



The Accumulation of Human and Nonhuman Capital, Revisited

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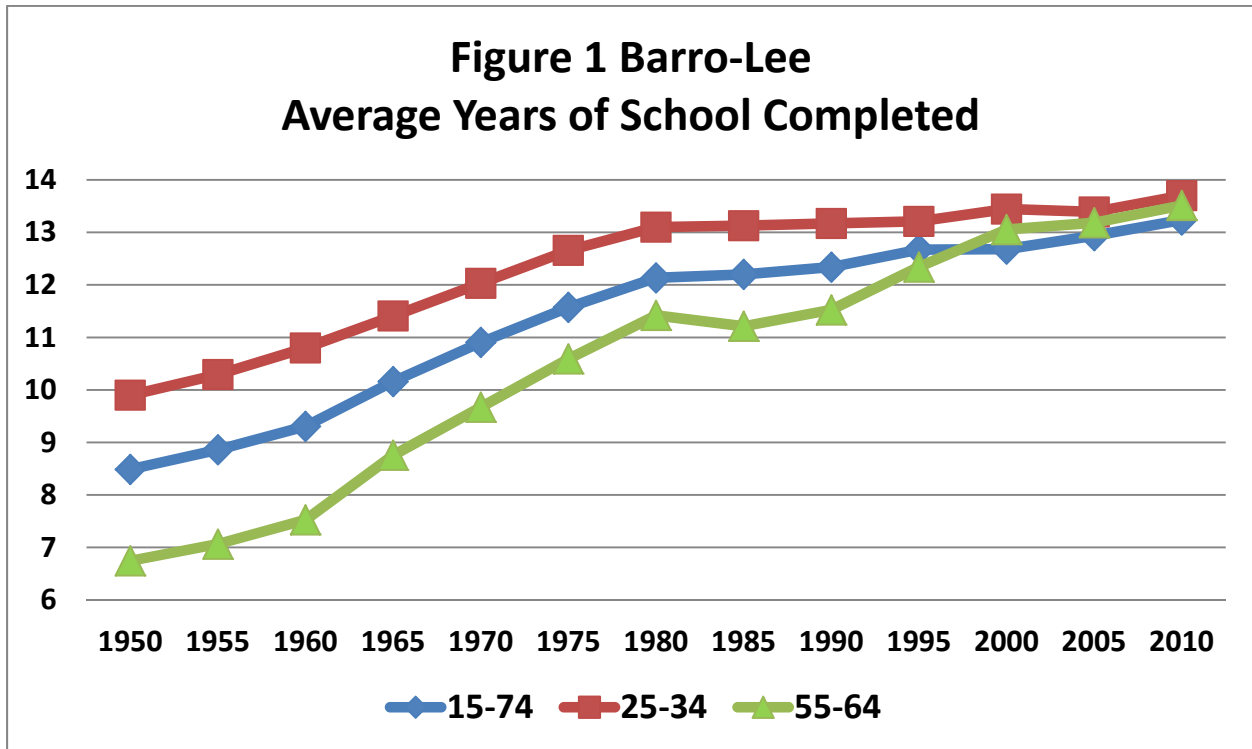
Just over twenty-five years ago, Jorgenson and Fraumeni (J-F) published their first paper on human capital (1989). This first paper emphasized the importance of human capital by presenting human capital estimates embedded in a complete national income accounting system. Since that time much has changed: the U.S. National Income and Product Accounts (NIPAs) have been substantially revised and the average number of years of formal schooling completed in the U.S. has increased by over fifty percent. In addition, increasing attention is being paid to the topic of human capital. The purpose of this paper is two-fold: 1) to integrate the J-F human capital accounts with an up-to-date and internally consistent system of national accounts, and 2) to describe changes and trends in the aggregates over time, particularly those related to human capital.

“Beyond GDP” is a catchword, popularized by the Stiglitz-Sen-Fitoussi Commission, which calls for innovation in economic accounts. Even before the final 2009 report was released, commission activities influenced related efforts and resulted in a workshop on human capital in Turin, Italy November 3-4th, 2008. At this event, jointly organized by the OECD and the Fondazione Agnelli, Fraumeni (2008b) presented a paper which proposed a simplified approach to estimating Jorgenson-Fraumeni (J-F) human capital. Subsequently, the OECD Human Capital Project began with Gang Liu as the primary economist involved in estimating J-F-type human capital for 16 countries using a simplified approach. With that project, the number of countries with J-F human capital estimates increased from six to 18. Later, J-F estimates for Argentina and China were independently constructed as well as new estimates for the United States, bringing J-F country coverage to 20.¹ Interest in human capital measurement continues to the present, with a report on OECD practices (OECD, 2012), a UNECE Task Force (Statistics Norway, 2014), and World Bank and UN reports on wealth (World Bank, 2010 and UNU-IHDP and UNEP, 2014), which both featured human capital.

Figure 1 shows how average educational attainment has changed at the five year frequency between 1950 and 2010 for three age groups: younger individuals aged 25-34, older individuals aged 55-64, and a broader age category for those aged 15-74 which includes the majority of the

¹ The countries include: Argentina, Australia, Canada, China, Denmark, France, Great Britain, India, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Poland, Rumania, South Korea, Spain, Sweden, and the United States. See Argentina (Coremberg, 2010), Australia (Wei, 2007, 2008), Canada (Gu and Wong, 2009), China (Li and co-authors 2009b, 2010a, 2014 and annual reports beginning in 2009), India (Gundimeda, Sanyal, Sinha, and Sukhdev, 2007), New Zealand (Le, Gibson, and Oxley, 2005), Norway (Liu and Grecker, 2009), Sweden (Ahlroth and Bjorkland, 1997), the United States (Christian, 2009, 2010, 2014) and Mira and Liu (2010) and Liu for the OECD human capital consortium countries (2011, 2014). O’Mahony and Stevens (2004) applied J-F methodology to evaluate government provided education in Great Britain. As the references above indicate, for several countries, OECD human capital project estimates exist as well as estimates constructed during the course of other research projects.

adult population.² In 1950 the difference in average educational attainment between the three age groups averaged around 1.5 years (6.7 years for those aged 55-64, 8.5 years for those aged 15-74, and 9.9 years for those aged 25-34). By 2010 average educational attainment is almost identical across the three age groups, with the average for those aged 15-74 increasing from 8.5 to 13.2 years of formal schooling. The advances continued almost without abatement over the whole period, except for the oldest group during the 1980-1990 period; however the pace of these increases slowed after 2000. This paper traces through these changes in educational attainment that occurred over the last 25 years to their effects on human capital via the lifetime income approach.



An important component of this paper is to integrate human capital estimates with a system of national accounts. Since the March 1986 data for the original 1989 paper was collected, six comprehensive NIPA revisions have occurred. There have been many definition, classification, source data, methodological, and presentation changes as a result of the revisions. Many were concerned with prices or quality change, such as hedonic price indexes for computers and implementation of chained Fisher ideal indexes. Other changes include the classification of software and research and development as investment, separation of government expenditures into consumption versus investment, measurement of implicit services provided by property and casualty insurance and by commercial banks, and a complete revamping of the table presentation

² See Barro and Lee 2013a and 2013b.

of the accounts.³ In addition, the NIPAs changed to be in greater conformity with the System of National Accounts.⁴

This paper includes results for 1948 to 1984, the years covered in the original paper, and from 1998 to 2009, the years covered in the most recent paper by Christian. Human capital related estimates for 1948 to 1984 are identical to those in the original paper, but nonhuman estimates are for all years are updated.^{5 6}

Human Capital Accounts Methodology

The Jorgenson-Fraumeni model of human capital (Jorgenson and Fraumeni, 1989, 1992) measures human capital using the lifetime income approach. It measures the stock of human capital using an estimate of a population's lifetime earnings, current and future, in present discounted value. Investment in human capital captures the impact of events that have a positive impact on the human capital stock, such as births, formal education, and immigration. Depreciation of human capital captures the impact of events that have a negative impact on the human capital stock, such as deaths, aging, and emigration. Investment and depreciation--either in total, or for a particular reason such as education--are valued by the extent to which they add to or subtract from the human capital stock.

The lifetime income approach to measuring human capital (of which the Jorgenson-Fraumeni model is the most well-known example) is a commonly used approach to measuring human capital. Alternative approaches include the cost approach (Kendrick, 1976), which measures the stock of human capital using the cost of producing it, and the indicators approach, which measures human capital using indicators such as the average level of education, i.e. Barro and Lee (2013a). The J-F human capital approach integrates within the same conceptual framework as the national accounts.

The Jorgenson-Fraumeni model can be used to measure both a market and a nonmarket component of human capital. The market component of human capital is valued using lifetime market earnings. The nonmarket component is measured using an estimate of lifetime nonmarket time spent in activities other than market work, schooling, or personal maintenance, and valued using an opportunity cost equal to a tax-adjusted market wage. The Jorgenson-Fraumeni model can also be used to measure human capital for an entire population (including children), or for a component of that population such as employed people or people of working age. Human capital for people of working age or for employed people is referred to as "active" human capital.

³ See Boskin (2000) and various issues of the Survey of Current Business (U.S. Department of Commerce).

⁴ For example, the term operating surplus was introduced during the 2003 comprehensive revision.

⁵ The updated nonhuman estimates are based on the May 28, 2014 NIPA tables.

⁶ Estimates are not available for the middle period: 1985-1997. Constructing such estimates would require a multi-year full-time project because of the many steps required to do so and changes in the data sources.

In the Jorgenson-Fraumeni model, the population is cross classified by age, sex, and education, and average lifetime earnings is the present discounted value of earnings. Estimates in a given year use average yearly earnings and school enrollment rates by age, sex, and education; discounted earnings reflect mortality rates by age and sex, and an assumed discount rate and skills-neutral income growth rate. Average yearly market earnings are set to post-tax labor income by age, sex, and education. Average yearly nonmarket earnings are set to the value of nonmarket time, defined as time not spent in market work, at school (assumed to be 1300 hours per year for enrolled persons), or in personal maintenance (assumed to be 10 hours per day for all persons). Nonmarket time is valued at the pre-tax market wage rate, multiplied by one minus the marginal tax rate to reflect the opportunity cost of leisure or household production. Age is topcoded at age 75, and levels of education reflect years of education from 0 (no education) to 18 (two years of graduate school or more).

The actual calculation of lifetime income begins at older ages, and then works its way back through younger ages. The model splits a lifetime into five stages. From ages 0 to 4, people do not attend school or earn income. From ages 5 to 13 (5 to 14 in the 1998-2009 results), people do not earn income, but may attend school. From ages 14 to 34 (15 to 34 in the 1998-2009 results), people may earn income and/or attend school. The differences in the ages between the phases in the earlier and later results reflects a change in the earliest age of labor income recorded in Census data. From ages 35 to 74, people no longer attend school, but continue to earn income. At age 75 or higher, people do not attend school or earn income.

For people age 75 and older, average lifetime earnings are assumed to be zero:

$$i_{y,a,s,e} = 0 \text{ if } a = 75+$$

where $i_{y,a,s,e}$ is average lifetime income (market, nonmarket, or combined) in year y for people of age a , sex s , and level of education e .

For ages 35 to 74, average lifetime earnings is equal to average current earnings, plus lifetime earnings at the next age older, adjusted for survival, discounting, and income growth:

$$i_{y,a,s,e} = yi_{y,a,s,e} + [(1+\rho)^{-1}(1+g)sr_{y,a,s,e}]i_{y,a+1,s,e} \text{ if } a = 35, 36, \dots, 74$$

where $yi_{y,a,s,e}$ equals average yearly income (market or nonmarket) and $sr_{y,a,s,e}$ equals the survival rate in year y for people of age a , sex s , and level of education e ; ρ equals the discount rate; and g is the income growth rate. In the results presented here, the discount rate is set to 0.04, and the income growth rate is set to 0.02 as in the 1989 accumulation paper. Survival rates differ by age and sex, but are the same across levels of education within age and sex.

For ages 14 to 34 (15 to 34 in the 1998-2009 results), lifetime income estimates take into account the probability of attending school:

$$i_{y,a,s,e} = yi_{y,a,s,e} + senr_{y,a,s,e}[(1+\rho)^{-1}(1+g)sr_{y,a,s,e+1}]i_{y,a+1,s,e+1} + (1 - senr_{y,a,s,e})[(1+\rho)^{-1}(1+g)sr_{y,a,s,e}]i_{y,a+1,s,e}$$

if $a = 14, 15, \dots, 34$

where $senr_{y,a+1,s,e}$ is the school enrollment rate in year y of people of age a , sex s , and level of education e .

For ages 5 to 13 (5 to 14 in the 1998-2009 results), people are too young to earn income, and so yearly income is set to zero:

$$i_{y,a,s,e} = senr_{y,a,s,e}[(1+\rho)^{-1}(1+g)sr_{y,a,s,e+1}]i_{y,a+1,s,e+1} + (1 - senr_{y,a,s,e})[(1+\rho)^{-1}(1+g)sr_{y,a,s,e}]i_{y,a+1,s,e}$$

if $a = 5, 6, \dots, 13$

and for ages 0 to 4, people are too young to attend school, so school enrollment rates are also set to zero:

$$i_{y,a,s,e} = [(1+\rho)^{-1}(1+g)sr_{y,a,s,e+1}]i_{y,a+1,s,e}$$

if $a = 0, 1, \dots, 4$

The stock of human capital in a given year is equal to the sum of lifetime income across a population, weighted by population by age, sex, and education:

$$hc_y = \sum_s \sum_a \sum_e (p_{y,a,s,e} \times i_{y,a,s,e})$$

where $p_{y,a,s,e}$ is the population in year y of people of age a , sex s , and level of education e . Note that this is computed using market, nonmarket, or combined lifetime income. It can also be computed using the entire population, or using a subset of the population (for example, people of working-age only).

Investment in human capital is measured using births, education, and (when available) immigration. Investment from births is the impact of births (the arrival of persons age 0) on the human capital stock, and is equal to

$$bi_y = \sum_s (p_{y,0,s,0} \times i_{y,0,s,0})$$

Investment from education is the impact of education (people moving up from education level e to education level $e+1$) on the human capital stock, and is equal to

$$si_y = \sum_s \sum_a \sum_e senr_{y,a,s,e} [p_{y,a,s,e} \times (i_{y,a,s,e+1} - i_{y,a,s,e})]$$

The 1998-2009 results include an additional component of investment, residual net investment. This is the impact of measured changes in the size and distribution of the population by sex, age, and education that cannot be attributed to measured births, deaths, or schooling. These changes exist for two reasons. The first is migration, which is not directly measured in the 1998-2009 results. The second is measurement error; in particular, the data on births, deaths, and educational attainment do not line up exactly with population estimates from year to year. The primary source of data for the 1998-2009 results are the March demographic and October school

enrollment supplements to the Current Population Survey, adjusted to match published national aggregates for population, births, deaths, and enrollments, with survival rates from the Centers for Disease Control.

To measure human capital in real terms, the population t (measured by age, sex, and education) is treated as the quantity, and the lifetime income component (similarly measured by age, sex, and education) is treated as the weight.⁷ The ratio of the nominal value to quantity index yield the implicit price.

Overview of the Accounts

This paper updates the original “accumulation” paper accounts, which were a comprehensive set of accounts that embedded human capital measures into modified NIPA accounts. The modified NIPA accounts were based on Christensen-Jorgenson (C-J) national income accounts (1973), which are summarized in Jorgenson (1980). Subsequently the C-J accounts were revised by a number of researchers working with Jorgenson: Stiroh, Landefeld, and Samuels, among others. The most recent and complete version of the modified NIPA accounts is described in Jorgenson and Landefeld (2006, 2009, and 2010). However, only the original “accumulation” paper added human capital measures to create “full” national account constructs based on the private domestic and private national economies.⁸ A purpose of this paper is to provide a fully integrated set of national accounts that includes human capital and is consistent with the concepts included in the US NIPAs.

The following figure briefly summarizes the five J-F accumulation paper accounts which are presented in more detail in a later section. Although the organization of the accounts is the same as in the original “accumulation” accounts, many individual elements of these accounts are revised to reflect the many national income accounting and tabular changes that have occurred since the publication of the original paper. For comparison, the detailed accounting tables presented later show data for 1982 (the base year in the original accumulation paper) and for 2009 (the current base year for the NIPA).

The complete accounting and integrated system with human capital measures in each account includes a production account, incorporating data on output and input; an income and expenditures account, giving data on income, expenditures, and saving; an accumulation account, allocating saving to various types of capital formation, and a balance sheet, containing data on private national wealth. The accumulation accounts are related to the wealth accounts through the accounting identity between period-to-period changes in wealth and the sum of net saving and the revaluation of assets.

⁷ The System of National Accounts term “volume” refers to the same concept as “quantity” as used in this paper.

⁸ The “new architecture” Jorgenson and Landefeld accounts (2006, 2009, and 2010) also include a foreign transactions current account and a U.S international position account.

Figure 2 Overview of the Five Accounts

1. PRODUCTION

Full Gross Private Domestic Product equals
Full Gross Private Domestic Factor Outlay

2. FULL PRIVATE NATIONAL LABOR & GROSS NATIONAL PROPERTY INCOME

Full Private National Labor Income
Gross Private National Property Income

3. FULL GROSS PRIVATE NATIONAL RECEIPTS & EXPENDITURES

Full Gross Private National Income

Full Private National Consumer Outlays plus Full Gross Private National Saving equals
Full Private National Consumer Expenditures

Full Gross Private National Consumer Receipts equals Full Private National Consumer Expenditures

4. FULL GROSS PRIVATE NATIONAL CAPITAL ACCUMULATION

Full Gross Private National Saving equals
Full Gross Private National Capital Formation

5. FULL PRIVATE NATIONAL WEALTH

Private National Nonhuman Wealth equals
Private Domestic Tangible Assets plus
Net Claims on Governments and the Rest-Of-The-World

Private National Nonhuman plus Human Wealth equals
Full Private National Wealth

The production account is for the private domestic economy; the other accounts use private national as the conceptual basis. The private domestic concept excludes the output and inputs of the government sector. The receipts and expenditure account is based on the accounting identity that the value of consumer receipts equals the value of outlays plus saving. Thus, compensation of government employees appears on the receipts side of the income and expenditure account. In general, the private national concept includes account relevant activities that occur in the United States, but restricts included relevant activities to those made by (such as expenditures), received by (such as income), or held by (such as wealth) private entities.

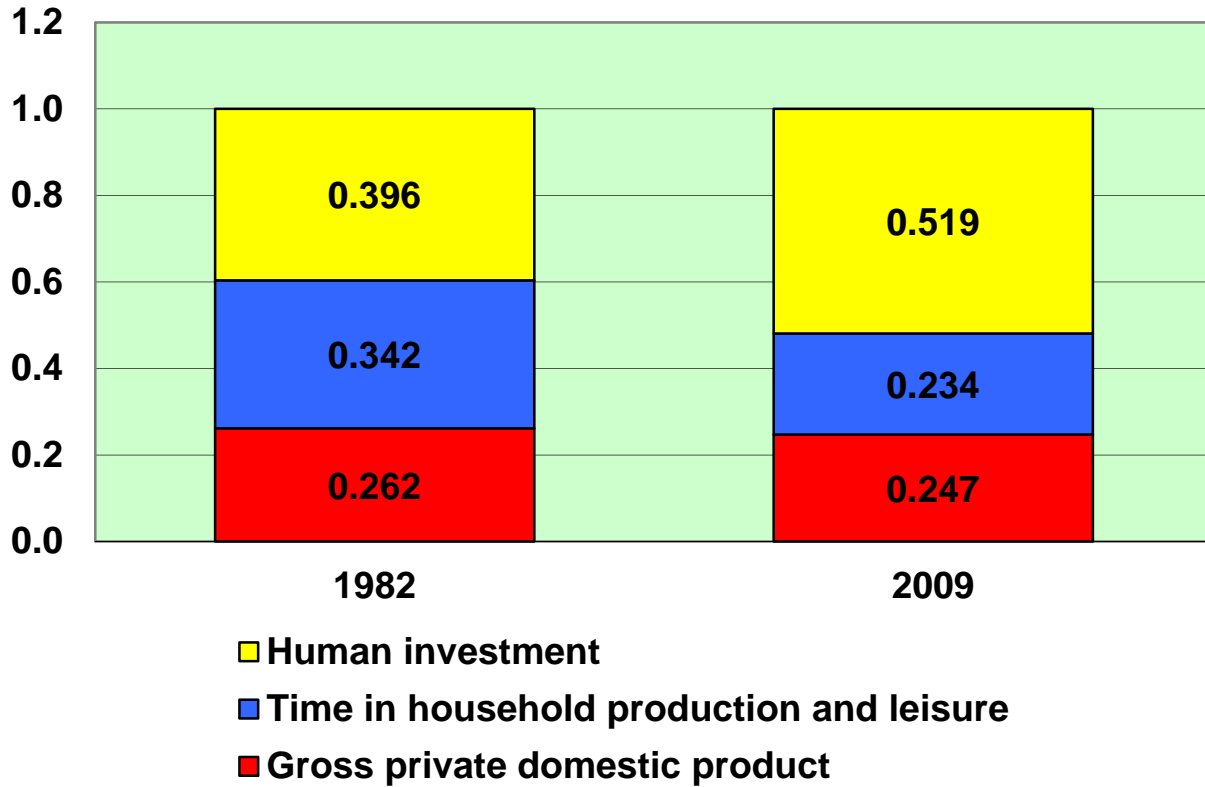
To give a sense of how relative magnitudes have changed over time, the figures 3 and 5-8 indicate the nominal dollar shares of the major components of the major aggregates included in the accounts in 1982 and 2009.⁹

Changes in the nominal shares of full gross private domestic product (see figure 2) between 1982 and 2009 mainly reflect changes in the labor force participation rate of women. Time in household production and leisure values time other than time in 1) sleep and maintenance (assumed to be 10 hours per day and given a zero valuation), 2) formal schooling (assumed to be 1300 hours per year for any enrolled individual), and 3) market work (which varies depending upon estimated hours). Time in household production and leisure is valued using the opportunity cost market wage. Human investment depends on the impact of births (a population increase) and formal schooling (increases in wages accrued to those with higher levels of education) on lifetime income, which includes both market and nonmarket income. As figure 4 illustrates, female labor force participation has almost doubled between 1948 and the end of the period, from just over 30 percent to around 60 percent. With the increase in female market work time, time spent and the corresponding nominal share of the value of time in household production and leisure in full gross private domestic product has decreased. Also, investment in education has risen between 1982 and 2009 with the higher educational attainment of both men and women, but most notably for women.¹⁰ At the same time, the nominal share of the “Full” component which is included in gross private domestic product has declined somewhat between 1982 and 2009.

