THE ACCOUNTING TREATMENT OF HUMAN INVESTMENT AND CAPITAL

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Defining investment as outlays that increase income- and output-producing capacity, the author presents estimates of human investment in the United States 1929–69, comprising rearing costs, education, training, health, safety and mobility outlays. He develops an economic accounting framework to accommodate human investments and research and development in national and sector capital accounts, with appropriate adjustments to the current accounts to provide consistency. The associated balance sheets and wealth statements are also developed.

The wealth and corresponding income estimates are used to compute rates of return on human, non-human, and total capital. In the business economy the average net rate of return on total capital was 10.6 percent in 1969, compared with 10.0 percent in 1929. The average and marginal rates of return on human capital were generally somewhat higher than on non-human capital throughout the period.

Double-entry accounts provide a systemic framework for presenting economic transactions and associated stocks, by significant sectoral groupings of transactors and categories of transactions. Economic accounting, while modeled after business accounting, has not slavishly followed business practices. For example, in principle if not always in practice, economists have sought to value transactions and stocks at current market prices, and also to revalue in constant prices so that changes in real magnitude and in prices could be distinguished. In these respects, business accountants have something to learn from economists. Yet, in general, business accounting has proven its durability as a model for economic accounts.

Economic accounting has come increasingly to follow business practice in distinguishing between current and capital transactions, and in developing associated balance sheets as of the ends of successive periods. The accounting period is usually a year or portion thereof, whereas investments by definition are outlays that enhance productive capacity and contribute to income for more than a year. Hence it would not contribute to good business or economic intelligence to charge the investments against the income of the current period alone. Rather, by capitalizing investment and charging depreciation plus interest or other capital charges against income in successive periods, a more accurate picture of net income is obtained. Further, by carrying production assets on the balance sheets over their life-times, net income can be related to equity, or net income plus interest payments related to total assets, in order to obtain revealing rate-of-return estimates. Changes in balance sheets are, of course, directly related to the entries in the capital accounts if the former are kept in terms of original acquisition costs as is usual in company accounts. When the economist re-states balance sheets in terms of market prices or approximations thereto, changes reflect revaluations of assets and liabilities, as well as investment, saving, and the financial flows.

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An increasing number of countries have developed capital accounts for the several economic sectors, as well as for the nation as a whole. In the United States, unfortunately, the official national income and product accounts of the Commerce Department do not yet provide for sector capital accounts in addition to the national saving-investment account, but the "flow-of-funds" accounts prepared by the Federal Reserve Board fill this gap, although on a somewhat different set of definitions and sectors than those employed in the official accounts. The revised standard system of national accounts (SNA) of the United Nations provides for a comprehensive system of capital accounts, by sector, and demonstrates how this, together with "revaluation accounts", provides a reconciliation with successive year-end balance sheets.

Although private investigators in an increasing number of countries have developed tangible "wealth" estimates and complete balance sheets, there are few countries with regular, official balance sheets to complement the national income and product accounts. Further, the existing balance sheets, whether official or privately-produced, are confined to the traditional categories of financial and tangible non-human capital assets, which after deduction of liabilities, result in correspondingly restricted net worth estimates.

The purpose of this paper is to indicate how capital accounts, balance sheets, and wealth statements can be restructured to accommodate broader definitions and estimates of investment and capital, including human as well as non-human. The discussion is illustrated by estimates for the United States for selected years, prepared by the author for the National Bureau of Economic Research.[1]

Expanding the Concepts and Measures of Capital

In expanding the scope of capital accounts and balance sheets, we must break away from the business accountants' model. Business accounts, quite properly from the viewpoint of individual enterprises, restrict the concept and measurement of investment and the associated capital assets to the tangible, nonhuman types that become the property of the firm. With the virtual disappearance of slavery from human societies, human beings as "labor" are free agents, so that investments in human capital do not become the property of enterprises and therefore enter their accounts only as current expense. Actually, most human investment is financed by individuals or governments, but even the minor portion financed by enterprises would not be entered as investment, only as expense, since the capital vests in employees who are free to move to other employment.

From the broader socio-economic viewpoint, however, all outlays that expand capacity to produce monetized or psychic income and output in future periods should be carried as investment, and the resulting capital entered in the associated balance sheets. I argued the case for this treatment at the Ronneby meetings of the IARIW.[2] That paper gave rise to the current session concerned with the proper accounting treatment of human capital, as well as of those types of

[1]John W. Kendrick, *The Formation and Stocks of Total Capital* (New York: National Bureau of Economic Research, Unpublished manuscript).

[2]John W. Kendrick, "The Treatment of Intangible Resources as Capital", *Review of Income and Wealth*, March 1972.

non-human capital covered by the broad definition of capital but presently excluded from the economic accounts.

It is not necessary again to go into the theoretical arguments for treating the "labor" factor of production as a category of capital. This viewpoint has been present in economic thought at least since the Mercantilists and Adam Smith, as has been set forth systematically by B. F. Kiker.[3] Yet neo-classical theory, following the lead of Alfred Marshall, continued to treat labor as a service flow without special regard to the investments required to increase the real value of those inputs. It has only been in the last 15 years or so that a substantial body of literature has developed concerning human investment and capital.

As Professor Theodore Schultz, himself a leader of the movement, has pointed out, work on human capital was stimulated by recognition of its power to explain various economic puzzles and paradoxes.[4] In particular, it appeared that human capital formation was an important part of the explanation of the "residual" between rates of growth of output and of tangible factor inputs as conventionally defined without allowance for the intangible investments designed to increase the quality and productive efficiency of the tangible factors. In my own early work on total factor productivity, which showed that little more than half of the economic growth in the United States could be explained by the growth of real tangible factor inputs, I suggested that probably the most significant element in explaining the residual growth was the sharp increase in intangible investments, particularly in research and development, education and training, and in health.[5] In recent years, I have developed estimates of total investment, and the associated capital stocks, nonhuman and human, intangible and tangible, as reported in the paper cited above. My assignment here is to explain my approach to restructuring the more conventional economic accounts to accommodate the expanded set of estimates. This is the first attempt I know of to implement statistically a comprehensive treatment of investment and capital, including the human and intangible forms, within a systematic accounting framework.

An economic accounting framework is indispensable for estimating as well as presenting the numbers. It ensures consistency of the income and product, saving and investment, and stock estimates, and facilitates a consistent analysis of these variables at both the aggregate and sectoral levels.

The Production Account (Table I)

Before looking at the sector accounts, it is useful to examine the expanded national income and product account (Table I) in order to get an over-view of the adjustments made to the conventional accounts. Looking first at GNP, it will be noted that the domestic investment components are much larger than in the official accounts—43.1 percent against 15.7 percent in 1929, and 50.6 percent against 16.2 percent in 1966. In large part, the larger absolute and relative size of

[3]B. F. Kiker, "The Historical Roots of the Concept of Human Capital", *Journal of Political Economy*, October 1966.

[4]Theodore W. Schultz, *Human Resources*,. 50th Anniversary Colloquium VI (New York: National Bureau of Economic Research, 1972).

[5]John W. Kendrick, *Productivity Trends: Capital and Labor*, Occasional Paper No. 53 (New York: National Bureau of Economic Research, 1956).

