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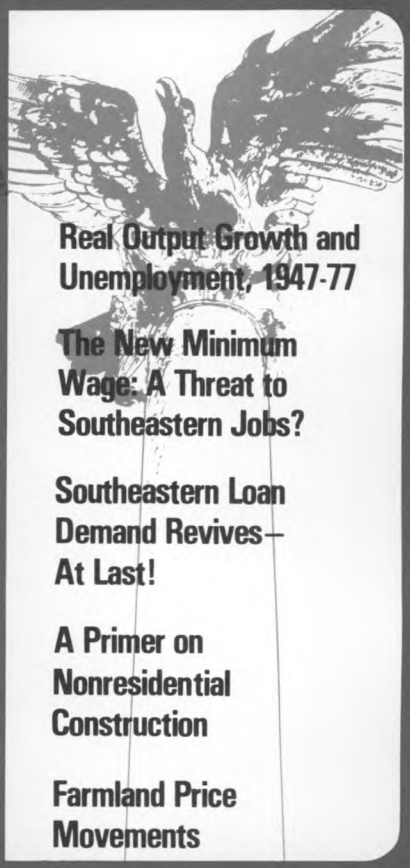

Real Output Growth and Unemployment, 1947-77

The New Minimum Wage: A Threat to Southeastern Jobs?

Southeastern Loan Demand Revives—At Last!

A Primer on Nonresidential Construction

Farmland Price Movements

Federal Reserve Bank of Atlanta

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REAL OUTPUT GROWTH AND UNEMPLOYMENT, 1947-77

by William N. Cox

Real output must expand significantly to keep the unemployment rate from rising. Merely avoiding a recession—a period when real output shrinks—is not enough.

Why? For two reasons. First, our labor force is constantly expanding. If employment doesn't grow at least as fast as the labor force, the unemployment rate will obviously go up. To get an increase in employment, we need an increase in output. During the 1947-77 period, for example, the U. S. labor force expanded at an average rate of 1.7 percent per year. Employment growth averaged 1.6 percent, however, not quite matching the labor force increase. The shortfall implies that our unemployment rate must have risen over the 1947-77 period, and, of course, it did: from 3.9 percent in 1947 to 7.1 percent in 1977.

During that same 30 years, our nation's real output actually expanded at a 3.6-percent annual rate. With annual employment growth of 1.6 percent, our average output per worker grew, on average, by 2.0 percent per year. These figures illustrate the second reason why real output must grow significantly to keep our unemployment rate from rising: Postwar real output would have had to expand by about 2 percent per year just to stabilize the *number* of people employed; output growth less than that could have been accomplished with a reduction in employment. So our growth of real output has to exceed the combined growth of the labor force and output per worker before we can expect to see the unemployment rate come down.

This combined growth rate, then, constitutes a threshold of sorts. We might even choose to call it the threshold rate of real growth, except that a prominent economist named Arthur Okun gave it another name 15 years ago: the potential rate of real growth.[1]

Our purpose in what follows is to examine the postwar patterns of this potential, or threshold, growth rate and its components, both for the sake of a consistent description and to help us assess what our potential growth rate might be in the years ahead. We live in a time when inflation and unemployment rates are both too high and economists and policymakers are much less confident than their predecessors that suitably enlightened policies will enable us to fine-tune the management of our economy. Fearing that

[1] Arthur M. Okun, "Potential GNP: Its Measurement and Significance," **1962 Proceedings of the Business and Economic Statistics Section**, American Statistical Association. Okun was interested in the rate of real growth which would stabilize the unemployment rate at full employment, then defined by an unemployment rate of 4.0 percent. Viewed in this way, the sum of labor force growth and output-per-worker growth measures the potential growth of output at full employment.

"How do we add up, compare, and forecast the effects of widely discussed influences, such as the decline of the workweek, the baby boom, and the entry of women into the labor force? These are some of the questions we shall probe below."

too rapid economic growth will lead to accelerated inflation and recession and that growth which is too sluggish will bring rising unemployment, many policymakers seek a moderate economic growth path. One side of that path is defined by the potential growth rate we have been discussing, since it is the growth rate our economy must surpass to keep unemployment coming down.[2] That rate has averaged about 4 percent over the past 30 years. Can we confidently expect the rate to be 4 percent in the future? How consistent has it been? What about the consistency of its components? How do we add up, compare, and forecast the effects of widely discussed influences, such as the decline of the workweek, the baby boom, and the entry of women into the labor force? These are some of the questions we shall probe below.

An Important Adjustment. Okun's work tells something else: For every additional percentage point the unemployment rate falls (or rises) from one year to the next, our real output growth must rise (or fall) by an additional 3 percent. This three-to-one relationship we call Okun's Law; it's part of every economic forecaster's tool kit. An example may help. In 1977, we posted a 7.0-percent average unemployment rate and a 5-percent gain in real output over 1976. Okun's Law suggests that a real growth rate of 8 percent (the 5 we got plus 3 we didn't get) would have produced an unemployment rate of about 6.0 percent (7.0 actual minus one-third of the addition to output growth). Going the other way, real output growth of 2 percent from 1976 to 1977 would have raised the unemployment rate to about 8.0 percent, or so Okun's Law tells us.

Why does it seem to take an extra 3 percent of output growth to get a 1-percent reduction in the unemployment rate? Because both the labor force and output per worker respond to changes in the unemployment rate. A falling unemployment rate seems to draw new job seekers into the labor force: Lower unemployment makes people more confident a job search will be successful, for one thing. For another, tighter labor markets generally mean higher wages; available jobs are more attractive. Output per worker seems to respond oppositely to unemployment: Employers are very conscious of hiring and training costs; they tend to be cautious both in reducing employment levels when output falls and in expanding employment when output increases. There is a tendency to retain experienced workers in a business slump and add to the number of hours each person works in an expansion, at least until there is room to believe an expansion will persist.

So when our economy's real growth rate accelerates, three things usually happen: (1) Employment expands, pulling down the unemployment rate; (2) labor force growth accelerates, retarding the fall in unemployment; and (3) output per worker rises, reducing the amount of employment growth necessary to accomplish the output acceleration. A 3-percent output acceleration contributes only 1 percent to employment and thus to the unemployment rate, *with the other 2 percent being absorbed by the labor force and output-per-worker responses.* This is what is referred to when people talk of a "sluggish" or "sticky" unemployment rate, as they did during much of 1977.

We adjust for these responses, as the reader can see in the algebra in Appendix I, by turning Okun's Law "inside out" and assuming that an actual decrease of, say,

"A falling unemployment rate seems to draw new job seekers into the labor force."

[2]Okun (Ibid.) estimated the relationship at 3.2-to-1. Subsequent estimates, notably by George Perry ("Labor Force Structure, Potential Output, and Productivity," **Brookings Papers on Economic Activity, 1971:3**), put the relationship slightly below three.