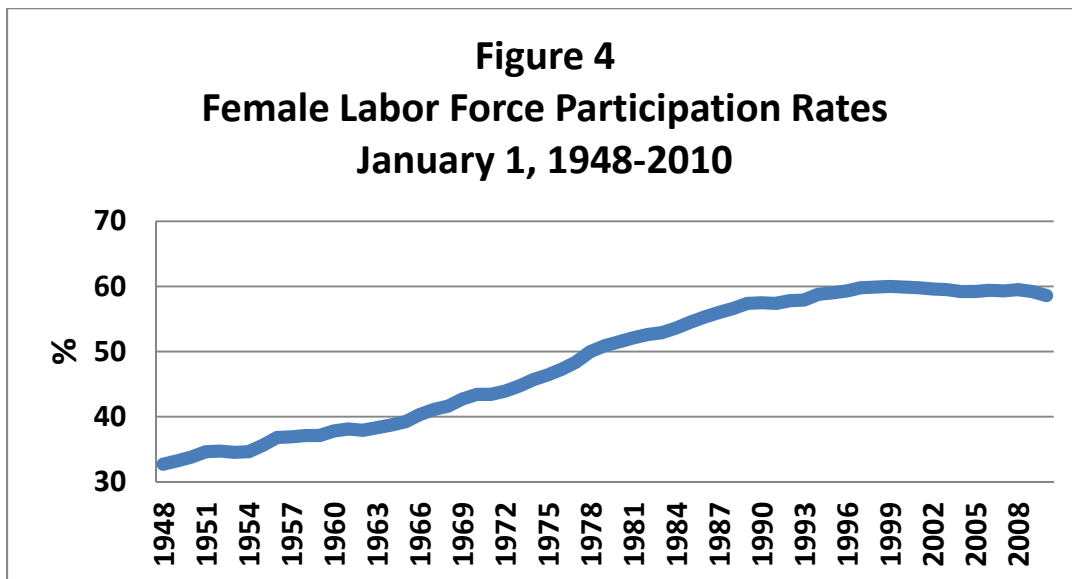
⁹ The “Full” aggregates include human capital accounts components.

¹⁰ According to the Barro and Lee (2013b) estimates, in 2010 the percent of the total population aged 15 and above that completed the tertiary level of education is almost identical for females and males (both to two significant digits at 27 percent), however, females compared to males made the greatest gains in this category over the period from 1980 to 2010. In 1980, the percent of the female population aged 15 and above that completed the tertiary level of education was 14 percent; while for males it was 20 percent.

**Figure 3 Shares of
Full Gross Private Domestic Product
1982 and 2009**

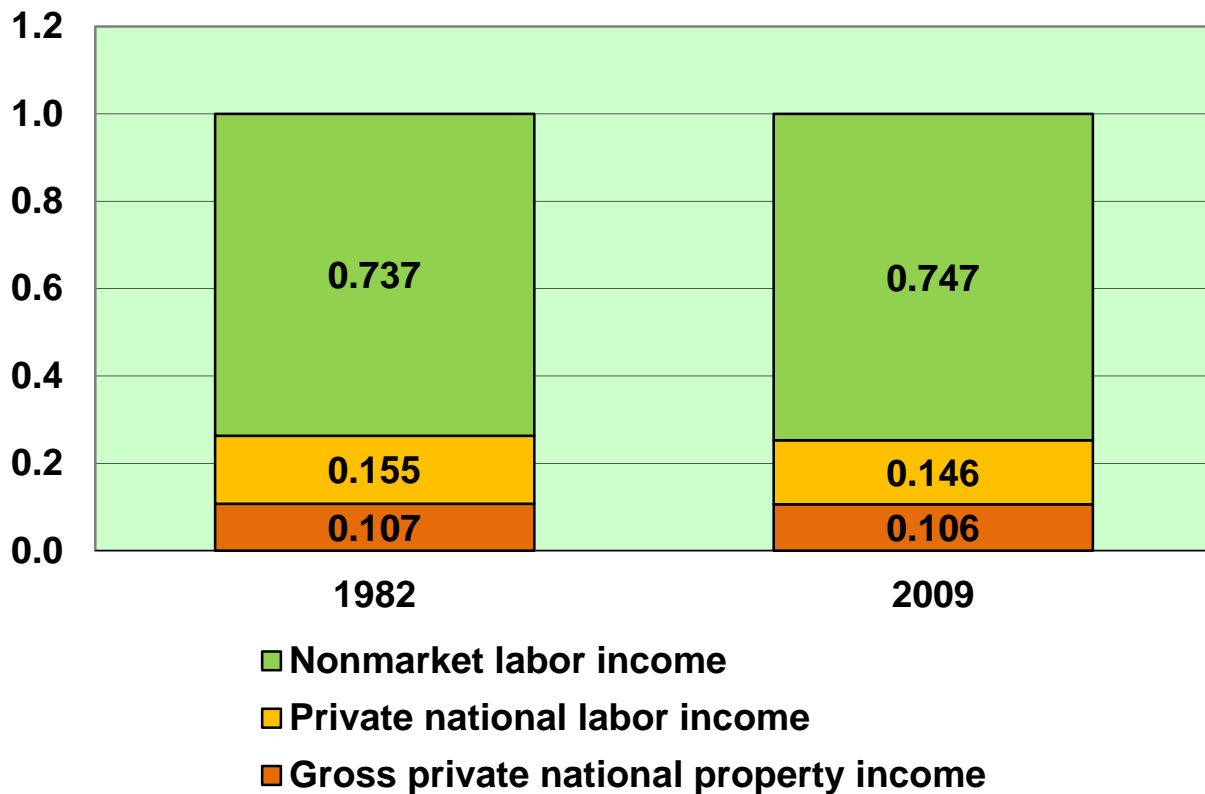


**Figure 4
Female Labor Force Participation Rates
January 1, 1948-2010**



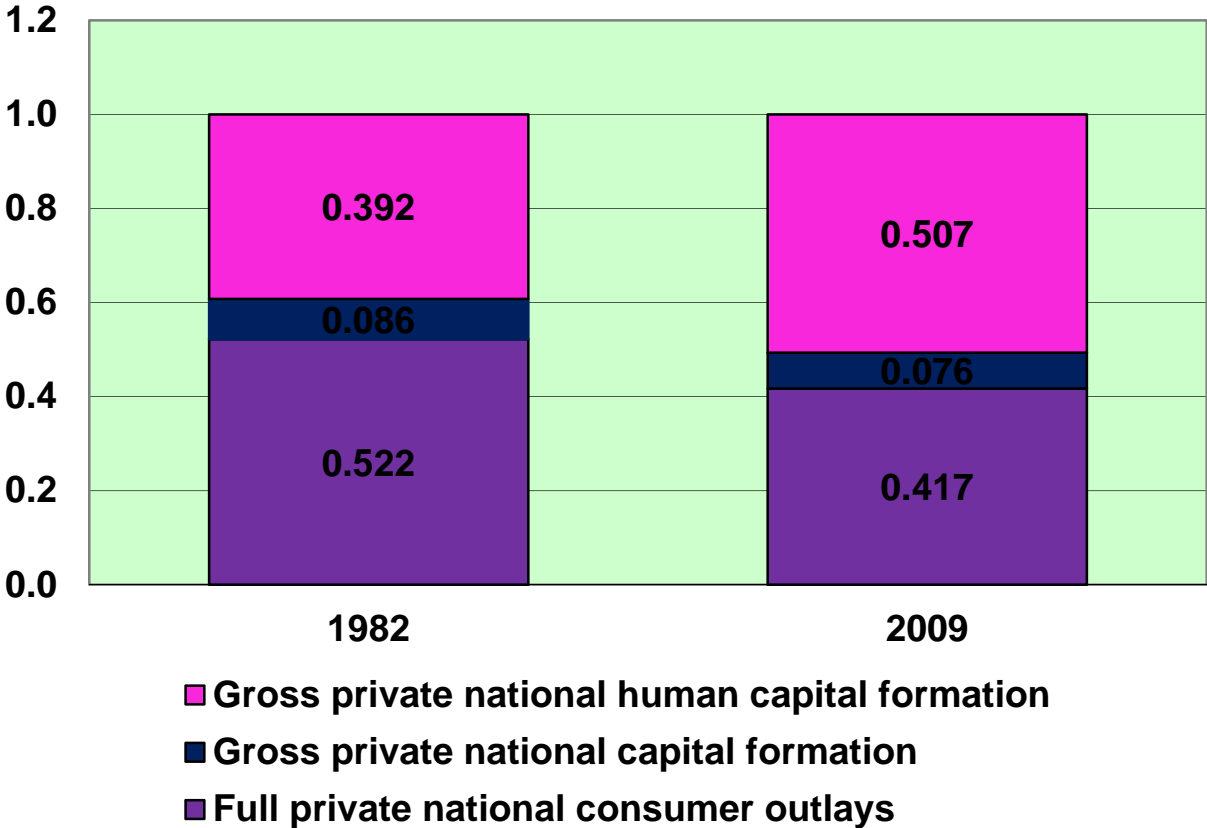
All of the major nominal subcomponents of gross private national income have increased by a factor of between 4.2 and 4.7 times between 1982 and 2009. The major subcomponents include private domestic outlay for labor services, private national labor income, nonmarket labor income, full private national labor income, gross domestic private outlay for capital services, and gross private national property income (see table 4). Gross private national property income (see figure 3) has stayed almost a constant nominal share of the sum of labor and property income. Note that nonmarket labor income includes both human investment and time in household production and leisure, so the trade-off between these two components of nonmarket labor income is masked in the aggregate shown in figure 3. The nominal share of the private (market) component of labor income has decreased slightly with a corresponding increase in the nonmarket component of labor income.

Figure 5
Shares of Full Private National Labor
and Gross National Property Income
1982 and 2009



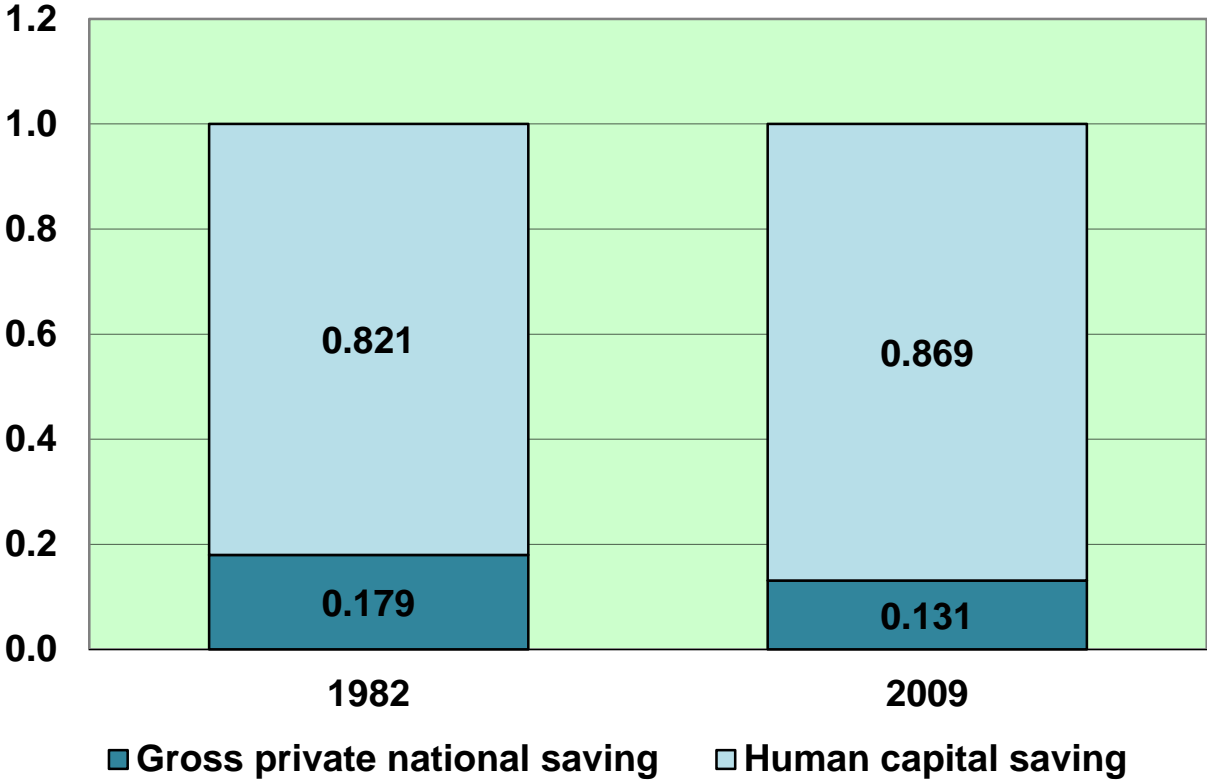
Overall the nominal share of capital formation in full private national consumer expenditures (see figure 6) has risen between 1982 and 2009. Often analysts are concerned about the level of private national capital formation, missing the important role that human capital formation has played since the early to mid-eighties. The nominal share of gross private national human capital formation in 1982 and full private national consumer outlays in 2009 are similar. The nominal share of full private national consumer outlays in 1982 and gross private national human capital formation in 2009 are similar. The importance of including both human and private (nonhuman) capital formation is highlighted by this figure.

Figure 6 Shares of Full Private National Consumer Expenditures 1982 and 2009



Human capital saving is clearly the largest, and a growing component of full gross private national saving (see figure 7). On average individuals have invested more in education since 1982. The increase in the average U.S. educational attainment is certainly in part a response to the demand for more highly skilled workers, which has resulted in a wage premium paid to those workers compared to those with fewer skills.¹¹

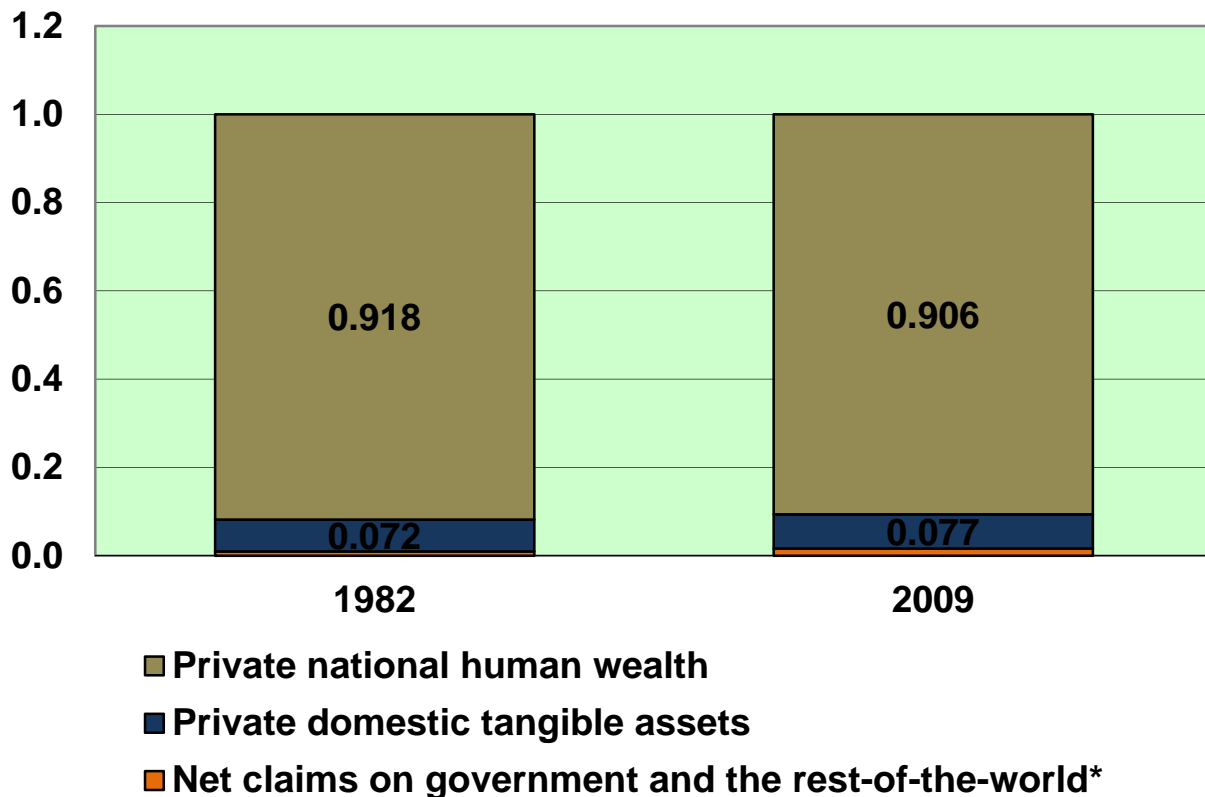
**Figure 7 Shares of Full Gross Private National Saving
1982 and 2009**



¹¹ See Figure 1 in Hotchkiss and Shiferaw (2014).

It might be surprising that the nominal share of human wealth in full private national wealth has decreased over the same period, given the increase in the nominal share of human capital saving (see figure 8). This is primarily due to the increase in depreciation as the baby-boomers approach retirement. The nominal share of depreciation in full gross saving rose from 47 percent in 1982 to 80 percent in 2009 (see appendix table 19). The share of U.S. resident population age 55 through age 64 rose from 9 percent in 1950, to 10 percent in 1980, and to 12 percent in 2010.¹² Private national human wealth is by far the largest component of full private national wealth, accounting for over 90 percent of the nominal total in both years.

**Figure 8 Shares of Full Gross Private National Wealth
1982 and 2009**



* The nominal shares for net claims on government and the rest-of-the-world are .0099 and .0164 for 1982 and 2009 respectively.

¹² U.S. Census Bureau, 2011, population table 7, and 1951, population projections by age and sex table no. 8.

Accounts Presentation and Discussion

In this section, details of the accounts are presented in three ways with: 1) definitional tables for 1982 and 2009, 2) rates of growth tables for major aggregates by sub periods, and 3) contribution tables for major aggregates by sub periods. The rates of growth tables show rates of growth from 1949-1984, 1949-1973, 1973-1984, 1998-2009, 1998-2000, 2000-2005, and 2005-2009. The contributions tables, since contributions require lagged components, are for average contributions from 1950-1984, 1950-1973, 1974-1984, 1999-2009, 1999-2000, 2001-2005, and 2006-2009. As the original accumulation paper used Thornqvist indices, so does this updated and revised version.^{13 14} With Thornqvist indices, contributions are a weighted rate of growth, where the weights are an average of the nominal dollar share in the previous period and the contemporaneous period and the rate of growth is a logarithmic growth rate of the quantities from the previous period to this period. The sub period breakpoints reflect economic conditions; in the productivity literature it has been clearly documented that productivity shifted downward post-1973; the period 1999-2000 corresponds to the end of the “IT Boom” period which began in 1995; and by 2006 the economy was headed towards the Great Recession (Jorgenson, Ho, and Samuels, 2104). Tables corresponding to all time series tables in the original accumulation paper are in the appendix; these time series tables are the data which underlie all figures and tables in the body of the paper. Accordingly, this paper provides a complete basis for review and analysis of the accounts presented herein which embed human capital related measures in a national income accounting framework.

The first account (see table 1) is the production account.¹⁵ As in the “new architecture” accounts (Jorgenson and Landefeld, 2006, 2009, and 2010), the core NIPA are modified in a number of ways. In the product account to allow for integration with productivity accounts, property-type taxes are included, but some other types of taxes such as primarily sales taxes, are not included. Imputations for nonhuman capital services (see line 16 of the product account) add into gross private domestic product several capital services that are not in NIPA GDP. These include those for consumer durables and real estate held by institutions and producer durable equipment held by institutions. The other imputation included in line 16 of the product account is for an addition to real estate held by households capital services as it is undercounted in NIPA GDP. These modifications are relatively minor in scale; as was already clearly seen in figure 3, the human capital components dominate the production account.

For the sub periods that we consider, prices and quantities generally increase over time. For that reason and because the sum of the price and quantity rates of growth must equal the nominal dollar rate of growth, the rates of growth for quantities and prices are typically less than the rate

¹³ Some of the sub components of the aggregates shown in this paper for the most recent period, 1998-2009, are constructed using Fisher indices. However, all aggregates in paper tables are constructed using Thornqvist indices.

¹⁴ The human capital account components are identical to those in the original accumulation paper, but other components are revised over all periods to reflect changes and revisions in the NIPA.

¹⁵ All table numbers in the account tables refer to NIPA table numbers unless otherwise specified.

Table 1 Production, United States 1982 and 2009 (billions of dollars)

Product		1982	2009
1	Gross national product (table 1.7.5, line 4)	3,381.5	14,565.1
2	- Rest-of-world gross national product (table 1.7.5, line 2 minus line 3)	36.5	147.2
3	- Compensation of government employees (table 6.2B, line 76 for 1982; table 6.2D, line 86 for 2009)	388.9	1,666.2
4	- Government consumption of fixed capital (table 5.1, line 17)	113.9	442.7
5	= Gross private domestic product (NIPA definition)	2,842.2	12,309.0
6	- Federal taxes on production and imports (table 3.5, line 2)	41.0	91.4
7	- Federal current transfer receipts from business (table 3.2, line 17)	3.7	46.7
8	+ Capital stock tax (table 3.5, line 12)	0.0	0.0
9	- State and local taxes on production and imports (table 3.5, line 13)	200.0	934.8
10	- State and local current transfer receipts from business (table 3.3, line 18)	3.2	44.0
11	+ Business property taxes (table 3.5, line 27)	85.3	435.1
12	+ Business motor vehicle licenses (table 3.5, line 28)	2.1	8.7
13	+ Business other taxes (table 3.5, sum of lines 29-31)	16.4	67.2
14	+ Subsidies less current surplus of federal government enterprises (table 3.2, line 32 minus line 19)	16.7	56.1
15	+ Subsidies less current surplus of state and local government enterprises (table 3.3 line 25 minus line 20)	2.2	22.8
16	+ Imputations for nonhuman capital services	298.9	1,234.6
17	= Gross private domestic product	3,015.9	13,016.6
18	+ Time in household production and leisure	3,944.5	12,311.0
19	+ Investment in human capital, births*	2,184.7	9,551.5
20	+ Investment in human capital, education*	2,383.9	15,955.0
21	+ Investment in human capital, residual	0.0	1,841.2
22	= Full gross private domestic product	11,529.0	52,675.4

Factor Outlay		1982	2009
1	Compensation of employees, all private industries (table 6.2B for 1982 and table 6.2D for 2009, both line 3)	1,505.6	6,129.5
2	+ Entrepreneurial labor income (imputation)	162.6	828.9
3	+ Full property outlay (line 17 from the Product account, minus lines 1 and 2 from the factor outlay account)	1,347.6	6,058.2
4	= Gross private domestic factor outlay	3,015.9	13,016.6
5	+ Imputations for human capital services from product account above (lines 18-21)	8,513.1	39,658.7
6	= Full gross private domestic factor outlay	11,529.0	52,675.4

Note: Totals may differ slightly from the sums due to rounding

* The split between birth and education in 1982 is imputed from a somewhat later version of the accounts presented in the original accumulation paper. Accordingly, this is the only place in this paper where this split is shown

of growth of nominal dollars.¹⁶ Because quantities per capita are divided by a population denominator that is always growing throughout the period, the rate of growth of the quantity is always greater than the rate of growth of the quantity per capita. Discussion will focus on the price and quantity subcomponents of the nominal dollar rate of growth and on the quantities per capita.

