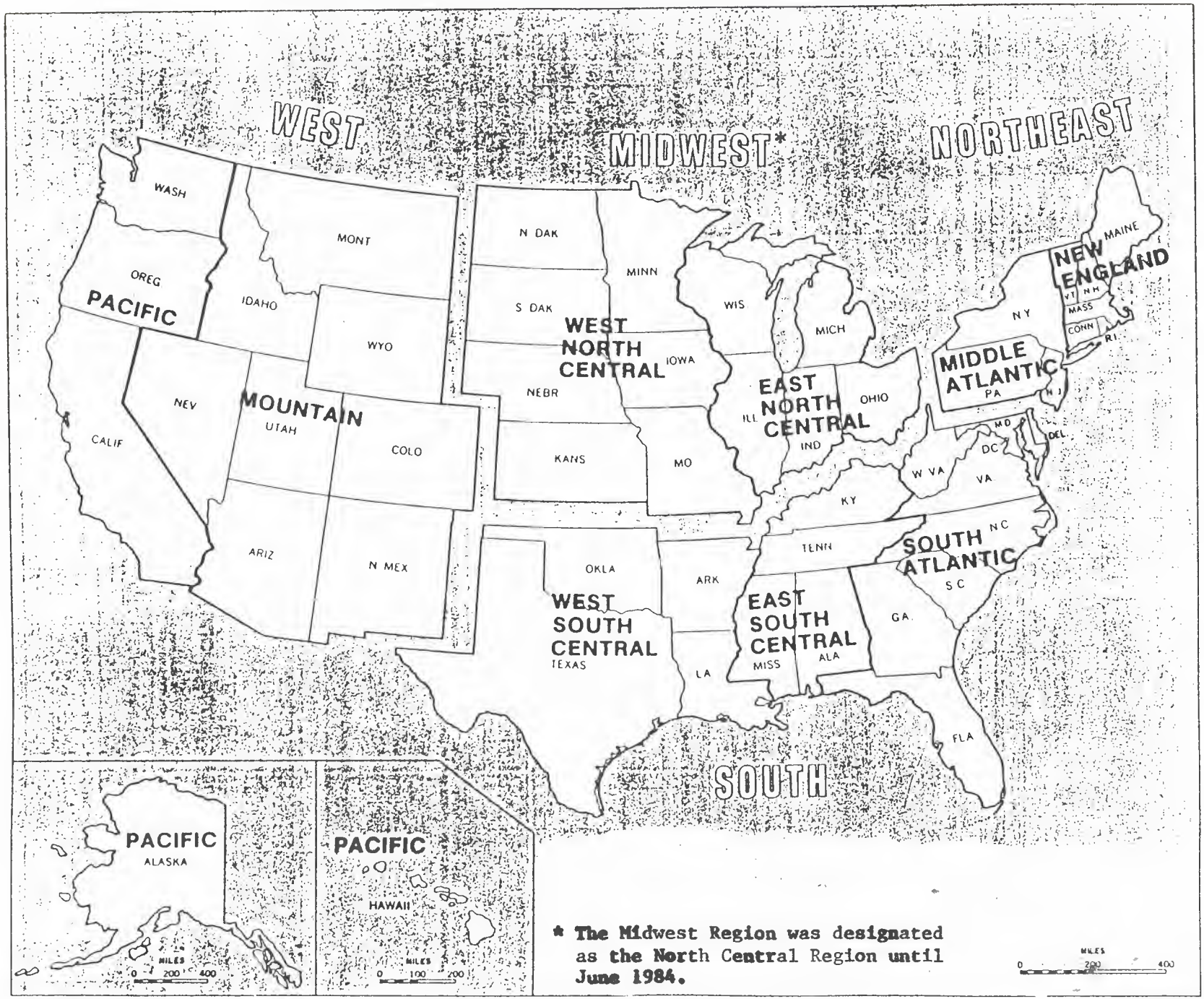
We next examined the location of foreign companies. Although we showed in Section 2 that foreign companies do not create many jobs nationally, the potential for job creation does exist in selected parts of the country. For instance, foreign firms have located in the "auto alley" of the Midwest bringing many new jobs to the region. Not only have Nissan, Honda, Mazda, and Toyota set up assembly plants in the Midwest, but about 300 auto suppliers have moved in as well. These suppliers sell not only to the Japanese assemblers, but also importantly to the American Big Three. However, the spread of jobs goes well beyond the Japanese auto industry. In the Piedmont area of South Carolina, European firms in many industries have built plants or bought out American owners. Such firms as Michelin, Siemens, and Northern Telecom have brought jobs to the South, many of them to rural communities. A foreign-controlled petrochemical complex is situated along the Gulf Coast; it includes such giants as Royal Dutch Shell and BASF. In the Pacific Northwest, a "Silicon Forest" of foreign semiconductor and computer firms like Kyocera, Epson, and Fujitsu has sprung up. These anecdotes reveal that pockets of foreign investment create jobs. However, a more comprehensive analysis of data is needed to tell us about the location of foreign investment and where jobs are created.

BUREAU OF ECONOMIC ANALYSIS DATA

With the problems in interpreting data on foreign investment in mind (see Section 3), we looked at both the BEA and ITA data in order to examine the distribution of foreign investment by region. We first used BEA data to provide an overview of the location of FDIUS. Figure 7 depicts regions and divisions defined by the U.S. Census Bureau. Historically, investment was centered along the East Coast and parts of the South. In 1974, for example, 71 percent of all foreign affiliate employment was in the Middle Atlantic, Midwest, and South

Figure 7

CENSUS REGIONS AND DIVISIONS OF THE UNITED STATES



U S DEPARTMENT OF COMMERCE
Bureau of the Census

Atlantic.[38] Over time, however, investment spread across the country--in part, mirroring investment patterns of American companies and concentrations of population. European investment swept inland from the East Coast, Canadian investment from the North, and Japanese investment from California and elsewhere on the West Coast. The largest shares of European and Canadian investment were in California, New York, Texas, and Pennsylvania. Japanese investment was highly concentrated in California--some 29 percent of all employees of Japanese companies were there. The regions with the fastest growth in investment between 1977 and 1985 were in the South, as Figure 8 shows. The share of FDIUS in the Manufacturing Belt declined.

Manufacturing investment, the largest component of FDIUS, was more widely dispersed than total FDIUS. Historically, the Manufacturing Belt and the Southeast held the greatest amount of investment. However, during the 1980s the shares of New England and the Southeast fell, while the shares of all other regions increased. Therefore, as with total FDIUS, there was a decentralization of manufacturing investment.

We can see these trends in the location of manufacturing investment by calculating a "location quotient," or LQ. The LQ measures the concentration of foreign affiliate employment in a state or region compared to the concentration of total employment.[39] If the ratio is greater than one, then the state has a higher concentration of foreign employment than the national average; if the LQ is less than one, then the state is less concentrated. We calculated LQs for each of the Census divisions for 1977 and 1986 to see where foreign affiliate employment was concentrated and how it had changed over time (Figure 9). In 1977, the highest LQs were in

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[38] Glickman and Woodward, Regional Patterns. Glickman and Woodward used BEA rather than Census regional definitions. The regions that best correspond to the Census regions noted here were the Mideast, Great Lakes, and Southeast.

[39] The location quotient is a general measure and can be used to gauge the concentration of other economic variables as well. It is calculated by dividing foreign employment in state i by total foreign employment in the United States to arrive at the numerator. The denominator is total employment in state i divided by total U.S. employment.

Figure 8

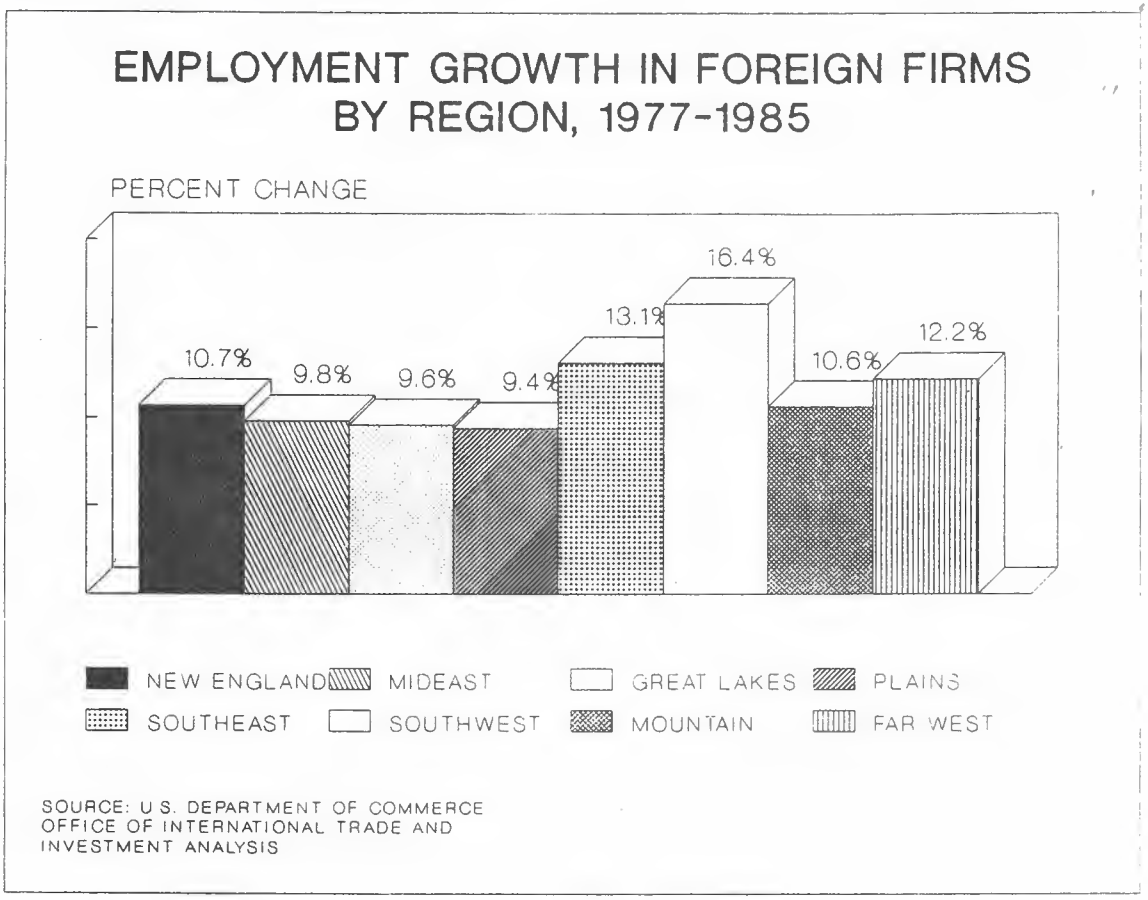
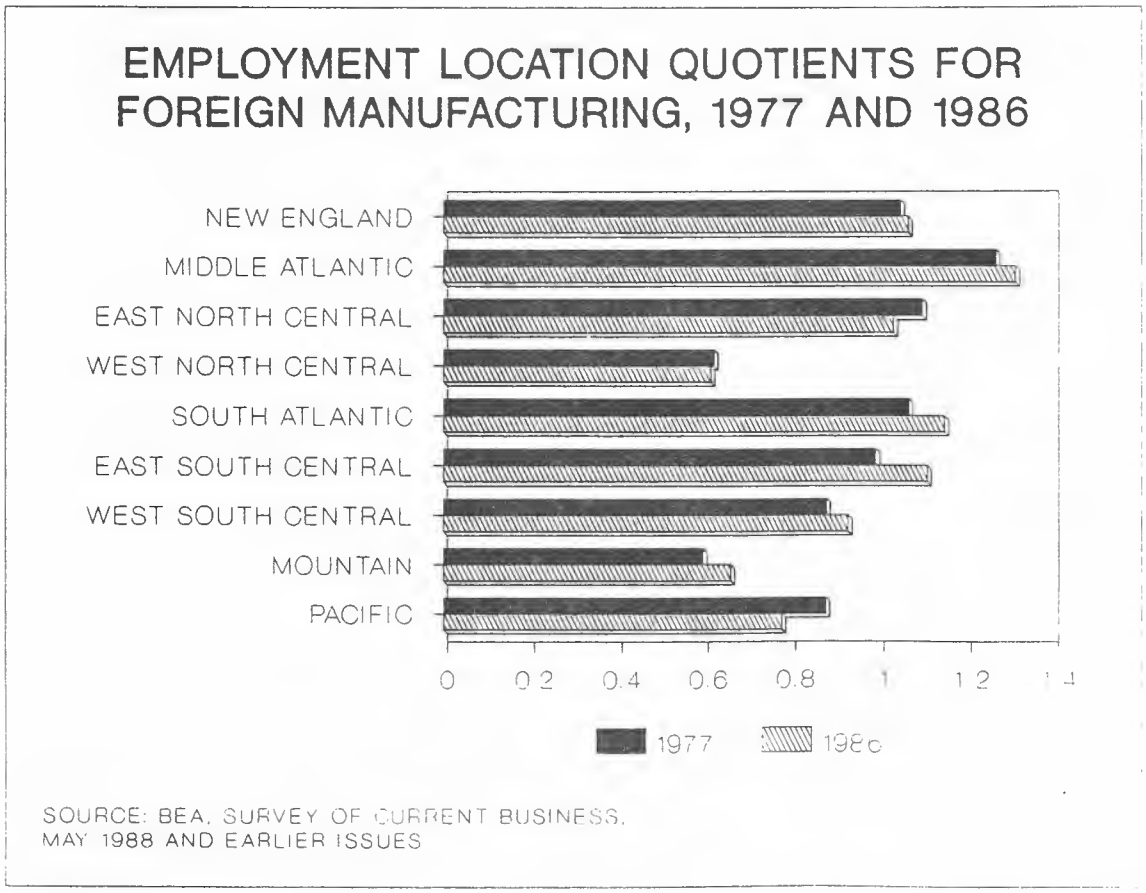


Figure 9



the Middle Atlantic, East North Central, New England, and South Atlantic divisions. Between 1977 and 1986, there were increases in LQs in the South Atlantic, East South Central, and West South Central; the Middle Atlantic, still the most concentrated region, also increased its share and remained the region with the highest LQ. Despite the continued strength of the Middle Atlantic in attracting FDIUS, there is a clear trend towards the South and West.

We also calculated location quotients for European and Japanese investors. The very high concentration of Europeans in the Middle Atlantic, New England, and the South Atlantic in 1977 is evident from Figure 10. Over time, investment locations shifted: between 1977 and 1986 the LQs in the West North Central, West South Central, and Mountain states increased. Japanese investment (Figure 11) was extraordinarily concentrated in the Pacific region in 1977: the location quotient was 2.8 in that year. The Pacific's high LQ is due largely to the very strong propensity for the Japanese to invest in California. Although the Pacific's LQ fell by 1986, it remain very high in comparison to other regions. Figure 11 shows that there was considerably more investment in later years in America's interior, especially the East South Central and West South Central, by Japanese companies.

Therefore, the data on manufacturing investment, as well as all investment, show a spreading out of FDIUS to places not previously affected by foreign money. In addition, there was a shift towards the South and Southwest, a pattern similar to that of investments made by American companies. Although the BEA data give us a good picture of where foreigners were investing, we cannot differentiate between investment in new plants and investment in acquisitions and mergers. The former are more likely to create new jobs than the latter. Some of the investment we have seen may represent only new non-American ownership, not new job opportunities. To get a better view of this important distinction, we looked at data provided by the International Trade Administration.

Figure 10

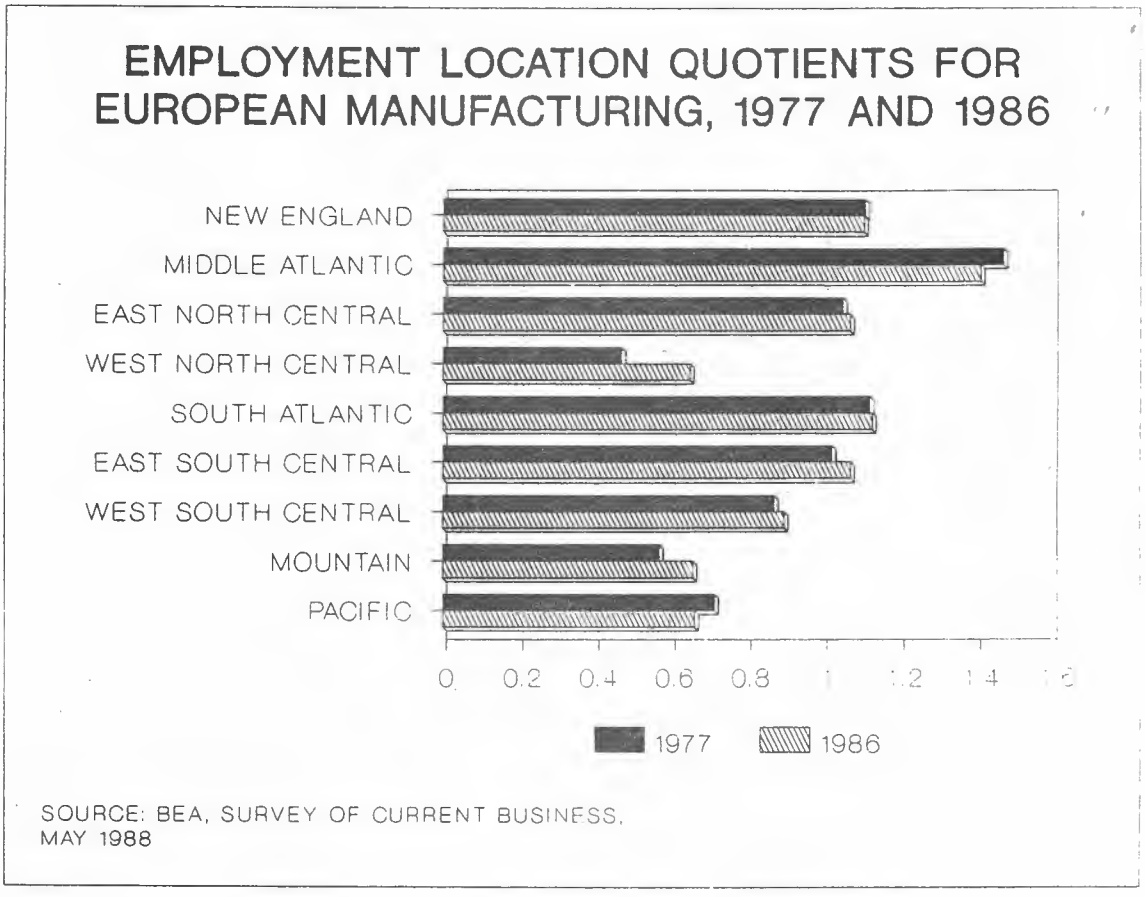
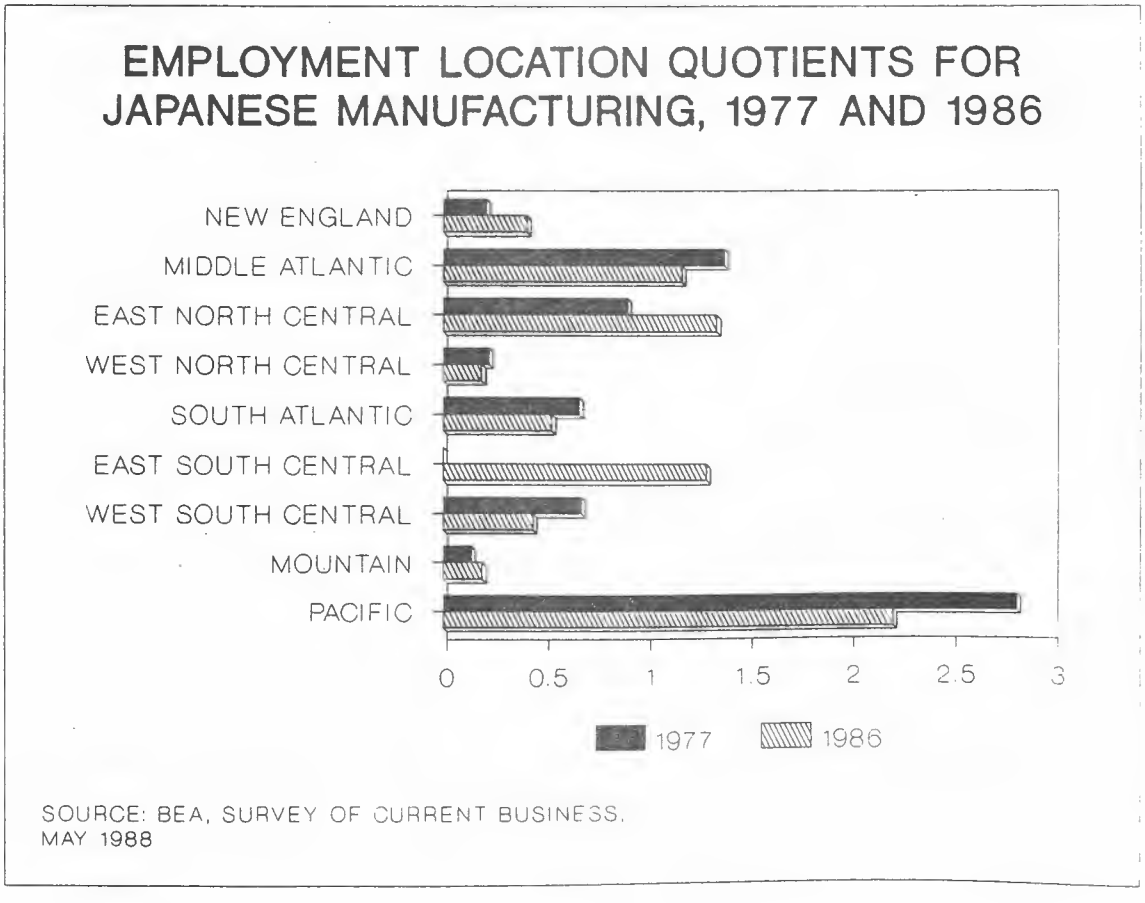


Figure 11



INTERNATIONAL TRADE ADMINISTRATION DATA

While the ITA data have certain limitations (noted above), they nonetheless have the advantage of identifying individual investments and providing far more detail than the BEA data. Unlike the BEA, the ITA allows us to see the location of investments that are likely to create new employment and investments by level of urbanization.

Location by Region

Over half of the number of foreign investment transactions in manufacturing were on the Atlantic and Pacific coasts through 1986. The Middle Atlantic had the greatest number of investments (22.6 percent of the total), followed by the South Atlantic (18 percent) and the Pacific (15.5 percent). To adjust for the effects of region size, we divided the number of investments by the number of manufacturing establishments in each region. When we made these calculations, New England had the largest number of investments per thousand manufacturing establishments (11.9); followed by the South Atlantic (11.5), Middle Atlantic (10.1), East South Central (9.5), and West South Central (8.4) (Figure 12).

As we discussed in Sections 1 and 2, some investments create jobs while others primarily shift control from American to foreign owners. To examine how investment affected regions, we defined investments in new plants or expansions of existing plants as "employment-creating." We defined acquisitions and mergers, equity investments, joint ventures, and other types of investment as "employment-acquiring";[40] they added employment to foreign rolls without necessarily creating new jobs. By looking for concentrations of employment-creating investments, we can see where foreigners were most likely to have increased jobs.

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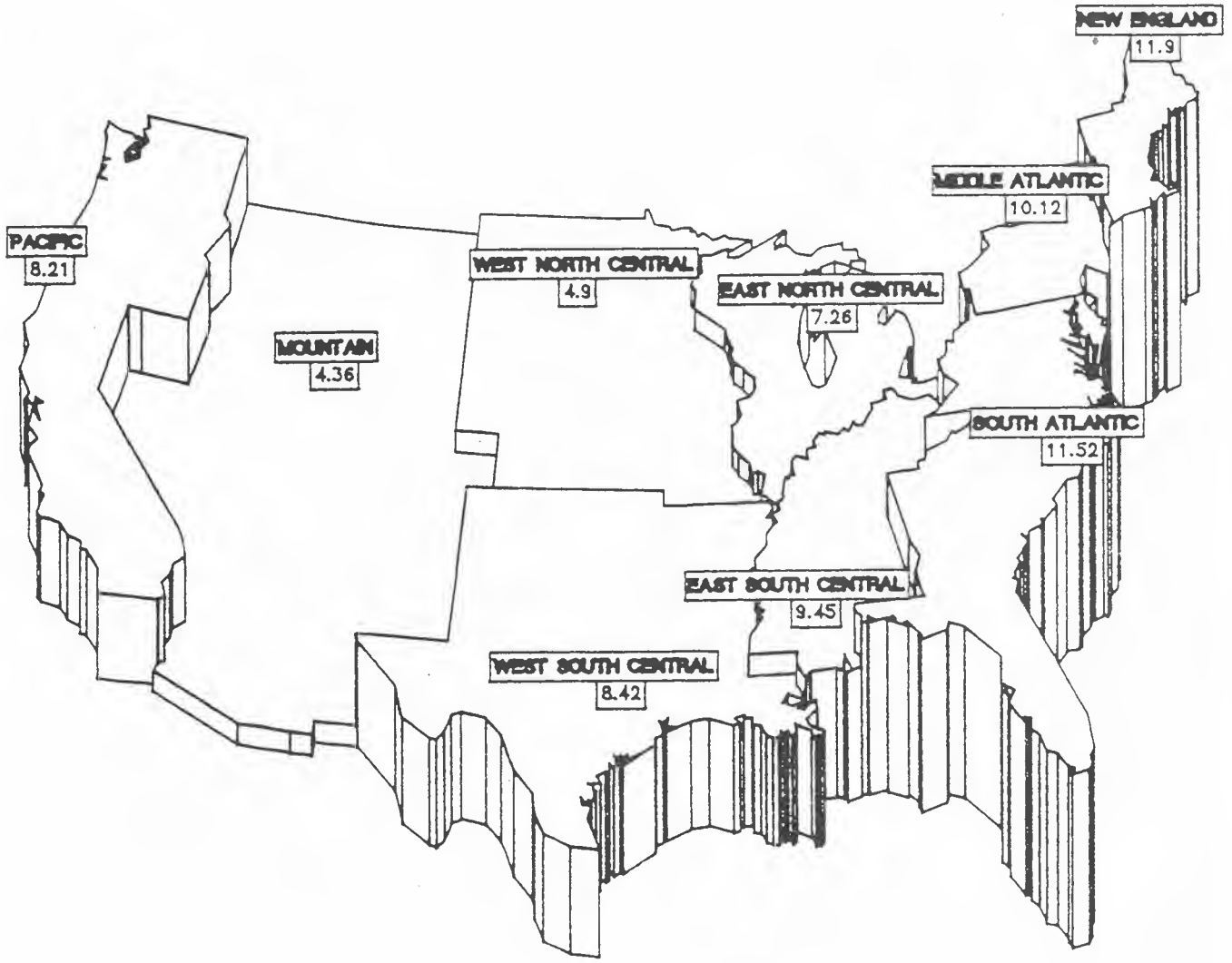
[40] Although these classifications are not completely accurate, they are the best approximation that the data will allow. Employment-acquiring investments may in some cases result in increases in employment (if joint ventures result in new plants, for example).

Figure 12

NUMBER OF FOREIGN INVESTMENTS PER THOUSAND MANUFACTURING ESTABLISHMENTS BY CENSUS DIVISION



Source: International Trade Administration

Nationally, 80 percent of all investments were employment-acquiring; only 20 percent were employment-creating. In manufacturing, the percentage of employment-acquiring investments was also higher: 67 percent were employment-acquiring, 33 percent employment-creating (Figure 13). Employment-creating manufacturing investments were heavily concentrated in the South. Figure 14 shows that 49 percent of all new plants and 53 percent of plant expansions took place in the South. When we adjusted for size of region, we found that the South Atlantic led the nation followed by the East South Central and the West South Central regions (Figure 15).[41] Employment-acquiring investments, on the other hand, were mainly in New England, the Middle and South Atlantic, and the Pacific. In sum, foreign investment has likely created jobs in the South through new plants and plant expansions. These data show the strong "southern scenario" of foreign investment and confirm the trends we saw in the Bureau of Economic Analysis data. Northern states got a higher proportion of acquisitions and, therefore, probably fewer new jobs.

Regional Changes in Investment

We examined the location of investments before and after 1980 to determine if significant changes in regional patterns had taken place during the 1980s. Seventy-three percent of all foreign manufacturing investment occurred after 1980. The number of investments grew most quickly in the South Atlantic, Middle Atlantic, Pacific, and East North Central regions. These are the divisions that have historically received the greatest number of investments. The most significant changes were the relative (not absolute) decline of

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41 However, foreign-affiliate employment is highly unevenly divided among the states of the South. The states with the greatest number of new plants and expansions are Texas, Louisiana, Georgia, Virginia, and North Carolina. By contrast, Oklahoma, Mississippi, and Arkansas have few foreign plants. On foreign investment in the South, see Norman J. Glickman and Amy Glasmeier, "American South and the International Economy," in Lloyd Rodwin, ed., Deindustrialization: U.S. and Japanese Experiences (London: Unwin Hyman, 1989).