TABLE I

NATIONAL INCOME AND PRODUCT ACCOUNT*
(Billions of Current Dollars)

Line No.	DEBITS	1929	1948	1966
1.	Labor Compensation	67.42	182.81	547.58
2.	Wage and salary disbursements (IIA–13)	50.44	135.34	394.50
3.	Wage accruals less disbursements (IIB–73)	0.00	0.04	0.00
4.	Employer contributions for social insurance (IVA–19)	0.10	3.04	20.29
5.	Other labor income (IIA–14)	0.56	2.71	20.71
6.	Imputed labor compensation of proprietors (IIA–15)	9.11	21.51	38.86
7.	Additional labor compensation imputations (IIA–16)	7.21	20.17	73.22
8.	Net rental income of persons and institutions	6.96	9.80	28.13
9.	From auxiliary business activities (IIIA–10)	3.08	5.36	8.72
10.	From owner-used capital (IIA–22)	3.88	4.44	19.41
11.	Profits of business enterprises (IIIA–11)	16.30	51.95	116.52
12.	Net rental income of government (IVA–20)	0.78	1.95	6.17
13.	Net interest	6.61	6.07	45.79
14.	Personal interest income (IIA–28)	7.22	7.88	43.64
15.	*Less:* Unproductive interest paid by consumers (IIA–11)	0.95	0.03	0.19
16.	Government interest income (IVA–21)	0.52	1.36	4.15
17.	*Less:* Unproductive interest paid by government (IVA–11)	0.18	3.14	1.81
	NATIONAL INCOME	98.07	252.58	744.19
18.	*Less:* Human capital consumption (IIA–33)	14.57	34.57	101.15
	NET NATIONAL INCOME	83.50	218.01	643.04
19.	Capital consumption allowances	35.07	91.30	272.57
20.	Personal (IIB–57)	24.33	54.353	169.44
21.	Nonhuman	9.77	19.97	68.29
22.	Human	14.57	34.57	101.15
23.	Business (IIIb–38)	9.02	19.45	71.26
24.	Government (IVB–41)	1.72	17.32	31.87
	GROSS NATIONAL INCOME	118.57	309.31	915.61
25.	Current business transfer payments (IIA–30)	0.59	0.70	2.99
26.	Indirect tax and nontax charges (IVA–16)	7.34	20.51	67.60
27.	*Less:* Subsidies less current surplus of government enterprises (IVA–12)	−0.14	0.86	2.62
28.	Statistical discrepancy (VI–18)	0.70	−1.99	−1.01
	CHARGES AGAINST GROSS NATIONAL PRODUCT	127.34	327.67	982.57

TABLE I—*continued*

Line No.	CREDITS	1929		1948		1966	
29.	Personal consumption (IIA–2)		64.84		146.04		381.57
30.	Government consumption (IVA–1)		6.43		35.30		98.48
31.	Gross tangible nonhuman investment (VI–1)		29.47		76.63		244.36
32.	Structures	11.48		27.80		78.27	
33.	Private residential	3.95		14.44		25.04	
34.	Other	7.53		13.36		53.23	
35.	Durable goods	15.46		43.80		144.02	
36.	Change in inventories	2.53		5.03		22.07	
37.	Gross tangible human investment (VI–2)		9.77		18.28		54.62
38.	Gross intangible investment (VI–3)		15.69		44.98		198.26
39.	Education and training	11.00		30.78		136.00	
40.	Health	1.90		5.22		21.47	
41.	Mobility	2.53		6.61		17.41	
42.	Research and development	0.25		2.37		22.77	
43.	Net exports of goods and services		1.15		6.44		5.28
44.	Exports (VA–1)	7.03		16.79		43.36	
45.	*Less:* Imports (VA–2)	5.89		10.35		38.08	
	GROSS NATIONAL PRODUCT		127.34		327.67		982.57

*Detail may not add to totals due to rounding

TABLE IB

RECONCILIATION OF ADJUSTED GNP AND COMMERCE DEPARTMENT GNP, 1929, 1948 AND 1969
(Billions of Current Dollars)

Line No.		1929	1948	1969
1.	GNP, Commerce concept	103.095	257.562	929.095
	Plus:			
	Households and Institutions:			
2.	Imputed student compensation (less unemployment adjustment)	5.141	15.660	92.265
3.	Imputed compensation of frictionally unemployed (less subsidies)	2.072	4.506	16.048
4.	Imputed rentals (excl. maintenance and insurance) on HH durables and inventories	10.405	20.499	100.057
5.	Imputed rentals (excl. maintenance) on institutional plant and equipment and land, over Commerce Dept. depreciation and interest paid	0.337	0.544	5.711
	Business:			
6.	Tangible investment conventionally charged to current account	0.282	0.899	2.34
7.	Intangible investment conventionally charged to current account	2.187	6.953	35.387
	General government:			
8.	Imputed rentals (excl. maintenance) on land, durables, and inventories	3.825	21.048	66.967
9.	*Equals:* GNP, adjusted	127.344	327.671	1,247.870
10.	*Ratio:* Adjusted to Commerce GNP	1.235	1.272	1.343

TABLE IC

FACTOR COMPENSATION, GROSS AND NET
(Billions of Current Dollars)

Line No.		1929	1948	1969
	A. U.S. Domestic Economy			
1.	Gross domestic factor compensation	117.764	308.332	1161.365
2.	Capital consumption (nonhuman)	20.503	56.727	223.874
3.	Adjusted domestic income (factor compensation)	97.261	251.605	937.491
4.	Human maintenance	33.974	83.425	216.145
5.	Adjusted gross domestic income less maintenance	63.287	168.180	721.346
6.	Human depreciation	14.566	34.568	126.376
7.	Adjusted net domestic income less maintenance	48.722	133.608	594.952
8.	Employee compensation	51.098	141.131	565.548
9.	Imputed proprietors' labor compensation	9.110	21.509	47.081
10.	Imputed compensation of students and frictionally unemployed	7.213	20.166	108.313
11.	Total gross labor compensation	67.421	182.806	720.942
12.	Total gross labor compensation excluding maintenance	33.447	99.381	504.797
13.	Total net labor compensation	18.881	64.813	378.421
14.	Gross capital compensation	50.344	125.522	440.405
15.	Net capital compensation	29.841	68.795	216.531
	B. Private Domestic Business Economy			
1.	Gross factor income	83.476	213.532	694.338
2.	Human maintenance	29.291	69.275	162.057
3.	Gross income less maintenance	54.185	144.257	532.281
4.	Capital consumption, nonhuman	9.016	19.446	95.557
5.	Human depreciation	12.558	28.705	94.752
6.	Net compensation excluding maintenance	32.611	96.105	341.972
7.	Gross labor compensation	52.251	137.253	469.772
8.	Gross labor compensation excluding maintenance	22.960	67.978	307.715
9.	Net labor compensation excluding maintenance	10.402	39.273	212.963
10.	Gross property compensation	31.225	76.279	224.566
11.	Net property compensation	22.209	56.833	129.009

gross investment was due to reclassifications of items from current consumption to investment. In the case of gross tangible nonhuman investment (line 1), the Commerce Department still includes only business and institutional investment, plus new residential construction for owner occupancy, whereas we also include the other tangible investments by the nonbusiness sectors (households and governments) in new structures, durable equipment, additions to inventories, and natural resource development.

Gross tangible human investment (line 37) represents the costs of rearing children to working age, and is a deduction from the Commerce personal consumption expenditure estimates. Some economists prefer to count as human capital only the results of investments designed to increase labor productivity, but it is my view that to parallel the treatment of non-human capital, the rearing costs necessary to produce the physical human agent must also be included. As Irving Fisher wrote: "The 'skill' of a mechanic is not wealth in addition to the man himself; it is the 'skilled mechanic' who should be put in the category of wealth."[6]

Gross intangible investment (line 38) consists of outlays for education and training, health and safety, labor mobility, and research and development (lines 39–42). My earlier paper summarized briefly the methods used to develop these estimates. All of these are human investment except R&D, which is largely directed towards new and improved products and processes. We therefore classify R&D as nonhuman intangible investment although it also acts to improve productivity of human investments and capital by adding to knowledge and know-how. To the extent that R&D and certain other investments are charged to current expense by business, our investment estimates require an upward adjustment to the official GNP estimates (see Table IB).