By sub periods, with one exception, the full product, full investment and full consumption price rates of growth are always greater than the quantity rates of growth (see table 2).^{17 18} Both full investment and full consumption encompass human capital related components; the former includes human capital investment (births and education) and the latter includes time in household production and leisure. Between the earlier period (1948-1984) and the later period (1998-2009), the nominal share of full investment in full product becomes larger than the nominal share of full consumption in full product (see appendix table 3). By sub periods, full investment prices, which grow at a higher rate than full consumption prices in the earlier period, grow at a lower rate than full consumption prices in the later period, with the exception of 1998-2000. However, in all sub periods except for 1949-1973, full consumption quantities and quantities per capita (shown in the constant prices per capita line) grow at a higher rate than full investment quantities.¹⁹ However, in 1949-1973, the difference between the rates of growth is only .001 percentage point. Full investment quantities per capita decrease in all sub periods beginning in 1973 or after. Population growth averaged about 1 percent per year during that time period. The quantity of human capital investment increase only slightly between 1973 and 1984 and actually decreased between 1998 and 2009 (see appendix table 2).²⁰

By sub periods, full property outlay quantities and quantities per capita always grow at a much faster rate than full labor outlay quantities and quantities per capita (see table 3). The decline in quantities per capita in all of the later sub periods again reflects the slowdown in human capital investment growth, which is included in full labor outlay. This decline is offset slightly by the

¹⁶ By logarithmic rules, the log of a product is equal to the sum of the log of each component of the product.

¹⁷ Nonhuman consumption and investment is constructed from the producer point of view.

¹⁸ In the original accumulation paper, the term “current prices” was used to refer to nominal dollars, the term “constant prices” was used to refer to quantity, and the term “price index” was used to refer to price.

¹⁹ United States national population grew at a rate of .0131 in 1949-1984, .0146 in 1949-1973, .0097 in 1973-1984, .0915 in 1998-2009, .0216 in 1998-2000, .092 in 2000-2005, and .0093 in 2005-2009. The population figures from 2000-2009 are intercensal estimates, which means that the change between 1999 and 2000 is expected to be revised eventually. The one year growth rate between 1999 and 2000 is .0341. Accordingly, all quantity per capita growth estimates for 1998-2000 are likely biased downward. Subsequent sub period growth rates are also impacted, but to a significantly lesser degree.

²⁰ Population data was collected on January 11, 2015 from the U.S. Bureau of the Census website. See U.S. Bureau of the Census (undated, 2000). July 1 population estimates are used in this paper.

increase in the quantity of time in household production and leisure.²¹ As figure 1 shows, the gains in average educational attainment slowed during this later time period.

Table 2 Full Gross Private Domestic Product, rates of growth, 1949-1984, 1998-2009

	1949- 1984	1949- 1973	1973- 1984	1998- 2009	1998- 2000	2000- 2005	2005- 2009
Full product:							
Nominal dollar	0.0732	0.0673	0.0861	0.0307	0.0515	0.0193	0.0345
Quantity	0.0220	0.0244	0.0167	0.0081	0.0175	0.0055	0.0067
Quantity per capita	0.0089	0.0098	0.0070	-0.0034	-0.0040	-0.0038	-0.0026
Price	0.0513	0.0429	0.0694	0.0226	0.0341	0.0139	0.0277
Full investment:							
Nominal dollar	0.0732	0.0695	0.0811	0.0197	0.0525	0.0040	0.0228
Quantity	0.0198	0.0245	0.0095	-0.0007	0.0127	-0.0042	-0.0030
Quantity per capita	0.0067	0.0098	-0.0002	-0.0122	-0.0088	-0.0135	-0.0124
Price	0.0537	0.0456	0.0713	0.0199	0.0389	0.0079	0.0255
Full consumption:							
Nominal dollar	0.0733	0.0652	0.0909	0.0484	0.0496	0.0454	0.0516
Quantity	0.0242	0.0244	0.0237	0.0227	0.0266	0.0222	0.0214
Quantity per capita	0.0111	0.0098	0.0140	0.0112	0.0050	0.0129	0.0120
Price	0.0492	0.0409	0.0672	0.0258	0.0234	0.0232	0.0303

²¹ The quantity of time in household production and leisure is shown in appendix table 14 under the title “nonmarket consumer outlays.”

Table 3 Gross Private National Labor and Property Income, rates of growth, 1949-1984, 1998-2009

	1949- 1984	1949- 1973	1973- 1984	1998- 2009	1998- 2000	2000- 2005	2005- 2009
Full factor outlay:							
Nominal dollar	0.0732	0.0673	0.0861	0.0307	0.0515	0.0193	0.0345
Quantity	0.0191	0.0206	0.0158	0.0062	0.0135	0.0024	0.0074
Quantity per capita	0.0060	0.0059	0.0061	-0.0053	-0.0081	-0.0069	-0.0020
Price	0.0541	0.0467	0.0703	0.0245	0.0378	0.0170	0.0272
Full labor outlay:							
Nominal dollar	0.0723	0.0673	0.0831	0.0284	0.0537	0.0152	0.0323
Quantity	0.0170	0.0185	0.0136	0.0031	0.0100	-0.0010	0.0049
Quantity per capita	0.0039	0.0039	0.0039	-0.0084	-0.0116	-0.0103	-0.0044
Price	0.0553	0.0488	0.0694	0.0253	0.0436	0.0163	0.0275
Full property outlay:							
Nominal dollar	0.0810	0.0674	0.1105	0.0501	0.0297	0.0566	0.0520
Quantity	0.0372	0.0387	0.0339	0.0345	0.0482	0.0351	0.0268
Quantity per capita	0.0241	0.0241	0.0241	0.0229	0.0266	0.0259	0.0174
Price	0.0438	0.0287	0.0766	0.0156	-0.0181	0.0215	0.0252

The first contribution figure (see figure 9) presents both sides of the production account as well as the implied multifactor productivity growth that is consistent with full product output and inputs.²² Even with human capital measures integrated into the account, as expected multifactor productivity growth falls beginning in the 1974-1984 sub period, recovers strongly in 1999-2000, but falls again, and even becomes negative, during the last period, 2006-2009, which includes the Great Recession and the slow recovery. Except during the 1950-1973 sub period, the contribution of full consumption to overall economic growth outweighs that of full investment. Except during the 1999-2009 and 2001-2005 sub periods, the contribution of full labor to economic growth outweighs that of full capital. The negative contribution of full labor in 2001-2005, which dominates the 1999-2009 period, is due to the factor mentioned earlier: the slowdown in human capital investment. Full capital contributes more to economic growth than multifactor productivity growth in all periods.

The second account is the labor and property income account (see table 4). Human capital components only enter into labor income. Figure 5 showed that there is very little change in the nominal share of gross private national labor income in total income between 1982 and 2009 and that nonmarket labor income represents almost 75 percent of total income. In this account, the split of personal income taxes between labor and property income is imputed in the modified NIPA set of accounts.

By sub period, full private national labor income growth demonstrates a typical pattern for a labor aggregate, but there is no consistent growth pattern for gross private national property income in the earlier sub periods (see table 5). For labor income, the growth in prices is consistently greater than the growth in quantities and the growth in quantities is consistently greater than the growth in quantities per capita as expected. The growth in property income quantities is greater than growth in prices for only two of the seven sub periods: 1949-1984 and 1973-1984. The growth in prices for each of the three aggregates in all later period sub periods is always less than the growth in prices in all of the earlier period sub periods.

The third account is the consumer receipts and expenditures account (see table 6). The aggregate full gross private national saving includes human saving as well as nonhuman saving (see appendix table 15 and line 10 of the Expenditures part of the account). The receipts part of the account includes all human capital components listed in the Product account of table 1. Consumer durables are excluded from expenditures as in the modified “new architecture” accounts and these accounts as consumer durables are considered investment (see line 2 of the Expenditures part of the account). Figure 6 showed that there is a very large increase in the nominal share of gross private national human capital formation in full private national consumer expenditures between 1982 and 2009.

²² Some titles are truncated in figure 9 because of space considerations.

Figure 9 Contributions to Full Gross Private Domestic Product and Economic Growth

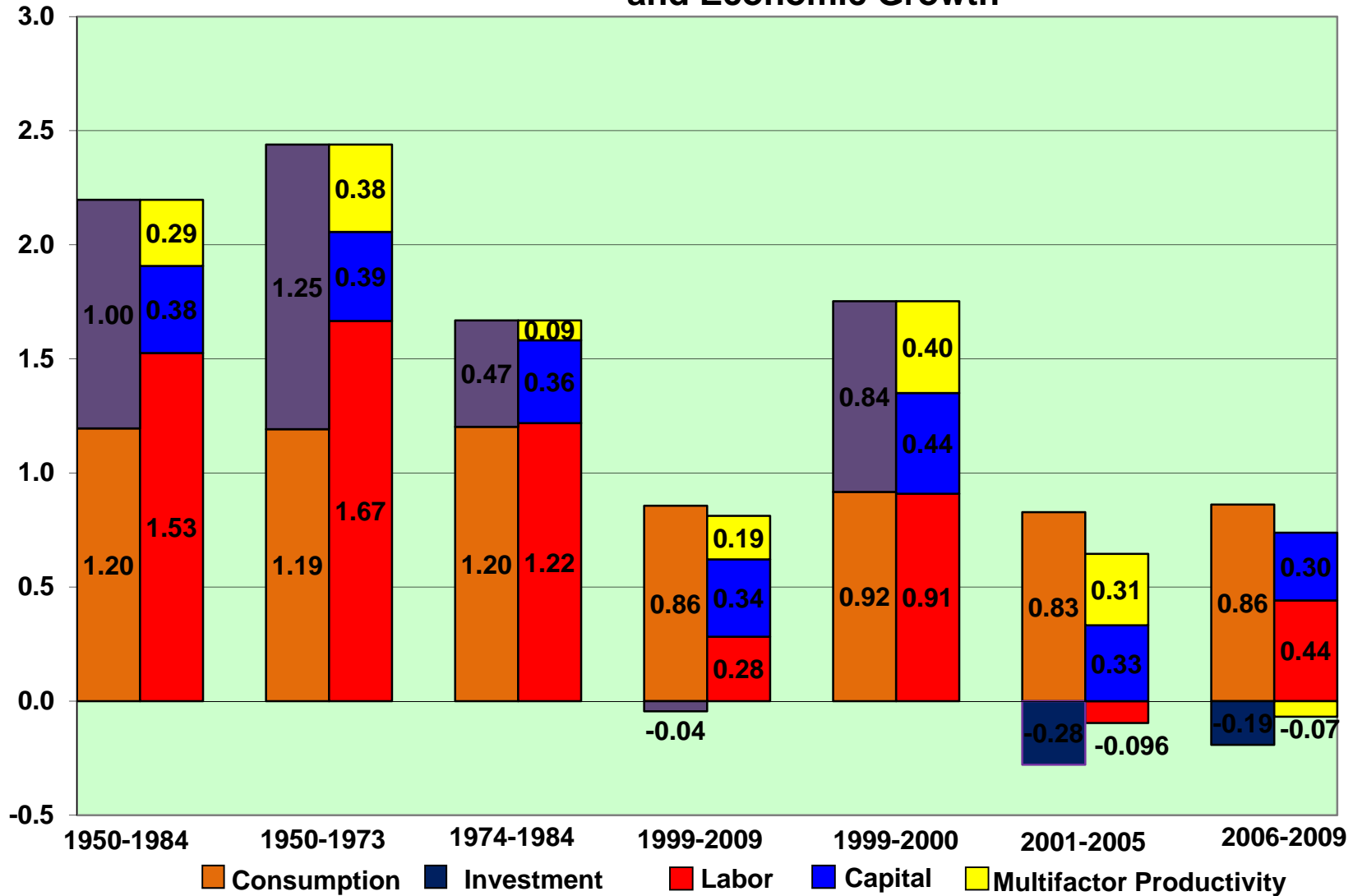


Table 4 Full Private National Labor and Gross Private National Property Income, United States, 1982 and 2009 (billions of dollars)

Labor Income			1982	2009
1		Private domestic outlay for labor services (line 1 plus line 2 of the Factor Outlay account in table 1)	1,668.2	6,958.4
2	+	Income originating in general government (table 1.13, line 56)	346.8	1,517.4
3	+	Compensation of employees in government enterprises (table 1.13, line 37)	42.1	148.8
4	+	Compensation of employees, rest-of-world (table 1.13, line 61)	-0.2	-7.8
5	-	Personal income taxes attributed to labor income (imputation)	261.9	843.1
6	=	Private national labor income	<u>1,795.0</u>	<u>7,773.7</u>
7	+	Nonmarket labor income (sum of lines 18-21 of the Product account in table 1)	8,513.1	39,658.7
8	=	Full private national labor income	<u>10,308.1</u>	<u>47,432.4</u>
Property Income			1982	2009
1		Gross domestic private outlay for capital services (imputation)	1,347.5	6,058.1
2	+	Capital income originating in the rest-of-world (imputation)	36.5	155.0
3	+	Personal interest income (table 2.1, line 14)	463.7	1,263.9
4	-	Net interest and miscellaneous payments on assets (table 1.7.5, line 20)	277.5	563.1
5	+	Government rents and royalties (table 3.2, line 15 plus table 3.3, line 15)	8.6	18.2
6	-	Personal interest payments to business (table 2.1, line 30)	59.3	273.9
7	+	Investment income of social insurance funds less transfers to general government (table 3.14, line 8 plus line 22, minus lines 11 and 24)	1.9	123.8
8	+	Rest-of-world contributions to government social insurance (table 3.6, line 32)	1.2	5.0
9	-	Corporate profits tax liability (table 3.2 line 7 plus table 3.3 line 10)	63.0	246.0
10	-	Personal property taxes (table 3.4, sum of lines 18, 19, and 20)	7.3	28.2
11	-	Business property taxes (line 4 from this paper's Factor Outlay account in table 1)	103.8	511.0
12	-	Personal income taxes attributed to property income (imputation)	85.0	273.6
13	-	Federal estate and gift taxes (table 5.11, line 19)	7.5	20.6
14	-	State and local estate and gift taxes (table 5.11, line 20)	2.6	4.3
15	-	Business transfer payments to foreigners (table 4.1, line 28)	3.4	21.2
16	-	Rents and royalties received by the Federal government (table 3.2, line 15)	5.1	7.0
17	-	Rents and royalties received by state and local governments (table 3.3, line 15)	3.5	11.2
18	-	Dividends received by government (table 3.1, line 10)	0.2	20.9
19	=	Gross private national property income	<u>1,241.2</u>	<u>5,643.1</u>

Note: Totals may differ slightly from the sums due to rounding.

Table 5 Full Private National Income, rates of growth, 1949-1984, 1998-2009

	1949- 1984	1949- 1973	1973- 1984	1998- 2009	1998- 2000	2000- 2005	2005- 2009
Full national income:							
Nominal dollar	0.0734	0.0675	0.0864	0.0320	0.0503	0.0204	0.0373
Quantity	0.0193	0.0205	0.0167	0.0072	0.0119	0.0025	0.0108
Quantity per capita	0.0062	0.0059	0.0070	-0.0043	-0.0097	-0.0068	0.0014
Price	0.0541	0.0470	0.0697	0.0247	0.0379	0.0179	0.0266
Full labor income:							
Nominal dollar	0.0723	0.0675	0.0827	0.0296	0.0529	0.0170	0.0336
Quantity	0.0173	0.0189	0.0138	0.0041	0.0096	-0.0005	0.0071
Quantity per capita	0.0042	0.0043	0.0041	-0.0074	-0.0120	-0.0098	-0.0023
Price	0.0550	0.0485	0.0689	0.0254	0.0431	0.0174	0.0266
Full property income:							
Nominal dollar	0.0839	0.0670	0.1208	0.0552	0.0195	0.0575	0.0700
Quantity	0.0401	0.0382	0.0443	0.0394	0.0375	0.0360	0.0446
Quantity per capita	0.0270	0.0236	0.0346	0.0279	0.0159	0.0267	0.0353
Price	0.0438	0.0288	0.0764	0.0158	-0.0180	0.0216	0.0254

Table 6 Full Gross Private National Consumer Receipts and Expenditures, United States, 1982 and 2009 (billions of dollars)

Receipts			1982	2009
1		Gross private domestic factor outlay (line 4 of the Factor Outlay account of table 1)	3,015.9	13,016.6
2	+	Income originating in rest-of-world (table 6.1, line 82)	36.5	147.2
3	+	Compensation of employees in general government and government enterprises	388.9	1,666.2
4	+	Investment income of social insurance funds less transfers to general government (table 3.14, line 8 plus line 22, minus lines 11 and 24)	1.9	123.8
5	+	Rest-of-world contributions to government social insurance (table 3.6, line 32)	1.2	5.0
6	+	Personal interest income (table 2.1, line 14)	463.7	1,263.9
7	-	Net interest and miscellaneous payments on assets (table 1.7.5, line 20)	277.5	563.1
8	+	Government rents and royalties (table 3.2, line 15 plus table 3.3, line 15)	8.6	18.2
9	-	Personal interest payments to business (table 2.1, line 30)	59.3	273.9
10	-	Corporate profits tax liability (table 3.2, line 7 plus table 3.3, line 10)	63.0	246.0
11	-	Personal property taxes (table 3.4, sum of lines 18, 19, and 20)	7.3	28.2
12	-	Business property taxes (line 4 from this paper's Factor Outlay account in table 1)	103.8	511.0
13	-	Personal tax and nontax payments (table 2.1, line 24)	346.9	1,116.7
14	-	Federal estate and gift taxes (table 5.11, line 19)	7.5	20.6
15	-	State and local estate and gift taxes (table 5.11, line 20)	2.6	4.3
16	-	Business transfer payments to foreigners (table 4.1, line 28)	3.4	21.2
17	-	Rents and royalties received by the Federal government (table 3.2, line 15)	5.1	7.0
18	-	Rents and royalties received by state and local governments (table 3.3, line 15)	3.5	11.2
19	-	Dividends received by government (table 3.1, line 10)	0.2	20.9
20	=	Gross private national income	3,036.5	13,416.7
21	+	Nonmarket labor income (sum of lines 18-21 from this paper's Product account in table 1)	8,513.1	39,658.7
22	=	Full gross private national income	11,549.6	53,075.4
23	+	Government transfer payments to persons other than benefits from social insurance funds	97.2	757.3
24	+	Government net purchases of nonproduced assets (table 3.1, line 36)	-1.5	3.4
25	+	Capital transfer payments to persons and financial stabilization payments (table 5.11 sum of lines 12-14)	0.2	142.9
26	=	Full gross private national consumer receipts	11,645.5	53,979.0
Expenditures			1982	2009
1		Personal consumption expenditures (table 1.1.5, line 2)	2,073.9	9,842.9
2	-	Personal consumption expenditures, durable goods (table 1.1.5, line 4)	253.0	1,023.3
3	+	Imputation for nonhuman capital services (line 16 of the Product account in table 1)	298.9	1,234.6
4	=	Private national consumption expenditure	2,119.8	10,054.2
5	+	Consumption of nonmarket goods and services	3,944.5	12,311.0
6	=	Full private national consumption expenditure	6,064.3	22,365.2
7	+	Personal transfer payments to foreigners (table 2.1, line 33)	6.7	66.1
8	+	Current Transfer Receipts from persons (table 3.1, line 13)	7.1	83.5
9	=	Full private national consumer outlays	6,078.1	22,514.8
10	+	Full gross private national saving (line 11 of the Saving account in table 8)	5,567.6	31,464.2
11	=	Full private national consumer expenditures	11,645.5	53,979.0

Note: Totals may differ slightly from the sums due to rounding.

By sub periods, price growth is almost always greater, and usually significantly higher, than quantity growth in the expenditure component and in the consumer outlays and saving subcomponents (see table 7). The only subcomponent and sub period for which quantity growth is greater than price growth is the consumer outlays subcomponent for the 1998-2000 sub period.

The fourth account is the gross private national capital accumulation account (see table 8). This account, as well as demonstrating how full gross private national saving is equal to gross private national capital formation, derives net private national saving and change in private national wealth (see the Saving part of table 8). Depreciation experienced the greatest relative change between 1982 and 2009 in any of the sub components which show the relationship between gross private national saving and change in private national wealth. The 2009 estimates for gross private national saving, human capital saving, and full gross private national saving are all four to six times the corresponding 1982 estimates, however the 2009 estimate for depreciation is well over nine times the corresponding 1982 estimate. As previously noted, human capital depreciation has risen significantly with the aging of the baby-boomer population. Accordingly, the 2009 estimate for net private national saving is only just over two times the corresponding 1982 estimate. As the 2009 estimate for revaluation, which is added to net saving, is just over 1.5 times the 1982 estimate, the 2009 estimate for change in private national wealth is between 1.5 and 2 times the 1982 estimate.

