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ABSTRACT

Causes of the significant decrease in productivity growth and dramatic increase in unemployment in the United States since the mid-1960's are examined in order to test the underlying assumption of current economic policies that increasing capital savings and investments will create fuller and more productive employment. Data on trends in employment, productivity growth, and related variables since World War II are presented and general causes reviewed. The conclusion is that causes may differ between economic sectors, and these differences may be explained by shifts in the concentration of capital from industry and nonfinancial commerce and services to oil, gas, and the banks. In the nonmanufacturing sector, growth of capital investment per employee seems to correlate positively with productivity growth and negatively with the unemployment rate. In manufacturing, however, how and where capital is invested seems more important than the amount invested. Alternative capital allocation strategies furthering increased employment and higher productivity may require worker and government participation and should take into account the relationships between higher productivity and higher wages; growth and consumer demand; accumulation by private and government sectors; and the allocation of capital among sunset and sunrise industries and among sectors, regions, and nations. (MJL)

Institute for Research on Educational Finance and Governance

SCHOOL OF EDUCATION STANFORD UNIVERSITY

Project Report No. 83-A15

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Abstract

Productivity growth has declined significantly since the middle 1960s, while unemployment rates have recently risen to the highest levels since the Great Depression. Many observers believe that one way to help overcome both problems is to increase savings and investment in order to raise the amount of capital. This essay reviews the principal causes of the decline in productivity growth and increased unemployment, with particular focus on the effect of capital investment on these two economic problems. The paper examines how--if at all--the level of investment and investment patterns, interacting with labor force expansion, explain changes in productivity and unemployment during the current economic crisis. The last section of the paper also explores alternatives to the present system of capital investment, both as a way of raising more capital and deploying it for higher productivity growth and employment.

Productivity growth has decreased significantly in the United States since the mid-1960s and, in the last decade, has been close to zero. At the same time, average rates of unemployment have increased significantly. Currently, 11 million Americans are out of work, over 10 percent of the work force. Because productivity increases and unemployment rates are associated with the economy's capability to increase the average standard of living, this decline in productivity growth and the increase in unemployment have become symbols of our current economic malaise. (1)

Much of the current thinking about productivity and unemployment focuses on investment and savings rates; that is, on capital. Present economic policies hinge on increasing the amount of capital saved and invested in order to create more jobs and more productive jobs. Incentives for saving and investment, including lower tax rates, accelerated depreciation, and higher interest rates for savings hope to make enough capital available and enough desire to invest so that economic growth rates, productivity, and employment all increase rapidly. Does the research and data on the role of capital in productivity growth and employment bear out the underlying assumptions for this policy?

This brief essay will review the principal causes of productivity growth decline and increased unemployment, with particular focus on the effect of capital investment on these two economic variables. Specifically, we will examine how -- if at all -- the level of investment and investment

patterns interacting with labor force expansion explain changes in productivity and employment during the current economic crisis.

We will carry out this analysis in three parts: First, we describe the nature of the problem by showing the main changes in employment, productivity growth and related variables in the post-World War II period. Second, we review the general causes of the slowdown in productivity growth and the increase in unemployment rates. We conclude from this analysis that the causes may very well differ from economic sector to economic sector. In the nonmanufacturing sector, the growth of capital investment per employee seems to be positively correlated with productivity growth and negatively with the overall unemployment rate. But in manufacturing, it appears not to be so much the amount of capital investment that is the problem, but how and where capital is invested. In turn, the differences between sectors may be explained by shifts in the concentration of capital during the 1970s. In the last section of the essay, we explore alternatives to the present system of capital investment decisions, both as a way of raising more capital and deploying it for higher productivity growth and employment.

The Nature of the Problem

Economic growth in the post-war period averaged a 2.4 percent annual increase in gross national product per capita between 1948 and 1973 and 2.0 percent between 1973 and 1979 and 1.8 percent between 1973 and 1982 (see Table 1). Consumption power, which economists call "real earnings," rose 60 percent between 1948 and 1973, but has since fallen 16 percent. Productivity, which we measure here as gross national product per employed

worker, also increased 2.4 percent annually between 1948 and 1973, but only 0.5 percent per year between 1973 and 1979, not growing at all between 1979 amd 1982. The unemployment rate in the 1950s and 1960s averaged about 5 percent, but increased to about 7 percent between 1973 and 1979 and 8 percent in the first three years of the present decade. So it appears that the rate of growth of per capita income, real wages and productivity, all increased at about 2.4 percent per year for 25 years, making average Americans about 60 percent better off materially. Since 1973, though, many of these indicators of progress have become stalled: real wages have fallen drastically, productivity increased at a lower rate and recently began to fall, and economic growth was the lowest since the late 1950s.

Economic growth in the post-war period was not even. Table 1 shows that after the low per capita GNP growth in the 1930s (0.8 percent annually) and the World War II boom (4.5 percent annual rate), the economy continued to grow rapidly fueled by the Korean War, but then slowed down sharply for the rest of the 1950s. There were recessions in 1949, 1954, 1958, and a milder downturn in 1960. Total GNP growth was only 2.4 percent annually from 1953 to 1959, and GNP per capita growth was only 0.6 percent per year. Beginning in the early sixties, however, the economy boomed again in the longest sustained economic expansion of the century (1960-69). The expansion was fueled by increases in government spending that raised its percentage of GNP from 27 to 31 percent.

There were also demographic cycles underway that had important effects on economic growth, wages, and productivity. The rise in the birth rate after the war resulted in an average 1.8 percent annual increase in population for 15 years, between 1947 and 1962.

Women who had been pulled into the labor force during World War II returned home to bear and care for children, withdrawing them from the wage

Table 1

Growth Rates of Real Per Capita GNP, Real Wages, and Productivity; Average Unemployment and Savings Rates, by Period, 1929-1981 (percent)

Years	Annual Real Per Capita GNP Growth	Annual Growth in Real Wages	Annual Growth of Productivity (GNP/Empl. Person)	Average Unemployment Rate	Average Savings Rate
1929-40	0.8	n.a.	0.8	n.a	n.a
1941-47	4.5	n.a.	1.9	3.9	16.5
1948-53	3.2	3.2	3.9	4.0	6.2
1954-55	0.8	3.0	1.8	5.0	6.3
1956-59	0.5	1.7	1.3	5.2	[illegible].0
1960-66	3.1	1.7	2.9	5.3	6.2
1967-73	2.5	1.0	1.5	4.6	7.5
1974-79	2.0	-1.4	0.5	6.8	6.7
1980-82	0.0	-3.0	0.0	8.1	6.2

Source: 1929-79: Economic Report of the President, 1982, Tables B-29, B-37, B-39. B-23.

