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**Michigan's Stake in
International Trade and Investment**

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ABSTRACT

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This paper provides descriptive data on the interactions of the economy of the State of Michigan with the rest of the world outside the United States. Most of the focus is on international trade and investment, with specific attention to Michigan's exports and the foreign ownership of establishments in Michigan. For both of these, data are presented on the size of these international transactions by value and by employment, comparison of these with other states, their industry composition, and their foreign-country composition. It is noted that Michigan is one of the largest exporting states in the nation, with the largest share of these exports being in the transportation equipment industry, and with most of these exports destined for Canada and Mexico. Foreign ownership is also important in Michigan, although not as important as trade.

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I. Introduction

At first glance the State of Michigan appears geographically to be rather central to the United States, and certainly those of us who live here tend to think of ourselves as part of America's heartland. But true as this may be, it is also true that Michigan interacts extensively with the rest of the world, in part across our border with Canada, but also with many other more distant countries through international commerce. This chapter documents the extent of that interaction.

Although international economic interactions take many forms, there are two that are especially important in their implications for the Michigan economy: international trade, and international investment. In trade, Michigan firms and consumers purchase many goods and services from foreign firms, and these imports provide a low-cost source of many of the things we depend upon for our standard of living, as well as essential inputs for Michigan's own producers. More distinctive, however, and perhaps more important for the health of the Michigan economy, are our exports. As we will see, Michigan exports more each year than all but three other states. In consequence, a significant portion of Michigan's economy, including its employment of labor, depends

on this access to world markets. Section II of this chapter will use available data to indicate what Michigan's exports consist of, what countries and parts of the world we export to, how our exports have changed over time, and how Michigan compares with other states along these dimensions. It will also examine how important these exports are for jobs in the Michigan economy, both directly and indirectly.

International investment includes both U.S. investment abroad and foreign firms' investment in the United States. Much of this investment is financial, but an important part of it, called Foreign Direct Investment (FDI), consists of the acquisition of real productive capital in another country, specifically the ownership by foreigners of establishments in the United States, and the ownership by U.S. firms of establishments abroad. Of these two, it is the former that has the most direct and obvious impact on the local economy, and fortunately there exist good data on the extent of such foreign ownership at the state level. This will be reported in section III, where we will see just how much of the Michigan economy is owned by foreigners, who they are, and what they do.

These two sections constitute the bulk of the chapter, for two reasons. First, there is now a large amount of data at the state level, both on exports and on inward FDI. And second, these are the two forms of international transaction that relate directly to economic activity in Michigan, especially jobs. Having documented the extent and nature of these international connections in sections II and III, the chapter concludes in section IV by discussing how these connections may matter for residents of Michigan. To see

* I have benefited from conversations on the topic of this paper with Joan Crary, George Fulton, Bob Lipsey, Dave Richardson, Bob Stern, and other participants in the Michigan at the Millennium project, as well as from detailed suggestion from the editors of the volume.

this, we look first at how much we gain from this international trade and investment, then turn to the extent to which these connections expose us to the effects of changes on international markets.

II. Michigan's Exports

Table 1 reports the levels of merchandise exports, in real 2000 dollars, for Michigan and for the United States as a whole, beginning in 1993, which is the first year for which trade data are available in any form by state.¹² <insert table 1> It is clear that Michigan's exports grew substantially. Michigan's share of U.S. exports has hovered around six percent during this period, which is almost twice Michigan's share of Gross State Product (GSP).³

This suggests, correctly, that Michigan is one of the country's largest exporting states. We can see this clearly in Tables 2 and 3, which report the ten largest exporting U.S. states by dollar value of exports and by percentage of GSP respectively. Michigan ranks number four on both lists, surpassed only by California, Texas, and (barely) New York in terms of absolute exports, and by Washington State, Vermont, and Delaware in

¹ For the purposes of this chapter, it would obviously be valuable to have data on trade from earlier years, but unfortunately these do not seem to have been collected, even in forms that might be less useful than what we report here. Furthermore, as will become clear below, while some of the available data start in 1993, other items begin only in 1997. Therefore throughout this section, we can provide only a tantalizing taste of how Michigan's trade may have changed over time.

² These and other data on state merchandise exports are from Office of Trade and Economic Analysis, 2002. The data are taken in turn from the Census Bureau, and are based upon "exporter location," that is, the state in which the exporting company is located and not where the exports happen to leave the country.

³ GSP is available from Bureau of Economic Analysis (2001), but only through 1999. In 1999, Michigan's share of total United States GSP was 3.3%.

terms of the percentage of its gross product that it exports.⁴ No state surpasses Michigan on both lists.

<insert table 2>

<insert table 3>

The tables also report how these values have changed over the span of available data. The value of Michigan's exports has grown by more than that of any other state in the top ten by export value. In addition, its exported share of GSP has grown by more than that of any other state in that top-ten list. Any way you look at it, it seems that Michigan is a major exporter of merchandise.⁵

These data include only exports of merchandise, and they exclude services, the trade in which is of increasing importance in the United States and the world. We will look in more detail at some of Michigan's service exports below, but we should say at the outset that Michigan's exports of services appear to be somewhat less important than its exports of goods. Data are available at the state level only for selected categories of services, but among these, even in the sector in which Michigan seems to export the most

⁴ Such percentages can be somewhat misleading, since GSP, like national GDP, is a value added measure while the value of exports is not. Thus it is possible for an economic unit to export more than 100% of its GSP or GDP, as indeed is the case for small countries like Singapore and Hong Kong, whose huge exports embody a large amount of imports. For comparison across economic units, such as is done here, this should not be a problem.

⁵ Trade data, such as are reported here, are far from perfect. The best are collected by customs officers who monitor imports, and the data can be presumed to be fairly complete in developed countries such as the United States and many of the countries that we trade with. However, even here the values of reported trade may be subject to distortion, as importers seek to avoid paying customs duties. The export data that we use here, on the other hand, are more difficult to collect, since exporters do not pass through customs as they leave the country and are instead simply required to report their shipments to the government. In recent years, deregulation of trucking in the United States has meant that outward shipments have been increasingly carried by truckers who failed to report, and the United States now collects much of its export data with the help of Canadian customs. These and other problems with the trade data pose some difficulties for econometric analysis and other uses, but should not matter much for the broader picture that we are trying to draw here.

– professional, scientific, and technical services – Michigan ranks only number 13 out of the 50 states.

The message, then, is that the State of Michigan is one of the largest exporters in the United States economy, with these exports concentrated primarily in exports of merchandise, not services.

What Does Michigan Export?

The answer here is easy and obvious: cars. Actually, the available data are not fine enough to identify cars *per se*, or even the more relevant category “road motor vehicles and parts.” Instead, they aggregate these with other vehicles, such as aircraft, in the category “transportation equipment.”