By sub periods, given the relative changes in the magnitudes, it is not surprising that the full net saving quantity growth is negative for all sub periods except for 1949-1984 and 1949-1973 (see table 9). If it were not for the strong growth in the 1949-1973 sub period, the 1949-1984 sub period growth would also be negative. In the 2000-2005 sub period, even the full net saving price growth is negative. With low rates of quantity growth for all components for all sub periods beginning in 1998 or after, quantities per capita growth are all negative as well with one exception: full depreciation in the 2005-2009 sub period.

Figure 10 shows negative contributions for net saving for all periods beginning in 1974 or after as contributions are weighted quantity rates of growth. As full gross private saving is the aggregate, depreciation has a positive contribution. However, this perspective changes when looking at net saving, which is probably the more relevant aggregate. Depreciation contribution is particularly large during the two sub periods when economic growth was lower: 1974-1984 and 2006-2009. During the 2006-2009 sub period, unemployment was high and labor force participation declined, both factors reducing gross and net human saving, the latter due to human depreciation increasing. The human saving quantity reached its maximum for the broader sub period 1999-2005 in 2000, at the end of the “IT Boom” period (see appendix table 16). Accordingly, it is not surprising that the contribution of human saving is a large negative during the 2001-2005 sub period. In this sub period, the contribution of total saving is not appreciably different from zero.

Table7 Full Private National Expenditures, rates of growth, 1949-1984, 1998-2009

	1949- 1984	1949- 1973	1973- 1984	1998- 2009	1998- 2000	2000- 2005	2005- 2009
Full expenditures:							
Nominal dollar	0.0735	0.0675	0.0865	0.0327	0.0504	0.0212	0.0383
Quantity	0.0224	0.0247	0.0175	0.0105	0.0145	0.0084	0.0111
Quantity per capita	0.0093	0.0101	0.0078	-0.0011	-0.0071	-0.0009	0.0018
Price	0.0510	0.0427	0.0692	0.0222	0.0357	0.0129	0.0272
Full consumer outlays:							
Nominal dollar	0.0736	0.0653	0.0915	0.0481	0.0524	0.0461	0.0485
Quantity	0.0243	0.0246	0.0235	0.0216	0.0277	0.0221	0.0178
Quantity per capita	0.0112	0.0100	0.0138	0.0100	0.0061	0.0128	0.0085
Price	0.0493	0.0407	0.0681	0.0265	0.0248	0.0240	0.0305
Full saving:							
Nominal dollar	0.0733	0.0697	0.0813	0.0231	0.0493	0.0061	0.0312
Quantity	0.0206	0.0248	0.0114	0.0038	0.0074	0.0001	0.0066
Quantity per capita	0.0075	0.0102	0.0016	-0.0077	-0.0142	-0.0092	-0.0027
Price	0.0527	0.0449	0.0699	0.0193	0.0415	0.0061	0.0247

Table 8 Full Gross Private National Capital Accumulation and Saving, United States, 1982 and 2009 (billions of dollars)

Saving			1982	2009
1		Gross private saving NIPA (table 5.1, line 43)	783.7	3,150.7
2	+	Personal consumption expenditures, durable goods (line 2 of the Expenditures account in table 18)	253.0	1,023.3
3	+	Surplus, social insurance funds (table 3.14 ,line 1 plus line 16 minus lines 10 and 23)	-33.1	-251.0
4	+	Statistical discrepancy (table 5.1, line 42)	6.8	72.2
5	-	Taxes on wealth (Estate and gift taxes, table 5.11 line 18)	10.1	24.9
6	+	Government net purchases of nonproduced assets (table 3.1, line 36)	-1.5	3.4
7	+	Capital transfer payments to persons and financial stabilization payments (table 5.11, sum of lines 12-14)	0.2	142.9
8	=	Gross private national saving	999.0	4,116.5
9	+	Human capital saving (sum of lines 19-21 of the Product account in table 1)	4,568.6	27,347.7
10	=	Full gross private national saving	5,567.6	31,464.2
11	-	Depreciation*	2,624.8	25,060.4
12	=	Net private national saving	2,942.8	6,403.8
13	+	Revaluation*	10,643.00	16,509.8
14	=	Change in private national wealth	13,585.8	22,913.6
Capital Formation			1982	2009
1		Gross private domestic investment excluding intellectual property products (table 1.1.5, line 7 minus line 12)	508.3	1327.2
2	+	Intellectual property products (table 1.1.5, line 12)	72.7	550.9
3	+	Personal consumption expenditures, durable goods (line 2 of the Expenditures account in table 18)	253.0	1,023.3
4	+	Net lending of federal government (table 3.2, line 45)	185.4	1,476.7
5	+	Net lending of state and local governments (table 3.3, line 38)	16.1	371.4
6	-	Deficit, federal social insurance funds (table 3.14, line 10 minus line 1)	34.3	253.1
7	-	Deficits, state and local social insurance funds (table 3.14, line 23 minus line 16)	-1.2	-2.1
8	+	Net foreign investment (Table 4.1, line 29)	-3.4	-381.7
9	=	Gross private national capital formation	999.0	4,116.5
10	+	Gross private national human capital formation (sum of lines 19-21 of the Product account in table 1)	4,568.6	27,347.7
11	=	Full gross private national capital formation	5,567.6	31,464.2

Note: Totals may differ slightly from the sums due to rounding.

* For 1982, depreciation and revaluation are taken directly from the original 1989 paper; human and nonhuman depreciation and revaluation are not available separately for that year.

Table 9 Full Gross Private National Saving, rates of growth, 1949-1984, 1998-2009

	1949- 1984	1949- 1973	1973- 1984	1998- 2009	1998- 2000	2000- 2005	2005- 2009
Full gross saving:							
Nominal dollar	0.0733	0.0697	0.0813	0.0231	0.0493	0.0061	0.0312
Quantity	0.0206	0.0248	0.0114	0.0038	0.0074	0.0001	0.0066
Quantity per capita	0.0075	0.0102	0.0016	-0.0077	-0.0142	-0.0092	-0.0027
Price	0.0527	0.0449	0.0699	0.0193	0.0415	0.0061	0.0247
Full net saving:							
Nominal dollar	0.0674	0.0690	0.0639	0.0142	0.0102	-0.0248	0.0649
Quantity	0.0157	0.0253	-0.0053	-0.0234	-0.0025	-0.0148	-0.0446
Quantity per capita	0.0026	0.0107	-0.0150	-0.0349	-0.0240	-0.0240	-0.0540
Price	0.0517	0.0437	0.0692	0.0376	0.0127	-0.0100	0.1096
Full depreciation:							
Nominal dollar	0.0816	0.0709	0.1049	0.0255	0.0600	0.0135	0.0233
Quantity	0.0269	0.0237	0.0341	0.0099	0.0107	0.0041	0.0168
Quantity per capita	0.0139	0.0090	0.0244	-0.0016	-0.0109	-0.0052	0.0075
Price	0.0546	0.0471	0.0709	0.0156	0.0497	0.0092	0.0066

Figure 10 Contributions to Full Gross Private National Saving

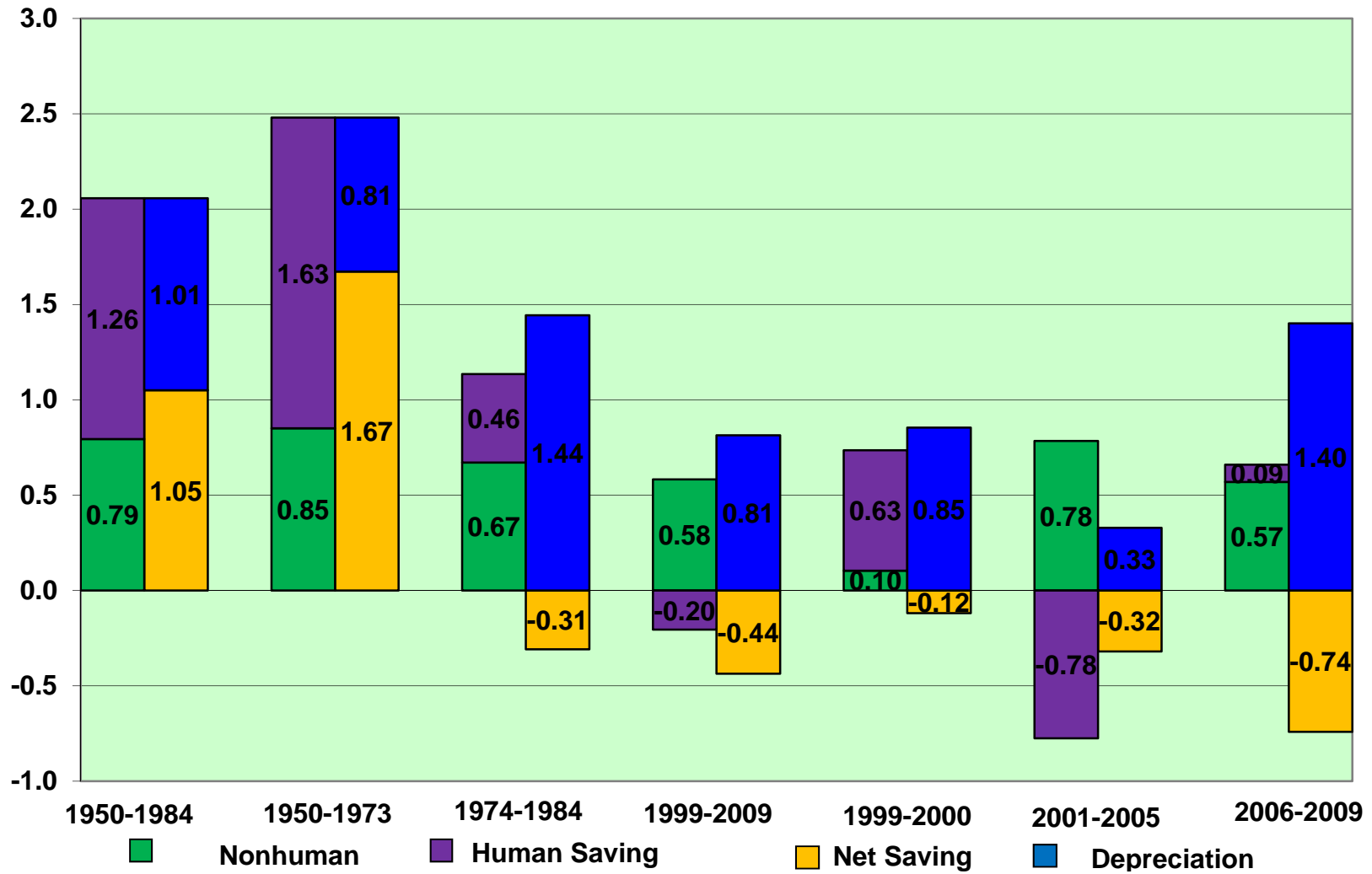


Figure 11 combines information from the income account of table 4, the full private consumer outlays component of table 6, and the net private national saving component of table 8. In this figure, growth in the level of living is the difference between growth rates of expenditures and incomes. Total growth is the highest in the 1950-1973 sub period. Half of the subcomponents experience a maximum contribution in this sub period: labor income, level of living, and net saving. In all sub periods starting in 1973 or after, as just described, the contribution of net saving is negative. The contribution of market consumption is the highest over all sub periods in 1999-2000 at the end of the “IT Boom” period, and continues to be an important contributor in the 2001-2005 sub period before reaching its minimum during the 2006-2009 Great Recession and slow recovery sub period. The level of living contribution is even negative during this last sub period. The contribution of market consumption, which is the contribution of time in household production and leisure, is lower in all sub periods beginning in 1999 than in all previous sub periods.

The fifth, and last account, is for full private national wealth (see table 10). Using either nominal shares or contributions to examine subcomponents of wealth, the magnitudes for human wealth clearly dominate (see figures 8 and 12 and appendix table 22). The magnitudes of private domestic tangible assets, which are clearly larger than the magnitudes of net claims on governments and the rest-of-the world, are small compared to the magnitude for human wealth. Tangible assets represent clearly less than 10 percent of full private national wealth.

By sub periods (see table 11), price growth is almost always greater than quantity growth. Both exceptions are for nonhuman wealth. In the sub period 1949-1973, nonhuman wealth price and quantity grow at a relatively strong rate (approximately between three and four percent), with quantity growth being greater. In the sub period 2005-2009, the nonhuman wealth price decreased at a very large rate. For human wealth, in the earlier period, 1949-1984, the difference between the price rate of growth and the quantity rate of growth is over three and one-half percentage points; in the later period, 1998-2009, this difference fell by over one percentage points.

The final figure (see figure 12) shows the contribution of nonhuman versus human wealth to growth in full private national wealth. The significant variation in growth in sub period 1950-1973 compared to 1974-1984 can be attributed to the contribution of human wealth, which is well over one percent in each of these sub periods. The contribution of human wealth to growth in total wealth continued to be strong in all later sub periods, but it is always less than one percent. As figure 1 illustrates, average educational attainment for those aged 15 through 74 increased at a rapid rate from 1950 to 1980, with the rate of increase substantially slowing from 1980 to 2010. In the earlier three sub periods and again in 2001-2005, nonhuman wealth contributes .25 percentage points to growth in total wealth. Its contribution is less in 1999-2009, 1999-2000 and 2006-2009. The decrease in both the contribution of human and nonhuman

Figure 11 Contributions to Full Private National Expenditure and Income

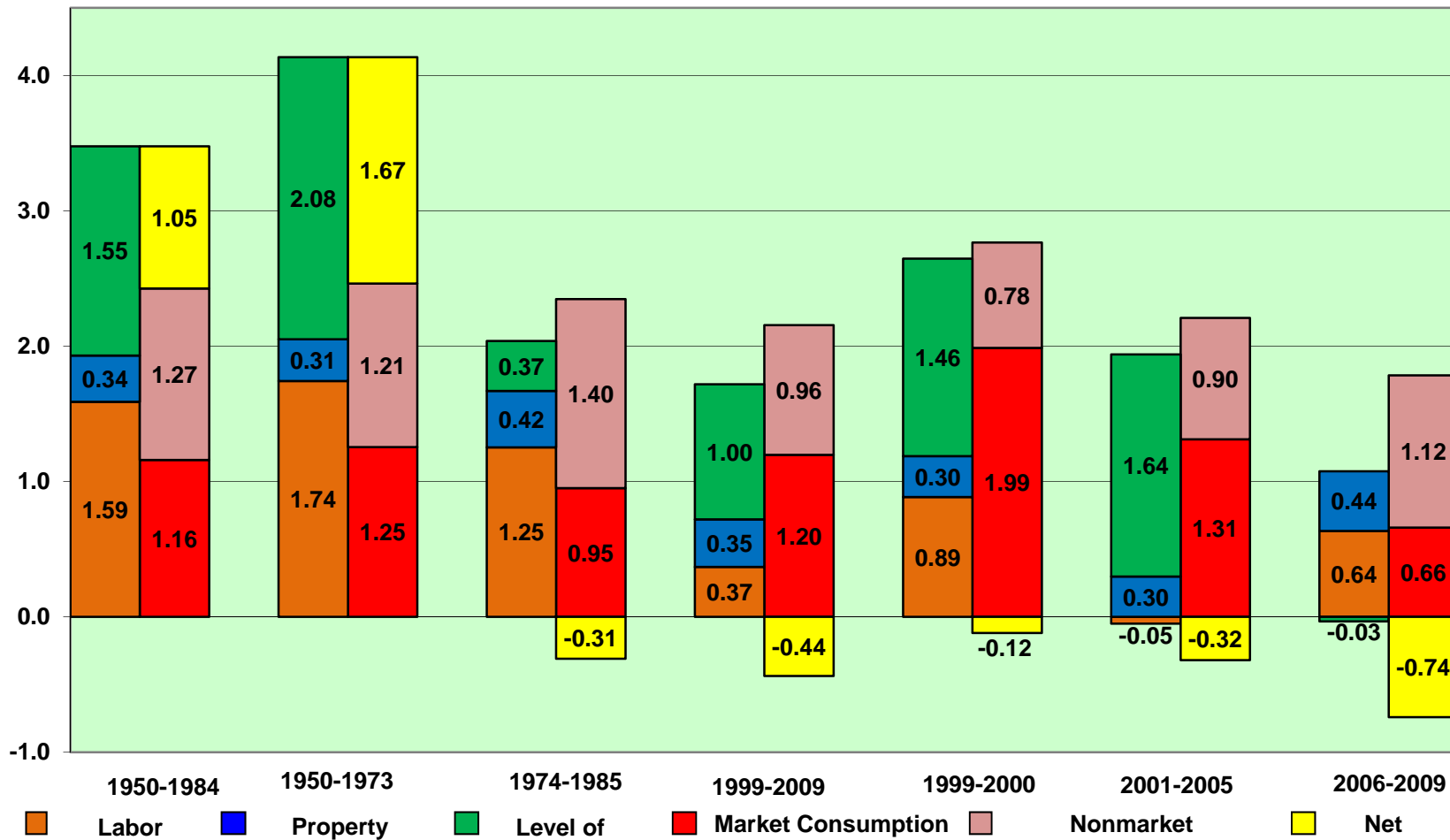


Table 10 Full Private National Wealth, United States, 1982 and 2009 (billions of current dollars)

				1982	2009
1			Private domestic tangible assets	13,127.0	52,657.8
			Net claims on federal, state, and local governments		
2	+	a.	Federal, monetary	171.4	1,842.6
		(i)	+ Vault cash of commercial banks ^a	19.6	54.9
		(ii)	+ Member bank reserves ^a	26.5	977.0
		(iii)	+ Currency outside banks ^a	136.6	873.3
		(iv)	+ Par to market value adjustment (imputation)	-11.3	-62.7
3	+	b.	Federal, nonmonetary	1,231.3	6,072.0
		(i)	+ U.S. government total liabilities ^a	1,796.8	11,003.5
		(ii)	- U.S. government financial assets ^a	283.3	1,387.1
		(iii)	+ Net liabilities, federally-sponsored credit agencies ^a	-6.4	-71.4
		(iv)	+ Assets of social insurance funds ^b	65.7	2,915.4
		(v)	- U.S. government liabilities to rest-of-world ^c	177.4	4,478.6
		(vi)	+ U.S. government credits and claims abroad ^c	99.7	202.2
		(vii)	- Monetary liabilities	182.7	1,905.2
		(viii)	+ Par to market value adjustment (imputation)	-81.1	-206.6
4	+	c.	State and local	147.6	1,840.1
		(i)	+ State and local total liabilities ^a	578.3	4,714.6
		(ii)	- State and local financial assets ^a	392.7	2,662.0
		(iii)	+ Par to market value adjustment (imputation)	-38.1	-212.4
5	+		Net claims on the rest-of-world	247.8	1,436.8
		a.	Private U.S. assets and investments abroad ^c	793.1	15,025.6
		b.	- Private U.S. liabilities to foreigners ^c	545.3	13,588.8
6	=		Private national nonhuman wealth	14,925.0	63,849.3
7	+		Private national human wealth	166,990.4	616,779.1
8	=		Full private national wealth	181,915.4	680,628.4

Note: Totals may differ slightly from the sums due to rounding.

^a Board of Governors of the Federal Reserve System, *Flow of Funds Accounts*, various issues.

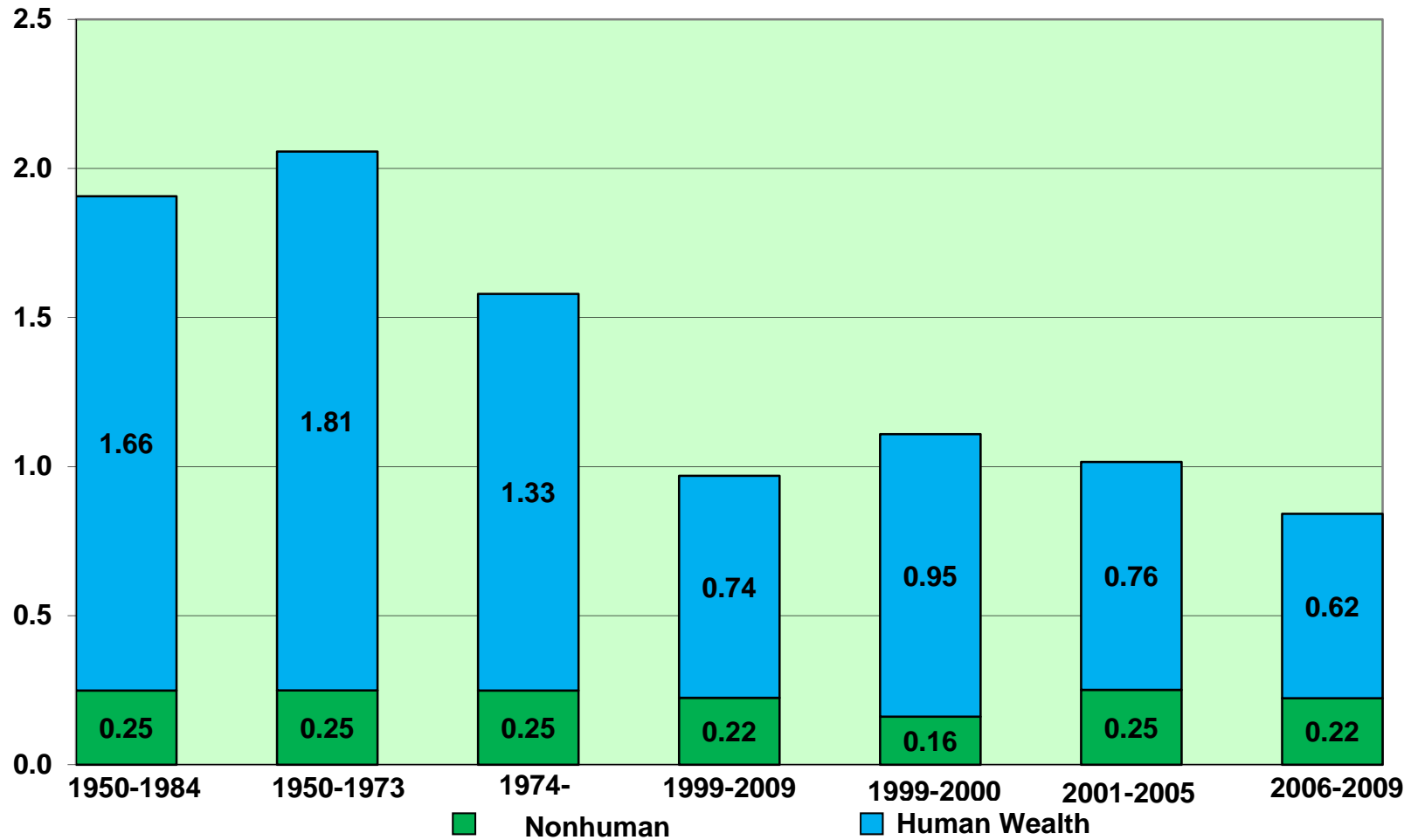
^b U. S. Department of Treasury, *Treasury Bulletin*, February issues.