Figure 13

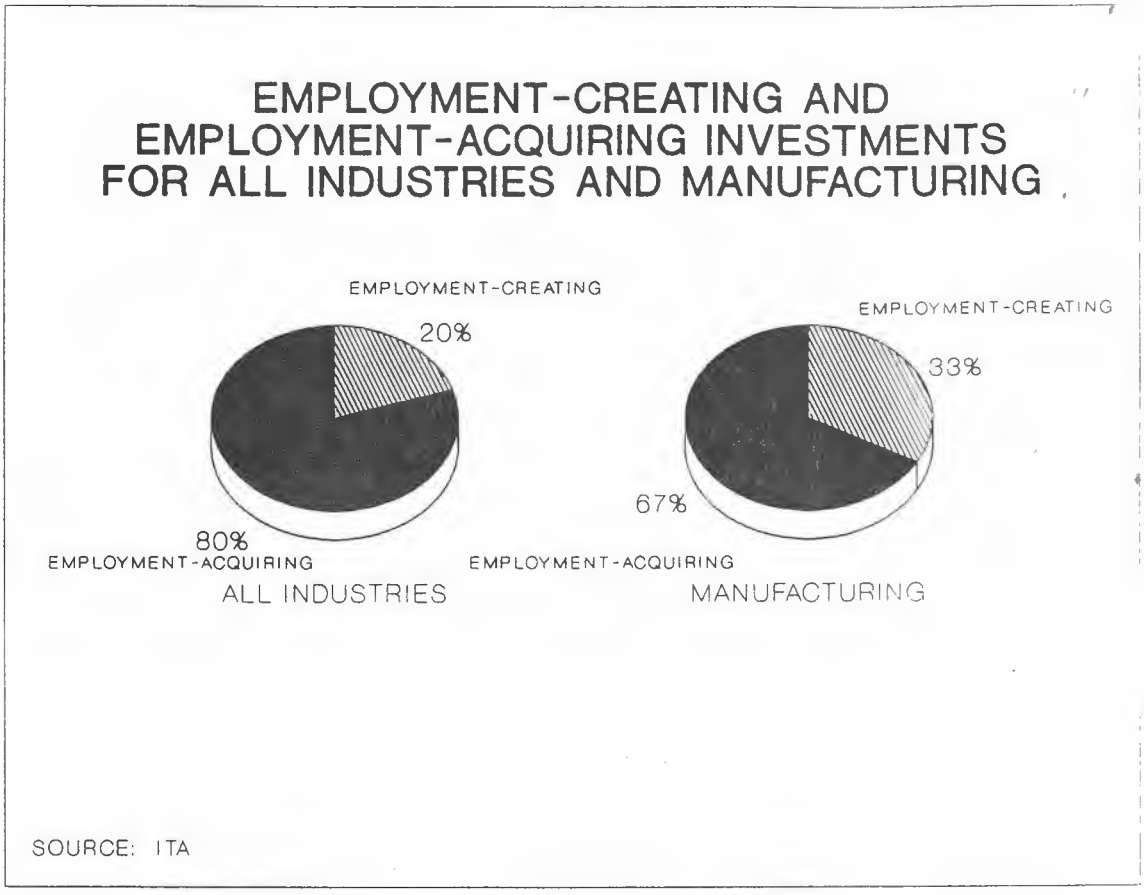


Figure 14

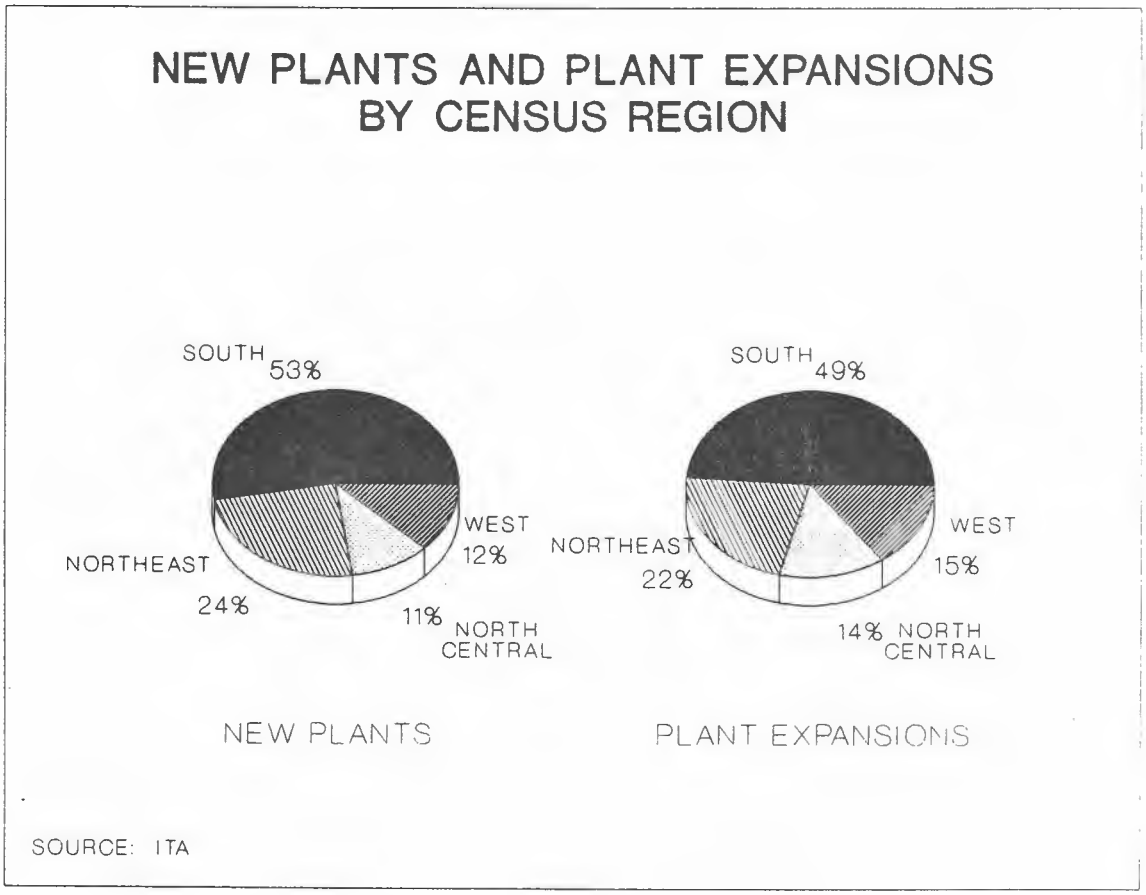
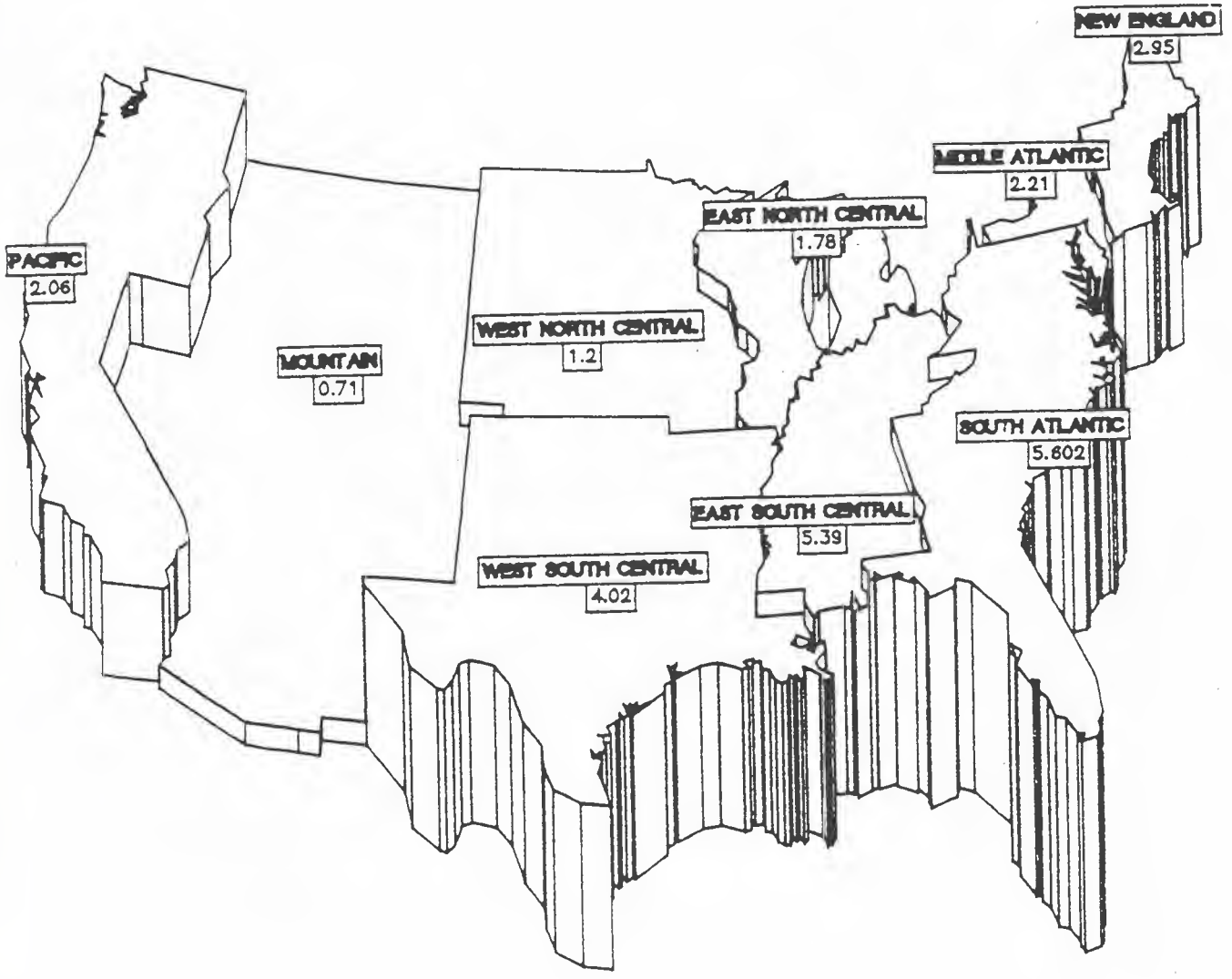


Figure 15

EMPLOYMENT-CREATING INVESTMENTS PER THOUSAND MANUFACTURING ESTABLISHMENTS BY CENSUS DIVISION



Source: International Trade Administration

investment in the Middle Atlantic and the increase in the South Atlantic after 1980. While the Middle Atlantic remained the region with the greatest number of investments after 1980, its share of total investment fell from 28 to 21 percent. In contrast, the South Atlantic's share rose from 13 to 19 percent. All other divisions remained essentially the same. This change in regional patterns occurred because employment-acquiring investments became relatively less important in the South. Thus, although there were more employment-creating investments in the South, they grew more quickly in the Pacific and the East North Central. Although there were more employment-acquiring investments in New England and the Middle Atlantic, they were growing most slowly in these regions.

FACTORS INFLUENCING FIRM LOCATION

Why did these location patterns occur? What location factors affected site choice? In looking for site locations in the United States, foreigners are sometimes at a disadvantage compared to domestic companies--they can be "strangers in a strange land." They face a large and diverse environment--economically, culturally, and politically. Often, foreigners do not know the economic landscape very well. There are large differences in the size of markets, transportation facilities, labor force characteristics, and other location factors important to firms. To compensate for their disadvantages, they often hire staff economists and location consultants to evaluate alternative sites for new plants. Many, especially the Japanese, take a long time to look for the best site. Companies generally take a two-step approach to deciding on a location. First, they look for the region of the country that seems most desirable. The region may have a market they want to tap or a labor force consistent with the firm's needs. Once the region is chosen, they look for the best site within that region. For example, Hilti Corporation, owned by a Luxembourg firm, chose to locate in the South; then it picked Tulsa, Oklahoma, from among ten cities for its machine tool operation. Matsushita too wanted to locate its car-radio plant in the South; it picked suburban Atlanta.

Are the plant location decisions of foreign producers based on the same factors that affect the decisions of domestic manufacturers? This is a critical question, for theoretical as well as policy purposes. Researchers of industrial location patterns want to know the answer in order to determine whether foreign firms are changing, or merely duplicating, the existing geography of industrial production and job formation in the U.S. Economic development officials seeking to attract new direct investment to their states and localities want to know how they can affect those decisions with policies designed to decrease the costs of establishing manufacturing operations.

We asked the foreign and domestic firms in our sample that made a location decision to rate the importance of a set of factors generally thought to be key determinants of plant location by industrial location specialists.[42] We asked them to rank several location factors: the proximity of a potential location to a firm's suppliers and markets; labor costs and the strength of trade unions; transportation access and costs; a community's quality of life; and local living and utility costs. Since there is a debate among economists and policymakers over whether industrial development incentives (IDIs)--almost universally issued by state and local governments--can attract plants, we also asked whether incentives and government services were important. Finally, we asked foreign firms whether they agreed that a community's attitude toward foreign investors influenced their location.

One hundred four of 170 firms in our sample responded to this section of our survey. We aggregated their "location factor rankings" by adding the number of respondents who agreed that a factor was "very important" or "important" to their location decision. The factor with the highest number of "agree" responses was ranked first, the factor with the second-highest number ranked second, and so on. In cases where two or more factors received the

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[42] Only firms who built a new plant or leased a previously existing facility were asked to rate location factors. If a firm purchased a plant through an acquisition or merger, we did not consider this a location decision, per se, but an "inheritance" of a site from a previous owner.

same number of "agree" responses, the factors were then ranked in the inverse order of the number of "disagree" responses each received.

Location Factor Rankings

The cost of labor was ranked among the three most important factors by domestic firms (Figure 16). Quality of life, access to transportation, cost of living, government services, cost of utilities, and the absence of unions also ranked high. The only factor consistently ranked among the three least important was government incentives. Proximity to markets, absence of unions, proximity to suppliers, and cost of utilities were also ranked among the least important factors.[43]

Overall, foreign firms (Figure 17) considered cost of labor, access to transportation, and access to markets as the three most important location factors. This was almost identical to the ordering of domestic firms. Quality of life was the fourth most important. Attitudes toward foreign investors (a location factor we asked only foreign firms to judge) placed fifth.

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[43] Looking at the rankings by industry, domestic semiconductor manufacturers regarded quality of life, access to transportation, and cost of labor as the three most important factors. At the other end of the range, proximity to markets, absence of unions, and government incentives were least important. Auto firms ranked cost of living, cost of utilities, and cost of labor as the three most important factors. Cost of living and cost of utilities were ranked much higher by these firms than by any of the other groups of domestic firms. Proximity to suppliers, proximity to markets, and the absence of unions were ranked the lowest, again much lower than other domestic firms. Government incentives were again ranked last. Domestic computer firms ranked cost of labor, quality of life, and the absence of unions highest. As in the case of domestic auto manufacturers, however, the small number of responses in this industry group (seven) meant that this ordering may not have been an accurate reflection of locational preferences among domestic computer makers. Government incentives (eighth) were ranked higher by domestic computer firms than among any of the other domestic rankings. Proximity to markets was ranked ninth. Finally, cost of utilities was ranked last, lower than in any of the previous rankings.

Figure 16

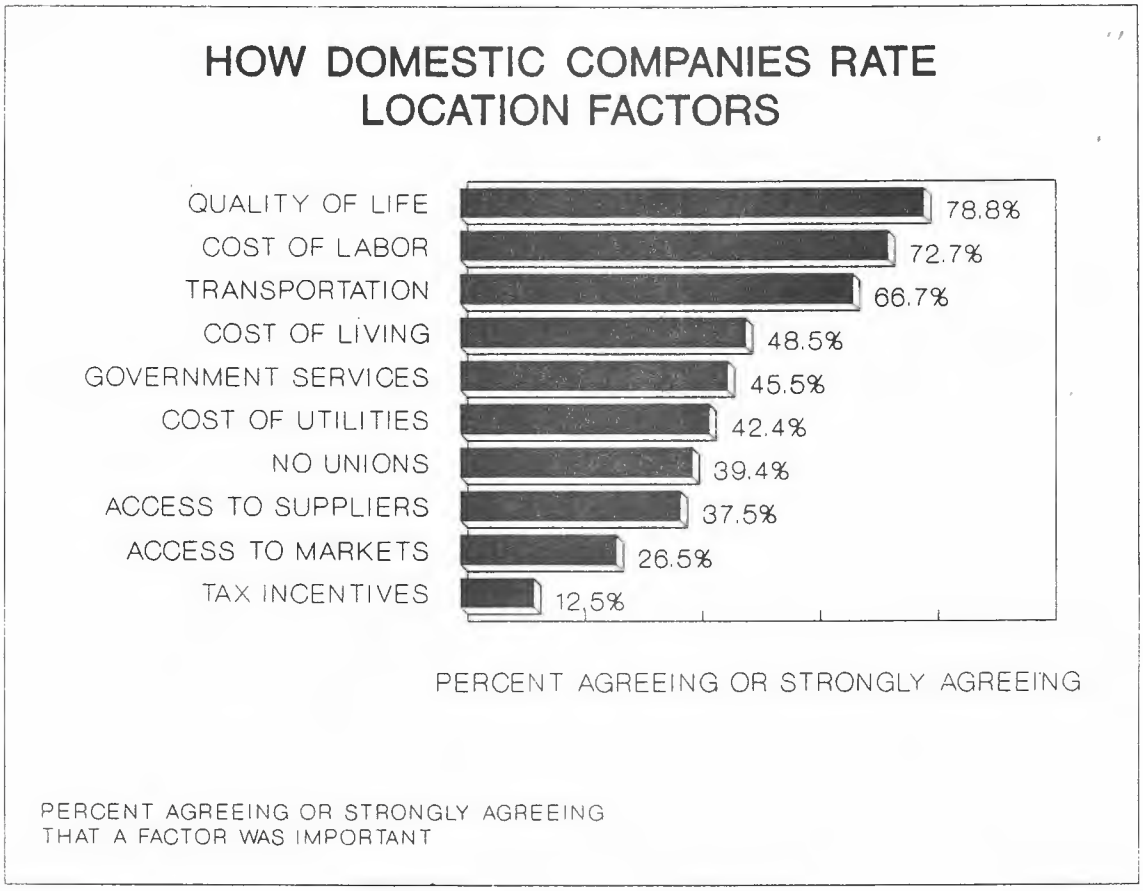
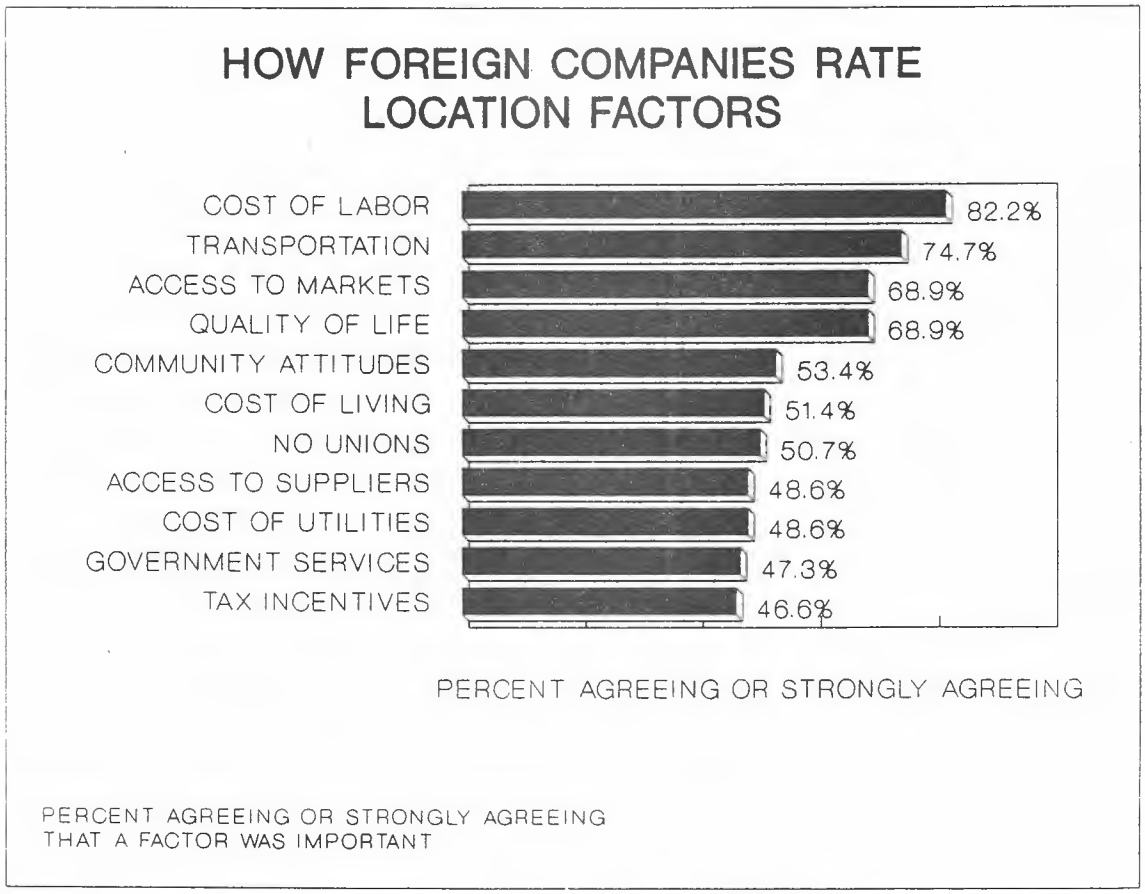


Figure 17



Proximity to suppliers, cost of utilities, government services, and government incentives were the least influential location factors.[44]

The cost of labor was regarded universally as a critical factor in firm location decisions: it was ranked no lower than third by foreign and domestic companies alike in all industry groups. In addition, both foreign and domestic firms regarded access to transportation among the three most influential factors. This was true for firms in all industries and of all nationalities. An exception was a strong concern with market proximity among foreign auto makers.

What accounts for the consistently high regard for labor costs and "community factors"--i.e., transportation access, quality of life, and cost of living--for almost all of the firms in our sample? Many of the firms we interviewed are branch plants of large companies with many manufacturing operations. Industrial location theory suggests that branch plants with capital-intensive production requiring relatively unskilled workers search for locations where labor is relatively cheap.[45] In addition, the desire to maintain autonomy in the decision to hire or fire production workers may lie behind firms' aversion to locations with a significant labor

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[44] Looking within the industry groups, foreign semiconductor firms thought cost of labor, quality of life, and access to transportation were the most important location factors. Cost of utilities was more important to this group of firms than to foreign firms in general. The four least important factors were proximity to suppliers, government services, attitudes toward foreign investors, and proximity to markets. Auto firms considered proximity to markets, access to transportation, and cost of labor as most important. Government incentives, government services, cost of utilities, and proximity to suppliers were the least important. Foreign computer firms rated quality of life, cost of labor, and access to transportation as the three most important factors. Proximity to markets, ranked fourth, was also thought to be significant. Cost of living, absence of unions, attitudes toward foreign investors, and government incentives, in descending order, were viewed as the least important.

[45] Niles Hansen, "The New International Division of Labor and Manufacturing Decentralization in the United States," Review of Regional Studies 1981, (9), 1: 1-11

union presence (i.e., this was true in the case of domestic computer firms).[46] This does not mean that branch plants are completely labor cost-oriented--we have seen that other location factors are important too. However, the criterion of cheap labor--among other reasons--can lead them to industrial sites in small metropolitan or nonmetropolitan communities. Workers in these communities often lack industrial experience and are therefore more compliant and less likely to unionize. The low level of unionization in foreign auto parts plants compared to domestic autos is an example. Further, metropolitan diseconomies of pollution, congestion, and high living costs are less significant.[47]

Market proximity, at least in the case of the auto parts and computer firms which made up a large part of our sample, was also a strong influence on location. Foreign firms as a whole ranked it third, due largely to the first-place ranking given it by foreign auto parts firms. Foreign computer makers ranked it fourth. This confirms the idea that foreign auto parts and computer manufacturers have shifted operations to the United States to be near North American markets. We suspect that these two industries' market orientation can be further disaggregated. Auto parts producers locate near their primary market, which is the large assembly plants, whereas computer makers are more concerned about access to final consumer markets. On the other hand, market proximity made little difference to the domestic firms, which ranked it ninth. Both foreign and domestic semiconductor makers also regarded it as unimportant. This may reflect the fact that semiconductor firms markets are highly international. Furthermore, their location in the U.S. is far more determined by the need to be near pools of technical labor than their markets per se.

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[46] Gordon Clark, "The Employment Relation and Spatial Division of Employment: A Hypothesis," Annals of the Association of American Geographers (71): 412-24, 1980.

[47] This point is buttressed by our finding, detailed in Section 5, that over half of the foreign firms, and slightly less than one-third of the domestic firms, located in small metropolitan or nonmetropolitan counties of the South and Midwest.

The strong influence on firm location of labor, community-specific characteristics, and (for foreign auto and computer producers) market proximity, contrasted markedly with the lack of importance of supplier proximity. Neither foreign nor domestic companies were supply-oriented, and proximity to suppliers was not important in industry groups either. This was not surprising. Better transportation and communications technologies, and the emergence of the multiplant firm (which makes intrafirm purchasing and transshipment of intermediate goods much easier) have steadily eroded the influence of supply factors on location.

In addition to the factors discussed so far, another important point of comparison between foreign and domestic firms was their disregard for government incentives. Both groups ranked incentives last, a rating that was consistent across sectors--only foreign semiconductor firms ranked government incentives higher than eighth. The finding that government incentives were unimportant to domestic firms is also consistent with the bulk of research in this area.[48]

Finally, community attitudes toward foreign investors, relevant only to foreign firms, was ranked fifth, about average in rank. There was a major divergence between semiconductor and computer firms, who ranked it tenth, and auto firms, who ranked it fourth. One possible reason for the high ranking by auto and auto parts producers is that many of the newly constructed factories in our sample were Japanese auto plants, whose managements stress the importance of a "welcoming" attitude on the part of a host community.[49]

To sum up, we found the cost of labor, market proximity, and community factors crucial to many of the firm location decisions in our sample. There was little supply orientation among any firms, little market orientation among domestic firms and foreign semiconductor manufacturers, and a universal belief that government incentives were not important to location

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48 Roger Schmenner, Making Business Location Decisions (Englewood Cliffs, NJ: Prentice Hall, Inc., 1982); and Michael Kieschnick, Taxes and Growth: Business Incentives and Economic Development (Washington, D.C.: Council of State Planning Agencies, 1981).

49 Glickman and Woodward, The New Competitors (New York: Basic Books, 1989).

decisions. Where firms were market-oriented, this was the result of their desire to gain access to North American markets and major population centers in the U.S. The likeliest explanation for the lack of regard for supply proximity, again, is that branch plants can largely ignore the geographic constraints of a supply orientation, due to intra-firm purchasing and transshipment capabilities.

5. MATERIAL INPUT LOCATIONS AND MARKETS

Why do communities collectively spend millions of dollars each year to attract foreign investment? The answer is "jobs." Communities seek employment for local residents through the expansion of old firms and creation of new ones. Economists' shorthand for this relationship is "linkages"--both jobs created directly by a new establishment and the orders for goods and services by a new establishment from other local firms.[50]

DOMESTIC CONTENT: THE DEBATE ABOUT THE BENEFITS OF FOREIGN INVESTMENT

Whether firms (foreign and domestic) buy locally and how much they buy are subjects of some debate. There is a long history of research on these issues--research which has often produced ambiguous results. Nevertheless, we know that although there are important exceptions, local purchases are generally a function of establishment size, ownership status, and age.[51] Small plants usually buy more inputs locally than large plants--presumably because volume discounts are available to large firms buying in large lots. Locally owned and older firms (wise in the workings of the local economy) usually purchase more locally than branch plants (new start-ups may also purchase inputs locally given their limited information about national suppliers). There is also some evidence that firms producing technical and R&D-intensive products buy more inputs locally. And it is generally believed that foreign-owned

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50 We also undertook an input-output analysis of foreign investment. This is discussed in Appendix B.

51 See A. G. Hoare, "Industrial Linkage Studies," Progress in Industrial Geography, ed. Michael Pacione, Croom Helm, London, England, pp. 40-80, 1985; Breandan O hUallachain, "Linkages and Foreign Investment in the United States," Economic Geography 60: 238-253, 1984; Allen J. Scott, "Location and Linkage Systems: A Survey and Reassessment," The Annals of Regional Science XVII: 1: 1-39, 1983; and Michael J. Hagey and Edward J. Malecki, "Linkages in High Tech Industry: A Florida Case Study, Environment and Planning A 18: 1477-1498, 1986.

firms buy less of their inputs locally. Long-standing relationships with supplier firms in the home country are essentially carried over to the host nation. We noted the higher propensity to import by foreign companies in Section 2. Together these linkage relationships are summarized in Table 1 which shows local/in-state purchasing probabilities. The left-hand column indicates the characteristics of firms which regulate the extent of local versus non-local purchase behavior. The second and third columns depict the variations in firms' characteristics and their propensity to buy material inputs locally and from outside the local community. Reading across the rows, Table 1 shows that small firms buy inputs locally, whereas larger firms buy inputs from non-local sources. Again, locally owned firms buy more inputs locally compared with their non-local counterparts.

In more technical language, linkage impacts can be described in terms of the size of the local multiplier. The longer a dollar circulates locally (indicating a longer local purchasing pattern), the more jobs are immediately affected. In a simple example, the money derived from local input purchases results in wages paid to workers in the supplier firm, taxes paid to the government, and money saved in local banks. In the second round, employees spend a part of their wages locally, part is paid in taxes, part saved. The more purchases undertaken by firms locally, the greater the economic benefits to a community economy.