Michigan’s largest export categories are shown in Table 4, while the available breakdown of these exports by industry is shown in Table 5 for manufactures and Table 6 for agriculture and other commodities. <insert table 4> The tables also show the percent change in exports over time for the available data, which unfortunately in this case is only from 1997 to 2000. This is far too short a time period to provide good evidence of trends, but it is all that we have.

From Table 4, the dominance of transportation equipment in Michigan’s exports is obvious, constituting well over half of total state exports and growing at close to the same rate as total exports. Second place among state manufactured exports is occupied by machinery, with exports less than a quarter as large as in transportation equipment. And outside of manufactures, in agriculture and other commodities, exports are essentially negligible. Possible signs of change in the future, however, can be seen in two

sectors: chemical manufactures, and computers and electronic products. Although the level of state exports of these industries is not much more than one tenth of transport equipment exports, exports in both of these industries have recently been growing several times as fast as exports of the latter, at least in the few recent years for which we have data.

<insert table 5>

<insert table 6>

A more complete list of state manufactured exports is provided in Table 5. Table 6 does the same for goods exports outside of manufactures. If there is a message here, it is that Michigan's exports are not only small but declining in sectors where the state lacks comparative advantage, such as labor-intensive apparel and leather products, and land-intensive agriculture and processed food and beverages. It is perhaps interesting, in contrast, that recent export growth has been quite strong in several sectors, including animal production; fishing, hunting and trapping; and mining. However, the value of mining exports, especially, is very sensitive to price changes, and all of these categories start from a very small base, so too much should not be made of these large percentage changes.

As noted above, data at the state level on service exports are even harder to come by than data on goods exports, and there does not seem to be anything available that is at all comprehensive. What we do have are data for just a handful of service sectors, reported by the Coalition of Service Industries (2002). Table 7 shows these export data

for five service sectors, for the United States as a whole and for Michigan.⁶ <insert table

7> The largest of these, both in absolute terms and as a share of U.S. exports, is professional, scientific, and technical services, for which Michigan exports are approximately two percent of U.S. exports. Since Michigan produces more than three percent of U.S. output and exports more than six percent of U.S. goods exports, it is clear that service exports – at least those reported – are of relatively minor importance for Michigan.

Not included here are educational services, which are of course of special interest to many of us contributing to this volume. For example, in fall 2001 the University of Michigan enrolled 2,908 non-resident alien graduate students and 1,085 undergraduate students.⁷ If these students spent \$20,000 each on tuition, then the value of this education sold to foreign nationals, which is really also an export of services, would approximate \$80 million dollars just from the University of Michigan alone.⁸ Adding tuition at other universities and educational institutions, plus the living expenses of these students during their stay in Michigan, and these service exports could easily be comparable to the other categories mentioned in Table 7.

⁶ Without data on other services, it is hard to know how representative these data are, but we can get some indication by comparing them to the service transactions included in the U.S. balance of payments accounts by the Bureau of Economic Analysis. For 1997, total exports of private services by the U.S. were \$239 billion, of which only \$33 billion, or about 15%, are included in Table 7. Large categories of U.S. service exports that are missing from Table 7 include travel, passenger fares, and other transportation, which together made up more than half of U.S. service exports in 1997, as well as royalties and license fees, affiliated services (within firms), education, financial services, and insurance.

⁷ Personal communication from Glenna Schweitzer of the University of Michigan registrar's office.

⁸ Many of the graduate students do not themselves pay tuition, as it is provided as part of their compensation as graduate student instructors or research assistants. That does not lessen the value of the education service being exported, however, but only means that the state is also importing the services of these same graduate students as instructors.

Another category of services trade that is missing from Table 7 is travel and tourism. International visitor expenditures in Michigan have been estimated at \$600 million for 1999,⁹ suggesting that if this category of services had been added to Table 7, it might well have been larger than any of those reported. The United States is of course a large buyer as well as a seller of tourism services, and the estimate is that Michigan spends more than it earns in this category by an amount of \$1.24 billion.¹⁰ However, Michigan is an attractive tourist destination for visitors from abroad, and its exports of tourist services would appear prominently in a list like Table 7 if comparable data were available.

A clear and unsurprising message of this section is that, although Michigan's exports are diverse, it remains the case that exports of automobiles are the largest and most important. This is emphasized further in Table 8, which shows the top ten state exporters of transport equipment. <insert table 8> Michigan easily leads this list, with exports almost one third larger than the runner up, Washington. And of course Washington makes the list only because transport equipment includes aircraft. Table 8 also reports the percentage changes in transport equipment exports for these states over the time of the available data, 1997-2000. Here Michigan is surpassed by several states, but its recent export growth remains well above that of the country as a whole in this industry.

To Whom Does Michigan Export?

⁹ Personal communication from Donald Holecek, based on data from Travel Industry of America.

¹⁰ Calculated from data and assumptions by Donald Holecek. See his chapter in this volume.

The answer here is almost as easy as for the previous question: Michigan exports to Canada, and to a somewhat lesser extent, Mexico. Table 9 shows Michigan's total exports to the major regions of the world, while Table 10 shows exports to the top ten countries that import from Michigan.¹¹ <insert table 9> Both tables also show Michigan's share of U.S. exports to these destinations, and the percent changes in these export flows over recent years.

<insert table 10>

As mentioned, Canada gets the largest portion of Michigan's exports, with Mexico a close second. Together, these NAFTA countries receive more than three quarters of total Michigan exports of merchandise. The European Union is the only region other than North America to get more than one tenth of Michigan's exports, with the largest individual country flows going to the United Kingdom, Germany, and Belgium. Among individual countries, however, Japan is the third largest destination for Michigan's exports.

These patterns are not that different from those of the United States as a whole, but they are more extreme in being focused on North America. This can be seen from the fact that Michigan's exports to North America are more than 17% of U.S. exports there, compared to Michigan's share of only 7.5% of U.S. total exports regardless of destination. No other large region gets such a disproportionate share of Michigan's

¹¹ It may be of some interest to know which countries do *not* import from Michigan, or at least are not listed in the available data, even though they show positive imports from the United States as a whole. There are thirty destinations with imports listed for the United States but not for Michigan. Most of these are very small, such as Niue and Tuvalu, but a few seem possibly nontrivial: Armenia, Libya, Sudan, Iran, Chad, Iraq, West Bank, and Cuba (these in decreasing order of total U.S. exports to them). Their omission suggests that political concerns may interfere with the accuracy or completeness of the data here.

exports, and among the individual countries listed in Table 10, only Saudi Arabia and Austria receive comparably large shares of U.S. exports from Michigan.

These data are again available only since 1997, too short a time to establish any meaningful trends. Nonetheless it is notable that during that short period, Michigan's already large exports to Mexico grew more than 150%. This is in marked contrast to our exports to the other NAFTA partner, Canada, where exports grew only 11%. The reason is presumably that our trading relationship with Canada is more mature, having already grown large under the U.S.-Canada Free Trade Agreement that preceded NAFTA, as well as under the much older U.S.-Canada Auto Pact.