1980-82: Economic Report of the President, 1983, Tables B-29, B-37, B-39, B-23.

Productivity is measured by real GNP growth (column 1) minus growth of employed labor force in the same period. Average savings rate measured by personal savings as a percent of personal disposable income.

economy (day care centers were not on the national agenda). Even so, women's labor force participation did increase throughout the 1950s, and the growth of employment was limited largely to that increased participation, those men born in the 1930s and early 1940s -- a period of low population growth -- plus that small and diminishing group of rural workers displaced by machinery, corporate takeovers in agriculture, plus Mexican illegals. While population was growing at almost 2 percent per year, employment was therefore increasing less than one percent annually until the early 1960s.

These demographic changes created a situation of relatively low unemployment and real wages increasing more rapidly than productivity. Labor unions grew in strength. Although productivity rose faster than real wages in 1948-53 (both increases were very high -- 3.2 percent annually for real wages and 3.9 percent for the change in GNP per person employed) -- in 1954-59 real wages rose much more than productivity. Unemployment rates by today's standards were also low, averaging 4.6 percent for all workers in 1948-59 and 8.2 percent for blacks. The 1950s were therefore a period of relatively slow GNP per capita growth, but simultaneously marked by historically low unemployment rates and a growth in real wages that was as high or higher than productivity increases.

The demographic trends reversed in the 1960s. Population growth dropped sharply during the decade to 1 percent per year by 1968. As the children of the late 1940s and their mothers released from child caring began entering the labor force, employment grew more rapidly than population for the first time since World War II. Real wages continued to increase rapidly until 1966, but less than productivity, which shot up by an almost 3 percent annually. By the end of the decade and the early 1970s employment increases began to swamp population growth: between 1966 and

1973, the labor force was growing by more than 2 percent per year, and increased by 2.1 percent annually between 1973 and 1982. Real wage increases in 1966-73 fell to 1 percent a year while annual productivity increases also fell to 1.5 percent annually. Yet productivity was still rising faster than wages. And because of the sustained growth fueled by government spending, unemployment rates remained low despite rapid increases in employment during the late 1960s. The stage was set for the crisis that followed as the economy weakened.

In many ways, the 1960s -- particularly the early 1960s -- were an anomaly in America's recent history. Population growth had been high for more than a decade, which meant rapidly expanding domestic markets. The U.S. was at the height of its power, both economically and militarily, which meant that it could count on expanding its world markets as well. New entrants into the labor force were increasing slowly, so expanding production could absorb them. The age structure of the population was such that the biggest increase in public spending was on education, an expense gladly borne by the majority of Americans because they were spending on their own children, and the intake of social security taxes was greater than the pay-out. Real wages were still rising rapidly (although not as rapidly as in the previous decade), so paying more taxes even for the elimination of others' poverty and for massive increases in military spending was acceptable. Expanding markets, cheap energy, government subsidies for research and development, stable prices and low interest rates all made for a high incentive to invest in increased industrial capacity. It was also during this period of continued increases in real wages that personal savings rose from about 6 percent of disposable income in 1959-60 to more than 8 percent in the early 1970s.

The labor force grew slowly in the 1950s and early 1960s, and very

rapidly in the late 1960s and 1970s. Despite the rapid growth of the labor force in the late 1960s, productivity grew at about the same rate as in the mid and late-1950s. After 1973, however, the growth of productivity slowed down significantly (as did real wage increases), and the average unemployment rate increased, staying relatively high even after the 1974-75 recession.

What was the role of capital investment in these changes as compared to other factors, like the rapid growth of the labor force, the rising energy costs that occurred the 1974-79 period, or the changing structure of the economy?

Productivity, Employment, and Investment

An underlying assumption of the present investment incentive policies for increasing productivity growth and reducing secular unemployment is that profit rates declined in the 1970s, and it was those declines that caused lower private investment. In fact, the overall profit rate did decline in America, but not in the 1970s as this analysis implies (Table 2). Average profit rates rose in the early 1960s and then fell sharply in the late 1960s. The analysis may be right for this earlier period: in part profit rates increased in the expansion of the early 1960s because the spread between productivity and labor was so large, and declined later in the decade because that spread closed. But, surprisingly, the increased spread between wage and productivity increases in the 1970s (see Table 1) did not raise profit rates significantly. The difference between wage and productivity growth was 1.2 percent per year in 1960-66, fell to 0.5 percent in 1967-73, rose to 1.9 percent in 1974-79, and 3 percent in 1980-82.

Gross domestic private investment -- the amount that the private sector invests each year in some form or another of capital -- rose from

Table 2

Profit Rate of Non-financial Corporations and Real Investment, 1955-1981 (Percent)

Year	Rate of Return on Stockholders' Equity(a) Before Tax	After Tax	Real Investment (as % of GNP)
1955	13.1	6.2	9.3
1959	10.5	5.1	8.8
1962	11.2	6.1	9.0
1965	15.4	9.6	10.5
1966	15.2	9.2	11.0
1967	13.4	8.2	10.4
1968	13.8	8.0	10.4
1969	12.5	7.1	10.7
1970	8.8	4.7	10.5
1972	10.5	6.2	10.2
1973	12.8	8.3	11.0
1977	10.2	6.3	10.2
1979	10.2	6.6	11.5
1980	8.4	5.5	11.3
1981	7.7	5.1	11.4

Source: Economic Report of the President, 1982, Table B-88

Note: (a) Corporate profits corrected for inflation effects divided by the net worth of physical capital valued at current replacement cost. Bowles and Gintis (1982) report rates of profit as follows:

Year	Before Tax	After Tax
1948	15.6	7.9
1950	15.6	6.1
1955	14.5	6.4
1959	12.2	5.6
1965	15.9	9.1
1972	10.7	5.8
1977	9.5	4.9

about 9 percent of GNP in the 1950s and early 1960s to 10.5 - 11 percent in the late 1960s, and has stayed up there even in the 1970s despite falling corporate profit rates in the late 1960s (Economic Report of the President, 1983, Table B-88). One reason for the continued relatively high investment rate in the late 1960s was that capital was readily available. The increasing wages during that period produced a higher savings rate (see Table 1). Americans raised their saving rate to the highest level since World War II. Not only that, but the inflation that began in the late 1960s made the real cost of borrowing fall. For example, mortgage rates rose to about 7-8 percent, but a four percent inflation made the real mortgage rate (the nominal rate minus inflation) about 3 to 4 percent, lower than a decade earlier. Ready availability of capital from increased savings and a relatively low cost of capital kept investment high for at least a few years despite falling profit rates.