In the case of foreign direct investment, linkages are influenced by how ownership is established--acquisition versus new facilities investment. As we know, a major portion of foreign direct investment consists of purchases of existing establishments. Most acquisitions are undertaken by firms who wish to gain a position in the U.S. market or to acquire a specific technology. In the short run, both these advantages are tied intimately to an existing set of supplier relationships. A company may actually lose the benefits of an acquisition by altering input purchasing patterns. Therefore, we would not expect linkage patterns to vary dramatically due to ownership changes. Exceptions to this generalization are the cases in which foreign producers acquire manufacturing plants to gain control of marketing and distribution channels. A company's supplier relations might also be altered if the acquiring firm requires the acquired establishment to buy material inputs from the foreign firm's own suppliers.

Table 1

SUMMARY OF LITERATURE ON LINKAGES AND FIRM INPUT PURCHASE LOCATION

Establishment Characteristics	Local Input Purchasing	Non-Local Input Purchasing
Size	Small	Large
Ownership	Local	Non-Local
Age	Young and Old	
Technology	High Technology	Low Technology
Nationality	Domestic	Foreign
Organizational Type	Single-Unit Plant	Multi-Unit Branch

Foreign direct investment through establishment of new facilities is another matter. Foreign companies constructing new plants often rely on preexisting home-country suppliers that diminish local linkages and result in a reduced local multiplier. In the short run, firms believe it makes good business sense to rely on established suppliers. Investing in a country is a complicated task made more difficult if local linkages must be established. And if the new investment is part of a multi-establishment firm, quantity discounts are often passed on to corporate affiliates. In this instance, all corporate units enjoy the benefits of quantity discounts. The product of these foreign investment-related input limitations is a reduced local multiplier.

There is ample discussion but sparse empirical evidence regarding the material input purchasing behavior of foreign versus domestic firms in the United States. Some authors argue that foreign firms use the U.S. as an "assembly platform." According to this view, foreign firms bring in components and sub-assemblies and undertake only final assembly on-shore. Therefore, foreign investment's domestic content in manufactured goods is low relative to similar levels of domestic investment. This has been argued most forcefully in the case of the auto industry (particularly referring to Japanese producers). As the first wave of Japanese auto investments occurred, Japanese firms justified their use of non-domestic supplies based on the low quality of U.S. auto parts. Honda is frequently cited as relying on less than 50 percent domestic content in completed cars.[52] However, recent empirical evidence about Japanese auto firms indicates that assembly plants are increasing local content through purchases of parts--from Japanese-owned transplant firms.[53]

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[52] Business Week, Special Report, "The Americanization of Honda," pp. 90-96, 25 April 1988.

[53] Andrew Mair, Richard Florida, and Martin Kenney, "The New Geography of Automobile Production: Japanese Transplants in North America," Economic Geography, forthcoming.

The question of domestic content is further complicated by American firms' policies toward international sourcing. In response to international competition, American firms are buying more and more of their parts from foreign sources. In the auto industry not only are parts outsourced, but American firms are subcontracting (often through Japanese joint ventures) with Asian auto producers for the manufacture of small automobile models. Auto parts outsourcing increased from $8 billion to $28 billion between 1978 and 1987. A study by the accounting firm of Arthur Andersen and Company predicted that the overseas outsourcing of auto parts would increase from 15 to 25 percent between 1985 and 1995. This means that American automakers are decreasing their domestic content and local linkages.

The automobile industry illustrates how difficult and increasingly complex the issue of local content has become. It further suggests that as the economies of nations increasingly intertwine, the categories "foreign" and "domestic" become outdated. Business Week's article, "The Hollow Corporation," serves to illustrate the increasingly international nature of manufacturing and graphically portrays U.S. firms' pursuit of numerous options to maintain competitiveness in manufacturing.[54] In some instances, U.S. corporations have stopped manufacturing completely and simply distribute goods manufactured entirely outside the U.S. by multinationals based elsewhere. American firms are also increasing their use of foreign inputs in the manufacture of goods assembled in the U.S. For example, since 1986 the Big 3 automakers collectively imported 4 million engine blocks from Brazil. American firms are simply using less domestically produced inputs in their products.[55] In many instances U.S.

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54 Business Week, "The Hollow Corporation," 6 March 1986.

55 Amy Glasmeier and Richard McCluskey, "U.S. Auto Parts Production: An Analysis of the Organization and Location of a Changing Industry," Economic Geography, Spring 1987, pp 142-159. Also see, United Auto Workers, "Choices for American Industry: Auto" (Detroit: United Auto Workers, 1986, mimeo); Donald B. Thompson, "Where Is U.S. Industry Going? It's Heading Where Many American Manufacturers Have Already Gone--Offshore," Industry Week, 6 January 1986, p. 28; and telephone interview with Candace Howes of the United Auto Workers' Research Department, 9 September 1988.

companies have stopped manufacturing entirely and are now distributing goods manufactured outside the U.S. It is no longer possible to make gross generalizations about the local economic consequences of manufacturing. Increasingly, production processes and specific products regulate the extent to which a manufacturing plant will have local linkages. Moreover, the domestic impact of firms is determined by the type of product produced and the form of market competition dictated by the industry. As a consequence, disentangling foreign investment benefits requires examination of specific sectoral experiences. Our data allowed us to test these two propositions by analyzing the linkage and market behavior of foreign and domestic firms in our sample.

WHERE FOREIGN AND DOMESTIC FIRMS BUY THEIR INPUTS

A major reason for our survey, then, was to determine whether purchasing patterns of foreign-owned establishments differ from those of domestic firms. The implications of this exercise are obvious: communities want to retain more of every dollar spent in association with a new plant. Government officials offering incentives to foreign investors often justify subsidies based on the direct and indirect benefits presumed to accompany such investment. If foreign investors buy most of their material inputs from non-local and non-national sources, it is harder to justify subsidies.

In this section, we first examine the location of material input purchases in the aggregate, comparing foreign with domestic plants. Then we compare the experiences of foreign and domestic establishments in each of our three industries. We also present the results of statistical tests used to verify that foreign firm purchasing behavior conforms with general findings in the industrial location and industrial complex development literature. Therefore, we describe the linkage relationship of domestic and foreign firms by age, ownership, size, and product technology. We also explored the structure of markets. Market location data were examined comparing all foreign and domestic firms in the sample. We then focused on the location of the three industries and compared their separate experiences based

on the same variables of age, ownership, size, and product technology. Our results were constrained, we must note, by both the industries we studied and the composition of our sample.

Except where otherwise stated, input purchase location was broken into three categories. First is the percent of purchases made from firms in the same state where the plant is located; second, purchases from firms outside the state but within the U.S.; and third, purchases from firms located in foreign countries. Although we collected data on in-state location of suppliers, the wide range of answers (and thus low cell counts) forced us to collapse the data into three broader categories. In most cases, information loss did not seriously hamper our analysis.

The General Picture

We explored material input purchases by location of the three largest inputs as measured by dollar value. Firms were asked to identify their three largest inputs and to specify the manufacturing location of these goods.[56] We begin this analysis by examining the purchasing relationship of all foreign and domestic firms regardless of industry composition. Figure 18 indicates that both foreign and domestic firms purchased a majority of their primary inputs within the U.S., but outside the state in which the plant is located. Domestic firms purchased 24 percent of their inputs from firms located in-state, 45 percent from firms within the U.S., and 31 percent from firms located in foreign countries. In contrast, foreign-owned firms purchased 17 percent of their inputs from firms located in-state, 43 percent from firms located out-of-state but within the nation, and 40 percent from firms located in foreign countries.

Readers should note that these proportions confirm what we expected based on the distribution of respondents and the structure of the sample. We can see this by examining the observed and expected values in Table 2. The expected values are determined under the assumption that there is no difference between foreign and domestic firms' input purchase

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[56] We discuss the results of the second and third inputs only in cases in which tests comparing foreign and domestic firms indicate a statistically significant difference.

Figure 18

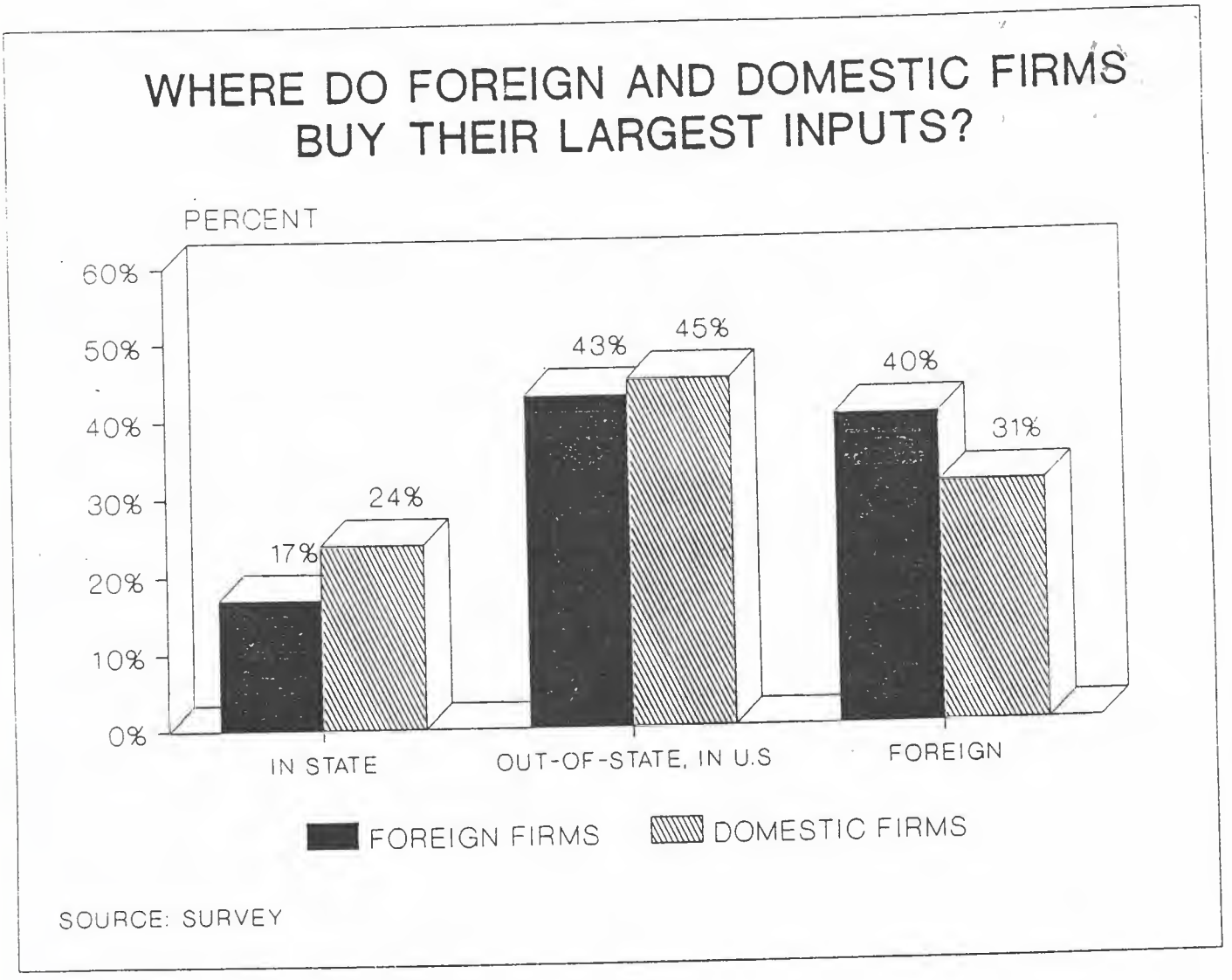
WHERE DO FOREIGN AND DOMESTIC FIRMS BUY THEIR LARGEST INPUTS?
PERCENT
60%
50%
40%
30%
20%
10%
0%
17%
24%
43%
45%
40%
31%
IN STATE
OUT-OF-STATE, IN U.S
FOREIGN
FOREIGN FIRMS
DOMESTIC FIRMS
SOURCE: SURVEY

Table 2

INPUT PURCHASE LOCATION FOR THE LARGEST INPUT

FOR FOREIGN AND DOMESTIC FIRMS

FREQUENCY PERCENT ROW PCT COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	13	10	19	42
	9.85	7.58	14.39	31.82
	30.95	23.81	45.24	
	26.53	40.00	32.76	
FOREIGN	36	15	39	90
	27.27	11.36	29.55	68.18
	40.00	16.67	43.33	
	73.47	60.00	67.24	
TOTAL	49	25	58	132
	37.12	18.94	43.94	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	1.427	0.490

INPUT PURCHASE OF FIRST MAJOR INPUT

FOREIGN AND DOMESTIC INVESTMENT

COMPARISON OF EXPECTED AND ACTUAL FREQUENCY

FREQUENCY EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	13	10	19	42
	15.6	8.0	18.5	
FOREIGN	36	15	39	90
	33.4	17.0	39.5	
TOTAL	49	25	58	132

location. Based on the sample of foreign and domestic firms, the expected and actual frequencies of foreign and domestic firm input purchases from establishments within the U.S. were nearly identical (19 and 19; 40 and 39). This means that given the sample distribution of foreign and domestic firms, there is no statistically significant difference between actual and expected cell counts.

Foreign firms bought a larger share of second and third major inputs from non-U.S. markets than did domestic companies.[57] However, examination of the expected and actual cell frequencies indicated that there is a statistically significant relationship for only the second input. We suspect that these rather contradictory results are due to the structure of our sample. We believe our sample firms were typical of foreign firms in the three industries. In contrast, the domestic sample, although randomly selected, was not drawn from a complete universe of firms. Therefore, there may have been an unintentional bias in the domestic sample. We further suspect that sectoral experiences influenced our aggregate results. For example, whereas domestic auto firms have historically bought a majority of their inputs from firms manufacturing in the U.S., foreign firms began production in the U.S. largely using foreign parts. Therefore, foreigners would tend to register a high proportion of non-domestic input purchases. The semiconductor and computer industries exhibited serious import penetration. Thus both American and foreign firms were expected to have high proportions of their inputs originating in foreign locations (explaining these apparent differences).

Input Purchasing Location for the Three Industries

Examination of individual industries indicates a statistically significant difference in the location of semiconductor firms' primary input purchases. Foreign firms in the semiconductor industry bought more of their first input (53 percent) from foreign markets

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[57] See Appendix C, Tables 1 and 2. Appendix C contains additional tables on our linkages analysis.

(p = .04) than did domestic firms (25 percent) (Figure 19).[58] These results only confirm a steady erosion of domestic suppliers in the semiconductor industry. A major motivation for creation of Sematech (a consortium whose goal is to reestablish U.S. presence in the large memory chip field) was to rekindle the U.S. semiconductor supplier industry. For strategic inputs such as chip casings and various lithographic machinery, there are virtually no U.S. suppliers. Foreign firms' high use of foreign suppliers is only an indication of larger industry trends. With the sale of Monsanto's silicon subsidiary to a foreign company, no U.S. firm currently manufactures silicon. Small cell size inhibits our ability to discuss results for the auto and computer industries (see Appendix C, Tables 3-5).[59]

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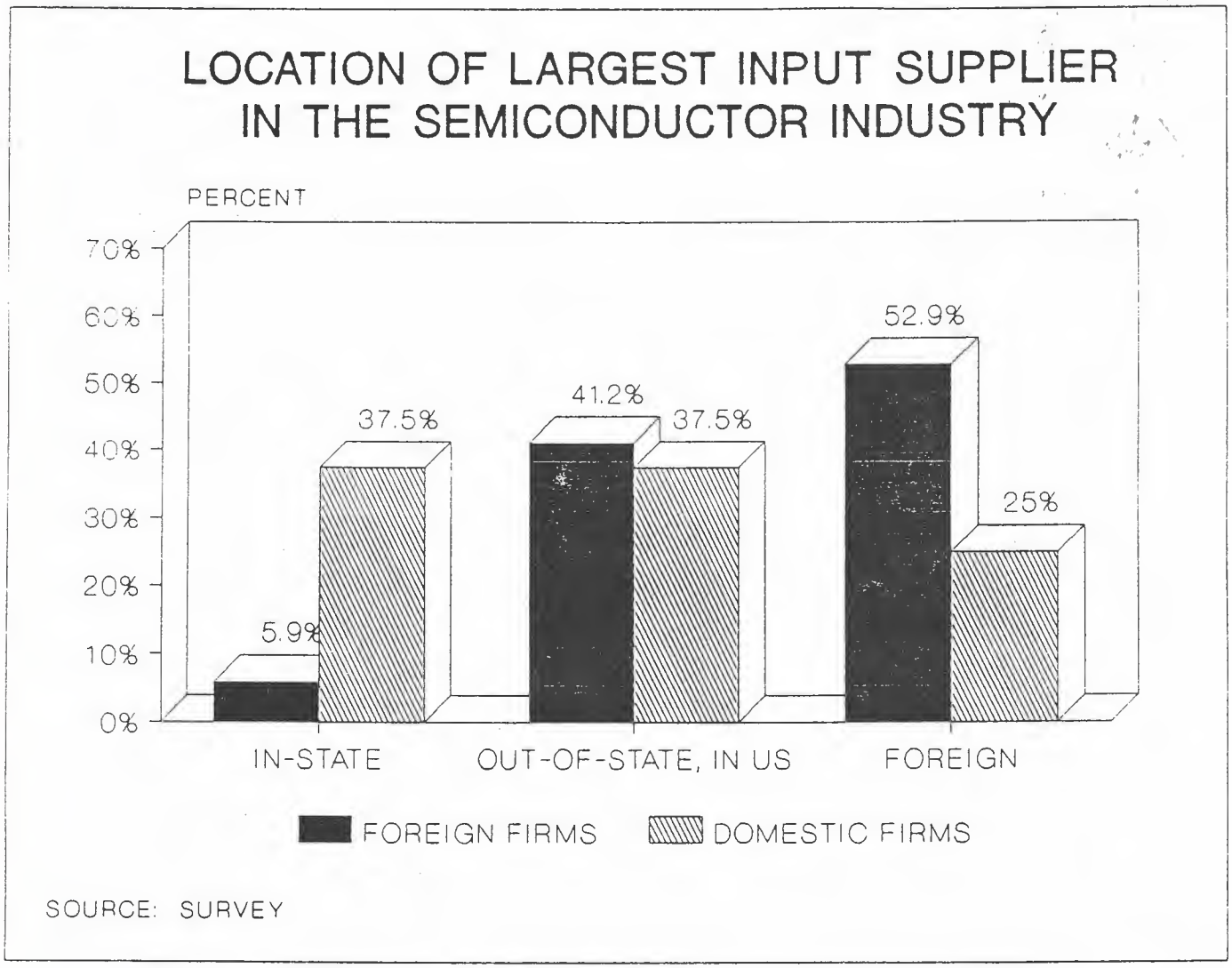
[58] A similar (though not statistically significant) relationship holds in the case of autos. Foreign firms bought almost twice as much of their primary input from firms located in foreign countries as did domestic firms (p = .07). Readers should note, however, that these results are influenced by low cell counts. There was no significant difference in purchase location of primary input between foreign and domestic computer firms. This is probably because American firms bought components abroad (particularly DRAMS) while foreign firms shipped complete systems into the U.S. Either way, total inputs were foreign in origin. Although we tried to control for this problem, the survey instrument was likely not refined enough to detect this subtle difference.

[59] In the case of second and third inputs, given the uneven cell distribution, we were unable to discuss the relationship between ownership and the location of second and third inputs. By holding industry constant, much of the difference seen at the aggregate level (between foreign and domestic firms' location of their second and third inputs) disappeared. In the case of semiconductors and computers, there was no significant difference between foreign and domestic firm purchases of their second and third inputs. The only significant difference was found in the auto industry, in which foreign firms imported 29 percent of their material inputs from abroad (p = .03). The significance in this case may have been somewhat erroneous, however, given the unequal cell frequencies and the finding that no domestic firm purchased its second and third inputs abroad. Interpretation of this result must be viewed in light of the bias in the sample reflecting the heavy presence of foreign auto parts producers.

Figure 19


LOCATION OF LARGEST INPUT SUPPLIER
IN THE SEMICONDUCTOR INDUSTRY
PERCENT
70%
60%
50%
40%
30%
20%
10%
0%
5.9%
37.5%
41.2%
37.5%
52.9%
25%
IN-STATE
OUT-OF-STATE, IN US
FOREIGN
FOREIGN FIRMS
DOMESTIC FIRMS
SOURCE: SURVEY

Why did we find reversals in the level of significance when we disaggregated by industry? One answer is that industry may have exerted a much greater influence than nationality on the purchase location of inputs for selected industries. As we mentioned previously, American manufacturers have been increasing their use of cheap foreign goods. In the case of autos, this is a relatively recent occurrence (discounting intra-corporate supply agreements), whereas by the late 1970s to early 1980s, foreign suppliers to the computer and semiconductor industry were well entrenched. A second possible explanation is the sample bias. Domestic firms in the American auto industry have historically been highly vertically integrated. Major auto assemblers traditionally made a large portion of their own auto parts either through direct manufacturing within corporate-owned plants or through arrangements with subsidiaries. In 1986 GM, for example, still produced 80 percent of its own auto parts in the U.S. While Ford and Chrysler were less vertically integrated, nonetheless, both firms made more than 30 percent of their own parts. Thus foreign firms' behavior presented a vivid contrast to that of American firms.

INPUT PURCHASES BY MODE OF ENTRY

Our data also allowed us to examine how the mode of entry--acquisition, new construction, or lease arrangement, etc.--affected input purchase location. Although there is no literature on the subject of entry mode and linkage purchase location, common sense suggests that a firm's local economic influence will vary based on the degree of the firm's attachment to a local economy. For example, lease of a site involves little more than purchasing local business permits and is therefore a relatively easy activity to undertake. In contrast, finding a developable site, hiring an architect and developer, and then seeing construction through to finish is much more complicated and difficult to accomplish. Leasing is clearly a step taken by firms wishing to maintain some flexibility in the short run. Firms choosing this option wait to assess local conditions and industry trends. After sufficient time, a rather ephemeral investment decision may harden into a commitment to break ground. Thus we hypothesized

that firms entering the U.S. market through facility leasing would purchase more inputs from non-local sources. We suspected this was the case because leasing is the easiest means of establishing an "address" in a foreign market, allowing a firm time to learn the "lay of the land."

As expected, we found some differences between foreign and domestic firms' mode of entry and location of input purchases. Foreign firms entering the U.S. market and leasing a facility were two-thirds more likely to buy their major material inputs abroad than were domestic firms. Hypothesizing that leasing is the quickest way to enter a market, these results confirmed our expectations ($p = .05$). In contrast, foreign firms entering the American market through purchase of a facility or new construction exhibited no more significant difference in input purchasing location than did domestic firms ($p = .36$ and $p = .65$, respectively; see Tables 9 to 11 of Appendix C). These results were not surprising given that, in the case of an acquisition, firms are likely to maintain the existing linkage structure. As mentioned previously, acquisitions are undertaken by firms for strategic purposes. In the short run it seems reasonable that a firm would maintain existing supplier relationships until an acquisition has been fully digested by the new owner. In the case of firms constructing new facilities, a location may have been selected for its proximity to suppliers, or a firm may have had sufficient time to develop local purchasing relations.[60]

AGE OF FIRM AND LOCATION OF INPUT PURCHASE

The linkage literature generally suggests that as firms mature and develop information about the local environment, they are more likely to purchase material inputs locally than their more youthful counterparts. However, we found no significant differences between age of establishment and input purchase location. In testing this hypothesis we broke the firms

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[60] For second and third inputs, there was no difference between mode of entry and propensity to buy inputs abroad. Both foreign and domestic firms purchased approximately the same amount of their second and third inputs from firms located along the input continuum.

into four groups: those established before 1960, between 1960 and 1979, between 1980 and 1984, and after 1985 (Appendix C, Tables 12 to 15). While there was some difference between the percent of purchases from within the state compared with those from out-of-state, the results were not statistically significant. For example, the oldest foreign firms bought 100 percent of their primary input locally. Unfortunately, because the cell frequency was only two, we could not determine the statistical significance of this finding.[61]

INPUT PURCHASE LOCATION BY FIRM SIZE

Again, on the basis of the linkage literature, it is generally presumed that smaller firms are more likely to buy inputs locally than their larger counterparts. Small firms tend to buy small volumes, face significant demand uncertainty, and have insufficient access to the information channels available to multi-establishment firms. Small firms are also excluded from multi-firm purchasing hierarchies--further restricting their access to information. They mostly rely on local inputs and information sources (the effects of firm size vary by ownership--multi-establishment versus single-unit corporation). To test this hypothesis, we divided the firms into three size categories: less than 99 employees, 100 to 249 employees, and 250 or more employees (Tables 16 to 18 in Appendix C). We confirmed that small firms were

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61 Controlling for age of firm, there was no statistically significant difference among firms in the purchase of the second and third major inputs. That is, domestic and foreign firms demonstrated a similar tendency to buy their inputs from the same markets.

more likely to purchase inputs locally than large firms. This relationship held for both domestic and foreign firms.[62]

SUMMARY OF MATERIAL PURCHASE LOCATIONS

Analysis of material purchase locations indicated that foreign and domestic firms bought a majority of their material inputs outside their immediate plant area, but within the U.S. Examining the three industries, we found that foreign semiconductor firms purchased more of their inputs from foreign sources than did their domestic counterparts. Furthermore, our results indicated that input purchase location was influenced by the method of firm entry into the U.S. market. Foreign firms leasing a site were more likely to purchase their inputs from firms located in a foreign country than those who either constructed a new facility, or those who entered the U.S. market by acquiring a domestic firm. Confirming our hypothesis about establishment size, we found that small plants (both domestic and foreign-owned) purchased a higher percentage of their inputs within the U.S than did their larger foreign and domestic counterparts.

NATIONALITY OF INPUT PRODUCERS

From a slightly different perspective, we can see that domestic and foreign firms vary with respect to the nationality of firms from which they buy their material inputs. Using

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[62] In the case of the second input, small foreign firms were more likely to buy their second input from foreign locations than domestic firms ($p = .04$). In larger firms there was no difference between foreign and domestic firm purchasing behavior of the second input. Examining the third major input, only the largest foreign firms bought a higher portion of their inputs abroad than domestic firms ($p = .07$). It should be noted that this difference may have been complicated by the unequal size of cells. There were twice as many domestic as foreign large firms.

results of the survey we were able to answer questions about the nationality of firms from which material goods were purchased. Foreign firms had a higher propensity to buy goods from other foreign-owned firms than their domestic counterparts (significant at the .09 level). On average, foreigners bought 49.4 percent, while domestic companies bought only 33.3 percent from foreign firms. Disaggregating the results to our three industries, we found that the difference was due largely to the purchasing behavior of firms in the semiconductor and auto parts industries. In semiconductors, 75 percent of foreign firms purchased inputs from other foreign firms compared with only 38 percent of domestic semiconductor firms. A similar (though not statistically significant p=.13 level) pattern is apparent for auto parts firms. For the second major input, foreign firms also bought more of their inputs from foreign firms than did domestics. In this instance the difference was attributed to purchases by foreign and domestic firms in the computer and auto parts industries.

That foreign firm input purchasing geography was similar to U.S. firms is not surprising. Companies in our sample have roughly similar locational behavior. That is, they are found in geographic proximity of one another and would presumably draw on similar suppliers. In addition, manufacturing complexes in our three industries are concentrated geographically. For example, the vast majority of auto parts are manufactured in a few midwestern states. A firm purchasing auto parts would naturally look to the Midwest for a supplier.

Ownership differences have important implications for the distribution of economic development impacts. The foreign-owned establishment may not manufacture in the U.S. and may instead be either the distributor or the sales office of a firm manufacturing outside the U.S. In this case the national industry multiplier is reduced. But perhaps more critical from an economic development perspective is the extent to which foreign input sources diminish potential demand for domestic manufacturers' goods. In other words, how much of domestic sales are being shifted to firms producing outside the U.S.? Business Week recently reprinted disturbing news about U.S.-Japanese joint ventures: many of them are crumbling but not

before Japanese firms successfully garnered market share from their American counterparts.[63] Research at the University of Michigan Center for the Study of the American Automobile Industry indicates that auto parts business lost to foreign producers erodes the base of the American automobile manufacturing complex. These firms are quite interdependent; thus the loss of one manufacturer's business may affect the manufacturing schedules of other parts producers. Further research is needed to clarify the extent to which the foreign-owned parts suppliers manufacture in the U.S.

PURCHASE LOCATION OF BUSINESS AND NON-BUSINESS SERVICES

In addition to analyzing the location of material input purchases, we looked at differences in firms' purchase of services--both business and non-business. In general, research on services indicates these inputs are more locally oriented and dependent on intra-industry transactions than manufacturing. Therefore, to the extent firms purchase services, these transactions tend to be local.

Non-Business Services

In our study, non-business services included construction, janitorial, landscaping, food preparation, temporary help, and security functions. Our definition of business services broadly conformed to that used in other studies and includes such services as accounting, legal, financial, advertising, engineering, travel, etc.[64] Our analysis indicates that firms

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63 Business Week, "What Happens When U.S.-Japan Joint Ventures Fail?," 11 July 1989.

64 For a review of the literature, see Amy Glasmeier and Gayle Borchard, "From Branch Plants to Back Offices: Prospects for Rural Services Growth," Environment and Planning A, 1989, pending publication.