The industry breakdown of Michigan's exports to its two largest trading partners, Canada and Mexico, is shown in Table 11 for Michigan's top five export sectors. <insert table 11> Exports of the top two sectors, transport equipment and machinery, also dominate the exports to these two destinations, in roughly the same proportions as to the world as a whole. Michigan's chemical exports, on the other hand, are rather smaller to Canada and especially to Mexico than they are to other parts of the world. At the same time, computer and electronic products are under-represented in exports to Canada, while they are considerably over-represented in exports to Mexico. Indeed, more than half of Michigan's total exports of computers and electronics goes to Mexico.

Who Exports from Within Michigan?

Limited data are available showing the exports of metropolitan areas within Michigan. Table 12 shows the levels of exports of nine metropolitan areas in 1999, together with their percentage growth since 1993 and comparisons to income and

population. <insert table 12> The largest exporter is of course Detroit, whose exports of \$28 billion in 1999 constituted over two-thirds of Michigan's total exports in that year (see Table 1). Far behind Detroit, the next largest exporting area was Grand Rapids/Muskegon/Holland, which exported more than \$3 billion, followed in order by Saginaw/Bay City/ Midland, Ann Arbor, Flint, and Kalamazoo/Battle Creek, each with exports of between one and two billion. In the period since 1993, most of these export flows grew substantially, with the fastest growth posted by Saginaw/Bay City/ Midland. Exceptions to this growth were Ann Arbor and Benton Harbor, whose exports fell over the period.

To put these export flows into perspective, Table 12 also compares them to the areas' levels of personal income and population. Detroit continues to lead the list, with more exports in 1999 both per thousand dollars of personal income and per person of population. However, on these bases Saginaw/Bay City/Midland now comes a close rather than a distant second, and both Flint and Grand Rapids/Muskegon/Holland have exports of more than one dollar in every ten dollars of personal income. On a per capita basis, every one of these metropolitan areas except Lansing has exports of more than \$1000 per person. Detroit exports more than \$6000 per person, and even Ann Arbor, whose exports trail the other metropolitan areas in many respects, comes in third among them on a per capita basis with over \$3000 in exports per person.

In interpreting these numbers, one should of course keep in mind that they reflect merchandise exports only, and do not include the services that we discussed above. The latter include education, professional/scientific/technical, and tourism, all of which might add considerably to the exports of some of these metropolitan areas.

Available information on the destinations of these metropolitan-area exports is even more limited, as shown in Table 13. This shows, for just five of the nine metropolitan areas in Table 12, the percentage breakdown of their exports to selected countries and geographic regions of the world. <insert table 13> The destinations of Detroit's exports are of course similar to those of exports of Michigan as a whole, with almost half going to Canada and another quarter to Mexico. It is perhaps of some interest that the other largest exporting metropolitan areas send an even higher proportion to Canada, with Flint exporting almost 85% there. In contrast, however, these same areas export a much smaller percentage to Mexico, in spite of the NAFTA. What they do not export to Mexico, several of these areas seem to send to Europe, which gets more than twenty percent of the exports from both Benton Harbor and Kalamazoo. Asia, too, gets almost fifteen percent of exports from these two metropolitan areas, and even more from Grand Rapids, in contrast to the only four percent that Asia gets of Detroit's exports. Thus there are substantial differences across locations within Michigan in the countries and regions to which they export. These differences almost certainly reflect differences in the industries that dominate these different metropolitan areas, but unfortunately we have no data on their exports at the industry level.

Benefits from Exports

So far we have looked only at the exports themselves, but exports are only a means to various desirable ends, not an end in themselves. To an economist, the primary benefit from exports is the imports that they permit a country to purchase in return. If trade were balanced, one might think that since the value of imports would equal the

value of exports, these export values would provide a pretty good measure of import values. However, the point of international trade is that a given value of exports allows us to buy goods and services that, because of comparative advantage and other sources of gains from trade, would have cost us more to produce ourselves. Indeed, it is this gap, between what we pay for imports and what it would have cost us to produce them ourselves, that measures the gains from trade, and the value of exports tells us little about that gap. For example, suppose arbitrarily that the goods we import would have cost us ten percent more to produce ourselves than to import. Then each dollar of exports, when the revenue is spent on imports, would yield a sort of dividend of \$0.10 in the gains from trade.

We have seen that in the year 2000, Michigan's exports came to \$51.6 billion. If this ten percent figure for the gains from trade were correct, then we could infer that Michigan's exports had generated, in addition to the revenue from the exports themselves, an extra five billion dollars worth of gains from trade. What does this mean? It means that, in addition to the over fifty billion dollars that we earned using resources to produce those exports, we also released an additional five billion dollars worth of resources from the need to produce goods that we could get more cheaply from abroad. These released resources, as long as they are employed, are being used to produce a kind of bonus: goods that we could not afford to produce if we did not trade.

The qualification just stated – “as long as they are employed” – raises a question that has long been a source of worry in the Michigan economy and elsewhere: what does trade do to employment? Here the concern is not so much the trade that Michigan itself enters into, which we have been examining here, but rather the trade – especially imports

– of others in the U.S. that may have been at the expense of purchases from Michigan. That is not something that we can easily address, especially with data on the Michigan economy itself. However, there is one connection between trade and employment that we can address, and we turn to that next.

Jobs Supported by Exports

The International Trade Administration of the Department of Commerce reports the numbers of jobs that are supported by exports, including manufacturing jobs that are directly export related (producing the exports themselves), manufacturing jobs that are indirectly export related (producing inputs for exports), and non-manufacturing jobs in several categories (business services, transportation services, wholesale and retail trade, and other non-manufacturing sectors) that are “tied to manufactured exports” (also providing services to the industries that export). Results are reported and ranked by state. Table 14 shows the values and ranks for Michigan together with the values for the U.S. as a whole and the value for the top-ranked state (with its identity).

<insert table 14>

Thus, according to the ITA’s calculations, 372,900 jobs in Michigan are tied to manufacturing exports. This number is exceeded in only three US states, the largest of which is California. These workers constitute 9.5% of Michigan’s private-sector employment, and Michigan ranks number eight among US states in terms of this fraction of employment that is tied to exports.

These jobs include all three of the above-mentioned categories – direct, indirect, and non-manufacturing – and in fact those directly employed in producing for export are

not much more than a quarter of this, 100,200 workers. Another 90,800 workers produce manufactured inputs that are used in producing exports, while almost half of the total export-dependent jobs are not in manufacturing at all. Some 181,900 workers provide services to manufacturers that produce for export. But even though the connection is indirect, these workers are just as dependent on exports as those in the exporting factories themselves. These proportions are not atypical among US states, as indicated by both the ranking and the totals for the U.S. as a whole.

