

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: International Economic Transactions: Issues in Measurement and Empirical Research

Volume Author/Editor: Peter Hooper and J. David Richardson, editors

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-35135-1

Volume URL: <http://www.nber.org/books/hoop91-1>

Conference Date: November 3-4, 1989

Publication Date: January 1991

Chapter Title: The Adequacy of U.S. Direct Investment Data

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Chapter URL: <http://www.nber.org/chapters/c8434>

Chapter pages in book: (p. 321 - 353)

9 The Adequacy of U.S. Direct Investment Data

Lois E. Stekler and Guy V. G. Stevens

9.1 Introduction

The term “adequacy” in the title implies a comparison with a set of standards. In the case of U.S. direct investment, are the data adequate to answer the questions that the profession and the public think it important to address? Since the questions deemed important may change, and indeed have changed over the years, an adequate data system must either change also or be extensive enough to be able to answer a variety of questions, some of which may only be dimly perceived at any given moment.

Direct investment is now a “hot” issue. New questions have claimed the attention not only of the economics profession, but also of the public at large. Alarmists have interpreted growing foreign direct investment in the United States as endangering our control of our own future, and, along with the accumulation of other net liabilities to foreigners, as implying a potentially crushing servicing burden on future generations. Ironically, these current concerns about direct investment in the United States are just the mirror image of the questions debated for many years in foreign countries with respect to U.S. investment abroad.

But there are more traditional questions that, in our minds, remain important for direct investment both in the United States and abroad. What are the net benefits and costs of direct investments in particular cases? What are the

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This paper represents the views of the authors and should not be interpreted as reflecting those of the Board of Governors of the Federal Reserve System or other members of its staff. The authors are grateful for comments from a number of fellow economists: Michael Adler, Betty Barker, David Belli, Edward Graham, Peter Hooper, Ned Howenstine, Robert Lipsey, Ted Moran, Peggy Musgrave, Samuel Pizer, David Richardson, John Rutter, and Louis Wells. Jodi Garner, as usual, provided outstanding research assistance.

determinants of the flow of direct investment and the real assets and liabilities associated with it? And there is the perennial question: What is the relationship, if any, between trade and direct investment? We will try to evaluate the adequacy of the present U.S. data system with respect to these questions.

A wide range of data relating to the operations of direct investors is required to answer the questions posed above, certainly much more than accurate measures of the income and capital flows included in the balance-of-payments accounts or the stock, however defined, that measures the direct investor's stake in a particular country or industry. Unlike that of most countries, the U.S. system of direct investment statistics does provide a wide range of data, at least attempting to provide the information necessary to address many important questions. Although we will argue that the present system can and should be improved in important ways, we recognize that it has long stood as a model for other countries.

It is therefore disconcerting that an aspect of the recent public interest in direct investment in the United States has been a series of attacks on the adequacy of the data system itself—in contrast to debates about the use of specific variables to measure particular concepts. Most of these attacks, we believe, are wide of the mark; this is especially the case with respect to the criticisms questioning the coverage of the samples or the accuracy of the data collected.

Section 9.2 of this paper reviews the current Bureau of Economic Analysis (BEA) data-collection system and its history, including the definition of direct investment and general questions about data coverage and accuracy; a related question involves the adequacy of the system in delivering the data to its ultimate users. The following sections focus on a selection of issues that economists or policymakers might wish to address using the direct investment data; they also deal with the adequacy of BEA's data for that purpose. Section 9.3 considers the adequacy of the published direct investment position as a measure of U.S. wealth vis-à-vis foreigners and the accuracy of the direct investment payments data as an indicator of the servicing burden of growing foreign direct investment in the United States. Section 9.4 attempts to assess the trade implications of foreign direct investment in the United States. Section 9.5 examines our ability to measure the welfare impacts of direct investment, while Section 9.6 looks at data requirements for explaining and forecasting direct investment flows and activities. Section 9.7 reviews our major conclusions and recommendations.

9.2 The Present System

Most data systems dealing with direct investment activities were designed to be, and are today, balance-of-payments-oriented. On the current account side, they concentrate on the accurate measurement of direct investment receipts and payments—dividends, interest, and reinvested earnings. On the

capital account side, they concentrate on the change in the ownership position (net worth) of enterprises controlled by direct investors—the sum of the changes in owners' equity, intercompany accounts, and reinvested earnings. Corresponding to this capital account flow is a net worth concept, denoted in the United States as the direct investment position, which is essentially the cumulation of previous capital flows.¹

In the 1950s a small group of civil servants at what was then the Office of Business Economics (now BEA) had the inspiration to go beyond the balance-of-payments data in order “to evaluate the full effects of U.S. direct investments, both on our domestic economy and on the economies of foreign countries benefiting from this capital and advanced technology” (U.S. Department of Commerce 1960, p. III). Under the direction of Samuel Pizer and Frederick Cutler, a much more extensive system was instituted that included detailed balance-sheet and income-statement data, such as sales and plant and equipment expenditures, as well as data on employment, wages, and import and export flows. Over the years, there has been added to this core extensive information on parent-firm operations (for U.S., but not foreign, parents), details on R&D expenditures and research workers, and information on performance requirements.

The system today consists of periodic benchmark censuses of outward and inward direct investments covering the data mentioned above; quarterly reports for balance-of-payment flows; semiannual reports on capital expenditures of foreign affiliates abroad; and annual reports by both foreign direct investors in the United States and U.S. direct investors abroad, covering in somewhat abbreviated form the same areas as the benchmark surveys. In addition, reports are required for U.S. businesses taken over and newly established by foreigners.

9.2.1 Issues of Definition, Coverage, and Accuracy

In this subsection we will discuss issues that deal with the data system generally; in subsequent sections, subject-oriented in nature, we will bring up issues of coverage and accuracy as they relate to specific concepts or problems.

Definition of a Direct Investor

Conceptually, a direct investor, in contrast to a portfolio investor, participates significantly in the management of an enterprise, usually controlling it. Generally, it is assumed that different factors or variables motivate the actions of portfolio and direct investors; modern theories of direct investment tend to focus on “industrial organization” explanations,² while portfolio investment

1. BEA also adjusts the direct investment position for certain valuation changes, particularly for the difference between market price and book value for assets that are sold.

2. See Dunning (1988) for a survey.

is assumed to reflect mainly the flow of capital in response to return differentials across countries.

For the purposes of reporting requirements, BEA currently relies on an arbitrary percentage of equity ownership by a single foreigner—10 percent of the voting shares—to distinguish direct from portfolio investment.³ In the past, it seemed of little importance where the percentage was set, for the aggregate magnitude of investments where the equity share was low, and control questionable, was small. In recent years, however, such investments seem to be occurring with increasing frequency. In addition, the inclusion in the totals for U.S. affiliates of foreign companies of certain companies with minority foreign ownership, and perhaps limited foreign participation in management, has given a misleading impression of the extent of foreign control of the U.S. economy. For example, foreign participation in the U.S. chemicals industry is inflated by the inclusion of Du Pont; Seagrams (Canada) has a minority but not controlling interest in the company.⁴ Similarly, the minority and not controlling interests of Japanese financial institutions in Goldman-Sachs, Shearson-American Express, and Paine Webber inflate the size of Japanese-“controlled” assets in the United States.⁵ On the outflow side there are also notable minority investments, including Ford’s minority interest in Mazda and GM’s stake in Isuzu.

We would suggest that BEA continue to use the 10-percent rule to determine reporting responsibility.⁶ The direct investment reports provide a more reliable source of information on capital flows and investment income than the reporting systems for portfolio capital flows and the indirect estimation methods for portfolio investment income. However, serious thought should be given to alternative ways of aggregating and publishing the data. Given that the data are computerized, it should pose no problem to produce alternative measures of the stock of direct investment (and related measures, such as sales) based on different ownership-percentage cutoffs (e.g., at 10-percent intervals, from 10 percent and above, as is now the practice, to 50 percent and above). This flexibility would also facilitate comparisons of data with other

3. The reporting cutoff has not always been 10 percent; in the 1950 and 1957 censuses of direct investment abroad the cutoff was 25 percent, with some leeway allowed to include investments where control was well known even though the ownership percentage was less than 25 percent.

For practices in other countries and a proposal for moving countries to a common set of definitions, see OECD (1983).

4. See the May 1988 *Survey of Current Business*, page 63. U.S. affiliates of foreign companies account for about 30 percent of both assets and sales of all U.S. chemical manufacturers. All the assets and sales of Du Pont and Conoco are included in this figure.

5. See, for example, the *Washington Post* of June 28, 1989, asserting that Japan had become the largest direct investor in the United States in 1987, based upon the total assets of these financial companies (and not the prorated share of Japanese investors in these companies’ assets).