^c "The International Investment Position of the United States," *Survey of Current Business*, various issues.

Table 11 Full Private National Wealth, rates of growth, 1949-1984, 1998-2009

	1949- 1984	1949- 1973	1973- 1984	1998- 2009	1998- 2000	2000- 2005	2005- 2009
Full wealth:							
Nominal dollar	0.0725	0.0684	0.0815	0.0418	0.0492	0.0464	0.0323
Quantity	0.0191	0.0206	0.0158	0.0097	0.0111	0.0102	0.0084
Quantity per capita	0.0060	0.0059	0.0061	-0.0018	-0.0105	0.0009	-0.0009
Price	0.0536	0.0480	0.0658	0.0320	0.0377	0.0363	0.0239
Human wealth:							
Nominal dollar	0.0721	0.0686	0.0797	0.0411	0.0461	0.0403	0.0398
Quantity	0.0178	0.0194	0.0144	0.0083	0.0104	0.0085	0.0070
Quantity per capita	0.0047	0.0048	0.0046	-0.0032	-0.0112	-0.0007	-0.0024
Price	0.0543	0.0492	0.0653	0.0328	0.0357	0.0318	0.0328
Nonhuman wealth:							
Nominal dollar	0.0776	0.0655	0.1041	0.0484	0.0808	0.0980	-0.0299
Quantity	0.0354	0.0362	0.0337	0.0219	0.0179	0.0246	0.0205
Quantity per capita	0.0223	0.0216	0.0239	0.0104	-0.0037	0.0154	0.0112
Price	0.0421	0.0292	0.0701	0.0264	0.0627	0.0734	-0.0505

Figure 12 Contributions to Full Private National Wealth



wealth results in total growth in the later period being almost always at least one percentage point lower than in the earlier period.

Conclusion

Without looking at a set of national accounts with integrated human capital components, researchers, analysts, and policy-makers will have an incomplete picture of economic growth. Major economic trends are very much evident in the results: the slowdown in the sub period 1974- 1984 relative to the sub period 1950-1984, the rebound in the sub period 1999-2000 at the end of the “IT Boom” period, another slowdown in the sub period 2001-2005, followed by a weak economy in the sub period 2006-2009. The benefit from integrating human capital components most clearly comes from quantification of the impact of an end to the gains in average educational attainment and female labor force participation and the greying of America. Recently, in a number of countries including China and India, the average educational attainment of the young aged 25 through 34 have substantially surpassed the average educational attainment of the older aged 55 through 64.²³ By contrast, in 2010 the average educational attainment of the young in the United States is barely above the average educational attainment of older individuals.²⁴ A typical situation is for sub period price growth to be larger than quantity growth. The contribution of net saving is negative in all sub periods beginning on or after 1974 and depreciation more than doubled as a share of gross saving between 1949 and 2009 (see appendix table 19).²⁵ What does it mean in a world economy to have price growth to be larger than quantity growth? How will the decrease in the contribution of human capital play out in the future? Will the economies of many other countries, particularly emerging countries, continue to catch up, and if so, at what pace? Does this mean that the United States government should be encouraging policies to increase investment in human capital? The answers to these questions are unknown, but they can best be explored using accounts which include human capital components.

²³ See Fraumeni and Liu (2014).

²⁴ See the Barro-Lee data set (Barro and Lee, 2013b).

²⁵ For all years, 1998 through 2009, human depreciation is approximately 90 percent of total depreciation.

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Appendix

All of the time series tables in the original Jorgenson and Fraumeni 1989 accumulation paper are reproduced here, revised and updated, and with the addition of the 1998-2009 period.

Appendix Table 1 Full Investment (billions of dollars)

Year	Full investment	Human investment	Nonhuman investment	Human share	Nonhuman share
1948	467.8	392.9	74.9	0.840	0.160
1949	481.1	415.5	65.6	0.864	0.136
1950	530.4	441.3	89.1	0.832	0.168
1951	571.7	477.2	94.5	0.835	0.165
1952	597.4	508.9	88.5	0.852	0.148
1953	658.7	563.7	95.0	0.856	0.144
1954	699.5	607.6	91.9	0.869	0.131
1955	750.4	635.9	114.5	0.847	0.153
1956	796.4	678.6	117.8	0.852	0.148
1957	873.8	755.2	118.6	0.864	0.136
1958	930.0	819.5	110.5	0.881	0.119
1959	977.0	846.5	130.5	0.866	0.134
1960	1,016.8	884.7	132.1	0.870	0.130
1961	1,083.3	952.5	130.8	0.879	0.121
1962	1,142.6	996.1	146.5	0.872	0.128
1963	1,188.8	1,031.3	157.5	0.868	0.132
1964	1,312.2	1,140.5	171.7	0.869	0.131
1965	1,389.2	1,193.2	196.0	0.859	0.141
1966	1,484.1	1,268.3	215.8	0.855	0.145
1967	1,572.4	1,355.7	216.7	0.862	0.138
1968	1,708.5	1,466.7	241.8	0.858	0.142
1969	1,847.1	1,582.9	264.2	0.857	0.143
1970	2,056.2	1,796.2	260.0	0.874	0.126
1971	2,328.9	2,029.6	299.3	0.871	0.129
1972	2,412.9	2,068.3	344.6	0.857	0.143
1973	2,567.7	2,170.2	397.5	0.845	0.155
1974	2,801.8	2,397.1	404.7	0.856	0.144
1975	3,121.7	2,722.2	399.5	0.872	0.128
1976	3,309.3	2,817.4	491.9	0.851	0.149
1977	3,635.9	3,047.3	588.6	0.838	0.162
1978	3,812.9	3,121.1	691.8	0.819	0.181
1979	4,311.2	3,545.2	766.0	0.822	0.178
1980	4,731.3	3,974.7	756.6	0.840	0.160
1981	5,164.6	4,289.4	875.2	0.831	0.169
1982	5,402.8	4,568.6	834.2	0.846	0.154
1983	5,775.5	4,843.1	932.4	0.839	0.161
1984	6,285.5	5,123.2	1,162.3	0.815	0.185
1998	24,513.5	21,998.8	2,514.7	0.897	0.103
1999	25,741.2	23,001.5	2,739.7	0.894	0.106
2000	27,307.7	24,361.5	2,946.2	0.892	0.108
2001	24,984.9	22,114.8	2,870.1	0.885	0.115
2002	25,948.5	23,038.0	2,910.5	0.888	0.112
2003	27,056.4	24,010.9	3,045.5	0.887	0.113
2004	29,943.3	26,586.8	3,356.5	0.888	0.112
2005	27,917.3	24,263.1	3,654.2	0.869	0.131
2006	30,322.8	26,486.0	3,836.8	0.873	0.127
2007	28,368.7	24,540.3	3,828.4	0.865	0.135
2008	29,970.8	26,443.7	3,527.1	0.882	0.118
2009	30,249.0	27,347.7	2,901.3	0.904	0.096

Appendix Table 2 Full Investment (billions of constant dollars)

Year	Full investment		Human investment*		Nonhuman investment	
	Quantity	Price	Quantity	Price	Quantity	Price
1949	2,944.1	0.164	2,669.1	0.156	278.3	0.236
1950	3,094.4	0.171	2,686.5	0.164	372.3	0.239
1951	3,145.6	0.182	2,756.9	0.173	361.0	0.262
1952	3,162.2	0.189	2,812.6	0.181	335.2	0.264
1953	3,258.1	0.202	2,878.3	0.196	359.4	0.264
1954	3,320.4	0.211	2,956.1	0.206	348.9	0.263
1955	3,497.9	0.215	3,032.9	0.210	431.5	0.265
1956	3,562.2	0.223	3,106.6	0.218	425.3	0.277
1957	3,666.3	0.238	3,226.6	0.234	414.2	0.286
1958	3,712.0	0.250	3,312.7	0.247	381.2	0.290
1959	3,832.3	0.255	3,356.2	0.252	448.3	0.291
1960	3,916.9	0.259	3,438.3	0.257	451.2	0.293
1961	4,028.2	0.269	3,556.0	0.268	446.1	0.293
1962	4,136.2	0.276	3,606.4	0.276	499.8	0.293
1963	4,263.0	0.279	3,694.2	0.279	536.6	0.294
1964	4,404.0	0.298	3,790.0	0.301	580.2	0.296
1965	4,488.2	0.309	3,797.7	0.314	658.4	0.298
1966	4,532.6	0.328	3,786.3	0.335	717.9	0.301
1967	4,583.1	0.343	3,851.1	0.352	700.5	0.309
1968	4,722.6	0.362	3,941.8	0.372	752.3	0.321
1969	4,889.3	0.378	4,072.2	0.389	788.9	0.335
1970	5,000.4	0.411	4,218.3	0.426	743.4	0.350
1971	5,187.0	0.449	4,335.4	0.468	821.6	0.364
1972	5,194.2	0.465	4,268.6	0.485	916.4	0.376
1973	5,242.5	0.490	4,240.4	0.512	1,012.9	0.392
1974	5,201.8	0.539	4,253.6	0.564	944.7	0.428
1975	5,184.7	0.602	4,323.7	0.630	831.2	0.481
1976	5,307.3	0.624	4,328.4	0.651	977.5	0.503
1977	5,497.1	0.662	4,418.0	0.690	1,096.6	0.537
1978	5,613.1	0.680	4,447.7	0.702	1,199.0	0.577
1979	5,671.9	0.760	4,487.8	0.790	1,219.6	0.628
1980	5,649.8	0.838	4,560.3	0.872	1,101.2	0.687
1981	5,725.7	0.902	4,575.7	0.937	1,174.0	0.745
1982	5,612.5	0.963	4,568.6	1.000	1,046.1	0.797
1983	5,678.0	1.017	4,543.7	1.066	1,159.2	0.804
1984	5,854.0	1.074	4,510.4	1.136	1,432.1	0.812
1998	30,538.6	0.803	28,027.9	0.785	2,635.3	0.954
1999	29,999.7	0.858	27,184.6	0.846	2,887.6	0.949
2000	31,439.2	0.868	28,421.3	0.857	3,086.8	0.954
2001	29,932.6	0.835	26,998.7	0.819	2,992.0	0.959
2002	30,316.5	0.856	27,307.6	0.844	3,062.9	0.950
2003	30,404.2	0.890	27,224.1	0.882	3,219.6	0.946
2004	30,865.2	0.970	27,397.0	0.970	3,501.4	0.959
2005	30,908.8	0.903	27,221.3	0.891	3,710.9	0.985
2006	32,552.7	0.932	28,773.5	0.921	3,813.2	1.006
2007	28,706.3	0.988	24,933.7	0.984	3,777.3	1.014
2008	28,846.7	1.039	25,383.7	1.042	3,469.3	1.017
2009	30,249.0	1.000	27,347.7	1.000	2,901.3	1.000

* The level of prices and quantities are not comparable before and after the break in the time series; however, growth rates are comparable. The earlier period has 1982 as the base year; the later period has 2009 as its base year.

Appendix Table 3 Full Gross Private Domestic Product (billions of dollars)

Year	Full product	Full consumption	Full investment	Consumption share	Investment share
1948	982.5	505.6	476.9	0.515	0.485
1949	1,033.8	540.7	493.1	0.523	0.477
1950	1,107.4	567.3	540.1	0.512	0.488
1951	1,196.9	604.7	592.3	0.505	0.495
1952	1,260.0	633.9	626.1	0.503	0.497
1953	1,377.0	687.2	689.8	0.499	0.501
1954	1,458.7	730.2	728.4	0.501	0.499
1955	1,529.4	752.6	776.8	0.492	0.508
1956	1,615.3	789.4	825.9	0.489	0.511
1957	1,760.6	852.4	908.2	0.484	0.516
1958	1,879.6	914.6	965.0	0.487	0.513
1959	1,953.5	943.7	1,009.9	0.483	0.517
1960	2,030.5	978.6	1,051.9	0.482	0.518
1961	2,166.6	1,044.8	1,121.8	0.482	0.518
1962	2,278.0	1,094.4	1,183.6	0.480	0.520
1963	2,364.6	1,133.6	1,231.0	0.479	0.521
1964	2,592.8	1,237.2	1,355.6	0.477	0.523
1965	2,769.6	1,337.3	1,432.4	0.483	0.517
1966	2,986.6	1,453.2	1,533.4	0.487	0.513
1967	3,177.0	1,551.6	1,625.5	0.488	0.512
1968	3,410.6	1,649.5	1,761.1	0.484	0.516
1969	3,666.6	1,768.5	1,898.1	0.482	0.518
1970	4,071.4	1,963.3	2,108.1	0.482	0.518
1971	4,553.2	2,180.1	2,373.1	0.479	0.521
1972	4,800.8	2,344.9	2,456.0	0.488	0.512
1973	5,202.1	2,586.8	2,615.3	0.497	0.503
1974	5,694.1	2,830.6	2,863.5	0.497	0.503
1975	6,353.4	3,149.0	3,204.4	0.496	0.504
1976	6,843.5	3,455.1	3,388.3	0.505	0.495
1977	7,433.9	3,725.1	3,708.8	0.501	0.499
1978	7,978.8	4,090.5	3,888.3	0.513	0.487
1979	9,008.7	4,599.1	4,409.6	0.511	0.489
1980	9,811.7	4,953.5	4,858.2	0.505	0.495
1981	10,724.0	5,432.5	5,291.5	0.507	0.493
1982	11,528.9	5,995.0	5,533.9	0.520	0.480
1983	12,417.4	6,522.3	5,895.0	0.525	0.475
1984	13,418.4	7,033.5	6,385.0	0.524	0.476
1998	37,588.4	12,990.4	24,598.1	0.346	0.654
1999	39,390.9	13,599.6	25,791.3	0.345	0.655
2000	41,668.7	14,345.2	27,323.5	0.344	0.656
2001	40,166.4	15,122.1	25,044.3	0.376	0.624
2002	41,805.3	15,824.2	25,981.0	0.379	0.621
2003	43,789.7	16,705.5	27,084.3	0.381	0.619
2004	47,120.2	17,203.9	29,916.3	0.365	0.635
2005	45,882.9	18,000.9	27,882.0	0.392	0.608
2006	49,257.7	18,964.3	30,293.4	0.385	0.615
2007	48,490.6	20,085.5	28,405.1	0.414	0.586
2008	51,114.1	20,993.2	30,120.9	0.411	0.589
2009	52,675.2	22,125.7	30,549.5	0.420	0.580

Appendix Table 4 Full Gross Private Domestic Product (billions of constant dollars)

Year	Full product		Full consumption		Full investment	
	Quantity	Price	Quantity	Price	Quantity	Price
1949	6,382.4	0.162	3,503.5	0.154	2,992.2	0.164
1950	6,573.7	0.168	3,561.0	0.159	3,126.1	0.171
1951	6,772.0	0.177	3,659.6	0.165	3,228.3	0.182
1952	6,922.2	0.182	3,753.6	0.169	3,288.6	0.189
1953	7,133.4	0.193	3,858.1	0.178	3,397.7	0.202
1954	7,250.8	0.201	3,926.7	0.186	3,449.2	0.211
1955	7,490.0	0.204	4,003.6	0.188	3,609.0	0.215
1956	7,647.7	0.211	4,096.5	0.193	3,677.6	0.223
1957	7,864.5	0.224	4,195.8	0.203	3,796.2	0.238
1958	8,007.7	0.234	4,296.0	0.213	3,845.1	0.250
1959	8,192.1	0.238	4,370.1	0.216	3,954.6	0.255
1960	8,367.1	0.242	4,451.2	0.220	4,049.6	0.259
1961	8,616.5	0.252	4,583.1	0.228	4,170.8	0.269
1962	8,830.6	0.258	4,684.5	0.233	4,285.1	0.276
1963	9,066.7	0.261	4,791.2	0.236	4,415.4	0.279
1964	9,340.8	0.278	4,922.5	0.251	4,560.3	0.298
1965	9,538.2	0.290	5,047.2	0.265	4,639.0	0.309
1966	9,730.1	0.307	5,192.1	0.280	4,695.2	0.328
1967	9,933.3	0.320	5,336.8	0.291	4,762.2	0.343
1968	10,217.3	0.334	5,490.2	0.300	4,897.8	0.362
1969	10,507.8	0.349	5,626.2	0.314	5,053.8	0.378
1970	10,770.7	0.378	5,788.6	0.339	5,162.3	0.411
1971	11,111.3	0.410	5,969.5	0.365	5,327.2	0.449
1972	11,264.1	0.426	6,141.3	0.382	5,326.5	0.465
1973	11,461.3	0.454	6,292.3	0.411	5,383.5	0.490
1974	11,572.9	0.492	6,444.4	0.439	5,360.2	0.539
1975	11,787.4	0.539	6,679.9	0.472	5,366.0	0.602
1976	12,048.1	0.568	6,847.3	0.505	5,469.0	0.624
1977	12,389.9	0.600	7,014.3	0.531	5,646.2	0.662
1978	12,663.3	0.630	7,176.6	0.570	5,764.5	0.680
1979	12,939.3	0.696	7,386.9	0.622	5,845.2	0.760
1980	13,124.0	0.748	7,590.7	0.652	5,849.4	0.838
1981	13,316.2	0.805	7,738.1	0.702	5,906.7	0.902
1982	13,318.9	0.866	7,900.8	0.759	5,780.8	0.963
1983	13,513.4	0.919	8,063.5	0.809	5,827.6	1.017
1984	13,770.2	0.974	8,168.8	0.861	5,976.8	1.074
1998	48,175.7	0.780	17,241.1	0.753	30,789.0	0.803
1999	47,982.8	0.821	17,689.5	0.769	30,189.1	0.858
2000	49,894.0	0.835	18,182.1	0.789	31,583.5	0.868
2001	48,801.2	0.823	18,622.6	0.812	30,100.5	0.835
2002	49,550.8	0.844	19,035.9	0.831	30,438.9	0.856
2003	50,066.1	0.875	19,484.2	0.857	30,512.7	0.890
2004	50,886.9	0.926	19,909.6	0.864	30,914.4	0.970
2005	51,283.4	0.895	20,312.2	0.886	30,923.6	0.903
2006	53,399.3	0.923	20,783.6	0.912	32,559.4	0.932
2007	50,067.1	0.969	21,314.9	0.943	28,759.2	0.988
2008	50,742.5	1.007	21,737.8	0.966	29,019.8	1.039
2009	52,675.3	1.000	22,125.7	1.000	30,549.5	1.000

Appendix Table 5 Full Labor Outlay (billions of dollars)

Year	Full labor outlay	Market labor outlay	Nonmarket labor outlay	Market share	Nonmarket share
1948	882.7	149.9	732.8	0.170	0.830
1949	933.5	148.2	785.3	0.159	0.841
1950	992.9	161.2	831.7	0.162	0.838
1951	1,068.5	186.3	882.2	0.174	0.826
1952	1,127.9	198.6	929.3	0.176	0.824
1953	1,238.7	212.4	1,026.3	0.171	0.829
1954	1,319.1	212.2	1,106.9	0.161	0.839
1955	1,365.0	223.5	1,141.5	0.164	0.836
1956	1,449.8	238.8	1,211.0	0.165	0.835
1957	1,589.2	254.6	1,334.6	0.160	0.840
1958	1,712.9	260.1	1,452.8	0.152	0.848
1959	1,761.0	274.5	1,486.5	0.156	0.844
1960	1,836.6	286.5	1,550.1	0.156	0.844
1961	1,963.3	294.0	1,669.3	0.150	0.850
1962	2,053.7	311.1	1,742.6	0.151	0.849
1963	2,119.1	321.2	1,797.9	0.152	0.848
1964	2,325.1	343.1	1,982.0	0.148	0.852
1965	2,469.7	367.6	2,102.1	0.149	0.851
1966	2,661.8	407.7	2,254.1	0.153	0.847
1967	2,844.1	432.7	2,411.4	0.152	0.848
1968	3,061.9	476.1	2,585.8	0.155	0.845
1969	3,298.4	520.8	2,777.6	0.158	0.842
1970	3,697.8	555.2	3,142.6	0.150	0.850
1971	4,143.8	592.3	3,551.5	0.143	0.857
1972	4,339.5	649.3	3,690.2	0.150	0.850
1973	4,696.0	734.6	3,961.4	0.156	0.844
1974	5,168.3	803.2	4,365.1	0.155	0.845
1975	5,768.4	864.0	4,904.4	0.150	0.850
1976	6,131.6	949.7	5,181.9	0.155	0.845
1977	6,625.5	1,057.9	5,567.6	0.160	0.840
1978	7,060.5	1,207.0	5,853.5	0.171	0.829
1979	8,019.5	1,383.9	6,635.6	0.173	0.827
1980	8,770.7	1,506.3	7,264.4	0.172	0.828
1981	9,486.6	1,636.2	7,850.4	0.172	0.828
1982	10,181.3	1,668.2	8,513.1	0.164	0.836
1983	10,931.8	1,814.0	9,117.8	0.166	0.834
1984	11,711.8	1,997.7	9,714.1	0.171	0.829
1998	34,095.8	4,623.2	29,472.6	0.136	0.864
1999	35,757.4	4,973.9	30,783.5	0.139	0.861
2000	37,962.4	5,381.6	32,580.8	0.142	0.858
2001	36,468.4	5,608.7	30,859.7	0.154	0.846
2002	37,798.9	5,641.1	32,157.8	0.149	0.851
2003	39,573.7	5,844.9	33,728.8	0.148	0.852
2004	42,716.6	6,183.6	36,533.0	0.145	0.855
2005	40,963.5	6,430.5	34,533.0	0.157	0.843
2006	43,800.6	6,598.4	37,202.2	0.151	0.849
2007	42,944.6	7,174.6	35,770.0	0.167	0.833
2008	45,612.8	7,470.9	38,141.9	0.164	0.836
2009	46,617.1	6,958.4	39,658.7	0.149	0.851

Appendix Table 6 Full Labor Outlay (billions of constant dollars)