The main lesson from Table 14 is that Michigan's jobs depend relatively heavily on exports. In the private sector as a whole, almost one in ten jobs is tied to exports, while in manufacturing, more than one in five workers produces either directly or indirectly for export. These numbers are somewhat higher than those for the U.S. as a whole, but not vastly so. Michigan, as our data for exports have already indicated, is very much like the US economy in its engagement with international trade, but even more so.

It is customary to focus on the jobs that are lost when expanding imports cause domestic industries to cut back, and it is quite appropriate to do so in view of the economic hardship that such cutbacks cause. But we should not lose sight of the fact that, over the long term, exports and imports have expanded together, and exports create jobs at the same time that imports may displace them. The jobs that are identified here as being tied to exports would be lost if trade were to cease, and that also would cause hardship. Nobody, of course, is advocating that international trade should cease. But if barriers to trade were to increase, the effect would be a partial cessation of trade and a consequent partial loss, not only of the gains from trade, but also of the jobs that depend on trade.

III. Michigan's Foreign Ownership

Section II focused on Michigan's exports, which certainly constitute a major way that the Michigan economy interfaces with the world economy. We turn now to foreign direct investment (FDI), which also plays an important role. FDI goes both directions, of course, with Michigan firms owning subsidiaries abroad at the same time that foreign firms own subsidiaries here. However, data are available only for the latter, and that is what we will attend to in this section. While it would be desirable of course also to have data on Michigan's outward FDI, it is inward FDI that has the most direct effect on economic activity here, including the employment of Michigan workers.

To provide an idea of the size and importance of foreign ownership, Table 15 shows employment in foreign owned firms in Michigan and in the United States for 1997, which is the most recent year for which data are available.¹² <insert table 15> It also compares these employment levels to both total employment and to the jobs tied to exports from Table 14. Looking first at all (private) sectors, 4.37% of Michigan private sector employment is in foreign affiliates, slightly less than the percentage in the US as a whole. This is a bit less than half the number of workers whose jobs are tied to manufacturing exports. A disproportionate amount of foreign-affiliate employment is in manufacturing, however, so that over ten percent of Michigan's manufacturing employment is in foreign affiliates. Thus one in ten manufacturing-sector workers in Michigan are employed in foreign-owned firms. This is actually somewhat less than the

¹² Note, therefore, that these data precede the 1998 merger of Daimler-Benz AG and the Chrysler Corporation. More recent data, if they were available, would include the U.S. and Michigan operations of

comparable figure for the U.S. as a whole, but it is hardly negligible. On the other hand, it is also evident from Table 15 that, while the fraction of Michigan employment in foreign affiliates is somewhat less than that of the U.S. as a whole, Michigan's fraction of jobs tied to exports is larger. Thus exports are more important for Michigan employment than foreign ownership, both absolutely and relatively, in comparison to the rest of the country. Nonetheless, in absolute terms in 1997, 84,100 manufacturing workers were employed in Michigan by foreign firms.

We saw in the previous section that Michigan ranks high among U.S. states in terms of exports. Given this somewhat smaller role for foreign ownership, it is not surprising that Michigan's ranking based on that should be lower. Table 16 shows the top ten states ranked by manufacturing employment in foreign affiliates, and Michigan ranks ninth. <insert table 16> The table also shows how these employment figures had grown during the preceding ten years. Michigan's manufacturing employment had grown by 63% over that period, very similar to the growth country-wide. It may be of interest that among these top ten states two of Michigan's neighbors, Indiana and Ohio, posted the fastest growth in manufacturing affiliate employment over this period, with Indiana's figure more than doubling during the ten years.

What Do Michigan's Foreign Affiliates Do?

Table 17 shows the breakdown of Michigan's foreign affiliates by major industry, together with the data for the U.S. as a whole and the growth over the 1987-97 period.

<insert table 17> Reported are both the value of property owned by affiliates and their

Daimler-Chrysler among foreign affiliates, with obvious importance especially for the industry composition

employment levels. By both measures, somewhat more than half of Michigan's foreign affiliate presence is in manufacturing. This is somewhat higher than for the U.S. as a whole, as also indicated by the fact that Michigan's percentage of U.S. foreign affiliates is higher in manufacturing than in all other sectors except the smallest one, professional, scientific, and technical services.

Thus foreign presence in Michigan is somewhat disproportionately attracted to manufacturing. On the other hand, the growth in foreign affiliation over the 1987-97 period, although substantial in manufacturing, has been fastest in other parts of the economy. Unfortunately, the available breakdown places most of this growth in "other industries," so we do not know exactly what it is.

We also do not have any breakdown of foreign affiliation within manufacturing itself. We are therefore unable to answer the obvious question of whether foreign affiliates are concentrated within the transport equipment industry, as was the case for Michigan's exports. As a very crude indicator of that, we have obtained a listing of "Michigan Companies with Foreign Parents" from the Michigan Economic Development Corporation, and this listing includes for most of them a short description of their business. The listing includes 863 foreign-owned businesses in Michigan, of which 188 included the words "auto," "automotive," or "automobile" in their description. As a broader measure, we also counted all those whose descriptions included something that we recognized as relating to automobiles or to motor vehicles more generally, and found 264. Together, these results suggest that perhaps only one third of Michigan's foreign-owned companies produce directly in or for the automobile industry, considerably less

of foreign ownership discussed below.

than the apparent share of that industry in Michigan's exports. Of course, the number of companies is of less interest than their value added or their employment, but comparable data on these are not available.

Who Owns Michigan's Foreign Affiliates?

The single country that owns the most foreign affiliates in Michigan is Japan, by a wide margin, as shown in Table 18. By number, Japan had 293 affiliates in 1997, compared to 159 for the U.K., 151 for Germany, and 137 for Canada. <insert table 18> On the other hand, the German affiliates employed more workers than the Japanese affiliates, with all four of these countries employing rather similar numbers, in excess of 25 thousand workers each. Collectively, on the other hand, Europe accounts for more than half of Michigan's foreign affiliates, both in number and in employment.

Japan also posted the greatest growth in number of affiliates during the 1987-97 period. At the same time, while the European affiliates were expanding both their numbers and their employment less rapidly than Japanese affiliates, employment in European affiliates grew almost three times as fast as their number, indicating that the European affiliates were growing substantially in average size.¹³

As for the industry composition of these affiliates, the final column of Table 18 shows that the majority of countries' affiliates employed most of their workers in manufacturing. However Canada, Switzerland, and especially the Netherlands were exceptions, with only a minority of employment in manufacturing.

¹³ This was true also in Japan, but to a much smaller extent.

How Big Are Michigan's Foreign Affiliates?

Tables 19 and 20 show the distribution of Michigan's foreign affiliates by size, with Table 19 reporting by value and Table 20 reporting by number of employees.