But if we look at gross investment another way, we see that the picture changed after 1973. Although the investment rate stayed about the same (11 percent of GNP) even after 1973 the amount business was investing per employee dropped sharply. Real non-residential gross private investment per employed worker increased at a 0.7 percent annual rate in the 1950s, 5.4 percent in the early 1960s, 1.0 percent from 1966 to 1973, and an average 0.2 percent annually from 1973 to 1979. So American business invested the same percentage of GNP that it had since the mid-1960s, but the absolute amount was not high enough in the 1970s to keep up with an expanding labor force.

The other element in declining investment per worker is the changing demography in the 1970s. Rapid increases in those of labor force age, smaller families, and increasing female labor force participation (based in part on a rejection of traditional female roles) put downward pressure

on wages and increased unemployment rates. This pressure began well before 1973, but since that year, real wages fell at a rate of about 2 percent annually, while employment has grown at a rate of 2.6 percent per year. Unemployment averaged 7.2 percent for all workers in 1974-82, and 13.0 percent for black workers. The economy therefore absorbed many more workers in the 1970s than at any time since the war, but at a cost of much lower wages per worker and increasing average unemployment rates. Part of the decrease in wages came from a lower average number of hours worked per week per worker. In the late-1960s, the average employee in private industry worked 38 hours, while in 1981, that figure had dropped to 35 hours. All this combined to limit the growth of total real wages and salaries paid out by private industry and government to 0.4 percent annually for the seven years after 1973. Put another way, the rapid growth in the labor force slightly more than offset the decline in real wages paid per worker to produce a total increase of less than 3 percent in purchasing power in the period 1973-80 for all wage and salaried workers added together. Government employees did much worse than those in the private sector. If we subtract out government workers' wages and salaries, the increase improves slightly to about 5 percent for labor in the private, non-farm sector.

Thus, the growth of capital stock that did occur between 1973 and 1980 increased employment but with decreasing average wages and a very low increase in total consumption demand coming from wages and salaries. Considering that national income grew at 1.8 percent annually in those years, the 0.4 percent growth of total wages suggests that employees as a whole were receiving a declining share of national income in the form of wages. Part of the decline was picked up by increasing government social welfare spending, but estimates by Bowles and Gintis (1982) indicate that labor's overall share of GNP did decline in the post-1972 period.

The Structure of Employment. The overall decline in capital per worker is only part of the explanation for productivity growth decline and increased unemployment. Denison (1982) estimates that only 0.21 percentage points out of a 2.68 percentage point decline in annual productivity growth between the periods 1948-73 and 1973-81 is attributable to the decline in capital per worker (1982, p. 5).

But important structural changes occurred in employment and investment between these periods. More and more of the rapid employment growth of the 1970s was in wholesale/retail trade and services, especially private services. Table 3 shows just how drastic these shifts in employment have been. Between 1948 and 1973, 4.5 million people entered manufacturing, and 23 million entered wholesale/retail trade, services, and finance/insurance/real estate -- what we can call, in general terms, private commerce and services (private c&s). Since the the late 1960s, manufacturing employment hardly grew, but c&s jobs continued to expand rapidly, increasing by 11 million between 1973 and 1982. As late as 1955, one out of three Americans worked in manufacturing (the figure had been as high as 38 percent in 1945). In 1966, the figure was still at 30 percent. But by 1981, only one out of five worked in manufacturing. This trend is supposed to continue, with almost all new jobs in the 1980s created in c&s.

The shift implies that the manufacturing sector as a whole is no longer the dynamic element in our economy as far as employment is concerned. There are rapid growth parts of manufacturing, like high technology industries. And there is always the possibility that high tech will expand so much that it will become to manufacturing what the automobile industry was in the 1950s. It is also true that part of the growth in services comes from manufacturing industries separating out their service divisions into

Table 3

Wage and Salary Workers, by Sector of Employment, 1929-1981 (millions)

Year	Total	Manuf-acturing	Min.	Const.	Transp./ Utilit.	Whole./ Ret. Trade	Fin.& Ins.	Priv. Serv.	Govt.
1929	31.3	10.7	1.1	1.5	3.9	6.1	1.5	3.4	3.1
1933	23.7	7.4	0.7	0.8	2.7	4.8	1.3	2.9	3.2
1940	32.4	11.0	0.9	1.3	3.0	6.8	1.5	3.7	4.2
1945	40.4	15.5	0.8	1.1	3.8	7.3	1.5	4.2	5.9
1948	44.9	15.6	1.0	2.2	4.2	9.3	1.8	5.2	5.6
1953	50.2	17.5	0.9	2.6	4.3	10.2	2.1	5.8	6.6
1955	50.6	16.9	0.8	2.8	4.1	10.5	2.3	6.2	6.9
1959	53.3	16.7	0.7	3.0	4.0	11.1	2.5	7.1	7.1
1966	63.9	19.2	0.6	3.3	4.2	13.2	3.0	9.5	10.8
1973	76.8	20.1	0.6	4.1	4.6	16.6	4.0	12.8	13.7
1977	82.5	19.7	0.8	3.8	4.7	18.5	4.5	15.3	15.1
1979	89.8	21.0	1.0	4.5	5.1	20.2	5.0	17.1	15.9
1981	91.5	20.3	1.1	4.3	5.2	20.7	5.3	18.6	16.0
1982	89.6	18.8	1.1	3.9	5.1	20.5	5.4	19.0	15.8

Source: Economic Report of the President, 1983, Table B-37.

new enterprises, such as GMAC handling the finances for General Motors. But these caveats do not change the fact that in the near future, business services, health care, and wholesale/retail trade will be the great employment generators if the present development pattern persists. We are rapidly becoming a service economy. Twice the number of people now work in private and public health care alone than in construction. Three times more people work for McDonald's making hamburgers than are employed by U.S. steel. So what happens in services will have a lot to do with labor-management relations, wages, and productivity. We shall show below, however, that simultaneous with this drastic shift of employment to private commerce and nonfinancial services, capital investment has concentrated in other sectors of the economy (oil and gas and financial services) that employ a very small percentage of the labor force. With capital investment growth in nonmanufacturing concentrating outside the principal employment sectors, those sectors would tend to be very sensitive to profit performance for attracting capital. Hence, unemployment rates may have increased because the high employment sectors generate only part of their investment capital, and are particularly prone to shifts in financial capital and increasing interest rates.