6. However, this current criterion fails to include as direct investment certain U.S. investments in centrally planned economies or less-developed countries that are controlled by contract, rather than equity ownership. U.S. rules on foreign ownership of U.S. airlines may also encourage investments that would not trigger reporting requirements but could involve significant influence with minimal ownership of voting equity.

countries that use different ownership percentages as cutoffs.⁷ Additional efforts by international organizations such as the IMF to harmonize definitions across countries are also necessary to facilitate international comparisons.

It would also be useful to divide affiliates into those controlled by foreign investors, those where foreigners have noncontrolling equity interests, and those that are joint ventures. Disaggregation along these lines would require judgment rather than a fixed cutoff by percentage of equity.

Coverage

Charges have been made in recent years that BEA's data on foreign direct investment in the United States seriously understate the growing foreign presence.⁸ Thus, in recent Congressional testimony, Dr. Susan J. Tolchin, co-author of *Buying into America* (1988), stated: "The U.S. is flying blind on foreign investment. No one knows the full extent of foreign investment, and some experts believe at least 50% of all foreign investment goes unreported. Lax reporting requirements, hidden ownerships, and other circumventions of the law—many of them already riddled with loopholes—have made it virtually impossible to keep track of the flood of foreign money" (Tolchin 1988).

After reviewing the evidence, we find nothing to support such extreme criticism. Occasionally these attacks have been based upon faulty comparisons of different measures of direct investment. Measures of the total assets of U.S. affiliates of foreigners differ substantially from measures of the amounts invested by foreigners to acquire or establish U.S. affiliates, and these amounts differ again from the direct investment capital flows and the cumulation of these capital flows into the international investment position. Moreover, some BEA data attribute investments to the country of residence of the ultimate owner, while other data are presented on the basis of residence of the direct owner. Perhaps BEA should make a greater effort to educate the public on the differences between various data series and the reasons for collecting data on different bases.

BEA data would understate the size of direct investment if a significant number of large investors failed to report. However, BEA devotes substantial resources to monitoring publicly available information for the names of new reporters. Undoubtedly some U.S. companies making direct investments abroad are missed, as are some foreign investments in the United States. This is more likely in the case of small investments or private transactions (SEC regulations require registration of purchases of 5 percent or more of the equity of publicly traded U.S. companies). If there are any problems, they are probably in real estate, where small investments are common. In addition, much

7. See Vukmanic, Czinkota, and Ricks (1985) for an excellent discussion of the direct investment definitions, practices, and inadequacies for other countries. Robert E. Lipsey's comment (1985) on that paper is very useful. See also OECD (1983).

8. See, for example, Congressional Economic Leadership Institute (1989, p. 33) or Tolchin (1988b).

foreign investment in U.S. real estate falls between the cracks of various reporting requirements; no direct investment reports are required on residential real estate for personal use or on real estate investment through limited partnerships (since direct investment is defined as control of 10 percent of the voting equity in a company).⁹

If additional funds were available, BEA could devote additional resources to ferreting out direct investors who currently do not report. Since these are likely to be small investors, they are unlikely to substantially alter the overall picture of U.S. investment abroad or foreign investment in the United States. Moreover, except for certain real estate transactions, as discussed above, investors are already legally required to report; adding additional legal requirements to report would do nothing to improve coverage.

Accuracy

Despite the legal obligations to report, the accuracy of the responses to BEA direct investment surveys depends primarily on voluntary compliance with the law. Historically, BEA has not conducted detailed audits of the books of direct investors, nor does it currently have the staff to do this. Since BEA surveys are confidential and are not used for tax purposes, there is no obvious incentive for firms to misrepresent data. However, firms pressed by competitive pressures to limit costs or firms recently acquired through takeovers may not devote sufficient resources to ensure accurate reporting. Late reporting by foreign investors in the United States has become a serious problem, producing, for example, large revisions in the data for the fourth quarter of 1988. This problem, it must be said, has been exacerbated by the lack of concern shown for the quality of economic data in the higher echelons of the executive branch in recent years, particularly by the Office of Management and Budget. Excessive attention by OMB to the laudable goal of reducing the "paperwork burden," with very little attention to its traditional role of assuring statistical quality, has been an invitation to a significant minority of businesses to resist providing accurate and timely data.

The accuracy of data that firms provide is likely to be reasonably high for information that home offices collect in any case for their own purposes, such as parent and affiliate balance-sheet or income-statement data. However, it is uncertain whether wholly-owned U.S. affiliates of foreigners report as instructed using U.S. generally accepted accounting practices rather than U.S. tax or foreign accounting practices. In addition, firms more often may be lax about the accuracy of data that they do not collect as a matter of course. A case in point is the extremely low quality of data, mandated in the 1982 cen-

9. In theory, the Treasury International Capital S-reports currently include data on limited partnerships; in practice, only participations traded on exchanges are reported (aggregated with other investments). Planned clarification of the TIC-S reporting instructions in July 1990 may help some, but since many real estate partnerships are formed without the participation of current S-form reporters, coverage is likely to continue to be inadequate.

sus, on investment incentives given by foreign governments to U.S.-owned subsidiaries abroad.¹⁰ There also have been problems with the data on employment and employee compensation. Devoting additional BEA resources to monitoring the accuracy of direct investment reports would normally be the answer to such problems, but this, sad as it is to say, would probably not be worthwhile unless there is a political consensus to force the private sector to devote additional resources to eliminating inadequacies in statistical reports.

Some insight into the accuracy of U.S. data on direct investment might be gained by comparison with other countries. Unfortunately, since the United States is virtually the only country that collects and publishes extensive data on the operations of affiliates, the only comparisons possible are of balance-of-payments data on capital flows, receipts, and payments. And even here, many countries do not adhere to international standards established by the IMF. Only a few major countries collect information on reinvested earnings; treatment of short-term accounts receivable and payable differ; and the division between portfolio and direct investment is not uniformly set at 10 percent.

Comparisons of U.S. data on the direct investment position of Canada and Japan in the United States with data from these countries have been used to support the assertion that the U.S. data are inadequate. (See Congressional Economic Leadership Institute 1989, p. 33.) However, the United States and Canada regularly meet to reconcile international transactions data. Based upon these annual meetings, there is no evidence that Canadian direct investment in the United States is systematically underreported in the U.S. data (when common definitions are used). Moreover, the published Canadian and Japanese data on direct investment positions in the United States include investments made through third countries, while the U.S. data do not. For Canada, in particular, investments in the United States made through subsidiaries in the Netherlands are very large. In conclusion, international attempts to encourage common definitions probably should be supported. Until that is accomplished, efforts at bilateral reconciliation will remain very difficult.

The Delivery System: Confidentiality, Suppressed Data, and Access by Researchers

The necessary confidentiality of the underlying parent and affiliate reports has been a continuing problem in delivering the BEA data to its ultimate users. When consulting data presented by country and industry in published tables, one all too often finds a "D", indicating that the data point has been suppressed because the cell is, according to the statistical tests used by BEA, "dominated" by three or fewer firms.¹¹ This confidentiality problem also im-

10. See U.S. Department of Commerce (1985, appendix, p. 4 of form BE-10b, Report for Foreign Affiliate).

11. For an example, see Table III.T 3 of the 1982 census of direct investment abroad (U.S. Department of Commerce 1985, p. 347).

plies that it is frequently impossible to publish data at the disaggregated industry level. Users would be helped if data ranges could be substituted for the present "D"s.

Given the suppression problem and the additional fact that the existing time series for much operating data are short (e.g., sales), it is often tempting for researchers to try to work with the underlying, microeconomic affiliate data. For over twenty years BEA has cooperated with government and outside researchers, but because of the confidentiality problems and costs, research activity of this kind has been very limited.¹²

Because of the confidentiality requirement, the delivery system will probably always be bedeviled with problems. However, steps have been taken to improve the situation, and more could be taken. BEA has greatly expanded the range of data it now publishes in census tables and annual reports; some of the latter present a much richer set of data than appear in the *Survey of Current Business*. The aggregated data are also available on machine-readable diskettes.

The use of the microeconomic affiliate data, under proper confidentiality safeguards, has been encouraged by BEA through a program that has existed since the early 1970s. BEA personnel perform statistical work for outside researchers and, in some instances, researchers are permitted to be taken "in house" as consultants. Unfortunately, after an auspicious start, increasing responsibilities combined with tight budgets have made it very difficult for BEA personnel to participate in this program, even when outside researchers have the funds to pay for their services.

9.3 Measures of the U.S. Investment Position and Servicing Burden

According to BEA data, the United States shifted from a net positive international investment position of \$141 billion at the end of 1981 to a negative position of \$533 billion at the end of 1988. Concerns have been raised about the willingness of investors to continue to invest in the United States at current interest and exchange rates and about the servicing burden implied by this growing negative position. Because of these concerns, increasing attention has been focused on the accuracy of the data on the net international investment position and, in particular, on the use of book value in the measurement of the direct investment position. BEA estimates the market value of U.S. and foreign holdings of portfolio investments, but makes no attempt to estimate the market value of direct investments. However, in an inflationary environment, book value is likely to seriously underestimate the market value of old investments. Because foreign direct investment in the United States is, on average, more recent than U.S. direct investment abroad, the use of book value undoubtedly understates the net U.S. direct investment position.

