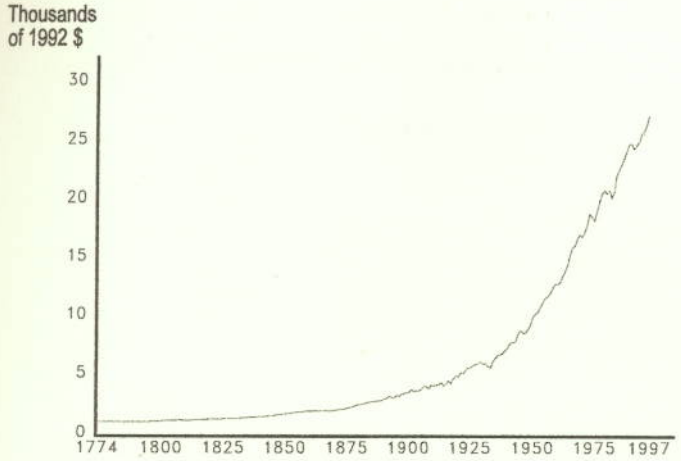

Fig. 1.1 Real GNP/GDP per capita in the United States.

economist has had two main tasks: first, to undertake the enormous job of constructing historical data on inputs and outputs; and second, to measure the degree to which output growth is, in fact, due to technological factors ("productivity") versus capital formation. This last undertaking is sometimes called "sources of growth analysis" and is the intellectual framework of the TFP residual, which is the organizing concept of this survey.

A vast empirical literature has attempted to sort out the capital technology dichotomy, an example of which is shown in table 1.2, but no clear consensus has emerged. Many early studies favored productivity as the main explanation of output growth (see Griliches 1996), and this view continues in the "official" productivity statistics produced by the U.S. Bureau of Labor Statistics (BLS). However, Jorgenson and Griliches (1967) famously disagreed, and their alternative view finds support in subsequent work (e.g., Young 1995) and in the New Growth literature.

In recent years, attention has turned to another issue: the slowdown in productivity that started in the late 1960s or early 1970s. This issue has never been resolved satisfactorily, despite significant research efforts. This, in turn, has been supplanted by yet another mystery: Why has the widely touted information revolution not reversed the productivity slowdown? In a review in the *New York Times* (12 July 1987, p. 36), Robert Solow puts the proposition succinctly: "We can see the computer age everywhere but in the productivity statistics." Recent research seems to have located some of the missing effect (Oliner and Sichel 2000; Jorgenson and Stiroh 2000) as the productivity pickup of the late 1990s has correlated well with the IT revolution. However, Nordhaus (1997) reminds us that the "Solow Paradox" is not limited to computers. Based on his study of the history of lighting, he argues that official price and output data "miss the most important technological revolutions in economic history" (Nordhaus 1997, 54). Moreover, the Advisory Commission to Study the Consumer Price Index (1996) assigns an upward bias of 0.6 percentage points per year in the Consumer Price Index (CPI) as a result of missed quality improvement, with a corresponding understatement of quantity.

In this New Economy critique of productivity statistics, the growth path

Table 1.1 Historical Growth Rates of Output per Person and Total Factor Productivity in the United States (by decade)

	Real GNP/GDP per Capita	TFP	Contribution of TFP (percent)
1779–1789	−0.002	n.a.	
1789–1799	−0.008	n.a.	
1799–1809	0.007	0.006	73.5
1809–1819	−0.009	0.006	64.4
1819–1829	0.008	0.006	69.7
1829–1839	0.012	0.006	44.0
1839–1849	0.018	0.007	38.4
1849–1859	0.016	0.007	45.1
1859–1869	0.004	0.007	161.7
1869–1879	0.023	0.007	30.7
1879–1889	0.017	0.007	42.7
1889–1899	0.023	0.003	12.6
1899–1909	0.018	0.002	13.5
1909–1919	0.019	0.003	16.3
1919–1929	0.024	0.002	7.7
1929–1939	0.016	0.003	16.6
1939–1949	0.026	0.003	9.6
1949–1959	0.034	0.002	6.2
1959–1969	0.027	0.003	12.0
1969–1979	0.023	n.a.	
1979–1989	0.017	n.a.	
1989–1997	0.009	n.a.	
1799–1979	0.018	0.005	26.0
	Private Business Economy Only		
1948–1973	0.033	0.021	64
1973–1979	0.013	0.006	46
1979–1990	0.012	0.002	17
1990–1996	0.011	0.003	27
1948–1996	0.023	0.012	52

Sources: Gallman (1987), U.S. Department of Commerce, Bureau of the Census (1975), and the 1998 *Economic Report of the President.* Data for "Private Business Economy Only" are from the Bureau of Labor Statistics, miscellaneous press releases subsequent to Bulletin 2178 (1983).

Note: n.a. = not available.

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Edwin R. Dean, and
Michael J. Harper

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CHARLES R. HULTEN is professor of economics at the University of Maryland, a research associate of the National Bureau of Economic Research, and chairman of the Conference on Research in Income and Wealth. EDWIN R. DEAN was formerly associate commissioner for productivity and technology, Bureau of Labor Statistics, U.S. Department of Labor. He is currently adjunct professor in the Department of Economics at The George Washington University, Washington, D.C. MICHAEL J. HARPER is a member of the staff of the Office of Productivity and Technology of the U.S. Bureau of Labor Statistics.

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