<insert table 19> <insert table 20> In both tables, the first row shows the numbers of affiliates in total for which the relevant information was available, while subsequent rows show numbers in various size categories. The first two columns show the numbers for the U.S. as whole, the first based on subsidiaries' size in the nation as a whole, while the second gives the number of state-affiliate combinations of the given size within individual states. Thus, for example, a single foreign-owned firm with a value in the whole U.S. of \$500 million will contribute one unit to the last row of the first column of Table 19. But if that firm has, say, subsidiaries in each of 25 states, each with a value of \$20 million, then it will also contribute 25 units to the second column in the fourth row, \$10-\$25 million. Michigan's affiliate size distributions are shown in the next column, with its percentage of the second column shown last.

From both tables, it is clear that the size distributions of Michigan's foreign affiliates are quite similar to those of the nation as a whole, as long as size is measured at the state level. Of course, many affiliates are present in multiple states, so their sizes nationwide tend to be larger than their presence in individual states. But the fact that the percentages in the final column are all quite similar tells us that Michigan's affiliates are not all that different from those of all other states.

There are a few small differences that may be worth noting, however. First, in both of the tables, Michigan's smallest percentage is in the smallest size category. Thus

one could say that Michigan has somewhat less than its share of the very smallest firms.¹⁴ At the other end of the spectrum, Michigan has a disproportionately large number of firms in the largest employment class, employing 2500 or more workers. It has eleven of these firms, while it would have only eight if they were distributed alike in all employment classes. Thus there is a slight tendency for Michigan's foreign affiliates to be larger than the average of affiliates in other states.¹⁵

IV. What Does It All Mean?

The preceding sections have quantified two aspects of the role of the international economy in Michigan: exports and foreign ownership. In simple terms, we have seen that Michigan is one of the nation's largest international traders, in terms of its volume of exports. Those exports are tied to one in ten of Michigan's jobs and one in five of its manufacturing jobs. Foreign ownership is somewhat less important than exports for Michigan, but even here, one in twenty private sector jobs and one in ten manufacturing jobs are in firms that are owned by foreigners. Thus a non-negligible fraction of the Michigan economy depends on world markets, either for sales, for ownership, or for both. To conclude this paper, we will discuss more carefully just what these and other interactions with the world economy mean for the livelihoods and well-being of Michigan residents. There are two aspects of this that we will discuss: the extent to which Michigan gains from its and the nation's international trade and investment; and the extent to which these international linkages make it susceptible to economic shocks.

¹⁴ Not a lot less: If Michigan had the same percentage of the smallest size class that it has of all affiliates, then it would have 25 more of these small firms: 186 instead of 161.

One topic that will not be discussed, in spite of its importance in much of the rest of this volume, is the impact of trade and investment on the budget of the Michigan state government. The reason for this omission is that the state budget is not obviously very much affected, positively or negatively, by international trade and investment. The state does not tax international trade separately from other transactions, and its taxes on operations within the state are for the most part no different for foreign-owned entities than for domestic ones. Likewise, state expenditures would seem to be driven almost exclusively by domestic concerns. Of course, the health of the state budget does depend on the health of the state economy, and that in turn depends in part on foreign sales. But this is really just a byproduct of the role that trade and investment play in the broader Michigan economy.

Michigan's Gains from Trade and Investment

Economists speak frequently of a country's "gains from trade," by which we mean the increased value of goods and services that become available to a country's consumers as a result of international trade, in exchange for its exports. The same concept applies to states, and it is reasonable to ask whether, and to what extent, Michigan gains from trade and investment. To define this question more concretely, we could ask whether Michigan would be worse off if it did not trade. The answer is clearly yes, but the size of this loss would be different depending on the time horizon considered, since many who would lose immediately from an abrupt termination of trade would eventually recover at least part of

¹⁵ Strangely, although the largest employment class is over-represented in Michigan according to Table 20, the largest class by value in Table 19 is not.

their loss by changing to other activities. The gains from trade are usually thought of on a long-run basis, after all such adjustments have been completed.

Michigan's gains from trade are without a doubt far larger for its trade with other states of the United States than with the rest of the world. In spite of Michigan's prominence as an international trader, we are much more fully integrated into the U.S. economy than into the world, and if that integration were interrupted, the cost to the state would be devastating. Indeed, it is hard to imagine how today's Michigan population could survive if it had to depend on itself and its own productive capacity for all of the goods and services that enter its consumption.

Compared to that, the effects of blocking only Michigan's international trade would be small, but they are nonetheless significant. Using a standard partial equilibrium calculation of the gains from trade based on the export share reported in Table 3, and using very approximate estimates of the responsiveness of supply and demand to price changes, Michigan's gain from trade in 1999 is estimated to be \$2.5 billion, or 0.8% of gross state product.¹⁶

This underestimates the gains from all international trade to the state of Michigan, since it includes only the trade that Michigan itself enters into with other countries. But much of what Michigan buys from other states is available at current prices only because of international trade between other states and the world. Thus, if Michigan alone were to completely cease direct exports to and imports from the world, it would still share in the

¹⁶ The welfare gain from trade in a single sector as a share of value of output in that sector is given by $(1/2)s^2/[(1-s)E_D+sE_S]$, where s is the fraction of output exported and E_D, E_S are the elasticities of demand and supply, respectively, in the sector. The number in the text is obtained by applying that formula to Michigan's merchandise exports, with elasticities $E_D=1$ and $E_S=2$, and interpreting the result as a fraction of gross state product.

considerable gains that the rest of the country enjoys from trade. These too are significant, but not huge, simply because the United States is such a large and diverse economy that it can provide reasonably well for itself without trade. But the fact of these additional gains does mean that the number given above understates the benefits that Michigan derives from the existence of the global economy.

We saw in Section II that foreign affiliates of firms in Michigan own over \$20 billion worth of property here. To the extent that these foreign affiliates produce for export, they contribute to part of the gain already identified due to trade. But mostly they produce for the U.S. market, and the question arises whether Michigan gains from their presence. In one sense, the answer is clearly yes: These affiliates employed 171,600 workers in 1997, and if they were to shut down, these jobs would be lost. But that is only a short-run effect, and presumably after a period of perhaps painful adjustment, those workers would find jobs in other industries that would replace the foreign affiliates.

In the long term, these affiliates contribute things other than jobs to the Michigan economy. One of these is simply capital, which makes Michigan labor more productive and raises real incomes and real wages. Another is the particular expertise that foreign firms have and that they use as the basis for their expansion as multinational enterprises, including their business models, their patents, and their complementary interactions with their operations in other countries based on comparative advantage. Foreign direct investment is an alternative to trade for exploiting such comparative advantage and for generating other forms of gains from trade as well. For example, multinational firms use their knowledge capital to provide services such as research and development in one

location that contribute to their productivity in all locations, and this source of economies of scale contributes not only to their own profits but also to the real incomes of the countries in which they operate. There is no easy way to estimate these gains from foreign ownership, and we therefore will not attempt to quantify them here. But we would expect them to approximate, in order of magnitude, the gains from trade noted above.