THE POSTWAR EXPERIENCE

(national growth rates expressed as annual percentages)

	1947-52	1952-57	1957-62	1962-67	1967-72	1972-77	1947-62	1962-77	Range of 5-year Growth Rates
Output/Worker ($\dot{Y}/\dot{N}$)	**3.9**	**1.4**	**2.4**	**2.5**	**1.1**	**0.7**	**2.5**	**1.5**	**0.7 to 3.9**
Private Output/Hour $(\dot{Y}/\dot{H})_p$	3.8	2.8	3.1	3.5	2.1	1.3	3.2	2.3	1.3 to 3.8
Private Hours/Worker $(\dot{H}/\dot{N})_p$	-0.2	-0.6	-0.1	-0.4	-0.5	-0.6	-0.3	-0.5	-0.6 to -0.1
Imputed Public-Private Adjustment $\left[\frac{\dot{Y}/\dot{N}}{(\dot{Y}/\dot{N}_p)_t}\right]$	0.3	-0.8	-0.6	-0.5	-0.5	0.0	-0.4	-0.3	-0.8 to 0.3
Civilian Labor Force ($\dot{L}$)	**0.9**	**1.5**	**1.1**	**1.8**	**2.3**	**2.4**	**1.2**	**2.2**	**0.9 to 2.4**
Population 16-to-65 ($\dot{P}$)	1.0	1.1	1.3	1.6	1.8	1.7	1.2	1.7	1.0 to 1.8
Participation Rate ($\dot{L}_t/P$)	0.5	0.1	-0.3	0.3	0.1	0.6	0.1	0.3	-0.3 to 0.6
Armed Forces Adjustment ($\dot{L}/\dot{L}_t$)	-0.6	0.3	—	-0.1	0.3	0.1	-0.1	0.1	-0.6 to 0.3
Unadjusted Potential Real Growth Rate	**4.8**	**2.9**	**3.5**	**4.3**	**3.4**	**3.1**	**3.7**	**3.7**	**2.9 to 4.8**
Unemployment Rate Changes*	**-0.9**	**1.3**	**1.2**	**-1.7**	**1.8**	**1.5**	**1.6**	**1.6**	**-1.7 to 1.8**
Okun's Law Adjustment	**-0.4**	**0.6**	**0.5**	**-0.7**	**0.8**	**0.7**	**0.3**	**0.2**	
Estimated Potential Real Growth Rate	**4.4**	**3.5**	**4.0**	**3.6**	**4.2**	**3.8**	**4.0**	**3.9**	**3.5 to 4.4**

*Actual changes, not annualized.
Sources: Departments of Commerce and Labor

1 percent per year in the unemployment rate must have been accompanied by something like a 2-percent response in labor force and output-per-worker growth. We can measure actual changes in the unemployment rate, in the labor force, and in output per worker. What we want to know, though, is how much real output growth would have been consistent with *no* change in the unemployment rate. (That is, after all, the definition of the potential, or threshold, growth rate we seek.) So our estimate of the potential growth rate equals the actual labor force growth plus the actual output-per-worker growth plus twice the actual change in the unemployment rate.

The 1947-77 Experience. Our postwar experience with the potential growth rate is summarized in the table. *Every number in it (except the unemployment rate changes) is an annual rate of percentage growth (or decline) during the five- or fifteen-year period shown.*

Turning first to the boldface numbers and using the 1972-77 column as an example, we can see that output per worker grew 0.7 percent and the civilian labor force grew 2.4 percent. We adjust by estimating that the sum of output per worker and labor force growth would have been 0.7 percent higher if the unemployment rate had held steady rather than rising at an annual rate of about 0.3 percent. Our estimate of the potential growth rate for 1972-77, therefore, is 3.8 percent: That real growth rate would have been necessary, over the 1972-77 period, to hold the unemployment rate constant at its 1972 level of 5.6 percent. As it happened, our real growth averaged only about 2.7 percent, thanks to the 1974-75 recession, and our unemployment rate rose to 7.1 percent.

Still focusing on the boldface statistics, we can see that the potential growth rates

"A 3-percent output acceleration contributes only 1 percent to employment and thus to the unemployment rate, with the other 2 percent being absorbed by the labor force and output-per-worker responses."

"We can see that the potential growth rates were about the same for the first and second halves of the thirty-year period and that there is no clear trend in the potential growth rates over the six five-year periods."

were about the same for the first and second halves of the thirty-year period and that there is no clear trend in the potential growth rates over the six five-year periods, although they range more broadly between 3.5 percent to 4.4 percent than do the fifteen-year rates. If we look no further than these numbers, we might well conclude that for the 1977-82 period, an extrapolated potential growth rate of 4 percent would be our best bet.

It might be. But before we decide that, we should look at how productivity and labor force growth behaved individually. Here we find no such stability but rather offsetting trends apparently caused by unrelated developments. Labor force growth accelerated sharply from 1947-62 to 1962-77. Our potential growth rate might have jumped just as sharply and unemployment with it, except for a decline in productivity growth which offset the labor force acceleration almost exactly. The five-year growth rates show the same trends: labor force up; productivity down.

Two offsetting growth rates like these usually lead an economist to suspect a behavioral relationship between the two. Are productivity and labor force growth somehow interrelated, once we adjust for the reaction of each to changes in unemployment? Can we count on an acceleration in one being offset by a deceleration in the other? If we can, we would feel more confident about extrapolating the 4-percent potential growth rate into the future. To answer this question, we need to look closely at the components of labor force and productivity growth. When we do that, we shall see that the two seem substantially independent and that the offsetting growth patterns, therefore, seem largely coincidental.

Civilian Labor Force Growth. First, let us look more carefully at postwar labor force growth, defining it more carefully to mean the expansion of the *civilian* labor force. As Appendix I shows, we have divided our labor force growth in each period into three components: (1) growth of our working-age population, age 16 and above; (2) changes in the "participation rate," or the proportion of that population in the total labor force, including the armed forces; and (3) fluctuations in an adjustment ratio measuring the proportion of our total labor force in the civilian labor force—that is, outside the armed forces.

Qualitatively, we can see that our civilian labor force would increase by (1) growth in our working-age population, (2) an increase in the participation rate within that population, and (3) a reduction in our armed forces personnel, some of whom will be seeking civilian jobs.

Quantitatively, our use of annual growth rates enables us to compare the effects of each component on unemployment. Some of these comparisons are quite revealing in themselves. For example, we can see that the much discussed entry of women into the labor force between 1972 and 1977 contributed (through the overall participation rate) only a third as much to labor force growth as did growth in our working-age population (0.6 percent versus 1.7 percent).[3] We can see, too, that higher participation rates during the past five years had about twice the effect of our armed forces reductions during the Vietnam wind-down (0.6 percent versus 0.3

"We can see that our civilian labor force would increase by (1) growth in our working-age population, (2) an increase in the participation rate within that population, and (3) a reduction in our armed forces personnel."

