

Valuation of the U.S. Net International Investment Position

THIS article reviews the issues surrounding the valuation of the U.S. net international investment position and presents revalued estimates for direct investment, for U.S. gold reserves, and for the international investment position. The article describes two alternative methods for valuing direct investment in prices of the current period, presents estimates of the direct investment totals for 1982-89 that are prepared using these methods, and compares these estimates with BEA's existing historical-cost estimates and with current-value estimates from several earlier studies. (Estimates for 1990 and revised estimates for 1987-89 will be presented in the regular article on the international investment position next month—see the box on this page.)

In the mid-to-late 1980's, concerns began to arise about the mix of valuation methods used by BEA in deriving the net international investment position. Although many of the assets in the U.S. international investment position (such as portfolio investment and most reserve assets) were being valued at current-period prices, other assets (such as direct investment and U.S. gold reserves) were being valued at the historical costs at which they were purchased. In 1990, BEA suspended publication of the net international investment position of the United States and announced that it was undertaking a review of alternative methods of valuing international investment to reflect current-period prices.¹

The BEA review focused on direct investment because the largest differences between historical and current costs in the international investment position were thought to have resulted

Current-cost, market-value, and historical-cost estimates of direct investment for 1990 and revised estimates for 1987-89 will appear in the annual article on the U.S. international investment position in the June 1991 SURVEY OF CURRENT BUSINESS. The revised estimates will reflect the incorporation of information from the 1987 benchmark survey of U.S. affiliates of foreign parents and the most recent annual survey of U.S. parents of foreign affiliates. Detailed estimates by country and industry are available only in historical costs.

from a significant misstatement of the relative positions for U.S. direct investment abroad (USDIA) and foreign direct investment in the United States (FDIUS). Because most USDIA in the 1989 stock occurred in the 1960's and 1970's, it seemed likely that these assets would require a significantly larger adjustment for the cumulative effects of inflation than would those for FDIUS, most of which occurred in the late 1970's and 1980's.²

2. Inflation drives a wedge between values expressed in historical prices and those in current prices. During

Revaluation of direct investment.—As a result of its review, BEA has developed two measures—current-cost and market-value—to revalue its estimates of the USDIA and FDIUS positions in prices of the current period. The *current-cost method* revalues the U.S. and foreign parents' share of their affiliates' investment in plant and equipment using a perpetual inventory model to estimate the net stock of direct investment capital at current costs, revalues direct investment in land using general price indexes, and revalues direct investment in inventories using estimates of their current

the last 30 years, the International Monetary Fund's world price index has risen more than 4 percent a year, amounting to more than a threefold increase over the period. Such an inflation rate may hinder meaningful comparisons of dollar values at different points in time. As a result, measures of flows, which are in current prices, are often restated to constant prices, and measures of stocks, which are valued in acquisition (or historical) prices, are often restated to current (or to constant) prices. Consistent comparisons of business income and assets over time and of rates of return, capital productivity, and capital/labor ratios require such valuations.

Table 1.—U.S. Direct Investment Positions Using Alternative BEA Methods of Valuation, Amounts Outstanding at Yearend, 1982-89

[Millions of dollars]

Valuation method	1982	1983	1984	1985	1986	1987	1988	1989
U.S. direct investment abroad								
Historical-cost	207,752	207,203	211,480	230,250	259,800	314,307	333,501	373,436
Current-cost ¹	374,003	357,900	350,007	379,556	414,091	485,178	499,500	535,870
Market-value ²	228,304	273,313	267,636	380,478	519,413	577,603	675,984	804,525
Foreign direct investment in the United States								
Historical-cost	124,677	137,061	164,583	184,615	220,414	271,788	328,851	400,817
Current-cost ¹	173,223	181,289	207,159	227,223	266,541	322,725	384,009	457,566
Market-value ²	133,044	157,548	177,726	227,949	283,153	322,579	397,535	543,703
Direct investment, net								
Historical-cost	83,075	70,142	46,897	45,635	39,386	42,519	4,650	-27,381
Current-cost ¹	200,780	176,611	142,848	152,333	147,550	162,453	115,491	78,304
Market-value ²	95,260	115,765	89,910	152,529	236,260	255,024	278,449	260,822

1. Only tangible assets on the asset side of the balance sheet are revalued at their current cost. See "Technical Notes" for methodological details.
 2. Only owners' equity on the liabilities and owners' equity side of the balance sheet is revalued to market value. See "Technical Notes" for methodological details.

1. See "International Investment Position: Component Detail for 1989," SURVEY OF CURRENT BUSINESS 70 (June 1990): 54-85. Before its suspension in 1990, an annual estimate of the net international investment position of the United States was published each year.

replacement cost. The *market-value method* revalues the owners' equity portion of the direct investment position for USDIA and FDIUS using indexes of stock market prices. Thus, the two methods can be viewed as revaluing, respectively, the asset side of a balance sheet and the liabilities and owners' equity side of a balance sheet (see the box "Revaluation of Direct In-

vestment in a Hypothetical Balance Sheet"). The market value differs from the current-cost value in that it is an estimate of firms' aggregate net worth, including not only the current value of tangible assets, but also the market value of intangible assets—such as patents, trademarks, management, and name recognition. The market value may also reflect changes in the

general economic outlook or in the outlook for a particular industry—changes that may not be related to the prices of tangible assets.

BEA's revaluation of direct investment assets from historical cost to current cost raises the value of the USDIA position at yearend 1989 by \$162.4 billion, to \$535.9 billion, and raises the FDIUS position by \$56.7 billion, to \$457.6 billion (chart 4 and table 1). Revaluation of owners' equity from historical cost to market value raises the value of the USDIA position at yearend 1989 by \$431.1 billion, to \$804.5 billion, and raises the FDIUS position by \$142.9 billion, to \$543.7 billion. On a historical-cost basis, the U.S. net direct investment position at yearend 1989 was -\$27.4 billion. Revaluation to current cost raises the net position to \$78.3 billion; revaluation to market value raises the net position to \$260.8 billion. The difference between the current-cost and market-value estimates reflects significantly different rates of change in recent years in stock prices and in replacement costs of tangible assets.

Revaluation of U.S. gold reserves.—BEA has revalued U.S. gold reserves from the 1973 par value of \$42.22 per fine troy ounce previously used in the international investment position to the yearend market price, as reported for gold on the London fixing. The revaluation puts gold reserves on the same current-cost valuation basis as other reserve assets and values gold reserves on the same basis as gold held in private portfolios.