Productivity Growth and Employment Structure. Table 4 shows that after 1959, productivity growth in manufacturing was much more rapid than in either wholesale/retail trade or services. But in the 1970s, the increase in manufacturing sector GNP per employed worker slowed down from 3 percent annually in 1948-73 to 1 percent after 1973, about the same slowdown as in other sectors. Productivity in services -- where about 80 percent of new workers find jobs -- dropped from a 0.3 percent annual increase in 1960-73 to a 0.2 percent decrease in 1974-79. The contribution to GNP of each employed worker in private commerce and services (which

Table 4

Real Gross National Product Per Employed Person (RGNPPEP) and Growth in RGNPPEP, by Sector, 1948-1980

Year	Manufacturing (1972 $)	Wholesale/Retail Trade (1972 $)	Private Services (1972 $)	Government Services (1972 $)
1948	7782	8387	11058	12140
1953	9206	9206	10810	14591
1955	9804	9819	10903	13869
1959	10251	10396	11380	12840
1966	132[illegible]	11841	11484	12676
1973	16104	12717	11225	11391
1979	17523	12282	10444	10931
1980	17291	11912	10251	10816
	RGNPPEP Annual Growth Rates, by Sector (%)			
1948-53	3.4	1.9	- 0.4	3.7
1954-55	3.2	3.3	0.4	- 2.6
1956-59	1.1	1.4	1.1	- 1.9
1960-66	3.8	1.9	0.1	- 0.2
1967-73	2.8	1.0	- 0.4	- 1.5
1974-79	1.4	- 0.6	- 1.2	- 0.7
1980	1.0	- 0.9	- 1.3	- 0.7

Source: Economic Report of the President, 1982, Tables B-11, B-37

include wholesale/retail trade, banking/insurance/real estate, and non-government services) increased only by 1.2 percent per year in 1948-73, and decreased 0.6 percent annually in 1973-80. If we exclude the banking/insurance/real estate component of that sector, the annual growth rates are 1.0 percent in 1948-73 and -1.2 percent in 1973-80, reflecting the rapid growth of banking and real estate after 1973. So output per worker in that part of the economy which already employs about one half the private labor force is decreasing rapidly.

Any increased annual shift of the labor force from "high productivity growth" manufacturing to "low productivity growth" wholesale and retail trade and services therefore automatically lowers average productivity increases from year to year. Even if output per employee within manufacturing had been rising normally in 1973 to 1980, average productivity in the economy would have grown more slowly because most new workers were entering wholesale/retail and services. Yet, most analysts (see Denison, 1980), agree that although employment shift has a negative effect on productivity growth, the effect is not great compared to other factors that are reducing growth across sectors.

On the other hand, the expansion of private commerce and services relative to traditional employment in manufacturing and construction is not a temporary phenomenon. Employment in wholesale/retail trade and services can be expected to continue increasing at a rapid rate. Since the growth of jobs in government will be lower in the 1980s than in the past because of lower GNP growth rates and current fiscal difficulties, what happens in private sector commerce and services will be crucial for productivity and wage growth.

Productivity and Capital Structure. There has been a substantial restructuring not only of employment in the U.S. economy, but of profits and capital investment. The restructuring of capital has only been partially related to employment restructuring, less so than in previous historical periods. Furthermore, there has been, in the last decade, significant movement of capital into different regions of the country and to other countries.

The restructuring of capital involves a shift in manufacturing from old-line industries to high technology, a shift in profits from agriculture and old-line manufacturing to the energy sector, highly differentiated rates of investment in different sectors, and a rapid shift of output and employment growth from the U.S. Northeast/Upper Midwest to the South and West.

Rasche and Tatom (1981) claim that this is largely due to rising energy prices since 1973: High-energy consuming old-line industries and agriculture have had their profits eroded, and have had to restructure the methods of producing the goods and services that the public demands; high energy prices have jacked-up profits in the energy-producing enterprises, concentrating capital there rather than in manufacturing, agriculture, and services. This is dragging down the growth potential of the country, for U.S. industry is moving more toward labor-intensive production and away from production that uses a lot of capital and energy. Historically, until 1973, capital and energy was being substituted for labor, increasing labor productivity. But since 1973, production is becoming more labor intensive, thus reducing productivity. Much of the new capital investment goes to replacing high energy-consuming capital investment with energy-efficient capital.

However, Denison (1980; 1982) contends that energy price increases lowered U.S. productivity growth in the post-1973 period only by 0.1 percentage point, a small amount relative to the overall decline. Yet even if Denison's estimate of the direct effect on productivity of higher energy prices were correct, it is also true that high energy prices have concentrated capital in energy-producing companies, and, indirectly, in banks and other financial corporations. Between 1964 and 1981, the percentage of all non-financial corporate profits concentrated in oil and gas alone rose from 21 to 36 percent. Although this fraction is projected to fall in the 1980s as oil prices rise more slowly, it will still stay above 30 percent (Business Week, June 1, 1981)

The energy industry's share of capital spending in the mid-sixties was 16 percent and only 21 percent as late as 1976, but in 1981, as much as 30-35 percent of business investment came from this source (Business Week, June 1, 1981). So oil and gas companies will continue to play a dominant role in determining U.S. development. Add to this that financial corporations have increased their share of domestic corporate profits from about 10 percent in 1965 to 18 percent in 1980 (Economic Report of the President, 1982, Table B-83), and it is obvious that capital markets underwent a drastic shift in the 1970s. These shifts have placed enormous economic power in the hands of oil/gas producers and financial institutions.

The current debt crisis has revealed that an important source of the financial sector's profits was Arab oil money placed in U.S. banks and then lent at high interest rates to Third World newly industrializing countries (NICs) such as Mexico, Brazil, and Argentina. This sheds new light on the investment policies of U.S. financial institutions and the double role of rising oil prices in the U.S. economy. On the one hand, increases in oil prices increased costs of production and contributed to

reduced demand for consumption goods (the increases acted as a tax on consumers) -- both factors tended to reduce profits for industrial and agricultural producers. On the other hand, higher oil prices raised profits for oil and gas producers (as well as other energy producers) and for banks, since banks obtained a large new source of capital just as personal savings growth slowed down. The large banks assumed correctly that the U.S. government would bail them out in case of a foreign government threat of default (as they are now being bailed out through increased U.S. contributions to the International Monetary Fund). So they could afford to take the high risks associated with foreign loans and get the high interest rates associated with such high risk loans. These loans, in turn, financed increased economic growth in the NICs, increasing demand for U.S. industrial exports and contributing significantly to the U.S. growth rate in the late 1970s.

Higher oil prices were therefore crucial in shifting capital from one sector to another. For the banks, they indirectly formed the basis of increased profits. The fact that so much of the newly available capital was being invested abroad lowered the potential capital available domestically. Banks thus have a vested interest in high oil prices -- the present glut and falling oil prices, combined with the inability of the NICs to repay their loans, has all the makings of a world financial crisis.(2)

Capital has therefore become concentrated outside the job creating sectors. Oil/gas industries and financial institutions (including real estate) employ a very small fraction of the American labor force (about 6-7 percent). Even if we add another 5 percent of the labor force which is indirectly employed by those industries because of the construction and services they require, it would seem that where this capital is invested outside the sectors themselves has much more of an impact on jobs and growth

than what takes place inside.