Michigan's Exposure to International Shocks

If the world were not subject to change, then the discussion so far of Michigan's gains from trade and investment would be the end of the story. But in fact, of course, both Michigan and the world are constantly changing. If Michigan were not engaged with the rest of the world, then it would be immune from changes abroad, both positive and negative. But by participating in the world economy, we subject ourselves to the effects of such changes, and these will sometimes help, sometimes hurt.

For example, Michigan is heavily influenced by the world price of oil. As in all economies that produce none of their own oil, people in Michigan suffer as consumers whenever the price of oil rises, and they gain when it falls. Even more important, perhaps, is the fact that the market for our largest industry, motor vehicles, is critically dependent on the price of oil as well. When oil prices rise, car sales fall, at least of the large gas-guzzlers that Michigan has traditionally specialized in. This represents a source of vulnerability of Michigan to foreign markets, but it is not one that we could escape by not trading. Without oil imports, oil would be far more expensive, and Americans might need to find other forms of transport much as Europeans have done.

Michigan is also exposed to international shocks in the form of exchange rate changes. Because the Michigan economy bulks large in manufacturing of traded goods, both in the exports that we have documented here and in competition with imports, Michigan's markets are more sensitive than most to changes in exchange rates. We saw this dramatically in the early 1980s, when a large appreciation of the U.S. dollar put Michigan firms at a disadvantage relative to imports, and the recession that hit most of the country hit hardest here.

That vulnerability continues, although it has a flip side as well: when the U.S. dollar falls on international exchange markets, Michigan also benefits disproportionately. Until recently, the dollar has again been strong, and we have once again felt the pain of international competition during the recent recession. However, the weakness has been milder than it was in the early 80s, perhaps indicative of the more diversified economy that we have today.

In addition to oil prices and exchange rates, the main other frequent source of international instability is the financial crises that periodically disrupt foreign markets. Though hardly new, these have hit with particular force during the last decade, starting with Mexico shortly after the NAFTA was implemented, hitting many East Asian economies starting in 1997, spilling from there into Latin America and Russia, and most recently afflicting Argentina. These crises have common features: (1) a loss of confidence in the government and financial system of the targeted developing or transition economy, (2) capital flight that drains financial resources from the country, culminating in (3) a devaluation of their currency and a resulting collapse of asset values and a rash of bankruptcies. These crises obviously inflict their greatest pain on the target

countries, but they also spill over to other countries that have invested in them and that transact with them in international trade. The point for Michigan is that this is one source of international disruption that does *not* seem to be particularly salient for us. Although our trade with Mexico is very important, the peso crisis does not seem to have hurt us badly, and the harmful effects of the other crises have been felt more in other parts of the country that are specialized more in financial markets than in manufacturing.

Not all changes in the international economy take the form of shocks, and not all are bad. Over the last half century there has been more or less continuous growth in the world economy, and this has included gratifying rates of progress in an increasing number of previously very poor countries. This economic growth, although it has been occasionally interrupted by the sorts of crisis just mentioned, has for the most part produced a steady expansion of world markets for both goods and services, together with an increasing supply of ever more efficiently produced products for the world to buy. Michigan has for the most part prospered in this environment, producing ever more goods and also some services for sale on world markets, and, like the rest of the country, increasing standards of living by using the proceeds from these exports to buy an increasing variety of products from abroad. In the long run, the costs of temporary shocks due to changing oil prices, exchange rates, and financial crisis have paled by comparison to the benefits of world-wide economic growth that we prosper from at home through the mechanisms of international trade and investment. One may hope and presume that this growth will continue into the future, and that Michigan will continue to take advantage of the opportunities that trade and investment provide in this context.

References

- Bureau of Economic Analysis, Foreign Direct Investment in the United States, Benchmark Surveys, U.S. Department of Commerce, http://www.bea.doc.gov/bea/uguide.htm#_1_23, 1997.
- Bureau of Economic Analysis, Regional Accounts Data: Gross State Product Data, U.S. Department of Commerce, <http://www.bea.doc.gov/bea/regional/gsp/>, released June 2001.
- Coalition of Service Industries, In the National Interest: The U.S. Services Industry Case for Trade Promotion Authority, undated, <http://www.uscsi.org/csi-services-statistics.pdf>, downloaded April 2002.
- Office of Trade and Economic Analysis, U.S. Jobs from Exports, International Trade Administration, U.S. Department of Commerce, <http://www.export.gov/docTSFrameset.html>, February 2001.
- Office of Trade and Economic Analysis, State Exports to Countries and Regions, International Trade Administration, U.S. Department of Commerce, <http://www.ita.doc.gov/td/industry/otea/state/preformat.html>, 2002.

Table 1			
U.S. and Michigan Merchandise Exports to the World, 1993-2000			
(billions of 2000 dollars)			
	U.S.	Michigan	Michigan Share
	(1)	(2)	(3)
1993	440.7	24.0	5.4%
1994	480.6	34.5	7.2%
1995	534.2	34.0	6.4%
1996	585.8	35.9	6.1%
1997	664.7	36.7	5.5%
1998	679.0	39.2	5.8%
1999	700.8	42.0	6.0%
2000	780.4	51.6	6.6%

Source: Office of Trade and Economic Analysis, 2002; deflated by price index for exports of goods from Bureau of Economic Analysis, Table 7.9.

Table 2			
States with Largest Levels of Merchandise Exports, 2000			
(Billions of Dollars)			
		Level	% Change
Rank	State	2000	1993-2000
1	California	129.9	96
2	Texas	68.7	98
3	New York	53.0	35
4	Michigan	51.6	109
5	Washington	33.4	27
6	Illinois	32.2	64
7	Ohio	29.1	70
8	New Jersey	28.8	103
9	Florida	24.2	70
10	Pennsylvania	24.0	87

Source: Office of Trade and Economic Analysis, 2002. % change is in real terms.

Table 3			
States with Largest Ratios of Merchandise Exports to GSP, 1999			
(Billions of Dollars)			
		Percent	%pt Change
Rank	State	1999	1993-99
1	Washington	17.6	-2.2
2	Vermont	16.5	-0.8
3	Delaware	14.0	-0.5
4	Michigan	13.5	2.1
5	Oregon	10.2	1.3
6	Texas	9.0	1.1
7	California	8.4	0.3
8	Minnesota	8.3	-0.3
9	Indiana	8.0	1.6
10	Dist. of Col.	7.8	-2.3

Source: Calculated from Office of Trade and Economic Analysis, 2002, and Bureau of Economic Analysis, 2001.

Table 4		
Michigan Exports by Major Sector, 2000		
(Millions of Dollars)		
	Level	% Change
	2000	1997-2000
TOTAL	51,615	36
AGRICULTURAL & LIVESTOCK PRODUCTS	158	-21
MANUFACTURES	50,782	37
Transportation Equipment	30,378	32
Machinery Manufactures	5,475	14
Chemical Manufactures	3,736	91
Computers & Electronic Prod.	3,354	139
OTHER COMMODITIES	676	21

Source: Office of Trade and Economic Analysis, 2002.