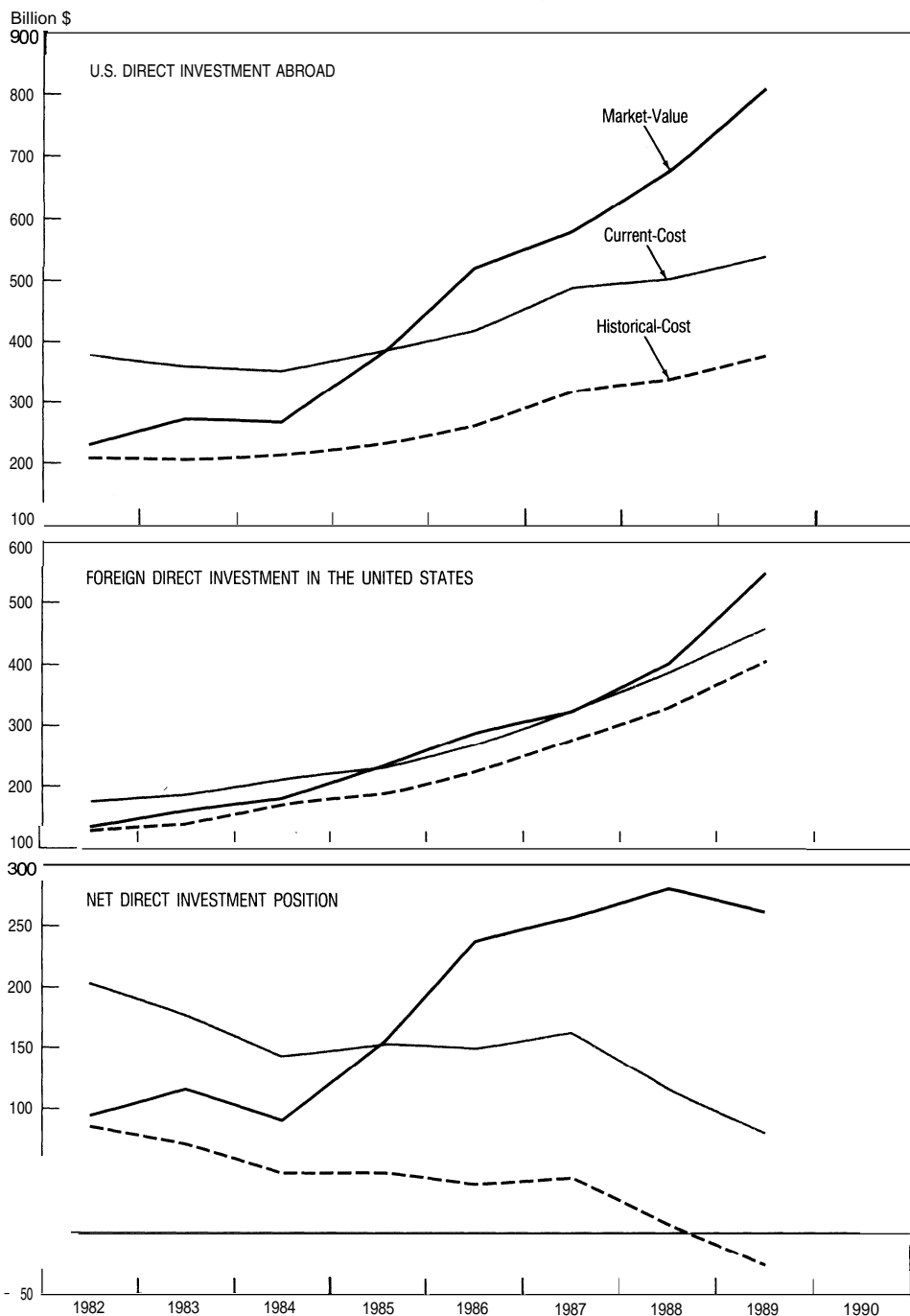
The following tabulation provides the historical values for U.S. gold reserves based on the 1973 par value and the current values based on market prices.

[Millions of dollars]		
Year	Historical	Current
1982.....	11,148	120,653
1983.....	11,121	100,484
1984.....	11,096	81,202
1985.....	11,090	85,834
1986.....	11,064	102,428
1987.....	11,078	127,648
1988.....	11,057	107,434
1989.....	11,059	105,164

Revaluing U.S. gold reserves to the yearend 1989 market price of \$401.50 per fine troy ounce raises the 1989 value of these reserves in the investment position by \$94.1 billion, from \$11.1 billion to \$105.2 billion.

Alternative Valuation of Direct Investment, 1982=89

CHART 4



U.S. international investment position.—After the revaluations of direct investment and U.S. gold reserves, the major components of the international investment position may be viewed as valued at or near current-period prices (table 2). The following list summarizes the valuations used for the major investment position components:

- *Direct investment* has been revalued to current-period prices using both stock market prices for equity investment and current-cost values for tangible assets.
- *Portfolio investments* in foreign and U.S. securities are valued at current-period prices; for these frequently traded assets held in private and public portfolios, the position estimates are based on changes in stock market prices and, in the case of bonds, on changes in bond prices.
- *Short-term loans and other short-term liabilities* to banks and nonbanks are recorded at historical cost because the face, or claim, value recorded on a firm's books

is normally roughly equal to the current-period value.

- *Official reserve assets* are valued at current-period private market prices; U.S. gold reserves have been revalued to **current-period** private market prices.
- *Long-term loans and other long-term liabilities* are valued at historical cost. For loans held to maturity, the maximum claim a lender can collect is the book value of the principal on the loan, so loans and other long-term liabilities generally need not be revalued to reflect inflation.

In recent years, the Third World debt problem and the U.S. savings and loan problem have indicated that there may be sizable differences, reflecting increased risk of default, between market values and book values. Unfortunately, the available estimates of market value—from secondary markets, appraisals, or indirect methods—are of limited value.

BEA's revaluation of the U.S. direct investment position and the U.S. reserve gold position from historical cost to current cost reduces the deficit in the U.S. net international investment position at yearend 1989 by \$199.8 billion, to -\$464.0 billion. The revaluation to market value reduces the deficit by \$382.3 billion, to -\$281.4 billion (table 3).

It should be noted that unrecorded capital inflows could have a significant impact on BEA's position estimates. During the 1980's, there was a large and persistent statistical discrepancy between the current and the capital accounts in the U.S. balance of payments. The cumulative statistical discrepancy, which amounted to \$178 billion, indicated either an overstatement of the current-account deficit or an understatement of net capital inflows into the United States. To the extent that this statistical discrepancy was due to unrecorded capital inflows, particularly of portfolio capital, the foreign investment position in the United States is understated. The Economic Statistics Initiative in the Administration's fiscal 1992 budget calls for improving the estimates of U.S. capital flows. Under this initiative, the measures of international flows of portfolio capital would be strengthened to take into account new channels of financing and new types of financial instruments, and the measures of direct investment would be strengthened by including estimates for small reporters and nonreporters.³

Position estimates and measures of wealth.—The current-cost estimates presented in this article put the U.S. international investment position estimates on a basis comparable with BEA's current-cost estimates of total U.S. fixed, reproducible tangible wealth and with the Federal Reserve Board's estimates of U.S. domestic net worth—that is, the sum of tangible assets located in the United States, including plant and equipment, inventories, and land.⁴ With consistent current-cost es-