[3]Our purposes here preclude a detailed discussion of the breakdown of postwar participation rates by age and sex, but we have included a 1962-77 summary in Appendix II. Earlier data were not collected on a detailed basis.

"Although the contribution of the participation rate was fairly small in the 15-year periods, it has jumped dramatically since 1972."

percent). The table provides material for other specific comparisons, which we leave to the reader.

Our primary interest is to learn more about why civilian labor force growth has accelerated. The data in the two fifteen-year columns suggest that most of the acceleration came from population growth (which picked up from 1.2 percent to 1.7 percent) rather than from the rise in the participation rate (0.1 percent to 0.3 percent), which roughly equaled the effects of reductions in our armed forces (-0.1 percent to +0.1 percent). Documented immigration had very little influence on our working-age population growth over the past 30 years. The acceleration basically comes from the baby boom: High birthrates during the 1947-62 period brought large increases in the 16-to-65 population 16 years later. When we turn to assess the potential growth rate components in the years ahead, we shall be interested in what more recent birthrates suggest and whether we can continue to ignore the influence of immigration.

Although the contribution of the participation rate was fairly small in the 15-year periods, it has jumped dramatically since 1972. Moreover, the 0.6-percent contribution tabulated for 1972-77 would probably have been about 0.2 percent higher had the unemployment rate not increased at the same time. (Common sense tells us that it is the participation rate rather than population growth or the armed forces adjustment which has reacted to unemployment changes in the way we discussed at the beginning of this article.) When we turn later to guess at the future, our job will be to judge whether the participation rate will continue to rise the way it has for the past five years. Not surprisingly, the answer seems to rest in the participation rates of women, which have gone up dramatically, overcoming a smaller and less discussed decline in the participation rate of men. In any case, the relevant question for us is not whether participation rates will fall or not but rather how fast they will grow.

There is little to add here about the armed forces adjustment—our percentages measure changes in the ratio of the civilian labor force to the total labor force—except to note that the effects on our potential growth rate have at times been fairly significant. Future effects will tend to reflect whether or not we have another Korean or Vietnamese build-up.

Growth in Output Per Worker. Our experience with output per worker is tougher to deal with than the labor force for two reasons. First is the inherent ambiguity of effects. Productivity growth is counted as a good thing in our society. More output per worker means more consumption per worker and a higher economic standard of living. Higher wages and profits, undiluted by inflation, are part and parcel of this higher living standard. Most economists would find it difficult to argue that higher output per worker is something that we don't want.[4] Yet in our peculiar context here, there is no question that higher productivity growth has perverse effects on unemployment unless our economic growth rate itself rises to offset the productivity increase. From the standpoint of bringing the unemployment rate down, higher productivity has a negative effect.

Another thing makes the productivity side more difficult to analyze: We cannot decompose it as neatly for

"Most economists would find it difficult to argue that higher output per worker is something that we don't want. Yet in our peculiar context here, there is no question that higher productivity growth has perverse effects on unemployment."

[4]For a contrary view highlighting the essential conflict between productivity and employment, see E. F. Schumacher, **Small Is Beautiful**, Vantage Books, 1977

APPENDIX I

MEASUREMENT OF THE POTENTIAL GROWTH RATE AND ITS COMPONENTS

We begin by noting that in any year

$$(1) \quad Y = \left(\frac{Y}{N}\right)\left(\frac{N}{L}\right) L,$$

where Y is real output (GNP in 1972 $)

N is civilian employment, and

L is the civilian labor force.

Y/N is output per worker, and N/L is the complement of our conventional unemployment rate U. (If U is 5 percent, for example, then N/L is 1 minus .05 = .95.) If we convert each of these terms to percentage changes at annual rates and denote the conversion by placing a dot over each term, then

$$(2) \quad \dot{Y} \cong \left(\frac{Y}{N}\right)^{\cdot} + \left(\frac{N}{L}\right)^{\cdot} + \dot{L}.$$

Real output growth, this says, is approximately equal to growth in output per worker plus growth in the employment rate plus growth in the labor force. This approximation is very close for small percentage changes like the annual rates we use in this article.

Our interest is not in the actual rate of economic growth $\dot{Y}$ but rather in the potential rate of growth—that rate which would have been consistent with no change in the unemployment rate. Calling this potential rate $\dot{Y}_0$, we can see that

$$(3) \quad \dot{Y}_0 \cong \left(\frac{Y}{N}\right)^{\cdot}_0 + \dot{L}_0 + 0,$$

where $(Y/N)_0$ is the output per worker we would have had, and $\dot{L}_0$ is the labor force growth we would have had, with no change in unemployment. (In such case, of course, $(\dot{N}/L)$ would have been zero.)

$$(4) \quad \dot{Y} - \dot{Y}_0 \cong 3 \left(\frac{N}{L}\right)^{\cdot}.$$

Next, this says that the excess of actual over potential economic growth equals three times the fall in the conventional unemployment rate or, equivalently, three times the percentage increase in the employment-to-labor-force ratio.* If we reorder (4) and substitute (2) into the result, we get

$$(5) \quad \dot{Y}_0 \cong \dot{Y} - 3 \left(\frac{N}{L}\right)^{\cdot}$$

$$(6) \quad \dot{Y}_0 \cong \left(\frac{Y}{N}\right)^{\cdot} + \dot{L} + \left(\frac{N}{L}\right)^{\cdot} - 3 \left(\frac{N}{L}\right)^{\cdot}$$

$$(7) \quad \dot{Y}_0 \cong \left(\frac{Y}{N}\right)^{\cdot} + \dot{L} - 2 \left(\frac{N}{L}\right)^{\cdot}.$$

Equation (7) provides a way of estimating the potential growth rate: We start with measured growth in output per worker, add measured growth of the civilian labor force, and correct the sum for the effects of unemployment rate changes by subtracting twice the change in the ratio of employment to the civilian labor force.

We have also found it analytically useful to break Y/N and L into three components each. For L:

$$(8) \quad L = \left(\frac{L}{L_t}\right)\left(\frac{L_t}{P}\right) P$$

$$(9) \quad \dot{L} \cong \left(\frac{\dot{L}}{L_t}\right) + \left(\frac{\dot{L}_t}{P}\right) + \dot{P},$$

where L_t is the total labor force (including persons in the armed forces) and P is 16-and-over population. Here L_t/P is the familiar participation rate—the proportion of working-age Americans in the total labor force. The L/L_t term adjusts for movements in and out of the armed forces. This breakdown enables us to see, for example, during the 1972-77 period, that of the 2.4-percent annual expansion in the civilian force, 1.7 percent was attributable to the growth of working-age population, 0.6 percent came from expanded participation of that population, and 0.1 percent came from a movement out of the armed forces into the civilian labor force.

Our breakout of the productivity term is similar. We have data for the private sector on output per hour $(Y/H)_p$ and on the average number of hours worked per week $(H/N)_p$.