Net exports (line 43) are the same as in the official accounts, comprising net foreign investment and net unilateral transfer payments.

Both personal and government consumption (lines 29 and 30) begin with the official estimates, less the categories reclassified as investment, plus imputed rental values of the services provided by the tangible, non-human capital stocks owned by each of the two nonbusiness sectors. To the extent that the imputed rentals are less than the tangible capital outlays of each sector, the adjusted consumption estimates are smaller than the official U.S. estimates for this reason as well as because of the deduction of the intangible capital outlays. But GNP and gross national income are enlarged by the imputed rental values which are not now included except for owner-occupied residences. As shown in the reconciliation table (IB) the aggregate estimates are also larger to the extent of foregone earnings of students and of the frictionally unemployed, which are counted as part of intangible investments in education and in labor mobility, respectively.

As a result of all the various additions, our adjusted GNP estimates were 23.5 percent higher than the official estimates in 1929, and 34.3 percent higher in 1969 (see Table IB). Note, however, that the adjustments were made purely to provide for consistency with the expanded investment and capital estimates. In another project, we have imputed values for all non-market production (indicated by

[6]Irving Fisher, *The Nature of Capital and Income* (New York: Macmillan and Company, 1930, page 9).

parenthetical stub entries in the sector accounts). Other investigators, such as James Tobin, have made further adjustments to attempt to provide a still closer approximation to NEW (net economic welfare) as Paul Samuelson has dubbed it in the latest edition of his text-book. That was not our objective in making the adjustments shown in Table IB, although these items would contribute to broader welfare-oriented measures.

Turning to the debit side of the production account, comprising factor costs (national income) and other charges against product, adjustments were made for the additions to product just noted. Thus, labor compensation is increased by the imputed value of non-market services involved in education and mobility (line 7), and net rental income includes the net rental value of household tangible wealth (line 10) and of public sector wealth (line 12). We have also imputed the labor value of proprietors' work (line 6), using the average wage-salary of employees in the several industries, in order to isolate the profit portion of the net income of proprietors to include with corporate profits (line 11). This is necessary in order to estimate returns on human and nonhuman capital separately as shown in Table IC. Net interest was modified by deducting from the official estimates consumer interest on brokerage loans, and the excess of interest paid by the Federal Government over and above the net rental value of that sector's real wealth.

It should be noted that we have not imputed a rental income on the human capital stock, tangible and intangible, since our view is that the labor compensation estimates already represent the return on total human capital employed. The official national income estimates are asymmetrical, however, in that property income is net of capital consumption allowances, while labor income is gross of human capital consumption. Accordingly, in line 18 we deduct capital consumption allowances to arrive at "net national income" estimates which are symmetrical in that respect. The allowances represent that portion of gross income which, theoretically from a social accounting viewpoint, must be invested in human capital in order to maintain its productive capacity intact.

It could be argued that even our net national income estimates are asymmetrical in that property income is net of maintenance expenditures, while the labor income estimates are not. Most, but not all, economists believe that since the portion of current consumption representing maintenance affords satisfaction, no deduction should be made if a welfare criterion is observed. We have followed this line in Table I, recognizing a possible inconsistency with our treatment of human capital consumption, although it can be argued that the current utility from human investment is negligible in relation to the flow of income, psychic as well as monetary, over future accounting periods deriving from human capital creation. Yet we do estimate maintenance outlays, as shown in Table IC, as a basis for estimating rates of return on human and nonhuman capital in a consistent manner, as discussed in the final section of this paper.

Having deducted human capital consumption, it can then be neatly combined with non-human capital consumption (line 19) and added to net national income to obtain gross national income. Then the usual reconciliation items, chiefly indirect business taxes less subsidies, can be added to arrive at total charges against GNP at market prices.

The Sector Accounts, Current and Capital

The basic design of sector accounts is well known. (See Tables II–V.) On the credit side, "primary" income flows from current production plus transfer payments received (including tax revenues) are entered. To the official U.S. estimates, we have added in the appropriate sector accounts the rental values of capital goods owned by the household and government sectors, the imputed values of non-market time spent by persons on investment-in-self, and the several lesser items as discussed earlier. Note that we follow the Commerce Department in crediting proprietors' net income from both labor and property to the personal sector, since there is no basis for estimating the proportion retained for investment in the unincorporated firms. Also, from personal income, human capital consumption is deducted to arrive at "net personal income", so that personal saving will be net of human as well as of nonhuman depreciation allowances.

In the business sector account (which the Commerce Department does not explicitly develop), we credit profits (before tax), after the several valuation adjustments. The foreign sector account is the same as that of the Department.

On the debit side of the current accounts, both personal and government consumption estimates are adjusted as described earlier, and transfer payments (including tax and non-tax payments in the case of the personal sector) and "unproductive interest" payments are added. In the business sector, the debits are for dividends, entrepreneurial withdrawals, and corporate tax liabilities. In all sectors, net saving is the balancing item obtained as the residual after subtracting the various debits just described from the net sector incomes.

In the sector capital accounts, net saving becomes the initial credit item as a source of funds. Since the capital accounts are gross, in order to explain the sources of funds to finance gross investment, capital consumption allowances—tangible and intangible—are debited to the gross production account and credited to the sector capital accounts. The final category of credits, intersectoral net capital transfers, requires some explanation.

Whereas initial new investment is entered according to the sector which finances it, we wish to show capital accumulation and stocks by the sector which controls and reaps the primary benefit from the capital. Thus, we posit that the personal sector controls all human capital, so the intangible human investments financed by business and governments are transferred to the personal sector. Transfers are not necessary for rearing costs, which are both incurred by and accrue to the benefit of households. We also posit that applied R&D accrues to the benefit of the business sector, so non-business AR&D is transferred to business. Net capital transfers from abroad represent the change in net human stock, calculated by age-groups and adjusted for accumulated depreciation, resulting from net immigration (immigration less emigration). To simplify the estimation procedure, we assume that immigrants represent the same amounts of capital, in dollars, as persons already in the U.S. of the same age-groups.

In this treatment, we have adopted the framework of the revised SNA, although the capital transfers provided for there are intended to be primarily financial. As a result of the productive capital transfers, sector stock estimates relate to the capital controlled, and it is on this basis that depreciation is estimated.

On the debit side of the domestic sector capital accounts, there are three chief groupings of entries. First is the productive tangible and intangible investment financed, by type. Next, the capital accumulation from net capital transfers is detailed by type, rather than by sector of origin as on the credit side. The third category, "net financial investment" is the balancing item in the capital accounts defined as the difference between total credits and the sum of the other debits. If the capital account were elaborated to show financial transactions, it would represent the difference between net acquisition of assets (lending) and net incurrence of liabilities (borrowing), each of which could be detailed by type of financial instrument. But our interest here is not in the flow-of-funds.

In the foreign sector capital account (Table V), note that to the surplus of the nation on current account (line 6) we add the net capital transfers from the rest of the world (line 7), by recipient sector.

The consolidated capital formation account (Table VI) contains the contra-entries to the various investments and capital transfers of the several sectors, and summarizes national investment, by sector and major type. Note that the capital transfers among the domestic sectors plus net capital transfers from abroad sum to zero. So also do net financial investments of the domestic sectors plus net foreign investment, after allowance for the statistical discrepancy. Or, to state it alternatively, the sum of net financial investment for the domestic sectors (line 14) equals net foreign investment (line 5) less the statistical discrepancy (line 18).