If, for example, oil companies decide to invest more abroad or speculate in real estate or invest more in the Southwest, these decisions have enormous repercussions for the availability of jobs and the kinds of jobs available. Similarly, private financial institutions are wielding increasing power over the economic development process. Who has the capital in the American economy has therefore changed drastically in the last decade and this change will have profound effects on the economy's future development and productivity growth.

Productivity and Shifts in Regional Investment. Moves to regions of the country that offer better "business climate" leave other regions -- first the Northeast and now the Upper Midwest -- stricken with much higher than average unemployment, declining cities, and less tax base for public services. This has been called "corporate flight" (Bluestone and Harrison, 1980). Not only the Northeast and Midwest have been affected, however. For example, the Georgia Pacific Company now ships Oregon logs to Georgia to be processed into lumber, closing down its Northwestern mills and helping destroy one of Oregon's most important industries. High tech industries are moving from California to Texas (and to Oregon) in search of lower housing costs for its executives and engineers.

There are two distinct parts in the regional shift problem. The first is the issue of capital shift from declining (sunset) to expanding (sunrise) manufacturing industries and from manufacturing as a whole to oil/gas and financial corporations, which we have already discussed. Old-line manufacturing industries have declined partly because the management of these companies allowed them to become obsolete, and partly because of foreign competition. Some of these manufacturing industries move South, like textiles, lumber, and shoes. But others just close down, like

steel and autos. On the other hand, growing industries like gas and oil are located away from the traditional industrial centers. Their massive accumulation of profits have made the Southwest a particularly fast growing area. Other industries have located around this new capital concentration. High tech industries have produced a similar, though much smaller, phenomenon. And in some cases, high tech has located in previous growth areas like California (military, entertainment, agriculture, and tourism) or depressed areas like New England. Unemployment rates in New England during the 1981-82 recession have been distinctly lower than in 1974-75 because most old-line industries had already died in that first downturn.

The second piece of the problem is the shift away from unionized labor and states where labor has local political power. Orthodox economic theory argues that investment decisions are based on management's meticulous examination of the relative costs of doing business in alternative locations, and choosing those sites which minimize costs (assuming that markets are available for the firm's products or service). It follows that those communities which offer the least-cost package of inputs will attract capital from higher-cost areas. There is evidence to support the least-cost notion, but Bluestone and Harrison (1982) argue that business tends to locate with other factors primarily in mind, particularly "business climate." A good business climate includes favorable laws for business and a state governments which want to attract business into its state. Such a climate is a more important part of the location decision than wages, energy costs, or anything else.

If we look behind the business climate theory, however, it appears that businesses' primary interest is to escape labor unions and move away from states where labor unions have powerful friends in government. This suggests that the Frostbelt-Sunbelt shift is in part a response to unions

and labor activity in the North; second, in the world economy, multinational corporations attempt to organize the international division of labor in order to take advantage of less organized labor in Third World nations. Therefore, some companies have fled the Northeast and Upper Midwest because of the traditionally more "organized," higher-wage, and higher educated labor forces in those regions. Southern states and many low-income countries offer a different tradition: no unions, labor docility, and lower wages.

The result of such shifts in the 1970s have been dramatic: between 1969 and 1976, Frostbelt firms destroyed about 111 jobs through plant closings for every 100 new jobs they created, while companies in the South and West shut down 80 jobs while opening 100 (Bluestone and Harrison, 1980, Table 1).

Recent research indicates that the effect of moves away from unionized firms may be to lower productivity, since there is apparently a positive effect on productivity of unionization (see Fortune, December 1, 1980, pp. 149-52 for an interview with James Medoff and Richard Freeman; also Freeman, 1980). For one thing, since union wage contracts often tie wage increases to productivity increases, it is in the union's interest to raise output per worker. Shifting production to nonunionized regions such as the South and Southwest may therefore serve to reduce productivity growth.

The epitome of "corporate flight," however, is the shift -- over the long term -- of old-line industrial capital (as well as energy and financial capital) overseas. U.S. direct investment abroad rose from $12 billion in 1950 to $33 billion in 1960 to $78 billion in 1970 to $137 billion in 1976 to $187 billion in 1979, and $227 billion in 1981. This investment represented 22 percent of gross private domestic investment in 1950, 43 percent in 1960, 54 percent in 1970, 53 percent in 1976, down to

45 percent in 1979, and up to 54 percent in 1980, and down to 49 percent in 1981 (Survey of Current Business, August, 1982, Table 12). While it appears that foreign investment was down in the late 1970s from its relative highs in the early part of the decade (1980 seems to be an exceptional year because of unusually low GPDI), it still represents a signficant flow of funds out of the domestic economy.

The shift in investment has been marked by an important change in what happens to the profits of capital going abroad. Until World War II, U.S. overseas investment was largely in extractive industries, with profits repatriated to the U.S. After the war, there was a gradual shift in U.S. foreign investment to industrial production both for reexport back to the United States and for foreign markets themselves. In this new situation, American companies created branches in foreign countries that borrowed abroad, borrowed in the U.S., used profits created in the U.S. to invest overseas, repatriated profits to the U.S., and simultaneously invested in foreign securities, in U.S. Treasury notes, and wherever interest was highest. These enterprises, in other words, became transnational in their operations, and their profits no longer had a "home" in the old sense. For example, First National City Bank is a U.S. corporation but makes more than 50 percent of its profit abroad. Much of this profit is not only made

It is difficult to tell what percentage of profits made by U.S. companies overseas is reinvested in the U.S. but we do know that a higher and higher percentage of corporate pre-tax profits are made outside the U.S. Between 1960 and 1973, this figure rose from 6 to 13 percent, and between 1973 and 1980, the rise continued from 13 to 16 percent (Economic Report of the President, 1982, Table B-83). Given the investment trends of the 1960s and 1970s, it is likely that an increasing percentage of new investment in plant and equipment is being made overseas. Capital expenditures by majority-owned foreign affiliates of U.S. companies were

about $10 billion, or 12 percent of total non-farm business spending on new plant and equipment, in 1967 and $42 billion, or 14 percent of the total, in 1980 (Survey of Current Business, March, 1982, p.33).

Profits are still coming back to the United States, but the net effect of overseas investment is increasingly one of lowering U.S. productivity and placing downward pressure on U.S. wages. The old model of U.S. foreign investment exploiting low-income country agriculture and mine labor in order to ship profits back to the U.S., increasing wages at home and producing industrial goods in the U.S. for our home market, is no longer dominant. Naturally, some U.S. foreign investment still does exactly that. Much of U.S. foreign production, however, is now competitive with domestic production using American labor and is largely interested in developing foreign markets for its goods produced abroad. The U.S. still exports, and export industries did well in the mid-1970s as the dollar weakened. Growth of foreign markets will benefit these export industries to the extent that they are not competitive with the very products being produced abroad as import substitutes. But all in all, the transnationalization of capital has tended to accelerate the shift of American workers into lower productivity service industries and to cut down the incentive for innovation in U.S. manufacturing and services. This massive overseas investment is not just in automobiles, television sets and tape recorders; it is in food, clothing, drugs, forest products, transportation -- almost any industry found in the U.S.

