WHAT DO WE KNOW ABOUT

THE IMPACT OF OFFSHORE INVESTMENT ON THE U.S. ECONOMY?

by

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Executive Summary

WHAT DO WE KNOW ABOUT

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Corporate tax code which aggressively seeks to keep American investment at home has potential benefits according to one model and potential harm according to another. The model of a multinational firm that seems to drive much of the empirical work in this literature is a kind of mutual fund which allows U.S. investors access to foreign equity markets which are otherwise inaccessible. With this model as a guide, changes in the tax codes that raise the effective tax on foreign source earnings might keep savings at home, and help to maintain American leadership in productivity by keeping high our ratios of physical capital per worker. The principal alternative model of the multinational firm is a kind of safe deposit box which prevents American trade secrets from being used by foreign businesses and which increases the return to intangible assets by enlarging the market in which they can be deployed. Aggressive tax policy aimed at foreign source earnings according to this model lowers the returns to knowledge investments in the U.S., and assists foreign firms in their competition for technological leadership over U.S. businesses. If this is correct, impairing U.S. corporations in the global competition with non-U.S. businesses is a self-defeating strategy for improving the economic health of the United States, measured either in terms of efficiency or equity.

Real evidence that can help us sort out these two alternatives is extremely difficult to come by. The correct policy question is: "What combination of corporate taxation, commercial policy, R&D subsidies and educational subsidies can be relied upon to improve the economic health of the U.S. economy in terms of efficiency (e.g. GNP per capita) and equity (e.g. unemployment, income inequality)?." There is virtually no evidence regarding this question. A weaker question is: "What Policies Toward Outward Foreign Direct Investment Can be Relied Upon to Increase Investment at Home?" There is a little evidence regarding this question, but not much. Most of the evidence relates to the least relevant question: "Does Outward Foreign Direct Investment Increase or Decrease Domestic Investment by U.S. Multinational Corporations?" This is the least relevant question because foreign direct investment is not subject to direct control by the U.S. government, and because the many different ways that FDI might be influenced by government policies are likely to have very different effects on domestic investment, some favorable and some unfavorable.

After a critical review in Section 2 of various correlational evidence regarding the relationship between foreign direct investment and domestic investment, this paper reverts to logic and numerical simulation to study the effect of foreign direct investment on the domestic economy. A multinational firm is treated as an institution that facilitates the flow of knowledge to foreign locations. FDI is one of five means by which U.S. knowledge capital can be employed outside our borders:

(1) The services of knowledge capital can be embodied in U.S. exports.

(2) Knowledge capital created in the United States can be used by foreign affiliates of U.S. multinational corporations.

(3) Proprietary knowledge of U.S. corporations can be sold or leased to foreign businesses or governments.

(4) Knowledge that is too costly to protect can be taken by foreigners.

(5) Knowledge that is protected by U.S. copyrights can be stolen by businesses operating in countries where legal systems to protect intellectual capital are weak or nonexistent.

In the 1960's when the "technology gap" was at its widest, U.S. exports were effectively the only means by which U.S. knowledge capital was employed around the globe. Today that technology gap has disappeared, and, in some cases reversed. Some of the disappearance of the gap may be associated with multinationals, some of it because of knowledge investment by foreign business, but much of the U.S. technological advantage was essentially given away with no return to the United States.

Obviously, the private return to knowledge investments is lowered or eliminated if the investment can either be taken or stolen, or if the scope of the market is limited by government interference. Absent an adequate rate of return, no private investment will take place. It accordingly is in the interest of the world economy as well as the individual investors to put in place institutions that can protect intellectual property rights and extend the scope of the market. International legal systems are one form of institution for protecting intellectual property rights. Multinational corporations are another. By keeping knowledge internal to the firm, the multinational corporation

reduces the chances of theft or leakage, and raises the private return to knowledge investments.

Viewed as a means of protecting intellectual property, the multinational corporation is an entirely felicitous institution, but the transfer of knowledge capital to foreign locations affects the rate of return not only to knowledge capital but also to other U.S. factors of production, including physical capital and labor. When American workers had access to superior tools and superior organizational forms they could command very high wages, but today Americans have to face competition with foreign workers who have access to the same tools and the same or better organizational forms and, partly as a result of technological dispersion, they are suffering stagnating real incomes and increasing income inequality.

These ideas regarding FDI as knowledge transfer are here embodied in a graphical general equilibrium model and a numerical simulation model which has been calibrated for studying the economic integration of Mexico and the United States. This simulation model suggests that the potential effects on U.S. wage levels of U.S. FDI into Mexico are minor, basically because FDI is limited by human capital shortages in Mexico.

WHAT DO WE KNOW ABOUT

THE IMPACT OF OFFSHORE INVESTMENT ON THE U.S. ECONOMY?

In a new study of American opinion, Economic Nationalism and the Future of American Politics, Ruy Teixeira and Guy Molyneux argue that popular anxiety about American economic decline is feeding fears of foreign investment and low-wage imports and focusing Americans' attention on the link between jobs and trade. According to Teixeira and Molyneux, 67 percent of Americans favor "restricting foreign imports to protect American industry and American jobs," and 70 percent think foreign investment is "bad" for the United States. [1]

Middle class disappointment over declining real incomes is being tapped by politicians who point their fingers at foreigners and who offer to improve the situation by closing the borders of the United States. The NAFTA debate resonated with this middle class resentment that was focussed politically on Mexican workers and U.S. multinational corporations. The close call for NAFTA doesn't mean that this sentiment is going to go away. On the contrary, as technological trends and a poor educational system combine to increase income inequality even more, foreigners and U.S. multinational corporations are certain to feel the heat again, and more intensely.

There is little doubt that globalization of product and capital markets is contributing to the income inequality trends in the United States. However, fighting income inequality by closing down the country would probably be a costly way of achieving only minor, temporary reductions in income inequality. We would still have to contend with the volatile interaction of technological trends (information technology) and education shortcomings which for a long time will make a lot of hard-working Americans increasingly worse off. (Burtless (1990))

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[1] John B. Judis, "The Divide" The New Republic, October 11, 1993, page 27.

If we do attempt to deal with our domestic inequality problems by interfering more intrusively in external commerce, we should design that interference in a way that is most likely to achieve a clearly stated goal. Commercial policy aimed at limiting the competition of low-skilled Americans with their counterparts in Asia and Latin America is a defensible short-run policy choice if the goal is to keep wages of unskilled U.S. workers at reasonable levels (Leamer(1994)). But the better long-run policy is not to *isolate* our workers but to *insulate* them from foreign competition by providing them with skills and tools not available elsewhere. A short-run isolationist policy threatens the long-run insulationist policy by creating a constituency for further isolation and no countervailing constituency for insulation.

Isolationist commercial policy might be short-sighted, but at least it has some probable benefits. Isolationist corporate tax code which aggressively seeks to keep American investment at home is a more doubtful instrument to achieve improvements in either equity or efficiency. The strongest case for isolationism refers to a the multinational firm as a kind of mutual fund which allows U.S. investors access to foreign equity markets which are otherwise inaccessible. With this model as a guide, changes in the tax codes that raise the effective tax on foreign source earnings might keep savings at home, and help to maintain American leadership in productivity by keeping high our ratios of physical capital per worker. The more plausible alternative model of the multinational is a kind of safe deposit box which keeps American trade secrets from being used by foreign businesses. Aggressive tax policy aimed at foreign source earnings according to this model lowers the returns to knowledge investments in the U.S., and assists foreign

firms in their competition for technological leadership over U.S.
businesses.   According to this model, impairing U.S. corporations in
the global competition with non-U.S. businesses is a self-defeating
strategy for improving the economic health of the United States,
measured either in terms of efficiency or equity.

Real evidence that can help us sort out these two alternatives is
extremely difficult to come by. One reason why we are having a hard
time finding evidence is that we have often asked the wrong question:

QUESTION 1: "Does Outward Foreign Direct Investment Increase or Decrease

    Domestic Investment?"

Answers to this question might be found by studying the variation of
investment across countries, across time periods, across industries or
across firms. One might discover, for example, one or more of the
following facts: (a) Countries that make substantial FDI (Foreign
Direct Investment) generally also make substantial DI (Domestic
Investment). (b) The United States tends to export especially to those
countries that are the location of substantial DI. (c) Time periods of
intense FDI are also periods of intense domestic investment. (d)
Industries that are characterized by sizeable FDI also have sizeable DI.
(e) Firms that invest abroad are also successful at home.

Some of these statements are true, but neither these nor their
opposite would by themselves answer this first question. After all,
correlation does not imply causation.

The most important step in getting a good answer is to choose a
good question. This first question brings to mind McAfee's(1983)
tongue-in-cheek counterfactual: "What if Columbus Had Not Discovered
America?" Both questions make reference to counterfactuals that are

vague as they stand and risk becoming absurd if they are more precisely

defined.   A better question that makes a clear counterfactual is:

QUESTION 2:   "What Policies Toward Outward Foreign Direct Investment Can

be Relied Upon to Increase Investment at Home?"

Though the first question suffers from vagueness, this alternative

question suffers from irrelevance. Obviously, there are tax rules that

can increase DI and reduce FDI, there are tax rules that can reduce both

and there are rules that can increase both.   What we want to know is

which of these policies are wise.   Thus the real question is:

QUESTION 3 : "What combination of corporate taxation, commercial policy,

R&D subsidies and educational subsidies can be relied upon to

improve the economic health of the U.S. economy in terms of

efficiency (e.g. GNP per capita) and equity (e.g. unemployment,

income inequality)?"

There is no direct evidence of which I am aware that is pertinent

to this real question. The literature does contain some evidence

regarding the second question.   This has come especially from studies of

the Tax Reform Act of 1986 (e.g. Slemrod(1989)).   But the nature of that

"experiment" is not dramatic enough to produce very clear conclusions.

Most of the evidence in the literature relates to the first question.

The alarmist anecdotal evidence falls into this category: "When Ford

closes an assembly plant in Michigan and opens one up at nearly the same

time in Mexico, surely that is evidence that FDI has reduced DI!

Indeed, even the existence of auto assembly plants in Mexico is evidence

that FDI is displacing DI!!" Though one can understand the frustration,

these observations do not mean that there are measures that can be taken

by the U.S. government that can raise domestic employment levels in

automobile production. On the contrary, if we impair our own manufacturers we give advantage to our competitors: the Japanese and Europeans.

Thus if the design of policies (QUESTION 2) is the issue, these anecdotes and the correlations described above do not offer much of an answer because the association between outward foreign direct investment and home investment is probably driven by factors that are quite unlike the policy measures that might be put in place to discourage or to encourage FDI.

Generally, we should expect to observe a positive association between FDI and DI when FDI is the vehicle by which successful innovations are spread throughout the globe. But that positive association between home and foreign investment does not deny the existence of policy measures that could tend to keep investment at home. One has to be careful in designing such measures, since schemes that might tend to capture (expropriate) in the short run the investment stimulated by one successful innovation may discourage future innovations and may in the longer run tend to reduce home investment.

A negative association between FDI and DI is likely to occur when FDI is facilitating foreign equity investments that otherwise are difficult to make. For example, U.S. financial capital may find it awkward to "employ" low-wage labor in Mexico indirectly through equity investments in the Mexican stock exchange, but may find the connection relatively direct through FDI in Mexico by U.S. based multinationals. Even if this model is correct and if there is a negative association between FDI and DI, this does not assure the existence of tax schemes that can increase DI at the expense of FDI. Measures that would deter

U.S. investments in Mexico might impair U.S. firms in competition with Asian or European firms. This would be particularly harmful to domestic investment if U.S. firms operating in Mexico tended to use U.S. suppliers of parts whereas the Asian and European firms imported parts from their home countries. The impaired U.S. firms might then find it difficult to raise financial capital in the global financial markets, and the attempt by the U.S. to keep investments at home would actually divert global investment resources to Japan or to Europe.

These possibilities are obviously complex and very difficult to detect in any data sets of which I am aware. As is often the case in economics, the argument can be supported somewhat by empirical results but must rest fundamentally on logic. I will accordingly attempt here to make a logically compelling case, but I will also review the empirical evidence as I understand it. The view of a multinational as a safety deposit box rather than a mutual fund will dominate most of the theory in this paper. This preference is supported by findings in favor of the "internalization theory" by Morck and Yeung(1991) who study the stock market valuation of multinationality.

Section 1 of this paper offers a brief review the empirical evidence. This is preceded with some comments about the general difficulties of drawing causal inferences from nonexperimental data and the special problems with any observed FDI/DI association. Section 2 provides a "word" model of the effect of taxation on the international flow of knowledge capital; Section 3 is a graphical two-country general equilibrium model in which FDI is a means of transferring internationally a superior technology.. This way of thinking about FDI is given some numerical substance in Section 4 which uses a calibrated

growth model to compute the effects of various levels of taxation on the economic integration of Mexico and the United States. Shortages of human capital in Mexico are shown to greatly limit the FDI flows. Finally, Section 6 contains some concluding remarks.

1. CORRELATIONAL EVIDENCE

It is well understood that correlation does not imply causation, but many papers that purport to measure the impact of outward foreign direct investment on domestic investment come dangerously close to behaving otherwise. If the question is "What is the impact of FDI on DI?" traditional econometric theory suggests a way to find an answer even though there is two-way causality. A suitable "surrogate" (instrumental variable) for FDI must be found, and causal inferences regarding the impact of FDI on DI can be made by studying the correlations of the surrogate with both FDI and DI. For example, if following the Mexican liberalization there was an increase in FDI from the U.S. into Mexico and a concomitant reduction of DI in the United States, econometricians would conclude that "FDI lowers DI." Indeed this did seem to happen, as can be seen in Figure 1. Here the Mexican liberalization is survey as a "surrogate" for potential tax changes that might encourage more outward FDI.