Another useful summary is provided in Table VII showing disposable income and its disposition, by sector. The disposable income for each sector is derived as its gross income less transfers to other sectors, and it sums to GNP less statistical discrepancy. Disposable income is allocated by each sector to consumption, productive tangible and intangible investments, and net financial investment. Although saving equals investment for the nation, they are unequal for each sector to the extent of net financial investment. The sector disposable income series, and the channels of disposition, are necessary for analysis of consumption, saving, and investment functions.

Balance Sheets and Wealth Statements

Everyone knows the basic principles of a balance sheet, showing the economic condition of an enterprise, sector, or economy at the end of a period as a result of saving and borrowing, investing and lending, and (if stated in current prices) revaluations of assets during the period. To obtain a complete balance sheet, to the financial assets is added productive wealth, hitherto confined to tangibles, to obtain total assets which are conventionally shown on the left-hand side. On the opposite side are liabilities, and the balancing category of net worth, obtained as the difference between total assets and liabilities including stock and other equity if these are also carried on the asset side, as is usual in sector and combined national balance sheets.[7]

Table VIII presents a combined national balance sheet for the United States for the end of the year 1968. The financial assets and liabilities are taken from

[7]See John W. Kendrick, *Economic Accounts and Their Uses* (New York: McGraw-Hill Book Co., 1972), Chapters 10 and 14.

TABLE II

PERSONAL SECTOR ACCOUNTS
(Billions of Current Dollars)

Line No.		1929		1948		1966	
A—CURRENT ACCOUNT (Cash Basis)							
	DEBITS						
1.	Personal tax and nontax payments (IVA–14)		2.31		20.64		73.41
2.	Personal consumption (I–29)		64.84		146.04		381.57
3.	Imputed rentals for services of capital	18.47		35.30		138.41	
4.	Owner-occupied residences	6.41		10.80		46.28	
5.	Institutional plant	0.41		0.75		5.50	
6.	Consumer durable goods and inventories	11.38		23.54		85.65	
7.	Institutional equipment	0.26		0.20		0.99	
8.	*Less:* Imputed rentals allocated to intangible and human investment (Consumption provided by business to employees) (Current consumption transfers from business to general public)	2.84		5.43		22.75	
9.	Other consumption expenditures	49.22		116.18		265.91	
10.	Personal transfer payments to rest of world (net) (VA–3)		0.34		0.70		0.56
11.	Unproductive interest paid by consumers (I–15)		0.95		0.03		0.19
12.	Net personal savings (IIB–56)		11.12		30.07		111.22
	DISPOSAL OF NET PERSONAL INCOME		79.56		197.48		566.95

TABLE II—*continued*

PERSONAL SECTOR ACCOUNTS
(Billions of Current Dollars)

Line No.		1929		1948		1966	
A—CURRENT ACCOUNT (Cash Basis) *continued*							
	CREDITS						
13.	Wages and salary disbursements (I–2)		50.44		135.34		394.50
14.	Other labor income (I–5)		0.56		2.71		20.71
15.	Imputed labor compensation of proprietors (I–6)		9.11		21.51		38.86
16.	Additional labor compensation imputations (I–7)		7.21		20.17		73.22
17.	Students	5.14		15.66		60.89	
18.	Frictionally unemployed	2.07		4.51		12.34	
	(Household members)						
	(Volunteers)						
	(Employees for business provided consumption)						
19.	Withdrawals of proprietors' profits (IIIA–2)		5.47		18.54		21.92
20.	Net rental income		6.96		9.80		28.13
21.	From auxiliary business activities (IIIA–1)	3.08		5.36		8.72	
22.	From owner-used capital (I–10)	3.88		4.44		19.41	
23.	Residences	2.13		0.98		8.33	
24.	Institutional plant	0.11		0.27		2.82	
25.	Consumer durable goods and inventories	1.61		3.18		8.06	
26.	Institutional equipment	0.02		0.02		0.20	
27.	Dividends (IIIA–4)		5.80		7.04		20.80
28.	Personal interest income (I–14)		7.22		7.88		43.64
29.	Current transfers to persons		1.50		11.24		44.06
30.	From business (I–25)	0.59		0.70		2.99	
	Cash						
	(Consumption provided to general public)						
31.	From Government (IVA–9)	0.91		10.54		41.08	
32.	*Less:* Personal contributions for social insurance (IVA–18)		0.14		2.18		17.74
	PERSONAL INCOME		94.13		232.05		668.10
33.	*Less:* Human capital consumption (I–18)		14.57		34.57		101.15
	NET PERSONAL INCOME		79.56		197.48		566.95

TABLE II—*continued*

PERSONAL SECTOR ACCOUNTS
(Billions of Current Dollars)

Line No.		1929		1948		1966	
B—CAPITAL ACCOUNT (Accrual Basis)							
	DEBITS						
34.	Gross personal investment (VI–7)		33.26		81.20		260.38
35.	Tangible nonhuman investment	12.95		34.14		99.41	
36.	Land (net purchase)	0.01		−0.17		−1.63	
37.	Residential structures	2.21		11.74		18.67	
38.	Institutional plant	0.43		0.71		3.82	
39.	Consumer durable goods	9.21		22.68		70.75	
40.	Institutional equipment	0.27		0.20		0.80	
41.	Change in household inventories	0.82		−1.02		7.00	
42.	Tangible human investment	9.77		18.28		54.62	
43.	Intangible investment	10.54		28.78		106.35	
44.	Education and training	6.85		19.37		75.29	
45.	Health	1.47		3.82		15.37	
46.	Mobility	2.20		5.55		14.83	
47.	Research and development	0.02		0.04		0.86	
48.	Accumulation through capital transfers (VI–11)		5.85		15.10		75.22
49.	Tangible nonhuman capital	0.00		0.00		0.00	
50.	Tangible human capital	0.47		0.51		1.68	
51.	Education and training	4.59		12.10		64.84	
52.	Health	0.46		1.44		6.38	
53.	Mobility	0.33		1.06		2.58	
54.	Research and development	−0.00		−0.01		−0.25	
55.	Net financial investment (VI–15)		2.19		3.44		20.28
	GROSS ACCUMULATION		41.30		99.74		355.88

TABLE II—*continued*

PERSONAL SECTOR ACCOUNTS
(Billions of Current Dollars)

Line No.		1929	1948	1966
B—CAPITAL ACCOUNT (Accrual Basis) *continued*				
	CREDITS			
56.	Net personal saving (IIA–12)	11.12	30.07	111.22
57.	Personal capital consumption allowances (I–20)	24.33	54.53	169.44
58.	Tangible nonhuman capital	9.77	19.97	68.29
59.	Residential structures	1.51	4.10	11.74
60.	Institutional plant	0.17	0.33	1.69
61.	Consumer durable goods	7.87	15.39	54.20
62.	Institutional equipment	0.21	0.15	0.65
63.	Tangible human capital	5.10	9.84	17.42
64.	Intangible capital	9.46	24.73	83.73
65.	Education and training	5.28	15.55	54.67
66.	Health	1.21	3.16	13.26
67.	Mobility	2.98	6.02	15.80
68.	Net capital transfers	5.85	15.10	75.22
69.	Capital transfers from business (IIIB–48)	2.02	5.92	19.94
70.	Capital transfers from government (IVB–46)	2.90	7.94	50.05
71.	Capital transfers from rest of world (VB–8)	0.93	1.25	5.48
72.	*Less:* Capital transfers to business (IIIB–45)	0.00	0.01	0.25
73.	Wage accruals less disbursements (I–3)	0.00	0.04	0.00
	FINANCE OF GROSS ACCUMULATION	41.30	99.74	355.88