Table 2.—Valuation of Components of the U.S. International Investment Position

Type of investment	Type of valuation
U.S. assets abroad:	
U.S. official reserve assets:	
Gold	Current
Special drawing rights	Current
Reserve position in the International Monetary Fund	Current
Foreign currencies	Current
U.S. Government assets, other than official reserve assets:	
U.S. loans and other long-term assets	Current: Approximated by historical claim value with no adjustment made for default risk.
Repayable in dollars	Current: Approximated by historical claim value with no adjustment made for default risk.
Other	Current: Approximated by historical claim value with no adjustment made for default risk.
U.S. foreign currency holdings and U.S. short-term assets	Current: For U.S. foreign- currency holdings, based on the end-of-period exchange rates; for U.S. short-term assets, approximated by historical claim value with no adjustment made for default risk
U.S. private assets:	
Direct investment abroad	Current
Foreign securities	Current
Bonds	Current
Corporate stocks	Current
U.S. claims on unaffiliated foreigners reported by U.S. nonbanking concerns	Current: Approximated by historical claim value with no adjustment made for default risk.
U.S. claims reported by U.S. banks, not included elsewhere	Current: Approximated by historical claim value with no adjustment made for default risk.
Foreign assets in the United States:	
Foreign official assets in the United States:	
U.S. Government securities	Current
U.S. Treasury securities	Current
Other	Current
Other U.S. Government liabilities	Current: Approximated by historical claim value with no adjustment made for default risk.
U.S. liabilities reported by U.S. banks, not included elsewhere	Current: Approximated by historical claim value with no adjustment made for default risk.
Other foreign official assets	Current
Other foreign assets in the United States:	
Direct investment in the United States	Current
U.S. Treasury securities	Current
U.S. securities other than U.S. Treasury securities	Current
Corporate and other bonds	Current
Corporate stocks	Current
U.S. liabilities to unaffiliated foreigners reported by U.S. nonbanking concerns	Current: Approximated by historical claim value with no adjustment made for default risk.
U.S. liabilities reported by U.S. banks, not included elsewhere	Current: Approximated by historical claim value with no adjustment made for default risk.

3. See "Improving the Quality of Economic Statistics: The 1992 Economic Statistics Initiative" in the March 1991 SURVEY.

4. BEA has produced estimates of the gross and net stocks of domestic fixed reproducible assets on consistent current- and constant-cost bases since 1972. The Federal Reserve Board uses BEA's current-cost estimates, along with an estimate of the market value of land, to estimate total tangible assets located in the United States, or domestic net worth, in its balance sheets for the U.S. economy.

Table 3.—U.S. International Investment Positions Using Alternative BEA Methods of Valuation, Amounts Outstanding at Yearend, 1982-89

- [Millions of dollars]

Valuation method	1982	1983	1984	1985	1986	1987	1988	1989
U.S. assets abroad								
Historical-cost	824,755	873,457	895,912	949,723	1,073,399	1,175,932	1,265,620	1,412,515
Current-cost	1,100,493	1,113,517	1,104,545	1,173,773	1,319,054	1,463,373	1,527,996	1,669,054
Market-value	954,794	1,028,930	1,022,174	1,174,695	1,424,376	1,555,798	1,704,480	1,937,709
Foreign assets in the United States								
Historical-cost	688,052	784,453	898,074	1,066,937	1,347,085	1,553,998	1,796,704	2,076,262
Current-cost	736,598	828,681	940,650	1,109,545	1,393,212	1,604,935	1,851,862	2,133,011
Market-value	696,419	804,940	911,217	1,110,271	1,409,824	1,604,789	1,865,388	2,219,148
International investment, net								
Historical-cost	136,703	89,004	-2,162	-117,214	-273,686	-378,066	-531,084	-663,747
Current-cost	363,895	284,836	163,895	64,228	-74,158	-141,562	-323,866	-463,957
Market-value	258,375	223,990	110,957	64,424	14,552	-48,991	-160,908	-281,439

imates of the value of foreign assets in the United States and of U.S. assets here and abroad, it is possible to evaluate changes in the size of national net worth, the distribution of net worth between foreign and domestic saving and investment, and changes in the rate of return to such investments over time.

At yearend 1989, domestic net worth in the United States was \$16,017.2 billion.⁵ After BEA's revaluations, the current-cost value of domestic assets owned by foreigners was \$1,579.3 billion, and the current-cost value of U.S. assets abroad was \$1,025.1 billion, and the value of U.S. monetary gold and of special drawing rights was \$115.1 billion. Subtracting the current-cost value of domestic assets owned by foreigners from domestic net worth and adding the current-cost value of U.S. assets abroad and the value of U.S. monetary gold and of special drawing rights produces a national net worth of \$15,578.1 billion at yearend 1989.

5. Board of Governors of the Federal Reserve System, *Balance Sheets for the U.S. Economy, 1945-90*, Board of Governors of the Federal Reserve System, Publication C (Washington, DC: March 1991).

Valuation of Direct Investment

The question of undervaluation of the U.S. direct investment position abroad relative to the foreign direct investment position in the United States was first explored in a series of papers beginning in the late 1980's; the most comprehensive were by Ulan and Dewald, Eisner and Pieper, and Lederer.⁶ These authors used a variety of techniques to estimate the current-cost value of direct investment: Revaluation of the cumulative direct investment flows by using a replacement cost index for capital goods or by using various stock market indexes; capitaliza-

6. Michael Ulan and William G. Dewald, "The U.S. Net International Investment Position: Misstated and Misunderstood," in James A. Dorn and William A. Niskanen, ed., *Dollars, Deficits, and Trade* (Norwell, MA: Kluwer Academic Publishers for the Cato Institute, 1989).

Robert Eisner and Paul J. Pieper, "The World's Greatest Debtor Nation?," in *The North American Review of Economics and Finance*, vol. 1, no. 1 (Greenwich, CT: JAI Press, 1990).

Walther Lederer, "The Valuation of U.S. Direct Investment Abroad," Unpublished (Washington, DC: Board of Governors of the Federal Reserve System, May 8, 1990).

Acknowledgments

BEA's direct investment revaluation initiative was conducted under the general direction of J. Steven Landefeld, Associate Director for International Economics, with the assistance of Christopher L. Bach, Chief of the Balance of Payments Division, and Betty L. Barker, Chief of the International Investment Division. Ann M. Lawson, Chief of the Special Studies Branch, Balance of Payments Division, Ralph Kozlow, Chief of the Special Surveys Branch, International Investment Division, and John C. Musgrave, National Income and Wealth Division, coordinated efforts within BEA to produce the final estimates. Henry Townsend, Michael A. Mann, Douglas B. Weinberg, and Eric J. Troyer of the Balance of Payments Division provided assistance with methodological research and preparation of the estimates. Special tabulations of historical foreign direct investment data were provided by Smith W. Allnutt III, Arnold Gilbert, and Jane Fry of the International Investment Division. The estimates and methods benefited significantly by comments from BEA staff and from William G. Dewald, Robert Eisner, John A. Gorman, Craig S. Hakkio, Walther Lederer, and Paul J. Pieper.

tion of the annual earnings flows from FDIUS and USDIA by a common discount rate to derive an implicit current value of the positions; and use of the ratio of current-cost value to historical-cost value for the U.S. stock of property, plant, and equipment (PP&E) and inventories to estimate the current replacement cost value of tangible assets related to USDIA and FDIUS. In producing the current-value estimates of the direct investment position, BEA has built upon and refined the methods used in these exploratory studies. The remainder of this section describes BEA's methodology and estimates and then compares them with these studies.