The shortcomings of this kind of thinking are two: First, FDI is not subject to the direct control of any government agency, and, second, the form by which governments may seek to influence FDI (tax codes, R&D subsidies, commercial policy,...) is likely substantially to alter the relationship between FDI and DI. For these reasons, the best answers to meaningful questions probably come from intense study of the effects of

FIGURE 1   8

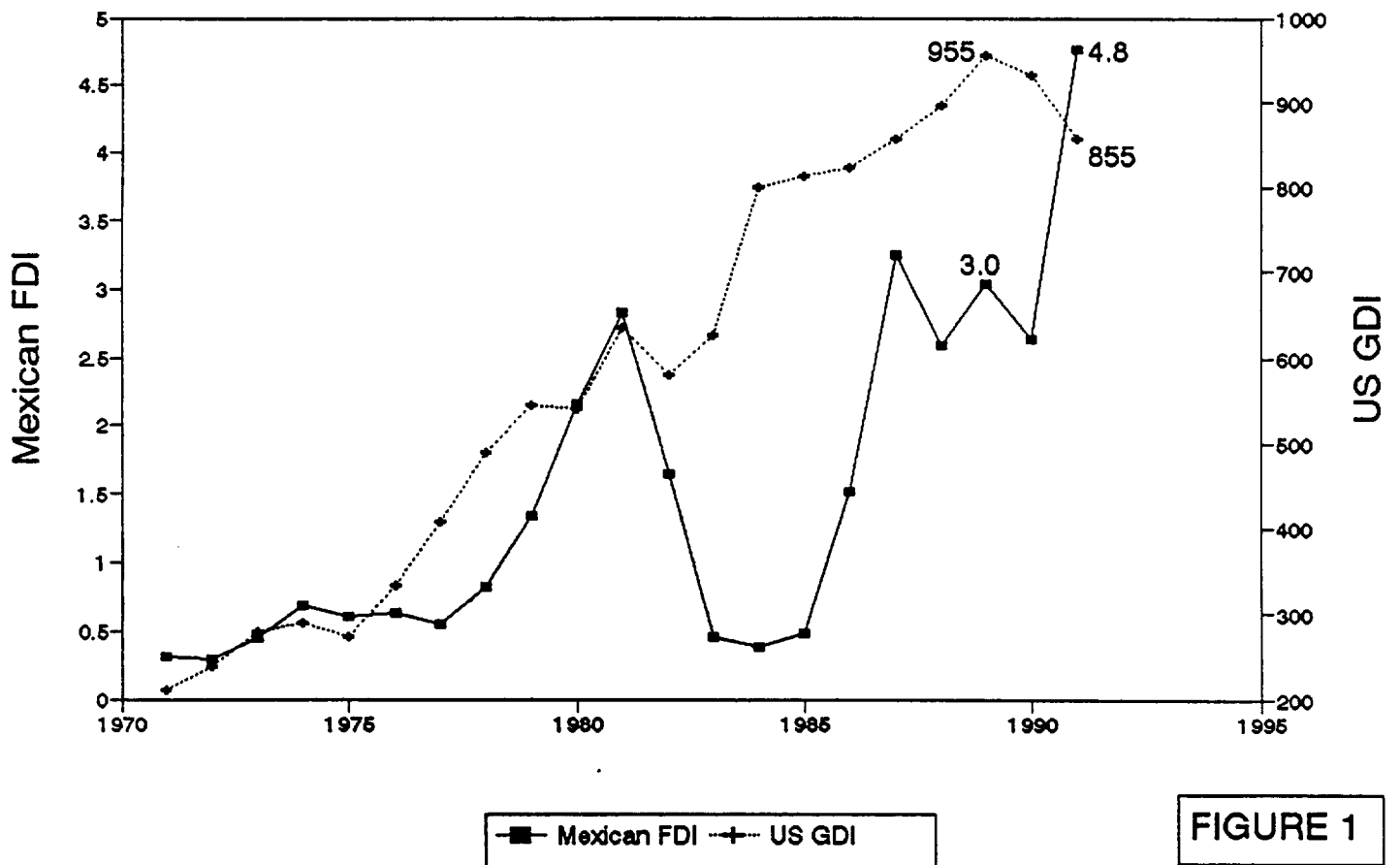# Mexican Inward FDI and US GDI
Billions of U.S. Dollars

FIGURE 1

historical tax changes, such as the Tax Reform Act of 1986. This and other "experiments" are very limited in scope, and we are consequently very far from being able to answer the right question with any degree of accuracy: "What combinations of corporate profits tax, commercial policy and other policy measures are in the best interest of the United States?"

With that as an introduction, we can now take a look at some surprising correlations. It will prove almost impossible to resist the temptation to draw causal inferences from some of these. These correlations are organized into three sections. First is background information. Second are correlations which seem to support the case for measures that would encourage FDI rather than discourage it. Next are the correlations which seem to support the contrary opinion.

1.1 BACKGROUND

- The United States has a long-standing comparative advantage in technology-intensive products.

- The U.S. economy is becoming much more global.

Figures 2, 3 and 4 compare 1983 data with 1991 data on the ratios of exports, imports and net exports to sales for various manufacturing sectors. In Figures 2 and 3 are drawn "forty-five" degree lines along which the 1983 ratio equals the 1991 ratio. Every industry is becoming more global with higher ratios of exports to sales and also higher ratios of imports to sales.

The most export-oriented sectors are machinery, electrical equipment, transportation, instruments and chemicals, all of which are connected in important ways to technology. Electrical machinery, transportation equipment, machinery and instruments also have substantial levels of imports, as does primary metals.
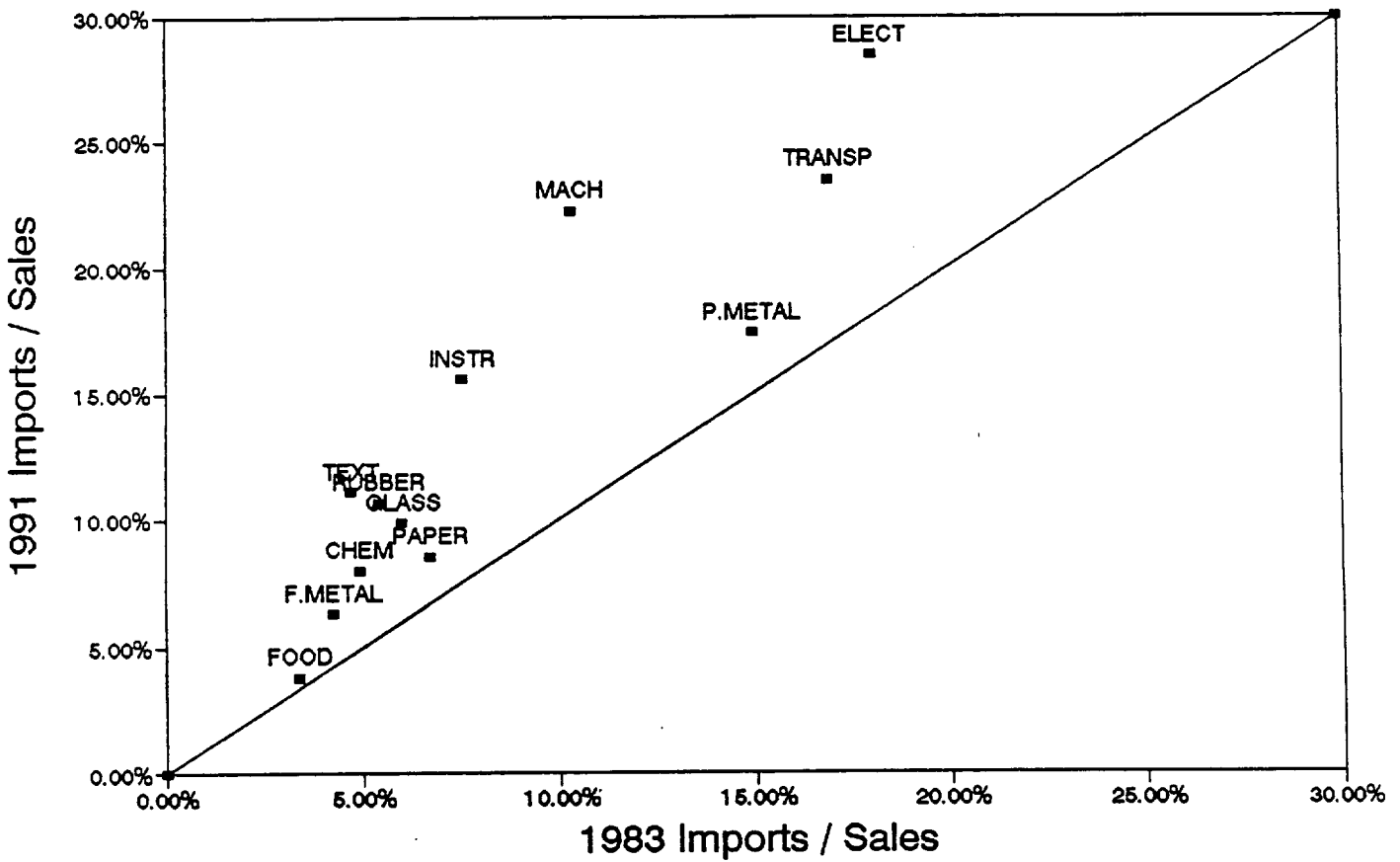
FIGURE 2   10

Exports / Sales
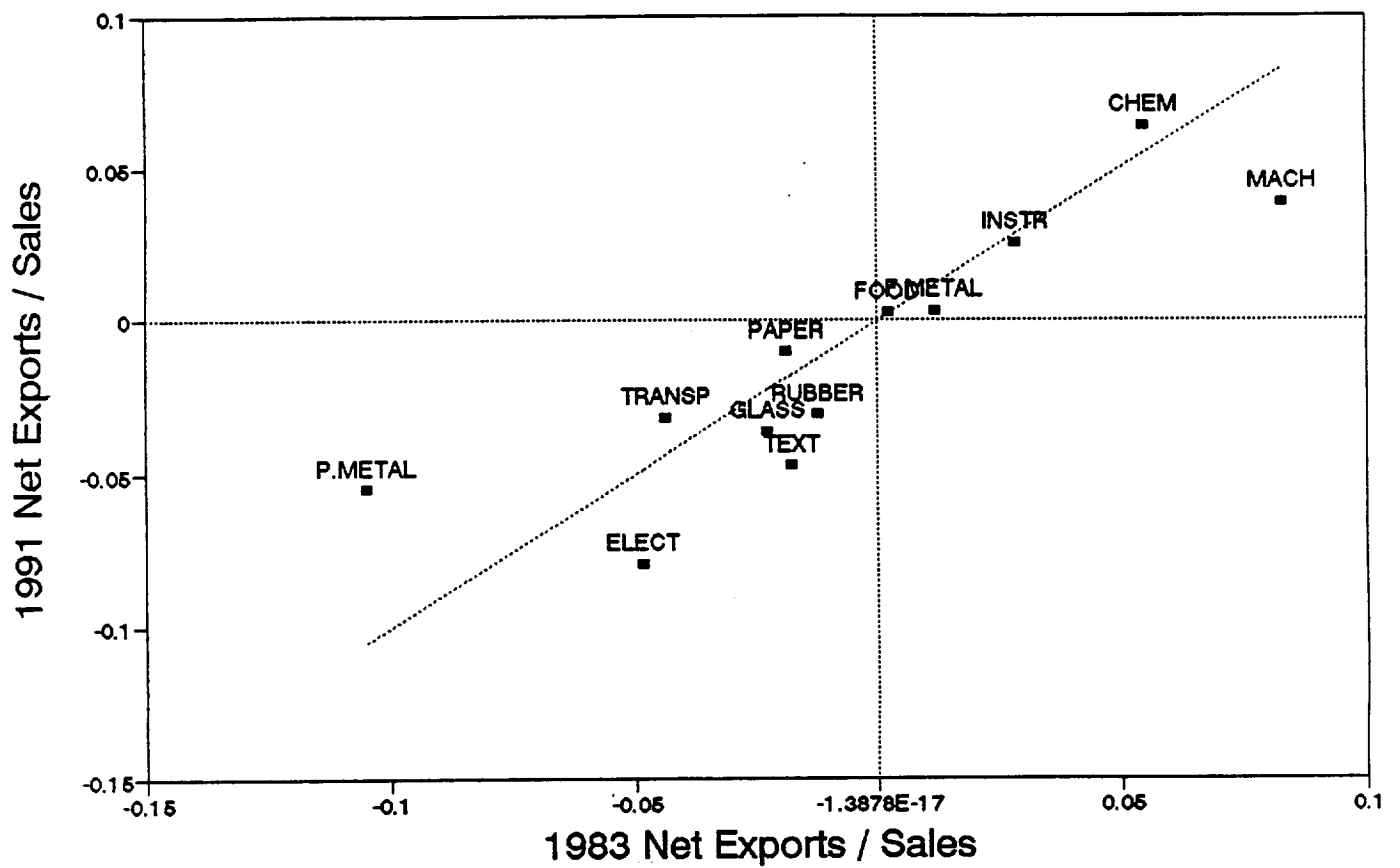## U.S. Manufacturing (exc. oil and print)

FIGURE 3   11
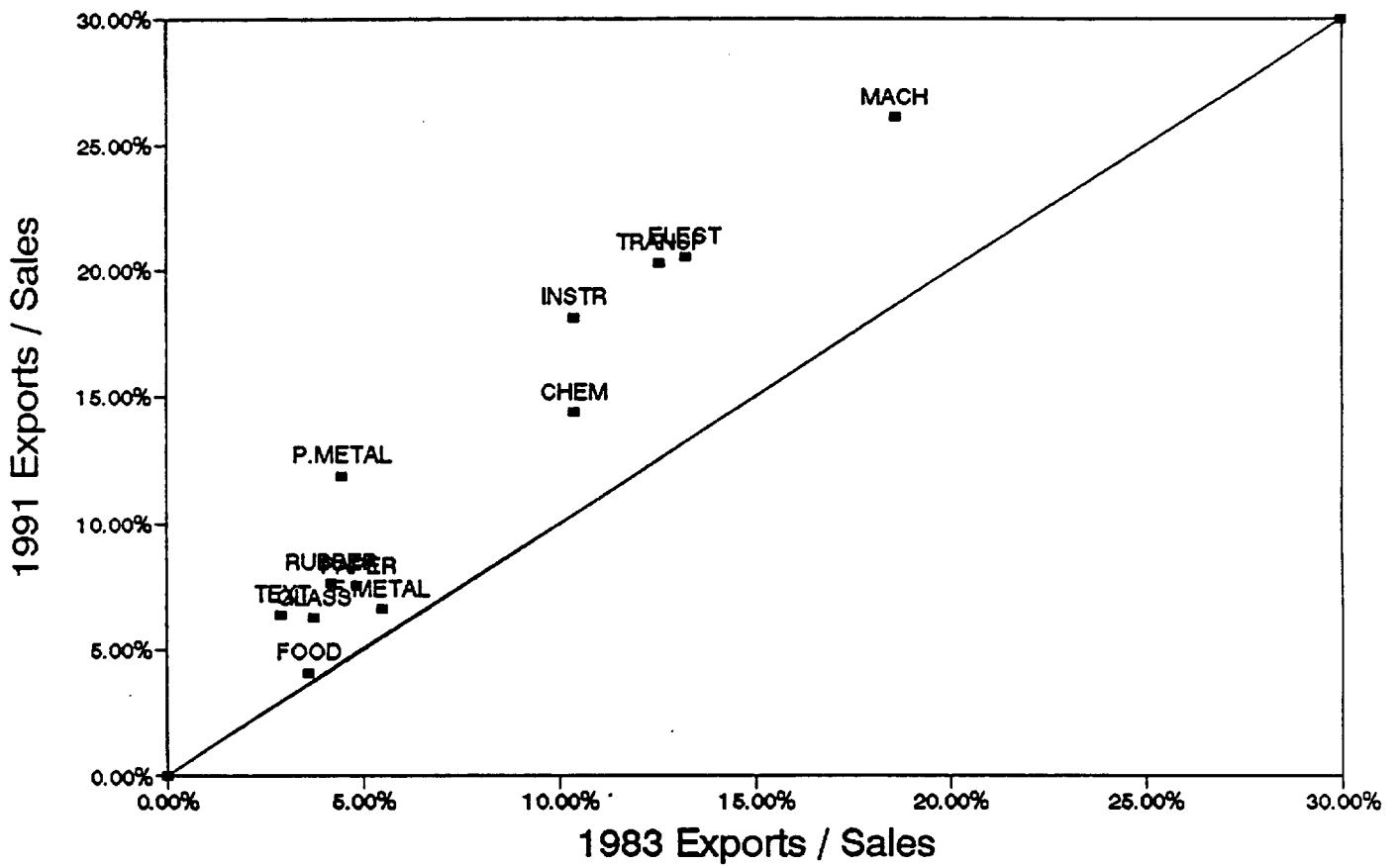
Imports / Sales
U.S. Manufacturing (exc. oil and print)

FIGURE 4   12

Exports - Imports / Sales
U.S. Manufacturing (exc. oil and print)

Because of offsetting imports and exports, the net export diagram, Figure 4, is probably best for characterizing U.S. comparative advantage. Sectors located in the northeast quadrant were industries in which the U.S. had a comparative advantage. Sectors in the southwest quadrant were industries in which the U.S. had a comparative disadvantage. Here the forty-five degree line separates sectors with improving trade balances from sectors with deteriorating trade balances. Here again we see the comparative advantage in technology-intensive goods, machinery, chemicals and instruments.