Table 5		
Michigan Exports of Manufactures, 2000		
(Millions of Dollars)		
	Level	% Change
	2000	1997-2000
MANUFACTURES	50,782	37
Transportation Equipment	30,378	32
Machinery Manufactures	5,475	14
Chemical Manufactures	3,736	91
Computers & Electronic Prod.	3,354	139
Fabricated Metal Products	1,975	58
Plastic & Rubber Products	1,092	77
Elec. Eq., Appliances & Parts	1,055	18
Primary Metal Manufactures	1,024	39
Non-Metallic Mineral Mfgs.	662	32
Furniture & Related Products	539	61
Misc. Manufactures	360	1
Processed Foods	329	-22
Paper Products	249	38
Leather & Related Products	103	-59
Wood Products	94	33
Printing & Related Products	91	5
Petroleum & Coal Products	79	40
Fabric Mill Products	77	31
Non-Apparel Textile Products	69	111
Beverage & Tobacco Products	24	-42
Apparel Manufactures	14	-38

Source: Office of Trade and Economic Analysis, 2002.

Table 6		
Michigan Exports of Agriculture and Other Non-Manufactures, 2000		
(Millions of Dollars)		
	Level	% Change
	2000	1997-2000
AGRICULTURAL & LIVESTOCK PRODUCTS	158	-21
Crop Production	137	-29
Animal Production	21	179
OTHER COMMODITIES	676	21
Waste & Scrap	165	54
Mining	150	650
Spec. Classification Provisions	149	47
Oil & Gas Extraction	49	78
Used Merchandise	15	20
Fishing, Hunting, & Trapping	13	262
Forestry & Logging	12	2
Goods Returned to Canada	123	-56

Source: Office of Trade and Economic Analysis, 2002.

Table 7			
U.S. and Michigan Selected Service Exports to the World, 1997			
(Millions of Current Dollars)			
	U.S.	Michigan	Michigan Share
	(1)	(2)	(3)
Software publishers	7,295	80.2	1.1
Broadcasting and telecommunications	4,450	31.6	0.7
Information and data processing services	634	4.1	0.6
Professional, scientific, and technical services	18,994	395.7	2.1
Administrative and support and waste management services	2,390	34.1	1.4

Source: Receipts from exported sales, reported in Coalition of Service Industries, 2002.

Table 8			
States with Largest Exports of Transport Equipment, 2000			
(Millions of Dollars)			
		Level	% Change
Rank	State	2000	1997-2000
1	Michigan	30.4	32
2	Washington	21.0	7
3	California	10.0	-18
4	New York	6.8	56
5	Ohio	6.3	-1
6	Texas	5.3	-12
7	Indiana	4.3	48
8	Connecticut	3.3	53
9	Florida	2.4	5
10	Illinois	2.2	-16
	Unallocated	2.1	209
	U.S. Total	11.8	9

Source: Office of Trade and Economic Analysis, 2002.

Table 9				
Michigan Merchandise Exports to Regions of the World, 2000				
(millions of current dollars)				
	Level	% of U.S.	% Change	
	2000	Exports	1997-2000	
	(1)	(2)	(3)	
North America	38,537	13.4	47.0	
European Union	5,448	3.3	14.8	
Asia, Selected other*	2,701	1.7	1.5	
South America	1,622	4.4	9.4	
Middle East	1,117	5.9	-3.2	
ASEAN**	793	1.7	64.4	
Africa, Subsaharan	145	2.5	168.0	
Eastern Europe	114	1.9	-42.3	
Central America	103	1.0	36.3	
Caribbean	81	0.7	46.0	
Former Soviet Republics	24	0.7	-74.1	
World	51,615	6.6	36.1	

Source: Office of Trade and Economic Analysis, 2002.

*Asia, Selected other is China, Hong Kong, India, Japan, S. Korea, Taiwan

**ASEAN is Brunei, Burma (Myanmar), Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, and Viet Nam.

Table 10			
Major Country Destinations of Michigan's Merchandise Exports, 2000			
(millions of current dollars)			
	Level	% of U.S.	% Change
	2000	Exports	1997-2000
	(1)	(2)	(3)
CANADA	22,046	12.5	11.6
MEXICO	16,491	14.8	155.4
JAPAN	1,393	2.1	7.0
UNITED KINGDOM	1,371	3.3	0.6
GERMANY	1,059	3.6	0.2
BELGIUM	851	6.1	-21.3
AUSTRALIA	710	5.7	30.5
BRAZIL	644	4.2	17.0
SAUDI ARABIA	630	10.1	109.2
AUSTRIA	595	23.3	-20.9

Source: Office of Trade and Economic Analysis, 2002.

Table 11					
Michigan's Exports to Canada and Mexico in its Top Export Sectors, 2000					
(millions of current dollars and percent of MI exports)					
		Canada		Mexico	
	Total	Level	%	Level	%
MANUFACTURES	50,782	21,448	42	16,424	32
Transportation Equipment	30,378	14,278	47	9,837	32
Machinery Manufactures	5,475	2,414	44	1,743	32
Chemical Manufactures	3,736	857	23	476	13
Computers & Electronic Prod.	3,354	650	19	1,697	51
Fabricated Metal Products	1,975	887	45	843	43

Source: Office of Trade and Economic Analysis, 2002.

Table 12				
Export Sales of Michigan Metropolitan Areas, 1999 (Level, recent real growth, per income and per person)				
	\$ Million	% Growth	Per \$1000 Personal Income	Per Person
	1999	93-99	1999	1999
Ann Arbor	1,746	-15.0	92.8	3,132
Benton Harbor	287	-9.0	70.6	1,796
Detroit	28,008	73.2	198.9	6,259
Flint	1,165	27.8	109.1	2,664
Grand Rapids--Muskegon--Holland	3,256	97.2	112.0	3,094
Jackson	160	73.6	42.8	1,016
Kalamazoo--Battle Creek	1,052	68.0	91.9	2,352
Lansing--East Lansing	244	37.6	21.3	541
Saginaw--Bay City--Midland	1,831	120.4	175.6	4,569

Source: Office of Trade and Economic Analysis, 2002, and Bureau of Economic Analysis, 2001.

Table 13					
Export Destinations of Major Michigan Metropolitan Areas Millions of dollars, 1999, and % of Total					
	Benton Harbor	Detroit	Flint	Grand Rapids	Kalamazoo
Total	287	28,008	1,165	3,256	1,052
Canada	43.0%	49.7%	84.4%	53.2%	53.7%
Mexico	5.2%	26.3%	1.2%	7.1%	5.1%
Caribbean & Cen. Am.	0.1%	0.4%	0.2%	0.7%	1.0%
South America	3.2%	2.2%	1.2%	1.7%	2.4%
Europe	22.9%	13.3%	4.0%	16.6%	21.0%
Asia	14.9%	4.0%	2.9%	18.5%	14.5%
Africa	1.5%	0.1%	0.0%	0.4%	0.4%
Near East	3.3%	2.7%	5.8%	0.8%	0.5%
Australia	5.9%	1.3%	0.4%	1.1%	1.3%

Source: Office of Trade and Economic Analysis, 2002.