BEA's current-cost estimates

Method.—The current-cost method revalues tangible assets using a perpetual inventory model for plant and equipment, general price indexes for land, and special adjustment factors for inventories. The model used for revaluing the direct investors' shares of investment in plant and equipment by affiliates is the same one used to derive BEA's estimates of total U.S. fixed reproducible capital. The parents' share of equity in FDIUS and USDIA affiliates has averaged about 80 percent in recent years.

The perpetual inventory model first revalues each year's plant and equipment investment from historical cost to constant cost using U.S. capital goods price indexes for FDIUS and a weighted average of country-by-industry price indexes for USDIA. The constant-cost gross capital stock of plant and equipment for a given year is then obtained by cumulating past investment in plant and equipment and deducting the cumulated value of plant and equipment investment that has been discarded, using estimated average service lives and retirement patterns. The constant-cost net capital stock of plant and equipment is obtained in a similar manner, using a depreciation formula to write off the value of the assets over their service lives. The constant-cost net capital stock is then revalued to current cost using the appropriate capital goods price indexes.

The current-cost values for the net capital stock of plant and equipment derived by this method are added to current-cost estimates of the parents'

share of their affiliates' land and inventories. Land is revalued using U.S. and foreign gross national (domestic) product price indexes. Inventories are revalued using ratios of current-cost to historical-cost values for U.S. inventory stocks. The sum of the revalued plant and equipment, land, and inventories produces a current-cost replacement value for all tangible assets.

One of the major advantages of the perpetual inventory model is that it explicitly takes into account current-cost depreciation, as well as the timing pattern of investments and differences in prices across industries and countries.

Nevertheless, uncertainties about the appropriate choice of service lives and pattern of depreciation can have a large impact on the resulting estimates of capital stocks of plant and equipment. The sensitivity of the estimates to changes in underlying assumptions, as well as a more detailed discussion of the methodology, is presented in the "Technical Notes."

Estimates.—Although revaluation to current costs significantly changes the relative levels of the USDIA and FDIUS positions, the trend in the current-cost estimates is similar to that in the historical-cost estimates—

both show a smaller increase in the USDIA position than in the FDIUS position during the 1980's. From 1982 to 1989, the USDIA position in current costs grew \$161.9 billion, from \$374.0 billion to \$535.9 billion. Over the same period, the FDIUS position in current costs grew \$284.3 billion, from \$173.2 billion to \$457.6 billion. As a result, the net direct investment position dropped from \$200.8 billion in 1982 to \$78.3 billion in 1989.

The sources of change in the year-to-year USDIA and FDIUS positions in current costs are presented in table 4. In the table, changes attributable to capital inflows and outflows are dis-

Revaluation of Direct Investment in a Hypothetical Balance Sheet

The balance sheet in table A is for a hypothetical wholly owned foreign affiliate of a U.S. firm; in this balance sheet, all of the figures are recorded at historical cost. Table B shows the balance sheet after revaluation using the current-cost method, and table C shows the balance sheet after revaluation using the market-value method.

In table B, using the current-cost method revalues only tangible assets—inventories and property, plant, and equipment (PP&E)—on the left side of the balance sheet. Net PP&E is revalued from \$233,571 at historical cost to \$359,092 at current cost, and inventories are revalued from \$103,803 to \$117,318. Thus, the value of the firm's tangible assets is \$139,036 greater at current cost than at historical cost. Financial assets (current and noncurrent) do not need to be revalued, because the historical costs of these assets are assumed to equal or approximate their current-period prices. On the right side of the balance sheet, owners' equity is revalued from \$387,102 to \$526,139 to reflect the adjustment in the value of the tangible assets on the left side.

In table C, using the market-value method revalues owners' equity, on the right side of the balance sheet, to reflect yearend stock market prices. Owners' equity is revalued from \$387,102 at historical cost to \$793,559 at market value. Liabilities, which are also on the right side of the balance sheet, do not need to be revalued, because they are assumed to be approximately at current-period prices. The counterentry on the left side of the balance sheet is assumed to be in goodwill, which is included under "other" noncurrent assets. Goodwill is the balancing

item often used to reflect the difference between the acquisition price of a firm and the net value of the firm's assets less its liabilities.

Table B.—Balance Sheet Using Current-Cost Method

Assets		Liabilities and owners' equity	
Current:		Liabilities:	
Inventories	\$117,318	Current liabilities and long-term debt	\$504,956
Other	407,341	Other liabilities	107,942
Total	524,659	Total	612,898
Noncurrent:		Owners' equity:	
Property, plant, and equipment (PP&E)	646,816	Owners' equity	526,139
Less: Accumulated depreciation	-287,723	Total	526,139
Net PP&E	359,092		
Other	255,286		
Total	614,378		
Addenda: Net tangible assets	476,410		
Total assets	1,139,037	Total liabilities and owners' equity	1,139,037

Table A.—Balance Sheet at Historical Cost

Assets		Liabilities and owners' equity	
Current:		Liabilities:	
Inventories	\$103,803	Current liabilities and long-term debt	\$504,956
Other	407,341	Other liabilities	107,942
Total	511,144	Total	612,898
Noncurrent:		Owners' equity:	
Property, plant, and equipment (PP&E)	420,720	Owners' equity	387,102
Less: Accumulated depreciation	-187,149	Total	387,102
Net PP&E	233,571		
Other	255,286		
Total	488,856		
Addenda: Net tangible assets	337,374		
Total assets	1,000,000	Total liabilities and owners' equity	1,000,000

Table C.—Balance Sheet Using Market-Value Method

Assets		Liabilities and owners' equity	
Current:		Liabilities:	
Inventories	\$103,803	Current liabilities and long-term debt	\$504,956
Other	407,341	Other liabilities	107,942
Total	511,144	Total	612,898
Noncurrent:		Owners' equity:	
Property, plant, and equipment (PP&E)	420,720	Owners' equity	793,559
Less: Accumulated depreciation	-187,149	Total	793,559
Net PP&E	233,571		
Other	661,742		
Total	895,314		
Addenda: Net tangible assets	337,374		
Total assets	1,406,457	Total liabilities and owners' equity	1,406,457

tinguished from changes attributable to valuation adjustments for price changes, exchange rate changes, and "other changes."