(regardless of industry, nationality, age, or size) purchased a majority of their non-business services locally--within thirty miles of the plant. We suspect this reflects the labor-intensive and immediately consumable nature of such services. Generally, non-business services are purchased on short notice, in variable quantities, and at low prices. They also tend to be ubiquitous. If firms are going to buy non-business services (such as janitorial or security) at all, they will purchase them from firms with a local presence.

Business Services

Business services, including accounting, legal, and financial activities, are among the fastest-growing components of the national economy. Some reasons cited for their rapid growth are growth in GNP, globalization of the economy, and the growing complexity of corporations.[65] Thus an important reason for business service growth is the increasing complexity of firms operating in a global market. Not only have traditional business services such as legal and accounting employment grown, but over the last ten years, entirely new services (in trade and finance) have developed specifically to serve foreign-owned firms undertaking foreign investment in host markets. Many of the firms we interviewed contract out for some business service. We discovered that foreign and domestic firms basically bought the same type of business services. Although firms primarily purchased traditional business

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[65] For a review of service growth explanations, see Glasmeier and Borchard, op. cit. Also see John Tschetter, "Producer Services Industries: Why Are They Growing So Rapidly?," Monthly Labor Review, pp. 31-39, December 1987; Albert Eckstein and Dale Heien, "The U.S. Experience: Causes and Consequences of Service Sector Growth," Growth and Change 16:2. 12-17, April 1985; Robert Kirk, "Are Business Services Immune to the Business Cycle?," Growth and Change 18:2 15-23, 1987; Eilif Trondsen and Ralph Edfelt, "New Opportunities in Global Services," Long Range Planning 20:5 53-61, 1987; and Thierry Noyelle, "Economic Transformation," Annals of the American Academy of Political and Social Science 488, pp. 9-17, November 1986.

services (legal, accounting, etc.), such contracts also included operations once undertaken exclusively in-house (e.g., R&D and strategic planning).

Nationality does not affect the purchase location of business services. A majority of business services were purchased within 30 miles of the plant. In addition, although foreign firms purchased slightly more of their business services non-locally but within the U.S. (on a percentage basis), the results were not statistically significant. The location of business services did not appear to be affected by mode of entry. Foreign firms leasing facilities had a higher probability of buying business services locally (but again this did not appear to be statistically significant). The purchasing behavior of firms did not vary between those that constructed new and those that purchased existing facilities. For these firms, approximately half of all business services were purchased locally, and the remainder was split between rest-of-state and national locations.

Controlling for industry, foreign auto firms bought a higher portion of their business services from firms located outside the state of plant location than did domestic firms. Conversely, domestic auto parts firms were more apt to buy their business services from firms located within the state. These results may reflect the dispersed pattern of foreign auto assembly plant location. Foreign auto producers operate assembly plants in Ohio, Michigan, California, Kentucky, and Tennessee. These results may further be representative of the well-established automobile agglomeration centered in the midwestern U.S. (or the geographic location of our auto plant sample, which was heavily weighted toward the Midwest), where presumably auto-related business services are needed and found in abundance. In contrast, given that foreign auto investment has occurred both within and outside the traditional auto corridor, we might have expected a slightly more dispersed business services purchasing pattern.

Foreign computer firms, on the other hand, purchased a majority of their business services locally (much more than domestic firms). In the semiconductor industry, foreign firms also bought a larger portion of their business services locally than did American firms. We suspect this reflects the fact that foreign firms are located within the dominant

agglomerations of the semiconductor and computer industries, whereas domestic manufacturing capacity is dispersed among several regions.

There were differences between foreign and domestic firms' business service purchases by plant size. Small domestic firms purchased a higher percentage of their business services locally (within 30 miles of the plant) than did small foreign firms. This difference eroded and then reversed for larger firms. Medium and large foreign plants were more likely to buy a higher percentage of their business service inputs locally than were similar-sized domestic firms. We believe that locally owned small firms were started in place and relied on local business service inputs. In contrast, small foreign-owned plants may have been either newly established branch plants or acquisitions of foreign firms whose parents provide services from the headquarters location. Regarding medium and large foreign-owned establishments, our findings in Section 4 indicated that foreign-owned establishments were more geographically concentrated within existing industrial agglomerations compared to domestic firms in the same industries. Therefore, we would expect business services purchases to occur in physical proximity to foreign plants.

USE OF DISTRIBUTORS

The literature on material linkages and industrial complex analysis assumes that material transactions (the exchange of goods and services) occur between manufacturers. That is, company A makes a widget and sells it directly to company B. This view of transactions represents one aspect of the material exchange process. Less well-known, but still important, is the role wholesalers play in the distribution of goods and services within the national and, increasingly, the international economy. Distributors buy large quantities of material goods from manufacturers and sell them to many different firms in highly dispersed markets. They are particularly important for small firms whose material needs fall below most factory-order size requirements. Furthermore, distributors often represent the only viable alternative when firms need quick turnaround to fill an unexpected gap in supply. Distributors also perform

a number of marketing functions otherwise undertaken by individual firms. This function of selling into a market is particularly important for small firms and firms whose products require broad geographic coverage. A discussion of why firms use distributors to market their goods is complex. Here we simply mention the marketing function, while focusing our attention on the distributor supply-side relationship.[66]

Although there are a number of important historical treatments of merchant wholesalers' roles in manufacturing, few contemporary references in the field of geography exist on this important subject. There is even less attention paid to differences between foreign and domestic firms' use of distributors. For example, information gleaned from automobile parts and equipment and electronics trade publications indicates that foreign firms are much less likely to use distributors than domestic firms. Domestic electronics distributors are largely captive to domestic component producers. In recent months, domestic semiconductor distributors have lost domestic product lines because they marketed foreign products. In automobile parts, evidence of exclusive contracts among domestic producers and distributors is more anecdotal. Yet in some product lines distributors sell only domestically produced goods.

As part of our study we examined the importance of distributors in the material acquisition process. We found that foreign and domestic firms differed in their use of distributors. Domestic firms were almost twice as likely to use distributors for 10 percent or more of their purchases than were foreign firms ($p = .001$). We also showed that a higher percentage of domestic firms used domestic-owned compared to foreign-owned distributors. This relationship is significant ($p = .08$). Interestingly, we also found that foreign firms using distributors (more than 10 percent of total inputs purchased through a distributor) were more

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[66] For a review of the literature, see Amy Glasmeier, "A Missing Link: Wholesale Distribution and Regional Development," under review, Annals, 1989; James Vance, The Merchant's World: The Geography of Wholesaling, Prentice Hall, New Jersey, 1970; and Glen Porter and Harold Livesay, Merchants and Manufacturers: Studies in the Changing Structuring of Nineteenth-Century Marketing (The Johns Hopkins University Press, Baltimore, Maryland, 1971).

likely to use the services of foreign distributors than were domestic firms ($p = .009$). This may reflect the unique relationship between foreign firms and parent trading companies (e.g., in Japanese firms).

So far the analysis indicates there is little difference between foreign and domestic firms in the purchase of their primary inputs, non-business, and business services. But distributor use does differ to some extent. Our results suggest nationality is less important than industry as a determinant of firm purchase decisions. The following section examines the flip side of the input question--market location. We find a number of important (and expected) differences among foreign and domestic firms.

MARKETS FOR FIRM PRODUCTS

As noted, the primary reason for foreign direct investment in the U.S. is access to markets. Foreign firms also come to the U.S. to avoid tariff restrictions and protectionist sentiment. The falling value of the dollar has made U.S. manufacturing cost competitive with many other locations. Concomitantly, as the value of the dollar declined, American firms made inroads into international markets. American firms invest in foreign markets for many of the same reasons foreign firms invest in the U.S. (e.g., access to markets, fear of protection, and relative cost differences).[67] We expected to find that foreign firms sold a higher proportion of their output within the U.S. while domestic firms exported more of their goods abroad. And, in general, our results confirmed these expectations.

Foreign firms sell into the U.S. market while American firms sell a portion of output into foreign markets. Obviously the relative strength of this relationship is mediated by past patterns of trade within the three industries we studied. We expected American auto parts to be domestically produced for the U.S. market. In contrast, U.S. computer and semiconductor firms produced for both domestic and foreign markets.

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[67] Erica Schoenberger, op. cit.

We found that foreign firms' markets were overwhelmingly domestic (within the U.S.). Foreign firms sold a higher percentage of their output locally (within 30 miles of the plant) compared to domestic firms. Nonetheless, while there were differences, all firms in our sample sold the majority of their output within the U.S.

On the basis of entry mode, we found small differences in market orientation among foreign and domestic firms, although foreigners ranked markets somewhat more important. These differences were reflected in the percent of goods sold locally (by foreign versus domestic firms) and the percent of output sold to foreign markets by domestic firms. Foreign and domestic firms sold similar shares of their output to U.S. markets. Foreign firms constructing new facilities sold a higher percentage of their output locally (within 30 miles) than to other modes of entry, though the difference was small (8 versus 5 percent). Finally, firms purchasing facilities showed the expected breakdown: foreign firms sold more locally and within the U.S., compared to domestic firms, which sold more of their output abroad.

Market orientation varied by industry. In auto parts, foreign firms sold more locally (within 30 miles) and to international markets than did domestic firms. Domestic firms sold almost their entire output to U.S. markets. In computers, market location differed dramatically for foreign and domestic firms. Domestic firms sold twice as much output to foreign markets as did non-domestic firms. And yet these firms sold equal shares locally (very small shares sold within 30 miles of the plants). In general, the domestic computer industry was not locally oriented. This is not surprising given what is known about this industry's origin (the U.S. pioneered computer manufacturing), and the degree to which it is internationally oriented. Finally, semiconductor markets are highly international. Domestic firms in our sample sold approximately equal shares of their output to foreign and domestic markets. Foreign firms sold more of semiconductor output locally than did domestic firms. We suspect that this difference simply reflects the dominant purpose for foreign investment in the U.S.--access to the market.

Age of firm presents additional explanation regarding firm market orientation by nationality. Older domestic firms are wholly oriented to the American market. The same

holds true for foreign firms. Younger domestic firms exported a much higher percentage of their output to foreign markets than either their older counterparts or their younger foreign counterparts. Young foreign firms sold more of their output locally (within thirty miles of the plant location). In fact, for the great majority of cases, foreign firms sell in the American market. These results suggest that currently foreign firms seldom use U.S. manufacturing locations as re-export platforms to Europe and other regions of the world. Although we saw some incidence of this occurring in the auto parts industry, recent media accounts indicate that foreign firms may increase their share of re-exports in line with the revalued dollar. However, at present, there is only anecdotal evidence regarding this prospective development.

Firm size reflects similar trends in the market orientation of foreign and domestic firms. Small foreign firms were more locally and nationally oriented than domestic firms. Small domestic firms exported more of their output than did small foreign firms. As we move from small to large firms, foreigners sold more within thirty miles and within the nation, and domestic firms exported more of their output to foreign markets. In the largest plants (over 500 employees), domestic firms exported more than a quarter of their output to foreign markets, while foreign firms (regardless of size, age, or entry mode) sold less than 15 percent of their output overseas.

SUMMARY

We found little difference between U.S. and foreign firm input purchase locations. Most firms buy their inputs outside the local area but within the U.S. Closer scrutiny of the ownership of supplier firms, however, reveals that foreign firms buy a larger share of their inputs from foreign suppliers. There were some important differences among the industries we studied. In semiconductors, both foreign and domestic firms buy a large portion of important inputs from foreign locations. We believe this reflects the virtual collapse of the American semiconductor supplier industry. We also found that foreign firms are oriented toward the domestic market. And yet differences were evident when we examined individual

industries. Foreign parts producers export a larger share of their output to foreign markets compared with their domestic counterparts. Armed with these findings, in Section 7, we examine state and local policies to encourage foreign investment.

6. FOREIGN DIRECT INVESTMENT IN NONMETROPOLITAN AREAS

INTRODUCTION

We have so far concentrated on the internal characteristics, regional location patterns, and employment effects of foreign direct investment. These elements are essential for a coherent picture of FDIUS's role in regional development. Another aim of our study, however, was to understand more specifically the effects of foreign direct investment on economic development in nonmetropolitan America.[68]

The rural growth of the 1970s has given way to a new era of economic decline and increasing poverty in the 1980s. Gone are the days of rapid growth in agriculture. And manufacturing, once heralded as the savior of rural communities, has contracted and declined as the manufacturing base has been challenged by severe international competition and the negative effects of economic globalization. More troubling, many core nonmetropolitan industries--textiles, food processing, agriculture, and mining--are in advanced states of restructuring. They are not likely to add significant numbers of new jobs. The economic balloon that served briefly to lift rural America out of its state of decline has indeed burst. Income growth in rural areas has once again begun to lag behind that in urban areas. Thus, there is a critical need to explore alternative sources of economic development for rural areas.

In the early 1980s, high-tech industries were central to economic development policy. But these industries cannot foster widespread economic development among the nation's rural communities because they do not have the skilled labor needed for many high-tech processes. Further, wage rates in rural areas, even for the most unskilled operations, are significantly

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[68] The ratio of domestic to foreign auto firms in our sample was very low, which prevents us from making any generalizations about differences between these two groups.

above those found in third world countries.[69] Thus the search for additional sources of growth continues. Policymakers at all levels have attempted to expand existing industrial bases by wooing outside investment in new industries. This has included the preoccupation with garnering a share of the recent influx of foreign capital.

Interest in foreign investment as a component of economic development policy is only now being accompanied by research capable of measuring its potential development impacts. Thus a major purpose of our research was to better inform this discussion. In particular, we wanted to provide an empirical basis to assess the benefits of this new form of investment. We showed in Section 2 that foreign investment created few jobs, but rather consisted mostly of ownership changes. In addition, we have seen that the limited number of new jobs created by foreign investors is skewed toward certain regions of the country. We also showed that the importance of foreign investment as a source of economic growth cannot be decoupled from changes occurring within industry as a whole. So as we turn our attention to the experience of rural communities that have attracted foreign investment, we will attempt to provide explanations for these trends.

The Geography of Rural America

Before examining rural FDIUS, we briefly summarize some facts about the geography of rural America. The South is America's most rural region. Almost half the nation's rural

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69 David Barkley and Stephen Smith, "Local Economic Impacts of High Technology Manufacturing in the Nonmetropolitan West"; and David Barkley, John Keith, and Stephen Smith, "The Potential for High Technology Manufacturing in Nonmetropolitan Areas," papers prepared for the Western Rural Development Center, Oregon State University, March 1989. Also see, Amy Glasmeier, final report to the Ford Foundation, Rural Economic Policy Project, "Bypassing America's Outlands: Rural America and High Technology" (1988).

population lives in this 17-state area.[70] The Midwest's share of rural population is also substantial--30 percent. In both the South and the Midwest, almost a third of population resides in nonmetropolitan counties. The populations of the Northeast and West, by contrast, are quite urban--only 17 and 12 percent, respectively, of the nation's rural population live in these regions. And only 21 and 16 percent of their respective populations reside in rural counties.

A similar pattern exists in the distribution of rural manufacturing employment. In the early 1980s, 52 percent of the nation's rural manufacturing was located in the South. The Midwest also had a significant share--approximately 29 percent of the total. And the West had only 8 percent of the nation's rural manufacturing, while the Northeast had a slightly larger, yet still modest, 11 percent.

Southern and midwestern rural areas also contain large portions of their regions' respective manufacturing employment. The South had 32 percent of its manufacturing jobs concentrated in rural counties, followed by the Midwest with a smaller, yet substantial share (22 percent). By contrast, the Northeast and West had smaller shares of their manufacturing in rural areas (10 percent each).

Changes in this pattern are resulting in increasing concentrations of rural manufacturing in the South. Since the late 1970s, the South and the West increased their shares of rural manufacturing. The Midwest suffered the most profound loss of manufacturing jobs, from 37 percent to 32 percent. Changes were reflected as increases in the South's share of the nation's rural manufacturing employment: between 1972 and 1982, the South's share rose from 48 percent to 52 percent.

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[70] We defined the South as the states in the South Atlantic, East South Central, and West South Central regions. See Figure 7.

NONMETROPOLITAN FDIUS: HOW MUCH, WHERE, AND FROM WHAT SOURCES?

To determine the economic development potential of FDIUS in nonmetropolitan areas, we first attempt to answer the following questions. To what extent have rural communities attracted foreign investment? Is the distribution of FDIUS in line with or representative of a deviation from past patterns of rural development? Can foreign investment be counted on to repair the damage in rural communities with declining economic bases? Or, is FDIUS simply following past patterns of corporate investment in specific industries and regions? We address these issues by first examining ITA data.

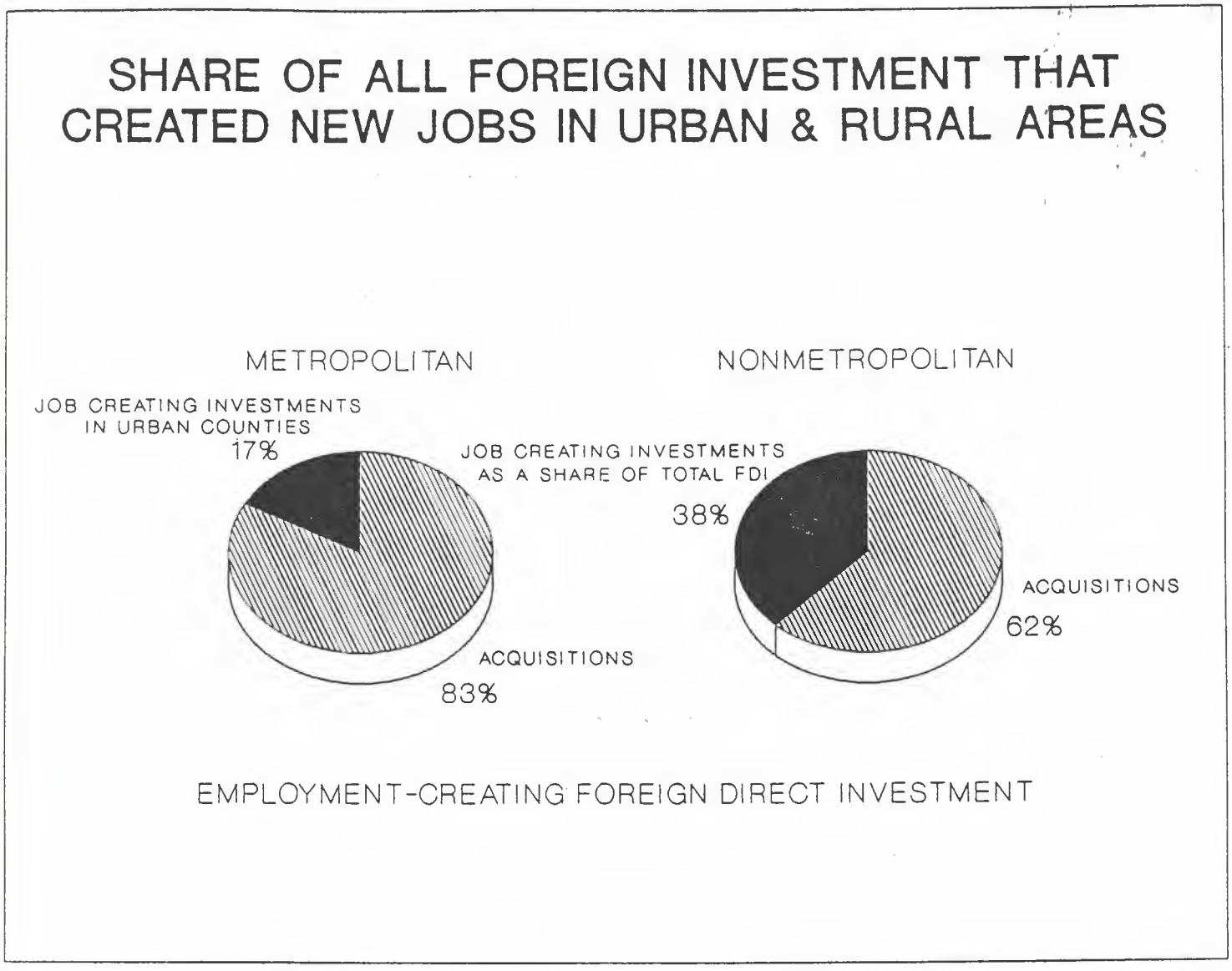
Through 1987, approximately 10 percent of all FDIUS was in nonmetropolitan counties (Figure 20). Rural FDIUS constituted 20 percent of all new employment-creating investments, and 7 percent of all investments through acquisitions. As with the nation, rural FDIUS consists primarily of acquisitions (62 percent). But compared with the nation, rural FDIUS has a greater proportion of employment-creating investments (38 percent versus 17 percent) (Figure 21). This pattern is clearly a positive sign for rural economic development. Employment-creating investments have greater potential for generating additional rounds of local economic development--the "multiplier effects" discussed earlier. Such benefits include not only the effects of new construction and increases in local employment, but also the material input requirements of new establishments. As we will see in future sections, the effect of foreign investments in rural areas is quite limited.

A majority of FDIUS in rural areas is of recent vintage. By breaking our data into two time periods--pre- and post-1980--we see that 86 percent of employment-creating investments occurred in the last seven years. We found similar numbers for plant acquisitions: 76 percent of all investments in rural areas occurred in the more recent period (compared with 57 percent in metropolitan areas). These results mirror the pattern of foreign investment at the national level. There has been a substantial increase in the level of foreign investment in the 1980s as the value of the dollar has declined and investing in the U.S. has become a "good deal."

Figure 20

FOREIGN INVESTMENT IN NONMETROPOLITAN COUNTIES IN THE U.S.

Figure 21


SHARE OF ALL FOREIGN INVESTMENT THAT CREATED NEW JOBS IN URBAN & RURAL AREAS
METROPOLITAN
NONMETROPOLITAN
JOB CREATING INVESTMENTS IN URBAN COUNTIES
17%
ACQUISITIONS
83%
JOB CREATING INVESTMENTS AS A SHARE OF TOTAL FDI
38%
ACQUISITIONS
62%
EMPLOYMENT-CREATING FOREIGN DIRECT INVESTMENT

The regional distribution of rural FDIUS is roughly comparable to the distribution of domestic rural manufacturing. By 1986, approximately 44 percent of all rural FDIUS occurred in the South (Figure 22). The South Atlantic region received more than half of this investment, the Midwest 27 percent. The remainder was distributed rather evenly among states in the Northeast and West. Employment-creating investments in rural counties were also concentrated in the South (61 percent of the total) (Figure 23), with the largest share of the region's total occurring in the South Atlantic states. In contrast, acquisitions were more evenly distributed between the South and Midwest (33 percent each, respectively) (Figure 24). The distribution of residual employment-creating and -acquiring investments was rather even between the Northeast and West. This clearly shows that employment-creating FDIUS is heavily concentrated in the rural South and, secondarily, the Midwest.

Investment in nonmetropolitan counties has changed over time. Pre- and post-1980 foreign acquisitions were split almost evenly between the Midwest and the South. Over time, these two regions' share of all rural acquisitions has come to dominate this form of investment. Constituting roughly 47 percent of pre-1980 acquisition investment, the two regions now represent 70 percent of total investment through acquisitions. A different pattern is evident in the distribution of employment-creating investments. Prior to 1980, southern states received the lion's share of these investments (71 percent). The Midwest received a meager 8 percent. Post-1980 investments were more evenly distributed among the four regions, with the South's share falling to 59 percent (or roughly the region's share of rural manufacturing), while the Midwest's share grew to 17 percent.

Examination of regional shares of rural FDIUS further illustrates the disproportionate representation of the South and Midwest. Seventeen percent of FDIUS in the Midwest is concentrated in rural counties; in the South, 14 percent of FDIUS is similarly located (Figure 25). Almost no FDIUS is found in rural counties of the Northeast and West (5 percent and 6 percent, respectively). Like overall manufacturing, foreign investment in rural areas appears to follow long-established spatial trends, rather than creating new patterns.