We use it by noting that

$$(10) \quad \left(\frac{Y}{N}\right) = \left(\frac{Y}{H}\right)_p \left(\frac{H}{N}\right)_p \left[\frac{Y/N}{(Y/N)_p}\right]$$

$$(11) \quad \left(\frac{\dot{Y}}{N}\right) \cong \left(\frac{\dot{Y}}{H}\right)_p + \left(\frac{\dot{H}}{N}\right)_p + \left[\frac{\dot{Y/N}}{(Y/N)_p}\right],$$

where the third term adjusts for the public-private discrepancy.

Our summary table, then, is based on equations (7), (9), and (11), which when combined give us

$$\dot{Y}_0 \cong \left(\frac{\dot{Y}}{H}\right)_p + \left(\frac{\dot{H}}{N}\right)_p + \left[\frac{\dot{Y/N}}{(Y/N)_p}\right] + \left(\frac{\dot{L}}{L_t}\right) + \left(\frac{\dot{L}_t}{P}\right) + \dot{P} - 2\left(\frac{\dot{N}}{L}\right).$$

*Our estimates employ a factor of three: Of a 3-percent change in the rate of economic growth, 1 percent will show up in the unemployment rate and the other 2 percent will be offset by increases in productivity and the labor force. Estimates of this relationship by various economists over the past 15 years seem to cluster in the 2.7- to 3.4-percent range. Okun's original estimate was 3.2. The most recent estimates are toward the lower end of the range and would suggest our using perhaps 2.7 or 2.8, but we chose 3.0 because of a subjective suspicion that the statistical associations were in part reflecting coincidental rather than causative relationships.

"Our reading of the 1947-77 experience, then, is that our stable potential growth rate reflects a coincidence of offsetting independent factors. Labor force growth accelerated sharply, partly in response to the baby boom and partly in response to expanded labor force participation by women. The offsetting deceleration in output per worker seems largely the result of shifts in the composition of our output and employment."

description and analysis. The obvious breakdown is to separate output per worker into two components: output per hour and average hours per worker (per week, per month, or whatever; it doesn't matter because we are interested in annual rates of percentage change). We can get data to separate these components, and we have, but only for the private sector. For government employees, who do not produce goods and services priced and valued in private markets, there is no standard against which to measure productivity. The builders of our national income accounts simply estimate government productivity growth as zero. Our nation's productivity statisticians, recognizing the lack of information in our government-sector productivity figures, stick to the private-sector data. So shall we, except that we include an imputed adjustment to highlight the public-private discrepancy in coverage.

What do these private-sector figures tell us about the decline in productivity we mentioned earlier? Overall, we can see from the 15-year figures that output per hour is by far the most important of the two components and has decelerated significantly. (This is true, incidentally, even if we attribute a substantial portion of the "Okun's Law adjustment" to the output per hour component.) The workweek reduction has continued through the 30-year period too, though the percentage decreases have recently been larger.

The reasons for the postwar declines in the growth in output per hour and the workweek are largely structural. New technology and additions to physical and human capital (plant and equipment; education and training) exert upward pressure on output per hour, year after year. Virtually all the changes in productivity growth have been related to three structural shifts: (1) the substantial movement of workers from farm to nonfarm jobs, which boosted overall productivity substantially until the early 1960s; (2) the continuing shift in our nation's output from manufacturing to service occupations, which has retarded the growth of hourly productivity; and (3) the recent increase in the proportion of inexperienced workers, whose average productivity tends to be below that of their more seasoned counterparts. Studies by the Bureau of Labor Statistics suggest that these factors are sufficient to account for most of the postwar deceleration and are more important than the effects of changes in capital investment, labor-management relations, and the like.[5] Basically, then, most of the postwar productivity slump has come from the exhaustion of the farm-to-nonfarm transfer, from continuing shifts from manufacturing into services, and from the recent reduction in the experience level of our labor force.

Accelerated declines in the average workweek seem to be explained by similar factors. Until about ten years ago, there had been a small but consistent shortening of the average workweek through all

"We expect the potential growth rate to fall from the 4.0-percent postwar average to about 3½ percent, since declines in the working-age population will not be fully offset by increases in participation rates or output per worker."

[5]Summarized in Kutscher, Mark, and Norsworthy, "The Productivity Slowdown and the Outlook to 1985," **Monthly Labor Review**, May 1977

"Additions to the labor force through immigration (legal or otherwise) are the biggest question mark. If our unemployment rate falls and the supply of entry-level job applicants decelerates, such immigration could push potential growth and unemployment up significantly."

sectors of our economy. Talk was widespread then about the 32-hour week. More recently, however, such attention has been diverted to flexible working hours and 4-day, 40-hour weeks, perhaps stimulated by consciousness of higher commuting costs. Cutbacks in average hours of work have come, instead, from the shift from manufacturing to services and the increase in part-time employment.

What about our imputed discrepancy between the public and private sectors? Persistent negative adjustments suggest that public-sector productivity, as estimated, lagged behind the private sector until the past five years. We are reluctant to say much more about the reasons for this pattern without further study, but we cannot resist the guess that the improvement posted for this component in the 1972-77 period reflects recent heavy pay increases in the public sector rather than a stalling of productivity declines.

Our reading of the 1947-77 experience, then, is that our stable potential growth rate reflects a coincidence of offsetting independent factors. Labor force growth accelerated sharply, partly in response to the baby boom and partly in response to expanded labor force participation by women. The offsetting deceleration in output per worker seems largely the result of shifts in the composition of our output and employment.

The diversity of these contributions and influences suggests that we cannot simply extrapolate our potential growth into the future. A reasonable assessment of our future potential growth requires, instead, that we examine each component in the light of the influences peculiar to it.

What Lies Ahead? We venture these prospects with considerable uncertainty:[6]

1. We expect the potential growth rate to fall from the 4.0-percent postwar average to about 3 1/2 percent, since declines in the working-age population will not be fully offset by increases in participation rates or output per worker.

2. Additions to the labor force through immigration (legal or otherwise) are the biggest question mark. If our unemployment rate falls and the supply of entry-level job applicants decelerates, such immigration could push potential growth and unemployment up significantly.

3. The strong deceleration in our working-age population suggests that our potential growth rate will be falling rather than rising *within* the next five-year period, implying that a constant actual rate of economic growth throughout the period would make increasingly more headway against unemployment as the period transpires.

Before we elaborate a bit, a couple of warnings are appropriate. The potential growth rate we discuss here is based on the capacity and willingness of our labor force to expand real output. It takes no account of other bottlenecks, notably shortages of physical capital or natural resources.

Second, we need to recognize the attention economists have recently paid to

"The strong deceleration in our working-age population suggests that our potential growth rate will be falling rather than rising within the next five-year period, implying that a constant actual rate of economic growth throughout the period would make increasingly more headway against unemployment as the period transpires."