Business has apparently slowed down its transnationalization in the 1970s compared to the 1950s and 1960s. Direct foreign investment decreased its percentage of gross domestic private investment (from 54 percent in 1970 to 45 percent in 1979 and 48 percent in 1981). But American business -- particularly big business -- still invests huge

amounts overseas every year and increasingly views its investment market as the world, not just the United States. This means that a large U.S. corporation in the 1980s tends to open and close plants on the basis of arranging its world-wide production of goods and services, even though much of the market for those goods and services may be in the U.S.

Some Hypotheses Concerning Productivity and Unemployment

A direct measure of the change in capital per worker is the growth of plant and equipment available for each worker in different industries. Net capital per worker in nonmanufacturing industries increased at 2.5 percent annually in 1948-59 when the labor force was only growing at a 1.6 percent annual rate, decreased slightly to 2.3 percent annually in 1959 to 1973 when the labor force was growing at a higher 2.6 percent every year, but began decreasing at a 0.5 percent annual rate in 1974 to 1979 when the labor force was still growing as quickly as in the 1960s (2.6 percent). Like overall investment, growth of capital stock in nonmanufacturing failed to keep up with labor force growth after 1973 (see Table 5).

Outside of manufacturing, capital stock per employee stagnated in the 1970s and this halted the increase in capital per employed person that had characterized the post-war period. In non-farm, non-manufacturing business (dominated by wholesale/retail trade and services), the average real value of structures and equipment available per employed person had leveled off by the mid-1970s. Table 5 shows that in 1973 each employee in non-manufacturing business had about $16,000 of net capital stock (measured in 1972 dollars) to work with; by 1979, the figure had decreased. It appears, therefore, that productivity increases slowed down in non-manufacturing business partly because there was a significant slowdown in the amount of investment per employee.

But in the manufacturing sector, the relation between growth of capital per employee and productivity is more complex. Net capital stock per employee increased from $10,700 per worker in 1973 to $13,300 in 1979. Yet productivity measured by sector GNP per employed worker increased by only 1.4 percent annually in that six year period, compared to a 3.3 percent annual increase from 1959 to 1973 (3.8 percent between 1959 and 1966 and 2.8 percent from 1966 to 1973). Looking again at Table 5, we see that the growth of fixed plant and equipment per employee in manufacturing in the 1950s grew relatively quickly and so did productivity. But in 1960 to 1973, the net stock of capital per employee grew relatively slowly, while productivity increased rapidly. This productivity increase may have been the result of the large investment in the 1950s. Yet, in the 1970s, despite rapid growth of capital stock per employee in the late 1960s and 1970s, productivity growth slowed down drastically.

Edward Denison shows in his research on U.S. productivity growth (Denison, 1980; 1982) that national income per person employed (NIPPE) averaged 2.46 percent annual growth in 1948-73, and - 0.22 percent in 1973-81 (Denison, 1982, p. 5). Of the 2.68 percentage point decline in annual growth rate of this measure of productivity between the two periods, 0.17 percentage points is due to a decline in hours worked and 0.21 percentage points to a decline in capital per employee. Fully 1.68 percentage points is the unexplained residual -- what Denison calls "advances in knowledge and miscellaneous determinants." Denison concludes that the best possibility is that everything had gone wrong at once among the determinants that affect the residual series, just as it did among the determinants whose effects were separately estimated: "Several developments may have combined to slow the advance in knowledge itself, and others to retard the incorporation of new knowledge into production. Similarly, inflation, regulation, soaring energy prices, high taxes, and changing

attitudes may have conspired to exert the large adverse impact on the miscellaneous determinants of output that forced the residual series into an actual decline" (1982, p. 41).

But Denison's methodology is open to criticism. Neoclassical economists themselves challenge many of the neo-classical assumptions underlying growth accounting. Nelson (1981) suggests that much of the difference in U.S. growth rates in the different periods and between countries will be found by regarding the firm as a social system rather than as a machine (worker satisfaction becomes a key variable) and studying the way that technological advance occurs. For one, firms make different decisions about technology, and the complex relationship between R&D spending and technological advance may have caused important differences in the way technology developed and spread in the earlier post-war period and the 1970s. Investment time horizons may have become shorter, as argued by Hayes and Abernathy (1980), or the efficiency of government R&D programs may have declined. Nelson also suggests that the sources of growth analysis has its limits, since it does not look at broad factors that foster or hinder a generally stimulating growth environment; i.e., the examination of macroeconomic conditions that mold economic growth. Thus, a number of factors may interact, such as a decline in investment per worker and the pace of technological advance, and productivity growth with the inability of the U.S. government to deal with macroeconomic problems in the 1970s compared with the 1960s. Nelson's point is that the "residual" is not the best route to go in understanding changes in economic growth. Rather, more "atmospheric" effects like the evolution of economic institutions, the pace of technological development, the relations between workers and employers, the economic outlook itself, and so forth, are much more significant in understanding such changes. (3)

We agree with Nelson and suggest that much of what he calls "atmospheric" effects are reflected in the low productivity growth in manufacturing in the 1970s. This low rate of growth may, in turn, be explained if we assume that most of the increased stock of plant and equipment went (a) to replace high-energy consuming with low-energy consuming machinery, (b) for moves from high-cost to low-cost labor regions in the U.S., and/or (c) for production abroad. (4)

All three types of investment are designed to raise the return to capital by lowering costs rather than by increasing labor productivity. They are perfectly sensible investments -- particularly those needed when the price of energy increased -- but they do not necessarily raise productivity. Rather, they are profit-motivated, and in the case of building new plants in low labor-cost, non-unionized regions (domestically and abroad), also are designed to take advantage of lower wages and may even lower productivity. The important factor in such investment is the spread attained between wages and productivity, not productivity alone. The New Deal accord struck between government, labor unions and business in the 1930s as part of Roosevelt's measures to counteract potential social upheaval in the 1930s, was built around higher profit combined with higher productivity. In this way both profits and real wages could rise. In the 1970s -- even with an increasing real value of capital per worker in manufacturing -- the investment was apparently such that productivity increases slowed down and real wages per employee fell. Of course, the accord had been fraying all along. Manufacturing moves overseas and to the South and West began long before the 1970s. Yet it was during this last decade that the emphasis on investment in lowering costs became the norm rather than the exception.