Table 14						
Michigan and U.S. Jobs from Exports						
Thousands of Jobs, 1997 Data						
		MI Rank	MI	US	Max	Max State
Jobs tied to manufacturing exports						
	Number (thousands)	4	372.9	7,676.2	1,147.9	CA
	% of private sector jobs	8	9.5%	7.2%	17.3%	NM
Manufacturing jobs tied to manufacturing exports						
	Direct export related	5	100.2	2,027.8	288.8	CA
	Indirect export related	3	90.8	1,316.4	210.1	CA
	Total export related	4	191.0	3,344.2	498.9	CA
	% of mfg. employment	8	22.9%	19.8%	39.4%	WA
Non- manufacturing jobs tied to manufacturing exports						
	Number	5	181.9	4,332.0	649.0	CA
Source: Office of Trade and Economic Analysis, 2001.						

Table 15					
Employment in Foreign Affiliates Compared to Employment Linked to Exports					
Michigan and US, 1997					
Thousands of Workers					
		MI		US	
		Number	Percent	Number	Percent
Total Employment					
	In foreign affiliates	171.6	4.37%	5,202	4.88%
	Tied to manufacturing exports	372.9	9.50%	7,676	7.20%
Manufacturing Employment					
	In foreign affiliates	84.1	10.08%	2,064	12.22%
	Tied to manufacturing exports	191.0	22.90%	3,344	19.80%
Sources: Bureau of Economic Analysis, 1997, and Office of Trade and Economic Analysis, 2001					

Table 16			
States with Largest Manufacturing Employment in Foreign Affiliates, 1997			
(Thousands of Workers)			
		Level	% Change
Rank	State	1997	1987-1997
1	California	185.3	47%
2	Ohio	135.9	90%
3	Texas	131.9	83%
4	North Carolina	117.5	57%
5	Illinois	104.4	59%
6	Pennsylvania	102.8	17%
7	Tennessee	86.8	67%
8	Indiana	85.5	110%
9	Michigan	84.1	63%
10	Georgia	83.8	50%
	United States	2,063.7	57%

Source: Bureau of Economic Analysis, 1997.

Table 17								
Industry of Foreign Affiliates in Michigan and the United States								
	Value of Property ^a			Employment of Affiliates ^b				
	(Millions of dollars)		MI% of US	(Thousands of employees)			MI% of US	
	U.S.	MI		U.S.	Growth ^c	MI	Growth ^c	
All industries	877,568	21,170	2.4	5,201.9	61.3	171.6	78.2	3.3
Manufacturing	400,182	12,899	3.2	2,258.0	46.4	92.5	60.3	4.1
Wholesale trade	100,507	2,430	2.4	509.7	58.3	13.4	48.9	2.6
Retail trade	31,769	498	1.6	683.6	22.4	14.3	16.3	2.1
Information	64,587	596	0.9	292.1		5.3		1.8
Finance ^d and Insurance	38,563	220	0.6	225.1	31.4	4.1	127.8	1.8
Real estate & rental/leasing	94,385	567	0.6	39.8	17.4	0.3	0.0	0.8
Prof., sci. & tech.l services	4,735	183	3.9	85.1		4.1		4.8
Other industries	142,841	3,777	2.6	1,108.6	481.3	37.4	434.3	3.4
a. Gross property, plant, and equipment of affiliates								
b. Employment of affiliates								
c. Percent growth 1987-1997								
d. Except depository institutions								
Source: Bureau of Economic Analysis, 1997								

Table 18							
Country of Ownership of Foreign Affiliates in Michigan							
1997 and Growth since 1987							
	Number of Affiliates (a)			Employment of Affiliates (c)			
	(Thousands of employees)						
	Level	Growth		Level	Growth		
	1997	1987-97	% of MI	1997	1987-97	% of MI	%Mfg
All countries	1,107	41	100%	171.6	78.2	100%	49
Regions							
Africa	6	-14	1%	n.a.			
Asia and Pacific	325	102	29%	34.1	82.4	20%	62
Europe	585	29	53%	102.1	85.3	59%	51
Latin America & other W. Hemis.	22	-4	2%	2.3	-28.1	1%	n.a.
Middle East	20	67	2%	3.7	1750.0	2%	27
Selected Countries							
Australia	10	-29	1%	1.1	-73.8	1%	18
Canada	137	13	12%	25.3	39.0	15%	32
France	72	44	7%	6.7	-15.2	4%	57
Germany	151	48	14%	34.1	135.2	20%	57
Japan	293	111	26%	32.7	138.7	19%	64
Netherlands	47	57	4%	13.1	244.7	8%	15
Switzerland	57	10	5%	9.4	308.7	5%	41
United Kingdom	159	10	14%	29.3	65.5	17%	56
a. Number of affiliates with property, plant, and equipment or employment							
Source: Bureau of Economic Analysis, 1997							

Table 19				
Size Distribution of US and Michigan Foreign Affiliates By Value, 1997				
	Number of Affiliates (a)			
	(Number)			
Size class (b)	U.S., by National Size	U.S., by State Size	MI	MI%
Total	8,602	31,257	880	2.8
0 - \$100,000	595	6,646	161	2.4
\$100,000 - \$1,000,000	1,262	7,032	218	3.1
\$1,000,000 - \$10,000,000	2,966	9,101	265	2.9
\$10,000,000 - \$25,000,000	1,268	3,435	100	2.9
\$25,000,000 - \$100,000,000	1,394	3,454	92	2.7
\$100,000,000 - \$250,000,000	569	976	27	2.8
\$250,000,000 and over	548	613	17	2.8
a. Number of Affiliates With Property, Plant, and Equipment or Employment				
b. Property, Plant, and Equipment Size				
Source: Bureau of Economic Analysis, 1997				

Table 20				
Size Distribution of US and Michigan Foreign Affiliates By Employment, 1997				
	Number of Affiliates (a)			
	(Number)			
Employment class (b)	U.S., by National Size	U.S., by State Size	MI	MI%
Total	7,445	34,791	1,034	3.0
1 - 9	1,376	14,439	391	2.7
10 - 19	697	3,680	116	3.2
20 - 99	2,154	8,214	269	3.3
100 - 249	1,186	4,076	124	3.0
250 - 999	1,226	3,391	101	3.0
1000 - 2499	403	725	22	3.0
2500 and over	403	266	11	4.1
a. Number of Affiliates With Property, Plant, and Equipment or Employment				
b. Employees per affiliate				
Source: Bureau of Economic Analysis, 1997				