■ Commercial policy has a potentially large effect on the location of investment and shouldn't be neglected when studying FDI.

Mendez(1993) studies the effect of the U.S. Offshore Assembly Provision which exempts from tariffs the part of value that comes from U.S. supplied parts. These imports have risen to 73.7 billion dollars, 16.9 per cent of total imports, in 1987. The Mexican maquiladoras have expanded especially rapidly.

1.2 "GOOD" CORRELATIONS

● The U.S. as the source of outward FDI in the 1960's has been supplanted by Japan, the United Kingdom and France.

Table 1 (Table A-5 in ECAT(1993)) compares outward FDI shares of OECD totals for several different time periods. The United States had the dominant share in 1961-1970, but has been displaced by Japan and most recently by the U.K. There is a little bit of evidence in this cross-country comparison that suggests that FDI is a symptom of technological superiority and economic health. Decline in U.S. dominance of the OECD FDI totals is much greater than the decline in U.S. dominance in GDP totals. But correlation does not imply causation.

Outward Direct Investment Flows: Percent of Total Flows from OECD Countries
Selected Periods, 1961-1970 to 1988-1989

| Country	1961-1970	1971-1980	1981-1988	1981-1984	1985-1987	1988-1989
United States	66.3	44.4	21.6	20.1	25.3	16.9
Canada	2.1	3.7	5.2	8	5.4	3.5
Japan	2	6	16.7	13.2	16.2	27.6
Belgium-Luxembourg	0.5	1.1	0.9	0.4	1.8	1
France	3.7	4.6	7.2	8.1	6.5	10.8
Germany	5.8	7.7	8.5	9.7	9.4	8.7
Italy	2.4	1.2	2.4	4.6	2.7	2.6
Netherlands	3.8	9.2	6.6	7.8	5.6	4.9
Spain	0.1	0.4	0.5	0.9	0.6	0.9
United Kingdom	10.5	18.2	21.4	24.6	23.4	20.6
Sweden	1.5	1.5	2	2.7	3	4.4

• FDI is not a large component of U.S. gross domestic investment, and moreover the net flows have been inward not outward.

Figure 5 is a graph depicting the ratio of U.S. net inward FDI to GDI and the ratio of the external deficit to GDI. Throughout the decade of the 1980's the U.S. attracted FDI and also portfolio investments. External financing peaked in 1987 at almost 18% of GDI (and a much larger fraction of net investment). Inward net FDI peaked the next year at almost 5% of GDI. Both of these figures behaved very differently before the Reagan 80's and both are plummeting at the end of the period of observation. (See also Figure 6 which compares investment ratio with the external surplus.) We should probably be expecting very different behavior in the 90's and in the next century, but it seem doubtful these balance of payments numbers for FDI will ever become a substantial fraction of GDI.

• We sell where we invest; we invest where we sell.

Figure 7 indicates the 1991 location of U.S. foreign assets and the corresponding exports. Europe is the main destination for both exports and investments. Europe is also the source of U.S. imports

FIGURE 5   15

Sources of Gross Domestic Investment
United States

Legend: Inward Net FDI — External Deficit

FIGURE 6   16
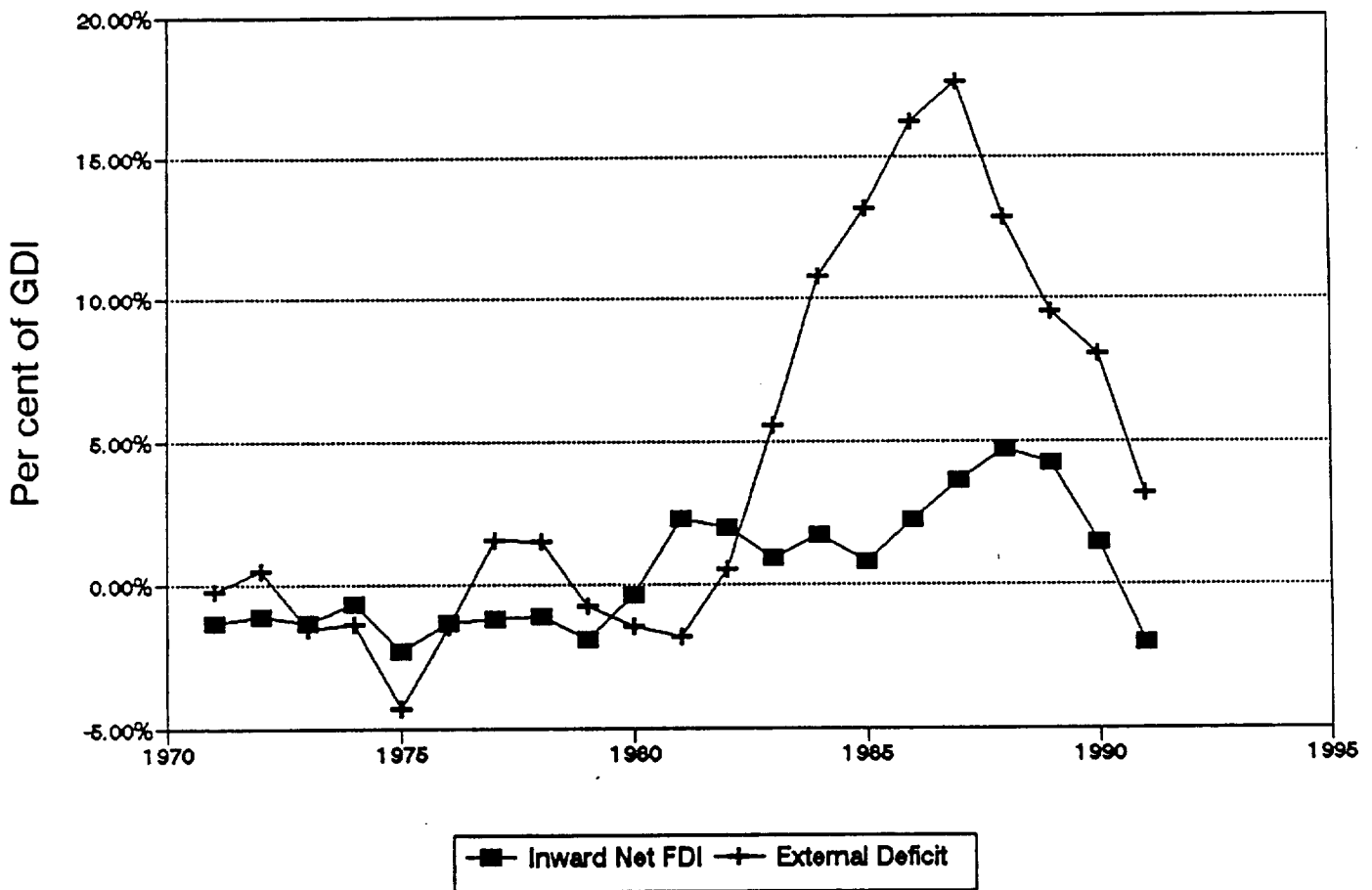
U.S. External and Internal Investments
Percent of GDP

FIGURE 7   17
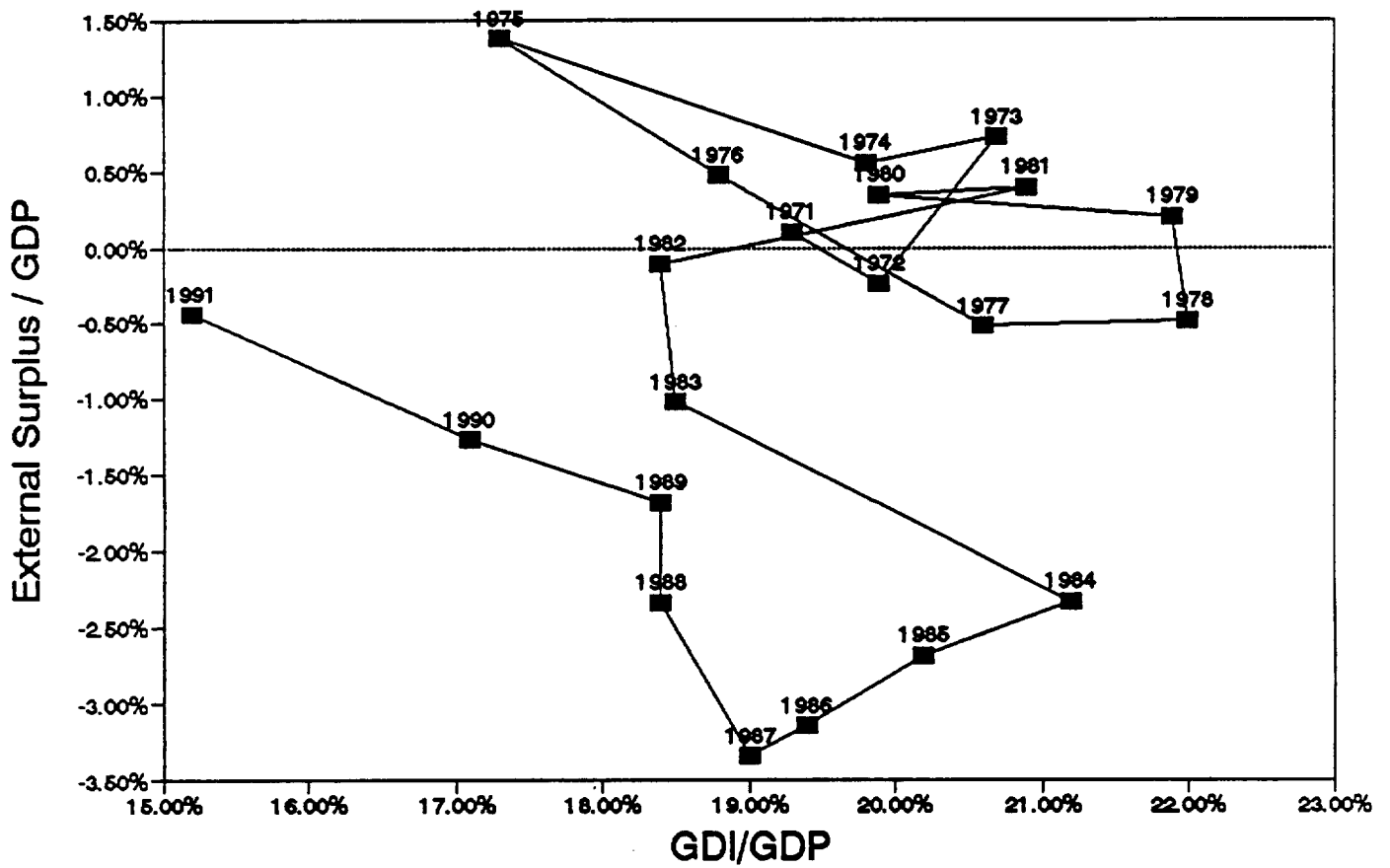
FDI and Exports by Region
1991
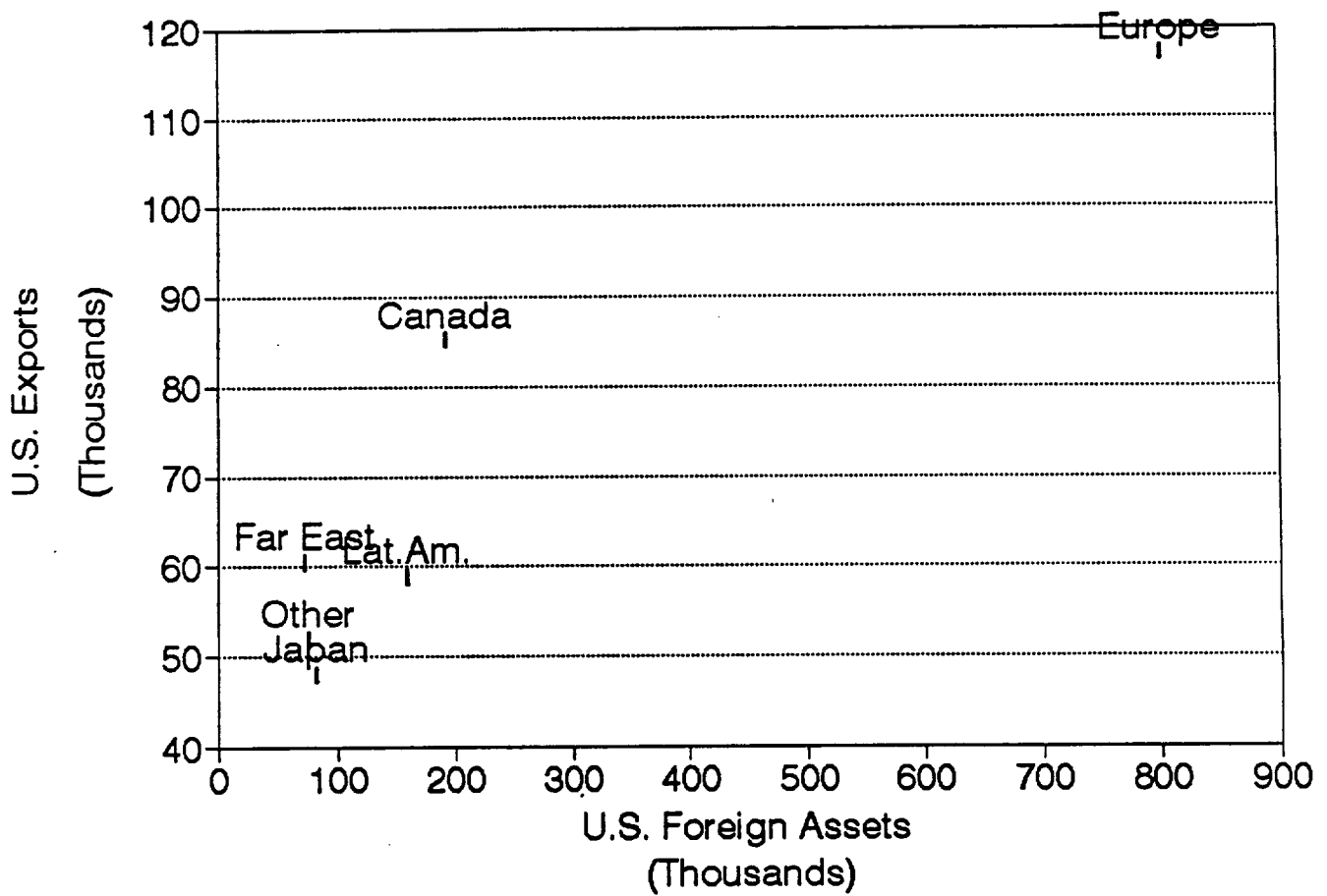
FIGURE 8   18