In terms of investment, then, two kinds of changes took place in the 1970s that apparently reflected a new business approach to the economy.

Table 5

A. Gross and Net Stock of Fixed Nonresidential Private Capital per Employee, 1948-79 (in 1972 dollars)

	Gross Stock of Capital/Employee		Net Stock of Capital/Employee	
Year	Manufacturing	Nonmanufacturing	Manufacturing	Nonmanufacturing
1948	11,530	17,980	6,430	8,910
1953	12,380	19,130	6,850	10,180
1955	13,780	19,980	7,520	10,850
1959	15,540	20,770	8,340	11,600
1966	16,210	24,010	9,310	14,350
1973	19,470	26,500	10,710	16,080
1979	23,340	26,790	13,340	15,580

Source: Gross and net capital stock from U.S. Department of Commerce, Survey of Current Business, vol. 61, no. 2 (February, 1981), p. 59. Number of wage and salary workers from Table 4-3, above. Net stock of capital equal to gross stock minus depreciation.

B. Growth of Real Capital Stock per Employee and Productivity, 1948-79 (percent)

	Capital Stock per Employee					
	Manufacturing		Nonmanufacturing		Productivity	
Year	Gross	Net	Gross	Net	Manufacturing	Total
1948-59	2.7	2.6	1.3	2.5	2.5	2.6
1960-73	1.6	1.8	1.7	2.3	3.3	2.2
1974-79	3.1	3.7	0.2	-0.5	1.4	0.5

Something happened in the late 1960s and early 1970s that made business change its overall investment pattern. This is observable even within the manufacturing sector, a sector where overall spending on new plant and equipment went up in the 1970s. Crucial industries like steel and autos held back on productivity-raising investments while the Japanese, Europeans and some Third World countries like Korea and Brazil were investing frantically in exactly those industries. Productivity growth slowed down in American manufacturing primarily because management was interested in lower labor costs and acquiring other firms (U.S. Steel's purchase of Marathon Oil, for example), rather than investing in rapid productivity increases. As a result, productivity growth fell as sharply in manufacturing as in services or wholesale/retail trade.

What explains this shift in capital from productivity-increasing to cost-reducing investment?

We suggest that the growth of capital stock per worker until the early 1970s tended to increase productivity and wages. But in the 1970s, important structural changes took place in the economy. These included a changing attitude of business toward organized labor and toward government macroeconomic policies (the New Deal accord). In those industries where there were increasing capital expenditures per worker, these investments were aimed increasingly at reducing energy costs and average wages, even at the price of reducing labor productivity. Thus, not only did capital per employee fall between 1973 and 1981, as Denison shows, but the capital investment that was being made was oriented differently than in the past. The New Deal relation between capital investment, employment, and wages was overturned in this period. Capital still replaces workers, increasing the productivity of those who remain, but the more important trend is to replace high-priced, highly-productive employees with low-priced, less-productive

ones through moving the plant. This expands employment, but does not necessarily mean that jobs are available for those who are displaced. In any case, it means that the displaced must move into lower-paying, less-skilled jobs.

An investment strategy that concentrates on lowering labor costs to increase profits obviously cannot be sustained indefinitely. It means lowering demand, and unless the U.S. intends to become increasingly an export economy, lower demand at home means lower growth. On the other hand, as a short- or medium-run approach to "rationalizing" the economy on "firmer ground," union-busting and real wage-reduction might mean higher profit rates for those companies that can survive the shaking-out period implied by such a strategy.

Alternative Strategies

Our analysis suggests that the decline in U.S. productivity growth is associated with declining investment per worker in much of the U.S. economy, but in the still-important manufacturing sector, capital stock per worker has been increasing while productivity growth is declining. Therefore, as Denison concludes, the nature of the investment has more to do with changes in productivity than increased capital per worker itself. Furthermore, declining productivity growth has been associated with greatly increased employment, but also greater unemployment. The unemployment rate has been rising since the late 1960s, and the rise does not appear to be due to a capital shortage except in this latest 1981-82 recession. Much of what could be viewed as a capital shortage before was really a tremendous shift of capital from industry and non-financial commerce and services to oil and gas and the banks. Much of this capital left the country in the form of loans to newly-industrializing nations and direct investment abroad.

Although the rate of personal savings declined at the end of the 1970s, it was only in 1981 that a high percentage of the absolute increase in personal savings began being absorbed by the increased net interest paid by the federal government on its debt. In 1981 (despite a sharp increase in the rate of savings in the last quarter), $16 billion of the $24 billion increase in savings was absorbed by increased net interest on federal debt. But in 1982, primarily because of a sharp downturn in savings in the fourth quarter, increased net interest on the debt exceeded savings by $16 billion to $11 billion (Economic Report of the President, 1983, Tables B-23 and B-72). On the other hand, the difficulties of Third World debt holders have reduced the amount of loans going to those countries, increasing the amount of capital available domestically. But declines in oil prices may, in turn, reduce the amount of capital flowing into U.S. banks. Nevertheless, even today's employment problem does not reside just in capital shortages and relatively high interest rates. Reduced growth of consumption demand due to very low increases in total wages and salaries paid over the last decade plus the recent decline in real government spending has shifted a significant fraction of GNP to owners of capital. In the manufacturing and in oil and gas sectors, they appear to be using much of that capital to increase short-term profits rather than creating employment. This will be a problem that resides with us far beyond the present recession.

The problem for increased productivity and reduced unemployment seems to reside much less in increased capital formation than in how available capital is used. Denison's, Nelson's, and our analysis all point in this same direction. More capital investment as a percentage of GNP could help increase productivity and employment, but lack of capital does not appear to be the important factor explaining lower productivity growth and increasing unemployment.

Part of the problem should be reduced in the longer run by a decreased growth of the labor force beginning in the second half of the 1980s. But much of that could be offset by increased immigration or capital flight. Again, the issue boils down more to what is done with available capital and to overall macroeconomic policies rather than the growth of the labor force and investment and savings.

Can high tech save us? At the same time that the rest of the economy has been having difficulties, there has been a sharp increase of investment and employment in rapidly-rising productivity electronics. But most Americans will continue to work in other industries, and those that do work in high-tech industry will be relatively unskilled and low-paid (Levin and Rumberger, 1983). The real impact of high tech on productivity and employment will be in the degree to which it changes and expands service industries. The technology already exists to improve productivity in the service sector. However, any projection of private sector service expansion depends a great deal on a long-term increase in demand. There are certain trends, such as the aging of the population, that will contribute to this increase, particularly in health care. But there are other trends, such as the decline in workers' real income, which unless sharply reversed will dampen demand. It is also unclear just how much of the new technology will actually be adopted in the next ten years, and whether it will be adopted "efficiently;" i.e., with higher productivity being passed on in lower prices of equivalent services, or, possibly, in higher quality services for the same price.