12. However, some interesting work has come out of such cooperation: see, for example, Courtney and Leipziger (1975), Lipsey and Weiss (1984), Severn (1972), and Stevens (1969).

Historical cost is the accepted basis for company accounting records, so that, with few exceptions, book values are the only valuations readily available to companies required to report in BEA surveys. Moreover, most large affiliates of U.S. companies abroad and foreign companies in the United States are fully owned, so that direct assessment of market value through the prices of shares traded on public exchanges is not possible. Therefore, attempts to measure the current market value of direct investment must rely on indirect estimation methods, which undoubtedly are subject to large errors.

An estimate of the current value of direct investment is employed in the forecasting model of the U.S. current account used at the Federal Reserve Board (the "USIT model"). Direct investment receipts and payments, and implicitly the current value of direct investment assets, are assumed to increase with the general price level and vary in dollar terms with the weighted average exchange rate.¹³ Under these assumptions, the value of U.S. direct investment abroad was about \$750 billion at the end of 1988, while foreign direct investment in the United States was about \$450 billion. (The book values were \$327 billion and \$329 billion respectively.)

Two recent papers have provided somewhat higher estimates than the USIT model for the net U.S. direct investment position at the end of 1987 (Eisner and Pieper 1988, Ulan and Dewald 1989). Both studies essentially use the methodology described above: starting with a base period, they inflate by subsequent price changes and add new investments. In contrast to the USIT model estimates, they start with an earlier base period, disaggregate by country (instead of using weighted averages), and do not use a general price index. Instead they produce two estimates, an estimate of market value using stock market prices and an estimate of replacement cost using implicit deflators for gross fixed capital formation.¹⁴ In addition, Ulan and Dewald produce a third estimate based on the capitalization of direct investment income.¹⁵

At best, all of these estimates are crude approximations. Inflating earlier investments by some price index fails to take into account investment mistakes (e.g., the value of Volkswagen's closed U.S. plant is its resale value, not its replacement cost). Also, not all direct investment capital flows are used to finance plant and equipment expenditures; accurate replacement costs can only be calculated by examining the balance sheets of affiliates (not the direct investment position) and adjusting each component (e.g., plant, equipment, inventories, accounts receivable, etc.) to current value.¹⁶ In addition, none of these approaches adjusts for the fact that depreciation charges may be inad-

13. See Stekler (1979). Starting at a base period, the investment position is inflated in each subsequent period by a price index (adjusted for exchange-rate changes in the case of investment abroad), and new investment is added to create an "adjusted" position series.

14. Stock market price increases reflect, in part, reinvested earnings. Eisner and Pieper adjust their stock indexes to exclude the effect of reinvested earnings in order to prevent double counting. (Reinvested earnings are also included in the capital flows data.) Ulan and Dewald do not.

15. The discount rate used was a three-year moving geometric average of the earning/price ratio for stocks in the Standard and Poor 500-stock index.

16. Walther Lederer has done some preliminary work along these lines.

quate to cover replacement costs when there have been substantial price or exchange-rate changes, or the fact that new capital, financed by depreciation charges, may be far more productive.

Ulan and Dewald's third (and much higher) estimate, based on capitalized earnings, appears to be rather implausible. For example, the estimated value of foreign direct investment in the United States at the end of 1987 is only \$162 billion, compared with a book value of \$262 billion. It is the case that several major investments by foreigners in the United States have not proved profitable (e.g., Volkswagen's auto production facilities, Midland Bank's investment in Crocker, and Campeau's retail store operations). However, it is hard to believe that foreign investments in the U.S. have lost, on average, 40 percent of their value in recent years.

In conclusion, the U.S. net direct investment position at the end of 1987 was probably closer to the \$350 to \$415 billion range estimated by the USIT model and by Eisner and Pieper than to the \$36 billion published by BEA. Since direct investment inflows in 1988 were about \$40 billion larger than outflows, the net position at the end of 1988 was probably about \$300 to \$400 billion.

While it is possible to make rough estimates of the market value of direct investment by the methods described above, each method has advantages and disadvantages, and no one method is clearly superior. The choice between them depends, in part, on the use envisaged for the data. For example, it would be circular to compare rates of return on U.S. direct investment abroad and foreign direct investment in the United States using a measure of direct investment assets derived by capitalizing earnings; the answer would be whatever you assumed in capitalizing earnings. In any case, BEA should continue to collect and publish numbers based on book value. In addition, BEA could explore alternative measures and indicate a range of estimates for value. However, given the shortage of resources available to BEA, and given the serious difficulties presented by the large cumulative statistical discrepancy in recent years, it is not clear that accurate measurement of the net investment position is possible, or that efforts to measure more precisely the market value of the direct investment position deserve high priority.

Under these circumstances, the value of publishing the overall U.S. net international investment position becomes questionable. Moreover, in assessing the creditworthiness of the United States, focus should probably be directed, not at the investment position, but at net investment income payments (see Stekler and Helkie 1989). In this context, the accuracy of the data on direct investment receipts and payments is crucial. Foreign direct investors in the United States appear to earn a very low rate of return on their investments, far below the rate earned by U.S. direct investors abroad, even when attempts are made to adjust the position to market value.¹⁷ Whether this differential is

17. Using direct investment receipts and payments as reported in the balance-of-payments accounts and estimates of the value of the position from the USIT model, the real rate of return on

accurate (whether accounting conventions accurately measure economic returns) and whether it is likely to persist have important implications for future direct investment receipts and payments and for the size of the servicing burden associated with growing U.S. net international indebtedness.

Some differential might be expected on the grounds that a part of U.S. direct investment abroad is located in countries where political and economic risks are significant. Some differential might also be explained by the newness of foreign direct investment in the United States. Time might be required before new plants are fully operational, and accounting charges for amortization, depreciation, and interest might be larger in the early years of acquisitions. Investigation of the role of the factors in explaining the low reported rate of return would be useful.¹⁸ Another part of the differential is probably the result of tax incentives which lead multinational firms to use transfer prices to shift reported profits to lower tax jurisdictions abroad (see Wheeler 1988). Although U.S. corporate tax rates were lowered recently relative to those of other industrial countries, they still remain above rates in various tax havens. The incentive to report profits abroad will probably persist, inflating reported receipts on U.S. direct investment abroad and depressing payments on foreign direct investment in the United States. Balancing this distortion of the direct investment accounts is the underreporting of exports of goods and services by U.S. corporations to their affiliates abroad and the overstatement of the imports of goods and services by the U.S. affiliates of foreign companies. These understatements of net credits on other current account items are likely to grow as direct investment in and out of the United States continues to expand, so increasing errors in the returns on direct investment are likely to continue to be offset by growing errors in the opposite direction in other current account items.¹⁹

9.4 Trade Balance Implications

Does the recent rapid increase in foreign direct investment in the United States indicate that the U.S. trade balance is likely to improve more rapidly than past experience (as measured by most econometric models) would indicate? Is the data collected by BEA adequate to answer this question?

Before addressing these questions, we want to acknowledge that our ap-

foreign direct investment in the United States in 1988 appeared to be about 4.5 percent, while the rate on U.S. direct investment abroad was 6.5 percent.

18. One way to investigate the role of newness in explaining low rates of return would require following individual affiliates and the change over time in their rates of return. This would require access to data that is not published.

19. This assumes that the cost used in calculating affiliates' profits is the same as the cost declared for customs purposes. In fact the IRS recently collected substantial back taxes from Toyota and Nissan on the grounds that their affiliates were overcharged for imported cars, understating profits. The IRS has ruled that if goods are subject to customs duties, firms may not charge their affiliates more for them than the amount declared for customs purposes.

proach is partial equilibrium. Obviously, in a general equilibrium context, any desired shift in capital inflows has implications for exchange rates, interest rates, inflation, GNP growth, and so on, and these implications will vary also depending on government policy reactions. In assessing the implications of direct investment for the trade balance, we focus only on the direct partial-equilibrium effects and do not attempt to consider the general equilibrium feedbacks on the trade balance. This partial equilibrium analysis would better be interpreted as indicating whether foreign direct investment in the United States is changing the U.S. industrial structure and comparative advantage, rather than as measuring the realized improvement in the trade balance. Moreover, underlying this analysis is the assumption that there are imperfections in the markets for goods, capital, technology, and so forth, so that a billion dollars invested by Honda to build a car assembly plant in Ohio has a different implication for the U.S. trade balance than a billion dollars invested by Honda in U.S. Treasury securities.