[6] As this article goes to press, we notice that the **1978 Report of the President's Council of Economic Advisers** contains similar answers to similar questions, including a real potential growth rate between 3 3 and 3 8 percent per year

"On the productivity side, we expect output per worker to grow 1.8 percent during the next five years."

natural, or noninflationary, rates of unemployment.[7] These studies suggest that if we push the conventional unemployment rate below some level, widely estimated at between 5 and 5 1/2 percent, inflation will accelerate unacceptably. This work suggests, quite credibly, that Okun's 3-to-1 ratio of above-potential economic growth to unemployment rate reductions may be too low as the unemployment rate comes into the 5- to 5 1/2-percent range, and forecasters and policymakers should be prepared to see their unemployment and inflation hopes disappointed in such a case. This prospect is pretty well recognized.

The determinants of the natural, or noninflationary, level of unemployment may include the same factors as our potential growth rate: productivity and the labor force. If so, and if we expect our potential growth rate to slow down, the natural rate of unemployment may fall with it, giving us more room to reduce unemployment without an acceleration of inflation. This hypothesis, however, is obviously well beyond the scope of this article.

How do we get our expectation that the potential growth rate will fall? On the labor force side, we start by accepting the official forecast of 1.3-percent growth in our 16-to-65 population. This projection is based on previous birthrates and is not affected significantly by inclusion of the over-65 age group. This rate should fall steadily from 1.7 to 1.1 over the five-year period.

Participation rates are much harder to forecast. Studies are pouring out on the subject, incorporating many possible influences: childbearing patterns of working women, school enrollments, single-parent families, purchasing power of young workers in relation to their parents, advantages of working versus public assistance programs, and so forth. Some analysts, notably at the Bureau of Labor Statistics, project a much slower increase in participation rates than the 0.6 percent experienced in 1972-76. Others see a continuation of our recent increases.[8] Our subjective judgment, after examining these forecasts, is that additions will continue to be strong but not as strong as recently, perhaps at an 0.4-percent contribution to civilian labor force growth. As to our armed forces adjustment, we project no change there, in the absence of a good reason to expect anything else.[9] Adding these numbers up, we expect the civilian labor force contribution to potential growth to average 1.7 percent: 1.3 percent from population growth and 0.4 percent from participation rate growth. This is midway between our experience for the 1947-62 and 1962-77 periods, respectively.

On the productivity side, we expect output per worker to grow 1.8 percent during the next five years. We accept the BLS estimate of a 2.4-percent increase in the private output per hour component, reflecting a continuing shift from manufacturing to services and a gradual seasoning of the labor force as the influx of inexperienced entrants subsides. The workweek, we expect, will continue to decline at an 0.4-percent rate: a continuation of the long-term shift to shorter workweek service activities, offset partly by a dropoff in the influx of secondary workers desiring part-time employment. As to the public-private discrepancy, we have estimated a decline of 0.2 percent, expecting public-sector wage increases to taper off. This component may fall more than that, but our doubts here are somewhat counterbalanced by a fear that the output per hour and workweek projections may each be (algebraically) a little high. ■

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[7] See, for example, Arthur M. Okun, "Conflicting National Goals" in **Jobs For Americans: A Look to the Future,** American Assembly on Manpower Goals for American Democracy, 1976

[8] Interested readers are urged to consult three recent articles in the **Monthly Labor Review:** Devens, "Labor Force Trends: A Bibliography," October 1977; Bednarzik and Klein, "Labor Force Trends: A Synthesis and Analysis," October 1977; and Fullerton and Flaim, "New Labor Force Projections to 1990," December 1976

[9] Manpower levels in the volunteer army may move in response to lower unemployment, however

APPENDIX II

LABOR FORCE PARTICIPATION RATES BY AGE

(percent)

Year		Total	16-19	20-24	25-34	35-44	45-54	55-64	65 and over
1962	Female	38.0	39.1	47.4	36.4	44.1	50.0	38.7	9.9
	Male	82.8	57.7	89.1	97.4	97.7	95.6	86.2	30.3
	Total	59.7	48.5	68.2	66.5	70.2	72.3	61.5	19.0
1967	Female	41.2	41.7	53.4	42.0	48.1	51.8	42.4	9.6
	Male	81.5	59.2	87.5	97.4	97.4	95.2	84.4	27.1
	Total	60.6	50.5	70.5	69.4	72.2	72.8	62.4	17.2
1972	Female	43.9	45.9	59.1	47.6	52.0	53.9	42.1	9.3
	Male	79.7	59.9	85.9	95.9	96.5	93.3	80.5	24.4
	Total	61.0	53.0	72.5	71.4	73.7	72.8	60.2	15.6
1977	Female	47.9	50.7	66.8	57.0	57.9	55.7	42.0	8.3
(est.)	Male	78.1	60.2	84.7	95.3	95.9	91.7	75.4	20.2
	Total	62.4	55.5	75.8	76.0	76.4	73.1	57.7	13.2

THE NEW MINIMUM WAGE: A THREAT TO SOUTHEASTERN JOBS?

by Charlie Carter

On January 1 of this year, the first of four scheduled increases in the Federal minimum wage took effect, lifting the basic minimum from $2.30 per hour to $2.65. The new law calls for further upward adjustments to $2.90 in 1979, $3.10 in 1980, and finally to $3.35 in 1981.

Advocates heralded the new law as a major step to protect working Americans from poverty. Many economists, however, contend that such legislation is self-defeating in that it reduces demand for entry-level workers—those it's designed to help.[1] Also, its "ripple effect" on above-minimum wages may dampen the demand for higher paid workers and add to inflation, as employers attempt to pass on higher wage costs by raising prices.

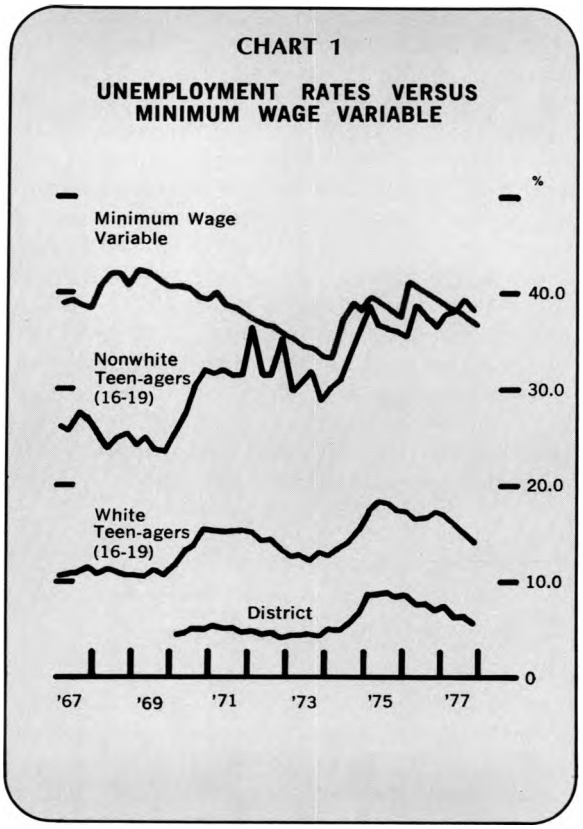
The economic literature on the subject of minimum wages is voluminous, dating back to the passage of the original Fair Labor Standards Act in 1938.[2] Previous studies have focused largely on the effects of increases in the minimum wage on employment, unemployment, and the labor force participation rates of various demographic groups. Although specific conclusions vary from study to study, there is general agreement that, on a national scale, elevations of the minimum wage reduce employment, raise unemployment (see Chart 1), and discourage labor force participation, especially of youths and nonwhite workers. There is also some evidence that increases in the minimum wage force up wage rates already above the minimum, as unions and other groups demand comparable pay raises.