Figure 22

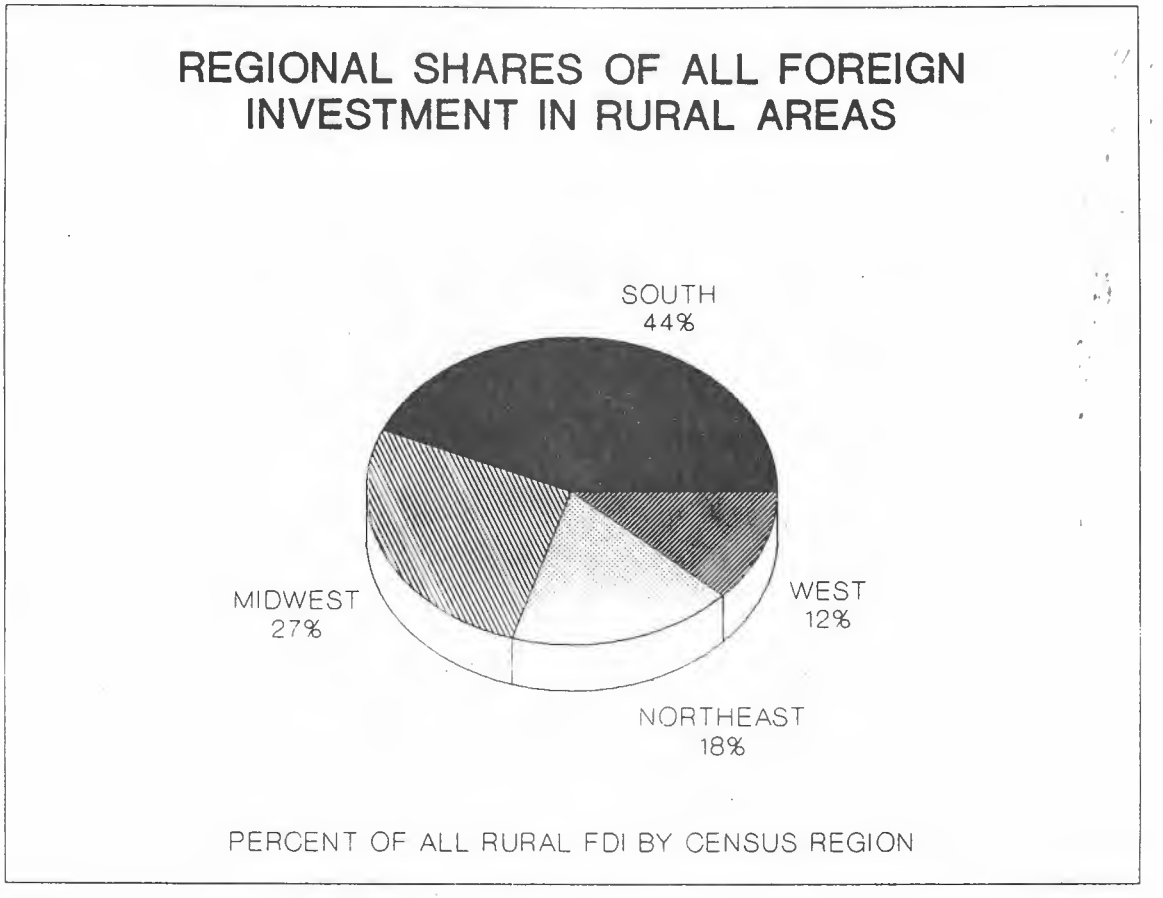


Figure 23

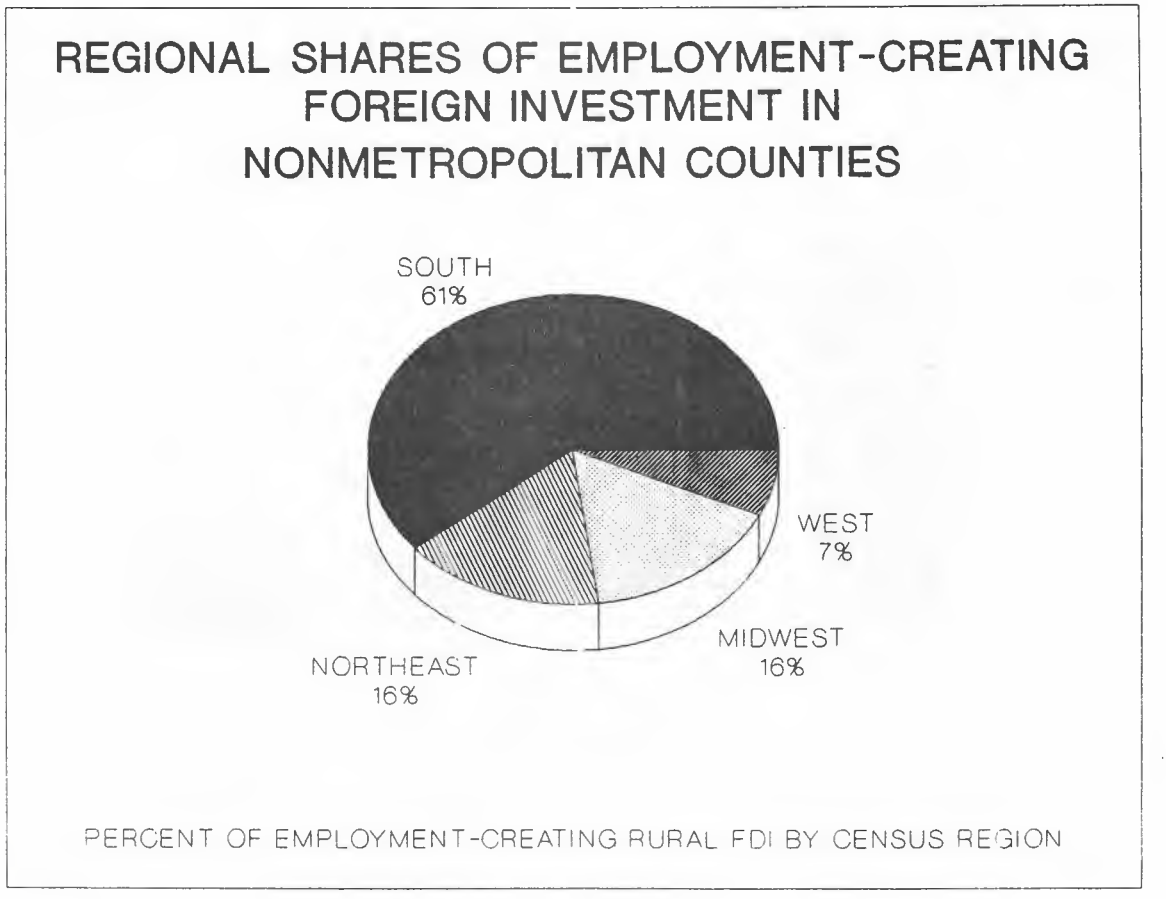


Figure 24

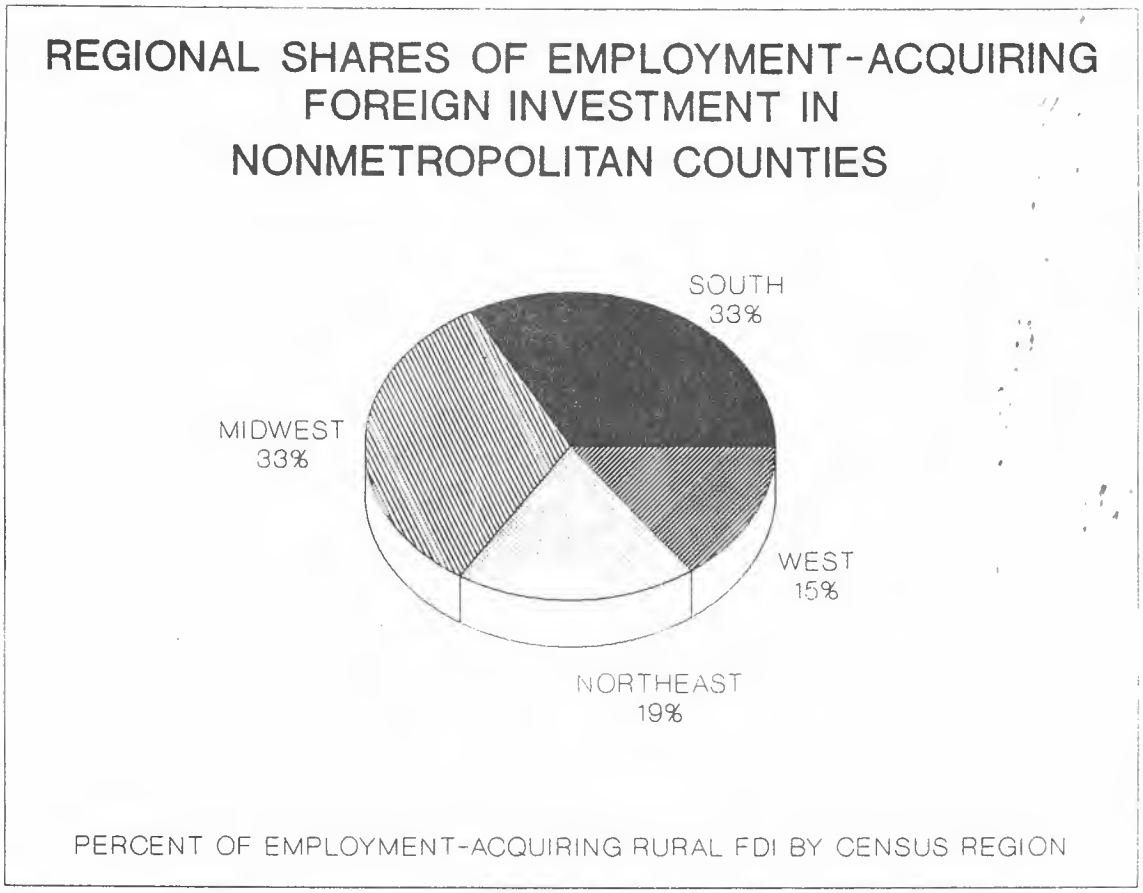
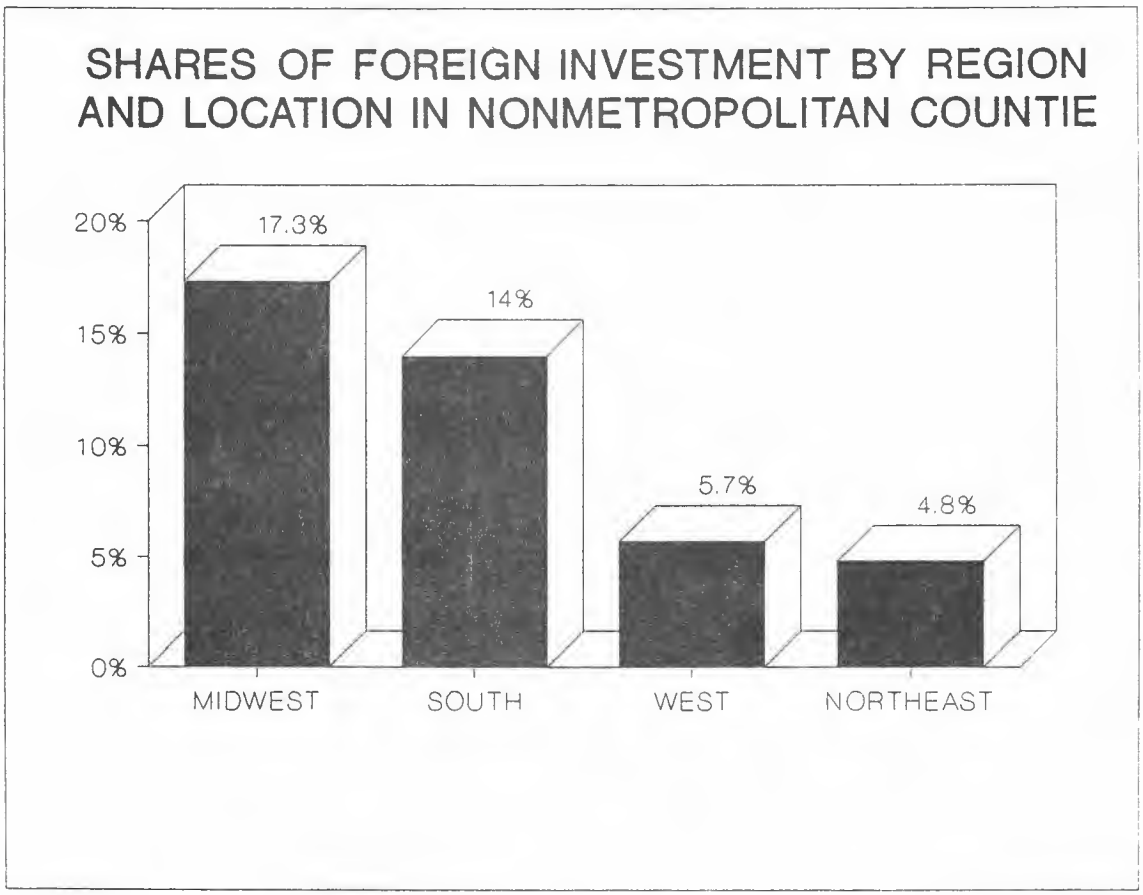


Figure 25



While FDIUS appeared almost evenly split between adjacent and non-adjacent nonmetropolitan counties (52 percent versus 48 percent), there are significant differences across regions (Figures 26 and 27). A majority of northeastern rural FDIUS is in adjacent counties (72 percent), whereas FDIUS in the South and Midwest was evenly split between adjacent and non-adjacent counties. In the West, FDIUS was far more concentrated in non-adjacent counties (62 percent); this figure no doubt reflects investment in oil and gas operations by foreign corporations.

Foreign Investments in Rural Manufacturing

Looking more specifically at investments in manufacturing, we found that 14 percent of FDIUS took place in nonmetropolitan counties. Within specific regions FDIUS in rural manufacturing constituted 21, 21, 8 and 5 percent of the total FDIUS in the Midwest, South, Northeast, and West, respectively. Of all rural foreign investments in manufacturing, the South received 46 percent, followed by the Midwest with 28 percent. The Northeast received another 20 percent, while the West accounted for only 6 percent. As with total FDIUS, the majority of manufacturing investments occurred since 1980 (80 percent). The distribution of these most-current investments almost mirrors overall regional distribution.

The composition of employment-creating versus acquired investment varies across regions. The South received the lion's share of rural employment-creating investments (61 percent) while the Midwest and Northeast shared most of the residual (17 percent each). Acquisitions, on the other hand, were concentrated in the Midwest (35 percent), and secondarily, in the South (32 percent). Pre- and post-1980 shares of both employment-acquiring and employment-creating investments mirrored the overall regional trends. The South gained the majority of employment-creating investments over both periods, while the Midwest received the bulk of employment-acquiring investments.

A majority of rural manufacturing investment occurred in rural counties adjacent to metropolitan areas, but there was considerable variation across regions. In both the Midwest

Figure 26

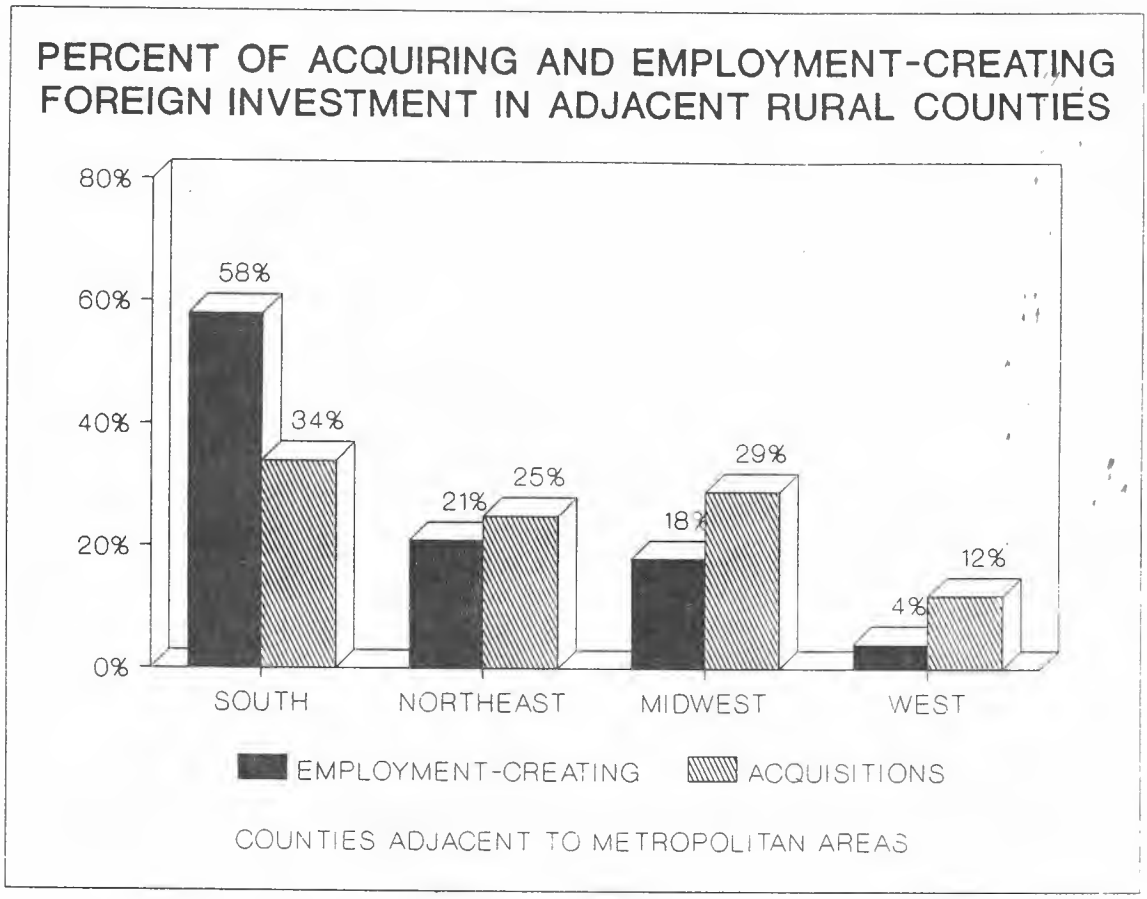
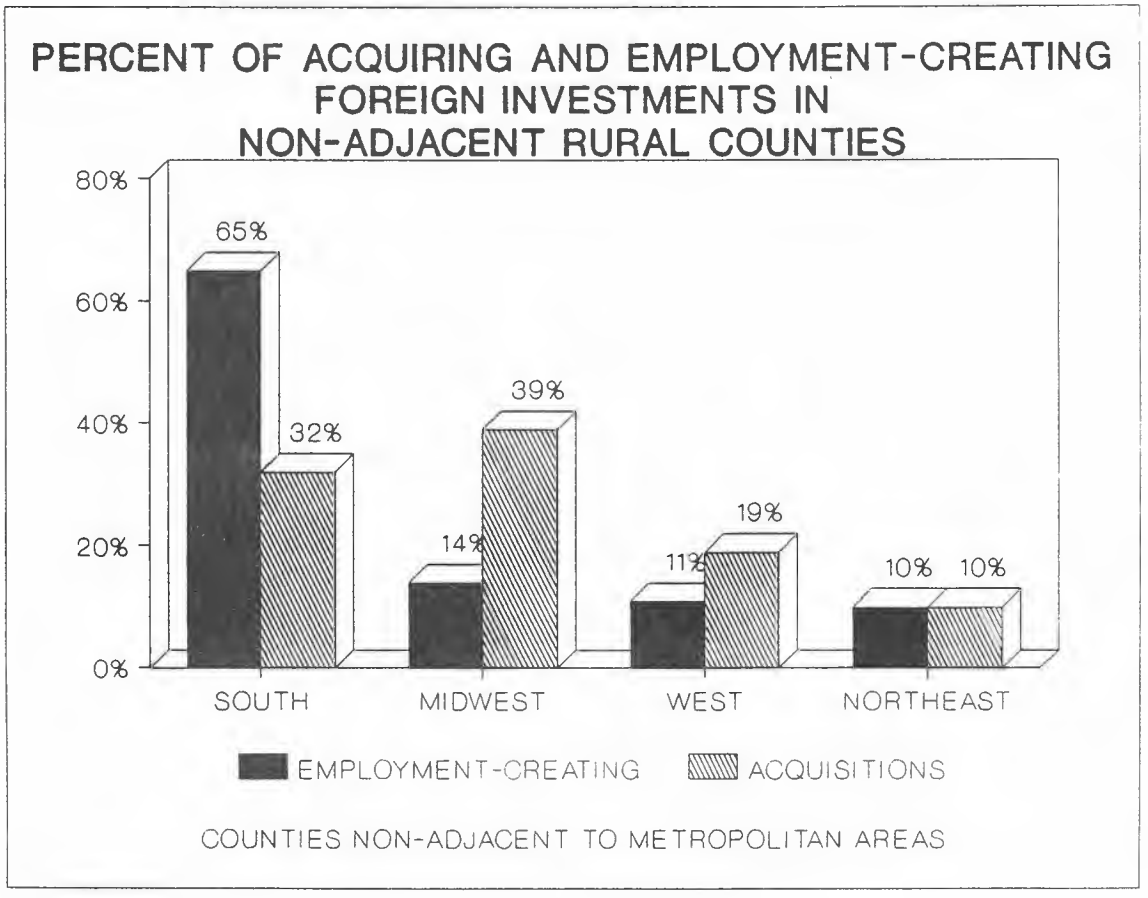


Figure 27



and the South, most rural FDIUS occurred in non-adjacent counties. In contrast, FDIUS in rural counties of the West and Northeast concentrated near cities. As with distribution of rural manufacturing, distribution of rural FDIUS was generally similar to that of overall population and manufacturing.

The consistent pattern of rural foreign investment (both in all industries and in manufacturing only) clearly illustrates that the South is the major recipient of rural FDIUS. As with domestic investments in rural areas, rather than setting new trends, FDIUS is reinforcing the existing distribution of economic activity among America's rural regions. The long-term benefits of rural FDIUS must therefore be measured in part by whether new investment is adding to an existing base of domestic rural manufacturing investments. Over the long run, such reinforcement might allow some rural areas to reach a threshold of self-sustaining development. If, however, rural FDIUS is essentially occurring in counties with no industrial or manufacturing experience, then it is not reinforcing any of the gains made over the post-war period associated with domestic investments. Thus in essence, foreign firms would not only be building greenfield sites, they would be building within greenfield rural counties. And the prospects for either of these developments can be discerned only by examining the location pattern of individual industries--a task we take up in the next section.

Rural foreign investment took place in relatively few industries. Chemicals, industrial machinery, and fabricated metals dominated the group. Rural FDIUS occurred in existing rural manufacturing industries, rather than spawning new trends. Given the concentration of rural FDIUS in the Midwest and secondarily in the South, there was obvious similarity with the industrial structure of individual regions.

While these results were expected, they are not making qualitative changes in the composition of rural industries. Foreign investment is simply strengthening rural areas' concentration in mature forms of manufacturing. Thus we would not expect skill levels to change or rural manufacturing "know-how" to improve substantially. The implication of this finding is clear: foreign-owned manufacturing in rural areas will do well as long as the underlying industries remain competitive. But should the auto, chemicals, or metal fabricating

sectors experience a decline of the magnitude which occurred in the early 1980s, similar economic instability and job loss are likely to follow.

NONMETROPOLITAN FDIUS IN THE AUTO PARTS, SEMICONDUCTOR, AND COMPUTER INDUSTRIES

While total FDIUS has been spread across a variety of industries, rates of investment have been particularly significant in the auto parts, semiconductor, and computer industries. These sectors have grown quickly within the national economy as a whole. We therefore selected these industries for in-depth study.

Since the 1960s, domestic auto parts firms have shifted routine product assembly into the hinterlands of the midwestern auto corridor. Significant investment has also occurred in the South as auto parts firms shifted production of parts used in auto repair (as opposed to assembly) to rural areas. Auto parts were therefore cited as ingredients in rural manufacturing growth over the postwar period.[71] Should FDIUS follow domestic industry trends, then one would expect that foreign-owned auto parts production would also locate in the Midwest and South. On the other hand, computers and semiconductors have resisted this tendency to shift low-wage production jobs to rural areas. From their origin, these industries have pursued either of two strategies. They have maintained technical functions in and around America's largest cities, while shifting assembly operations off-shore to newly industrializing countries. Or, they have invested in capital equipment (particularly for assembly work), obviating the need for low-wage, low-skill workers. Thus, we examined these industries to see whether foreign firms were establishing manufacturing operations tailored to metropolitan areas, or locating the least technical functions within America's rural communities. Theory and past

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[71] Amy Glasmeier and Richard McCluskey, "U.S. Auto Parts Production: An Analysis of the Organization and Location of a Changing Industry," Economic Geography, Spring 1987.

evidence suggest that like U.S. firms, foreign-owned corporations seek out locations where benefits of agglomeration of technically skilled labor can be found.

ITA Data

When we narrowed our focus and examined the ITA data to determine the incidence of nonmetropolitan FDIUS in the auto parts, semiconductor, and computer industries, we found that approximately 10 percent occurred in nonmetropolitan counties (a total of 221 plants). A majority of these rural investments were concentrated in the Midwest and South. Auto parts manufacturing plants dominated, with 88 percent of the investments. A total of four semiconductor and computer plants were located in rural areas, all in the Northeast and South. As most of this investment was in the auto parts sector, we expected to find the bulk in the Midwest. In line with the industrial base of the region, 89 percent of the nonmetropolitan auto parts plants were located there. The rest was in the rural South.

A majority of the nonmetropolitan firms we interviewed were located in the Midwest and the South (51 percent and 41 percent, respectively). The two remaining plants were in the Northeast; none was in the West. And most rural firms interviewed were located in non-adjacent counties. This contrasts with the overall distribution of foreign investment across regions (adjacent rural counties received the bulk of foreign investment).

Survey Data

The geographic distribution of auto parts plants in our sample roughly conforms with recent research focusing on Japanese auto parts production. Since the early 1980s, Japanese auto assembly firms have built new assembly plants largely within the traditional auto manufacturing belt including the states of Michigan, Ohio, Illinois, and Indiana, but outside communities with a tradition of auto parts and assembly manufacturing. Japanese firms were initially reluctant to rely on American parts production to supply critical components. They

formed alliances with Japanese parts producers and encouraged (and in some cases required) them to establish U.S. plants. While Japanese assembly plants tended to locate where they would have good access to the U.S. auto complex, Japanese parts producers have preferred to locate within the region and proximate to assembly plants, but in rural areas with little or no previous history of auto parts production. This investment strategy has produced a regionally concentrated but locally dispersed pattern of foreign investment in the auto industry.[72] That is, there was a great amount of investment in the region, but investment was located in rural places dispersed within the region. This pattern of investment both conforms with and deviates from the historic geographic distribution of domestic auto parts and assembly firms. America's auto industry complex is deeply rooted in the Midwest. There are numerous smaller agglomerations of parts manufacturing firms specializing in specific car components. Thus at a regional level, the auto complex is well-defined, and within the region subnodes of production are evident.[73] Japanese investment conforms with this historic pattern at a regional level, but it is establishing a new pattern of spatial dispersion at a local level.

Our research confirms these trends. While superficially this development bodes well for rural areas, it also signals that new investment may not be supplementing rural communities with previous histories of parts manufacturing. The implication is that (at least in the case of auto parts), FDIUS is not building upon a preexisting base of manufacturing skills. Therefore, it seems unlikely that rural communities, racked by domestic auto plant closures when the industry restructured in the late 1970s, can count on this new investment to shore up their weakened economic bases.

We also found from our survey data that FDIUS occurred in relatively large establishments (more than 250 employees) and that larger plants located in non-adjacent rural

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[72] Andrew Mair, Richard Florida, and Martin Kenney, "The New Geography of Automobile Production: Japanese Transplants in North America," Economic Geography, forthcoming.

[73] See Glasmeier and McCluskey, op. cit.

counties. These investments were for the most part recent (since 1984), and constituted new construction as opposed to leasing of plants. We suspect the disproportionate number of auto firms in our sample influences these findings. That plants are locating in non-adjacent counties mirrors the findings of others.[74] Assembly plants have by and large located in metropolitan areas. Mazda, Diamond Star-Chrysler, and Isuzu have recently built plants in metropolitan areas, and Honda and Nissan had built rural plants earlier. We suspect the choice of remote rural locations by parts producers reflects price pressures. While they must be in the Midwest for just-in-time inventory reasons, labor cost considerations force them into the rural hinterlands in search of cheap labor. Concern about unionization threats is also believed to be a consideration in their location decisions.

A significant portion of FDIUS in rural areas occurred as a result of new facilities construction. Thirty-five percent of our sample firms were located in rural areas. This may reflect the fact that urban firms have more options for renting commercial space than firms wishing to locate in rural areas. It may also be that rural areas have few establishments suitable for acquisition. To the extent that the latter hypothesis is true, then rural areas are essentially experiencing the purest form of foreign investment. Firms are coming to rural areas to set up shop rather than by means of an acquisition. This pattern can be viewed only as a positive sign for rural communities. At least on the surface, new plant construction signals prospects of future expansions, and over time, local linkages. The next section--discussion of FDIUS material purchase location--provides some evidence as to the near-term likelihood of this development.

ECONOMIC IMPACTS OF FOREIGN FIRMS IN NONMETROPOLITAN AREAS

As part of this research we asked a set of questions about the economic development impacts of material input purchasing of foreign firms. Do foreign-owned firms engage in

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74 See Mair et al., op. cit.

local purchasing of goods and services needed for manufacturing? Or, do they follow past patterns of branch plants which have tended to buy goods and services outside the confines of rural economies? In Section 6, we suggest a number of factors which influence the extent to which foreign and domestic firms purchased inputs locally, within the state, or within the U.S. For rural communities, limited size and lack of economic diversity have usually meant inputs must come from outside. Branch plants function in rural communities because of well-established input purchasing relations set up at headquarters. Therefore, we would not expect foreign-owned firms to buy much of their inputs locally.

Material Input Purchasing Location

On average, less than 25 percent of foreign firms bought their largest input from manufacturers within their states. This was true no matter how old or big they were, or to what industry they belonged. This relationship also held regardless of where a firm located in nonmetropolitan areas. Purchasing patterns of companies in adjacent nonmetropolitan counties were almost entirely non-local. Overall, more than 40 percent of non-local purchases were made from overseas suppliers. In all nonadjacent, nonmetropolitan counties, the proportion of inputs purchased outside the state economies was even larger--more than 70 percent.[75]

The Location of Business and Non-Business Service Purchases

We asked firms about the geographic location of service industry purchases. We divided service industries into business and non-business services. The first group encompasses such activities as accounting, legal, and consulting services--activities often purchased outside a

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[75] In these instances, however, a smaller portion of non-local purchases was made from overseas suppliers.

firm from organizations with specific expertise. Non-business services, in contrast, include landscaping, food services, security operations, etc. Although historically these activities were probably performed by company employees, it is now often cheaper to subcontract for them.

Like manufacturing, the extent to which foreign firms buy service inputs locally is largely dependent upon geography. Empirical studies suggest that business services are quite spatially concentrated in large cities. In fact, service industry location is even more oriented toward cities than is manufacturing. Therefore, we would generally expect rural firms to purchase a majority of their business services outside the local area. This prospect might be tempered somewhat in the cases where rural plants located in adjacent rural counties are within easy commutes of major metropolitan areas.

Of all foreign-owned plants in our sample, the majority bought their business services outside the local area but within the state in which the plant was located. Slightly more than a third purchased their business services within 30 miles of the plant, and the remaining 20 percent purchased business service inputs outside the state in which the plant was located, but within the U.S.

That one-third of these foreign-owned firms purchased their business services within 30 miles of the plant is somewhat surprising given the spatial concentration of services in cities. We know, however, that a portion of our sample (the high-tech industry group) consisted of plants located in rural counties adjacent to metropolitan areas. Therefore, we would expect that semiconductor and computer firms may buy more of their business service inputs locally than do auto parts plants.

Further examination of our data indicates that business services purchase location does vary by industry. Firms in the computer and semiconductor industries buy almost 50 percent of their business services from firms located within the U.S. (but entirely outside the state in which the plant is located). But compared with auto parts plants, computer and semiconductor firms also purchased a larger share of their business services locally. As we suspected, this pattern reflects a) that the computer and semiconductor plants are located in adjacent rural counties (making it possible that certain business services can be found within

30 miles of the plant); and b) that the large share of business services purchased outside the state in which plants in these two industries are located signifies the existence of business services concentrations tied to specific industries.

In contrast, auto parts plants purchased a majority of their business services outside the local area but within the state. Compared with the other industries, auto parts plants purchased less than 15 percent of their business services somewhere else in the nation. Given the spatial distribution of auto parts plants in our sample (mostly adjacent non-metropolitan midwestern counties), we expected these results.

Non-Business Services

Non-business services are generally purchased and consumed on a very immediate basis. They also tend to be labor-intensive and low-value in composition. We therefore expected that non-business services would be purchased primarily within the immediate vicinity of the plant. Indeed, our results largely confirmed this expectation.

Of all firms in our sample, 84 percent purchased their non-business services within 30 miles of the plant. Given the geographic distribution of the firms in our sample, we would expect this to vary somewhat by industry. Whereas computers and semiconductor plants purchased 100 percent of their non-business services locally, auto plants purchased only 81 percent within thirty miles of the plant. As with business services, we believe this result reflects the fact that auto parts plants are located in nonadjacent rural counties where there simply may not be a local firm providing a needed service.

MARKETS

The market orientation of rural, foreign-owned firms replicates the findings of the entire sample. The vast majority of goods produced in rural plants are sold within the U.S. Very small shares of output are sold either locally or to foreign markets. The industry

breakdown reflects the aggregate findings--with the exception that semiconductor firms sell a higher share of their output to foreign markets (13 percent compared with 0 and 8 percent for computer and auto parts plants, respectively). Additionally, auto parts plants sell four times as much output locally than other industries.

SUMMARY

The low proportion of spending by foreign firms on locally manufactured goods is an important finding. Most economic development specialists believe that linkages with local suppliers channel income streams from a manufacturing firm into a community, spreading economic development by stimulating the creation of yet additional sources of employment and income.[76] But so far, it appears that supply linkages have not been established by foreign firms in nonmetropolitan counties.[77]

New foreign manufacturing investment in nonmetropolitan areas is also expected to increase a community's total employment and per capita income--the direct result of expansion of existing plants and new construction. As we saw in Section 4, the South was the major

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[76] These "spread" effects were first described by Albert O. Hirschman, The Strategy of Economic Development (New Haven: Yale University Press, 1958). Some studies (e.g., Rodney Erickson, "The Spatial Pattern of Income Generation in Lead Firm, Growth Area Linkage Systems," Economic Geography 1975, (51) 1: 17-26; and "Sub-regional Impact Multipliers: Income Spread Effects from a Major Defense Installation," Economic Geography 1977, (53) 3: 283-302) have shown, however, that these effects are not an automatic outcome of nonmetropolitan industrialization per se.

