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November 14, 1980

Productivity Slowdown: II

In the last *Weekly Letter*, we showed that the secular (noncyclical) rate of increase of labor productivity in the private economy declined from a 3.2-percent annual rate over the 1948-65 period to 2.3 percent in 1965-73, and then to only 1.2 percent over the 1973-78 period. (Total factor productivity—a more inclusive concept that measures the productivity of labor and capital combined—displayed a similar deceleration, from 1.3 percent per year to 0.7 percent, and finally to 0.4 percent). We also showed that almost all of the deceleration in productivity growth between the 1948-65 and 1973-78 periods could be explained by broad-based decelerations in ten of the nation's twelve industry sectors.

Productivity analysts have been hard at work attempting to pinpoint the causes of this pervasive productivity slowdown. Perhaps the most likely candidate has been the well-publicized slowdown of capital investment. Empirical evidence substantiates a close association between the degree of capital intensity in production (the amount of capital employed relative to the amount of labor) and the level of labor productivity. Labor is more productive when it has more capital to work with. But in addition, technological improvements normally are built into new capital goods, so that new capital is more productive than old. Thus, capital investment increases total factor productivity as well as labor productivity.

Capital deepening and labor

As much as 0.9 percentage points of the 2.0 percentage-point deceleration in labor-productivity growth between the 1948-65 and 1973-78 periods is related to slower growth in capital intensity (gross capital stock/hours worked). Capital intensity increased at a 2.8-percent annual rate over the 1948-65 period, but slowed to rates of 2.5 percent and 1.8 percent over the 1965-73 and 1973-78 periods, respectively. But the

deceleration generally reflected not so much slower growth of capital investment as more rapid growth of labor inputs, at least until recent years (see chart).

The changing growth and composition of the labor force certainly have helped to account for the slowdown in capital deepening. The high birthrate of the 1940s and 1950s and the attempt by more women to seek employment helped create a wave of new labor force entrants after the mid 1960s. These developments increased the supply and decreased the real wage of inexperienced workers, thereby lowering the cost of inexperienced labor relative to capital. (More accurately, they reduced the differential by which the cost of labor had been rising in excess of the cost of capital). An abundant supply of relatively inexperienced labor also helped to stimulate the growth of retail trade and service industries, such as fast-food chains, where technology could adapt readily to the supply of inexperienced workers.

This situation is now turning around. Since 1973 the rate of increase in the educational level of the U.S. labor force (a proxy for the quality of labor) has accelerated from its prior rate of increase, while since 1978 the number of young persons entering the labor force has begun to slow. Even without a change in the growth rate of capital, these two changes will tend to accelerate both the quality of labor and the rate of capital deepening, and stimulate future labor-productivity growth.

Investment: macro-policies . . .

The other major factor involved in productivity growth, capital investment, is a complex phenomenon that normally involves large entrepreneurial risk over periods of years. Capital decisions are sensitive to the present—and more importantly, the anticipated—economic, political and regulatory environment over the life of the investment. Thus, such decisions depend in part on both

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macroeconomic (economic stabilization and growth) and microeconomic (regulatory) policies of government.

The macroeconomic climate of the 1960s was conducive to investment. The combination of a low inflation rate, strong economic growth, and the investment tax credit tended to lower the cost and raise the expected return of capital during that period. Hence, the acceleration in capital investment over the 1965-73 period largely reflected these factors.

The 1970s represented a different story. Economic uncertainties, inflation, and the existing tax laws undoubtedly affected both the level of capital investment and specific types of investments. The 1974-75 recession was the most severe in the postwar period, and uncertainties surrounding future economic growth characterized the decade. High and variable inflation rates created further uncertainties. Equally important, rampant inflation increased the effective tax burden imposed on capital investment during this period.

For one reason, depreciation must be calculated for tax purposes on the basis of historical (rather than replacement) cost. With accelerating inflation, depreciation write-offs have been inadequate to cover capital replacement costs, and profits—the bottom line of the income statement—have been unavoidably overstated. Since stated profits (“real” or otherwise) are taxed, inadequate depreciation write-offs have increased the effective tax on capital. Second, inflation has increased the levels of nominal interest rates, rates of return, and capital gains needed to compensate lenders and equity-owners for the loss of purchasing power on their investments. Yet, the higher yields are taxed as if they were ordinary income. In both these ways, therefore, the combination of inflation and existing tax legislation works to increase the cost of capital and to deter investment.

... and micro-policies

Government regulations—present and prospective—have received much of the blame

for the productivity slowdown, despite the difficulty of quantifying their effects. Regulations take many forms. Some impose direct costs on capital by requiring the diversion of some capital expenditures to equipment that meets environmental or safety standards, thereby either increasing the cost of capital or diverting some output toward nonmarketable ends. Most studies suggest that such direct regulations have had little effect on aggregate productivity growth.

The same may not be true, however, of the indirect effects of government regulations. A proliferation of rules for environmental protection and increased worker health and safety has altered production processes in factories and offices throughout the country. Despite their beneficial effects in terms of cleaner air and water and healthier working conditions, these regulations have tended to increase measured inputs relative to measured output—i.e., to lower productivity growth—because the benefits are not counted in measured inputs. Moreover, increases in government-imposed paperwork and a diversion of managerial resources toward compliance undoubtedly have put a drag on productivity. More importantly, current and prospective regulations have changed the allocation of resources from what the private market otherwise would have directed. The costs of this reallocation of resources may show up in part as lower overall efficiency or productivity.