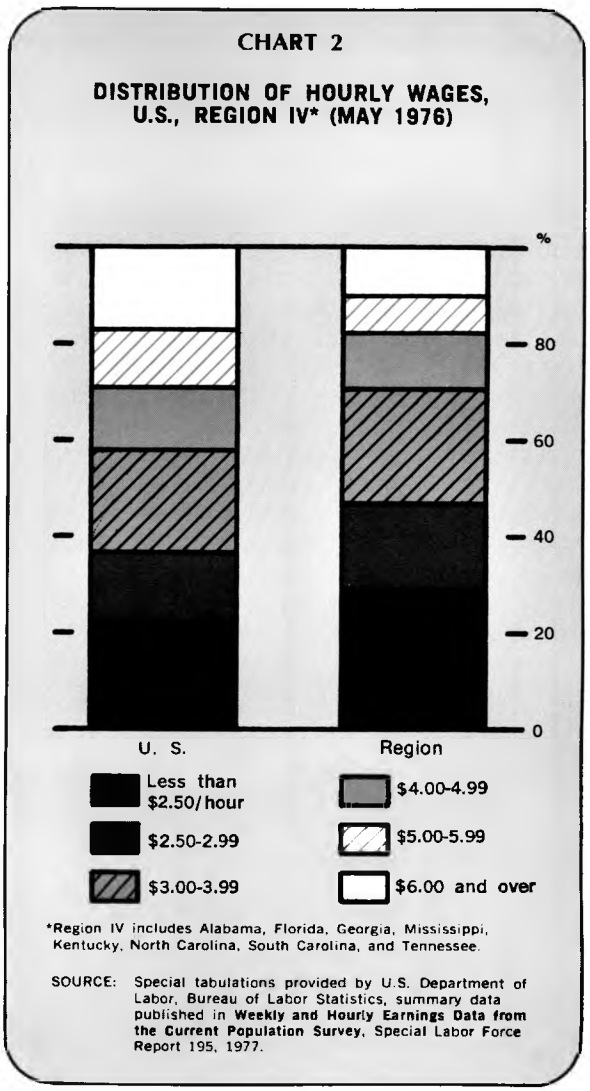
Regional Effects? With few exceptions, earlier research on the effects of the minimum wage has been nationwide in scope and has not dealt with possible regional differences in its impact. But it stands to reason that any adverse effects of an increase in the minimum wage would be more pronounced in low wage regions. A uniform national minimum will be higher relative to average earnings in a low wage area. And since a greater proportion of workers covered by minimum wage laws receive no more than the minimum pay in such an area, an increase will affect a larger fraction of its work force. Thus, raising the minimum wage to elevate living standards nationally may worsen unemployment in low wage regions.

The low wages of the southeastern United States relative to other regions of the U. S. make it a useful testing site for the above hypothesis. In May 1976, about 34.2 million wage and salary workers nationwide were paid on an hourly basis, according to the Census Bureau's **Current Population Survey.** Their median hourly earnings were $3.35, and the mean was $4.06. But the 6 million hourly workers in Administrative Region IV (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee) had a median wage of only $3.12 per hour and mean earnings of $3.52 per hour, significantly less than the

[1] For example, see James F. Ragan, Jr., "Minimum Wages and the Youth Labor Market," **The Review of Economics and Statistics,** Vol. 59, May 1977, p. 129.

[2] For a review of previous empirical studies, see John M. Peterson and Charles T. Stewart, Jr., **Employment Effects of Minimum Wage Rates** (Washington, D. C.: American Enterprise Institute for Public Policy Research), August 1969.





national averages. Almost two-thirds of U.S. hourly wage earners were paid at least $3 per hour, while only slightly over half of the Region IV workers earned that much (see Chart 2).

The Bureau of Labor Statistics earnings data show that the average hourly earnings of manufacturing production workers are also lower in the southeastern U. S. than in the nation as a whole. As recently as September 1977, mean hourly wages of manufacturing production workers in the six Federal Reserve District states (Alabama, Florida, Georgia, Louisiana, Mississippi, and Tennessee) were only $4.80,[3] about 17 percent less than the average $5.75 paid to factory workers nationally.

To test our hypothesis, regression analysis was used to estimate the effect of changes in a minimum wage variable on changes in unemployment rates. Changes in output were added to the equation in order to measure the effect of changes in general economic activity on unemployment rates. We estimated one such equation for the U. S. as a whole and another for our low wage region, the Sixth District. In addition, we calculated two similar equations using the national unemployment rates of white and nonwhite teen-agers. The minimum wage variable used was not the minimum wage per se but rather a coverage- and industry employment-weighted average ratio of the minimum wage to average hourly earnings. The Appendix explains the data and methodology used in greater detail.

TEST RESULTS

General Impact. The equations we estimated suggest that increases in the minimum wage are associated with rises in

[3]The mean hourly wage for the Sixth District is the average of hourly earnings in each of the six states weighted by the state's manufacturing employment

unemployment rates, both in the U.S. and in the Sixth District (see the table for statistics). However, that relationship is statistically significant only for the Southeast. The equation calculated for the District implies that a 10-percent advance in our minimum wage variable would raise the area's jobless rate by half a percentage point within two quarters, barring changes in production levels and other economic factors. Plugging the December 1977 value of District average hourly earnings and the proportion of workers covered in 1976 into the equation shows that the January 1 35-cent per hour elevation of the basic minimum wage will push the recent District unemployment rate of 6 percent to 6½ percent by June, unless offset by economic growth. Judging from current labor force estimates, District employment would be 60,000 higher at midyear if the minimum wage had not been increased. Should the estimated relationship hold through 1981, the increases scheduled would cost the District a total of 144,000 jobs.[4]

The lack of statistical significance of the relationship between the minimum wage and the jobless rate on the national level is not entirely a surprise. Previous studies have found that an elevation of the minimum wage affects the unemployment rates of certain demographic groups more than others. Thus, at the national level (and to a lesser extent in the Sixth District), a higher minimum wage may draw older, more experienced workers, particularly women, into jobs previously held by younger, lower skilled workers. Higher minimum wage

[4]This four-year estimate is based on assumptions that average hourly earnings will grow by 7 percent per year and that the shift of employment from manufacturing to service industries will continue at its historic trend rate.