FDI and Imports by Region
1991
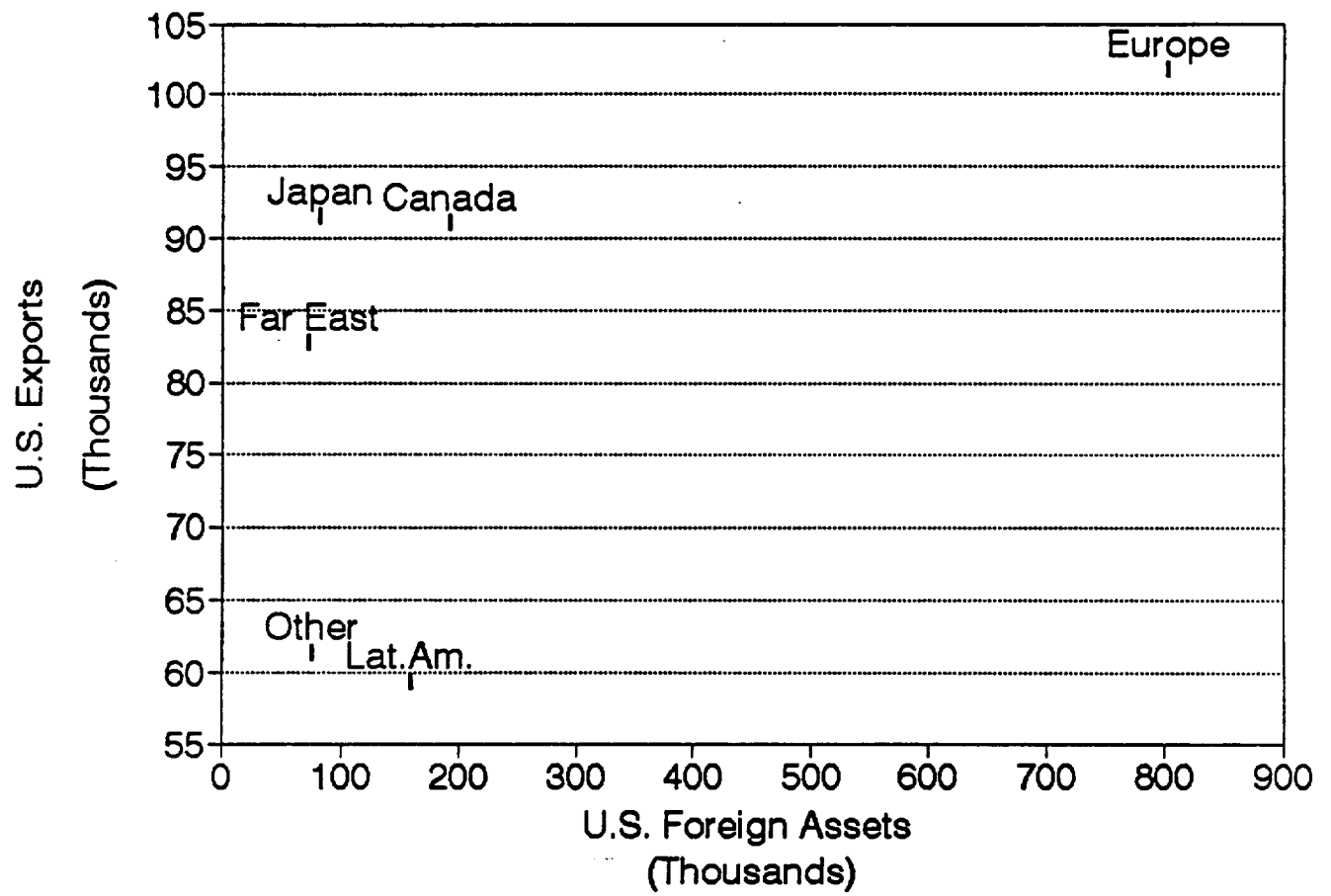
FIGURE 9   19

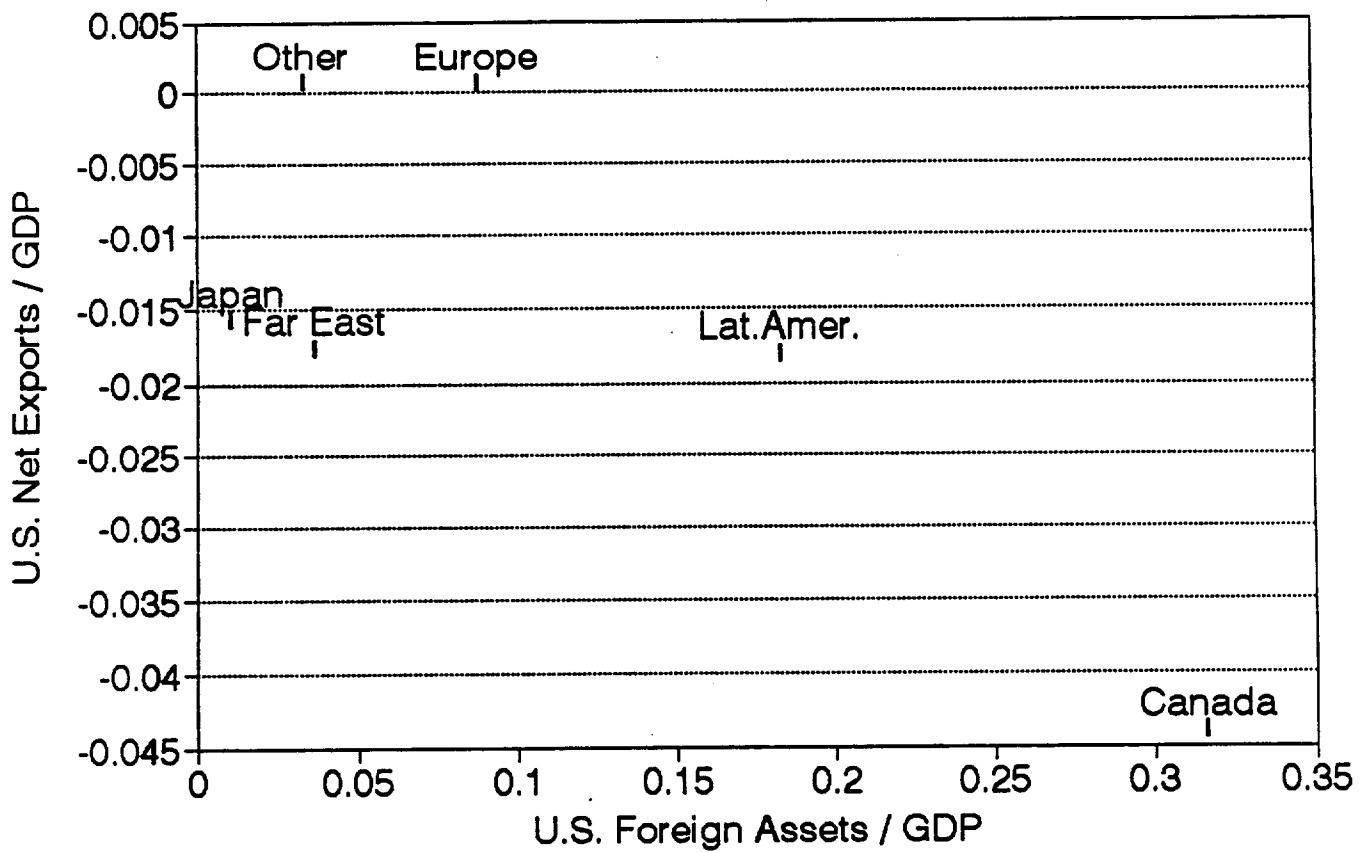# FDI/GDP and Net Exports/gdp by Region
1991

FIGURE 10   20
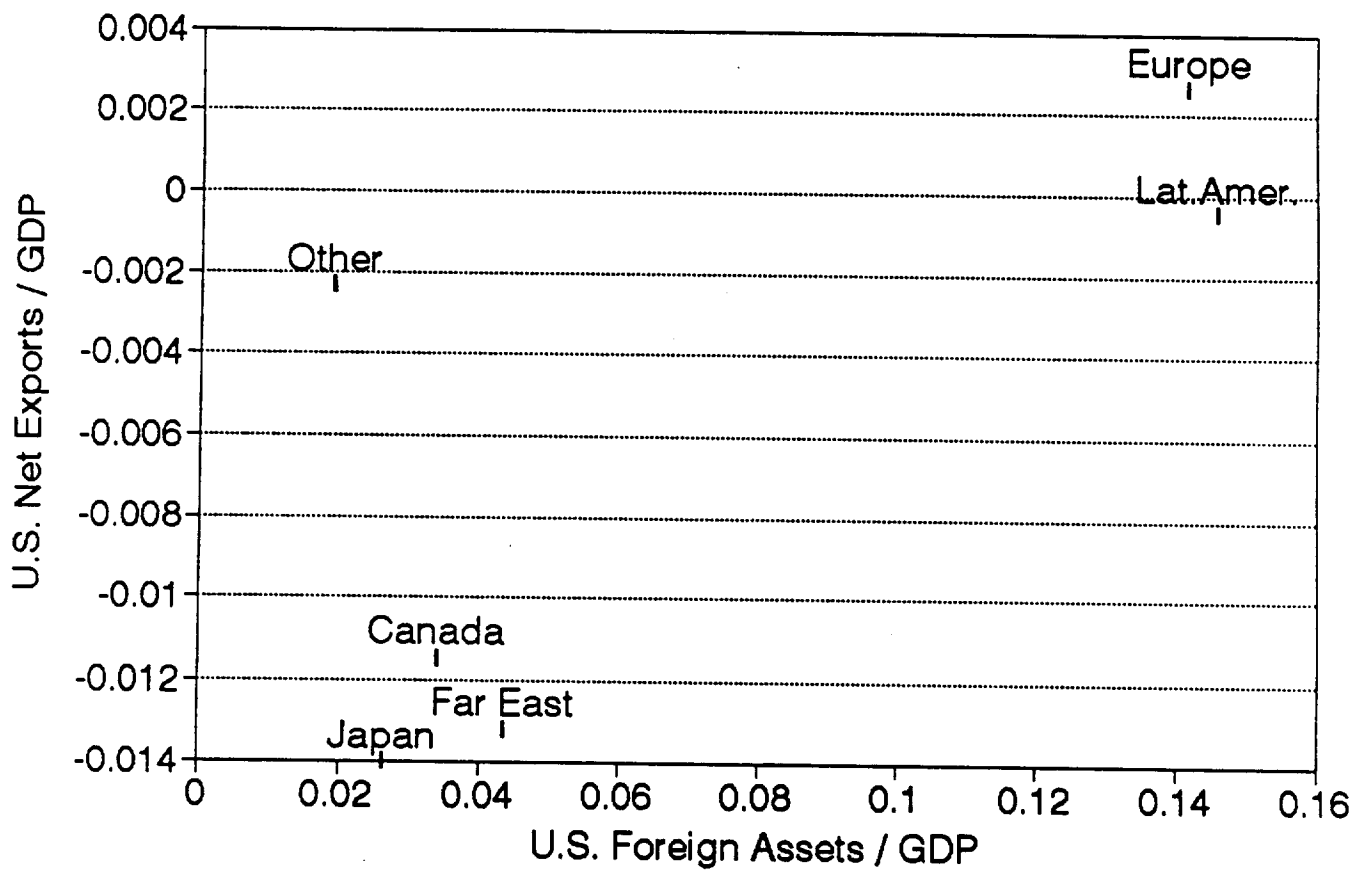
FDI and Net Exports by Region
1991

FIGURE 11 ____ 21
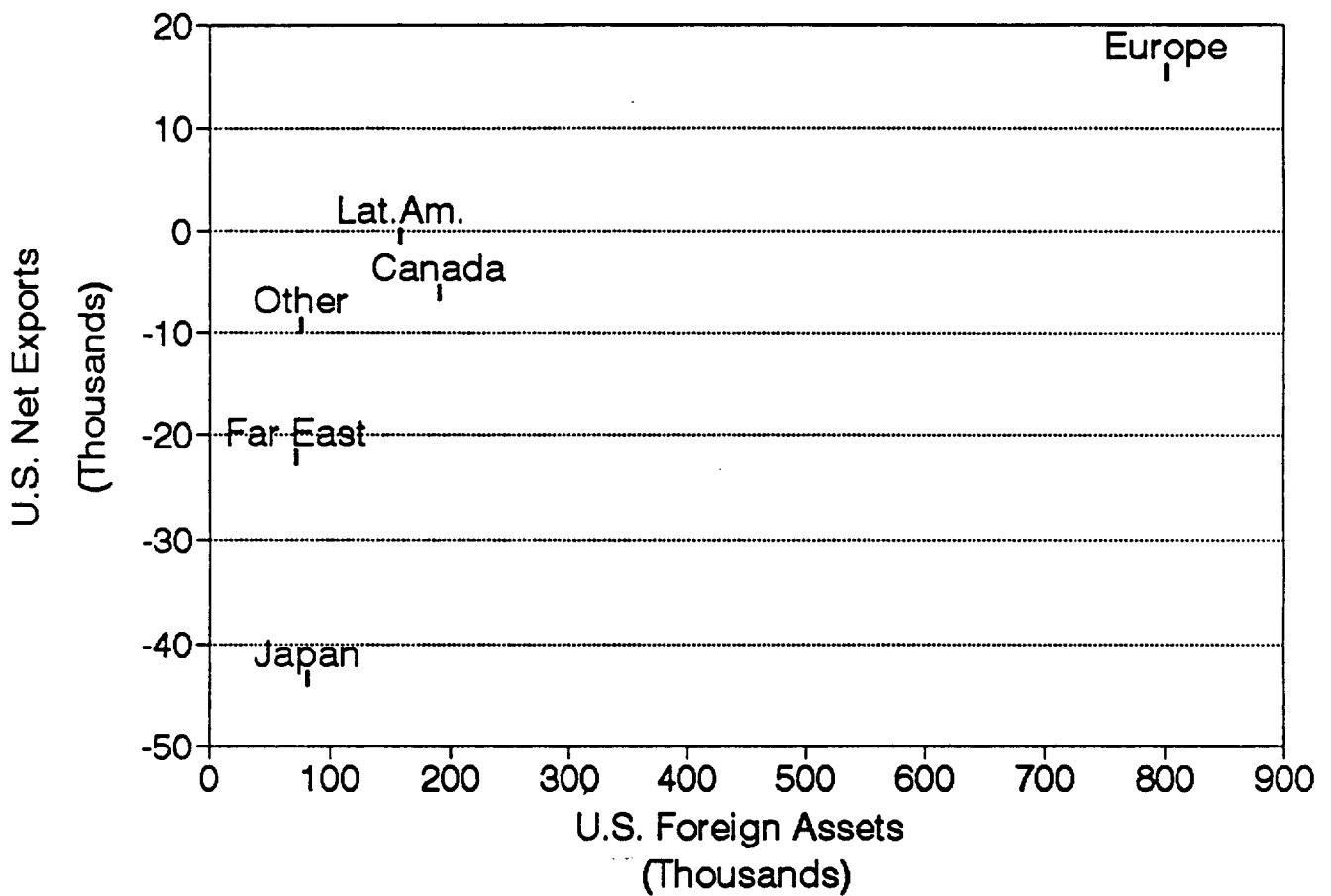
FDI/GDP and Net Exports/gdp by Region
1983