The price change adjustment reflects changes in capital goods prices (either from movements in the price of, or from shifts in the mix of, capital goods) that cause changes in the average age and price of the stock. This price change adjustment is generally negative when PP&E prices are declining—as they were in the United States in 1982-84—or when current-period PP&E investments are large enough, relative to earlier period investments, to lower the average age of the PP&E stock. The price change adjustment is generally positive under the opposite circumstances.

The exchange rate adjustment reflects the effect of translating the current-cost estimate into U.S. dollars using the yearend exchange rate times its percent change from a year earlier. The exchange rate adjustment to the USDIA position moves inversely to changes in the value of the U.S. dollar relative to other major currencies: The rise in the dollar in 1982-84 and in 1988-89 reduced the value of USDIA in foreign currencies, and the decline in the dollar in 1985-87 raised the value of USDIA in foreign currencies.

The "other changes" adjustment is a statistical entry that includes re-

visions due to changes in coverage, statistical discrepancies, the effect of the interaction between exchange rates and price changes, and other statistical adjustments to the value of assets.

The change in the current-cost USDIA position was \$36.4 billion in 1989, compared with \$14.3 billion in 1988. Capital outflows contributed \$31.7 billion to the 1989 change in position. Valuation adjustments for price changes and for "other changes" increased the position by \$8.7 billion, and adjustments for exchange rate changes lowered it by \$4.0 billion.

The change in the current-cost FDIUS position was \$73.6 billion in 1989, compared with \$61.3 billion in 1988. Capital inflows contributed \$72.2 billion to the 1989 change in position. Valuation adjustments for price changes increased the position by \$2.2 billion, and adjustments for "other changes" decreased it by \$0.8 billion. (Because U.S. affiliates of foreign parents generally maintain their financial accounts in U.S. dollars, the adjustment for changes in exchange rates is negligible.)

BEA's market-value estimates

Method.—The market-value method for estimating the value of the direct investment positions in current-period prices revalues the historical-

cost value of equity in foreign affiliates of U.S. parents using weighted average foreign stock prices. The method revalues equity in U.S. affiliates of foreign parents using a broad-based U.S. stock price index. BEA's estimates revalue only the owners' equity portion of the position; as noted earlier, the liabilities portion is assumed to be approximately valued at current-period prices.

The market-value method is similar to that used by BEA to value portfolio investment in that both use stock price indexes to revalue equity interests in companies. The major difference is that portfolio investments are composed of frequently traded securities, whereas U.S. and foreign affiliates are often wholly owned subsidiaries, and their stock may not be publicly traded. The key assumption is that revaluation of direct investment using general stock price indexes produces on average a reasonable estimate of the aggregate value of affiliates in a country. See the "Technical Notes" for a more detailed discussion of the methodology.

Estimates.—On the market-value basis, unlike on either the historical-cost or the current-cost basis, the USDIA position increased more than the FDIUS position from 1982 to 1989. Although both U.S. and foreign stock market indexes rose to record levels in the 1980's, stock market prices increased more rapidly abroad than in the United States. From 1982 to 1989, the USDIA position at market value grew \$576.2 billion, from \$228.3 billion to \$804.5 billion. Over the same period, the FDIUS position at market value grew \$410.7 billion, from \$133.0 billion to \$543.7 billion. As a result, the net direct investment position increased from \$95.3 billion in 1982 to \$260.8 billion in 1989.

From 1982 to 1984, the market-value estimates of the USDIA position were lower than the current-cost estimates. As foreign stock market indexes jumped in 1985, the market-value estimate moved slightly higher than the current-cost estimate. By yearend 1989, the market value of USDIA was \$804.5 billion, \$268.6 billion higher than the current-cost estimate.

Detailed information on the sources of change in the year-to-year USDIA and FDIUS positions on a market-value basis is not yet available. It is clear, however, that changes attributable to stock prices and capital

Table 4.—U.S. Direct Investment Positions at Current Cost, Amounts Outstanding and Changes, 1982-89

(Millions of dollars)

Year	Amounts outstanding, beginning of year	Changes during year (decrease (-))					Total (a+b+c+d)	Amounts outstanding, end of year
		Attributable to:						
		Capital flows (a)	Valuation adjustments for:			Other changes ² (d)		
			Price changes (b)	Exchange rate changes ¹ (c)				
U.S. direct investment abroad								
1982.....	401,214	967	3,316	-13,268	-18,226	-27,211	374,003	
1983.....	374,003	6,695	-6,699	-14,226	-1,873	-16,103	357,900	
1984.....	357,900	11,587	-3,073	-18,832	2,425	-7,893	350,007	
1985.....	350,007	13,162	319	14,448	1,620	29,549	379,556	
1986.....	379,556	18,679	-1,475	15,182	2,149	34,535	414,091	
1987.....	414,091	31,045	1,395	30,737	7,910	71,087	485,178	
1988.....	485,178	16,218	1,650	-5,163	1,617	14,322	499,500	
1989.....	499,500	31,722	-555	-4,032	9,235	36,370	535,870	
Foreign direct investment in the United States								
1982.....	158,719	13,792	-1,459	.....	2,171	14,504	173,223
1983.....	173,223	11,946	-4,450	.....	570	8,066	181,289
1984.....	181,289	25,359	-1,623	.....	2,134	25,870	207,159
1985.....	207,159	19,022	369	.....	673	20,064	227,223
1986.....	227,223	34,091	4,349	.....	878	39,318	266,541
1987.....	266,541	46,894	5,427	.....	3,863	56,184	322,725
1988.....	322,725	58,435	5,197	.....	-2,348	61,284	384,009
1989.....	384,009	72,244	2,163	.....	-850	73,557	457,566

1. Represents gains or losses on foreign currency-denominated assets due to their revaluation at current exchange rates.

2. Includes changes in coverage, statistical discrepancy, the effect of the interaction between exchange rates and price changes, and other adjustments to the value of assets.

flows predominated over changes attributable to exchange rates and other factors.

Comparison of BEA's estimates with those of earlier studies

Table 5 presents the alternative valuations of the positions for USDIA and for FDIUS that have been made by BEA and by authors of earlier studies. The methodologies used and results obtained are compared in this section.

Current-cost method.— In addition to using different source data, the BEA current-cost estimates differ from the current-cost estimates from various earlier studies for two methodological reasons.

First, BEA's current-cost measures differ from those of Ulan and Dewald and of Eisner and Pieper because BEA applies the tangible-asset price indexes only to the tangible assets. Both sets of authors applied price indexes for capital goods to the entire direct investment flow. As Lederer pointed out, broad application of the tangible-asset price indexes to all flows is incorrect because these flows are used by affiliates to finance a wide range of investments, ranging from plant and equipment to financial assets, a significant share of which are assets—such as cash and trade receivables—that do not need to be revalued. Among assets other than tangible assets, only equity stock in other corporations and intangible assets such as goodwill might arguably be revalued.