[77] There is limited evidence (Patrick N. O 'Farrell and Brian O'Loughlin, "New Industry Input Linkages in Ireland: An Econometric Analysis," Environment and Planning A 1981, (13): 285-308; and Donogh McDonald and Dermot McAleese, "Employment Growth and the Development of Linkages in Forcign-Owned and Domestic Manufacturing Enterprises," Bulletin 1978, 321-339) that suggests linkages between foreign-owned manufacturers and local suppliers increase over time.

beneficiary of new plant construction and expansion, with 49 percent and 53 percent of the national totals in these two categories. Even more striking is that 61 percent of new plants and expansions in nonmetropolitan counties across the nation were in the South. Thus a large portion of nonmetropolitan direct investment in the South represented a net addition to the stock of new manufacturing capital--helping to expand local employment and per capita income. This was more common in the South than in regions where employment-acquiring nonmetropolitan investment was more prevalent (e.g., the Northeast and West).

THE DETERMINANTS OF FOREIGN FIRM LOCATIONS

What explains the regional distribution and industrial composition of nonmetropolitan FDIUS found in the ITA data? Among the firms we surveyed, why did relatively large, newly constructed auto parts plants in midwestern and southern nonadjacent counties dominate? We delved into the factors deemed important by foreign firms in making a rural location decision. Conventional wisdom suggests that firms seeking low wages and permissive governments locate in rural areas. Financial incentives--although important in urban areas--seem to be more important rural locational determinants. Less significance has been placed on access to suppliers and markets. Therefore, in examining the firms' responses to our survey about locational determinants, we can begin to discern what motivates foreign companies to move to rural areas.

There is no single explanation for the forces that attract foreign firms to nonmetropolitan areas. We do know that postwar, nonmetropolitan industrialization occurred as a consequence of the decentralization of manufacturing in industrialized countries. This pattern of decentralization has been explored on the basis of the product-cycle model. Products are presumed to go through three stages of development--birth, growth, and maturation. In the first two stages employment is concentrated near cities where skilled labor and markets are found. Economists and geographers have concluded that industry locates mature components of manufacturing to rural areas in search of cheap land and labor. In this phase,

plants produce routine products, and capital intensity is high because large amounts of specialized equipment are used.[78] Low wages are significant because they represent a major variable cost of production. Firms' products at this point differ little qualitatively, so market share can be gained only via low per-unit prices.

A major component of our survey was questions about firm location decisions. Respondents were asked to rank factors deemed important in their site selection process (see Section 4). Of the 105 firms answering this section, 20 were located in rural areas. In general, there was a consistent pattern of factors deemed important as we move along the urban-rural continuum. Whereas firms in cities indicated quality of life and proximity to markets were critical location determinants, these were much less important for firms farther down the continuum toward rural, nonadjacent counties. Proximity to suppliers showed a similar pattern --less important to firms as they were located farther from urban areas.

Locational factors which were more important to rural firms included infrastructure services such as access to transportation and, surprisingly, government incentives. Whereas in general, this last factor was not rated important by all firms making location decisions, those companies considering a rural location cited government tax incentives as significant in their location calculations.

Finally, regardless of geographic location, firms ranked labor costs as either the most important or second most important factor influencing their location decision. These results suggest rural areas best able to compete for foreign investment should have good transportation access, low wage rates, and provide government incentives. This does not deviate significantly

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78 Its major elements were first articulated in the 1930s by Simon Kuznets and Arthur Burns, and formalized and extended by Raymond Vernon, "International Investment and International Trade in the Product Cycle," Quarterly Journal of Economics 1966, (80): 190-207. For succinct summaries, see Niles Hansen, "The New International Division of Labor and Manufacturing Decentralization in the United States," Review of Regional Studies 1981 (9), 1: 1-11; Wilbur Thompson, "The Economic Base of Urban Problems," in Neil W. Chamberlain, ed., Contemporary Economic Issues (New York: Irwin Co., 1969), pp. 1-48.

from domestic investment decisions. The factors which have lured industrialization to rural areas since the 1950s are clearly still important.

How do we understand the significance of these findings?

While product-cycle theory cannot provide a complete explanation, it does provide a framework in which to view some of these location factors. Most of the nonmetropolitan industries in the ITA data were mature and possessed relatively stable market growth and routine production technology. It is unlikely that many are developing innovative products or production processes, and the paramount locational requirement for firms in these industries is probably cheap labor.

The location preferences of the auto parts, semiconductor, and computer firms in our sample also lend supporting evidence for a product-cycle explanation of the industrial location and composition patterns we found. By comparing industries across the urban-rural continuum, we found that only 6 percent of the semiconductor manufacturers and 11 percent of the computer producers operated a nonmetropolitan plant. Thus these manufacturers displayed a strong metropolitan location preference, regardless of foreign or domestic ownership. On the other hand, 37 percent of the auto parts firms were in nonmetropolitan locations. As noted previously, all of these were in the South and Midwest. To the extent that we were able to make nationality comparisons within the auto industry, we saw a rough parity in the percentages of domestic (31 percent) and foreign (37 percent) firms in nonmetropolitan counties. Auto producers thus appeared to prefer nonmetropolitan manufacturing sites more than semiconductor and computer makers, regardless of their ownership.

We saw a number of influences in the location decisions of firms in the industries we studied. Some of these factors involve the nature of the skill-intensive production process--a limit on profitable nonmetropolitan locations for foreign investment in semiconductors and computer companies. Other factors are more historic--relating to the increasing number of foreign auto assembly plants loosely distributed among states in the U.S. auto agglomeration. Foreign semiconductor and computer companies--the high-tech industries in our sample--manufacture in the U.S. because they can better react to rapidly changing market and

technological conditions. A U.S. location also facilitates access to highly skilled scientific, engineering, and technical talent. These considerations lead foreign firms to follow industry location patterns, locating research and development facilities and many assembly plants near the metropolitan agglomerations of domestic high-tech firms in California's Silicon Valley and the Route 128 Corridor in Massachusetts.[79]

In the auto parts industry, foreign firms followed the lead of domestic firms which have been dispersing their production facilities to nonmetropolitan areas for some time. But, importantly, their regional orientation is determined by the preexisting auto industry agglomeration of the Midwest. Again, although we do not know the specific nature of the production processes used by the foreign auto parts firms in our sample, this would be true for those that carry out high-volume production of standardized products that require no specialized labor or custom materials. A low-wage nonmetropolitan setting could provide an appropriate manufacturing environment for these establishments.

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[79] Coleman, op. cit. Some foreign firms have dispersed their manufacturing operations to lower-wage sites in less urbanized places, as we saw in the case of the six nonmetropolitan semiconductor and computer firms in our sample. Most have followed the leads of their domestic counterparts (Harrington, 1985), however, and concentrated their investment activity near domestic semiconductor and computer firms in the Northeast and West.

7. STATE AND LOCAL POLICY TOWARD FDIUS

During the last few years, state and local governments have given large industrial development incentives (IDIs) to attract foreign companies. The mayor of Smyrna, Tennessee, which had successfully attracted a large Nissan facility, compared his view of the plant to seeing the Promised Land.[80] The reason: 3,000 new jobs were added to his small town's economy. With those jobs came increases in tax revenues. Part of the reason the Japanese automaker located in Smyrna was a $66 million package of incentives that the town and the state of Tennessee gave to Nissan. It consisted of job training, road, sewer, water and rail improvements, and property tax abatements. Later, in the biggest incentive package ever offered to a foreign company, Kentucky put up more than $300 million to induce Toyota to locate in Georgetown.

These large subsidies are not typical--most are much smaller--but, in total, states and localities spent more than $40 million in 1986 to attract foreign investment and promote international trade.[81] Nor are these subsidies limited to large, foreign multinationals: domestic firms also look for and receive locational inducements. But subsidies to foreign companies raise additional issues. In Illinois, for example, a domestic auto parts maker complained about a subsidy given by the state to a competitor from Japan. Why, the American company argued, should Japanese firms be subsidized by American taxpayers when they are already being subsidized through Japan's industrial policies? The Illinois legislature passed (over Governor Jim Thompson's veto) a law requiring an impact statement on competitive and other economic effects of foreign investments that received state incentives.

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[80] John Junkerman, "Nissan, Tennessee: It Ain't What It's Cracked Up to Be," The Progressive, June 1987, pp. 16-19.

[81] It is impossible to separate the amount spent on FDI from that spent on trade in the government data on international economics.

IDIs are becoming more controversial, given the few new jobs created by foreign companies and the tight budgets many communities face. Recall, between 1980 and 1987, foreign companies created only about 10,000 to 15,000 new jobs each year through new plants.[82] The effectiveness of incentives is also being questioned, both by economists and by economic development practitioners. For example, would Nissan have located in Smyrna without the incentives, or would it have done so with a much smaller package? The evidence is that these incentives have little effect on where firms locate. As we have seen in Section 4, manufacturers look at other factors, such as the cost and quality of labor, markets, and other characteristics of communities. Government incentives programs were ranked last among location factors by the firms we surveyed. At best, IDIs appear to be a deciding factor in plant location decisions only when the choice for a plant site has been narrowed to two or three communities with similarly desirable characteristics.[83]

To increase the knowledge base about economic development policy, we examined state and local government policies toward foreign direct investment. We raised several questions about public policies toward FDIUS. How do state and local economic development practitioners rank the importance of different location factors? Are their rankings different from those of executives of foreign firms? Finally, to the extent that IDIs affect plant location decisions, which of them are regarded as useful by foreign managers and public officials? To answer these questions, we surveyed directors and ranking staff members of

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82 These figures from newly constructed plants do not take into account mergers and acquisitions, as discussed in Section 2.

83 Schmenner, op. cit.; Kieschnick, op. cit.

economic development agencies[84] in all 50 states and a group of city development agencies on the importance of location factors[85] and the effectiveness of IDIs. We then compared their rankings with those given by foreign and domestic firms in Section 4.

RANKINGS OF LOCATION FACTORS BY STATE AND LOCAL OFFICIALS

State development officials considered convenient transportation access, attitude toward foreign investors, proximity to markets, and proximity to suppliers the most important location factors (Figure 28). Government incentives, the programs which provide state development agencies with much of their raison d'être, were ranked next-to-last. Cost of living was regarded as the least important factor. Local development officials, whose responses are seen in Figure 29, also thought convenient transportation access was the most important location factor. Proximity to suppliers was ranked second, followed by proximity to markets and attitude toward foreign investors. Cost of living and government incentives, in descending order, were the two least important factors. Thus, while state and local officials differed somewhat in the order of their rankings, there was a consensus on what they thought were the most and least important location factors.

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[84] We surveyed state development agencies by compiling a list from the Directory of Incentives for Business Investment and Development in the United States, report to the National Association of State Development Agencies (Washington, D.C.: Urban Institute Press, 1986). Agencies were canvassed by telephone to ascertain the names of directors or staff members, and our questionnaire was mailed to the appropriate person. Thirty-seven responses were received, a rate of approximately 75 percent. The survey of local (i.e., city) development agencies was conducted in much the same way. A sample of 78 cities was chosen randomly, and the survey of city development officials was then conducted through the mail. Twenty-four cities responded, a rate of approximately 30 percent.

[85] Because cost of labor and quality of life are factors over which state and local governments have little control, we did not ask for an evaluation of their importance. In all other respects, however, the list of factors was identical to the one used in our firm survey.

Figure 28

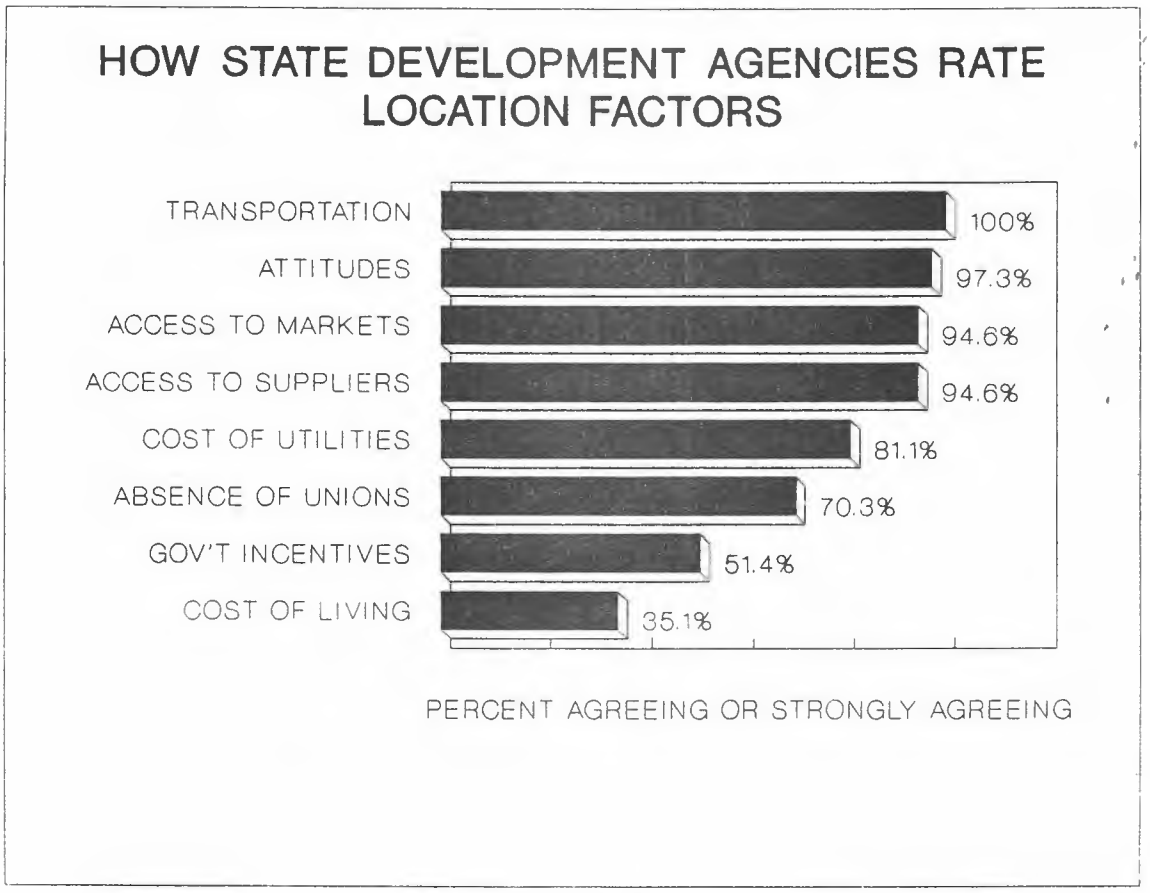
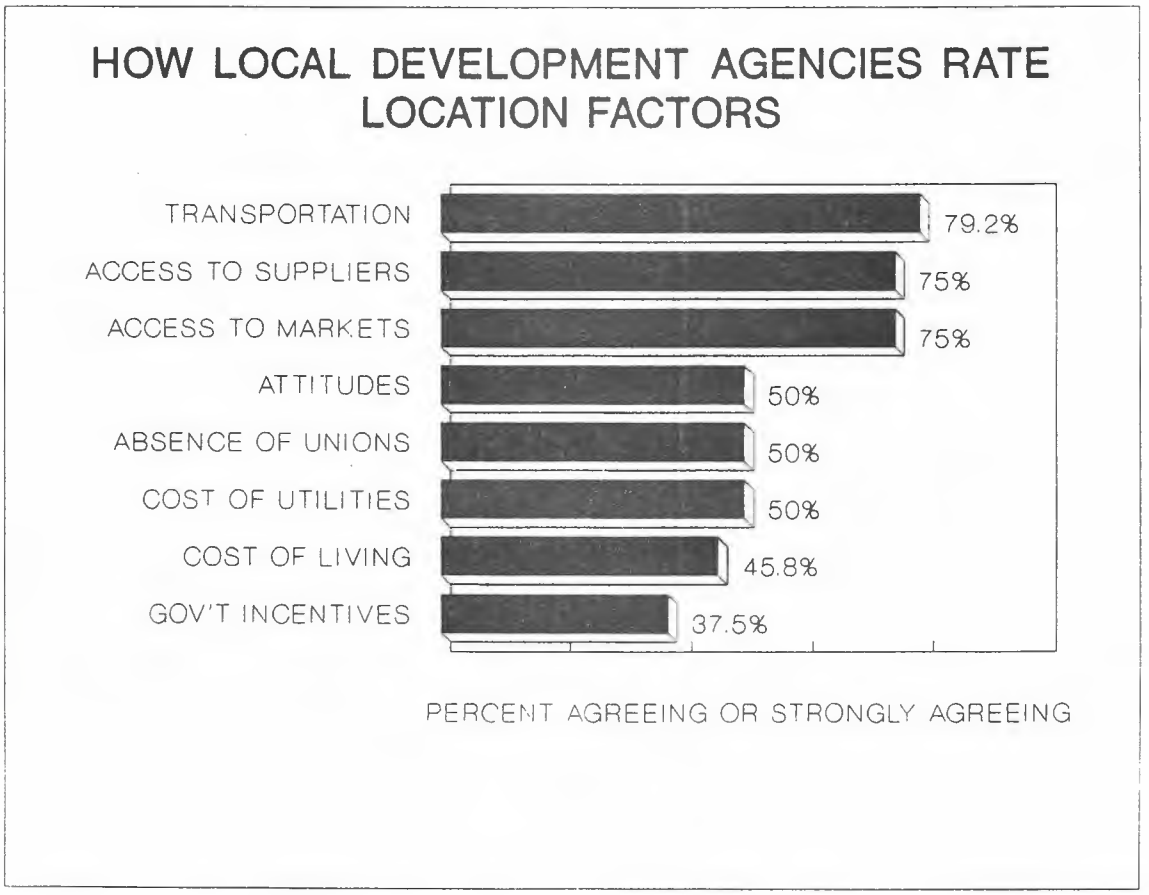


Figure 29



When we compared the location factor rankings of state and local officials with those of foreign managers (see Section 4), there were two noteworthy similarities. First, both groups considered convenient transportation access and proximity to markets important location determinants. While there is little that a city or state can do to improve its geographic location with respect to growing regional markets, this finding suggests that public investment in transportation infrastructure can have a positive influence on foreign plant location.

Second, and perhaps more remarkable, public officials and executives of foreign (and domestic) firms all agreed that government incentives were the least important location factor. This is ironic, and suggests that government officials do not use IDIs because they believe them to be effective instruments for attracting foreign manufacturing firms.[86] Rather, cities and states may feel the need to give IDIs because other cities and states are doing so. Not to give subsidies, many believe, would make them stand out negatively among competitors for FDIUS. Therefore, they are responding to increased interjurisdictional competition for the economic "spread" effects widely believed to flow from the presence of new manufacturing firms in a community.[87]

There were points of dissimilarity as well between public agencies and foreign firms. First, proximity to suppliers, ranked fourth by state and second by city officials, was ranked eighth by foreign firms. State and local officials were clearly out of step with the preferences of foreign managers on this issue. Not only did firms not consider supply proximity important

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[86] One possible explanation is that development officials reported what they believed to be the consensus among development practitioners and academic researchers about the ineffectiveness of IDIs, rather than their own opinions of the programs.

[87] See Anne Bowman, "Competition for Economic Development Among Southeastern Cities," Urban Affairs Quarterly 1988, (23), 4:511-527; Glickman and Woodward, 1989, op. cit.; William Luker, Jr., "Buying Payroll: Industrial Development Incentives and the Privatization of Economic Development," paper presented at the annual meeting of the Western Social Sciences Association, Denver, Colorado, 1988; and William Luker, Jr., "Theoretical Perspectives on Public Sector Restructuring in the United States," paper presented at the annual meeting of the Western Social Sciences Association, Albuquerque, New Mexico, 1989.

in their location decisions, but as we saw earlier, only a small number of firms in our sample purchased their major inputs from manufacturers within the same state. A second difference between the location factor rankings of government and firm officials was that the former ranked attitudes toward foreign investors much higher than did the foreign firms themselves. Attitudes placed fourth and second, respectively, among local and state development agencies, while foreign firms ranked this fifth overall. The magnitude of this difference may be small, but it may also reflect different perspectives with which government and company officials view location factors. A government official charged with the recruitment of foreign-owned enterprises is likely to place a high priority on the attitudes toward foreign investment projected by potential host communities. For the foreign investor, however, such an attitude may be important, but not as critical.

RANKINGS OF GOVERNMENT INCENTIVES BY FIRMS AND DEVELOPMENT AGENCIES

Development Agencies

While local and state development officials believe that their incentives are of little value in attracting FDIUS to their states and communities, the fact remains that these programs are used widely. We asked development officials to rate the effectiveness of the different incentives they offer to foreign firms.[88] We then compared their responses to those provided by the firms in our sample, who ranked the usefulness of any incentives they received. Figures 30 and 31 summarize the rankings provided by local and state development agencies.

State officials thought site selection assistance, employee recruitment and training, and industrial revenue bonds were the most effective IDIs. Following these were tax exemptions

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[88] Local officials were asked to rate 19 IDIs frequently employed by cities or counties, and states were asked to rate 31 IDIs. The list of incentives was drawn from those compiled annually by Industrial Development magazine.

Figure 30

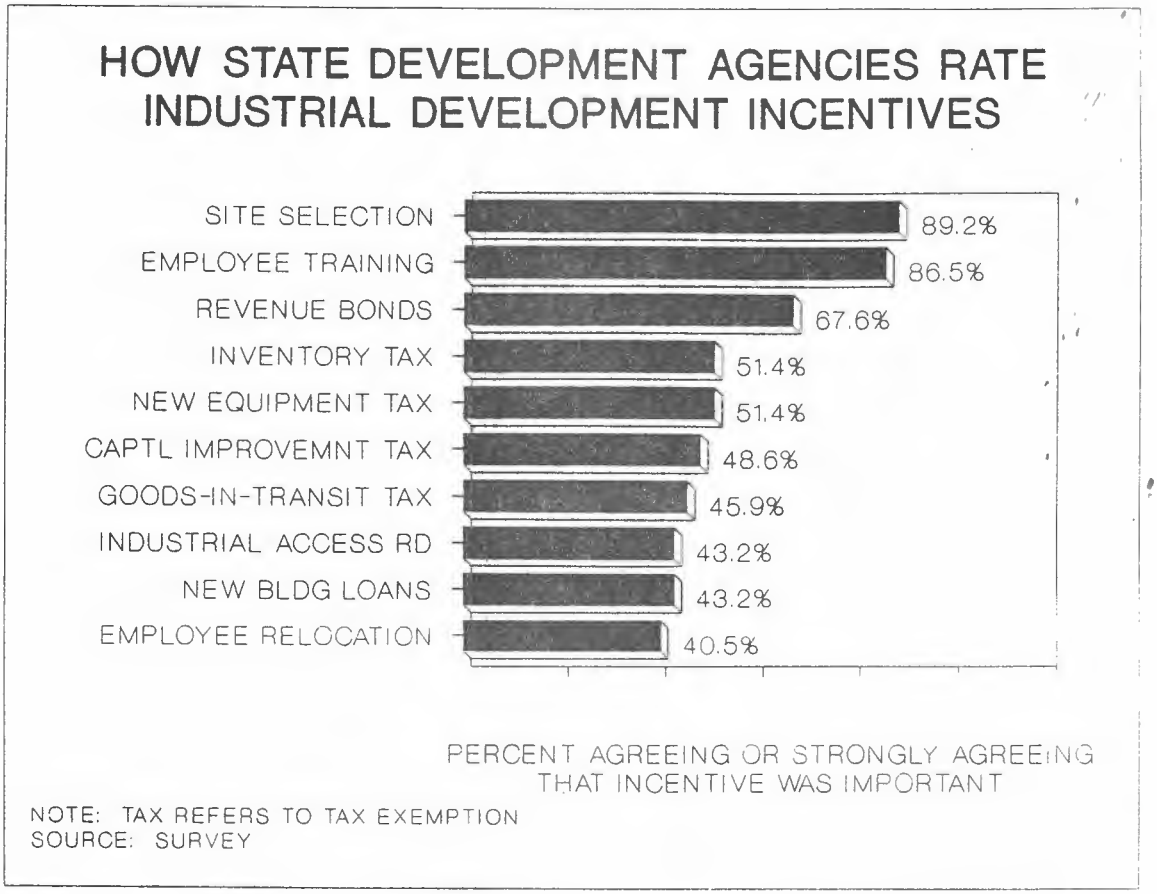
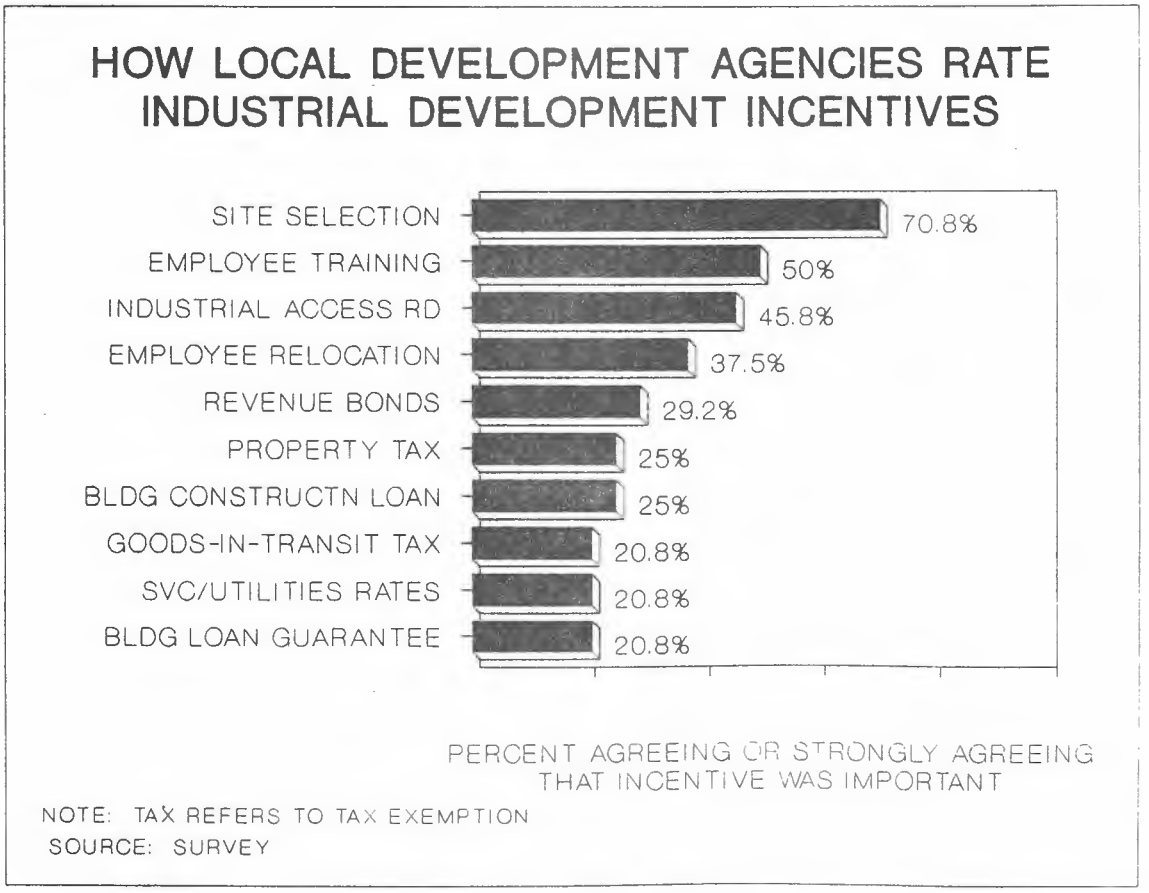


Figure 31



on inventories; tax exemptions on new equipment purchases and goods-in-transit; land, capital improvements, state-provided industrial access roads; state loans for new building construction; and employee relocation assistance.[89] Local agency officials said that the three most effective IDI programs were site selection assistance, employee recruitment and training, and locally provided industrial access roads. The rest of the top-rated IDIs were employee relocation assistance, industrial revenue bonds, local property tax exemption, loans for building construction and purchase, local tax exemptions for goods-in-transit, subsidized rates for services and utilities, and loan guarantees for building purchase and construction.

There were strong similarities between the state and local agency rankings. Seven of the ten most important incentives on the state list also appeared in the top ten of the local list. Site selection assistance and employee recruitment and training were both ranked first and second by the two groups of officials. Additionally, publicly funded industrial access roads, employee relocation assistance, industrial revenue bonds, loans for the purchase or construction of industrial buildings, and tax exemptions for goods-in-transit also appeared in the top ten of both lists.

One significant finding is that enterprise zones, touted by public officials at all levels of government as an effective means of attracting new businesses to communities, were thought by state and local development officers to be the least effective incentive program. It was also the least frequently used. Whether this is due to difficulties communities may have in setting up these programs, or a lack of know-how in making them work effectively, it is clear that the "enterprise zone" concept has yet to become an important economic development tool at the state and local level.[90]

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89 Three of the state-ranked incentives--tax exemptions on inventory, tax exemptions on new equipment purchases, and tax exemptions on land or capital improvements--did not appear on the local list because localities generally cannot grant them.