Has foreign direct investment in the United States accelerated in recent years, so that trade equations estimated using past history are likely to err? Two alternative measures are shown in the top panel of figure 9.1: the direct investment position (the solid line) and the total assets of U.S. nonbank affiliates of foreigners (the dashed line). The bottom panel of the figure shows the direct investment position in constant (1964) prices.²⁰ By all these measures, the growth of foreign direct investment in the United States has been rapid throughout the 1970s and 1980s, although the absolute increases have obviously been much larger in recent years. Relative to the size of all U.S. businesses, value added by U.S. affiliates of foreigners increased between 1977 and 1981 and then remained level through 1987 (Lowe 1990). There is little evidence in these data to indicate that the trend in recent years has been a radical departure from the past, likely to invalidate trade relationships estimated over past years.

Has the industry composition of direct investment inflows shifted in recent years in ways that would be expected to have larger implications for merchandise trade? As shown on table 9.1, much foreign direct investment in the United States is in industries that are not directly involved in international trade: banking, finance, insurance, and real estate. In addition, acquisitions in retail trade, petroleum, or mining are not likely to result in the substitution of U.S. for foreign production on a significant scale. The merchandise sold at Bloomingdales is not likely to change significantly because the store is now owned by a Canadian company. Nor is the sale by Texaco of certain refining and distribution assets to oil-producing countries, or the purchase of stock from minority shareholders by Shell or BP, likely to reduce U.S. oil imports.

Investment in wholesale trade is likely to be associated with increases,

20. This series was created by starting with the direct investment position at the end of 1964 and adding subsequent capital flows deflated by the CPI.

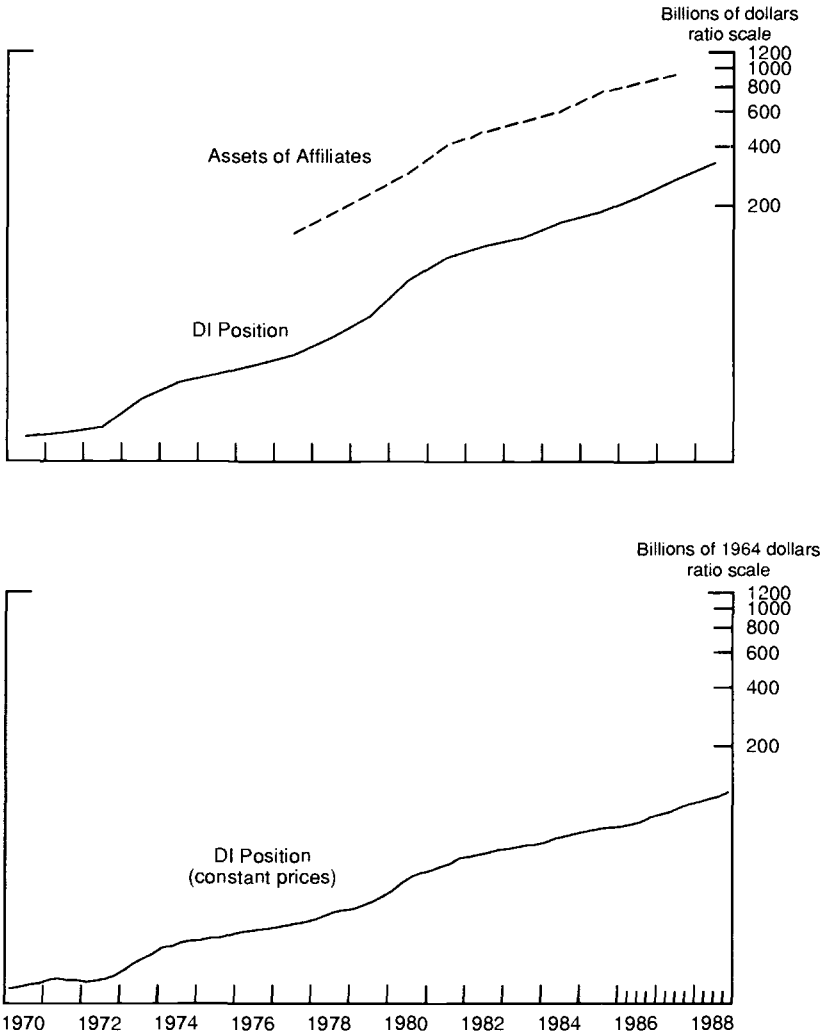


Fig. 9.1 Foreign direct investment in the United States

rather than with reductions, in U.S. imports. Much wholesale trade investment is in sales, distribution, and servicing facilities for imported goods. That leaves manufacturing, which accounts for only part of foreign direct investment in the United States, although its growth has accelerated in the last few years and has been faster than most other industries.

However, this analysis must be qualified because of the way affiliates' reports are consolidated and classified by BEA. All activities of a given subsid-

Table 9.1 Foreign Direct Investment Position in the United States by Industry (billions of dollars)

	1981	1985	1988	Average Annual Percentage Change	
				1982-85	1986-88
<i>All industries</i>	109	185	328	14	21
Manufacturing	41	60	121	10	26
Wholesale and retail trade	21	36	65	14	22
Petroleum and mining	17	32	35	17	3
Banking, finance, and insurance*	15	27	40	16	14
Real estate	9	19	32	21	19
Other	6	11	36	16	48

Source: Survey of Current Business.

*The banking data are not strictly comparable with the data for other industries because changes in net debt of banks to foreign parents are generally not included in the direct investment accounts.

ary are consolidated and classified according to the primary activity of the affiliate. As a result, considerable investment by Japanese auto companies in manufacturing facilities in the United States is classified under wholesale trade; and plans by Bridgestone to expand Firestone's retail store network would probably appear under manufacturing.²¹

Replacing consolidate reporting on all direct investment surveys with reporting by establishment would involve a substantial duplication of effort. Census already collects extensive data by establishment, as part of annual surveys of manufacturing and the census of industry (every 5 years). BEA and Census are currently engaged in a pilot effort to use employment identification numbers for establishments reported to BEA, to identify establishments affiliated with foreigners in the Census data-base. We strongly support these efforts. Implementation would not only provide a more accurate picture of the role of foreign-owned establishments in U.S. manufacturing, but would greatly facilitate comparisons of foreign and domestic-owned operations. Legislation proposed in 1989 by Senator Murkowski (S.856) would allow BEA access to the survey reports of U.S. affiliates of foreign companies that are filed on a confidential basis with the Census. Since establishment data are necessary for many important purposes, we strongly urge that other issues

21. The 1980 and 1987 benchmark surveys did include some questions that shed light on these issues. Affiliates were asked to classify sales and employment (1987 only) by 3-digit industry codes. In addition, they were asked to give the value of land and other property, plants, and equipment used in manufacturing (including petroleum refining). In 1987, "wholesale trade" affiliates devoted more property, plants, and equipment to manufacturing motor vehicles and equipment (\$4 billion) than did "manufacturing" affiliates (\$3 billion).

raised by the proposed legislation be resolved so that it can be passed and implemented quickly.²²

The rest of this section focuses exclusively on analyzing the impact on trade of foreign direct investment in U.S. manufacturing. There have been few studies of this subject, although there is a vast literature on the trade implications of U.S. direct investment abroad.²³ The typical investment considered in the theoretical literature is a "greenfield" investment (a new plant built abroad to supply foreign markets in place of exports of finished goods from the United States). Only a fraction of foreign direct investment in manufacturing industries in the United States fits this description. For purposes of analysis of trade impacts (and other issues as well) it would be useful if we could separate greenfield investment (e.g., Honda's building of an auto plant in Ohio) from mergers and acquisitions by firms in the same industry (e.g., Bridgestone's acquisition of Firestone) or acquisitions of firms in unrelated businesses (e.g., Seagram's investment in Du Pont). Mergers and acquisitions, particularly those motivated by the desire to diversify, are less likely than greenfield investments to have significant trade implications. Because BEA collects data on a consolidated basis, and because the same firm may establish some affiliates and acquire others, it is not now possible to classify reporters as representing greenfield investment. However, it might be possible (although perhaps costly) to make such distinctions using data at the establishment level.

Some light is shed on the relative importance of greenfield investment by BEA's Annual Survey of U.S. Business Enterprises Acquired or Established by Foreign Direct Investors (reported in the May *Survey of Current Business*). As indicated in table 9.2, the amounts invested in manufacturing through acquisitions and the total assets of the affiliates added through this method dwarf expenditures on new establishments in recent years. However, these data may be misleading. They provide no follow-up information on subsequent asset sales; acquisitions are frequently followed by spin-off of parts of the company acquired.²⁴ The new establishment data include expenditures only in the first year. It seems likely that greenfield investment plays only a small role in foreign direct investment in U.S. manufacturing, although we lack precise data to support this conclusion.

A related question is the relative importance of acquisitions versus plant and equipment expenditures in explaining the recent increases in the assets of

22. Legislation permitting BEA and Census to share data on direct investments was passed in 1990.

23. See Bergsten, Horst, and Moran (1978), for a review of this literature. More recent examples of the effects of U.S. investment abroad on trade include Lipsey and Weiss (1981, 1984) and Blomstrom, Lipsey, and Kulchycky (1988).