TABLE III

BUSINESS SECTOR ACCOUNTS
(Billions of Current Dollars)

Line No.	1929	1948	1966
A—CURRENT ACCOUNT			
DEBITS			
1. Withdrawals of net rental income from auxiliary business activities (IIA–21)	3.08	5.36	8.72
2. Withdrawals of proprietors' profits (IIA–19)	5.47	18.54	21.92
3. Corporate profits tax liability (IVA–15)	1.37	12.52	34.28
4. Dividends (IIA–27)	5.80	7.04	20.80
5. Net business saving (IIIB–37)	3.66	13.86	39.52
6. Unincorporated business nonwithdrawn profits before adjustment	NA	NA	NA
7. Corporate undistributed profits before adjustment	2.82	15.63	29.15
8. Amortization adjustment	0.22	0.78	12.55
9. Inventory valuation adjustment	0.61	−2.56	−2.17
DISPOSAL OF NET BUSINESS INCOME	19.38	57.30	125.25
CREDITS			
10. Net rental from auxiliary business activities (I–9)	3.08	5.36	8.72
11. Profits of business enterprises (I–11)	16.30	51.95	116.52
12. Unincorporated business profits before adjustment	5.47	18.54	21.92
13. Corporate profits before adjustment	9.99	35.19	84.22
14. Amortization adjustment	0.22	0.78	12.55
15. Tangible capital	−1.83	−5.05	−0.67
16. Intangible capital	2.05	5.84	13.22
17. Inventory valuation adjustment	0.61	−2.56	−2.17
NET BUSINESS INCOME (BEFORE INCOME TAX)	19.38	57.30	125.25

Line No.		1929		1948		1966	
	B—CAPITAL ACCOUNT						
	DEBITS						
18.	Gross business investment (VI–8)		15.78		41.22		127.03
19.	Tangible investment	13.60		34.27		99.98	
20.	Land (net purchase)	0.00		0.00		0.00	
21.	Residential structures	1.74		2.70		6.37	
22.	Nonresidential structures	4.53		8.11		24.67	
23.	Producers' durable equipment	5.61		18.75		54.14	
24.	Change in inventories	1.71		4.71		14.80	
25	Intangible investment	2.19		6.95		27.04	
26.	Education and training	1.64		4.84		17.50	
27.	Health	0.07		0.22		0.58	
28.	Mobility	0.31		0.86		1.86	
29.	Research and development	0.16		1.03		7.10	
30.	Accumulation through capital transfers (VI–12)		−1.95		−4.60		−4.88
31.	Tangible nonhuman capital	0.00		0.00		0.00	
32.	Education and training	−1.64		−4.84		−17.50	
33.	Health	−0.07		−0.22		−0.58	
34.	Mobility	−0.31		−0.86		−1.86	
35.	Research and development	0.07		1.32		15.07	
36.	Net financial investment (VI–16)		−3.11		−7.92		−16.24
	GROSS ACCUMULATION		10.72		28.70		105.91
	CREDITS						
37.	Net business saving (IIIA–5)		3.66		13.86		39.52
38.	Business capital consumption allowances (I–23)		9.02		19.45		71.26
39.	Tangible capital	8.88		18.33		57.44	
40.	Residential structures	1.11		1.59		3.89	
41.	Nonresidential structures	3.05		5.21		14.76	
42.	Producers' durable equipment	4.72		11.53		38.79	
43.	Intangible capital, research and development	0.14		1.12		13.82	
44.	Net capital transfers		−1.95		−4.60		−4.88
45.	Capital transfers from persons and institutions (IIB–72)	0.00		0.01		0.25	
46.	Capital transfers from government (IVB–47)	0.07		1.31		14.81	
47.	Capital transfers from rest of world (VB–9)	0.00		0.00		0.00	
48.	*Less:* Capital transfers to persons (IIB–69)	−2.02		−5.92		−19.94	
	FINANCE OF GROSS ACCUMULATION		10.72		28.70		105.91

TABLE IV

GOVERNMENT SECTOR ACCOUNTS
(Billions of Current Dollars)

Line No.	1929		1948		1966	
A—CURRENT ACCOUNT						
DEBITS						
1. General government consumption (I–30)		6.43		35.30		98.48
2. Imputed rentals for services of capital	4.93		26.28		60.73	
3. Public land	0.76		0.73		2.83	
4. Structures	3.42		9.23		31.09	
5. Equipment and inventories	0.75		16.32		26.81	
6. *Less:* Imputed rentals allocated to intangible investment	0.55		1.71		12.00	
7. Other consumption expenditures	2.05		10.73		49.75	
8. Government transfer payments		0.94		14.37		43.35
9. To persons (IIA–31)	0.91		10.54		41.08	
10. To rest of world (net) (VA–4)	0.03		3.83		2.28	
11. Unproductive interest paid by government (I–17)		0.18		3.14		1.81
12. Subsidies less current surplus of government enterprises (I–27)		−0.14		0.86		2.62
13. Surplus or deficit (−) on current account (IVB–40)		5.15		8.53		77.39
DISPOSAL OF GOVERNMENT INCOME		12.56		62.20		223.65
CREDITS						
14. Personal tax and nontax receipts (IIA–1)		2.31		20.64		73.41
15. Corporate profits tax accruals (IIIA–3)		1.37		12.52		34.28
16. Indirect tax and nontax charges (I–26)		7.34		20.51		67.60
17. Contributions for social insurance		0.24		5.22		38.04
18. Personal (IIA–32)	0.14		2.18		17.74	
19. Employer (I–4)	0.10		3.04		20.29	
20. Net rental income of government (I–12)		0.78		1.95		6.17
21. Government interest income (I–16)		0.52		1.36		4.15
GOVERNMENT INCOME		12.56		62.20		223.65

Line No.		1929		1948		1966	
B—CAPITAL ACCOUNT							
	DEBITS						
22.	Gross government investment (VI–9)		5.89		17.47		109.83
23.	Tangible investment	2.92		8.23		44.97	
24.	Land (net purchase)	−0.01		0.17		1.63	
25.	Structures	2.57		4.55		24.74	
26.	Equipment	0.36		2.17		18.33	
27.	Change in inventories	0.00		1.34		0.27	
28.	Intangible investment	2.96		9.24		64.86	
29.	Education and training	2.51		6.56		43.81	
30.	Health	0.36		1.18		5.52	
31.	Mobility	0.02		0.20		0.71	
32.	Research and development	0.07		1.31		14.81	
33.	Accumulation through capital transfers (VI–13)		−2.96		−9.24		−64.86
34.	Tangible nonhuman capital	0.00		0.00		0.00	
35.	Education and training	−2.51		−6.56		−43.81	
36.	Health	−0.36		−1.18		−5.52	
37.	Mobility	−0.02		−0.20		−0.71	
38.	Research and development	−0.07		−1.31		−14.81	
39.	Net financial investment (VI–17)		0.98		8.38		−0.57
	GROSS ACCUMULATION		3.91		16.61		44.40
	CREDITS						
40.	Surplus or deficit (−) on current account (IVA–13)		5.15		8.53		77.39
41.	Government consumption allowances (I–24)		1.72		17.32		31.87
42.	Structures	1.20		4.77		13.76	
43.	Equipment	0.52		12.55		18.11	
44.	Net capital transfers		−2.96		−9.24		−64.86
45.	Capital transfers from rest of world (VB–10)	0.00		0.00		0.00	
46.	*Less:* Capital transfers to persons (IIB–70)	2.90		7.94		50.05	
47.	Capital transfers to business (IIIB–46)	0.07		1.31		14.81	
	FINANCE OF GROSS ACCUMULATION		3.91		16.61		44.40