Second, BEA's current-cost estimates, unlike Lederer's estimates, are based on the perpetual inventory model, which explicitly takes into account the timing and composition of investment in plant and equipment and of prices both here and abroad. Lederer's estimates were based on the single ratio of current cost to historical cost for the total U.S. capital stock of plant and equipment and other tangible assets. This approach implicitly assumes that the timing of investment flows, the distribution of assets, and the rate of inflation are the same for U.S. domestic investment, USDIA, and FDIUS; however, three-fourths of FDIUS included in the yearend 1989 FDIUS position occurred in the 1980's and thus requires a smaller revaluation than the USDIA position, a large share of which occurred in the 1960's and 1970's.

Table 5.—Alternative Valuations of the U.S. Direct Investment Positions, Amounts Outstanding at Yearend 1988

[Billions of dollars]		
Valuation method	U.S. direct investment abroad	Foreign direct investment in the United States
Bureau of Economic Analysis:		
Current-cost	500	384
Market-value	676	398
Historical-cost	334	329
Michael Ulan and William G. Dewald:^{1,2}		
Current-cost	715	299
Market-value	1,016	496
Capitalization of earnings	808	162
Robert Eisner and Paul J. Pieper:³		
Current-cost	747	338
Market-value	749	389
Walther Lederer:⁴		
Current-cost	406	n.a.

n.a. Not available

1. Estimates are for 1987.

2. Michael Ulan and William G. Dewald, "The U.S. Net International Investment Position: Misstated and Misunderstood," in James A. Dorn and William A. Niskanen, ed., *Dollars, Deficits, and Trade* (Norwell, MA: Kluwer Academic Publishers for the Cato Institute, 1989).

3. Robert Eisner and Paul J. Pieper, "The World's Greatest Debtor Nation?," in *North American Review of Economics and Finance*, volume 1, number 1 (Greenwich, CT: JAI Press, Inc., 1990).

4. Walther Lederer, "The Valuation of U.S. Direct Investments Abroad," unpublished (Washington, DC: Board of Governors of the Federal Reserve System, May 8, 1990).

Market-value method.— BEA's market-value estimates differ from those of Ulan and Dewald because the BEA method excludes the portion of the movements in stock prices that are attributable to the retention of earnings. In this way, BEA avoids the double-counting of retained earnings in the Ulan and Dewald estimates that resulted from their applying an unadjusted stock price index to direct investment capital flows that included reinvested earnings. Furthermore, BEA's market-value estimates differ from those of Ulan and Dewald and of Eisner and Pieper because BEA's adjusted stock price indexes are applied only to the owners' equity portion of the direct investment capital flows; in contrast, both sets of authors applied their price indexes to the entire flow of direct investment capital.

Capitalization of earnings.—BEA has not produced an estimate based on the capitalization of direct investment earnings because of the large uncertainties involved in choosing an appropriate rate of discount. Given the existence of exchange rate risks, expropriation risks, less than perfect capital mobility, and persistent differences in interest rates across countries, it seems unreasonable to assume that a single discount rate could be appropriate for discounting investment flows from USDIA and FDIUS; further,

small differences in discount rates produce large differences in the capitalized value of earnings. In addition, choosing a discount rate predetermines the rate of return one can derive from the capital stock, and thus yields no independent information.

Valuation of Gold and Debt

U.S. gold reserves

In order to more accurately reflect the current value of all assets in the international investment position and to provide consistent current-cost treatment of U.S. gold reserves with other reserve assets and private gold, BEA has revalued gold reserves from the 1973 par value of \$42.22 per fine troy ounce to yearend market prices, as reported for gold on the London fixing.

Using the yearend 1989 market price of gold of \$401.50 per fine troy ounce raises the 1989 value of U.S. reserve holdings of gold by \$94.1 billion, from \$11.1 billion to \$105.2 billion. Revaluation to market value significantly raises the value of gold reserves throughout the 1982-89 period. The physical U.S. gold stock changed little throughout 1982-89, so virtually all of the changes in the year-to-year position of gold at current cost reflect changes in the price of gold. From 1982 to 1989, the current-cost value of U.S. gold reserves declined from \$120.7 billion to \$105.2 billion.

Long-term loans and other long-term debt

The valuation of debt, particularly that of heavily indebted nations, is a major issue for the 1990's, both here and abroad. In the past, valuation at historical cost seemed reasonable for debt that was unlikely to be sold in secondary markets—for example, government or bank debt. Bad debts, when deemed uncollectible, were written off by banks or forgiven by governments, and these writeoffs were reflected in the position estimates. Although a large dollar volume of debt to Third World nations was written off or forgiven during the 1980's, much debt that may yet have to be written off or forgiven is still being recorded at book value. In recent years, the rescheduling, selling, repurchasing, and swapping of such debt has led to development of a secondary market for the debt of these nations.

While there is some default risk attached to the debt of a substantial number of countries, market attention has focused on the debt of heavily indebted countries. For these countries, the secondary market value of their long-term bank debt has been estimated at about one-third of the book value of that debt.⁷ Ulan and Dewald, using these secondary market values, estimated that discounting bank loans to less developed countries would reduce the value of claims reported by U.S. banks by \$40-50 billion in 1989. Such estimates are speculative because secondary markets are extremely thin; any large purchase can substantially change the secondary market price. Indeed, when Brazil bought back a portion of its own debt in March 1988, the secondary market price of Brazilian debt doubled. In addition, these secondary market discounts cannot sim-

7. Salomon Brothers, "Indicative Prices for Less Developed Country Bank Loans," January 4, 1990.

ply be applied to bank debt to produce market-value estimates, because the value of bank claims varies substantially according to the extent to which loans have been collateralized and/or subordinated. Moreover, many of these loans have been written down substantially from face value, and the true market value of current bank claims may be only half of the amount implied by such estimates.

Although revaluation of debt was not attempted in the work reported in this article, BEA intends to examine the question further. The issue will face BEA—for both domestic and international debt—in the more general context of moving to an integrated set of national and international income and wealth accounts.⁸

8. For a description of BEA's plans for moving to an integrated set of national and international income and wealth accounts, see "The United Nations System of National Accounts: An Introduction," in the June 1990 SURVEY; and "Improving the Quality of Economic Statistics: The 1992 Economic Statistics Initiative," in the March 1991 SURVEY.

Technical Notes

This section provides additional detail on the two methods—current-cost and market-value—used by BEA to revalue the USDIA and FDIUS positions. The discussion covers the assumptions underlying each method, including tests of the sensitivity of the estimates to several of these assumptions.

Current-cost method

Under this method, U.S. and foreign parents' shares of affiliates' tangible assets—inventory stocks and PP&E—are revalued to current costs. Inventory stocks are revalued using ratios of current-cost to historical-cost inventory stocks for nonfarm corporate business from the U.S. national income and product accounts (NIPA's); these adjustments convert inventories from historical costs to current replacement costs. For FDIUS, land is revalued using the implicit price deflator for gross national product; for USDIA, land is revalued using country-specific implicit price deflators for gross national (or domestic) product. Plant and equipment is revalued using a perpetual inventory model.