24. Information on assets sold by affiliates is available from a different BEA survey, although the data are not currently published. They do not distinguish between assets previously acquired through acquisition or new establishment.

Table 9.2 Foreign Acquisitions and New Establishments in U.S. Manufacturing (billions of dollars)

	Investment Outlays		Assets of Affiliates	
	Acquisitions	New Establishments	Acquired	Established
1981	7.8	.3	29.3	.4
1982	2.1	.2	4.6	.7
1983	3.0	.1	3.7	.2
1984	2.7	.4	5.7	.9
1985	11.7	.4	14.8	1.3
1986	16.1	.7	18.7	1.2
1987	18.9	.9	23.2	1.8
1988	29.7	1.8	35.4	3.6

foreign-owned manufacturing affiliates. Unfortunately, this question also cannot be answered with currently available data.²⁵

One area of greenfield investment that has received considerable attention is Japanese investment in auto production in the United States. Case studies, such as the study of auto investment by GAO (1988), can be very useful in identifying analytic issues and data inadequacies. The GAO study did not use BEA data and focused primarily on the question of the direct impact on auto industry employment (ignoring macroeconomic determinants of employment). As the GAO study points out, assessment of the direct impact of Japanese car production in the United States on employment in the industry depends crucially on whether the cars produced in the United States displace imports from Japan or cars produced by U.S. or other foreign manufacturers. At one extreme, if it is assumed that car production in the U.S. by Japanese manufacturers is matched by reduced imports, then the improvement in the U.S. trade balance would equal the reduction in finished car imports less the value of imported parts used in Japanese car production in the United States. On the other hand, if production in the United States allows Japanese companies to increase their share of the market at the expense of U.S. producers, and if the import content of Japanese-brand cars is higher than the import content of U.S.-brand cars, investment by Japanese companies in production facilities in the United States could worsen the trade balance. The actual outcome is probably somewhere between these extremes.²⁶

The presence of barriers to Japanese car imports increases the likelihood of the less favorable trade outcome. If the voluntary export restraints effectively constrained the market share of Japanese cars, then Japanese companies might

25. The benchmark survey asks firms to decompose the change in net property plant and equipment in 1987 and to provide data on new plant and equipment expenditures and depreciation. However, increases resulting from acquisitions are lumped into a category labeled "restatement." See U.S. Department of Commerce (1989), table D7.

26. The outcome would also depend on macroeconomic interactions.

build production facilities in the United States in order to increase their market share, even if production in Japan remained the cheaper way to supply the U.S. market. Under these circumstances, one would expect imports from Japan to remain at the quota level. Projections into the future would require assumptions about future price and exchange-rate developments. BEA currently collects some information on costs of production from U.S. affiliates, but none from foreign parents on their operations outside the United States. Such data would be very useful, but attempts to collect it might cause serious international frictions.

Another crucial question is the import content of Japanese- and U.S.-brand cars. Currently the import content of Japanese cars produced in the United States is estimated at about 40 to 50 percent, while the import content of U.S.-brand cars is about 10 percent. But, over time, many observers expect these percentages to converge as Japanese manufacturers increasingly use parts manufactured in the United States. These estimates of import content are based not on BEA data, but rather on auto industry sources. BEA does collect information on imports by U.S. affiliates, but consolidation of wholesale trade with manufacturing makes it impossible to use the data to calculate the import content of production.²⁷ For this purpose establishment data are needed. It would also be useful to have information on Japanese direct investment in the U.S. auto-parts industry. However, the industry breakdowns currently used by BEA do not provide information on an end-use basis.

In conclusion, case studies of greenfield investments can produce useful insights into likely effects on trade flows. However, it is very difficult to assess the relative importance of each case to the overall trade balance. What part of greenfield direct investment in the United States is in the auto industry? Are other greenfield investments clustered in protected industries? Does the import content of foreign-owned production in the United States tend to fall over time? These are all questions that could be answered if BEA data were available on an establishment level, and if greenfield investments could be separated from others.

We turn now to mergers and acquisitions. Their impact on trade could go in either direction. If acquisitions result in improved management, the application of more advanced technology, and modernization of plants and equipment, they could make production in the United States more competitive and tend to improve the trade balance. On the other hand, consolidation of the new company could result in the transfer of advanced technology to foreigners, the shift of production of some products abroad, or the use of the U.S.

27. The benchmark survey does ask for the value of imports from foreign parents and others that are for resale without further processing, assembly, or manufacture by the U.S. affiliate. By subtraction, one could obtain the value of imports that were used in production. However, it is not clear how to adjust the sales data to exclude the value of imported goods sold without further processing.

affiliate to distribute imports.²⁸ If foreign affiliates were identified in the Census of Manufacturers data, comparison of domestic establishments and foreign affiliates could provide information that would be useful in assessing these alternatives.

Another possibility is that the acquisition of 10 percent or more of a U.S. company's equity is essentially a portfolio investment and has no direct implications for trade. Seagram's investment in Du Pont would probably fall into this category. One piece of information that might be useful in distinguishing portfolio-type investments from others (apart from information on control, discussed earlier) is whether the parent is in the same industry as the affiliate. Currently BEA surveys do not provide information on what type of manufacturing a foreign parent is engaged in.

If foreign direct investments in the United States, whether greenfield investments or acquisitions, are likely to have a significant impact on U.S. trade, one would expect to observe increases in plant and equipment expenditures by these affiliates. New plant and equipment expenditures by manufacturing affiliates were level between 1981 and 1986, but increased by almost 25 percent in 1987 (the latest data available). In contrast, Census's survey of new plant and equipment expenditures in manufacturing for the U.S. economy as a whole indicated that they increased by only 2 percent in 1987. This quarterly Census survey of investment plans for U.S. companies in general could provide much more up-to-date information on recent investments and current plans of affiliates of foreign companies. This would be another reward of closer cooperation between BEA and Census.

9.5 The Impact of Direct Investment Operations on Economic Welfare

The analysis of the various effects of U.S. direct investment abroad has been a major preoccupation for many years.²⁹ The preoccupation has just recently been extended to direct investment in the United States.³⁰ However, since most empirical studies have dealt with U.S. direct investment abroad, our discussion of the effects of foreign investment in the United States will necessarily be limited.

The majority of the studies fall into two broad classes, with quite different uses of available data. The studies in the first class, which has by far the most

28. One of the reasons frequently cited in the literature on why U.S. direct investment abroad has had little negative impact on net U.S. exports is that U.S. firms setting up production facilities abroad also have expanded their distribution networks and have been better positioned to take advantage of market opportunities. Increasing market share outweighed the shift of some production abroad.

29. For comprehensive general surveys, see Caves (1982) and Reuber (1973). Musgrave (1975) is an outstanding and comprehensive investigation of the effect of U.S. direct investment abroad on the United States.

30. See, for example, Graham and Krugman (1989), Tolchin and Tolchin (1988), and for an interesting industry study, U.S. General Accounting Office (1988).

members, do not attempt a comprehensive evaluation of the impact of direct investment on economic welfare, but rather concentrate on specific tests of hypotheses concerned with the impact of particular factors. Methodologically, such studies usually compare the behavior of foreign-owned enterprises with a sample of other firms: local firms, domestic U.S. firms, or foreign subsidiaries in other countries.

The second class of studies, which has relatively few members, attempts to evaluate the *overall* impact of, usually, a single investment on economic welfare; invariably such studies proceed by applying cost-benefit analysis to the flows associated with a given direct investment project.

9.5.1 Tests of Particular Attributes of Direct Investment Enterprises

Most studies in this class have utilized one of two types of data: (1) data allowing the comparison of the operations of foreign subsidiaries with domestically-owned firms in a given country; and (2) data allowing the comparison of the operations of foreign subsidiaries in a number of different countries.

All studies using the first type of data involve detailed comparisons, often statistical, of firm operations at the level of the establishment. Occasionally, privately collected data are used (e.g., Wells 1973), but typically a national census of manufacturing is the source. Important questions examined are whether foreign affiliates are more efficient than their domestic counterparts, whether there are differences in the capital intensity of the production processes chosen, and whether foreign affiliates pay higher wages. A careful study at the establishment level (Lim 1977) confirmed the finding of other studies that, on the average, foreign subsidiaries pay higher wages than their domestic counterparts. For a given level of employment, this finding means a higher level of payments to domestic factors and higher economic welfare in the host economy. However, if the wage rate is higher than the true marginal cost of labor, the level of employment by the foreign subsidiary and, perhaps the capital/labor ratio, will be suboptimal. The evidence on efficiency and capital intensity was less clear. There was some evidence that in some countries foreign affiliates use more capital-intensive techniques (Wells 1973, for Indonesia), but other studies found no clear picture (Corbo and Havrylyshyn 1982, for Canada; Morley and Smith 1977, for Brazil).³¹ In terms of productive efficiency, however, few if any studies could detect significant differences between the two classes of firms (Corbo and Havrylyshyn 1982, Vendrell-Alda 1978, Morley and Smith 1977).