APPENDIX

Methodology. Data limitations prevented our duplicating the approach commonly used in national scale tests for minimum wage effects in our regional test.* The specific equations we estimated are

$$\% \Delta U = a_o + b_o \% \Delta MINW + c_o \% \Delta GNP + e_o \text{ and}$$
$$\% \Delta DU = a_1 + b_1 \% \Delta DMINW + c_1 \% \Delta DIPI + e_1,$$

where U and DU are unemployment rates for the U. S. and Sixth District, respectively; GNP is the Gross National Product in 1972 dollars; DIPI is the Federal Reserve Bank of Atlanta's District Industrial Production Index; and the e's are error terms. MINW is the minimum wage variable for the U. S. and is defined as follows:

$$MINW = \sum \frac{E_i}{E} \left[\frac{MB}{AHE_i} (CB_i) + \frac{MN}{AHE_i} (CN_i) \right],$$

where E = private nonfarm payroll employment,
MB = basic minimum wage,
AHE = average hourly wage of production workers,
CB = proportion of nonsupervisory workers covered by the basic minimum wage,
MN = minimum wage applicable for newly covered workers,
CN = proportion of nonsupervisory workers covered by the minimum wage applicable for newly covered workers, and
i = major industry division—wholesale and retail trade is considered a separate division.

DMINW, the District minimum wage variable, is computed in the same way, except that average hourly earnings and the industry employment proportions are Sixth District averages.

*For an explanation of the behavioral model used in national studies, see Jacob Mincer, "Unemployment Effects of Minimum Wages," **Journal of Political Economy**, 1976, Vol. 84, No. 4, Part 2 (University of Chicago), pp. S87-S104.

levels are perceived as a deterioration in employment prospects. Since the newly discouraged workers would be primarily comprised of unemployed persons, the exodus from the labor force may offset some of the impact of the minimum wage hike on the jobless rate. Thus, a minimum wage hike may cause changes in the demographic distribution of employment which do not show up as an increase in the total unemployment rate.

Another explanation for the weakness of the relationship between the national minimum wage variable and the unemployment rate may be that the impact is primarily on hours of work. If employers respond to a raising of the minimum by cutting back hours worked rather than the number of employees, it will not alter the unemployment rate. And since increases in the basic minimum are usually accompanied by a rise in overtime pay, some employers may even add new employees to eliminate overtime.

Effect on Youths. The impact of the minimum wage on youth unemployment is startling (see Chart 1). Our test results show that a 10-percent increase in our minimum wage variable will raise the unemployment rate of whites age 16-19 by 7.4 percent and that of nonwhite youths by 6.4 percent. The 1978 elevation of the minimum can be expected to swell teenage joblessness from the recent rates of 14.7 percent for whites and 34.7 percent for nonwhites to 16.1 percent and 37.7 percent for whites and nonwhites, respectively, by midyear. With about 8.6 million white youths and 1.2 million nonwhite teen-agers in the national labor force, those increases mean that 156,000 fewer youths will be employed in June. When all the minimum wage raises of the next four years are considered, youth job losses may

To test the effects of the minimum wage on youths, we also estimated the following equations:

$$\% \Delta UY_W = a_2 + b_2 \% \Delta MINW + C_2 \% \Delta GNP + e_2$$

$$\% \Delta UY_N = a_3 + b_3 \% \Delta MINW + C_3 \% \Delta GNP + e_3,$$

where UY_W and UY_N are the national unemployment rates for white and nonwhite workers age 16-19, respectively.

The data were quarterly; the test period included the first quarter of 1970 through the second quarter of 1977. Only the output data were seasonally adjusted. The estimating technique used was ordinary least squares.

The Minimum Wage Variable. The form of the minimum wage variable was selected for its sophistication and wide acceptance in the literature. "Deflating" the nominal minimum wage by hourly earnings transforms the flat, steplike increases in the minimum into a rachet-like series of small rises. That's because inflation and productivity gains tend to gradually raise the general level of wages, eroding the effectiveness of statutory increases in the minimum wage.

Since the legal minimum for newly covered workers is not as high as the rate set for previously covered employees, only a weighted average of wage ratios for the two groups could accurately represent the relationship between the minimum wage and the general wage level. The weights used were the proportions of nonsupervisory workers covered previously and those covered as a result of extensions of the law (separate pairs of proportions were calculated for each industry division). In order to assign greatest importance to the industries which account for the largest shares of private nonfarm employment, the coverage-weighted wage ratios for each industry were also weighted by industry employment.

Measured in this way, the effective minimum wage rose from about 37 percent of national earnings in 1970 to 40 percent in 1976, an increase of 9 percent. In contrast, if coverage and employment distribution were ignored and only the basic minimum were considered, the wage ratio declined 2.5 percent during that period.

NET EFFECTS OF CHANGES IN THE MINIMUM WAGE AND OUTPUT ON UNEMPLOYMENT RATES, 1970:I - 1977:IV

(regression coefficients of equations and variables as defined in the Appendix)

Unemployment Rate Equation	Constant	% Δ MINW	% Δ DMINW	% Δ GNP	% Δ DIPI	R^2	Durbin-Watson Statistic
United States:							
All Workers	.029 (3.840)	.075 (0.395)		- 2.788 (4.786)		.416	2.13
Youths (Age 16-19)							
Whites	.049 (4.457)	.724 (2.642)		- 4.422 (5.248)		.492	2.15
Nonwhites	.031 (2.924)	.642 (2.444)		- 2.820 (3.493)		.340	2.14
Sixth District:							
All Workers	.038 (2.537)		.643 (1.580)		- 1.675 (3.757)	.450	1.93

Absolute values of t-statistics are in parentheses. For a two-tailed test, critical values are 1.314 ($\alpha = 0.1$), 1.70 ($\alpha = .05$), and 2.46 ($\alpha = .01$).

reach 470,000. The potential dramatic effects are particularly disturbing in light of the already extremely high jobless rates of youths.

The Role of Output. The output variables in our test equations (constant dollar GNP for the U. S. and industrial production for the Sixth District) are important because increases in output tend to create jobs, offsetting the effect of the minimum wage on the unemployment rate. Indeed, our tests confirm that production affects unemployment inversely and significantly.

More specifically, the unemployment rate is more sensitive to real output growth nationally than in the Sixth District. A 4-percent rise in real GNP reduces the U. S. jobless rate by about an 0.6 percentage point, but a similar increase in District industrial production lowers the southeastern unemployment rate by roughly an 0.4 percentage point.[5] The jobless rate of white teen-agers shows a greater response to output gains than does the rate for nonwhite youths: that 4-percent real GNP growth improves the white rate by 16 percent and the nonwhite rate by 11 percent.