Year	Full labor outlay		Market labor outlay		Nonmarket labor outlay*	
	Quantity	Price	Quantity	Price	Quantity	Price
1949	6,617.7	0.141	2,555.2	0.058	4,743.8	0.166
1950	6,718.3	0.148	2,686.7	0.060	4,783.8	0.174
1951	6,867.1	0.155	2,822.7	0.066	4,862.6	0.181
1952	6,987.3	0.161	2,878.3	0.069	4,945.5	0.188
1953	7,150.7	0.173	2,950.0	0.072	5,059.5	0.203
1954	7,254.0	0.182	2,867.6	0.074	5,176.4	0.214
1955	7,410.6	0.184	2,980.0	0.075	5,270.7	0.217
1956	7,564.7	0.191	3,061.5	0.078	5,373.5	0.225
1957	7,762.5	0.205	3,067.5	0.083	5,539.6	0.241
1958	7,891.2	0.217	2,955.7	0.088	5,687.5	0.255
1959	8,014.7	0.220	3,084.3	0.089	5,748.2	0.259
1960	8,168.8	0.225	3,114.1	0.092	5,868.9	0.264
1961	8,383.1	0.235	3,094.7	0.095	6,057.9	0.276
1962	8,520.3	0.241	3,174.5	0.098	6,147.0	0.283
1963	8,710.7	0.243	3,244.4	0.099	6,284.7	0.286
1964	8,894.7	0.262	3,299.0	0.104	6,422.2	0.309
1965	8,993.6	0.275	3,403.7	0.108	6,470.9	0.325
1966	9,092.7	0.292	3,545.2	0.115	6,507.6	0.346
1967	9,244.1	0.307	3,546.7	0.122	6,635.2	0.363
1968	9,440.9	0.324	3,606.8	0.132	6,781.7	0.381
1969	9,690.0	0.340	3,693.6	0.141	6,963.6	0.399
1970	9,920.7	0.373	3,628.8	0.153	7,183.0	0.438
1971	10,174.6	0.407	3,633.7	0.163	7,397.1	0.480
1972	10,227.1	0.425	3,753.2	0.173	7,400.8	0.499
1973	10,319.8	0.455	3,907.4	0.188	7,425.8	0.533
1974	10,450.8	0.494	3,918.0	0.205	7,533.8	0.579
1975	10,629.3	0.543	3,806.2	0.227	7,726.1	0.635
1976	10,782.5	0.569	3,940.7	0.241	7,808.8	0.664
1977	11,033.5	0.601	4,100.4	0.258	7,965.7	0.699
1978	11,213.4	0.630	4,310.7	0.280	8,041.5	0.728
1979	11,440.7	0.701	4,464.2	0.310	8,179.2	0.811
1980	11,616.5	0.755	4,430.3	0.340	8,344.5	0.871
1981	11,751.8	0.807	4,507.4	0.363	8,431.7	0.931
1982	11,809.4	0.862	4,424.9	0.377	8,513.1	1.000
1983	11,887.9	0.919	4,523.7	0.401	8,543.6	1.067
1984	11,990.3	0.976	4,790.6	0.417	8,532.6	1.138
1998	45,038.7	0.76	6680.92	0.69	38331.26	0.77
1999	44,398.7	0.81	6813.56	0.73	37582.72	0.82
2000	45,946.7	0.83	6926.13	0.78	39006.97	0.84
2001	44,638.5	0.82	6856.60	0.82	37773.32	0.82
2002	45,084.5	0.84	6804.70	0.83	38270.36	0.84
2003	45,226.6	0.88	6820.19	0.86	38396.84	0.88
2004	45,659.9	0.94	6947.87	0.89	38704.90	0.94
2005	45,710.9	0.90	7074.26	0.91	38632.25	0.89
2006	47,595.6	0.92	7258.97	0.91	40332.11	0.92
2007	44,002.4	0.98	7373.69	0.97	36630.60	0.98
2008	44,662.6	1.02	7338.80	1.02	37325.13	1.02
2009	46,617.1	1.00	6958.40	1.00	39658.72	1.00

* The level of prices and quantities are not comparable before and after the break in the time series; however, growth rates are comparable. The earlier period has 1982 as the base year; the later period has 2009 as its base year.

Appendix Table 7 Full Gross Private Domestic Outlay (billions of dollars)

Year	Full factor outlay	Full property outlay	Full labor outlay	Property share	Labor share
1948	982.6	99.9	882.7	0.102	0.898
1949	1,033.8	100.3	933.5	0.097	0.903
1950	1,107.4	114.5	992.9	0.103	0.897
1951	1,196.9	128.4	1,068.5	0.107	0.893
1952	1,260.0	132.1	1,127.9	0.105	0.895
1953	1,377.0	138.3	1,238.7	0.100	0.900
1954	1,458.7	139.6	1,319.1	0.096	0.904
1955	1,529.4	164.4	1,365.0	0.107	0.893
1956	1,615.3	165.5	1,449.8	0.102	0.898
1957	1,760.6	171.4	1,589.2	0.097	0.903
1958	1,879.6	166.7	1,712.9	0.089	0.911
1959	1,953.6	192.6	1,761.0	0.099	0.901
1960	2,030.5	193.9	1,836.6	0.095	0.905
1961	2,166.7	203.4	1,963.3	0.094	0.906
1962	2,278.0	224.3	2,053.7	0.098	0.902
1963	2,364.5	245.4	2,119.1	0.104	0.896
1964	2,592.9	267.8	2,325.1	0.103	0.897
1965	2,769.6	299.9	2,469.7	0.108	0.892
1966	2,986.6	324.8	2,661.8	0.109	0.891
1967	3,177.0	332.9	2,844.1	0.105	0.895
1968	3,410.6	348.7	3,061.9	0.102	0.898
1969	3,666.5	368.1	3,298.4	0.100	0.900
1970	4,071.4	373.6	3,697.8	0.092	0.908
1971	4,553.2	409.4	4,143.8	0.090	0.910
1972	4,800.9	461.4	4,339.5	0.096	0.904
1973	5,202.1	506.1	4,696.0	0.097	0.903
1974	5,694.1	525.8	5,168.3	0.092	0.908
1975	6,353.4	585.0	5,768.4	0.092	0.908
1976	6,843.4	711.8	6,131.6	0.104	0.896
1977	7,433.9	808.4	6,625.5	0.109	0.891
1978	7,978.8	918.3	7,060.5	0.115	0.885
1979	9,008.7	989.2	8,019.5	0.110	0.890
1980	9,811.7	1,041.0	8,770.7	0.106	0.894
1981	10,724.0	1,237.4	9,486.6	0.115	0.885
1982	11,528.8	1,347.5	10,181.3	0.117	0.883
1983	12,417.4	1,485.6	10,931.8	0.120	0.880
1984	13,418.4	1,706.6	11,711.8	0.127	0.873
1998	37,588.5	3,492.7	34,095.8	0.093	0.907
1999	39,390.8	3,633.4	35,757.4	0.092	0.908
2000	41,668.7	3,706.3	37,962.4	0.089	0.911
2001	40,166.3	3,697.9	36,468.4	0.092	0.908
2002	41,805.3	4,006.4	37,798.9	0.096	0.904
2003	43,789.7	4,216.0	39,573.7	0.096	0.904
2004	47,120.2	4,403.6	42,716.6	0.093	0.907
2005	45,883.0	4,919.5	40,963.5	0.107	0.893
2006	49,257.6	5,457.0	43,800.6	0.111	0.889
2007	48,490.6	5,546.0	42,944.6	0.114	0.886
2008	51,114.1	5,501.3	45,612.8	0.108	0.892
2009	52,675.2	6,058.1	46,617.1	0.115	0.885

Appendix Table 8 Full Gross Private Domestic Factor Outlay (billions of constant dollars)

Year	Full factor outlay		Property outlay		Labor outlay	
	Quantity	Price	Quantity	Price	Quantity	Price
1949	7,398.6	0.140	722.8	0.139	6,617.7	0.141
1950	7,537.1	0.147	759.4	0.151	6,718.3	0.148
1951	7,739.3	0.154	810.6	0.158	6,867.1	0.155
1952	7,902.0	0.159	852.0	0.155	6,987.3	0.161
1953	8,097.1	0.170	882.9	0.157	7,150.7	0.173
1954	8,233.5	0.177	917.5	0.152	7,254.0	0.182
1955	8,416.8	0.182	943.5	0.174	7,410.6	0.184
1956	8,615.1	0.187	988.1	0.168	7,564.7	0.191
1957	8,851.1	0.199	1,026.3	0.167	7,762.5	0.205
1958	9,011.8	0.208	1,060.9	0.157	7,891.2	0.217
1959	9,155.2	0.214	1,080.5	0.178	8,014.7	0.220
1960	9,339.9	0.218	1,111.9	0.174	8,168.8	0.225
1961	9,584.7	0.227	1,140.8	0.178	8,383.1	0.235
1962	9,745.2	0.234	1,164.0	0.193	8,520.3	0.241
1963	9,971.9	0.237	1,200.6	0.204	8,710.7	0.243
1964	10,197.4	0.255	1,243.4	0.215	8,894.7	0.262
1965	10,340.1	0.268	1,291.5	0.232	8,993.6	0.275
1966	10,495.2	0.284	1,353.9	0.240	9,092.7	0.292
1967	10,711.4	0.296	1,427.2	0.233	9,244.1	0.307
1968	10,963.8	0.311	1,489.2	0.234	9,440.9	0.324
1969	11,276.1	0.325	1,559.6	0.236	9,690.0	0.340
1970	11,568.9	0.352	1,632.2	0.229	9,920.7	0.373
1971	11,874.6	0.383	1,688.9	0.242	10,174.6	0.407
1972	11,971.0	0.402	1,752.2	0.263	10,227.1	0.425
1973	12,119.6	0.429	1,829.8	0.277	10,319.8	0.455
1974	12,316.6	0.462	1,922.9	0.273	10,450.8	0.494
1975	12,550.6	0.506	1,996.1	0.293	10,629.3	0.543
1976	12,744.9	0.537	2,047.1	0.348	10,782.5	0.569
1977	13,054.8	0.570	2,114.8	0.382	11,033.5	0.601
1978	13,300.6	0.600	2,197.5	0.418	11,213.4	0.630
1979	13,609.3	0.662	2,300.1	0.430	11,440.7	0.701
1980	13,857.9	0.708	2,397.8	0.434	11,616.5	0.755
1981	14,043.5	0.763	2,464.1	0.502	11,751.8	0.807
1982	14,153.7	0.814	2,539.4	0.531	11,809.4	0.862
1983	14,270.2	0.870	2,590.3	0.574	11,887.9	0.919
1984	14,422.0	0.930	2,655.5	0.643	11,990.3	0.976
1998	49,196.2	0.764	4,147.0	0.842	45,038.7	0.757
1999	48,770.7	0.807	4,344.3	0.836	44,398.7	0.805
2000	50,542.9	0.824	4,566.7	0.812	45,946.7	0.826
2001	49,453.8	0.812	4,798.6	0.771	44,638.5	0.817
2002	50,077.0	0.834	4,981.6	0.804	45,084.5	0.838
2003	50,355.5	0.870	5,123.7	0.823	45,226.6	0.875
2004	50,932.6	0.926	5,275.1	0.835	45,659.9	0.936
2005	51,143.2	0.897	5,443.0	0.904	45,710.9	0.896
2006	53,202.8	0.926	5,619.7	0.971	47,595.6	0.920
2007	49,789.8	0.974	5,789.8	0.958	44,002.4	0.976
2008	50,615.3	1.010	5,959.3	0.923	44,662.6	1.021
2009	52,675.3	1.000	6,058.1	1.000	46,617.1	1.000

Appendix Table 9 Full Labor Income (billions of dollars)

Year	Full labor income	Market labor income	Nonmarket labor income	Market share	Nonmarket share
1948	891.5	158.7	732.8	0.178	0.822
1949	946.7	161.4	785.3	0.170	0.830
1950	1,006.3	174.6	831.7	0.174	0.826
1951	1,083.9	201.7	882.2	0.186	0.814
1952	1,144.5	215.2	929.3	0.188	0.812
1953	1,255.5	229.2	1,026.3	0.183	0.817
1954	1,338.8	231.9	1,106.9	0.173	0.827
1955	1,384.6	243.1	1,141.5	0.176	0.824
1956	1,469.2	258.2	1,211.0	0.176	0.824
1957	1,610.1	275.5	1,334.6	0.171	0.829
1958	1,737.8	285.0	1,452.8	0.164	0.836
1959	1,785.3	298.8	1,486.5	0.167	0.833
1960	1,862.0	311.9	1,550.1	0.168	0.832
1961	1,991.9	322.6	1,669.3	0.162	0.838
1962	2,083.4	340.8	1,742.6	0.164	0.836
1963	2,151.3	353.4	1,797.9	0.164	0.836
1964	2,364.9	382.9	1,982.0	0.162	0.838
1965	2,511.5	409.4	2,102.1	0.163	0.837
1966	2,707.9	453.8	2,254.1	0.168	0.832
1967	2,894.9	483.5	2,411.4	0.167	0.833
1968	3,115.0	529.2	2,585.8	0.170	0.830
1969	3,349.8	572.2	2,777.6	0.171	0.829
1970	3,764.8	622.2	3,142.6	0.165	0.835
1971	4,226.3	674.8	3,551.5	0.160	0.840
1972	4,420.0	729.8	3,690.2	0.165	0.835
1973	4,782.8	821.4	3,961.4	0.172	0.828
1974	5,256.6	891.5	4,365.1	0.170	0.830
1975	5,880.2	975.8	4,904.4	0.166	0.834
1976	6,239.8	1,057.9	5,181.9	0.170	0.830
1977	6,732.5	1,164.9	5,567.6	0.173	0.827
1978	7,166.3	1,312.8	5,853.5	0.183	0.817
1979	8,118.8	1,483.2	6,635.6	0.183	0.817
1980	8,877.7	1,613.3	7,264.4	0.182	0.818
1981	9,591.7	1,741.3	7,850.4	0.182	0.818
1982	10,308.1	1,795.0	8,513.1	0.174	0.826
1983	11,085.2	1,967.4	9,117.8	0.177	0.823
1984	11,877.5	2,163.4	9,714.1	0.182	0.818
1998	34,265.5	4,792.9	29,472.6	0.140	0.860
1999	35,916.8	5,133.3	30,783.5	0.143	0.857
2000	38,091.9	5,511.1	32,580.8	0.145	0.855
2001	36,663.2	5,803.5	30,859.7	0.158	0.842
2002	38,205.2	6,047.4	32,157.8	0.158	0.842
2003	40,094.0	6,365.2	33,728.8	0.159	0.841
2004	43,279.5	6,746.5	36,533.0	0.156	0.844
2005	41,463.8	6,930.8	34,533.0	0.167	0.833
2006	44,255.4	7,053.2	37,202.2	0.159	0.841
2007	43,373.1	7,603.1	35,770.0	0.175	0.825
2008	46,155.9	8,014.0	38,141.9	0.174	0.826
2009	47,432.3	7,773.6	39,658.7	0.16	0.84

Appendix Table 10 Full Labor Income (billions of constant dollars)

Year	Full labor income		Market labor income		Nonmarket labor income*	
	Quantity	Price	Quantity	Price	Quantity	Price
1949	6,710.5	0.141	2,656.8	0.061	4,743.8	0.166
1950	6,797.8	0.148	2,750.9	0.063	4,783.8	0.174
1951	6,963.2	0.155	2,919.0	0.069	4,862.6	0.181
1952	7,096.0	0.161	3,000.3	0.072	4,945.5	0.188
1953	7,258.3	0.173	3,066.6	0.075	5,059.5	0.203
1954	7,399.7	0.181	3,075.5	0.075	5,176.4	0.214
1955	7,537.0	0.184	3,137.3	0.077	5,270.7	0.217
1956	7,685.9	0.191	3,203.0	0.081	5,373.5	0.225
1957	7,888.3	0.204	3,218.9	0.086	5,539.6	0.241
1958	8,065.6	0.215	3,224.7	0.088	5,687.5	0.255
1959	8,165.1	0.219	3,291.4	0.091	5,748.2	0.259
1960	8,330.3	0.223	3,345.6	0.093	5,868.9	0.264
1961	8,578.1	0.233	3,403.6	0.095	6,057.9	0.276
1962	8,709.7	0.239	3,467.1	0.098	6,147.0	0.283
1963	8,895.7	0.242	3,522.6	0.100	6,284.7	0.286
1964	9,089.6	0.260	3,597.8	0.106	6,422.2	0.309
1965	9,186.8	0.274	3,694.7	0.111	6,470.9	0.325
1966	9,286.6	0.291	3,833.3	0.118	6,507.6	0.346
1967	9,461.7	0.306	3,891.3	0.124	6,635.2	0.363
1968	9,659.9	0.322	3,951.2	0.134	6,781.7	0.381
1969	9,917.7	0.338	4,054.0	0.141	6,963.6	0.399
1970	10,171.1	0.370	4,039.8	0.154	7,183.0	0.438
1971	10,447.3	0.405	4,094.9	0.165	7,397.1	0.480
1972	10,488.0	0.422	4,183.4	0.174	7,400.8	0.499
1973	10,573.6	0.452	4,317.8	0.190	7,425.8	0.533
1974	10,722.6	0.490	4,369.2	0.204	7,533.8	0.579
1975	10,975.1	0.536	4,429.6	0.220	7,726.1	0.635
1976	11,108.1	0.562	4,514.5	0.234	7,808.8	0.664
1977	11,342.9	0.593	4,632.8	0.251	7,965.7	0.699
1978	11,500.2	0.623	4,791.3	0.274	8,041.5	0.728
1979	11,722.7	0.692	4,931.8	0.301	8,179.2	0.811
1980	11,938.2	0.744	4,982.4	0.324	8,344.5	0.871
1981	12,078.4	0.794	5,069.9	0.343	8,431.7	0.931
1982	12,190.0	0.845	5,107.0	0.351	8,513.1	1.000
1983	12,256.5	0.904	5,180.0	0.380	8,543.6	1.067
1984	12,305.3	0.965	5,327.0	0.406	8,532.6	1.138
1998	45,352.6	0.756	7,001.5	0.685	38,331.3	0.769
1999	44,689.3	0.804	7,111.1	0.722	37,582.7	0.819
2000	46,231.4	0.824	7,214.7	0.764	39,007.0	0.835
2001	44,991.3	0.815	7,218.4	0.804	37,773.3	0.817
2002	45,564.0	0.838	7,293.9	0.829	38,270.4	0.840
2003	45,732.8	0.876	7,336.4	0.868	38,396.8	0.878
2004	46,103.6	0.939	7,399.2	0.912	38,704.9	0.944
2005	46,111.7	0.899	7,479.8	0.927	38,632.3	0.894
2006	47,939.8	0.923	7,611.6	0.927	40,332.1	0.922
2007	44,359.3	0.978	7,727.5	0.984	36,630.6	0.977
2008	45,138.5	1.023	7,812.5	1.026	37,325.1	1.022
2009	47,432.3	1.000	7,773.6	1.000	39,658.7	1.000

* The level of prices and quantities are not comparable before and after the break in the time series; however, growth rates are comparable. The earlier period has 1982 as the base year; the later period has 2009 as its base year.