(Figure 8), but in 1991 we ran a substantial surplus Europe. This
surplus depicted in Figure 9 leaves the distinct impression that the
United States is able successfully to market products made at home in
those foreign locations where it also places investments. Correcting by
the size of the market (GDP) in Figure 10 doesn't seem to matter much
for the basic conclusion, but picking another year (Figure 11) changes
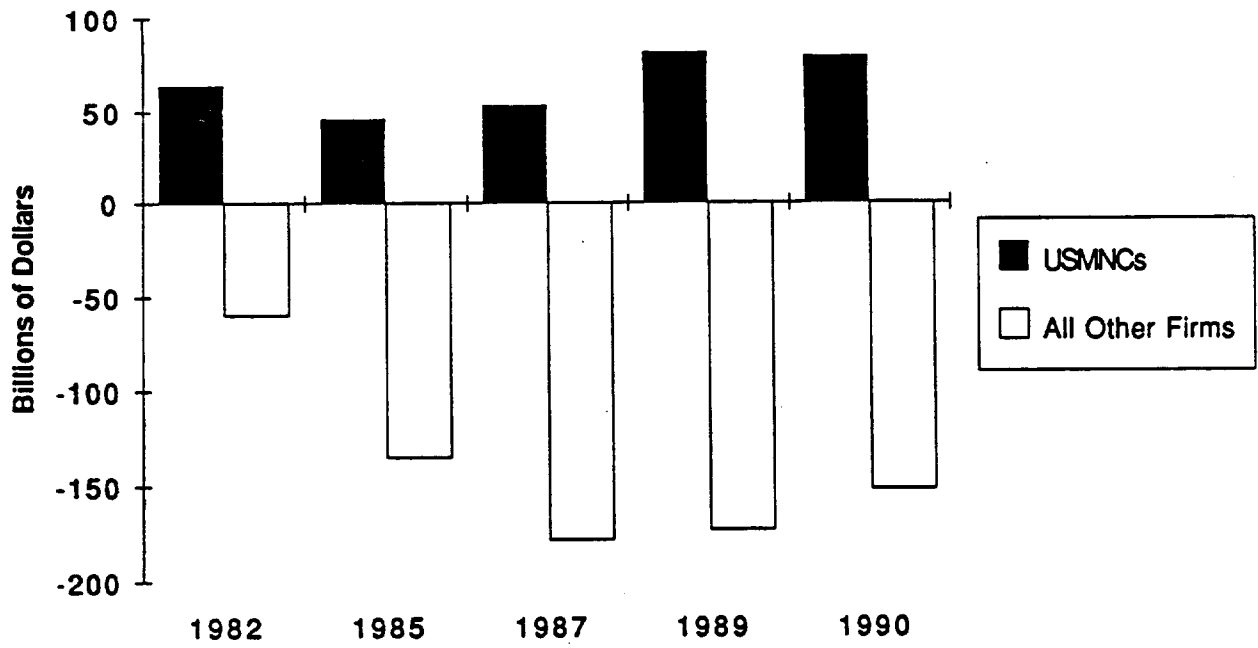the conclusion dramatically.

Incidentally, one of the most compelling arguments in favor of the
North American Free Trade Agreement is that it gives preferential access
into the U.S. marketplace and thereby encourages growth in a region of
the world where U.S. business successfully compete. It is common
knowledge that U.S. businesses have been singularly unsuccessful
penetrating the Japanese marketplace which is abundantly clear in Figure
9. The trade deficit with Japan is large, but there is already also a
large deficit with the rest of East Asia, especially the mainland of
China. This deficit is growing at an alarming rate. In great contrast
with this Asian experience, the United States has a substantial trade
surplus with Mexico and has pretty much balanced trade with Latin
America overall.

It is very tempting to use these cross-country associations
between exports and FDI to support the conclusion that government tax
policies that reduce FDI will also reduce U.S. exports. But correlation
does not imply causation.

• U.S. multinationals account for 2/3rds of U.S. manufactured exports.

Figures 12, 13 and 14 taken from ECAT(1993, pp17-19) indicate the
remarkable difference between U.S. multinationals and other firms in
terms of their external trade. U.S. multinationals are exporters (have

Chart1

FIGURE 12   23

U.S. Manufacturers' Trade Balance

Chart3   FIGURE 13   24

Trade Balances by Industry, 1990

FIGURE 14   25

Exports of Manufacturers

Legend:
■ USMNCs
□ All Other Firms

Y-axis: Billions of Dollars (0, 20, 40, 60, 80, 100, 120, 140, 160, 180, 200)

X-axis: 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990
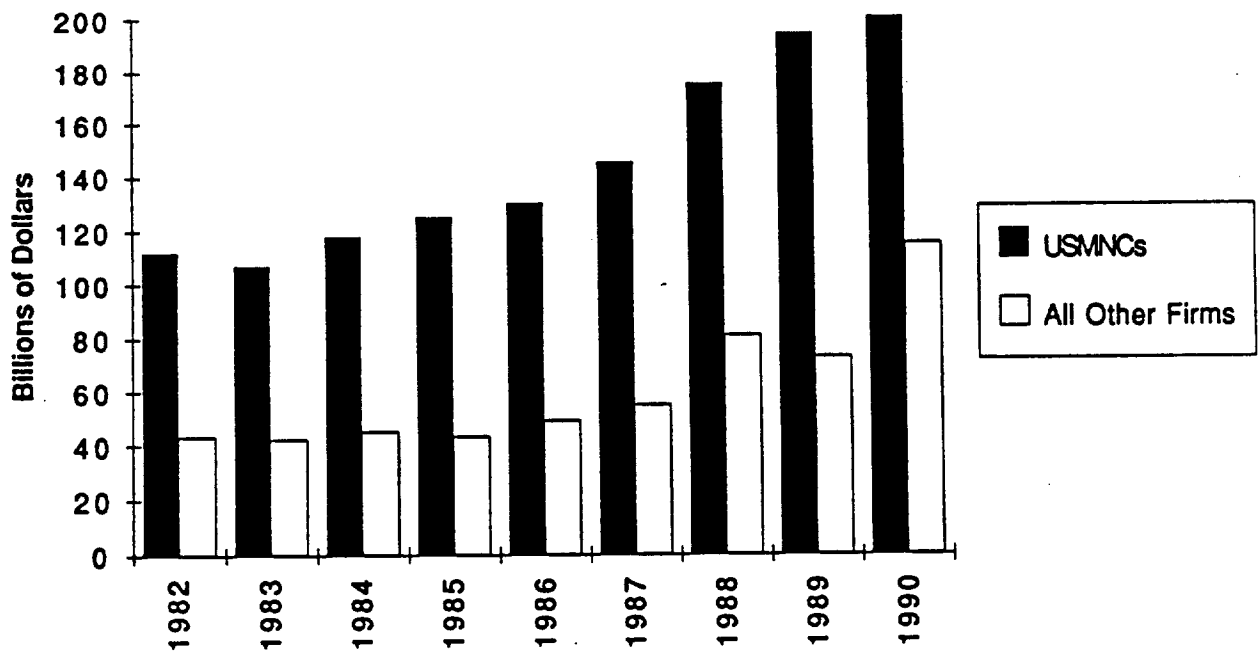
except in textiles/apparel and printing/publishing. Other firms are importers, except in printing/publishing.

From these charts it seems appropriate to conclude that whatever is the source of U.S. comparative advantage in manufactures, it resides largely within assets of U.S. multinationals. Indeed, Lipsey(1988) found that U.S. multinationals export performance in 1966 amplified the U.S. overall comparative advantage: ".. where the United States was strong, U.S. multinationals, taken as a group, were stronger. And where the United States was weak, U.S. multinationals as a group were weaker."

It is very tempting to use this cross-firm association between exports and FDI to support the conclusion that government tax policies 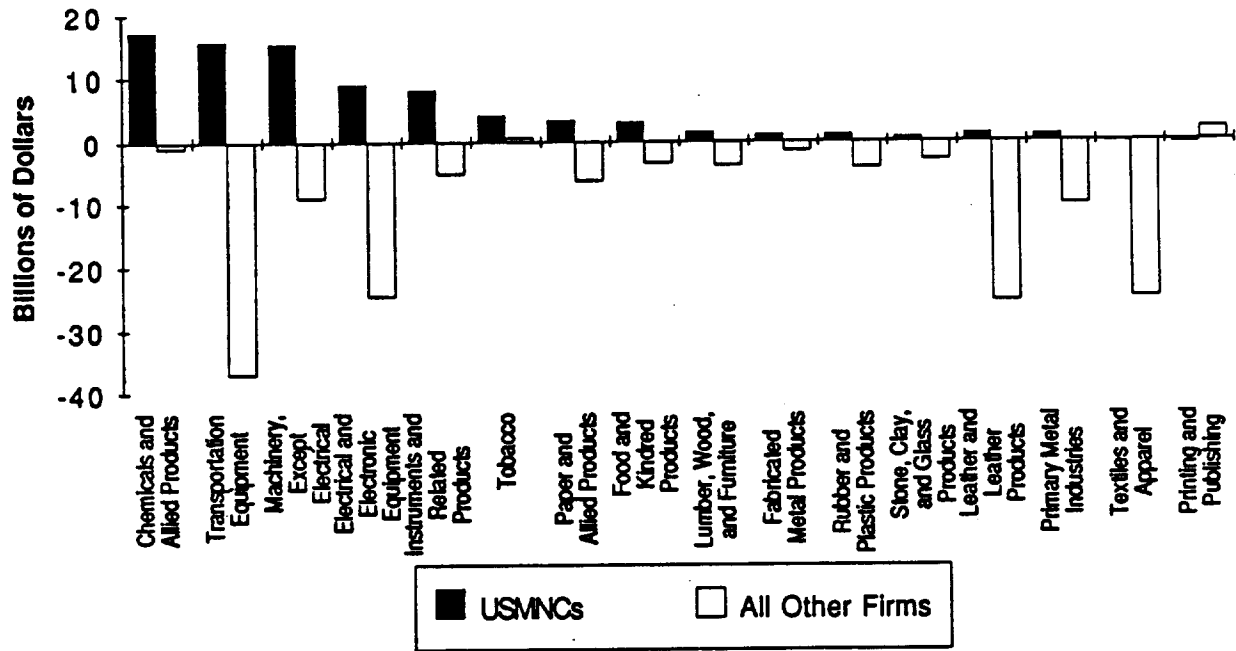that reduce FDI will also reduce U.S. exports. It is tempting, but it would be wrong. Correlation does not imply causation.

■ FDI is primarily confined to the advanced developed countries, and has not gone much from North to South.

Figure 7 indicates that most U.S. FDI has gone to Europe, but after correcting for economic size by dividing by GDP, as in Figure 10, Latin America looks like a more important destination for FDI.

■ We export from sectors with substantial FDI and we also pay high wages in those sectors.

See Figures 15 and 16.

■ FDI was relatively intense in the capital-intensive sectors.

Kravis and Lipsey(1988) find that firms with a high ratio of foreign production to U.S. production, tend to have higher U.S. labor productivity and to pay slightly higher salaries and wages to them. This relationship is stronger among manufacturing firms than among service industry firms, probably because services are less tradeable than manufactured goods or components, and service industries may

FIGURE 15   27

1991 FDI and Export Performance

Scatter plot. X-axis: Foreign Asset Ratio (0 to 0.5). Y-axis: (Exports) / Sales (0 to 0.3). Data points labeled: Mach, Elect, Trans, Instr, Chem, TOT, P. Met., Rubber, Paper, Text, Met., Glass, Food, Oil, Print.