However, technology adoption is a risky business and plenty of mistakes are made. There are winners and losers. Usually, in a transition process, the correct guessers pull ahead and the wrong guessers fall by the wayside. Sectors concentrate. If this process takes place in services,

concentrated industries may not pass price reductions along; rather, profits may rise for those who survive in a market where demand increases slowly along with rising prices. Finally, there is no guarantee that capital will move into services very quickly.

In order to absorb all that labor force and raise productivity, capital investment per employee in services has to increase rapidly. Although profits in the service sector have remained high, investment growth per worker between 1973-80 was negative. Why should this low investment rate change so radically in the next decade? And where is the capital to come from to finance increased investment in services? Finance capital would have to shift radically from speculation and high tech to even more risky service innovations. The capital for the enormous investment required will have to come from outside the non-financial service enterprises. Service sector productivity will probably continue to grow slowly despite innovations that increase productivity rapidly in some of its subsectors (for example, telecommunications) and in many individual service enterprises.

More important, however, the emphasis of some policy makers on high tech and other sunrise industries does not by itself address the last decade's general business investment strategy and the implications of that strategy for employment, consumption, individual security, community life, and government revenues. Much of private business investment is in the process of trying to raise profits through lower costs. What makes those policy makers who put their faith in the new technology believe that high tech will continue producing in America when threatened by Japanese competition? Or that high tech industries will not move from state to state looking for tax breaks and other inducements, forcing labor to become nomadic in its search for work? And if other industries are pushing

for lower labor costs, where is the increased demand to come from for these high tech products?

An alternative strategy for increased employment and higher productivity should begin with a specific agenda for how available capital can be used to achieve those ends most effectively. Part of that agenda must include discussion of the relationship between increased productivity and increased wages, between consumer demand and increased growth, between accumulation by the private and government sectors, and the allocation of capital to old-line and sunrise industries, both regionally, sectorally, and internationally. Capital investment decisions made primarily by large corporations seeking profits do not necessarily result in full employment nor in the socially most efficient use of capital on other grounds -- community preservation, increase in demand for goods and services, a clean environment, improved health care, and a socially productive labor force. Worker and government participation in capital allocation may be needed in order to reach significantly lower levels of unemployment in a society oriented toward social efficiency. These are the crucial issues for a long-range development policy. Somewhere in their resolution -- in the formulation of a policy of technological change, capital allocation, and wage-price policies -- lies the answer to increased productivity and full employment.

Footnotes

1. As will become clear in our analysis, it is not obvious that declining productivity growth per se is all that meaningful as a measure of the changing quality of life even for the employed, especially in the short and medium-run. For example, average output per employed person has increased in the last ten years, but real average wages have declined significantly. Thus, the average American family has to work much harder to buy the same basket of goods even though its members produce more more per hour than they did in 1973. Moreover, productivity increases -- the way they are generally measured -- do not reflect the destruction or improvement of the environment, or the increase or decrease in anxiety caused by certain kinds of production (nuclear arms, for example). We want to know why productivity is declining not because productivity itself is necessarily the crucial issue for U.S. economic and social development, but because analyzing this decline helps us to understand what is happening in the economy.

2. The fact that manufacturing and agriculture were hurt by rising oil prices whereas oil and gas plus finance profited from it does much to explain why Denison's data show such a small overall effect on productivity of the oil price increase, and why other economists like Jorgenson, who concentrate on manufacturing industry, can claim that the oil price increase is crucial to understanding productivity declines.

3. We should also mention that Peter Gutmann (1977), Edgar Feige (1979), and other economists argue that a high fraction of decreasing productivity is due to the growing role of the underground economy. This group argues that productivity has not really declined sharply in the 1970s and that the savings rate is much higher than measured -- GNP growth has been seriously underestimated because of the increasing fraction of the economy that goes unreported. The service sector in particular is being underreported, and, according to Feige, the people who are moonlighting save the best

performance for moonlighting. Denison does not accept the argument that the underground economy explains much of the residual, since errors in estimating output -- even if these are as great as claimed by the underground economists -- are probably matched in underestimating employment, both in numbers of people employed and their hours worked (1982, pp. 36-40).

4. Capital spending abroad by majority-owned affiliates of U.S. companies did, in fact, increase in 1972-80, especially in manufacturing and petroleum, but no more rapidly than in domestic manufacturing. Spending by manufacturing affiliates rose from $7-20 billion (current dollars) in this period as compared to an increase in total manufacturing spending on new plant and equipment of $35-116 billion in the same period (Survey of Current Business, September, 1981). Thus, it is least likely that low productivity growth is caused by spending abroad.

Bibliography

Bluestone, Barry and Bennett Harrison. Corporate Flight (Washington, D.C.: The Progressive Alliance, 1980).

--------. Deindustrializing America. (New York: Basic Books, 1982).

Bowles, Samuel and Herbert Gintis, "The Crisis of the Liberal Democratic State," Politics and Society, Spring, 1982.

Denison, Edward. Accounting for Slower Growth (Washington, D.C.: Brookings Institution, 1980).

---------, "Accounting for Slower Economic Growth: An Update," Paper prepared for Conference on International Comparisons of Productivity and Causes of the Slowdown held by the American Enterprise Institute for Public Policy Research, Washington, September 30, 1982.

Feige, Edgar, "How Big is the Irregular Economy?" Challenge, November/December, 1979, pp. 5-13.

Freeman, Richard B., "The Exit-Voice Tradeoff in the Labor Market: Unionism, Job Tenure, Quits, and Separations," Quarterly Journal of Economics, vol. 94 (June, 1980), pp. 643-673.

Gutmann, Peter, "The Subterranean Economy," Financial Analysts Journal, November/December, 1977, pp. 26-27.

Hayes, Robert and William Abernathy, "Managing Our Way to Economic Decline," Harvard Business Review, vol. 58, no. 4 (July-August, 1980), pp. 67-77.

Levin, Henry M. and Russell W. Rumberger, "The Educational Implications of High Technology," Institute for Finance and Governance, Stanford University, February, 1983.

Nelson, Richard R., "Research on Productivity Growth and Productivity Differences: Dead Ends and New Departures," Journal of Economic Literature, vol. 19, no. 3 (September, 1981), pp. 1029-64.

Rashe, Robert and John A. Tatom, "Energy Price Shocks, Aggregate Supply, and Monetary Policy: The Theory and the International Evidence," in Karl Brunner and Allan Meltzer (eds.), Supply Shocks, Incentives, and National Wealth, Carnegie-Rochester Conference Series in Public Policy, Vol. 14, 1981 (Amsterdam: North-Holland Publishing Company).