Earlier studies concluded that higher energy prices had contributed significantly to the productivity slowdown of the mid-decade. More recent analyses, in contrast, have found little energy impact, based on actual energy-usage data and evidence regarding substitutability among energy, capital, and labor inputs. Although higher energy prices certainly have reduced real consumption and affected the design and choice of new capital equipment, their effect on aggregate productivity growth apparently has been small to date.

Some economists attribute at least part of the productivity slowdown to retarded spending

for research and development, which has declined as a share of GNP since the late 1960s. (The research and development decline came about largely because of a reduction in government defense expenditures.) Other analysts argue, however, that the link is weak between R & D (particularly government-sponsored R & D) and productivity. A reduction in the growth of R & D spending may be a factor in the productivity slowdown, but it appears to explain only a small portion of the deceleration.

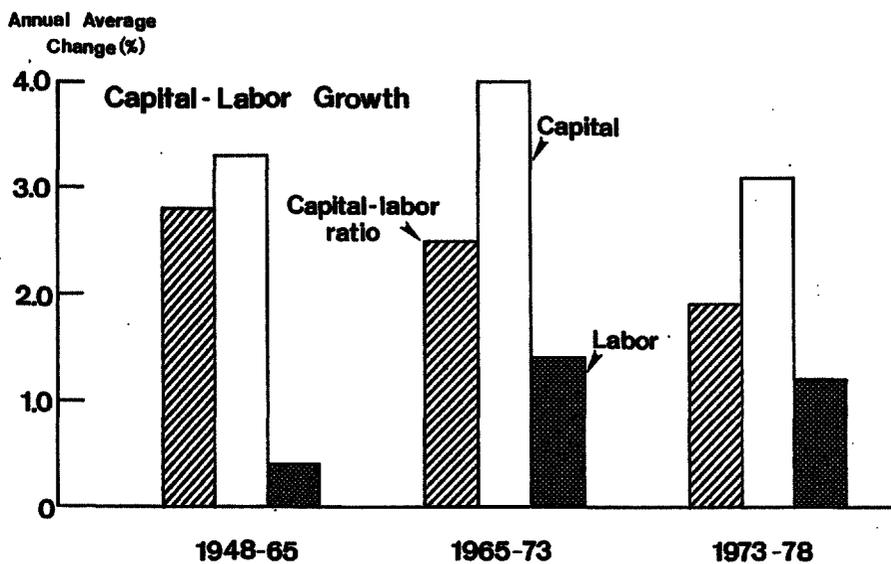
Uncertain future

Unfortunately, we are left with many potential causes of the productivity slowdown, most of which cannot be quantified accurately. A small part of the slowdown (about 15 percent) results from intersectoral shifts, while a much larger part (almost half) is related to a slower growth in capital deepening. That still leaves much of the productivity slowdown unexplained, and moreover, the

underlying causes of the slowdown in capital deepening also remain difficult to identify with certainty.

Labor-force growth will slow dramatically in the 1980s, imparting a positive boost to capital deepening and to labor productivity, even in the face of a further modest decline in capital-investment growth. But the direction and extent of capital investment is highly uncertain. Much depends on whether we overcome our recent problems, such as severe business cycles, a high and variable rate of inflation, and increasing taxation and regulations. Moreover, prediction is made difficult by our lack of understanding of how these negative factors impacted on productivity in the 1970s. Until we can understand the causes of that slowdown more fully, we shall have difficulty making a prognosis for the 1980s.

Jack Beebe and Jane Haltmaier



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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities	Amount Outstanding	Change from 10/22/80	Change from year ago	
			Dollar	Percent
Large Commercial Banks	10/29/80	10/22/80		
Loans (gross, adjusted) and investments*	141,878	271	6,298	4.6
Loans (gross, adjusted) — total#	119,811	220	7,374	6.6
Commercial and industrial	35,023	23	2,815	8.7
Real estate	48,929	172	6,902	16.4
Loans to individuals	23,730	56	133	0.6
Securities loans	1,152	33	533	31.6
U.S. Treasury securities*	6,663	9	776	10.4
Other securities*	15,404	42	300	1.9
Demand deposits — total#	44,226	185	1,102	2.4
Demand deposits — adjusted	33,072	24	1,703	5.4
Savings deposits — total	29,772	13	398	1.4
Time deposits — total#	65,570	619	8,799	15.5
Individuals, part. & corp.	56,716	451	8,279	17.1
(Large negotiable CD's)	25,104	688	4,367	21.1
Weekly Averages of Daily Figures	Week ended 10/29/80	Week ended 10/22/80	Comparable year-ago period	
Member Bank Reserve Position				
Excess Reserves (+)/Deficiency (-)	51	66	45	
Borrowings	132	146	125	
Net free reserves (+)/Net borrowed(-)	81	211	80	

* Excludes trading account securities.

Includes items not shown separately.

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