90 Peter Hall, "The Enterprise Zone Concept: British Origins, American Adaptations," Working Paper no. 350, Institute of Urban and Regional Development, University of California, Berkeley, 1981.

Firms

We asked firms who received some type of government incentive to rate the effectiveness of IDIs commonly used by states and cities. Figure 32 summarizes our findings.[91] Employee training assistance was ranked first, state financial assistance (grants, loans or loan guarantees, or industrial revenue bonds) second, and business assistance (e.g., site selection assistance and "one-stop" government offices for licensing and permitting) was third. Firm-specific physical infrastructure improvements (new industrial access roads or water and wastewater facilities) and local financial assistance were ranked fourth and fifth, respectively. Local and state tax incentives were ranked sixth and seventh, and the provision of manufacturing sites within foreign trade or enterprise zones ranked last.

It was not surprising that foreign firms regarded government assistance with employee recruitment and training as more important than tax write-offs, loans, or new roads. In their location factor rankings, foreign firms were very concerned about labor costs. Government-assisted employee recruitment and training, carried out in many instances through state employment offices, can cut labor costs substantially. It can do this by reducing the training costs for new workers and the unfamiliarity of foreign firms with local labor markets. State financial incentives were ranked highly, due perhaps to their wide availability and the fact that more generous terms for loans, bonds, and grants can often be negotiated by foreign manufacturers with state governments. Business assistance, local financial incentives, and physical infrastructure improvements were more highly regarded than either local or state tax incentives, probably because these three incentives directly reduce the fixed costs of establishing a manufacturing operation. The benefits of tax write-offs or moratoria represent

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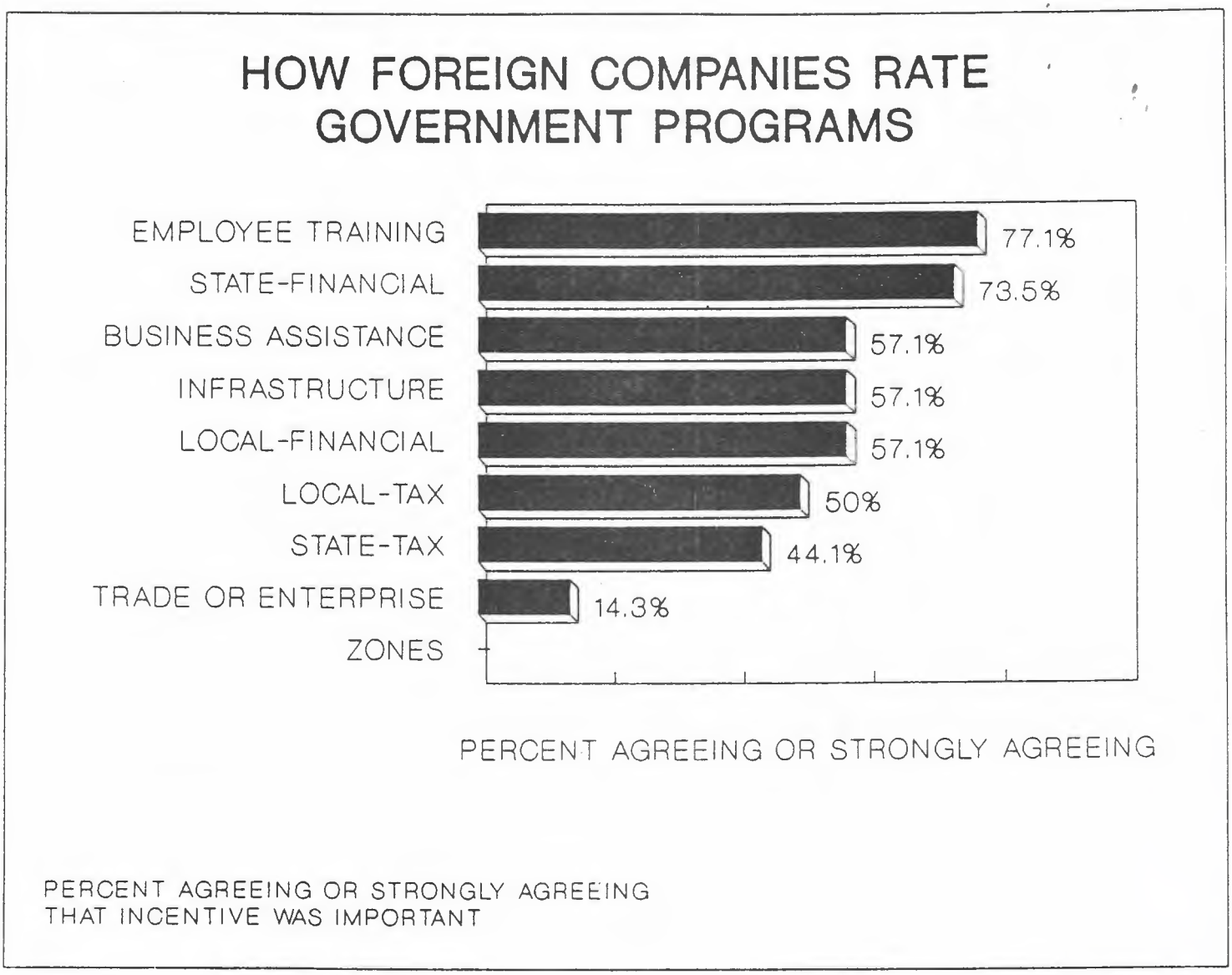
91 The reader should note two points in interpreting these results. First, only one domestic firm responded to these questions, so no comparisons can be made between foreign and domestically owned companies. Second, firms were asked to respond to these questions only if they had actually received an IDI from a state or local government.

Figure 32


HOW FOREIGN COMPANIES RATE GOVERNMENT PROGRAMS
EMPLOYEE TRAINING
STATE-FINANCIAL
BUSINESS ASSISTANCE
INFRASTRUCTURE
LOCAL-FINANCIAL
LOCAL-TAX
STATE-TAX
TRADE OR ENTERPRISE ZONES
77.1%
73.5%
57.1%
57.1%
57.1%
50%
44.1%
14.3%
PERCENT AGREEING OR STRONGLY AGREEING
PERCENT AGREEING OR STRONGLY AGREEING THAT INCENTIVE WAS IMPORTANT

a small share of start-up costs, perhaps a larger but still relatively small percentage of profits, and are spread out over a longer period of time.[92]

Finally, participation in a foreign trade or enterprise zone was ranked by foreign firms as the least useful government incentive. The fact that government officials and manufacturing executives agree on this point casts further doubt on whether enterprise zones will eventually become a widely used tool of economic development.

LOCATION FACTORS AND GOVERNMENT INCENTIVES BY TYPE OF COUNTY

We saw in Section 4 that certain location factors were more important than others in influencing the location decisions of firms. In almost all cases, government incentives were regarded as the least influential location factor. Are government incentives more important for firms in rural than in urban settings? In order to find out, we created contingency tables for each factor and government incentive showing the number that agreed, disagreed, or were neutral within each of four levels of urbanization: large metropolitan areas, small metropolitan areas, adjacent nonmetropolitan areas (i.e. adjacent to a metropolitan area), and non-adjacent, nonmetropolitan areas.[93]

We computed chi-square statistics to determine if a significant correlation existed between the level of urbanization of the firm's location, and its perception of the importance of location factors and incentives. We then created additional contingency tables for each factor and incentive, showing the rank of agreement by nationality of the respondent (i.e., foreign or domestic), controlling for the level of urbanization of the firm's location. Chi-

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92 John Due, "Studies of State-Local Tax Influences on Location of Industry," National Tax Jounral 1961, (XIX), 2: 163-173.

93 These county definitions are slightly different from those used in earlier sections of the report, in that rural counties are included in nonmetropolitan, non-adjacent counties and metropolitan counties are divided into large and small counties. These new definitions were necessary for the contingency table analysis.

square statistics then allowed us to examine whether a significant correlation existed between the nationality of a firm and the importance of location factors and incentives, for firms that located in areas of equal urbanization. Finally, we formulated contingency tables showing the rankings of each factor or incentive by level of urbanization, controlling for nationality. Chi-square tests then showed if there was a significant relationship between the location of the firm and its evaluation of the importance of a particular factor or incentive.

Which Factors Affected Location?

In Section 4, we showed that all firms in our sample ranked cost of labor, access to transportation, and quality of life as the most important location factors. They ranked government services, proximity to suppliers, and government incentives as least important. When we looked at the difference between foreign and domestic firms, we found that domestic firms consider quality of life, cost of living, government services, and cost of utilities more important than foreign firms. In contrast, foreign firms ranked proximity to markets and attitude toward foreign investors as more important than domestic firms. Both ranked access to transportation, cost of labor, and quality of life as important, and absence of unions, government incentives and proximity to suppliers least important.[94] One difference is that domestic firms placed more emphasis on government services, while foreign firms considered proximity to markets more important.

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[94] It should be emphasized that these rankings are relative measures, and that foreign firms also give some importance to cost of living, while domestic firms rank the cost of utilities relatively low on their list (albeit above the foreign ranking).

How do these factors vary as we move from highly urbanized to less urban and rural locations?[95] Some location factors were more important in metropolitan areas. Quality of life, ranked as most important by firms in large metropolitan areas, was less important in increasingly rural areas.[96] Proximity to markets and to suppliers was also more important to firms locating in metropolitan areas. We would expect firms in metropolitan areas to place greater value on quality of life and proximity to suppliers and markets, since these factors are generally more common there. Other factors were more important in nonmetropolitan areas, including access to transportation and the cost of living. In addition, government tax incentives became more important as the level of urbanization decreased, moving from eleventh (the bottom of the list in metropolitan areas) to fourth in non-adjacent, nonmetropolitan areas.[97]

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[95] Two sample problems are worth noting regarding this question. First, our sample response of seven firms in non-adjacent, nonmetropolitan areas is too small to derive significant conclusions about firms in these types of counties. From a total of 105 usable responses, 52 were in large metropolitan areas, 31 in small metropolitan areas; fifteen were in adjacent nonmetropolitan areas, and 7 were in non-adjacent, nonmetropolitan areas. Second, our sample response of one domestic firm in both adjacent and non-adjacent, nonmetropolitan regions is clearly insufficient for reaching significant conclusions about the difference between foreign and domestic firms. Keeping this in mind, our analysis focused on all firms across all levels of urbanization, and then on the difference between foreign and domestic firms in metropolitan areas. References to firms in nonmetropolitan areas refer only to foreign firms.

[96] Quality of life ranked third, fourth, and fifth in small metropolitan, adjacent nonmetropolitan, and non-adjacent, nonmetropolitan regions, respectively.

[97] Government services, absence of unions, and attitude towards foreign investors ranked low in the metropolitan areas in general and in adjacent non-metropolitan areas, but ranked higher in non-adjacent, nonmetropolitan areas. However, because of the scarcity of sample points in this category, it is impossible to say whether there was a change or not. Finally, the cost of labor remains equally ranked as important across all levels of urbanization. Similarly, the cost of utilities remains equally ranked as unimportant (see Appendix Table 1).

The Role of Government Incentives

Next we looked at the importance of government incentives. Although we found that incentives are relatively unimportant location factors, we wanted to see if particular incentives were important to firms in urban and rural settings. Few government incentives changed their rankings as we moved from metropolitan to nonmetropolitan areas. Business assistance programs and physical infrastructure were more important in metropolitan areas. Local financial incentives were more important in nonmetropolitan areas. All other incentives maintained their rank.

The most important government incentive, ranked first for nearly all levels of urbanization, is state financial incentives. State tax incentives, local tax incentives, and employee training assistance (manpower) remained unchanged across levels of urbanization. Trade and enterprise zones were ranked last and least important of all incentives across all levels of urbanization.

COMPARISON OF FOREIGN AND DOMESTIC FIRMS

We found differences between foreign and domestic firms in five of the location factors: proximity to markets, cost of utilities, government services, cost of living, and government tax incentives.[98] In metropolitan regions of all sizes, foreign firms considered proximity to markets more important than domestic firms. The remaining differences occurred for firms in small metropolitan areas. Here, domestic firms valued the cost of utilities and government services more than foreign firms. Foreigners, in contrast, placed greater importance on the cost of living and government tax incentives.

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[98] As noted, because of the small sample size, the comparisons we made between foreign and domestic firms hold only for those in large metropolitan areas and medium to small metropolitan areas. Thus, when we refer here to a decreasing level of urbanization, this implies a movement from large to small metropolitan areas.

Chi-square tests revealed the significance of the relationship between the level of urbanization of a firm's location and its ranking of an incentive.[99] For all firms, the only incentive that turned out to be significantly correlated to the level of urbanization of a firm's location was government tax incentives. This was because 58 percent of the firms in large metropolitan areas believed that government tax incentives were not important to their location decisions, while 50 percent of the firms in small metropolitan regions and nonmetropolitan areas agreed that they were important. When these cross-tabulations were run controlling for nationality, no table that was significant was without empty cells, so the results were not conclusive.

For the tabulations of nationality by factor or incentive, controlling for level of urbanization, more consistent results were found. At all levels of urbanization, except for non-adjacent, nonmetropolitan firms (where the cell counts were too sparse), proximity to markets was found to be significantly different in importance for domestic and foreign firms. As mentioned above, foreign firms consistently ranked it as important, while domestic firms consistently ranked it as unimportant. In small- and medium-sized metropolitan areas and adjacent nonmetropolitan areas, tax incentives were significantly correlated to nationality. Foreign firms consider these incentives to be important, while domestic firms do not. Finally, in large metropolitan areas, absence of unions is related to nationality. Domestic firms were generally neutral about the issue of absence of unions, while foreign firms considered the absence of unions to be definitely unimportant.

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[99] We considered chi-square tests significant at a level of 0.10 or below. We discounted some of the significant chi-square tests, however, because of sparse and empty cells. In general, if no cells were empty, the results of the test were accepted.

CONCLUSIONS

We drew several major conclusions from the rankings of location factors and incentives and the chi-squared tests. First, the level of urbanization is important in the firm's perception of location factors. Initially this can be seen in the fact that nine out of eleven location factors changed their rank when they were compared across the urban-rural continuum. Some chi-squared tests confirmed this conclusion, although they cannot be accepted as definitive because of zero cell counts. The only incentive that yields significant chi-squared results is government tax incentives. Second, the level of urbanization is not important to the firm's perception of the importance of government incentives. Only four of eight incentives changed their rank for different levels of urbanization, and there were no significant chi-squared results. Finally, and perhaps most striking, we have a distinct difference between foreign and domestic firms in their ranking of location factors. Foreign firms place much more importance on proximity to markets than do domestic firms, and domestic firms place much more importance on government tax incentives than foreign firms do. This was consistent across all levels of urbanization and is confirmed by chi-square tests. In addition, while domestic firms are, in general, neutral about the absence of unions as a factor in the location decision, foreign firms discount the importance of absence of unions altogether. This was also confirmed by chi-squared tests.

Finally, when we compared agency and firm rankings, we found that neither local and state development officials nor company executives thought that incentive programs strongly influenced business location decisions. Nevertheless, some types of IDIs were valued by foreign firms more than others. Employee training assistance, state financial incentives, and business assistance were the three most favored. Their high rankings corresponded closely to those of the agencies. Assistance with site selection and employee recruitment and training were ranked first and second by both groups of development specialists. Clearly, then, state and local development agencies are meeting some of the needs of their foreign business clients

with programs that reduce the uncertainty surrounding labor and plant construction start-up costs.

8. FOREIGN INVESTMENT AND PUBLIC POLICY

This study of foreign direct investment provides several important insights into the ways foreign companies have affected U.S. regional economies. As foreign firms have invested here, they have assumed an aura of strangeness; they are perceived as somehow different from their domestically owned counterparts. However, our study shows that this generalization is incorrect. Because the vast majority of foreign investment is through acquisition, both management and workers remain American. Thus upon closer scrutiny of operations, we find (not surprisingly) that foreign companies act much like American firms.

In addition, both American and non-American companies have many of the same goals and organizational styles. They seek strong and growing markets, solid infrastructure, and good workers. Our study shows that foreign and American firms are generally similar in size, the kinds of workers they hire, and the wages they pay. This was particularly true of the behavior of companies in particular industries. For example, when we compared foreign and domestic auto parts firms, with the exception of levels of unionization, the companies' operations were very similar.

That foreign firms exhibit low rates of unionization is an important finding of this study. While these firms appear remarkably similar to American companies, they are certainly not reinforcing long-standing labor practices in the auto industry. As other researchers point out, unions have been important to the economic mobility of minorities and women and have brought relatively high wages to rural areas. The fact that they are going to places where there are no existing plants means that foreign firms cannot be counted on to shore-up local economies where the effects of industrial restructuring are apparent. Clearly the results cry out for further study of this developing phenomenon.

Moreover, factors inducing foreign firms to locate in particular areas of the country are broadly similar to those motivating American companies. Labor costs, access to good transportation, and quality of life were rated as important locational determinants by both foreign and domestic companies. On the other hand, in aggregate, government tax incentives

and access to markets were consistently ranked as relatively unimportant by both sets of firms. The one major divergence of opinion was regarding the importance of access to markets; foreign firms found access important while domestic firms did not.

However, there were other differences as we examined firms along the urban-rural continuum. Government incentives became relatively more important as foreign firms located in rural counties. We interpret this finding as a reiteration of the fact that rural areas face considerable obstacles to development which require government investment to overcome.

Not surprisingly, firms regarded the same location factors important, thus their operational characteristics looked similar--leading to increasingly similar locational patterns. Although FDIUS was heavily concentrated in the Northeast and the South fifteen years ago, decentralization has occurred since then. Now foreign companies locate in very much the same patterns as American companies. Rather than establishing new locational trends, they are reinforcing existing movement.

Only about 14 percent of all FDIUS transactions were investments in rural areas. Much of this was in the South and was confined to relatively few industries such as autos, chemicals, and industrial machinery. And a majority of these investments occurred in rural counties adjacent to cities. However, a reasonable amount of investment has been in new plants, and these greenfield investments create jobs in rural areas. In contrast, a much higher proportion of urban investments were acquisitions, which do not create many jobs. Importantly, these results show that some rural jobs have been created via FDIUS.

But the location pattern of these investments is in most cases only reinforcing the long-standing problems of rural communities. As expected, technical industries remain tied to metropolitan areas where skilled labor and urban amenities can be found. Remote rural areas are not gaining branch plants of more modern innovative or growth-oriented industries.

The effects of auto parts investment are more difficult to comprehend. On the one hand, foreign firms in this sector are locating in remote rural areas. This may mean that less developed areas are currently experiencing the effects of first-time industrialization. On the other hand, the fact that these plants are locating in relative isolation also means that these

investments are not building on an existing base of rural manufacturing. Overall, it does not appear that foreigners are offering significant opportunities to rural workers beyond what was available to them before the influx of FDIUS.

We also examined the important issue of linkages between foreign companies and the U.S. economy. This involved an examination of the propensity of foreigners to buy their inputs locally or non-locally but within the U.S economy. In general, foreign and domestic firms buy a majority of their major inputs outside their local area but within the U.S. Thus the economic benefits of FDIUS are diffused throughout the national economy. At the local and, increasingly, the national level, linkages are an expression of an industry's organization. Examination of the three industries yielded information on the variations that existed between foreign and domestic firms. Explanations for these differences relate directly to competitive conditions in the industries rather than to whether the plant was foreign or domestically owned. The almost complete collapse of domestic semiconductor input manufacturing means supplies must come from non-domestic locations. Therefore, we cannot assume that the effect of direct industry investment will automatically result in an increase in the employment multiplier.

While input purchase locations differed little between foreign and domestic firms, ownership of supplier firms varied considerably. Foreign firms were more likely to buy inputs from other foreign firms. Thus while the direct effects of foreign investment may appear similar to those of domestic investment, we conclude that the indirect effects may differ. Validation of this proposition requires even finer detailed surveys of supplier firms than we were able to accomplish in our survey. However, it is important to note that this problem is not just an issue of foreign ownership. As we showed, American semiconductor firms also purchase a considerable amount of inputs from foreign firms.

What are the implications of our findings for public policy? For local economic development policy our research shows that bids for foreign companies are not likely to garner many jobs and will likely cost a great deal of money in industrial development incentives. Foreign companies did not regard incentives as particularly crucial to their location decisions. But like their American counterparts, they are adept at playing one community against another

to maximize their incentive packages and lower their costs of doing business. Communities cannot easily end their participation in the incentives "game" for fear of being labeled "anti-business."

What can and should localities do? They must structure their incentives packages so that industrial development incentives are attractive both to foreign companies and to the long-run growth policy of their community. Our survey of foreign companies shows that they value training and employment assistance among IDIs. And training increases the soundness of a community's overall economic base: A skilled labor force is helpful in attracting any type of business investment. Also, a more skilled work force is a positive factor in a community's drive for economic self-sufficiency because it helps local firms compete as well. Therefore, we believe that incentives in the form of training or improved education systems (which foreigners also find attractive) are good long-term investments.

Communities should design programs with some measure of accountability. Programs should ensure that loans or grants are scheduled for payback as quickly as possible--reducing long-term economic costs and risks to a community.

Another way to approach foreign investment is to consider the attraction of such investment as a component of a broader economic development program. In addition to trying to attract foreigners, communities should be investigating programs to build up home-grown firms and increase other forms of local economic growth. And investments in education and training show increasing significance in all facets of economic development.

Finally, communities should consider the use of "clawback" provisions. That is, if performance requirements set forth in an agreement with a foreign company (e.g., the creation of a certain number of jobs) are not met, then penalties will be levied to recoup at least a portion of the funds originally expended. Firms and communities should interact through legally binding contracts. Businesses are accustomed to such commitments in their day-to-day operations, and long-term contracts also make corporate planning less vulnerable. Governments should tie their incentives to certain amounts of investment and job creation.

This technique of carrot-and-stick has been used extensively in Europe, and should be attempted here.

APPENDIX A

THE SURVEY AND THE SAMPLE

THE SURVEY INSTRUMENT

We developed a survey instrument to find out what was not known about foreign direct investment and the behavior of foreign firms in the U.S. In formulating the survey questions, we combined knowledge of industrial patterns in the U.S., other studies about FDIUS, and of the industries we wanted to study. Having determined the general lines of inquiry, we formulated specific questions, tried to limit ambiguity, and made the questions as easy as possible to answer and subsequently analyze. The survey was presented among members of the group of interviewers and through a series of interviews with domestic manufacturing establishments chosen at random from the auto parts, semiconductor, and computer industries. The survey instrument contained about 100 questions aimed at understanding the level of integration of foreign firms in the U.S. economy, factors affecting the location decisions of these companies, and the importance of government incentives in determining locations. The questionnaire was segmented into six parts.

The Computer Aided Telephone Interviewing (CATI) system was employed to carry out the survey. We mailed the survey instrument to all prospective respondents one week before the telephone interview took place to allow interviewees to gather the material necessary for their responses. CATI was useful because the interviewers had the questionnaire on a computer screen in front of them as they administered the interview and could type in the responses immediately. Thus, very little coding of the answers was necessary. The survey was completed over a six-week period. One-hundred seventy responses were obtained--a response rate of 35 percent.

SAMPLE CHARACTERISTICS

We drew a sample of foreign firms in the three industries from federal data sources, directories of international firms, foreign investment directories published by state development agencies, and directories published by the commercial attachés of the respective country's embassy or chamber of commerce in the United States. In addition, we relied heavily on industry directories.

We wanted our sample to come as close as possible to the universe of foreign firms in the United States. However, to the extent that our sources were biased by the information available in print and accessible to us, the sample also contained certain potential biases: a country bias, an industry bias, and a regional bias. The country bias occurred because much of the information on foreign investment available to us related to Japanese firms, which comprised up a large percent of our sample. The industry bias resulted from a predominance of firms in the automobile industry. It is difficult to say where this bias comes from, or if, indeed, this is a bias at all. Certainly, there is a majority of investment in the automobile industry, as reflected in our sample. The survey responses show an even greater majority of automobile and auto parts firms, but this is due only to a greater response rate from this industry.

The Foreign Sample

The first step in obtaining the foreign sample was to extract listings of firms in the target industries from the data set containing foreign investments from the International Trade Administration data base. Each of these listings was verified in trade directories, directories of international firms, or directories of foreign firms investing in the United

States. Having exhausted these sources, we used trade directories to update the sample.[1] In the auto parts industry, this included Ward's Automotive News, 1986 Market Data Book Issue, a yearly directory of firms in the auto and auto parts industry. For the computer and semiconductor industries we used the Semiconductor Equipment and Materials Institute (SEMI) directory and the directory of the American Electronics Association (AEA).

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[1] The major sources of firms for our foreign sample were: German American Chamber of Commerce, American Subsidiaries of German Firms, 1986 (New York: German American Chamber of Commerce, 1986); Automotive News, 1986 Market Data Book Issue, pp. 137-201; The British-American Chamber of Commerce, 1987 Subsidiaries Directory (New York: The British-American Chamber of Commerce, 1987); Semiconductor Equipment and Materials Institute, SEMI Membership Directory, 1987-1988 (Mountain View, CA: Semiconductor Equipment and Materials Institute, Inc., 1987); Economic Development and Tourism Department, New Mexico Manufacturing Directory (Santa Fe, NM: Economic Development and Tourism Department, State of New Mexico, 1987); American Electronics Association, 1987 Directory (Santa Clara, CA: American Electronics Association, 1987); Industrial Development, "The New West Virginia," (Charleston, WV: Industrial Development of the State of West Virginia); Chilton Company Publication, 1987 Motor/Age, Who's Who: International Automotive Aftermarket Show (Radnor, PA: Chilton Company, 1987); Centre Francais du Commerce Exterieur, Liste des Filiales Françaises Implantees aux Etats-Unis (Paris, France: Centre Français du Commerce Exterieur, 1987); Massachusetts Office of International Trade and Investment, Massachusetts Foreign Firm Directory, 1985-1986 (Boston, MA: Executive Department, Massachusetts Office of International Trade and Investment, 1985); Florida Department of Commerce, Directory of International Manufacturing and Commercial Operations in Florida (Tallahassee, FL: Florida Department of Commerce, June 1987); Arkansas Industrial Development /commission, "Foreign Investment in Arkansas" (Little Rock, AR: Marketing Division, Arkansas Industrial Development Commission); Advanced Technology Development Center, Georgia High Technology Industries, 1983 (Atlanta, GA: Advanced Technology Development Center, 1983); and Georgia Department of Industry and Trade, Georgia International Facilities (Atlanta, GA: Research Division, Georgia Department of Industry and Trade, 1987).

After completing the review of these directories, we used state directories of foreign firms from 12 state development agencies that responded to our letters.[2] At the same time, directories from foreign chambers of commerce in the United States and commercial sections in foreign embassies were solicited. These directories covered investment from Canada, the United Kingdom, France, Japan, West Germany, and Italy. Finally, after these directories were reviewed, we employed additional sources. These included the Japan Economic Institute newsletter, Japan-U.S. Business Report, showing the latest investments and latest plants built in the U.S., as well as a list of Japanese firms in the auto parts industry provided by the Center for the Study of the Automobile Industry at the University of Michigan.

The Domestic Sample

The domestic sample was gathered from the industry directories mentioned above (e.g., Wards, SEMI and AEA). A random sampling method was used to pick firms. First, we gathered a random number by a computer using a random number-generating function and rounded to the nearest integer. If this number was (say) seven, every seventh firm listed in the appropriate directory would be extracted for the sample. If the firm was not suitable for the sample (i.e., if it was not a manufacturing firm, or if it made electrical appliances that had nothing to do with the computer industry), the next seventh firm was used. We continued with this procedure until the number of firms needed had been gathered.

COMPARING THE SAMPLE WITH THE UNIVERSE

We analyzed the sample of respondents and compared it to our original sample (what is termed the "universe" of foreign firms) in order to get a good idea of the representativeness

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[2] These were: Florida, New Mexico, Indiana, Arkansas, Ohio, New Hampshire, Michigan, Arizona, Rhode Island, Georgia, Massachusetts, and West Virginia.

of our sample. Tables A1 and A2 show the relationship between our sample of respondents and the "universe." Table A1 shows the percentage distribution of industries in foreign and domestic firms; table A2 shows the same distribution for the sample. Comparing the two tables it is clear that for both foreign and domestic firms, we oversampled in the automobile and auto parts industry at the expense of the other two industries. Fifty-two percent of the firms in our foreign investor universe were drawn from the auto parts industry compared with 62 percent of the sample. In the domestic sample we oversampled in the computer industry (40 percent in the universe versus 34 percent in the sample), and oversampled somewhat less in the semiconductor industry (35 percent of the universe and 32 percent of respondents). At the same time, we undersampled in the automobile industry (25 percent in the universe and 33 percent in the sample). This made it difficult to compare the responses of foreign firms in these industries to those of domestic firms, since the differences in industry composition bias the results.

Verifying the Sample

The unit of analysis for the survey was the manufacturing plant. The information required for each manufacturing plant in the sample was collected on a database using DBASE 3 plus. The essential variables in the sample included:

Company Name

Plant Address

Plant Telephone

Headquarters Address

Headquarters Telephone

Foreign Owner

Country of Owner

Industry Code 1 (SIC of primary product)

Industry Code 2 (SIC of secondary product)

Table A1

Percentage Distribution of Firms by Industry
The Initial Universe

	Auto Parts	Computers	Semiconductors	Total
Foreign	51.9	29.7	18.4	100.0
Domestic	33.5	34.0	32.5	100.0
Total	45.3	31.2	23.5	100.0

Table A2

Percentage Distribution of Firms by Industry
The Sample of Respondents

	Auto Parts	Computers	Semiconductors	Total
Foreign	61.9	24.6	13.5	100.0
Domestic	25.0	40.4	34.6	100.0
Total	50.6	29.4	20.0	100.0

Industry Code 3 (SIC of third product)

Primary Contact (plant manager)

Secondary Contact (VP manufacturing)

Third Contact (VP public relations)

In order to verify each of the above variables, we contacted each firm by telephone. We confirmed that it was a manufacturing plant and checked on the name of the plant manager or initial contact.