TABLE V

FOREIGN SECTOR ACCOUNTS
(Billions of Current Dollars)

Line No.		1929		1948		1966	
A—CURRENT ACCOUNT							
	DEBITS						
1.	Exports of goods and services (I–44)		7.03		16.79		43.36
	RECEIPTS FROM FOREIGNERS		7.03		16.79		43.36
	CREDITS						
2.	Imports of goods and services (I–45)		5.89		10.35		38.08
3.	Personal transfer payments to rest of world (net) (IIA–10)		0.34		0.70		0.56
4.	U.S. Government transfer payments to rest of world (net) (IVA–10)		0.03		3.83		2.28
5.	Surplus of nation on current foreign account (VB–6)		0.77		1.92		2.45
	CURRENT DISBURSEMENTS AND SURPLUS ON FOREIGN ACCOUNT		7.03		16.79		43.36
B—CAPITAL ACCOUNT							
	DEBITS						
6.	Surplus of nation on current foreign account (VA–5)		0.77		1.92		2.45
7.	Net capital transfers from rest of world		0.93		1.25		5.48
8.	To persons (IIB–71)	0.93		1.25		5.48	
9.	To business (IIIB–47)	0.00		0.00		0.00	
10.	To government (IVB–45)	0.00		0.00		0.00	
	SOURCE OF ACCUMULATION		1.70		3.17		7.92
	CREDITS						
11.	Accumulation through net capital transfers from rest of world (VI–4)		0.93		1.25		5.48
12.	Net foreign investment (VI–5)		0.77		1.92		2.45
	ACCUMULATION ON FOREIGN ACCOUNT		1.70		3.17		7.92

TABLE VI

CONSOLIDATED CAPITAL FORMATION ACCOUNT
(Billions of Current Dollars)

Line No.		1929	1948	1966
	DEBITS			
1.	Gross tangible nonhuman investment (I–31)	29.47	76.63	244.36
2.	Gross tangible human investment (I–37)	9.77	18.28	54.62
3.	Gross intangible investment (I–38)	15.69	44.98	198.26
4.	Accumulation through net capital transfers from rest of world (VB–11)	0.93	1.25	5.48
5.	Net foreign investment (VB–12)	0.77	1.92	2.45
	GROSS ACCUMULATION	56.63	143.05	505.16
	CREDITS			
6.	Gross domestic investment	54.93	139.89	497.24
7.	By persons and institutions (IIB–34)	33.26	81.20	260.38
8.	By business (IIIB–18)	15.78	41.22	127.03
9.	By government (IVB–22)	5.89	17.47	109.83
10.	Accumulation through capital transfers	0.93	1.25	5.48
11.	By persons (IIB–48)	5.85	15.10	75.22
12.	By business (IIIB–30)	−1.95	−4.60	−4.88
13.	By government (IVB–33)	−2.96	−9.24	−64.86
14.	Net financial investment	0.07	3.90	3.46
15.	By persons and institutions (IIB–55)	2.19	3.44	20.28
16.	By business (IIIB–36)	−3.11	−7.92	−16.24
17.	By government (IVB–39)	0.98	8.38	−0.57
18.	Statistical discrepancy (I–28)	0.70	−1.99	−1.01
	SOURCE OF GROSS ACCUMULATION	56.63	143.05	505.16

TABLE VII

DISPOSABLE RECEIPTS AND EXPENDITURES BY SECTOR
(Billions of Current Dollars)

Line No.		1929		1948		1966	
1.	Net personal income (IIA–Credits total)		79.56		197.48		566.95
2.	*Plus:* Personal capital consumption (IIB–57)		24.33		54.53		169.44
3.	Wage accruals over disbursements (IIB–73)		0.00		0.04		0.00
4.	*Equals:* Gross personal income accruals		103.89		252.05		736.39
5.	*Less:* Personal tax and nontax payments (IIA–1)		2.31		20.64		73.41
6.	Personal transfer payments to rest of world (net) (IIA–10)		0.34		0.70		0.56
7.	Unproductive interest paid by consumers (IIA–11)		0.95		0.03		0.19
8.	*Equals:* Disposable personal income*		100.29		230.68		662.23
9.	*Disposal:* Tangible nonhuman investment (IIB–35)	12.95		34.14		99.41	
10.	Tangible human investment (IIB–42)	9.77		18.28		54.62	
11.	Intangible investment (IIB–43)	10.54		28.78		106.35	
12.	Personal consumption (IIA–2)	64.84		146.04		381.57	
13.	Net financial investment (IIB–55)	2.19		3.44		20.28	
14.	Net business income before income tax (IIIA–Credits total)		19.38		57.30		125.25
15.	*Plus:* Business capital consumption (IIIB–38)		9.02		19.45		71.26
16.	Excess wage accruals over disbursements (I–3)		0.00		0.04		0.00
17.	*Equals:* Gross cash flow from business income		28.40		76.79		196.51
18.	*Less:* Withdrawals of auxiliary business income (III–1)		3.08		5.36		8.72
19.	Withdrawals of proprietors' profits (IIIA–2)		5.47		18.54		21.92
20.	Corporate profits tax liability (IIIA–3)		1.37		12.52		34.28
21.	Dividends (IIIA–4)		5.80		7.04		20.80
22.	Wages liability over disbursements (I–3)		0.00		0.04		0.00
23.	*Equals:* Gross retained earnings accruals*		12.68		33.29		110.79
24.	*Disposal:* Tangible investment (IIIB–19)	13.60		34.27		99.98	
25.	Intangible investment (IIIB–25)	2.19		6.95		27.04	
26.	Net financial investment (IIIB–36)	−3.11		−7.92		−16.24	
27.	Government income (IVA–Credits total)		12.56		62.20		223.65
28.	*Plus:* Government capital consumption (IVB–41)		1.72		17.32		31.87
29.	*Equals:* Gross government receipts or accruals		14.28		79.52		255.52
30.	*Less:* Government transfer payments (IVA–8)		0.94		14.37		43.35
31.	Unproductive interest paid by government (IVA–11)		0.18		3.14		1.81

TABLE VII—*continued*

DISPOSABLE RECEIPTS AND EXPENDITURES BY SECTOR
(Billions of Current Dollars)

Line No.		1929		1948		1966	
32.	Subsidies less current surplus of government enterprises (IVA–12)		−0.14		0.86		2.62
33.	*Equals:* Disposable government income*		13.30		61.15		207.74
34.	*Disposal:* Tangible interest (IVA–23)	2.92		8.23		44.97	
35.	Intangible investment (IVB–28)	2.96		9.24		64.86	
36.	General government consumption (IVA–1)	6.43		35.30		98.48	
37.	Net financial investment (IVB–39)	0.98		8.38		−0.57	
38.	Net foreign transfers (VA–3 + 4)		0.38		4.53		2.83
39.	*Less:* Net exports (I–43)		1.15		6.44		5.28
40.	*Equals:* Net foreign claims		−0.77		−1.91		−2.45
41.	Total current income (lines 8 + 23 + 33 + 38)		126.65		329.65		983.59
42.	*Plus:* Statistical discrepancy (I–28)		0.70		−1.99		−1.01
43.	*Equals:* Adjusted GNP		127.34		327.67		982.57

*Gross of capital consumption and capital transfers, but net of current transfers to other sectors.