FIGURE 16   28
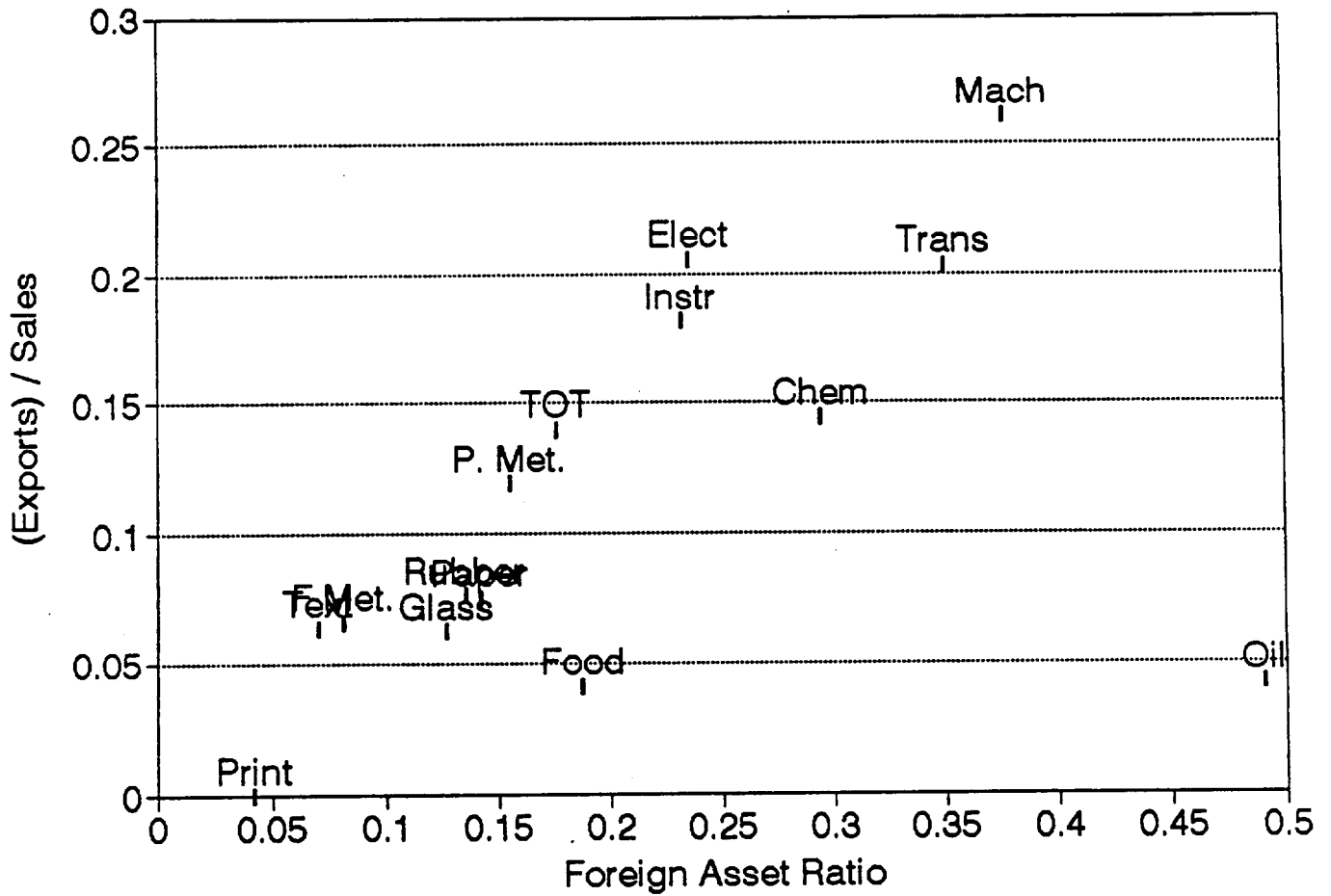
1991 Wages and F.A.R.
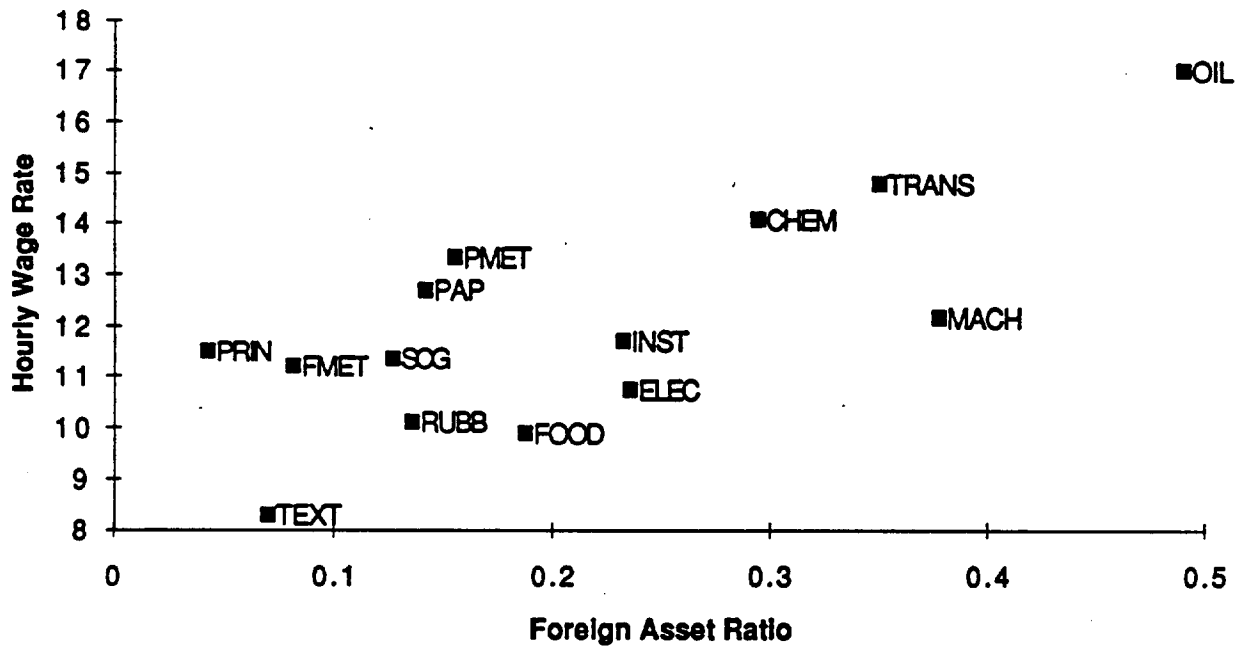
therefore be less able to break up the production process to take
advantage of difference in factor prices.

1.3 "BAD" CORRELATIONS

- Countries with high FDI have low DI.

Feldstein(1993) estimates the equation GDI/GDP = a + b[GNS/GDP] +
c [(FDI-out)/GDP] + d [(FDI-in)/GDP] with two cross sections of OECD
countries, 15 countries during the decade of the 1970's and 18 countries
during the decade of the 1980's. Here GDI is gross domestic investment,
GNS is gross national savings and both inward and outward FDI are
included. For the 18 country sample, one equation has (b,c,d) =
(.74,-1.65,.47) implying that each $1 of FDI reduces GDI by $1.65. This
coefficient is "knocked down" if more variables are included. From
these Feldstein concludes that the offset coefficient is about one:
Each $1 of FDI reduces DI by $1.

- State taxes affect the location of inward foreign direct investment.

Hines(1993) finds that states of the United States which impose
high income tax rates on foreign corporate earnings have difficulty
attracting direct investment. "...a one percent higher state corporate
tax rate is associated with a decrease from 7 to 9 percent in the share
of manufacturing investment by foreign investors from countries without
foreign tax credit systems, relative to investors from nations with tax
systems that do allow for the crediting of U.S. taxes against their
domestic tax obligations."

- While domestic employment in U.S. manufacturing stagnated in the
  1980's, domestic employment by multinationals fell substantially,
  which was almost exactly offset by an increase in employment by
  foreign affiliates.

U.S. employment in manufacturing held pretty steady from 1983 to
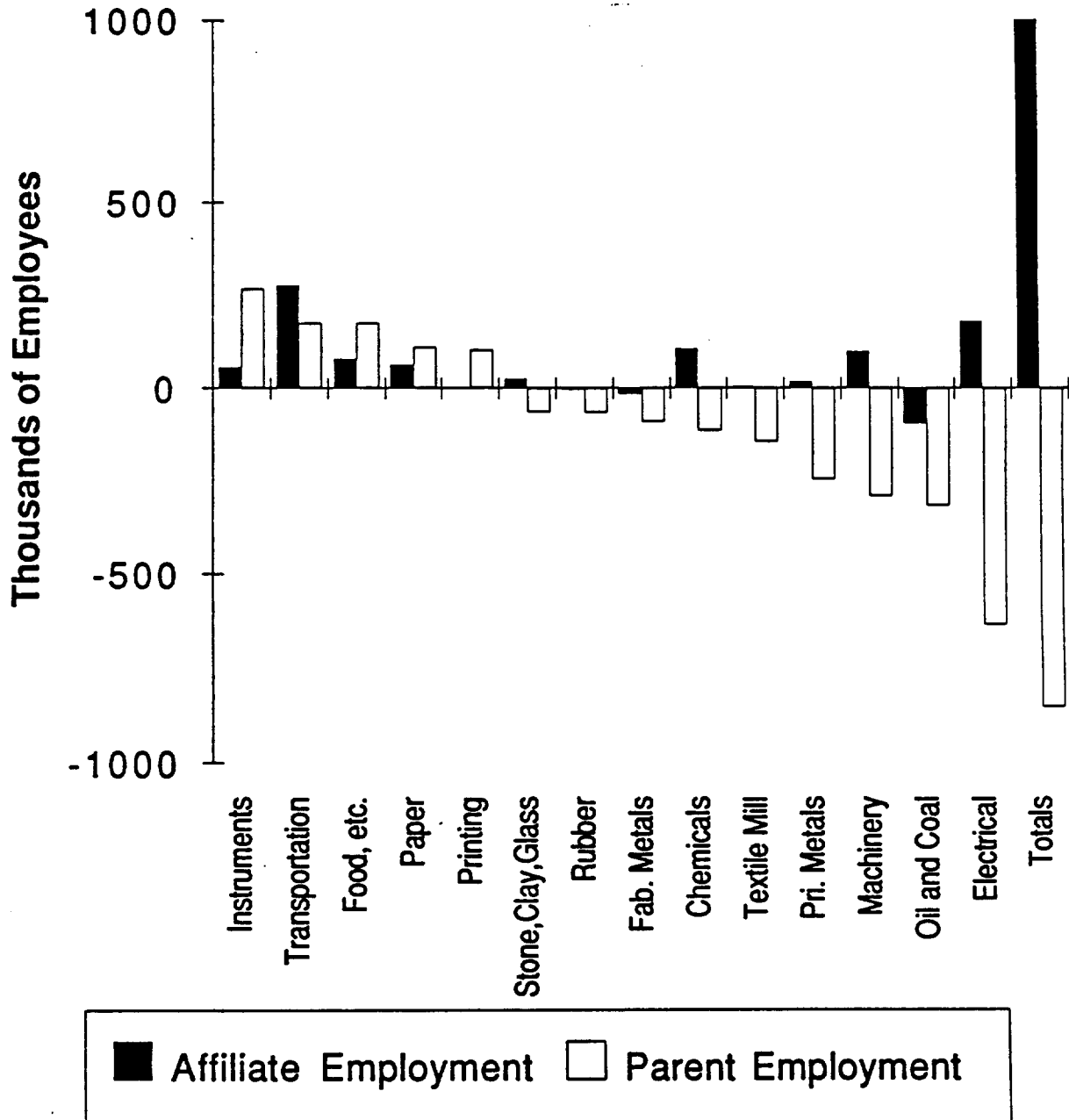1991 at about 18.4 million. But domestic employment by multinationals

fell by about 1 million from 10.4 million to 9.5 million. Meanwhile, employment by affiliates grew by nearly 2 million from 5.0 million to 6.9 million and employment in manufacturing by affiliates grew by about 1 million from 3.3 to 4.3 million. These numbers and the industry breakdown, taken from ECAT(1993), are illustrated in Figure 17.

These are troubling numbers that seem to be evidence of the great sucking sound that Ross Perot hears. This concern, I believe, is misplaced. Most importantly, economists should not let themselves get into a debate about job "creation". An adequately functioning labor market will assure jobs for all Americans who wish to work at the going wage rate. Of course it is true that there are macro-economic cycles that cause lay-offs and spells of unemployment. But ironing out the business cycle is the job of the Federal Reserve Board, and shouldn't be a consideration when Congress examines NAFTA or proposed changes in corporate taxation. The issue isn't the number of jobs; it's the kind of jobs and the rates of pay.

Parenthetically, I note that Kravis and Lipsey(1988) who offer a promising title "The Effect of Multinational Firms' Foreign Operations on their Domestic Employment" back off considerably when they offer the caveat: "While we interpret the causation as running from the level of foreign production to labor intensity in the U.S., the alternative interpretation is that, in manufacturing, the less labor-intensive firms produce more abroad." One of their regressions (p.6) using the 589 service sector parent firms in the 1982 benchmark survey of U.S. direct investment(U.S. Department of Commerce, 1985, is:

Parent Employment = .011 Parent sales - .0096 Maj. Affiliate Sales +
     .020 Minority Affiliate Sales

FIGURE 17   31

USMNC Affiliate and Parent Employment Change, 1983-1991

Thousands of Employees (y-axis, from -1000 to 1000)

Categories (x-axis): Instruments, Transportation, Food, etc., Paper, Printing, Stone,Clay,Glass, Rubber, Fab. Metals, Chemicals, Textile Mill, Pri. Metals, Machinery, Oil and Coal, Electrical, Totals

■ Affiliate Employment   □ Parent Employment

This equation is ordered causally in the same direction as the title, from foreign sales to domestic employment, taking as given the level of parent sales. Kravis and Lipsey follow this equation with an interpretation:

> "Given the level of parent sales, including exports, a million dollar increase in MAJ sales, reduces the number of parent jobs by 10. Higher MIN sales add to parent employment - about 20 jobs per million dollars of sales."

This sentence is giving a very doubtful causal interpretation to an association in the data. In almost any economic model, the levels of parent employment, parent sales and affiliate sales will be jointly determined. The association between these variables across firms at a given point in time thus allows no causal interpretation. Ergo the qualifying comment quoted in the paragraph above.

- Interactions between FDI and Domestic investment can come from financial constraints.

Stevens and Lipsey(1992) emphasize and find interactions between domestic and foreign investment through interdependence on the financial side. This financial interdependence has little to do with the policy question that is addressed in this paper. Formally a model of investment by a firm in two different locations can be expressed in terms of two functions, one for each location,

$$I_1 = f_1(t_1, t_2, x_1, x_2) \ , \ I_2 = f_2(t_1, t_2, x_1, x_2) \ .$$

Our issue is whether a tax by country 1, t_1, can increase investment at home at the expense of foreign investment. Stevens and Lipsey's question is whether x_2 affects I_1. Specifically, x_2 is foreign output, or the foreign contribution to the firm's capital, to the common cost of capital and to internal funds.

2.0 <u>FDI AS A VEHICLE FOR THE TRANSFER OF KNOWLEDGE CAPITAL</u>

A logical case against attempts to keep investments at home by sharply increasing the effective tax on foreign source earnings is offered in this section. The next two sections offer more formal theory and some numerical simulations of a model of the type presented here.

The laissez faire presumption applicable to commercial policy as well as to corporate tax policies is that U.S. private businesses organize themselves to employ most efficiently the workers, the physical capital and the knowledge capital that are sources of the international comparative advantage of the United States. Governmental interference in the form of aggressively non-neutral tax policies and regulations can alter the income distribution but do so at a cost of inefficiency.

This general presumption can be tailored to fit the FDI case best when FDI is a means for transferring U.S. knowledge capital to foreign locations, a view which is now the dominant theoretical model of FDI if not the empirical model. It is not surprising that U.S. multinationals are active in FDI since throughout most of this century the comparative advantage of the United States has come especially from its knowledge capital, from its technological and organizational superiority.(Nelson and Wright(1992)

U.S. knowledge capital can be employed outside our borders in five different ways:

(1) The services of knowledge capital can be embodied in U.S. exports.

(2) Knowledge capital created in the United States can be used by foreign affiliates of U.S. multinational corporations.

(3) Proprietary knowledge of U.S. corporations can be sold or leased to foreign businesses or governments.

(4) Knowledge that is too costly to protect can be taken by foreigners.

(5) Knowledge that is protected by U.S. copyrights can be stolen by

businesses operating in countries where legal systems to protect

intellectual capital are weak or nonexistent.

In the 1960's when the "technology gap" was at its widest, U.S. exports were effectively the only means by which U.S. knowledge capital was employed around the globe. Now that the technology gap has disappeared, and, in some cases reversed, it seems appropriate to ask: how did this happen and does it matter?.