Studies comparing the behavior of subsidiaries of multinational corporations have usually focused on the differences in behavior between subsidiaries in developed and developing countries. Two studies, in particular, should be

31. Morley and Smith seemed to find some tendency for foreign subsidiaries to be more capital intensive, although this was hard to detect because of what they viewed as deficient data on capital services (p. 275).

noted for their use of the BEA data to examine the question of the choice of technology and the efficiency of subsidiaries in developing countries (Courtney and Leipziger 1975; Lipsey, Kravis, and Roldan 1982). Both studies found strong evidence that subsidiaries respond to cost differentials by adopting more labor-intensive methods in developing countries. Lipsey, Kravis, and Roldan, in a very comprehensive investigation, arrived at this conclusion for both U.S. and Swedish-owned subsidiaries, comparing the labor intensity of production not only among subsidiaries, but also between subsidiaries and the parent firm.

The BEA data, collected at the enterprise level, may involve the aggregation of a number of establishments in a given country. Although the studies discussed above have shown that the analysis of the BEA data can lead to useful results, virtually all researchers advocate the collection and use of establishment-level data; these data minimize errors caused by the aggregation of different products and inputs that result from the aggregation of different establishments in a given country. Unfortunately, BEA has never required data at the establishment level, partly, perhaps, because the data system initially concerned itself only with balance-of-payments flows, where a natural unit of measurement is the country aggregate. We will argue below that the failure to require collection of data at the enterprise level is particularly regrettable since the requisite establishment data in most cases have already been collected by national authorities abroad, through national censuses of manufacturers (often modeled on the U.S. Census of Manufacturers). Hence, in most cases, no additional burden would be imposed on reporters by requiring data at the establishment level—data already reported to national authorities.³²

9.5.2 Tests of the Overall Benefit-Cost Ratio of a Direct Investment

The ultimate goal of this second class of studies is the comprehensive evaluation of all the benefits and costs for a particular direct investment (or group of them), leading to an overall assessment of its desirability for a given economy. It is our goal to determine whether the existing BEA data, or any other data that BEA might feasibly collect, are sufficient to carry out the requisite benefit-cost analysis.

The typical calculation of the contribution of direct investment to the host or home country concentrates solely on its impact on the national income of the country in question. Other important welfare questions, such as the impact on the distribution of income, are set aside. The benefit-cost technique has

32. We understand the concern of our discussant, Betty Barker, with respect to the possible difficulties in interpreting data from different countries. However, since most of these censuses of manufacturing have been patterned after our own, there is much more consistency across countries than might initially be expected. On this issue, see Lipsey (1985).

These data for U.S.-owned subsidiaries reported at the establishment level to national authorities are, of course, the same data that were analyzed by Corbo and Havrylyshyn (1982), Morley and Smith (1977), and Lim (1977). Many other such studies are discussed in Caves (1982).

been applied to direct investment in rather convincing fashion by Lall and Streeten (1977) and Encarnation and Wells (1986). Given the data available, the ease of quantifying properly the appropriate benefits and costs depends importantly on whether the key product and input markets are perfect (i.e., on whether prices reflect societal marginal costs). If this is the case, the prices embedded in normally collected flows, such as sales and wage payments, can be used without modification; if not, adjusted or "shadow" prices must be used—estimates that are as close as possible to the societal marginal costs. Of course, most practical applications to direct investments in developing countries necessitate careful adjustment of or substitution for market prices. For the United States, probably fewer adjustments need to be made; but, we would argue, most of the interesting cases require some adjustments nevertheless.

The Perfect-Markets Case

The analysis of the costs and benefits of direct investment dates to MacDougall's (1960) seminal article "The Benefits and Costs of Private Investment from Abroad." MacDougall analyzed primarily the perfect-markets case and treated direct investment as merely a transfer of real capital from a low-return home country to a high-return host country. Under such assumptions, as long as capital is paid its marginal product, the resulting national income of both host and home countries would be at least as high after the transfer, and probably higher. The capital stock that host country factors have to work with has increased, thus leading to increased returns, and owners of capital from the home country have improved their situation by shifting capital to a higher-yielding location.³³

Can we measure these benefits in the classic case by using the available U.S. data on direct investments? In many situations we can. Given the perfect-markets assumption,³⁴ a traditional cost-benefit calculation using data provided in the Census of Direct Investments should lead to a sound empirical estimate of the gains to home and host factors. Rather than measures of *marginal* output, the Census of Direct Investments provides data on sales—total output times price. However, the marginal value created by the investment can be calculated from sales by subtracting the value lost from domestic production by bidding other factors away from domestic firms or importing factors from abroad. Assuming the prices of these factors represent their marginal value product, if we subtract off the value of payments to labor and other factors, what we have left is the direct investment's marginal output. This

33. Labor payments will generally be lower in the home country, but it can be shown that, given perfect markets and constant returns to scale, the gains to capital outweigh the losses to labor in the home country and that, therefore, national income increases.

34. And, probably, that of constant returns to scale, so that factor payments according to marginal productivity exhaust national income.

quantity is divided between taxes of various kinds and profits of the direct investor.³⁵ As noted above, these data have been available in census years since 1957.

Departures from the Classic Case

Unfortunately, we are frequently in a world in which prices depart from marginal costs or, in the case of product prices, from marginal benefits or utilities. As early as 1955, Pizer and Cutler made a start toward measuring costs and benefits of direct investment under nonclassic conditions (see U.S. Department of Commerce, Office of Business Economics 1957). Subsequent U.S. censuses of direct investment abroad and in the United States, which collected increasingly detailed data on the operating characteristics of affiliates, at least offer the possibility of making benefit-cost evaluations in the typical situation when markets are not perfect. Such situations, we might add, are not limited to developing countries. A good example is the analysis of the impact of foreign-owned automobile assembly and manufacturing plants in the United States, a market in which market prices for autos have been distorted by quotas on Japanese imports.³⁶

A small but significant literature has developed since the work of Pizer and Cutler and MacDougall that has applied benefit-cost analysis to foreign investments in situations where one or more market prices are not proper shadow prices (i.e., are not equal to societal marginal costs). Important in this class are Encarnation and Wells (1986) and Lall and Streeten (1977). Both of these studies examine microeconomic data for specific foreign investment projects. For all such studies, where a particular observed price is distorted, the operating data for the foreign affiliates must be supplemented by estimates of shadow prices. In choosing shadow prices, both studies adopt the procedure advocated in the analysis by Little and Mirrlees (1974): where prices are distorted by tariff, quotas, or foreign-exchange controls, free-market prices should be used as the shadow price. An implicit assumption of this procedure is that free trade is a feasible alternative situation. A discussion of other approaches to certain shadow prices where free trade is not a feasible alternative, can be found in Lall and Streeten (1977) and Roemer and Stern (1975).

For concreteness, using the Little-Mirrlees framework, consider the calculation for a given year of the "net social income effect," Y :³⁷

35. Implicit here is the assumption of constant returns to scale.

36. See the excellent study on the subject done by the U.S. General Accounting Office (1988).

37. Over the life of a given investment, the value of Y may vary over time; it may even be negative in some years (a likely possibility when the investment is starting up) and at times will involve payments for capital goods and construction. We agree with a discussant that to calculate the overall societal value of the investment, the analyst must use a social discount rate to calculate a net present (social) value. We also agree that the calculation of social discount rates and shadow prices is subject to substantial error and therefore warrants a sensitivity analysis of the results to changes in these variables.

$$(1) \quad Y = (X + S_d) - (C_r + R + D) - (C_t + C_{nt} + L_s + K_t)$$

where X = the value of exports priced at free market prices; S_d = the free market value of domestic sales; C_r = the c.i.f. value of imported raw materials and other inputs; R = royalties and technical fees (after tax); D = after-tax profits and interest; C_t , C_{nt} = the shadow values of domestically produced tradable and nontradable inputs; L_s = the shadow value of scarce labor inputs; and K_t = the shadow value of local capital services. By using the identity linking sales and payments, the net social income effect, Y , can also be expressed as the sum of taxes and other payments to the government, payments above shadow wages to labor, and other payments above the relevant shadow prices to the local private sector.

Let us now consider whether present census data permit the calculation of the various entries listed in the above equation. Data in nominal dollars are reported for most of the categories appearing on both sides of the equality in equation (1). Possible exceptions deal with the raw materials categories. No direct figure for nonlabor inputs is collected in the present census, although it may be possible to construct one by eliminating wages and other items from the figure "cost of goods sold."

It is possible to get the proper data for imported inputs (C_r), at least for foreign affiliates in the United States (the total of imports in the category "goods intended for further processing, assembly, or manufacture"). For U.S. subsidiaries abroad, the fact that this break is available only for imports from the United States may be satisfactory, since this is the item that would be required to measure benefits to the United States.