TABLE VIII

COMBINED BALANCE SHEET OF THE UNITED STATES, INCLUDING HUMAN CAPITAL, 1968

(Billions of dollars)

Financial assets	*4,349*	*Liabilities—total*	*2,791*
Monetary reserves	22	Monetary reserves	5
Currency and demand deposits	209	Currency and demand deposits	211
Short-term claims	1,136	Short-term debt	1,061
Long-term claims	1,343	Long-term debt	1,337
Corporate shares	1,107	Other	177
Equity in unincorporated business	392		
Miscellaneous assets	140		
Productive assets—total	*6,296*	*Equity*—Noncorporate business and corporate shares	*1,489*
Nonhuman capital	*2,952*		
Tangibles	*2,783*		
Land	623		
Structures	1,250	*Net worth*	*6,365*
Equipment	570		
Inventories	340		
Intangibles	*169*		
Human capital	*3,344*		
Tangible	1,063		
Intangible	2,281		
TOTAL ASSETS	10,645	TOTAL LIABILITIES AND NET WORTH	10,645
Addendum: Net foreign assets	69		

Raymond Goldsmith, who based them largely on Federal Reserve Board estimates.[8] The productive asset estimates (net of depreciation reserves), human as well as nonhuman, are those included in my study for the National Bureau of Economic Research based on the investment estimates described above. The methodology used was summarized in the Ronneby paper, and will be explained in detail in the forthcoming NBER monograph. Here I review a few major aspects of the estimates.

The estimates are intended to represent market price or proxies therefor, notably depreciated replacement cost in the case of the depreciable assets. The latter concept is not only far easier to implement statistically than the economic concept of present value, but it makes possible the calculation of rates of return without the circularity inherent in relating compensation to a discounted future income stream, actual and/or expected.

The nonhuman reproducibles were obtained by use of the perpetual inventory method, employing generally a double declining balance method of depreciation. The private business economy estimates are those prepared by the Commerce Department; the nonbusiness sector estimates are largely extensions of earlier Goldsmith estimates. The human capital estimates were prepared in large part by cumulating human investments over the lifetimes of successive cohorts of individuals, and summing each year for all cohorts.

From the balance sheet, it can be seen that net worth is equal to the value of the productive assets plus net foreign claims. This is, in effect, the result of *consolidating* sector balance sheets, so that domestic assets and liabilities can cancel out. Since our interest here is in *wealth*, in the remaining tables we show domestic productive wealth, by sector and by type, with net foreign claims added for those who prefer to work with national wealth aggregates.

The estimates in Tables IX through XII show that inclusion of human capital more than doubles the national wealth of the United States, as conventionally measured. The proportion of human to total wealth did not increase significantly between 1929 and 1969, however. In fact, nonhuman capital increased significantly in relation to tangible human wealth, but the intangible human wealth increased much faster. In the Ronneby paper, I put major emphasis on the growth of intangible capital in relation to tangible factors as a primary explanation of the increase in total tangible factor productivity.

Indeed, the estimates of total investment and capital, by sector and type, open up many possibilities for fruitful analysis. In the space remaining, I shall focus on one of the possible avenues for investigation—estimates of rates of return on human, nonhuman, and total capital.

Rates of Return on Capital

Given the estimates of factor income by functional type (Table IC) and the capital stock estimates, human and nonhuman, it is a simple matter to calculate average rates of return. It was noted earlier that to be consistent with property returns, which are calculated after allowance for maintenance expenses, we have

[8]See *Institutional Investor Study Report of the S.E.C.*, 92nd Congress, 1st Session, House Document No. 92–64, Part 6 (Washington: Government Printing Office, 1971).

TABLE IX

NET NATIONAL WEALTH OF THE U.S. BY SECTOR AND TYPE, 1929
(Billions of current dollars)

	Nation	Persons	Business	Governments
Nonhuman	*392.0*	*122.0*	*222.2*	*47.9*
Tangible	390.3	121.7	221.2	47.4
Land	111.5	14.3	80.1	17.1
Structures	157.2	52.4	77.6	27.3
Equipment	60.0	33.5	23.6	3.0
(Military)	(4.3)			(4.3)
Inventories	61.5	21.5	39.8	0.1
Intangible	1.7	0.3	0.9	0.5
Human	*390.7*	*327.3*	*15.6*	*47.8*
Tangible	204.0	204.0	—	—
Intangibles	186.7	123.3	15.6	47.8
Education	164.1	105.2	14.7	44.2
Health	18.1	14.2	0.4	3.5
Mobility	4.6	3.9	0.5	0.1
Total—domestic	782.8	449.3	237.7	95.7
Net foreign assets	16.5			
Total—national	799.2			

TABLE X

NET NATIONAL WEALTH OF THE U.S. BY SECTOR AND TYPE, 1948
(Billions of current dollars)

	Nation	Persons	Business	Governments
Nonhuman	*892.5*	*298.7*	*378.1*	*215.8*
Tangible	879.2	297.7	372.8	208.8
Land	197.9	44.7	123.6	29.6
Structures	365.2	134.7	110.8	119.7
Equipment	175.6	65.5	53.6	56.5
(Military)	(65.6)			(65.6)
Inventories	140.6	52.7	84.9	3.0
Intangible	13.3	1.0	5.3	7.0
Human	*908.8*	*715.9*	*37.3*	*155.6*
Tangible	396.9	396.9	—	—
Intangibles	511.9	319.0	37.3	155.6
Education	457.8	278.1	35.2	144.5
Health	43.5	32.0	1.0	10.5
Mobility	10.6	8.9	1.2	0.5
Total—domestic	1,801.4	1,014.6	415.4	371.4
Net foreign assets	37.6			
Total—national	1,838.9			

TABLE XI

NET NATIONAL WEALTH OF THE U.S., BY SECTOR AND TYPE, 1969
(Billions of current dollars)

	Nation	Persons	Business	Governments
Nonhuman	*3,220.5*	*1,103.0*	*1,306.5*	*811.1*
Tangible	3,035.6	1,091.5	1,252.1	692.0
Land	686.8	174.3	393.7	118.8
Structures	1,376.1	515.9	423.0	436.3
Equipment	617.4	284.0	230.7	102.7
(Military)	(146.8)			(146.8)
Inventories	355.3	117.3	203.8	34.2
Intangible	184.9	11.5	54.4	119.1
Human	*3,699.9*	*2,695.9*	*169.5*	*834.5*
Tangible	1,146.9	1,146.9	—	—
Intangible	2,553.0	1,549.0	169.5	834.5
Education	2,267.3	1,334.1	162.4	770.9
Health	241.7	175.0	5.0	61.7
Mobility	43.9	40.0	2.0	1.9
Total—domestic	6,920.4	3,798.9	1,476.0	1,645.6
Net foreign assets	69.2			
Total—national	6,989.6			

TABLE XII

GROSS AND NET RATES OF RETURN ON CAPITAL EMPLOYED, BY MAJOR TYPE, U.S. DOMESTIC ECONOMY AND BUSINESS SECTOR, PEAK YEARS. 1929–1969 (PERCENTAGES)