Appendix Table 11 Full Private National Income (billions of dollars)

Year	Full income	Full property income	Full labor income	Property share	Labor share
1948	972.7	81.2	891.5	0.083	0.917
1949	1,030.7	84.0	946.7	0.082	0.918
1950	1,096.2	89.9	1,006.3	0.082	0.918
1951	1,180.8	96.9	1,083.9	0.082	0.918
1952	1,246.4	101.9	1,144.5	0.082	0.918
1953	1,361.9	106.4	1,255.5	0.078	0.922
1954	1,449.9	111.1	1,338.8	0.077	0.923
1955	1,514.9	130.3	1,384.6	0.086	0.914
1956	1,599.6	130.4	1,469.2	0.082	0.918
1957	1,746.3	136.2	1,610.1	0.078	0.922
1958	1,871.7	133.9	1,737.8	0.072	0.928
1959	1,939.3	154.0	1,785.3	0.079	0.921
1960	2,016.8	154.8	1,862.0	0.077	0.923
1961	2,154.1	162.2	1,991.9	0.075	0.925
1962	2,264.6	181.2	2,083.4	0.080	0.920
1963	2,350.3	199.0	2,151.3	0.085	0.915
1964	2,584.9	220.0	2,364.9	0.085	0.915
1965	2,758.4	246.9	2,511.5	0.090	0.910
1966	2,974.2	266.3	2,707.9	0.090	0.910
1967	3,167.8	272.9	2,894.9	0.086	0.914
1968	3,393.4	278.4	3,115.0	0.082	0.918
1969	3,641.7	291.9	3,349.8	0.080	0.920
1970	4,070.5	305.7	3,764.8	0.075	0.925
1971	4,563.0	336.7	4,226.3	0.074	0.926
1972	4,798.9	378.9	4,420.0	0.079	0.921
1973	5,202.3	419.5	4,782.8	0.081	0.919
1974	5,691.9	435.3	5,256.6	0.076	0.924
1975	6,374.1	493.9	5,880.2	0.077	0.923
1976	6,844.3	604.5	6,239.8	0.088	0.912
1977	7,420.1	687.6	6,732.5	0.093	0.907
1978	7,957.8	791.5	7,166.3	0.099	0.901
1979	8,981.2	862.4	8,118.8	0.096	0.904
1980	9,790.2	912.5	8,877.7	0.093	0.907
1981	10,698.8	1,107.1	9,591.7	0.103	0.897
1982	11,549.5	1,241.4	10,308.1	0.107	0.893
1983	12,458.1	1,372.9	11,085.2	0.110	0.890
1984	13,461.1	1,583.6	11,877.5	0.118	0.882
1998	37,341.7	3,076.1	34,265.5	0.082	0.918
1999	39,095.0	3,178.2	35,916.8	0.081	0.919
2000	41,290.1	3,198.2	38,091.9	0.077	0.923
2001	39,908.4	3,245.2	36,663.2	0.081	0.919
2002	41,809.7	3,604.5	38,205.2	0.086	0.914
2003	43,888.8	3,794.7	40,094.0	0.086	0.914
2004	47,176.0	3,896.5	43,279.5	0.083	0.917
2005	45,728.0	4,264.2	41,463.8	0.093	0.907
2006	48,943.1	4,687.6	44,255.4	0.096	0.904
2007	48,198.7	4,825.6	43,373.1	0.100	0.900
2008	51,120.6	4,964.7	46,155.9	0.097	0.903
2009	53,075.4	5,643.1	47,432.3	0.106	0.894

Appendix Table 12 Full Private National Income (billions of constant dollars)

Year	Full income		Property income		Labor income	
	Quantity	Price	Quantity	Price	Quantity	Price
1949	7,415.1	0.139	7,449.7	0.138	6,710.5	0.141
1950	7,494.0	0.146	7,289.1	0.150	6,797.8	0.148
1951	7,678.1	0.153	7,479.9	0.158	6,963.2	0.155
1952	7,858.2	0.158	8,063.7	0.155	7,096.0	0.161
1953	8,044.3	0.169	8,719.4	0.156	7,258.3	0.173
1954	8,234.2	0.176	9,550.5	0.152	7,399.7	0.181
1955	8,391.9	0.181	8,725.5	0.174	7,537.0	0.184
1956	8,571.5	0.186	9,571.1	0.167	7,685.9	0.191
1957	8,811.3	0.198	10,475.7	0.167	7,888.3	0.204
1958	9,022.4	0.207	11,907.0	0.157	8,065.6	0.215
1959	9,136.2	0.213	10,898.6	0.178	8,165.1	0.219
1960	9,326.0	0.216	11,580.8	0.174	8,330.3	0.223
1961	9,599.9	0.225	12,100.8	0.178	8,578.1	0.233
1962	9,761.4	0.232	11,779.9	0.192	8,709.7	0.239
1963	9,981.9	0.236	11,534.3	0.204	8,895.7	0.242
1964	10,222.7	0.253	12,047.3	0.215	9,089.6	0.260
1965	10,359.4	0.267	11,929.9	0.231	9,186.8	0.274
1966	10,502.2	0.283	12,455.1	0.239	9,286.6	0.291
1967	10,731.5	0.295	13,629.2	0.232	9,461.7	0.306
1968	10,951.3	0.309	14,533.4	0.233	9,659.9	0.322
1969	11,255.3	0.324	15,471.0	0.235	9,917.7	0.338
1970	11,587.9	0.351	17,806.3	0.229	10,171.1	0.370
1971	11,913.6	0.383	18,845.3	0.242	10,447.3	0.405
1972	11,989.2	0.401	18,257.1	0.263	10,488.0	0.422
1973	12,129.5	0.429	18,833.8	0.276	10,573.6	0.452
1974	12,331.9	0.461	20,802.1	0.274	10,722.6	0.490
1975	12,654.8	0.504	21,727.3	0.293	10,975.1	0.536
1976	12,830.3	0.534	19,699.4	0.347	11,108.1	0.562
1977	13,117.9	0.565	19,439.6	0.382	11,342.9	0.593
1978	13,349.1	0.596	19,083.9	0.417	11,500.2	0.623
1979	13,656.1	0.657	20,900.1	0.430	11,722.7	0.692
1980	13,942.6	0.703	22,522.8	0.435	11,938.2	0.744
1981	14,159.1	0.756	21,320.5	0.502	12,078.4	0.794
1982	14,365.5	0.803	21,778.0	0.530	12,190.0	0.845
1983	14,472.7	0.860	21,751.4	0.573	12,256.5	0.904
1984	14,575.4	0.923	21,020.5	0.640	12,305.3	0.965
1998	49,034.6	0.762	44,416.8	0.841	45,352.6	0.756
1999	48,530.8	0.806	46,804.7	0.835	44,689.3	0.804
2000	50,212.9	0.822	50,913.2	0.811	46,231.4	0.824
2001	49,225.0	0.811	51,756.5	0.771	44,991.3	0.815
2002	50,061.2	0.835	51,977.5	0.804	45,564.0	0.838
2003	50,354.3	0.871	53,323.9	0.823	45,732.8	0.876
2004	50,778.6	0.929	56,483.9	0.835	46,103.6	0.939
2005	50,839.0	0.899	50,618.7	0.903	46,111.7	0.899
2006	52,780.2	0.927	50,480.2	0.970	47,939.8	0.923
2007	49,411.5	0.976	50,336.5	0.958	44,359.3	0.978
2008	50,506.9	1.013	55,276.3	0.925	45,138.5	1.023
2009	53,075.4	1.000	53,075.4	1.000	47,432.3	1.000

Appendix Table 13 Full Consumer Outlays (billions of dollars)

Year	Full consumer outlays	Market consumer outlays	Nonmarket consumer outlays	Market share	Nonmarket share
1948	511.4	171.5	339.9	0.335	0.665
1949	545.2	175.4	369.8	0.322	0.678
1950	575.7	185.3	390.4	0.322	0.678
1951	608.9	203.9	405.0	0.335	0.665
1952	639.0	218.6	420.4	0.342	0.658
1953	692.9	230.3	462.6	0.332	0.668
1954	738.3	239.0	499.3	0.324	0.676
1955	761.5	255.9	505.6	0.336	0.664
1956	799.4	267.0	532.4	0.334	0.666
1957	861.7	282.3	579.4	0.328	0.672
1958	926.4	293.1	633.3	0.316	0.684
1959	954.9	314.9	640.0	0.330	0.670
1960	993.1	327.7	665.4	0.330	0.670
1961	1,058.4	341.6	716.8	0.323	0.677
1962	1,107.9	361.4	746.5	0.326	0.674
1963	1,148.8	382.2	766.6	0.333	0.667
1964	1,253.0	411.5	841.5	0.328	0.672
1965	1,354.0	445.1	908.9	0.329	0.671
1966	1,468.2	482.4	985.8	0.329	0.671
1967	1,563.6	507.9	1,055.7	0.325	0.675
1968	1,665.0	545.9	1,119.1	0.328	0.672
1969	1,786.9	592.2	1,194.7	0.331	0.669
1970	1,985.6	639.2	1,346.4	0.322	0.678
1971	2,204.8	682.9	1,521.9	0.310	0.690
1972	2,373.0	751.1	1,621.9	0.317	0.683
1973	2,616.0	824.8	1,791.2	0.315	0.685
1974	2,870.3	902.3	1,968.0	0.314	0.686
1975	3,182.6	1,000.4	2,182.2	0.314	0.686
1976	3,505.9	1,141.4	2,364.5	0.326	0.674
1977	3,789.3	1,269.0	2,520.3	0.335	0.665
1978	4,155.8	1,423.4	2,732.4	0.343	0.657
1979	4,674.5	1,584.1	3,090.4	0.339	0.661
1980	5,035.8	1,746.1	3,289.7	0.347	0.653
1981	5,522.3	1,961.3	3,561.0	0.355	0.645
1982	6,078.1	2,133.6	3,944.5	0.351	0.649
1983	6,614.7	2,340.0	4,274.7	0.354	0.646
1984	7,158.0	2,567.1	4,590.9	0.359	0.641
1998	13,263.6	5,789.8	7,473.8	0.437	0.563
1999	13,906.9	6,124.9	7,782.0	0.440	0.560
2000	14,730.4	6,511.1	8,219.3	0.442	0.558
2001	15,485.6	6,740.7	8,744.9	0.435	0.565
2002	16,199.4	7,079.6	9,119.8	0.437	0.563
2003	17,128.6	7,410.7	9,717.9	0.433	0.567
2004	17,680.4	7,734.2	9,946.2	0.437	0.563
2005	18,546.4	8,276.5	10,269.9	0.446	0.554
2006	19,549.3	8,833.1	10,716.2	0.452	0.548
2007	20,644.7	9,415.0	11,229.7	0.456	0.544
2008	21,584.1	9,885.9	11,698.2	0.458	0.542
2009	22,514.8	10,203.8	12,311.0	0.453	0.547

Appendix Table 14 Full Consumer Outlays (billions of constant dollars)

Year	Full consumer outlays		Market consumer outlays		Nonmarket consumer outlays*	
	Quantity	Price	Quantity	Price	Quantity	Price
1949	3,612.0	0.151	4,327.0	0.126	2,076.9	0.178
1950	3,693.3	0.156	4,533.1	0.127	2,098.9	0.186
1951	3,758.0	0.162	4,544.0	0.134	2,110.1	0.192
1952	3,852.4	0.166	4,664.2	0.137	2,138.2	0.197
1953	3,960.1	0.175	4,984.9	0.139	2,186.7	0.212
1954	4,038.8	0.183	5,236.2	0.141	2,226.8	0.224
1955	4,126.1	0.185	5,288.2	0.144	2,246.1	0.225
1956	4,222.7	0.189	5,551.4	0.144	2,276.4	0.234
1957	4,322.2	0.199	5,822.3	0.148	2,324.3	0.249
1958	4,434.6	0.209	6,176.0	0.150	2,386.5	0.265
1959	4,513.3	0.211	6,160.6	0.155	2,404.2	0.266
1960	4,603.8	0.216	6,325.5	0.157	2,443.7	0.272
1961	4,739.3	0.223	6,656.6	0.159	2,515.8	0.285
1962	4,837.7	0.229	6,796.9	0.163	2,554.6	0.292
1963	4,953.4	0.232	6,879.0	0.167	2,605.3	0.294
1964	5,091.4	0.246	7,327.5	0.171	2,648.0	0.318
1965	5,227.4	0.259	7,693.2	0.176	2,687.9	0.338
1966	5,369.4	0.274	8,067.0	0.182	2,733.8	0.361
1967	5,524.2	0.283	8,497.8	0.184	2,796.1	0.378
1968	5,682.6	0.293	8,809.5	0.189	2,852.6	0.392
1969	5,829.4	0.306	9,070.6	0.197	2,905.6	0.411
1970	5,991.8	0.332	9,638.8	0.206	2,980.4	0.452
1971	6,179.0	0.357	10,302.8	0.214	3,077.4	0.495
1972	6,368.5	0.373	10,593.8	0.224	3,144.0	0.516
1973	6,522.4	0.401	11,084.7	0.236	3,194.0	0.561
1974	6,667.3	0.430	11,212.1	0.256	3,285.3	0.599
1975	6,887.3	0.462	11,489.5	0.277	3,406.3	0.641
1976	7,094.9	0.494	11,608.9	0.302	3,483.1	0.679
1977	7,271.7	0.521	11,695.4	0.324	3,550.5	0.710
1978	7,441.7	0.559	11,942.0	0.348	3,596.0	0.760
1979	7,654.5	0.611	12,465.3	0.375	3,691.1	0.837
1980	7,808.1	0.645	12,312.5	0.409	3,783.5	0.869
1981	7,955.8	0.694	12,244.6	0.451	3,855.6	0.924
1982	8,118.7	0.749	12,584.1	0.483	3,944.5	1.000
1983	8,302.7	0.797	12,970.0	0.510	3,999.9	1.069
1984	8,443.8	0.848	13,280.1	0.539	4,022.1	1.141
1998	17,762.2	0.747	17,338.0	0.765	10,181.6	0.734
1999	18,227.0	0.763	17,944.4	0.775	10,306.7	0.755
2000	18,772.4	0.785	18,741.0	0.786	10,468.9	0.785
2001	19,213.9	0.806	19,527.9	0.793	10,693.9	0.818
2002	19,618.8	0.826	19,950.0	0.812	10,881.1	0.838
2003	20,092.1	0.852	20,761.9	0.825	11,092.4	0.876
2004	20,546.4	0.861	21,276.1	0.831	11,229.1	0.886
2005	20,964.2	0.885	21,565.6	0.860	11,337.2	0.906
2006	21,429.7	0.912	22,015.0	0.888	11,484.7	0.933
2007	21,910.3	0.942	22,391.2	0.922	11,702.8	0.960
2008	22,222.6	0.971	22,436.7	0.962	11,948.0	0.979
2009	22,514.8	1.000	22,514.8	1.000	12,311.0	1.000

* The level of prices and quantities are not comparable before and after the break in the time series; however, growth rates are comparable. The earlier period has 1982 as the base year; the later period has 2009 as its base year.

Appendix Table 15 Full Gross Private National Saving (billions of dollars)

Year	Full saving	Human saving	Nonhuman saving	Human share	Nonhuman share
1948	468.7	392.9	75.8	0.838	0.162
1949	492.4	415.5	76.9	0.844	0.156
1950	528.0	441.3	86.7	0.836	0.164
1951	578.1	477.2	100.9	0.825	0.175
1952	613.9	508.9	105.0	0.829	0.171
1953	675.3	563.7	111.6	0.835	0.165
1954	718.6	607.6	111.0	0.846	0.154
1955	760.4	635.9	124.5	0.836	0.164
1956	807.4	678.6	128.8	0.840	0.160
1957	892.4	755.2	137.2	0.846	0.154
1958	953.4	819.5	133.9	0.860	0.140
1959	993.0	846.5	146.5	0.852	0.148
1960	1,033.3	884.7	148.6	0.856	0.144
1961	1,105.6	952.5	153.1	0.862	0.138
1962	1,167.1	996.1	171.0	0.853	0.147
1963	1,212.5	1,031.3	181.2	0.851	0.149
1964	1,343.6	1,140.5	203.1	0.849	0.151
1965	1,417.0	1,193.2	223.8	0.842	0.158
1966	1,519.3	1,268.3	251.0	0.835	0.165
1967	1,619.7	1,355.7	264.0	0.837	0.163
1968	1,745.9	1,466.7	279.2	0.840	0.160
1969	1,876.1	1,582.9	293.2	0.844	0.156
1970	2,110.3	1,796.2	314.1	0.851	0.149
1971	2,389.3	2,029.6	359.7	0.849	0.151
1972	2,460.7	2,068.3	392.4	0.841	0.159
1973	2,621.7	2,170.2	451.5	0.828	0.172
1974	2,862.9	2,397.1	465.8	0.837	0.163
1975	3,249.1	2,722.2	526.9	0.838	0.162
1976	3,397.4	2,817.4	580.0	0.829	0.171
1977	3,692.5	3,047.3	645.2	0.825	0.175
1978	3,870.3	3,121.1	749.2	0.806	0.194
1979	4,379.7	3,545.2	834.5	0.809	0.191
1980	4,840.9	3,974.7	866.2	0.821	0.179
1981	5,268.6	4,289.4	979.2	0.814	0.186
1982	5,567.6	4,568.6	999.0	0.821	0.179
1983	5,945.9	4,843.1	1,102.8	0.815	0.185
1984	6,411.6	5,123.2	1,288.4	0.799	0.201
1998	24,406.3	21,998.8	2,407.4	0.901	0.099
1999	25,542.5	23,001.5	2,541.0	0.901	0.099
2000	26,934.5	24,361.5	2,573.0	0.904	0.096
2001	24,837.6	22,114.8	2,722.8	0.890	0.110
2002	26,073.1	23,038.0	3,035.1	0.884	0.116
2003	27,266.7	24,010.9	3,255.7	0.881	0.119
2004	30,051.6	26,586.8	3,464.8	0.885	0.115
2005	27,770.2	24,263.1	3,507.1	0.874	0.126
2006	29,973.1	26,486.0	3,487.0	0.884	0.116
2007	28,194.0	24,540.3	3,653.7	0.870	0.130
2008	30,291.5	26,443.7	3,847.8	0.873	0.127
2009	31,464.2	27,347.7	4,116.5	0.869	0.131

Appendix Table 16 Full Gross Private National Saving (billions of dollars)

Year	Full saving		Nonhuman saving		Human saving	
	Quantity	Price	Quantity	Price	Quantity	Price
1949	2,932.3	0.168	289.7	0.266	2,669.1	0.156
1950	3,047.2	0.173	355.7	0.244	2,686.5	0.164
1951	3,122.1	0.185	361.7	0.279	2,756.9	0.173
1952	3,168.2	0.194	357.7	0.294	2,812.6	0.181
1953	3,262.9	0.207	380.2	0.294	2,878.3	0.196
1954	3,332.1	0.216	376.9	0.295	2,956.1	0.206
1955	3,485.2	0.218	436.5	0.285	3,032.9	0.210
1956	3,553.0	0.227	434.2	0.297	3,106.6	0.218
1957	3,675.3	0.243	439.5	0.312	3,226.6	0.234
1958	3,730.9	0.255	417.8	0.321	3,312.7	0.247
1959	3,834.7	0.259	467.7	0.313	3,356.2	0.252
1960	3,920.9	0.263	472.8	0.314	3,438.3	0.257
1961	4,045.4	0.273	480.8	0.318	3,556.0	0.268
1962	4,157.7	0.281	535.3	0.320	3,606.4	0.276
1963	4,282.4	0.283	569.1	0.318	3,694.2	0.279
1964	4,441.4	0.303	627.6	0.324	3,790.0	0.301
1965	4,520.8	0.313	696.0	0.322	3,797.7	0.314
1966	4,582.0	0.332	768.2	0.327	3,786.3	0.335
1967	4,655.1	0.348	775.9	0.340	3,851.1	0.352
1968	4,776.0	0.365	805.9	0.346	3,941.8	0.372
1969	4,930.6	0.381	828.9	0.354	4,072.2	0.389
1970	5,082.9	0.415	831.9	0.378	4,218.3	0.426
1971	5,277.3	0.453	914.9	0.393	4,335.4	0.468
1972	5,264.2	0.468	980.0	0.400	4,268.6	0.485
1973	5,317.9	0.493	1,077.4	0.419	4,240.4	0.512
1974	5,283.6	0.542	1,020.5	0.456	4,253.6	0.564
1975	5,379.0	0.604	1,047.3	0.503	4,323.7	0.630
1976	5,430.3	0.626	1,102.8	0.526	4,328.4	0.651
1977	5,568.4	0.663	1,156.1	0.558	4,418.0	0.690
1978	5,686.8	0.681	1,258.3	0.595	4,447.7	0.702
1979	5,758.5	0.761	1,293.4	0.645	4,487.8	0.790
1980	5,800.9	0.835	1,253.8	0.691	4,560.3	0.872
1981	5,870.5	0.897	1,318.4	0.743	4,575.7	0.937
1982	5,868.1	0.949	1,324.7	0.754	4,568.6	1.000
1983	5,916.0	1.005	1,419.4	0.777	4,543.7	1.066
1984	6,025.1	1.064	1,608.8	0.801	4,510.4	1.136
1998	30,183.3	0.809	2,372.9	1.015	28,027.9	0.785
1999	29,515.5	0.865	2,499.5	1.017	27,184.6	0.846
2000	30,630.6	0.879	2,422.2	1.062	28,421.3	0.857
2001	29,526.6	0.841	2,654.0	1.026	26,998.7	0.819
2002	30,416.1	0.858	3,156.3	0.962	27,307.6	0.844
2003	30,617.2	0.891	3,415.1	0.953	27,224.1	0.882
2004	30,920.9	0.971	3,542.0	0.978	27,397.0	0.970
2005	30,644.9	0.906	3,446.3	1.018	27,221.3	0.891
2006	32,062.5	0.935	3,348.1	1.041	28,773.5	0.921
2007	28,457.5	0.991	3,525.7	1.036	24,933.7	0.984
2008	29,161.4	1.039	3,777.3	1.019	25,383.7	1.042
2009	31,464.2	1.000	4,116.5	1.000	27,347.7	1.000

* The level of prices and quantities are not comparable before and after the break in the time series; however, growth rates are comparable. The earlier period has 1982 as the base year; the later period has 2009 as its base year.