The more difficult problem is to substitute shadow prices for the various prices embedded in the nominal flows reported in the census. Shadow prices in some countries are likely to deviate from actual prices, notably with respect to product prices, labor payments, energy prices, domestic financial costs, and anything going through the foreign-exchange market. Clearly the absence of separate price information for the firm's accounts is a hindrance; there is little or no breakdown of census flows into price and quantity components.³⁸ However, of the studies discussed in this section, only Encarnation and Wells had the luxury of such rich data. In lieu of the quantity-price breakdowns, what must be done is to estimate the percentage by which various prices are under- or over-valued and to apply the appropriate percentage-correction factor to the flow in question. At the micro and macro level this requires the further assumption that the observation in question deviates from the shadow price by the average percentage in the country or area. If we had at least some separate product-price information for the affiliates involved, we could then take account of affiliates whose observed prices deviate by more or less than

38. An exception is the labor sector, where the provision of real variables such as hours worked allows the calculation of at least rough wage rates.

the average deviation from the proper shadow price (assuming shadow prices are not firm- or affiliate-specific).

9.6 Explaining and Forecasting Direct Investment Flows and Activities

This section addresses the adequacy of data currently collected to test hypotheses about direct investor behavior. Understanding the role of various factors in explaining past developments is crucial to developing the ability to forecast. It is necessary to understand why firms launch investments across national boundaries, what factors influence the expansion of existing affiliates, and how these and other factors influence direct investment capital flows.

9.6.1 New Investments: Takeovers and Greenfield Investment

Research on the multinational firm has to a significant extent concentrated on the question of the determinants of new direct investments. (See, e.g., Hufbauer 1975, Caves 1982, and Dunning 1988, for good surveys.) The accepted theory emphasizes industry- and firm-specific advantages that for varying reasons are best exploited by foreign production and direct ownership, rather than by international trade or licensing. Thus, for example, whether a firm is a foreign investor or not is correlated with industry characteristics such as research and development and advertising intensity, and within a given industry, the size of the firm.³⁹

Rarely are the BEA data alone sufficient to test hypotheses in this area, although in many cases these data are a necessary part of the data-set. Thus, Horst 1972a and Caves 1974 used as a dependent variable in their studies the ratio of sales of foreign subsidiaries to total industry sales; the numerator would require sales data for foreign subsidiaries as collected by BEA.⁴⁰ On the other hand, most of the independent variables are related to either industry characteristics or parent-firm data. Variables in the former category typically require data outside the BEA data-set, since the industry averages for the BEA sample alone are not likely to be indicative of the population as a whole; variables such as industry concentration ratios, R&D expenditures, and average plant size have been used in the studies mentioned above. For variables measuring the attributes of a parent firm that invests abroad, BEA's periodic censuses provide a data source of ever-increasing richness. However, when a study compares the characteristics of *noninvestors* to foreign investors, clearly data for the noninvestors must be gathered from separate sources.⁴¹

39. See Richard Caves's outstanding book, *Multinational Enterprise and Economic Analysis* (1982), for encyclopedic coverage of the issues discussed in this section and an evaluation of the evidence bearing on the related testable hypotheses. Of particular interest regarding the characteristics of foreign investors, see Caves's own article (1974) and Horst (1972b).

40. In the two studies noted, the authors used non-U.S. sources of data—from Canada and the United Kingdom.

41. Horst (1972b) continues to be an interesting study of this sort.

An additional level of data problems awaits researchers trying to explain the recent wave of takeovers and greenfield investments in the United States. One can assume, following the studies noted above, that much of the explanation depends on the characteristics of the investing parent firms; however, very little information is readily available on the foreign parents of subsidiaries in the United States. BEA collects virtually no data on the characteristics of the foreign parents of the U.S. subsidiaries that form its sample. BEA has an understandable reluctance to impose data requirements on foreign firms—the foreign parents—when such requirements might raise sensitive questions of international law. Some data on foreign parents might be filled in from public sources, but at present an important class of data has escaped BEA's data-collection system. Nevertheless, by using international data, data related only to the markets in the United States, and data on foreign parents from public and private sources, some interesting work has recently been completed. (See in particular, Ray 1989, Caves and Mehra 1986.)

9.6.2 The Expansion of Existing Subsidiaries

Most forecasting of direct investment variables—the balance-of-payments capital flow and, particularly, fixed investment expenditures—has been based on theoretical models developed to explain and predict the expansion of already-existing subsidiaries.⁴² In such models, the factors discussed above that have determined the initial establishment of the subsidiary, such as the size and technical progressiveness of the parent, are assumed to no longer affect the expansion of the subsidiary. Rather, the dependent variables have been related to more traditional investment theories and data. To use plant and equipment expenditure as an example, ideas embodied in the flexible accelerator and neoclassic investment functions have been applied, sometimes with a twist, directly to the investment of foreign subsidiaries.⁴³ For fixed investment, such equations require measures of output and its growth and of the existing capital stock, and perhaps measures of the cost of capital and the costs of other inputs. Most of these variables are available in the balance-sheet and income-statement data supplied annually to BEA by the individual subsidiaries (both U.S.-owned subsidiaries abroad and foreign-owned subsidiaries in the United States). When an attempt is made to model the direct investment capital flow—a financial variable—in addition to the above variables, factors such as interest cost differentials and tax considerations presumably also come into play. Some of these additional factors may require data outside the BEA system.

42. See, e.g., Helkie and Stekler (1987) and the direct investment equations in Stevens et al. (1984); Stevens (1974) provides a survey of most of the issues and results discussed in this section.

43. Stevens and Lipsey (1988) found some evidence of an interdependence between parent-firm investment in the United States and the investment of foreign affiliates abroad. This interdependence implied a generalized investment function, where, in addition to the usual determinants mentioned in the text, investment in a given location is affected by variables specific to the others.

For aggregate equations that usually must be used for forecasting (e.g., Helkie and Stekler 1987), subsidiary output measures may be aggregated to appropriate country or area totals, or foreign or U.S. GNP may be substituted for the subsidiary aggregates. Although the specific explanatory or forecasting equations in these studies have been closely linked to the theory, it should be recalled that neither the theory nor the equations are really designed to explain takeovers and greenfield investments. Thus, in periods like the present one when this type of investment predominates, it should not be surprising if such equations do poorly.

9.7 Conclusions

BEA has for many years collected an impressive body of data on direct investment, designed to cast light on a wide variety of important issues. We have examined the adequacy of this data system for answering the important questions in four areas: the measurement of the U.S. investment position and servicing burden; the interaction between direct investment and the trade balance; the effects of direct investment on economic welfare; and the explanation and forecasting of direct investment flows and activities.

We find charges that BEA's data omit half of foreign direct investment in the United States wildly implausible. There may be many small investors who are unaware of reporting requirements and therefore fail to report, but it is unlikely that their omission changes any important feature of the overall picture. There seems little reason to doubt that BEA surveys include most direct investment and that the basic data on income and capital flows are in most cases accurate, in the sense that they accurately reflect the reporters' books.

On the other hand, the accuracy of answers supplied by the treasurer's offices of the reporters to survey questions requiring data that they would not normally collect for their own purposes is much more variable. Perhaps influenced by Washington's general preoccupation with reducing the paperwork burden and by OMB's abdication of its former responsibility for the assurance of data quality, firms seem increasingly less willing to go out of their way and to devote resources to provide accurate data. In our experience, this problem is not confined to the area of direct investment.

In the four subject areas we have explored, we have inevitably identified some important questions that cannot be answered with the existing data. The answers to some of these questions are in principle unobtainable by BEA, since the requisite data would have to come from outside the existing universe of direct investors. The prediction of greenfield investment by foreigners and the measurement of the impact of foreign affiliate production on imports may be two such questions.

However, we have also identified a number of ways in which we think the existing data system can be improved. Our specific recommendations include:

1. With respect to the definition of direct investment, it is our view that BEA should continue collecting data on the basis of the present 10-percent

rule. However, BEA should provide data on key variables (e.g., assets, sales, etc.) based on a range of ownership cutoffs, to call attention to the fact that currently published data using the 10-percent rule exaggerate the extent of foreign control of the U.S. economy. Some consideration should be given to efforts to distinguish affiliates with some foreign participation in management from those controlled by foreigners.

2. To facilitate comparisons and resolve inconsistencies, attention should be given to the harmonization of the definition of direct investment among different countries.

3. Given BEA's extremely tight resource constraints, the diversion of BEA resources to construct a market-based or replacement-cost value for the direct investment position should not be given high priority. Neither of these alternatives would provide a more accurate indicator of the future servicing burden implied by accumulating U.S. current-account deficits.

4. A much higher priority should be given to the question of why income reported on foreign direct investment in the United States is so low and whether these low returns are likely to persist.