To some extent, the closing of the technology gap has been a consequence of knowledge investments by foreign businesses and governments, not by leakage from the United States. These knowledge investments by foreigners probably form an important aspect of technological competition in the 1980's but seem less relevant for the 1960's when the real story was technological transfer out of the United States. The effect that this transfer had on the U.S. economy depends on the form of the transfer. Was it: (a) transfers of knowledge from U.S. parents to foreign affiliates, (b) lease or sale of U.S. knowledge to foreign organizations, or (c) copying by foreigners, legally and illegally?

The notion that multinational corporations were the prime source of technology transfer does not square with the experience of Japan, Korea, and Taiwan, which received very little U.S. foreign direct investment yet enjoyed large improvements in productivity.(Dollar and Wolff (1988). There is an implicit agreement among economists who have studied the Asian NIC's that the dramatic Asian improvements in productivity were "carried" by international commerce, mostly with the

United States. Thus "copying" by foreigners was the method of choice

for technology transfer. Nelson and Wright(1992, pp 1933-34) express

this more benignly: "And as the networks of technological development

and communication have become more oriented to professional peer-group

communities, which have themselves become increasingly international,

technology has become more accessible to companies that make the

requisite investments in research and development, regardless of their

nationality."

Why does it matter if knowledge capital is internationally mobile?

One answer is clear: the rate of return to knowledge investments is

fundamentally affected by the form and extent of international capital

mobility. The highest returns occur when U.S. businesses can choose the

form/vehicle and the location in which to deploy knowledge capital

without any expropriation risk. Lower returns will be obtained if U.S.

businesses are forced into defensive actions (including FDI) to reduce

the threat to their intellectual properties. The ultimate defense is

not to make the investment at all.

Obviously, the private return to knowledge investments is lowered

or eliminated if the investment can either be taken or stolen. Absent

an adequate rate of return, no private investment will take place. It

accordingly is in the interest of the world economy as well as the

individual investors to put in place institutions that can protect

intellectual property rights. International legal systems are one form

of institution. Multinational corporations are another. By keeping

knowledge internal to the firm, the multinational corporation reduces

the chances of theft and raises the private return to knowledge

investments.

Viewed as a means of protecting intellectual property, the multinational corporation is an entirely felicitous institution, and all Americans should cheer its existence. But there is another important reason why Americans should be concerned about multinationals. The transfer of knowledge capital to foreign locations affects the rate of return not only to knowledge capital but also to other U.S. factors of production, including physical capital and labor. When American workers had access to superior tools and superior organizational forms they could command very high wages, but today Americans have to face competition with foreign workers who have access to the same tools and to the same or better organizational forms and, partly as a result of technological dispersion, U.S. workers are suffering stagnating real incomes and increasing income inequality.

The declining earnings of American lower-skilled workers is by now an established fact. Burtless(1990) reports that real earnings of men at the 20th decile declined by as much as 25% from 1979 to 1987. Though there is consensus that the United States has been experiencing large increases in income inequality, there is little consensus why. Education and technological change are high on everyone's list. Globalization is also a suspect, although why globalization might affect wages is not always so clearly articulated. It is true that the ratio of imports plus exports to GDP has risen from less than 7% in the 1950's to number approaching 15% in the 1990's, but why should that affect income inequality? Here are four possible reasons:

(a) reduced U.S. market power because of expansion of capacity abroad especially in automobiles and iron and steel,

(b) cheaper labor-intensive products like apparel and footwear, as a
    result of rapid growth in labor-abundant Asia,

(c) increased mobility of physical capital,

(d) increased mobility of knowledge capital and the closing of the
    technology gap.

There is not a great deal of evidence regarding the relative
importance of these four globalization effects on income inequality, nor
is there much evidence on the domestic effects of education and
technological change. It is, however, highly unlikely that increased
mobility of physical capital (category (a)) has been very important.
The remarkable "home-bias" of investors has been established by
Feldstein and Horioka(1980) who discovered very high cross-country
correlations between domestic savings rates and domestic investment
rates. Tesar and Williams (1993) find that "As of 1991 the share of
portfolio investment allocated to foreign assets by the United States
and Canada remained at less than 5% of total portfolios." It is quite
possible that the recent surge in interest in foreign equities by U.S.
investors signals a diminishing of the home-bias, but looking backward,
mobility of physical capital (carried by financial investments) cannot
be a very important part of the story. A bit of evidence on category
(b) is offered by Leamer(1991), who computes fairly small estimates of
the effects on wages of lower-skilled workers of reduced prices of
labor-intensive products. The other two globalization effects
(diminished market power and the technology transfer) have not received
much attention.

It seems fair to suspect that technology transfer is an important
part of the story. Knowledge capital is now much more mobile

internationally than it was several decades ago, partly because of the existence of multinational corporations but also because of the huge increase in the volume of trade which carries technology with it in ways that are not well understood. This mobility of knowledge capital has probably worked to the disadvantage of American workers who now must face competition with foreigners who have recently gained access to the most advanced technology. But there is little that we can do about the disappearance of the technological gap. It is highly unlikely that American technological leadership can be restored by burdening our corporations with tax polices which put a high cost on outward FDI. The best policy prescription in this new global economy is to encourage investments in immobile assets that are complementary with physical and knowledge capital, namely human capital and infrastructure. Americans and Chinese may have equal access to the world's stock of technological knowledge, but it will be Americans who will get the benefits from that knowledge if they have the best education and the best infrastructure.

Furthermore, if governments make one method of knowledge capital transfer more difficult, they will tend to encourage the others. Tax codes that impair international transfers of knowledge capital by U.S. multinationals encourage the sale or lease to foreigners of U.S. intellectual properties. Tax codes that discourage preemptive FDI, encourage theft of the intellectual property. Even if one adopts the "mutual fund" interpretation of a multinational, tax codes that discourage the transfer of physical capital by U.S. multinationals may only encourage more foreign portfolio investments. The point is that as the world's economic system becomes more and more integrated, isolationism simply is no longer a viable option. The system is too

full of leaks. Reactive policies - the building of dikes - will no longer work. Proactive policies are the measures of choice for the 21st Century. We need to attract investors, not tie them up. We should make sure that we have the best-educated, most productive workers, and also the best infrastructure. Build these, and they will come. (Kevin Costner, 1989)

3. A THEORY OF FOREIGN DIRECT INVESTMENT IN A GENERAL EQUILIBRIUM MODEL

A simple formal general equilibrium model of knowledge transfer is offered in this section. A simulation model of this type is presented in the next section. Much of the empirical work on foreign direct investment is based implicitly or explicitly on theories that are partial equilibrium in nature, which is the economist's way of saying that many variables describing other actors and other markets are held constant. An example would be Lipsey and Steven's(1992) analysis of the impact of financial constraints on the choice of investment location by individual firms. Implicitly, when Lipsey and Stevens study the behavior of one firm, they treat as fixed the intangible assets of the firm, the behavior of other firms, the response of the financial markets, of economy-wide investment rates, of ...

The public policy problem, on the other hand, is inherently general equilibrium in nature. The partial equilibrium information is useful in answering the public policy question, but it is not enough. For example, although it is useful to know how the corporate tax code affects investment by U.S. firms in Mexico, given that there are few Japanese firms located there, we need also know what effect U.S. government policies will have on the behavior of Japanese and European

firms, and how U.S. firms will be forced to react. We need a general equilibrium treatment.

The general equilibrium model presented here is a variant of the traditional "Heckscher-Ohlin" factor proportions model of international comparative advantage. According to the traditional Heckscher-Ohlin theory, countries that are abundant in capital have a comparative advantage in capital intensive goods, have relatively cheap capital and relatively expensive labor. If this theory were completely correct, there would be a strong incentive to reallocate capital from high-wage to low-wage countries, for example, from the U.S. to Mexico, or from New York City to Appalachia. In fact, capital is very slow to move in that direction, if it moves at all.

One thing that can account for the observed pattern of capital movement is technological/infrastructure inferiority in the low-wage country which eliminates or even reverses the incentive for capital to flow. To say it another way, low wages alone are not enough to attract capital. Productivity must be adequately high as well. With technological differences between countries, a fully integrated equilibrium cannot be accomplished merely by a capital flight out of the technologically inferior country since that would leave behind all the labor and some capital still using the inferior technology. Full efficiency could come about only if labor and capital were employed using the most efficient technology. That in my view, is the fundamental *raison detre* for the multinational corporation and FDI. A multinational corporation facilitates the flow of knowledge capital across national boundaries by protecting that capital from expropriation through violations of intellectual property rights.

Multinationals are not needed to transfer physical capital across borders. Trade imbalances alone can accomplish that. Machinery can be transferred from the United States to Mexico if the U.S. runs a trade surplus and Mexico uses the proceeds to purchase the machinery from the United States. This however will not transfer the knowledge of how to operate the machinery. If there is no concern over intellectual property rights, manuals can be sold with the machinery. But the enforcement mechanisms that prevent foreign customers from copying and reselling the manuals are notoriously weak, and many transfers of technology are deterred by the threat of copying (metaphorically speaking). A multinational corporation keeps the manuals internal to the firm and faces a much lower risk of unwarranted copying. Multinationals can therefore accomplish a transfer of technology to new locations which would otherwise not take place.

Incidentally, since knowledge capital is not on the books of corporations, there is no way that I know of to measure the flow.[2] The balance of payments figures for FDI have the well-known short-coming that they have little to do with physical asset accumulation, but even physical asset measures miss the point that, while FDI may carry with it physical assets, the main function of FDI is to transfer intangible assets, not tangible assets.

These ideas are put into a graphical general equilibrium model in Figure 18 which illustrates the impact of U.S. outward FDI into Mexico in a setting in which there are two traded goods (apparel and machinery), two factors of production (capital and labor), and two

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[2] The study by Morck and Yeung(1991) of the effect of multinationality on stock market valuations is forced to use the value of tangible assets as a proxy for intangible assets.

technologies for each good (a superior U.S. technology and an inferior
Mexican technology). The word technology is here used broadly to
include organizational/management systems. From this diagram, one can
draw the following conclusions:

- Multinationals that raise capital in the U.S. and transfer technology
to Mexico cause a redistributive effect and an efficiency effect
inside Mexico. The redistributive effect increases the wage of
Mexican labor capital and lowers the return on Mexican capital.
The efficiency effect raises total Mexican earnings, more so the
greater is the movement of capital into Mexico.

- The Mexican economy bifurcates, with the labor-intensive (apparel)
sector operated by U.S. multinationals using the advanced
technology and the capital intensive (machinery) sector run by
Mexican firms using the backward technology.

- Full integration can occur if Mexicans can invest in U.S. equities
sold in U.S. capital markets, or if U.S. multinationals can raise
financial capital in Mexican capital markets. Then all production
in Mexico is done by U.S. firms using the superior U.S.
technology.

- This FDI has no impact on U.S. earnings of capital or labor if the
flow is so small that the increased supply of apparel does not
lower its relative price. If the relative price of apparel falls,
U.S. wages fall and the return to U.S. capital increases.

These conclusions flow fairly easily from Figure 18. In this
figure there are two solid line right angles representing combinations
of capital and labor that are needed to produce a dollar of output in
each of the two sectors. These are called "unit value isoquants." The
solid line labelled "U.S. Isocost" is the combination of capital and
labor that costs a dollar to employ in the United States. This isocost
line must just touch the two right-angled unit value isoquants to assure
zero profits (rents) in the two sectors. From the equation for this
isocost line, $\$1 = w\ L + r\ K$, where w is the wage rate and r is the
rental rate on capital, we can solve for the two points where the line
crosses the axes, namely $1/w$ and $1/r$. The dotted line right angles
represent the Mexican technologies that use more labor and more capital
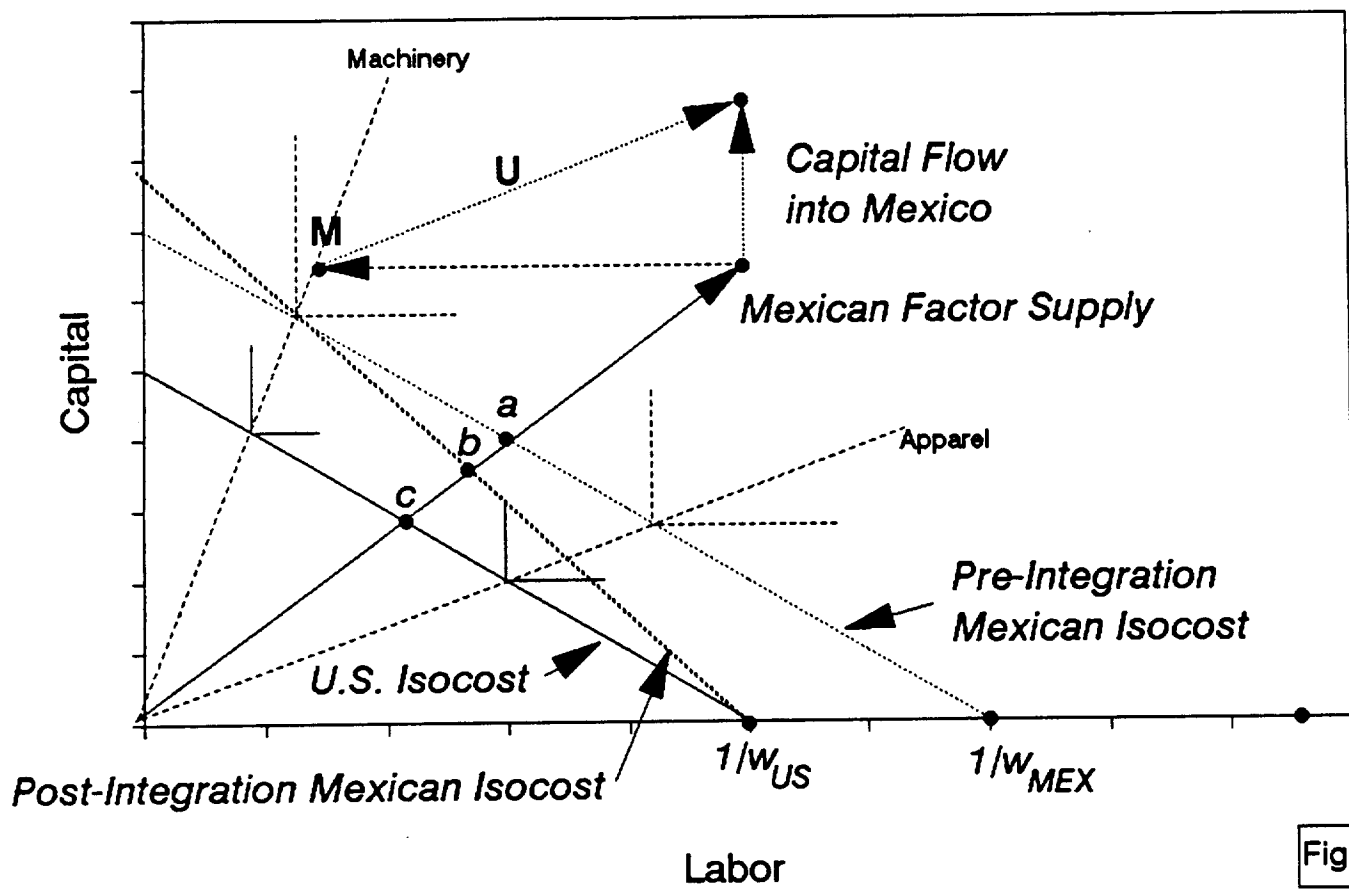
FDI with Home Financing
Dual Mexican Economy

Figure 18

to produce the same amount of output as in the U.S. The dotted line labelled "Pre-integration Mexican Isocost" represents combinations of capital and labor that cost $1 to employ inside of Mexico. Both the wage rate and the return to capital are lower in Mexico.