Appendix Table 17 Full Private National Expenditures Billions of dollars)

Year	Full expenditures	Full consumer outlays	Full saving	Outlays share	Saving share
1948	980.1	511.4	468.7	0.522	0.478
1949	1,037.6	545.2	492.4	0.525	0.475
1950	1,103.7	575.7	528.0	0.522	0.478
1951	1,187.0	608.9	578.1	0.513	0.487
1952	1,252.9	639.0	613.9	0.510	0.490
1953	1,368.2	692.9	675.3	0.506	0.494
1954	1,456.9	738.3	718.6	0.507	0.493
1955	1,521.9	761.5	760.4	0.500	0.500
1956	1,606.8	799.4	807.4	0.498	0.502
1957	1,754.1	861.7	892.4	0.491	0.509
1958	1,879.8	926.4	953.4	0.493	0.507
1959	1,947.9	954.9	993.0	0.490	0.510
1960	2,026.4	993.1	1,033.3	0.490	0.510
1961	2,164.0	1,058.4	1,105.6	0.489	0.511
1962	2,275.0	1,107.9	1,167.1	0.487	0.513
1963	2,361.3	1,148.8	1,212.5	0.487	0.513
1964	2,596.6	1,253.0	1,343.6	0.483	0.517
1965	2,771.0	1,354.0	1,417.0	0.489	0.511
1966	2,987.5	1,468.2	1,519.3	0.491	0.509
1967	3,183.3	1,563.6	1,619.7	0.491	0.509
1968	3,410.9	1,665.0	1,745.9	0.488	0.512
1969	3,663.0	1,786.9	1,876.1	0.488	0.512
1970	4,095.9	1,985.6	2,110.3	0.485	0.515
1971	4,594.1	2,204.8	2,389.3	0.480	0.520
1972	4,833.7	2,373.0	2,460.7	0.491	0.509
1973	5,237.7	2,616.0	2,621.7	0.499	0.501
1974	5,733.2	2,870.3	2,862.9	0.501	0.499
1975	6,431.7	3,182.6	3,249.1	0.495	0.505
1976	6,903.3	3,505.9	3,397.4	0.508	0.492
1977	7,481.8	3,789.3	3,692.5	0.506	0.494
1978	8,026.1	4,155.8	3,870.3	0.518	0.482
1979	9,054.2	4,674.5	4,379.7	0.516	0.484
1980	9,876.7	5,035.8	4,840.9	0.510	0.490
1981	10,790.9	5,522.3	5,268.6	0.512	0.488
1982	11,645.7	6,078.1	5,567.6	0.522	0.478
1983	12,560.6	6,614.7	5,945.9	0.527	0.473
1984	13,569.6	7,158.0	6,411.6	0.528	0.472
1998	37,669.9	13,263.6	24,406.3	0.352	0.648
1999	39,449.4	13,906.9	25,542.5	0.353	0.647
2000	41,664.9	14,730.4	26,934.5	0.354	0.646
2001	40,323.2	15,485.6	24,837.6	0.384	0.616
2002	42,272.5	16,199.4	26,073.1	0.383	0.617
2003	44,395.3	17,128.6	27,266.7	0.386	0.614
2004	47,732.0	17,680.4	30,051.6	0.370	0.630
2005	46,316.6	18,546.4	27,770.2	0.400	0.600
2006	49,522.4	19,549.3	29,973.1	0.395	0.605
2007	48,838.7	20,644.7	28,194.0	0.423	0.577
2008	51,875.6	21,584.1	30,291.5	0.416	0.584
2009	53,979.0	22,514.8	31,464.2	0.417	0.583

Appendix Table 18 Full Private National Expenditures (billions of constant dollars)

Year	Full expenditures		Consumer outlays		Full saving	
	Quantity	Price	Quantity	Price	Quantity	Price
1949	6,415.3	0.162	3,612.0	0.151	2,932.3	0.168
1950	6,610.4	0.167	3,693.3	0.156	3,047.2	0.173
1951	6,748.6	0.176	3,758.0	0.162	3,122.1	0.185
1952	6,883.9	0.182	3,852.4	0.166	3,168.2	0.194
1953	7,082.9	0.193	3,960.1	0.175	3,262.9	0.207
1954	7,228.3	0.202	4,038.8	0.183	3,332.1	0.216
1955	7,471.3	0.204	4,126.1	0.185	3,485.2	0.218
1956	7,631.4	0.210	4,222.7	0.189	3,553.0	0.227
1957	7,853.1	0.223	4,322.2	0.199	3,675.3	0.243
1958	8,013.8	0.234	4,434.6	0.209	3,730.9	0.255
1959	8,197.0	0.237	4,513.3	0.211	3,834.7	0.259
1960	8,371.4	0.242	4,603.8	0.216	3,920.9	0.263
1961	8,627.8	0.251	4,739.3	0.223	4,045.4	0.273
1962	8,837.8	0.258	4,837.7	0.229	4,157.7	0.281
1963	9,076.6	0.260	4,953.4	0.232	4,282.4	0.283
1964	9,372.8	0.277	5,091.4	0.246	4,441.4	0.303
1965	9,580.5	0.289	5,227.4	0.259	4,520.8	0.313
1966	9,774.0	0.306	5,369.4	0.274	4,582.0	0.332
1967	9,991.6	0.319	5,524.2	0.283	4,655.1	0.348
1968	10,264.3	0.332	5,682.6	0.293	4,776.0	0.365
1969	10,563.8	0.347	5,829.4	0.306	4,930.6	0.381
1970	10,874.4	0.377	5,991.8	0.332	5,082.9	0.415
1971	11,253.5	0.408	6,179.0	0.357	5,277.3	0.453
1972	11,405.2	0.424	6,368.5	0.373	5,264.2	0.468
1973	11,600.2	0.451	6,522.4	0.401	5,317.9	0.493
1974	11,690.4	0.490	6,667.3	0.430	5,283.6	0.542
1975	11,988.0	0.536	6,887.3	0.462	5,379.0	0.604
1976	12,225.6	0.565	7,094.9	0.494	5,430.3	0.626
1977	12,533.2	0.597	7,271.7	0.521	5,568.4	0.663
1978	12,813.3	0.627	7,441.7	0.559	5,686.8	0.681
1979	13,080.4	0.693	7,654.5	0.611	5,758.5	0.761
1980	13,261.7	0.745	7,808.1	0.645	5,800.9	0.835
1981	13,467.5	0.801	7,955.8	0.694	5,870.5	0.897
1982	13,606.8	0.856	8,118.7	0.749	5,868.1	0.949
1983	13,820.9	0.909	8,302.7	0.797	5,916.0	1.005
1984	14,065.3	0.965	8,443.8	0.848	6,025.1	1.064
1998	48,105.7	0.783	17,762.2	0.747	30,183.3	0.809
1999	47,847.2	0.824	18,227.0	0.763	29,515.5	0.865
2000	49,521.8	0.841	18,772.4	0.785	30,630.6	0.879
2001	48,804.6	0.826	19,213.9	0.806	29,526.6	0.841
2002	50,104.9	0.844	19,618.8	0.826	30,416.1	0.858
2003	50,771.7	0.874	20,092.1	0.852	30,617.2	0.891
2004	51,517.9	0.926	20,546.4	0.861	30,920.9	0.971
2005	51,634.3	0.897	20,964.2	0.885	30,644.9	0.906
2006	53,525.6	0.925	21,429.7	0.912	32,062.5	0.935
2007	50,334.1	0.970	21,910.3	0.942	28,457.5	0.991
2008	51,357.3	1.010	22,222.6	0.971	29,161.4	1.039
2009	53,979.0	1.000	22,514.8	1.000	31,464.2	1.000

Appendix Table 19 Full Gross Private National Saving (billions of dollars)

Year	Full gross saving	Full net saving	Depreciation*	Net share	Depreciation share
1949	492.4	315.6	176.8	0.641	0.359
1950	528.0	337.0	191.0	0.638	0.362
1951	578.1	370.5	207.6	0.641	0.359
1952	613.9	393.4	220.5	0.641	0.359
1953	675.3	436.5	238.8	0.646	0.354
1954	718.6	465.8	252.8	0.648	0.352
1955	760.4	495.9	264.5	0.652	0.348
1956	807.4	525.0	282.4	0.650	0.350
1957	892.4	589.9	302.5	0.661	0.339
1958	953.4	634.2	319.2	0.665	0.335
1959	993.0	661.9	331.1	0.667	0.333
1960	1,033.3	693.2	340.1	0.671	0.329
1961	1,105.6	744.6	361.0	0.673	0.327
1962	1,167.1	788.5	378.6	0.676	0.324
1963	1,212.5	818.9	393.6	0.675	0.325
1964	1,343.6	913.6	430.0	0.680	0.320
1965	1,417.0	956.4	460.6	0.675	0.325
1966	1,519.3	1,017.4	501.9	0.670	0.330
1967	1,619.7	1,076.3	543.4	0.665	0.335
1968	1,745.9	1,152.3	593.6	0.660	0.340
1969	1,876.1	1,232.7	643.4	0.657	0.343
1970	2,110.3	1,394.2	716.1	0.661	0.339
1971	2,389.3	1,587.7	801.6	0.665	0.335
1972	2,460.7	1,583.0	877.7	0.643	0.357
1973	2,621.7	1,653.5	968.2	0.631	0.369
1974	2,862.9	1,762.7	1,100.2	0.616	0.384
1975	3,249.1	1,996.2	1,252.9	0.614	0.386
1976	3,397.4	2,020.5	1,376.9	0.595	0.405
1977	3,692.5	2,171.6	1,520.9	0.588	0.412
1978	3,870.3	2,217.1	1,653.2	0.573	0.427
1979	4,379.7	2,482.0	1,897.7	0.567	0.433
1980	4,840.9	2,664.4	2,176.5	0.550	0.450
1981	5,268.6	2,866.8	2,401.8	0.544	0.456
1982	5,567.6	2,942.8	2,624.8	0.529	0.471
1983	5,945.9	3,117.6	2,828.3	0.524	0.476
1984	6,411.6	3,340.6	3,071.0	0.521	0.479
1998	24,406.3	5,477.7	18,928.6	0.224	0.776
1999	25,542.5	4,577.6	20,964.9	0.179	0.821
2000	26,934.5	5,590.6	21,343.9	0.208	0.792
2001	24,837.6	4,387.1	20,450.5	0.177	0.823
2002	26,073.1	4,849.0	21,224.1	0.186	0.814
2003	27,266.7	4,873.9	22,392.8	0.179	0.821
2004	30,051.6	5,247.4	24,804.2	0.175	0.825
2005	27,770.2	4,938.8	22,831.4	0.178	0.822
2006	29,973.1	6,164.6	23,808.4	0.206	0.794
2007	28,194.0	4,279.0	23,914.9	0.152	0.848
2008	30,291.5	4,564.6	25,726.9	0.151	0.849
2009	31,464.2	6,403.9	25,060.4	0.204	0.796

* For the period 1949 to 1984, depreciation is taken directly from the original 1989 paper; depreciation for human and nonhuman depreciation is not available separately for that period.

Appendix Table 20 Full Gross Private National Saving (billions of constant dollars)

Year	Full gross saving		Full net saving		Full depreciation*	
	Quantity	Price	Quantity	Price	Quantity	Price
1949	2,932.3	0.168	5,141.2	0.061	1,073.1	0.165
1950	3,047.2	0.173	5,368.1	0.063	1,105.7	0.173
1951	3,122.1	0.185	5,490.7	0.067	1,136.3	0.183
1952	3,168.2	0.194	5,560.7	0.071	1,157.2	0.191
1953	3,262.9	0.207	5,774.9	0.076	1,174.0	0.203
1954	3,332.1	0.216	5,919.6	0.079	1,190.6	0.212
1955	3,485.2	0.218	6,308.7	0.079	1,202.7	0.220
1956	3,553.0	0.227	6,436.5	0.082	1,224.3	0.231
1957	3,675.3	0.243	6,728.1	0.088	1,241.5	0.244
1958	3,730.9	0.255	6,843.8	0.093	1,255.2	0.254
1959	3,834.7	0.259	7,100.2	0.093	1,266.3	0.261
1960	3,920.9	0.263	7,302.2	0.095	1,279.7	0.266
1961	4,045.4	0.273	7,577.2	0.098	1,305.0	0.277
1962	4,157.7	0.281	7,829.5	0.101	1,326.3	0.285
1963	4,282.4	0.283	8,101.1	0.101	1,353.2	0.291
1964	4,441.4	0.303	8,455.6	0.108	1,384.8	0.310
1965	4,520.8	0.313	8,565.5	0.112	1,423.9	0.323
1966	4,582.0	0.332	8,595.2	0.118	1,473.0	0.341
1967	4,655.1	0.348	8,645.5	0.124	1,526.8	0.356
1968	4,776.0	0.365	8,831.4	0.130	1,579.9	0.376
1969	4,930.6	0.381	9,107.5	0.135	1,634.4	0.394
1970	5,082.9	0.415	9,376.3	0.149	1,689.2	0.424
1971	5,277.3	0.453	9,755.9	0.163	1,746.4	0.459
1972	5,264.2	0.468	9,517.5	0.166	1,816.9	0.483
1973	5,317.9	0.493	9,446.2	0.175	1,893.3	0.511
1974	5,283.6	0.542	9,102.5	0.194	1,978.7	0.556
1975	5,379.0	0.604	9,148.2	0.218	2,056.3	0.609
1976	5,430.3	0.626	9,081.5	0.222	2,130.0	0.646
1977	5,568.4	0.663	9,230.8	0.235	2,212.1	0.688
1978	5,686.8	0.681	9,286.4	0.239	2,306.7	0.717
1979	5,758.5	0.761	9,192.7	0.270	2,407.0	0.788
1980	5,800.9	0.835	9,044.6	0.295	2,498.1	0.871
1981	5,870.5	0.897	9,057.3	0.317	2,560.4	0.938
1982	5,868.1	0.949	8,858.3	0.332	2,624.8	1.000
1983	5,916.0	1.005	8,811.5	0.354	2,686.0	1.053
1984	6,025.1	1.064	8,915.8	0.375	2,755.1	1.115
1998	30,183.3	0.809	8,284.1	0.661	22,474.3	0.842
1999	29,515.5	0.865	6,996.5	0.654	22,806.8	0.919
2000	30,630.6	0.879	8,243.2	0.678	22,959.2	0.930
2001	29,526.6	0.841	6,526.2	0.672	23,192.2	0.882
2002	30,416.1	0.858	7,667.4	0.632	23,205.4	0.915
2003	30,617.2	0.891	7,526.5	0.648	23,490.1	0.953
2004	30,920.9	0.971	8,186.4	0.641	23,348.5	1.062
2005	30,644.9	0.906	7,655.8	0.645	23,429.2	0.974
2006	32,062.5	0.935	9,436.5	0.653	23,578.1	1.010
2007	28,457.5	0.991	4,440.1	0.964	24,026.3	0.995
2008	29,161.4	1.039	4,417.2	1.033	24,750.8	1.039
2009	31,464.2	1.000	6,403.9	1.000	25,060.4	1.000

* For the period 1949 to 1984, depreciation is taken directly from the original 1989 paper; depreciation for human and nonhuman depreciation is not available separately for that period. The level of prices and quantities are not comparable before and after the break in the time series; however, growth rates are comparable. The earlier period has 1982 as the base year; the later period has 2009 as its base year.

Appendix Table 21 Gross Private National Capital Accumulation (billions of dollars)

Year	Full gross private national saving	Depreciation*	Net capital formation	Revaluation*	Change in wealth
1949	492.4	176.8	315.6	729.5	1,045.1
1950	528.0	191.0	337.0	739.5	1,076.5
1951	578.1	207.6	370.5	941.2	1,311.7
1952	613.9	220.5	393.4	623.3	1,016.7
1953	675.3	238.8	436.5	1,400.4	1,836.9
1954	718.6	252.8	465.8	798.5	1,264.3
1955	760.4	264.5	495.9	-63.3	432.6
1956	807.4	282.4	525.0	927.5	1,452.5
1957	892.4	302.5	589.9	1,744.1	2,334.0
1958	953.4	319.2	634.2	1,783.9	2,418.1
1959	993.0	331.1	661.9	-128.3	533.6
1960	1,033.3	340.1	693.2	838.7	1,531.9
1961	1,105.6	361.0	744.6	1,291.4	2,036.0
1962	1,167.1	378.6	788.5	743.3	1,531.8
1963	1,212.5	393.6	818.9	378.1	1,197.0
1964	1,343.6	430.0	913.6	2,360.0	3,273.6
1965	1,417.0	460.6	956.4	2,202.2	3,158.6
1966	1,519.3	501.9	1,017.4	2,925.1	3,942.5
1967	1,619.7	543.4	1,076.3	2,392.5	3,468.8
1968	1,745.9	593.6	1,152.3	2,312.3	3,464.6
1969	1,876.1	643.4	1,232.7	2,955.1	4,187.8
1970	2,110.3	716.1	1,394.2	5,424.9	6,819.1
1971	2,389.3	801.6	1,587.7	5,542.9	7,130.6
1972	2,460.7	877.7	1,583.0	3,378.8	4,961.8
1973	2,621.7	968.2	1,653.5	7,663.9	9,317.4
1974	2,862.9	1,100.2	1,762.7	5,834.0	7,596.7
1975	3,249.1	1,252.9	1,996.2	6,335.3	8,331.5
1976	3,397.4	1,376.9	2,020.5	6,937.3	8,957.8
1977	3,692.5	1,520.9	2,171.6	5,632.2	7,803.8
1978	3,870.3	1,653.2	2,217.1	11,069.9	13,287.0
1979	4,379.7	1,897.7	2,482.0	13,278.3	15,760.3
1980	4,840.9	2,176.5	2,664.4	5,053.2	7,717.6
1981	5,268.6	2,401.8	2,866.8	10,410.9	13,277.7
1982	5,567.6	2,624.8	2,942.8	10,643.0	13,585.8
1983	5,945.9	2,828.3	3,117.6	10,571.3	13,688.9
1984	6,411.6	3,071.0	3,340.6	12,048.5	15,389.1
1999	25,542.5	20,964.9	4,577.6	9,282.2	13,859.8
2000	26,934.5	21,343.9	5,590.6	25,383.0	30,973.6
2001	24,837.6	20,450.5	4,387.1	18,065.7	22,452.8
2002	26,073.1	21,224.1	4,849.0	12,169.0	17,018.0
2003	27,266.7	22,392.8	4,873.9	29,517.9	34,391.8
2004	30,051.6	24,804.2	5,247.4	13,714.9	18,962.3
2005	27,770.2	22,831.4	4,938.8	21,375.5	26,314.3
2006	29,973.1	23,808.4	6,164.6	22,149.5	28,314.1
2007	28,194.0	23,914.9	4,279.0	14,358.7	18,637.8
2008	30,291.5	25,726.9	4,564.6	8,210.8	12,775.4
2009	31,464.2	25,060.4	6,403.9	16,509.8	22,913.6

* For the period 1949 to 1984, depreciation is taken directly from the original 1989 paper; depreciation for human and nonhuman depreciation is not available separately for that period.

Appendix Table 22 Full Private National Wealth (billions of dollars)

Year	Full wealth	Human wealth	Nonhuman wealth	Human share	Nonhuman share
1949	16,693	15,537	1,156	0.931	0.069
1950	17,737	16,513	1,224	0.931	0.069
1951	19,030	17,688	1,342	0.929	0.071
1952	20,111	18,618	1,492	0.926	0.074
1953	21,962	20,373	1,589	0.928	0.072
1954	23,226	21,574	1,652	0.929	0.071
1955	23,640	21,904	1,736	0.927	0.073
1956	25,066	23,210	1,856	0.926	0.074
1957	27,411	25,417	1,994	0.927	0.073
1958	29,796	27,737	2,059	0.931	0.069
1959	30,317	28,175	2,142	0.929	0.071
1960	31,877	29,604	2,273	0.929	0.071
1961	33,924	31,552	2,372	0.930	0.070
1962	35,470	32,972	2,499	0.930	0.070
1963	36,653	34,056	2,597	0.929	0.071
1964	39,887	37,188	2,700	0.932	0.068
1965	43,009	40,171	2,837	0.934	0.066
1966	46,936	43,886	3,050	0.935	0.065
1967	50,361	47,137	3,224	0.936	0.064
1968	53,858	50,332	3,526	0.935	0.065
1969	58,017	54,184	3,833	0.934	0.066
1970	64,872	60,722	4,150	0.936	0.064
1971	71,991	67,478	4,513	0.937	0.063
1972	77,012	72,000	5,013	0.935	0.065
1973	86,259	80,687	5,573	0.935	0.065
1974	93,497	87,523	5,974	0.936	0.064
1975	101,884	95,047	6,838	0.933	0.067
1976	110,721	103,214	7,507	0.932	0.068
1977	118,473	110,042	8,431	0.929	0.071
1978	131,610	122,024	9,586	0.927	0.073
1979	147,271	136,288	10,984	0.925	0.075
1980	154,845	142,516	12,329	0.920	0.080
1981	168,148	154,260	13,888	0.917	0.083
1982	181,915	166,990	14,925	0.918	0.082
1983	195,404	179,555	15,849	0.919	0.081
1984	211,334	193,829	17,505	0.917	0.083
1998	429,790	392,277	37,512	0.913	0.087
1999	444,405	404,443	39,962	0.910	0.090
2000	474,239	430,151	44,088	0.907	0.093
2001	498,223	450,932	47,291	0.905	0.095
2002	517,561	466,311	51,251	0.901	0.099
2003	551,901	496,367	55,534	0.899	0.101
2004	571,498	508,336	63,162	0.889	0.111
2005	598,068	526,098	71,970	0.880	0.120
2006	624,762	549,539	75,223	0.880	0.120
2007	645,305	571,254	74,051	0.885	0.115
2008	658,928	592,203	66,725	0.899	0.101
2009	680,628	616,779	63,849	0.906	0.094

Appendix Table 23 Full Private National Wealth (billions of constant dollars)

Year	Full wealth		Human wealth*		Nonhuman wealth	
	Quantity	Price	Quantity	Price	Quantity	Price
1949	102,513	0.162	91,689	0.169	10,274	0.113
1950	104,452	0.170	93,314	0.177	10,634	0.115
1951	106,475	0.179	95,025	0.186	10,988	0.122
1952	108,941	0.184	96,789	0.192	11,909	0.125
1953	111,141	0.198	98,604	0.207	12,370	0.128
1954	113,349	0.205	100,472	0.215	12,763	0.129
1955	115,708	0.204	102,442	0.214	13,228	0.131
1956	118,100	0.212	104,469	0.222	13,649	0.136
1957	120,662	0.227	106,625	0.238	14,129	0.141
1958	123,232	0.242	108,834	0.255	14,539	0.142
1959	125,883	0.241	111,135	0.254	14,922	0.144
1960	128,609	0.248	113,506	0.261	15,308	0.148
1961	131,387	0.258	115,910	0.272	15,723	0.151
1962	134,258	0.265	118,390	0.279	16,161	0.155
1963	137,254	0.267	120,934	0.282	16,700	0.155
1964	140,298	0.284	123,489	0.301	17,308	0.156
1965	143,323	0.300	125,992	0.319	17,996	0.158
1966	146,339	0.321	128,424	0.342	18,829	0.162
1967	149,361	0.337	130,912	0.360	19,571	0.165
1968	152,509	0.353	133,470	0.377	20,421	0.173
1969	155,647	0.373	136,049	0.398	21,210	0.181
1970	158,809	0.409	138,651	0.438	22,007	0.189
1971	162,025	0.444	141,343	0.477	22,725	0.199
1972	165,166	0.466	143,901	0.500	23,598	0.212
1973	167,944	0.513	146,113	0.552	24,492	0.228
1974	170,899	0.547	148,493	0.589	25,396	0.235
1975	174,119	0.585	151,071	0.629	26,415	0.259
1976	176,987	0.626	153,376	0.673	27,298	0.275
1977	179,965	0.658	155,791	0.706	28,154	0.299
1978	182,689	0.720	157,858	0.773	29,268	0.328
1979	185,486	0.794	159,992	0.852	30,384	0.362
1980	188,497	0.821	162,425	0.877	31,252	0.395
1981	191,480	0.878	164,751	0.936	32,282	0.430
1982	194,360	0.936	166,990	1.000	33,295	0.448
1983	197,096	0.992	169,121	1.062	34,262	0.463
1984	199,803	1.058	171,121	1.133	35,472	0.493
1998	611,799	0.703	562,994	0.697	50,147	0.748
1999	619,441	0.718	569,705	0.710	51,070	0.783
2000	625,515	0.758	574,841	0.748	51,973	0.848
2001	633,165	0.787	581,158	0.776	53,235	0.888
2002	639,405	0.809	585,789	0.796	54,704	0.937
2003	645,363	0.855	590,654	0.840	55,715	0.997
2004	652,163	0.876	595,087	0.854	57,754	1.094
2005	658,095	0.909	599,821	0.877	58,787	1.224
2006	662,952	0.943	604,008	0.910	59,392	1.267
2007	669,549	0.964	609,746	0.937	60,185	1.230
2008	675,341	0.976	613,135	0.966	62,264	1.072
2009	680,628	1.000	616,779	1.000	63,849	1.000

* The level of prices and quantities are not comparable before and after the break in the time series; however, growth rates are comparable. The earlier period has 1982 as the base year; the later period has 2009 as its base year.