5. Since, in our view, the direct investment data have been underutilized because of problems related to the confidentiality of the affiliate reports, we encourage BEA to reexamine its suppression rules for the published data and to pursue even more actively cooperative research projects with academic and government researchers.⁴⁴

6. While recognizing that requiring data on the operations of the foreign parents of U.S. affiliates raises delicate questions of international law, we point out that insofar as affiliate production and investment decisions are related to parent operations, the United States is missing completely an important class of direct investment data. This is one of a number of areas where the provision of adequate data for any given country may depend upon international cooperation.

7. A recurring problem in the analysis of direct investment is the absence of data at the establishment level. Given that the U.S. affiliates of foreign companies report at the establishment level in the U.S. Census of Manufacturers, and that the foreign affiliates of U.S. companies report at the establishment level in similar surveys by many foreign governments, establishment-level data on production, investment, costs, prices, employment, and related areas could be provided without substantially increasing reporting burden.⁴⁵ These data are necessary to improve our knowledge in the following areas: the disaggregated industry composition of direct investment in the United States and abroad; the separation of greenfield from other investments; and the ac-

44. We note the similar conclusion reached by Vukmanic, Czinkota and Ricks (1985), Lipsey (1985), and Graham and Krugman (1989). It should also be noted that the statutory authority under which the direct investment data are now collected specifically envisages such cooperation with researchers.

45. See Lipsey (1985) for a similar view and details on how this step could be taken with little extra cost or reporting burden.

curate comparison of the behavior of foreign-owned and domestic firms with respect to, among other things, productivity and wage rates.

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Comment Betty L. Barker

This paper is a balanced presentation of both the uses and the limitations of the data collected by the Bureau of Economic Analysis (BEA) on U.S. direct investment abroad and foreign direct investment in the United States. After careful review, the authors conclude that BEA's basic data system is sound

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and satisfies most of the needs of data users. However, they identify a number of data limitations. I agree with their conclusions. The question is the extent to which it is feasible to correct the limitations.

There are several constraints on BEA's ability to collect additional data. First is the requirement under the Paperwork Reduction Act to reduce the reporting burden of government surveys. Second, in some cases companies have indicated that the desired data are not available from their books and records and so cannot be reported. Third, in recent years budget and resource constraints have been a significant factor. Despite these constraints, BEA is working on improving its data in a number of areas.

My comments are focused on the feasibility of implementing the recommendations made in the paper. I will also discuss some of the data improvements BEA has made, is making, or plans to make.

The authors correctly point out that BEA's 10-percent ownership criterion for defining direct investment is somewhat arbitrary. It is, however, the percentage established by law at which an enterprise in one country is deemed to have sufficient influence over the management of an enterprise in another country that its interest is no longer purely passive. Stekler and Stevens recommend that BEA continue to collect its data using this 10-percent criterion, but that in publishing data, subjective criteria be used as well, in order to more closely approach a concept of "control." BEA believes that objective criteria are needed if the resulting data-set is to be consistently and clearly defined. Subjective criteria are difficult to apply consistently or to enforce in a large, complex data system such as ours. In addition, the use of subjective criteria would require the collection of more information (e.g., on the number of foreigners on the board of directors or in top management, or on how dispersed the remaining ownership interests are). Although BEA could consider collecting this information in future surveys, the basic definition of direct investment is unlikely to change.

Several shortcomings identified in the BEA data are the result of collecting data on an enterprise basis. On this basis, BEA obtains one report covering the fully consolidated U.S. business enterprise. Collection of data on an enterprise basis is necessary because this is the only basis on which financial-statement information and the information needed in compiling the U.S. balance-of-payments accounts are available. Also, for enterprises, consolidated reporting is the standard method of reporting for accounting purposes. Some of the consequences of collecting information only on an enterprise basis are: limited industry (and, for foreign direct investment in the United States, State by industry) detail; inability to compile separate data over time for U.S. affiliates that are newly established and for those that are acquired by foreign investors; and difficulty in disaggregating data for U.S. affiliates of foreign companies by percentage of ownership.

In the BEA data, each enterprise is classified in its primary industry (i.e., in the industry in which its sales are largest). This classification may obscure the industrial diversity of an enterprise that has activities in secondary indus-

tries. BEA has partly remedied this shortcoming by obtaining two data items, sales and employment, disaggregated by each industry in which an affiliate has sales. Thus, sales and the associated employment in secondary industries can be shown in those industries rather than all sales and employment being shown only in the affiliate's primary industry. It should be noted, however, that the resulting data on sales and employment disaggregated by industry of sales can only be shown at the (approximately) 3-digit SIC industry level at which the data are collected.

One way to obtain additional industry detail would be through collection of establishment- or plant-level data. The Census Bureau is already collecting establishment-level data for U.S. companies, but the data for the establishments of foreign-owned U.S. enterprises are not separately tabulated. If BEA and Census data could be linked, Census establishment data for BEA direct investment enterprises could be obtained without imposing any additional reporting burden on the business community. Legislation giving BEA access to the confidential establishment data collected by the Census Bureau and funding for the project to link BEA enterprise data and Census establishment data for foreign-owned U.S. companies have been obtained. Initial results of the link project are scheduled for publication in mid-1992.

Another consequence of collecting foreign direct investment data only on a consolidated enterprise basis is the inability to compile data separately over time for newly established and for acquired enterprises. An entity established in one year could in the next year acquire another enterprise that is merged or consolidated with the first entity. Thereafter, BEA receives one report for the consolidated enterprise and cannot show data separately for the part of the enterprise that was established and the part that was acquired. The linking of BEA enterprise and Census establishment data should facilitate the ability to track established and acquired U.S. affiliates separately over time.

Collecting data on a consolidated enterprise basis also makes it difficult to disaggregate the data for foreign-owned U.S. companies by percentage of ownership. In its surveys, BEA obtains the percentage of foreign ownership of the top U.S. parent in the consolidated enterprise, but not the percentage of ownership by a foreign person in each of the entities in the ownership chain below that top U.S. parent. Thus, arraying the data by percentage of foreign ownership of each of the entities in the consolidated enterprise is not possible. It is, however, possible to array the data by percentage of foreign ownership of the top U.S. parent of the enterprise. BEA published separate data for majority-owned and minority-owned U.S. affiliates of foreign companies on this basis for the first time in the July 1990 *Survey of Current Business*. We also plan to investigate how to refine the data further, as time and resources permit, to give data users a better idea of the extent of foreign ownership of U.S. businesses.

The authors indicate a need not only for establishment data for foreign-owned U.S. affiliates, but also for such data for U.S.-owned foreign affiliates. They recommend that BEA obtain from foreign affiliates any establishment

data that these affiliates report to their host country governments. Although this idea deserves serious study, a number of problems may make implementation difficult. For example, establishment data are not available for all countries and, where available, are not consistent in concept and definition across countries. Also, the data may be reported in foreign currency units on forms that are in foreign languages. Compilation of comparable data across countries will therefore be extremely difficult. In addition, the collection of these data will impose a significant burden on U.S. parent companies, which must obtain the information from their foreign affiliates and forward it to BEA. It should also be noted that, in BEA's data, the foreign affiliates of U.S. companies tend to be less diversified, on average, than the U.S. affiliates of foreign companies, because BEA allows no consolidation of foreign affiliates across country or industry lines. Thus, the effect of consolidation on the data for foreign affiliates of U.S. companies is much less than that on the data for U.S. affiliates of foreign companies.

The authors recommend that BEA not place high priority on constructing market-value estimates of the direct investment position. Nevertheless, BEA has undertaken work in this area. Stekler and Stevens are correct in their assessment that survey methods are inappropriate for obtaining market values. Companies do not know the market value of investments made in the past, unless the investments have been sold or recently appraised. Even if appraised, the value can vary significantly depending on the purpose of the appraisal. Thus, indirect methods of estimating market values are necessary. BEA published current value estimates of the U.S. direct investment position abroad and foreign direct investment position in the United States, using indirect methods, in the May 1991 *Survey of Current Business*.

The authors recommend that BEA collect more data for foreign parent companies. However, the reach of BEA's legal authority to collect data stops at the U.S. border. BEA must collect the information from the foreign parent's U.S. affiliate rather than from the foreign parent itself. Collection of some additional detail is possible. It is unlikely, however, that U.S. affiliates will be able to obtain highly detailed information from their foreign parents to report to BEA.

As resources permit, BEA has made, is making, or planning to make, improvements in several areas not mentioned earlier. A layman's guide for data users that explains the differences in the various direct investment data series and how to use them correctly was published in the February 1990 *Survey of Current Business*. BEA has received funding for 1991 and beyond to increase its compliance efforts to improve the coverage of smaller investments, particularly in real estate, and to strengthen its ability to analyze the data collected and to respond to special requests for information on direct investment. In addition, BEA is continuing to explore ways to lessen the suppression problems in its published data and to publish the data on as timely a basis as possible.