In this figure it is assumed that the financial markets are separated and consequently there is no force that directly equalizes Mexican and U.S. returns to capital. It is further assumed that through direct investment U.S. investors can locate capital in Mexico and produce with the superior U.S. technology and cheap Mexican labor. The lower Mexican wage yields U.S. firms excess profits in the short run, but competition among U.S. investors for the low-cost Mexican workers must eliminate that profit opportunity by equalizing U.S. and Mexican wages. In the figure, the U.S. and the rest of the world combined are assumed to be large enough that the capital flow into Mexico and the associated changes in product supplies do not affect world product prices. Under this assumption, wages equalize at the original U.S. level.

Depending on the relative degree of technological backwardness, the Mexican economy will find it efficient to concentrate all capital in one sector or the other. If the technological difference is neutral, the capital-intensive sector is preferred. This is the case illustrated in the figure. Here we have U.S. foreign direct investment concentrating completely on the labor intensive product using the advanced technology and Mexican investment flowing into the capital intensive sector using the backward technology and commanding a relatively low rate of return. Hence we have a dual economy.

This foreign direct investment has an automatic redistributive effect and a conditional efficiency effect inside of Mexico. The redistributive effect here is in favor of labor and away from Mexican capital. The efficiency effect is measured by the ratio a/b which is the proportional gain in the earnings of Mexican labor and capital as a result of the FDI. This efficiency gain is large if the capital inflow is large, that is if Mexico is relatively labor abundant and has a large amount of workers to be released for employment by U.S. owners in the technologically advanced labor intensive sector.

Now we can address theoretically the question: Does outward foreign direct investment reduce domestic investment? The answer, according to Figure 20 is, yes, but it may not matter for the United States. If the capital flow out of the U.S. and into Mexico does not produce supply effects that substantially alter product prices, then the wage rate and the return to U.S. capital stay exactly the same. If there are product price changes inside the U.S. marketplace, generally this will mean cheaper labor intensive goods which in turn will generate a redistributive effect in favor of capital and at the expense of labor.

4. SCENARIOS FOR U.S. AND MEXICAN ECONOMIC INTEGRATION

In this section, several numerical scenarios are presented which describe the possible effects of U.S. FDI into Mexico. These scenarios are based on a model calibrated with real data and taking the form of the one depicted in Figure 18. Perhaps the most important message here is that economic integration of Mexico and the United States is substantially limited by the lack of human capital in Mexico including managerial, technical and clerical talent. The levels of FDI from the U.S. into Mexico are accordingly likely to be too small to have a major

affect on the U.S. In the most extreme case discussed below, FDI flows from the United States reduce labor and human capital earnings by 2.6% and raise capital earnings by 5.9%. This occurs when existing Mexican human capital is almost fully transferable into U.S. organizations and when there is no risk/tax premium to discourage the southern flow of investment.

The assumptions and initial conditions that underlie the scenarios are presented in Table 2. First in this table are displayed the estimated Cobb-Douglas technologies. These parameters are estimated by Leamer and Taylor(1993) following Mankiw, Romer and Weil(1992) who use the Heston and Summers data base with an equilibrium condition of the Solow growth model as a theoretical foundation. Leamer and Taylor(1993) separate the Heston and Summers data into three subsets: developed countries, developing countries and previously centrally planned countries, and, using a Bayesian pooling technique, provide separate estimates for each subset. The parameters in Table 2 are the developed country estimates and the developing country estimates. The developing country (Mexican) technology has a larger labor share and an inferior total factor productivity.

Next in Table 2 are 1985 (pre-liberalization) Mexican and U.S. data from the Summers and Heston data base. These data help to determine the initial simulation conditions, also displayed in Table 2. The adult population and GDP are taken directly from the Heston and Summers data. The capital stock figure is derived from the equilibrium condition of the Solow growth model, K/GDP = (Savings rate)/(1+depreciation+population growth). This yields much higher capital stock figures than the Heston and Summer's figure, but is used

Table 2
1985 Data and Simulation Parameters

	Mexico	U.S.
Estimated Cobb-Douglas Technologies		
Labor Share	0.43	0.36
Capital Share	0.27	0.31
Human Capital Share	0.30	0.33
Total Factor Productivity	1.27	1.35
ln(TFP)	0.24	0.30
Summers and Heston Data Base (1985)		
Real GDP ($billions)	418	4015
Population(thousands)	78524	239283
Number of Adults(thousands)	61839	213107
Number of Workers(thousands)	26031	116801
Real GDP per Capita (International Prices)	5322	16779
Real GDP per Equivalent Adult(International	6758	18840
Real GDP per Worker (International Prices)	16054	34374
Capital Stock per worker (International Prices	11400	31041
Capital Stock per Adult	4799	17013
Capital/GDP	0.71	0.90
Simulation Initial Conditions		
GDP($b)	417	4045
Adult Population(thousands)	61839	213107
Capital($b)	953	13137
Human Capital	1364	13727
Physical Capital per Adult ($)	15400	61600
Human Capital per Adult	22	64.4
GDP per Adult	6740	19000
Capital/GDP	0.0	0.0
Implied Earnings		
Marginal Product of Labor($1000 per year)	2.89	6.876
Marginal Product of Capital(%)	0.12	0.096
Marginal Product of Human Capital(%)	0.091	0.096

Table 3
Liberalization Scenarios

	1	2	3	4	5	6	7
Physical Capital Transferability	50%	50%	50%	40%	40%	40%	40%
Human Capital Transferability	50%	50%	50%	90%	90%	90%	90%
Western Private Capital Pre-tax Premium	4%	4%	0%	17%	17%	10%	0%
Western Public Capital Pre-tax Premium	3%	0%	0%	3%	0%	0%	0%
Mexican Capital Risk Premium	0%	0%	0%	0%	0%	0%	0%
MEXICO							
Worldwide Earnings (GNP) Growth	0.0%	0.7%	5.4%	0.0%	0.7%	2.2%	31.3%
Labor Earnings	0.0%	7.4%	1.4%	0.0%	7.4%	-1.3%	32.5%
Human Capital Earnings	0.0%	7.4%	30.2%	0.0%	7.4%	26.6%	70.1%
Risk Adjusted Capital Earnings	0.0%	-17.5%	-16.0%	0.0%	-17.5%	-19.5%	-13.9%
Domestic Production (GDP) Growth	0.0%	7.4%	20.2%	0.0%	7.4%	16.9%	57.1%
Foreign Participation							
Foreign Direct Investment ($b)	0	0	1576	0	0	780	2010
Backward Sector Foreign Debt	0	288	0	0	288	0	0
Per cent Allocated to Backward Sector	0%	100%	0%	0%	100%	0%	0%
Ownership of Foreign Equities ($b)	0	0	953	0	0	953	953
Foreign Net Debt per Capita ($th)	0.00	0.00	10.05	0.00	0.00	-2.79	17.05
Net Debt/Output	0%	0%	2%	0%	0%	-1%	3%
Ownership of Advanced Sector	100%	100%	100%	0%	0%	100%	100%
Ownership of Backward Sector	0%	23%	0%	0%	23%	0%	0%
Overall Ownership Share	0%	23%	100%	0%	23%	100%	100%
Backward Sector Output Growth	0%	7%	-100%	0%	7%	-100%	-100%
Advanced Sector Shares of Total							
Labor	0%	0%	100%	0%	0%	100%	100%
Human Capital, Net of Transfer Loss	0%	0%	100%	0%	0%	100%	100%
Total Capital	0%	0%	100%	0%	0%	100%	100%
Mexican Capital, Net of Transfer Loss	0%	0%	0%	0%	0%	0%	0%
Output	0%	0%	100%	0%	0%	100%	100%
UNITED STATES							
Worldwide Earnings (GNP) Growth	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Labor Earnings	0.0%	-0.7%	-1.5%	0.0%	-0.7%	0.4%	-2.6%
Human Capital Earnings	0.0%	-0.7%	-1.5%	0.0%	-0.7%	0.4%	-2.6%
Risk Adjusted Capital Earnings	0.0%	1.5%	3.4%	0.0%	1.5%	-0.9%	5.9%
Domestic Production (GDP) Growth	0.0%	-0.7%	-1.5%	0.0%	-0.7%	0.4%	-2.6%
Foreign Participation							
Foreign Debt ($b)	0	0	953	0	0	953	953
Foreign Assets ($b)	0	288	1576	0	288	780	2010
Foreign Net Debt per Capita ($th)	0.00	-1.35	-2.93	0.00	-1.35	0.81	-4.96
Net Debt/GDP	0%	-7%	-16%	0%	-7%	4%	-27%
COMBINED GDP growth	0.0%	0.1%	0.5%	0.0%	0.1%	2.0%	3.0%
COMBINED Risk Adjusted Earnings Growth	0.0%	0.1%	0.5%	0.0%	0.1%	0.2%	3.0%

for consistency with the theory that underlies the estimates. Finally the human capital figures are selected so that the Cobb-Douglas technologies generate the appropriate levels of GDP.

With these as data, we can calculate the initial marginal productivities displayed in the last panel of Table 2. The United States has much higher labor earnings, somewhat higher return to human capital and a somewhat lower return to physical capital.

The first three scenarios in Table 3 have only 50% transferability of Mexican assets into the Mexican advanced sector. The low degree of capital transfer captures the idea that Mexican business organizations cannot operate at the same level of efficiency as U.S. businesses. This low degree of transferability prevents Mexican direct ownership in the advanced Mexican sector, but indirect ownership can be achieved through Mexican equity investments in U.S. businesses.

The first scenario has premiums for pre-tax rates of return that are enough to choke off all capital flow, 4% for private investments in the advanced sector and 3% for investment in the existing backward Mexican organizations. A premium of 4% means that U.S. investors are unwilling to accept Mexican assets paying 13.6% compared with U.S. equity paying 9.6% because of risk and taxation. No premium is needed to keep Mexican capital at home, since the initial Mexican rate of return exceeds the U.S. return.

The second scenario eliminates the premium for investment in Mexico's backward sector. This is meant to parallel the pre-debt crisis period when there were substantial loans from U.S. private banks to the Mexican government which basically operated the economy using the inferior developing country technology. In this case the Mexican

backward sector attracts $288 billion of U.S. investment. (This compares with the external debt of Mexico of $100b in 1986.) This capital flow lowers the U.S. GDP by .7%, a loss which is more than fully offset by the earnings on the Mexican investments, leaving a negligible net effect on U.S. GNP (worldwide earnings). There is, however, a measurable but small redistribution of income in the U.S. in favor of capital at the expense of labor and human capital. Mexico, which is the recipient of the capital flow, has an income redistribution which is opposite in sign and bigger in magnitude.

The third scenario eliminates also the premium on private investment and is meant to capture the post-liberalization, post-NAFTA period. In this scenario the U.S. direct investment in Mexico accumulates to $1.576 trillion dollars, which is offset by a capital flow north of $953 billion (or equivalently, local financing of the FDI). This latter number is equal to the total Mexican-owned capital, which means that only U.S. firms do business in Mexico and that all Mexican investment flows into the equities of American firms. The net capital flow out of the United States is about twice the flow of the second scenario, and the effects of the flows on GDP and income redistribution are about the same. The changes in the Mexican economy under scenario 3 are also larger but different in an interesting way from scenario 2. Namely, labor earnings hardly grow at all. The big gains accrue to Mexican human capital, the demand for which is driven by U.S. FDI into the emerging advanced Mexican sector.

The potential benefits from liberalization are much greater if the Mexican human capital is more transferable to the advanced sector. Scenarios 4, 5, 6 and 7 assume 90% transferability of Mexican human

capital.[3]   Scenario 4 supports the pre-liberalization separation of the

Mexican economy with a very high premium of 17% for private investment

in the advanced sector and a much lower premium of 3% for investment

into the backward sector. If this public sector premium is eliminated,

U.S. capital is used to support an expansion of the old, backward

Mexican sector. This scenario #5 is then identical to #2.

Scenarios 5, 6 and 7 can be interpreted as depicting policy

options with three different treatments of the foreign earnings of U.S.

multinationals, beginning with a tax high enough to make the tax plus

risk premium equal to 17% in scenario 5. A lower, but still very high

premium for private investment equal to 10%, supports FDI equal to $780

billion (scenario 6). However, this is more than offset by a Mexican

capital outflow equal in value to the whole Mexican capital stock. The

U.S. as a result ends up with a *larger* amount of capital, and higher

earnings on labor and human capital. This scenario has Mexican labor

made worse off, losing their jobs in the old Mexican-owned businesses

and employed by U.S. multinationals at lower wages.

If this premium is completely eliminated (scenario 7) a much

higher FDI figure results, and the Mexican GDP and GNP grow by 31% and

57% respectively. Then the capital flow into Mexico greatly increases

Mexican labor earnings.

In summary, a very high tax rate on Mexican earnings of U.S.

multinationals eliminates FDI but encourages loans by U.S. banks to the

Mexican government to expand the existing backward Mexican (state-owned)

business organizations. If the levels of taxation of foreign source

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[3] In these scenarios the rate of transferability of physical capital is
reduced to 40% in order to discourage the formation of the advanced
sector without U.S. FDI.

income are more moderate, the asset choice shifts from loans to the public sector in favor of FDI in the private sector. This FDI is offset by Mexican purchases of U.S. equities (local financing). If the tax rate is lower still, the flow of FDI increases, which has more substantial income redistribution effects in the U.S. Even in this extreme scenario, the effects are not very great, basically because the FDI fairly quickly exhausts the available stock of Mexican human capital.

5. CONCLUDING REMARKS

This paper has taken an empirical and a theoretical tack to make the argument that we do not yet know very much about the impact of offshore investment on the U.S. economy. Most of the existing empirical work doesn't get very close to answering policy-relevant questions. This is partly a consequence of limited and less-than-ideal data, but in addition, the question that has often been posed is not pertinent to the formation of policy. The evidence is particularly weak if FDI is a means for transferring knowledge capital to foreign locations and protecting it from expropriation. In order to shed light on this case, a formal general equilibrium model of knowledge transfer is presented and applied with a simulation exercise to the case of FDI from the U.S. into Mexico. One conclusion is that lack of human capital in Mexico severely limits the FDI flow, and the small flows that result do not have a major impact on the U.S. economy. This exercise takes the intangible assets of U.S. multinationals as fixed and does not allow Japanese and European investment in Mexico. If the numbers concerning the potential affect on the U.S. economy were larger, these other factors doubtlessly should be considered.

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