Perpetual inventory model.—The current-cost method uses a perpetual inventory model to estimate the gross and net stocks of plant and equipment for foreign affiliates of U.S. parents and for U.S. affiliates of foreign parents, by industry and geographic area.⁹ The model starts with plant and equipment investments in current and constant dollars and obtains the gross plant and equipment capital stock for a given year by cumulating past plant and equipment investments and deducting the cumulated value of plant and equipment that has been discarded or retired, using estimated average service lives and retirement patterns. Net plant and equipment capital stocks are derived by deducting depreciation for plant and equipment from the gross stock. The depreciation estimates are based on the straight-line formula used in the NIPA's, in which annual depreciation for a fixed asset is equal to its gross value divided by its service life.

9. For detailed information on the perpetual inventory model, see U.S. Department of Commerce, Bureau of Economic Analysis, *Fixed Reproducible Tangible Wealth in the United States, 1925-85* (Washington, DC: U.S. Government Printing Office, June 1987): vii-x.

The constant-cost estimates measure the net plant and equipment stocks in the prices of a base year, according to the following equation:

$$K_n = \sum (I_t - D_t) \left(\frac{P_b}{P_t} \right).$$

In this formula, K_n is the constant-cost net stock of plant and equipment in year n , expressed in the prices of base year b ; I_t is plant and equipment expenditures, net of discards of retired plant and equipment, in year t ; D_t is the estimated annual depreciation in year n on the plant and equipment purchased in year t ; P_b is the price that would have been paid in the base year for the mix of plant and equipment purchased in year t ; and P_t is the price of the plant and equipment in period t . The net plant and equipment stock in a country or region is the summation of net plant and equipment stocks across all industries in the country or region.

Current-cost plant and equipment estimates are derived by multiplying constant-cost plant and equipment estimates by current-period price indexes. Thus, current-cost estimates measure the plant and equipment stocks in prices that would have been paid if the stocks had been purchased in the period to which the plant and equipment estimates refer.

PP&E expenditures.—For USDIA and FDIUS, PP&E expenditures are derived from BEA's direct investment surveys of foreign and U.S. affiliates. For USDIA and FDIUS, it is assumed that the parents' share of PP&E expenditures equals the affiliates' PP&E expenditures multiplied by the parents' share of ownership in the affiliates.

Gross PP&E stocks at historical-cost (book) value are also available from BEA's direct investment surveys. Yearend changes in the gross stock of PP&E (also weighted by the parents' share of ownership) that are not explained by current PP&E expenditures or discards are the result of acquisitions or divestitures of affiliates and of benchmark revisions. Such changes are treated as transfers of used PP&E to or from affiliates.

Annual PP&E investments—PP&E expenditures adjusted for discards, acquisitions, divestitures, and benchmark revisions—are distributed into the components of PP&E using detailed information from BEA's benchmark surveys of FDIUS and USDIA.

Additional adjustments are made to include expensed petroleum and natural gas exploration and development expenditures in PP&E investments and stocks. Although companies may expense certain petroleum and natural gas exploration and development expenditures for financial reporting, BEA treats these investments as capitalized for the purpose of developing current-cost estimates consistent with NIPA concepts.

For FDIUS, annual PP&E expenditures at historical cost by industry of U.S. affiliate are available from the 1974, 1980, and 1987 benchmark surveys and from the 1977-79, 1981-86, and 1988 annual surveys of FDIUS. Estimates are made for 27 industry groups of affiliates. Because such estimates are not yet available for 1989, PP&E expenditures are estimated by extrapolating the results by industry from the Census Bureau's Plant and Equipment Expenditures Survey. Gross PP&E stocks at historical cost by industry of affiliate are available for 1974 and for 1980-88. Foreign parent ownership shares, by industry, are available from the 1974, 1980, and 1987 benchmark surveys and for large affiliates from the 1981-86 and 1988 annual surveys.

For USDIA, annual PP&E expenditures at historical cost by geographic area and industry of majority-owned foreign affiliates (MOFA's) are available from the 1957, 1966, 1977, and 1982 benchmark surveys and from the 1958-65, 1967-76, 1978-81, and 1983-89 annual capital expenditure surveys of USDIA.¹⁰ Gross PP&E stocks for MOFA's are available from the 1966, 1977, and 1982 benchmark surveys and the 1983-88 annual surveys. Parent ownership shares, by geographic area and industry, are available from the 1966, 1977, and 1982 benchmark surveys and from the 1983-89 annual surveys.

For the estimates of PP&E expenditures and stocks for USDIA to be consistent with those for FDIUS, data on PP&E expenditures and stocks are needed for both MOFA's and minority-owned foreign affiliates (MINOFA's).¹¹ PP&E data for MINOFA's are not as complete as those for MOFA's. As a result, the relationships between net PP&E stocks for MOFA's and MI-

NOFA's, by region and industry, as reported in BEA's 1982 benchmark survey are used to proportionally adjust the MOFA's PP&E expenditures and stocks, by region and industry, to an estimated total for MOFA's and MINOFA's combined.

For USDIA, the revaluation adjustments were based on weighted averages of data from the following countries or groups of countries: Canada, France, Germany, Italy, Japan, the United Kingdom, all other countries in Europe, and a residual for all other countries in the rest of the world.¹²

Price indexes.—For FDIUS, current- and constant-cost values for plant and equipment are derived using the annual price indexes for U.S. investments in plant and equipment, by industry, from BEA's capital stock estimates. Current- and constant-cost estimates of investment in land are derived using the implicit price deflator for U.S. gross national product.

For USDIA in Canada, France, Germany, Italy, Japan, and the United Kingdom, the current- and constant-cost values for plant and equipment are derived using the appropriate country price index, available from the Organisation for Economic Co-operation and Development (OECD), for nonresidential structures and for nonresidential equipment. Current- and constant-cost estimates of investment in land are derived for each country using its price deflator for gross national (or domestic) product.

For USDIA in "other Europe," country price indexes, available from the OECD, are used to develop weighted price indexes for structures, equipment, and gross domestic product. For USDIA in the rest of the world, U.S. price indexes are used because reliable weighted indexes for the developing countries are not available; furthermore, foreign affiliates in developing countries, particularly affiliates in the petroleum industry, are believed to acquire much of their equipment from the United States.

Average service lives.—The average service lives and retirement patterns used for FDIUS plant and equipment are the same as those used by BEA to derive the estimates of total

U.S. private fixed reproducible tangible wealth.

The service lives used for USDIA plant and equipment in Canada, France, Germany, Italy, Japan, and the United Kingdom are those used in the national economic accounts of those countries, as reported to the OECD.¹³ The service lives for nonpetroleum investments in other developed countries are based on service lives used in selected small European countries and on service lives in Canada, France, Germany, Italy, Japan, and the United Kingdom. The service lives used for nonpetroleum investments in less developed countries are based on those for developed countries, but they have been lengthened because less developed countries are assumed to have slower technological obsolescence and lower labor costs (and maintenance costs) relative to capital acquisition costs. The service lives used for petroleum investments are judgmental estimates and are considerably longer than those used by BEA for the domestic petroleum industry; the use of longer service lives reflects the slower, more efficient rate at which oil is extracted in foreign countries.