INTERNATIONAL TRADE ADMINISTRATION DATA

As noted, we began putting together the data base with information on firms from the International Trade Administration (ITA). The original data were supplied on computer tape by Michael Luger of the University of North Carolina at Chapel Hill. It contained information on FDIUS compiled by the ITA and available in hard copy in a series of annual reports (for example, Foreign Direct Investment in the United States, 1983 Transactions, U.S. Department of Commerce, International Trade Administration, September 1984). The data on the tape were updated to 1986 using subsequent ITA annual reports, and variables identifying the county and level of urbanization of each county in which foreign investments took place were added.

The ITA collects its data on FDIUS from a number of sources. A major portion of the information is derived from public secondary sources such as newspapers, magazines, and business and trade journals, as well as from the public files of Federal Regulatory agencies. The primary federal agency sources for publicly available data are the Securities and Exchange Commission, the Federal Trade Commission, and the Federal Reserve Board (FRB). Because of the eclectic nature of the sources for the data, and the fact that the ITA is not always able to verify the information in the reports, the data cannot be considered a compilation of the entire universe of FDIUS transactions. For instance, data on value of transactions are generally unreliable and often missing. In addition, many investments that

are announced are not always completed, and only in 1986 did the ITA begin publishing data exclusively on completed transactions without including pending transactions. Nevertheless, the data are good general indicators of the locational decisions of foreign firms, and of the general volume and orientation of FDIUS, both regionally and by industry.

The ITA reports contain a list of transactions with the following information:

-Name of firm

-SIC code for the industry the firm belongs to

-Location: name of the city in which the firm is located. This variable is missing in some instances.

-State: state in which firm is located.

-Foreign investor: name of foreign investor.

-Transaction type: classifies transactions by acquisitions/mergers, equity increases, joint ventures, new plants and plant expansions, real property (real estate, except private homes and agricultural land), and all others (including branches, agencies, representative offices, stores, outlets, warehouses, and unidentified transactions).

-Value of transactions: the reported total cost of the investment, or the estimated proportion of the investment if a joint venture, regardless of the source or timing of funds.

-Nationality: nationality of the investor.

-Transaction status: for transactions reported prior to 1986, reports whether the transaction is pending or completed at the time of the report.

To the these data, we added the following variables:

-County name and county FIPS code.

-Division, according to the Bureau of the Census regional divisions.

-Urban continuum code, according to the Bureau of the Census classifications of counties by nine types of county, ranging from highly urban to rural.

-Transaction date: the year in which the transaction was reported.

The data contain information on Japanese investments in the U.S.:

-Company name.

-Plant location.

-Ultimate Beneficial Owner(s) (UBO): Japanese corporations that hold 10 percent or more of the stock of the new or acquired firm.

-Share of stock of each UBO.

-Type of investment: new investment or acquisition.

-Product lines.

-Number of employees (approximate or actual number of people employed by the company as of the fourth quarter of 1987)

-Year of operation: the year the plant was opened or acquired by Japanese investors.

APPENDIX B

INPUT-OUTPUT ANALYSIS

INTRODUCTION

In addition to cross-tabular analysis of our survey data, we also employed input-output analysis to try to document the economic development impacts of foreign direct investment in the U.S. This method allowed us to determine whether there were significant differences between foreign-owned (FO) and domestically owned (DO) manufacturing firms in their direct, indirect, and induced effects on the economies of the entire U.S. and of the regions in which they are located. Such differences can occur because of variations in technology, in the geographic pattern of input purchases, and in the amount and cost of labor utilized in production. To determine the possible difference between FO and DO firms, the survey results were used in an input-output model developed by the Regional Science Research Institute (RSRI).[3]

However, there were problems with the I-O analysis because of the sample size. When there were no sample data, a "non-sample" estimate was inserted instead. This non-sample figure was the value of an "average" domestic firm in the industry. This unavoidable problem meant that making comparisons between domestic and foreign companies was very difficult. Thus, we present the technique and results in this appendix. Although the technique is in general a good one, our sample problems make the results in this case not useful for some of our purposes.

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[3] For an overview of regional input-output models, see William Miernyk, Elements of Input-Output Analysis (New York: Random House, 1965).

ELEMENTS OF THE MODEL STRUCTURE IMPORTANT TO THE ANALYSIS

The RSRI model consists of a technology matrix, a set of regionalization coefficients, a labor input row, and a household consumption column. The technology matrix is adapted from the 1977 U.S. Bureau of Economic Analysis (BEA) Input-Output (I-O) models. The 1977 I-O coefficients are the most recent available at the detailed industrial (roughly 500-sector) level. In addition, the RSRI did the necessary adaptions and adjustments, performed the model runs, and developed an updating system to make the I-O coefficients more current.[4] The adjustment procedure for updating the input-output coefficients depends on the trends in interindustry flows between 1977 and 2000 as projected by the Bureau of Labor Statistics. These trends have been calibrated to a 1982 benchmark of the aggregate (85-sector) I-O coefficients forecasted by the BEA.

The second major component of the model is the Regional Purchase Coefficient (RPC). An RPC for a good or service is the proportion of the demand that is fulfilled by the region's own producers (as opposed to being imported from other regions or overseas). Thus the larger an RPC, the more self-sufficient a region is in the production of the corresponding good or

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[4] There is, of course, no guarantee that the projected I-O coefficients accurately reflect future or even current interindustry relationships. The BLS forecast does reflect technological changes, especially in the substitutions among materials in the production of automobiles and many other manufactured products. It also does not take into account substitutions among external (or imported) services and between internal and external services in the operations of many types of businesses. We determined that the BLS trends should be used to update the I-O coefficients to 1988 for this analysis to obtain a better measure of indirect effects. The same models are used for the analysis of both FO and DO firms so that model inaccuracies will, in any case, tend to cancel out in the comparative analysis.

service.[5]

The labor row is the third major element in the model. This set of coefficients specifies the labor earnings (including proprietors' income, but excluding non-cash benefits) per dollar of output for each industry. The original wage coefficients are adapted from the detailed 1977 BEA I-O data (the latest available at the full level of disaggregation). In certain instances, RSRI updated the data to reflect changes that occurred through 1982. Non-cash earnings were deducted from cash wages because we assumed that changes in these earnings did not have the same induced effect on household spending, especially at the regional level. Similarly, proprietors' income was estimated from proportions provided in the BEA Regional Economic Information System data. This was added to wages on the assumption that such income is (to a greater or lesser extent) spent by a proprietor's household as if it were wages.

Although the model calculated the effects of FDIUS in dollar terms, it was also necessary to convert wage effects into employment effects. Therefore, a set of employment coefficients was estimated for each region. These reflect the relationships between wages and employment (suitably adjusted) that are reported annually in County Business Patterns for counties and industries. Because of non-disclosure gaps and other problems with the CBP data, RSRI reestimated the employment coefficients for all regions only every two years. Also, because the 1986 estimates were not completed by the time of this project's execution,

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[5] Regional self-sufficiency depends on the size of the indirect effects of manufacturing activities on other manufacturing and service outputs and employment in the same region. A major portion of the literature evaluates methods for estimating RPCs at the regional level. In the absence of appropriate data on interregional trading relationships, scholars suggest alterative techniques to estimate RPCs. Note that RPCs for the U.S. are relatively easy to determine because of data available on imports. Most U.S. RPCs are greater than .99 for sectors other than manufacturing and certain agricultural products. However, in the last few years, the purchase leakages of many types of electronic, computer, and transportation equipment outside the U.S. have substantially reduced the RPCs for these products.

the basic regional wage/employment relationships in the models are based on 1984 CBP data.[6]

The last major element in the model system is the household consumption column. In addition to the effects of changes in the RPCs (especially due to imports), the BLS projections of household consumption pattern changes were used to modify the household consumption coefficients in a manner analogous to those mentioned above. Again, these adjustments were effective even for 1988-1989 since the consumer expenditure survey (on which the regional household columns are heavily based) was performed in 1982-1983.

We calculated the direct regional import purchases which reflect aggregates of firms identified by 4-digit SIC codes by region and ownership class. These were analyzed and combined into a single column. The process required a number of steps which are discussed below.

METHODOLOGY FOR COMPILING DATA USED IN THE MODEL

1. We recorded general data such as total output, employment, and wages from the survey. If total output was not reported, we used employment or wages with current I-O ratios to estimate output. If none of the above were reported, the observation was discarded. This output was added to the total for the group.
2. We checked the data for material inputs, starting with the largest as measured by value.
   a. If amount of a purchase was not reported, we assumed the largest input to be from the sector, and the input coefficient the same as that specified

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6 All employment coefficients in the models were automatically updated to reflect wage changes reported in the Survey of Current Business. These changes were reported in aggregate only at the national level. The adjustment procedure, therefore, simply maintained the relevant proportions identified at the national level. It did not provide a fully accurate picture of detailed employment effects in individual sectors (especially at the regional level).

in the regular input-output data. We multiplied the coefficient by the output to get a dollar value of purchase from the largest input sector.

b. If the dollar amount of the purchase was reported, we recorded it along with the sector from which the purchase was made even if this did not correspond to the usual largest input sector specified in the standard I-O data.

3. We checked data for the geographic sources of material inputs.

   a. If the source data were not reported, we checked the answer to the question about what percentage of total inputs were bought from within the region and if reported, used this figure as described below. Otherwise, we used the regional purchase coefficient (RPC) for the sector as reported in the RSRI regional I-O data.

   b. If the source was reported, we used as the RPC the percentage of the input reported to be bought from within the region in question.

   c. If the only source reported was for material inputs as a group, we recorded this percentage but waited until all material inputs for the firm were analyzed before establishing individual RPCs.

4. Then we calculated within-region purchases by the firms.

   a. Multiply each purchase, as determined above by its RPC as established in (3). If (3) (c) does not apply, add the resulting regional purchases to the total purchases from the corresponding regional sectors.

   b. If (3) (c) applies, add the purchases together, regardless of sector, in a side calculation. Divide this total by the firm's output, and adjust the individual regional purchases proportionately so that the ratio of their total to output will be the same as the percentage reported for material inputs in general.

5. We repeated these procedures for remaining material and service inputs reported in the survey.

6. We then calculated employment and wages

   a. If neither total wages nor employment were reported by the firm, we used the ratios of employment and wages to output to obtain estimates to be added to the group totals.

   b. If both employment and wages were reported, no further calculation was necessary. If only one was reported, we used the ratios in the RSRI regional data to obtain the other. In either case, we added these to the group totals.

7. We repeated steps 1 through 6 for remaining firms in the group until a set of major input purchases, by sectoral source, from the subject region was assembled. For the remaining minor purchases in the industry's technology, we used the total output multiplied by the I-O coefficients in the model and the corresponding RPCs provided by RSRI.

8. This full set of input purchases was then adjusted proportionately so that it corresponded to an arbitrary total output for comparison purposes. In this analysis, $10 million of output was used for each industry in each region. Employment and wages, as established in step 5, were similarly adjusted.

9. We used the input purchase column in the form of a "final demand disturbance" in calculations with the region's I-O model. Thus, we used the specified input purchases directly to generate indirect and induced effects via the usual I-O (round-by-round) calculation method. The wages established from the survey data were used in the initial feedback to household purchases, and the corresponding direct employment was used as the base in calculating employment multiplier effects.

10. The above was repeated for each of the selected industries and regions. Where there were insufficient survey responses from DO firms for comparison purposes, a "non-sample" run of $10 million of output for the subject industry was performed simply using the standard RSRI model, unadjusted, for the

region in question.

APPENDIX C

TABLES 1-18

TABLE 1. INPUT PURCHASE LOCATION FOR SECOND MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT

FREQUENCY PERCENT ROW PCT COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	6	17	17	40
	5.00	14.17	14.17	33.33
	15.00	42.50	42.50	
	18.75	48.57	32.08	
FOREIGN	26	18	36	80
	21.67	15.00	30.00	66.67
	32.50	22.50	45.00	
	81.25	51.43	67.92	
TOTAL	32	35	53	120
	26.67	29.17	44.17	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	6.757	0.034

TABLE 1A. INPUT PURCHASE LOCATION FOR SECOND MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT
COMPARISON OF EXPECTED AND ACTUAL FREQUENCY

FREQUENCY EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	6	17	17	40
	10.7	11.7	17.7	
FOREIGN	26	18	36	80
	21.3	23.3	35.3	
TOTAL	32	35	53	120

TABLE 2. INPUT PURCHASE LOCATION FOR THIRD MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT

FREQUENCY PERCENT ROW PCT COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	4	13	17	34
	4.30	13.98	18.28	36.56
	11.76	38.24	50.00	
	17.39	44.83	41.46	
FOREIGN	19	16	24	59
	20.43	17.20	25.81	63.44
	32.20	27.12	40.68	
	82.61	55.17	58.54	
TOTAL	23	29	41	93
	24.73	31.18	44.09	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	4.923	0.085

TABLE 2A. INPUT PURCHASE LOCATION FOR THIRD MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT
COMPARISON OF EXPECTED AND ACTUAL FREQUENCY

FREQUENCY EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	4	13	17	34
	8.4	10.6	15.0	
FOREIGN	19	16	24	59
	14.6	18.4	26.0	
TOTAL	23	29	41	93

TABLE 3. INPUT PURCHASE LOCATION FOR FIRST MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT: SEMICONDUCTOR INDUSTRY

FREQUENCY / PERCENT / ROW PCT / COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	6	9	9	24
	14.63	21.95	21.95	58.54
	25.00	37.50	37.50	
	40.00	90.00	56.25	
FOREIGN	9	1	7	17
	21.95	2.44	17.07	41.46
	52.94	5.88	41.18	
	60.00	10.00	43.75	
TOTAL	15	10	16	41
	36.59	24.39	39.02	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	6.237	0.044

TABLE 3A. INPUT PURCHASE LOCATION FOR FIRST MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT: SEMICONDUCTOR INDUSTRY
COMPARISON OF EXPECTED AND ACTUAL FREQUENCY

FREQUENCY / EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	6	9	9	24
	8.8	5.9	9.4	
FOREIGN	9	1	7	17
	6.2	4.1	6.6	
TOTAL	15	10	16	41

TABLE 4. INPUT PURCHASE LOCATION FOR FIRST MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT: AUTO PARTS INDUSTRY

FREQUENCY PERCENT ROW PCT COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	2	0	9	11
	3.03	0.00	13.64	16.67
	18.18	0.00	81.82	
	9.52	0.00	26.47	
FOREIGN	19	11	25	55
	28.79	16.67	37.88	83.33
	34.55	20.00	45.45	
	90.48	100.00	73.53	
TOTAL	21	11	34	66
	31.82	16.67	51.52	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	5.324	0.070

TABLE 4A. INPUT PURCHASE LOCATION FOR FIRST MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT: AUTO PARTS INDUSTRY
COMPARISON OF EXPECTED AND ACTUAL FREQUENCY

FREQUENCY EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	2	0	9	11
	3.5	1.8	5.7	
FOREIGN	19	11	25	55
	17.5	9.2	28.3	
TOTAL	21	11	34	66

TABLE 5. INPUT PURCHASE LOCATION FOR FIRST MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT: COMPUTER INDUSTRY

FREQUENCY / PERCENT / ROW PCT / COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	5	1	1	7
	20.00	4.00	4.00	28.00
	71.43	14.29	14.29	
	38.46	25.00	12.50	
FOREIGN	8	3	7	18
	32.00	12.00	28.00	72.00
	44.44	16.67	38.89	
	61.54	75.00	87.50	
TOTAL	13	4	8	25
	52.00	16.00	32.00	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	1.677	0.432

TABLE 5A. INPUT PURCHASE LOCATION FOR FIRST MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT: COMPUTER INDUSTRY
COMPARISON OF EXPECTED AND ACTUAL FREQUENCY

FREQUENCY / EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	5	1	1	7
	3.6	1.1	2.2	
FOREIGN	8	3	7	18
	9.4	2.9	5.8	
TOTAL	13	4	8	25

TABLE 6. INPUT PURCHASE LOCATION FOR SECOND MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT: SEMICONDUCTOR INDUSTRY

FREQUENCY PERCENT ROW PCT COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	6	17	17	40
	5.00	14.17	14.17	33.33
	15.00	42.50	42.50	
	18.75	48.57	32.08	
FOREIGN	26	18	36	80
	21.67	15.00	30.00	66.67
	32.50	22.50	45.00	
	81.25	51.43	67.92	
TOTAL	32	35	53	120
	26.67	29.17	44.17	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	6.757	0.034

TABLE 6A. INPUT PURCHASE LOCATION FOR SECOND MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT: SEMICONDUCTOR INDUSTRY
COMPARISON OF ACTUAL AND EXPECTED FREQUENCY

FREQUENCY EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	6	17	17	40
	10.7	11.7	17.7	
FOREIGN	26	18	36	80
	21.3	23.3	35.3	
TOTAL	32	35	53	120

TABLE 7. INPUT PURCHASE LOCATION FOR SECOND MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT: COMPUTER INDUSTRY

FREQUENCY PERCENT ROW PCT COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	6	17	17	40
	5.00	14.17	14.17	33.33
	15.00	42.50	42.50	
	18.75	48.57	32.08	
FOREIGN	26	18	36	80
	21.67	15.00	30.00	66.67
	32.50	22.50	45.00	
	81.25	51.43	67.92	
TOTAL	32	35	53	120
	26.67	29.17	44.17	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	6.757	0.034

TABLE 7A. INPUT PURCHASE LOCATION FOR SECOND MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT: COMPUTER INDUSTRY
COMPARISON OF ACTUAL AND EXPECTED FREQUENCY

FREQUENCY EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	6	17	17	40
	10.7	11.7	17.7	
FOREIGN	26	18	36	80
	21.3	23.3	35.3	
TOTAL	32	35	53	120

TABLE 8. INPUT PURCHASE LOCATION FOR SECOND MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT: AUTO PARTS INDUSTRY

FREQUENCY / PERCENT / ROW PCT / COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	6	17	17	40
	5.00	14.17	14.17	33.33
	15.00	42.50	42.50	
	18.75	48.57	32.08	
FOREIGN	26	18	36	80
	21.67	15.00	30.00	66.67
	32.50	22.50	45.00	
	81.25	51.43	67.92	
TOTAL	32	35	53	120
	26.67	29.17	44.17	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	6.757	0.034

TABLE 8A. INPUT PURCHASE LOCATION FOR SECOND MAJOR INPUT
FOREIGN AND DOMESTIC INVESTMENT: AUTO PARTS INDUSTRY
COMPARISON OF ACTUAL AND EXPECTED FREQUENCY

FREQUENCY / EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	6	17	17	40
	10.7	11.7	17.7	
FOREIGN	26	18	36	80
	21.3	23.3	35.3	
TOTAL	32	35	53	120

TABLE 9. INPUT PURCHASE PATTERN OF FOREIGN AND DOMESTIC FIRMS LEASING THEIR SITES

FREQUENCY / PERCENT / ROW PCT / COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	10	4	7	21
	28.57	11.43	20.00	60.00
	47.62	19.05	33.33	
	45.45	100.00	77.78	
FOREIGN	12	0	2	14
	34.29	0.00	5.71	40.00
	85.71	0.00	14.29	
	54.55	0.00	22.22	
TOTAL	22	4	9	35
	62.86	11.43	25.71	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	5.791	0.055

TABLE 9A. INPUT PURCHASING PATTERN OF FOREIGN AND DOMESTIC FIRMS LEASING THEIR SITES
COMPARISON OF ACTUAL AND EXPECTED FREQUENCY

FREQUENCY / EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	10	4	7	21
	13.2	2.4	5.4	
FOREIGN	12	0	2	14
	8.8	1.6	3.6	
TOTAL	22	4	9	35

TABLE 10. INPUT PURCHASE PATTERN OF FOREIGN AND DOMESTIC FIRMS CONSTRUCTING THEIR SITES

FREQUENCY PERCENT ROW PCT COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	2 3.64 22.22 11.76	1 1.82 11.11 11.11	6 10.91 66.67 20.69	9 16.36
FOREIGN	15 27.27 32.61 88.24	8 14.55 17.39 88.89	23 41.82 50.00 79.31	46 83.64
TOTAL	17 30.91	9 16.36	29 52.73	55 100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	0.841	0.657

TABLE 10A. INPUT PURCHASING PATTERN OF FOREIGN AND DOMESTIC FIRMS CONSTRUCTING THEIR SITES
COMPARISON OF ACTUAL AND EXPECTED FREQUENCY

FREQUENCY EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	2 2.8	1 1.5	6 4.7	9
FOREIGN	15 14.2	8 7.5	23 24.3	46
TOTAL	17	9	29	55

TABLE 11. INPUT PURCHASE PATTERN OF FOREIGN AND DOMESTIC FIRMS PURCHASING THEIR SITES

FREQUENCY / PERCENT / ROW PCT / COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	0	0	3	3
	0.00	0.00	16.67	16.67
	0.00	0.00	100.00	
	0.00	0.00	30.00	
FOREIGN	4	4	7	15
	22.22	22.22	38.89	83.33
	26.67	26.67	46.67	
	100.00	100.00	70.00	
TOTAL	4	4	10	18
	22.22	22.22	55.56	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	2.880	0.237

TABLE 11A. INPUT PURCHASING PATTERN OF FOREIGN AND DOMESTIC FIRMS PURCHASING THEIR SITES
COMPARISON OF ACTUAL AND EXPECTED FREQUENCY

FREQUENCY / EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	0	0	3	3
	0.7	0.7	1.7	
FOREIGN	4	4	7	15
	3.3	3.3	8.3	
TOTAL	4	4	10	18

TABLE 12. INPUT PURCHASE LOCATION OF FOREIGN AND DOMESTIC ESTABLISHMENTS STARTED BEFORE 1960

FREQUENCY / PERCENT / ROW PCT / COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	2	2	5	9
	18.18	18.18	45.45	81.82
	22.22	22.22	55.56	
	100.00	50.00	100.00	
FOREIGN	0	2	0	2
	0.00	18.18	0.00	18.18
	0.00	100.00	0.00	
	0.00	50.00	0.00	
TOTAL	2	4	5	11
	18.18	36.36	45.45	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	4.278	0.118

TABLE 12A. INPUT PURCHASING LOCATION OF FOREIGN AND DOMESTIC ESTABLISHMENTS STARTED BEFORE 1906
COMPARISON OF ACTUAL AND EXPECTED FREQUENCY

FREQUENCY / EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	2	2	5	9
	1.6	3.3	4.1	
FOREIGN	0	2	0	2
	0.4	0.7	0.9	
TOTAL	2	4	5	11

TABLE 13. INPUT PURCHASE LOCATION OF FOREIGN AND DOMESTIC ESTABLISHMENTS STARTED BETWEEN 1960 AND 1979

FREQUENCY / PERCENT / ROW PCT / COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	2	2	4	8
	5.56	5.56	11.11	22.22
	25.00	25.00	50.00	
	14.29	50.00	22.22	
FOREIGN	12	2	14	28
	33.33	5.56	38.89	77.78
	42.86	7.14	50.00	
	85.71	50.00	77.78	
TOTAL	14	4	18	36
	38.89	11.11	50.00	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	2.296	0.317

TABLE 13A. INPUT PURCHASING LOCATION OF FOREIGN AND DOMESTIC ESTABLISHMENTS STARTED BETWEEN 1906 AND 1979 COMPARISON OF ACTUAL AND EXPECTED FREQUENCY

FREQUENCY / EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	2	2	4	8
	3.1	0.9	4.0	
FOREIGN	12	2	14	28
	10.9	3.1	14.0	
TOTAL	14	4	18	36

TABLE 14. INPUT PURCHASE LOCATION OF FOREIGN AND DOMESTIC ESTABLISHMENTS STARTED BETWEEN 1980 AND 1984

FREQUENCY / PERCENT / ROW PCT / COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	4	2	4	10
	12.12	6.06	12.12	30.30
	40.00	20.00	40.00	
	36.36	25.00	28.57	
FOREIGN	7	6	10	23
	21.21	18.18	30.30	69.70
	30.43	26.09	43.48	
	63.64	75.00	71.43	
TOTAL	11	8	14	33
	33.33	24.24	42.42	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	0.318	0.853

TABLE 14A. INPUT PURCHASING LOCATION OF FOREIGN AND DOMESTIC ESTABLISHMENTS STARTED BETWEEN 1980 AND 1984 COMPARISON OF ACTUAL AND EXPECTED FREQUENCY

FREQUENCY / EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	4	2	4	10
	3.3	2.4	4.2	
FOREIGN	7	6	10	23
	7.7	5.6	9.8	
TOTAL	11	8	14	33

TABLE 15. INPUT PURCHASE LOCATION OF FOREIGN AND DOMESTIC ESTABLISHMENTS STARTED BETWEEN 1985 AND 1988

FREQUENCY / PERCENT / ROW PCT / COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	5	3	5	13
	10.64	6.38	10.64	27.66
	38.46	23.08	38.46	
	23.81	37.50	27.78	
FOREIGN	16	5	13	34
	34.04	10.64	27.66	72.34
	47.06	14.71	38.24	
	76.19	62.50	72.22	
TOTAL	21	8	18	47
	44.68	17.02	38.30	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	0.543	0.762

TABLE 15A. INPUT PURCHASING LOCATION OF FOREIGN AND DOMESTIC ESTABLISHMENTS STARTED BETWEEN 1985 AND 1988 COMPARISON OF ACTUAL AND EXPECTED FREQUENCY

FREQUENCY / EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	5	3	5	13
	5.8	2.2	5.0	
FOREIGN	16	5	13	34
	15.2	5.8	13.0	
TOTAL	21	8	18	47

TABLE 16. INPUT PURCHASE LOCATION OF FOREIGN AND DOMESTIC ESTABLISHMENTS WITH 0 TO 99 EMPLOYEES

FREQUENCY PERCENT ROW PCT COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	7	6	8	21
	11.86	10.17	13.56	35.59
	33.33	28.57	38.10	
	29.17	42.86	38.10	
FOREIGN	17	8	13	38
	28.81	13.56	22.03	64.41
	44.74	21.05	34.21	
	70.83	57.14	61.90	
TOTAL	24	14	21	59
	40.68	23.73	35.59	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	0.812	0.666

TABLE 16A. INPUT PURCHASING LOCATION OF FOREIGN AND DOMESTIC ESTABLISHMENTS WITH 0 TO 99 EMPLOYEES
COMPARISON OF ACTUAL AND EXPECTED FREQUENCY

FREQUENCY EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	7	6	8	21
	8.5	5.0	7.5	
FOREIGN	17	8	13	38
	15.5	9.0	13.5	
TOTAL	24	14	21	59

TABLE 17. INPUT PURCHASE LOCATION OF FOREIGN AND DOMESTIC ESTABLISHMENTS WITH 100 TO 250 EMPLOYEES

FREQUENCY / PERCENT / ROW PCT / COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	3	1	2	6
	9.68	3.23	6.45	19.35
	50.00	16.67	33.33	
	23.08	20.00	15.38	
FOREIGN	10	4	11	25
	32.26	12.90	35.48	80.65
	40.00	16.00	44.00	
	76.92	80.00	84.62	
TOTAL	13	5	13	31
	41.94	16.13	41.94	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	0.248	0.883

TABLE 17A. INPUT PURCHASING LOCATION OF FOREIGN AND DOMESTIC ESTABLISHMENTS WITH 100 TO 250 EMPLOYEES COMPARISON OF ACTUAL AND EXPECTED FREQUENCY

FREQUENCY / EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	3	1	2	6
	2.5	1.0	2.5	
FOREIGN	10	4	11	25
	10.5	4.0	10.5	
TOTAL	13	5	13	31

TABLE 18. INPUT PURCHASE LOCATION OF FOREIGN AND DOMESTIC ESTABLISHMENTS WITH 250 OR MORE EMPLOYEES

FREQUENCY PERCENT ROW PCT COL PCT	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	3	3	9	15
	7.14	7.14	21.43	35.71
	20.00	20.00	60.00	
	25.00	50.00	37.50	
FOREIGN	9	3	15	27
	21.43	7.14	35.71	64.29
	33.33	11.11	55.56	
	75.00	50.00	62.50	
TOTAL	12	6	24	42
	28.57	14.29	57.14	100.00

STATISTIC	DF	VALUE	PROB
CHI-SQUARE	2	1.167	0.558

TABLE 18A. INPUT PURCHASING LOCATION OF FOREIGN AND DOMESTIC ESTABLISHMENTS WITH 250 OR MORE EMPLOYEES COMPARISON OF ACTUAL AND EXPECTED FREQUENCY

FREQUENCY EXPECTED	FOREIGN	IN STATE	OUT OF STATE	TOTAL
DOMESTIC	3	3	9	15
	4.3	2.1	8.6	
FOREIGN	9	3	15	27
	7.7	3.9	15.4	
TOTAL	12	6	24	42