Year	Gross Rates			Net Rates		
	Total	Human	Nonhuman	Total	Human	Nonhuman
			Private Domestic Business Economy			
1929	10.2	11.7	9.2	10.0	10.1	10.0
1937	9.3	11.3	7.8	9.2	9.6	8.9
1948	12.1	12.2	12.0	13.4	12.6	14.2
1953	12.1	13.5	10.8	13.1	14.8	11.4
1957	11.4	12.7	10.1	11.6	13.4	9.9
1960	11.0	12.3	9.7	11.0	12.9	9.2
1969	10.8	11.7	9.9	10.6	12.2	8.9
			Total Domestic Economy			
1929	9.1	11.5	8.1	8.3	9.8	7.6
1937	8.2	11.2	6.8	7.5	9.4	6.5
1948	9.3	11.7	8.1	9.1	11.8	7.7
1953	9.5	12.7	7.9	9.2	13.3	6.9
1957	9.2	11.9	7.8	8.3	12.0	6.4
1960	9.1	11.6	7.7	8.1	11.6	6.2
1969	9.4	11.1	8.3	8.5	11.2	6.7

also deducted estimates of the maintenance costs of human beings from labor compensation, gross and net of depreciation. As will be described in my NBER monograph in detail, human maintenance costs are calculated based on minimum budget estimates for families of various sizes, farm and nonfarm, and for institutional populations, with allowance for actual increases in average planes of living over the period. Since personal consumption expenditures have increased less than national income and labor compensation, labor returns less maintenance costs have risen more than gross returns, although the levels and derived rates are much lower.

Since the net property return on non-human capital in the nonbusiness sectors was imputed by applying interest rates to the stock estimates, we concentrate on the private business sector where the compensation estimates are independent of the stock estimates. We shall also look at returns in the total national economy, since there at least the labor returns are independent of the human stock estimates.

As shown in Table XII, for cycle peak years, the average rate of return on total gross capital employed in the private business sector was 10.2 percent in 1929. The lower return in 1937 reflects the less-than-full recovery of that year, since even though human capital is measured only for the employed work-force, returns would be affected by hours of work; and the non-human capital stock is all counted as employed, so average rates of utilization would affect rates of return. The highest rates of return were realized in 1948 and 1953, at 12.1 percent. The rate of return then declined slowly over subsequent cycle-peaks. The 10.8 percent return in 1969 was only modestly above the rate of return forty years earlier.

The rate of return on human capital was above that on nonhuman and total capital throughout the period, although the difference was minor when the latter peaked in 1948. The difference was less in 1969 than in 1929, since the rate of return on human capital was the same in both years at 11.7 percent whereas that on nonhuman capital rose from 9.2 to 9.9 percent.

Note also that the rate of return on non-human capital was lower in 1937 relative to 1929 than was the case with human capital, for reasons indicated above. Further, whereas the rate of return on non-human capital was at a high in 1948, that on human capital peaked in 1953. Finally, whereas the rate of return on human capital gradually declined from its peak, that on nonhuman capital was slightly higher in 1969 than in 1960, possibly due to higher rates of utilization of fixed plant capacity in the latter year. In fact, adjustment for differences in utilization rates would probably make the rates of return on nonhuman capital at least as stable as the human return rates.

On a net basis, the average return on total capital was 0.2 percentage points below the gross rate of return in both 1929 and 1969. The close correspondence of rates on the gross and net basis indicates that the ratio of annual depreciation to accumulated depreciation reserves was not greatly different from the ratio of net factor income (excluding maintenance) to the value of the net capital stock.

The pattern of movement of the net rates of return is similar to that of the gross rates. The net rates rose above the gross rates in the early post-war period, however, peaking in 1948 at 13.4 percent. The net rate then declined gradually

over the successive cycle peaks to 10.6 percent in 1969, modestly above the 1929 rate as was the gross rate.

The patterns of movement of the net rates of return on human and nonhuman capital separately likewise deviated somewhat from the patterns of the gross rates. In the case of human capital, the net rate of return at 10.1 percent was well below the gross rate of 11.7 percent, and quite close to the 10.0 percent rate of return on nonhuman capital in 1929. By 1948, the net rate at 12.6 percent exceeded the gross rate and remained higher, although the net rate also gradually declined from its peak in 1953 in subsequent cycle-peak years.

Conversely, the net rate of return on non-human capital was above the gross rate in 1929, and remained above through 1953, following the peak of 1948. But after 1948, the net rate fell more than the gross rate, and was below the gross rate in 1957 and succeeding peak years. The 1969 net rate of return on nonhuman capital at 8.9 percent was below the 1929 rate, whereas the gross rate of return of 9.9 percent was above the corresponding 1929 rate.

It is of some interest to look at a couple of variant return measures not shown in the text table since we do not deem them to be as significant as the measures just reviewed. First, consider the gross rate of return on human capital *before* deduction of estimated maintenance costs. In 1929, the gross return of 22.1 percent was almost twice as great as the return after adjustment for maintenance. It was at much the same level during the post-war period 1948 through 1957. But thereafter, it declined gradually to 19.7 percent in 1969, whereas the adjusted rate in 1969 was the same as 1929. The relative increase in the adjusted rate, as noted earlier, is due to the fact that consumption *per capita*, used to adjust maintenance estimates, rose less than income *per capita*. The fact that the level of the adjusted rate is much closer to the rate of return on nonhuman capital helps support the theoretical arguments for adjusting human as well as property returns to exclude maintenance expenses.

Another variant is the rate of return on "utilized" human capital. That is, in addition to adjusting the human capital denominator to eliminate that embodied in persons not formally employed, we further reduced it for the proportion of total available hours at work. This results in a much higher gross rate of return in 1929—26.9 percent (after adjustment for maintenance). The rate of return was even higher in the post-war period, equalling 32.5 percent in 1969, because of the decline in average hours worked per year after 1929. But since we did not adjust nonhuman capital for percentage of time utilized, it is not symmetrical to do so for human capital. And it can be argued theoretically that calculations should be and are made on the basis of returns to total capital embodied in the factors of production employed, rather than on that portion of useful capital actually utilized.

Finally, at the other extreme, one can estimate the rate of return on total human capital, including that embodied in persons who are not in the labor force at all or are unemployed. This, of course, produces a lower gross rate of return (excluding maintenance)—6.9 percent in 1929, rising to 8.4 percent in 1969. But this alternative also does not seem appropriate, except from a very broad social viewpoint. Even then, an opportunity cost should be estimated for those not employed in market activities, which then produces circularity in estimating rates of return.

It was to minimize the influence of imputations that we have concentrated on the private domestic business economy, since returns on nonbusiness property were imputed and influence the estimates shown for the domestic economy in Table XII. The rates of return on human capital, not affected by imputations, are a bit less for the total domestic economy than for the business sector on both a gross and net basis over the whole period. This means that rates of return in the nonbusiness sectors were less. Further, between 1929 and 1969 there was a small relative decline for the nonbusiness sectors, suggesting that the increase in average labor compensation was less than in the business sector over the four decades as a whole. But the pattern of movement between peak years was quite similar.

The rates of return on nonhuman capital were distinctly less for the whole domestic economy than for the business sector, particularly on a net basis. This reflects the use of interest rates to impute returns in the nonbusiness sectors.

The rates of return on total capital in the domestic economy averaged about 3 percentage points less than the rates in the business sector. It is interesting to observe how stable the overall rates of return were in the domestic economy as a whole—moving between 9 percent and 9.5 percent in all peak years except for the lower rate recorded for 1937.

All series for both the domestic economy and business sector show decreases in rates of return between peak years and the subsequent troughs, particularly on a net basis. The drops were drastic in the contractions of the 1930's, but mild since World War II. The mildest was the 1960–61 contraction, when the net rate of return on total capital employed in the business sector fell only from 10.97 percent to 10.73 percent. In the completed NBER monograph, the annual series will be presented, permitting analysis of cyclical forces as well as of trends.