Alternative service lives and the depreciation formula.—BEA examined a number of alternative assumptions about the appropriate service lives and formulas to use for depreciation. Several of these assumptions are discussed in the following paragraphs.

It is possible that the longer average service lives used for USDIA do not reflect actual differences in practice between the United States and other countries. If the USDIA position at current costs were recalculated using the shorter U.S. service lives (instead of the OECD service lives) for U.S. affiliates abroad, the current-cost USDIA position for 1989 would be \$61 billion lower, as would the resulting net direct investment position.

Various studies of depreciation in the United States suggest that depreciation for equipment may be more rapid in the first years of the service life than that calculated using the straight-line formula; studies also suggest that, for structures, either the depreciation rates are less or the service lives are longer than those used by BEA. BEA tested the effects of such

10. MOFA's are foreign affiliates in which the U.S. parent(s) ownership share is over 50 percent.

11. MINOFA's are foreign affiliates in which the U.S. parent(s) ownership share is between 10 percent and 50 percent.

12. PP&E is revalued according to its location rather than to the location of the direct investment claim. This treatment differs from the usual historical-cost treatment so as to allow for the use of price indexes and currency exchange rates of the country in which the PP&E is located.

13. Derek Blades, "Service Lives Of Fixed Assets," OECD Working Paper No. 4 (Paris, France: Organisation for Economic Co-operation and Development, March 1983).

assumptions using a declining balance formula with a depreciation rate of 1.8 times the first year's straight-line rate for equipment and using a straight-line formula with 25 percent longer service lives for structures.¹⁴ Combining these alternatives for equipment and structures would raise the FDIUS position by \$1 billion in 1989 and the USDIA position by \$23 billion; the resulting net direct investment position for 1989 would be \$21 billion higher.

Market-value method

Under this method, owners' equity of foreign affiliates of U.S. parents and of U.S. affiliates of foreign parents is revalued to current costs. Owners' equity included in the USDIA and FDIUS positions is the cumulative total of equity capital flows and reinvested earnings. Owners' equity is revalued to current cost using the market-equity model.

Market-equity model—In the market-equity model, FDIUS is revalued at the aggregate level, and USDIA is revalued by a weighted average country/region estimate. The revaluation formula for parents' equity in affiliates that maintain their financial records in U.S. dollars is

$$K_t = \frac{K_{t-1} \times \left(\frac{Peoy_t}{Peoy_{t-1}} \right) + I_t \times \left(\frac{Peoy_t}{Pavg_t} \right)}{1 + RE_t \times \left(\frac{Peoy_t}{Pavg_t} \right)},$$

where K_t is the equity investment in affiliates in year t , valued at yearend stock market prices; $Peoy_t$ is the yearend stock market price index and $Pavg_t$ is the annual average stock market price index, in year t ; I_t is the total equity capital flow in year t ; and RE_t is the yearend ratio of retained earnings per share as reflected in the stock price index for year t .

This formula revalues U.S. and foreign parents' equity in affiliates using

end-of-year stock price indexes, while adjusting for changes in annual investment and correcting for the effect of retained earnings on stock market prices during the year. The stock market data are first converted into U.S. dollars, so exchange rate effects are reflected in the market indexes.

An additional adjustment is needed for foreign affiliates of U.S. parents that maintain their financial accounts in another national currency and later translate these accounts into U.S. dollars. Investments made during the year by these foreign affiliates must be revalued from the average exchange rate during the year to the yearend exchange rate.

Equity investment flows.—Data on equity capital flows are generally available from BEA's quarterly and benchmark surveys from 1966 to 1989. For both USDIA and FDIUS, the necessary earnings, dividends, equity capital flows, and equity positions are generally available beginning in 1966 for incorporated U.S. affiliates of foreign parents and incorporated foreign affiliates of U.S. parents.

For FDIUS, the 1966 market value of the foreign equity position in incorporated U.S. affiliates is estimated by multiplying the position by the ratio of market-to-book values in 1966 for the Standard and Poor's Index for 400 Industrial Companies.¹⁵ This method assumes that the relationship between market and book values of incorporated U.S. affiliates is similar to that of a typical large U.S. industrial corporation in 1966.

For USDIA, comparable market-to-book-value ratios for 1966 are unavailable for foreign stock markets. Therefore, the 1966 market value of U.S. parents' equity in incorporated foreign affiliates is estimated by calculating the dividends affiliates paid to U.S. parents, assuming market yields in 1966, and then dividing the value of dividends by the market yield for the year.

Time series data for unincorporated U.S. and foreign affiliates are more limited than data for incorporated affiliates. For FDIUS, distributed earnings, equity flows, and equity positions are available for unincorporated U.S. affiliates of foreign parents from 1980 to 1989. Because these data are not available for earlier years, the valuation of unincorporated affiliates begins with data for 1980. A starting position in current-cost values was created by multiplying the equity position in unincorporated U.S. affiliates by the estimated market-to-book-value ratio of incorporated U.S. affiliates in 1980. In 1989, equity capital flows from foreign parents to unincorporated U.S. affiliates accounted for 8 percent of total equity capital flows to the United States from foreign parents.

For USDIA, complete data for unincorporated foreign affiliates are available from 1982 to 1989. An initial position for 1982 was estimated by using the market-to-book-value ratio for incorporated affiliates. In 1989, equity capital flows from U.S. parents to unincorporated foreign affiliates accounted for 12 percent of total equity capital flows from U.S. parents.

Market indexes.—For FDIUS, Standard and Poor's composite stock market data are used to revalue foreign parents' equity in U.S. affiliates. For USDIA, stock market data from Morgan Stanley Capital International are used to revalue U.S. parents' equity in foreign affiliates. OECD stock market data are used for years in which the Morgan Stanley stock market data are incomplete or missing. Investments in countries where country-specific stock market data are not available are revalued using the Morgan Stanley World Index for stocks.

The market-value method, like the current-cost method, is sensitive to the assumptions used. For example, FDIUS equity was revalued using the Standard and Poor's 500 stock market index because that index has broader coverage than the Morgan Stanley index for the United States; if the Morgan Stanley U.S. index were used, the 1989 FDIUS position would be raised by \$16 billion.

14. These assumptions about depreciation of equipment and structures are similar to the parameters suggested in a study by Hulten and Wykoff; see C.R. Hulten and F.C. Wykoff, "The Measurement of Economic Depreciation," in *Depreciation, Inflation, and the Taxation of Income from Capital* (The Urban Institute Press, 1981): 94.

15. The equity position of FDIUS in 1966 is not separately available. Therefore, an estimated equity position is derived by multiplying the total 1966 direct investment position by the ratio of equity to total direct investment in 1974, the first year equity is reported separately from debt.