Conclusions. Our evidence gives some support to a widely held belief that increases in the minimum wage adversely affect unemployment rates. The impact is greater in low wage regions like the Southeast and on youths, especially nonwhites. On the other hand, an elevation of the minimum wage does not significantly raise the jobless rate on the national level. Changes in the demographic composition of employment and a discouraged worker effect may explain the lack of response. Our estimates of the number of District and teen-age jobs to be lost because of minimum wage hikes do not reflect the effects of other major influences on labor markets: output changes, labor force participation rates, and monetary and fiscal policy. Although not tested here, increases in the minimum wage are likely to reduce hours worked and raise output prices. Hopefully, future studies will probe further into these other probable effects. ■

The District Industrial Production Index is designed to measure the output of manufacturing industries only. Since manufacturing production accounts for only a small share of the total output of the District (whereas national GNP is designed to measure the output of all sectors), the lower sensitivity of the District unemployment rate to changes in the production index is not surprising

SOUTHEASTERN LOAN DEMAND REVIVES— AT LAST!

by John M. Godfrey

As the southeastern economy moved into its third year of expansion, the region's banks picked up strong momentum. With liquidity positions rebuilt, Sixth District banks were in the advantageous position of experiencing strong deposit inflows concurrently with robust credit demands from many types of borrowers during 1977. As a result of this favorable balance of conditions, southeastern banks reported strong gains in interest income that generally flowed through to the bottom line as higher earnings.

Loan Demand Recovers. The most significant—and welcome—development to occur last year was the strong and broadly based pickup in loan demand. Not since 1973 had banks been in a position to really sell their major product—the direct extension of credit to households and business firms. In 1975 and 1976, the only significant growth in bank credit had been acquisitions of U. S. Treasury securities. Overall loan demand had been weak, with borrowing primarily limited to households. With expenses exceeding taxable income, many banks had been unable to take full advantage of the tax exemption on income from their large holdings of state and local government securities. Higher yielding government obligations thus had become more attractive in bank portfolios.

Bank loans in the District rose 14 percent last year and were advancing at an even faster pace in the latter half of the year. The strongest loan growth occurred in Alabama, Florida, and the southern half of Mississippi. While bank lending had advanced satisfactorily at the medium-sized and smaller banks in 1976, it had remained weak at the larger banks until late in that year. Since then, the lending increase at the larger banks has been below that of the other banks. While the credit expansion has been less rapid than the nearly 25-percent rate of the mid-1970s, most bankers would rather not repeat that experience.

CHART 1

BANK LENDING POSTS A STRONG GAIN

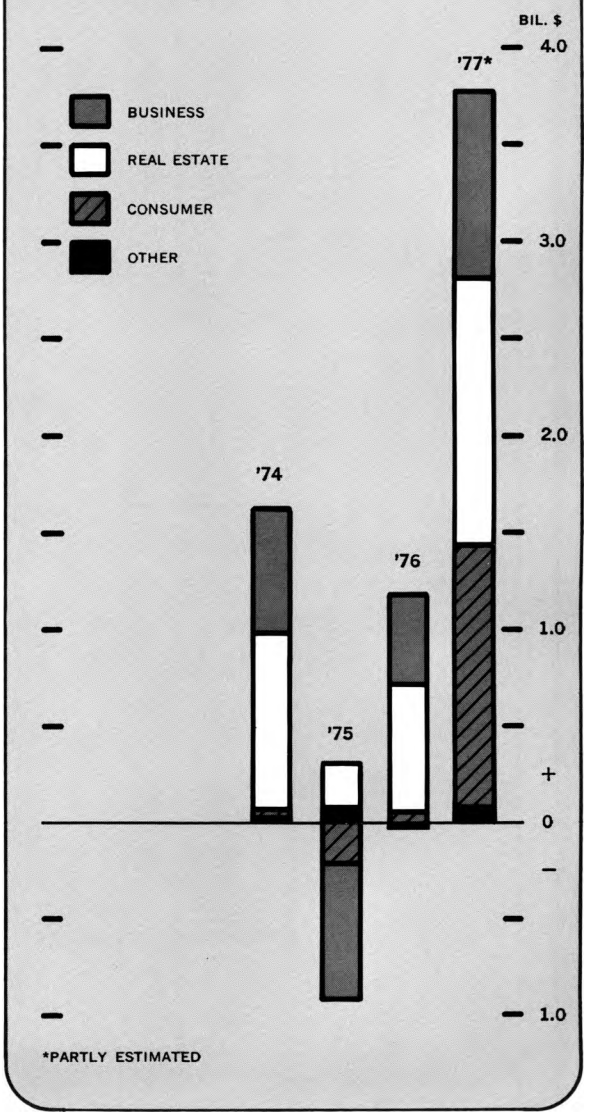
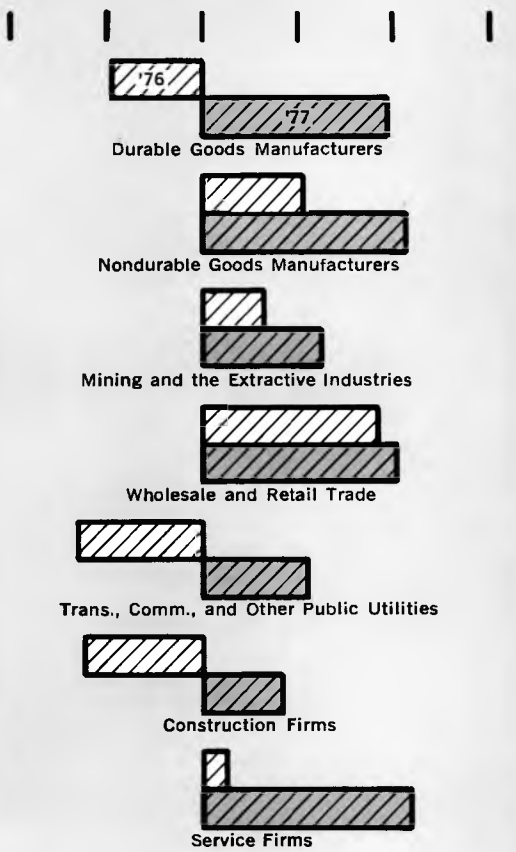
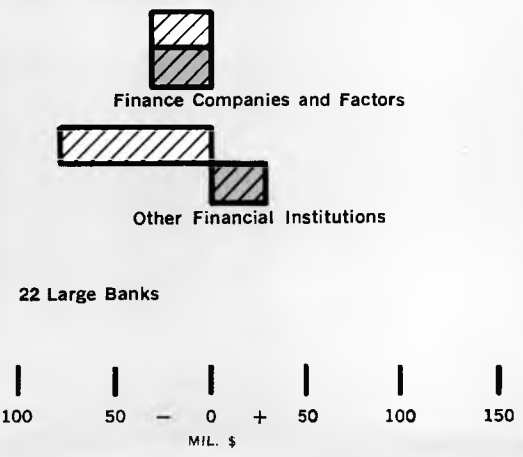


CHART 2

COMMERCIAL AND INDUSTRIAL LOANS REBOUND. . . .



. . . WHILE LOANS TO NONBANK FINANCIAL FIRMS REMAIN WEAK

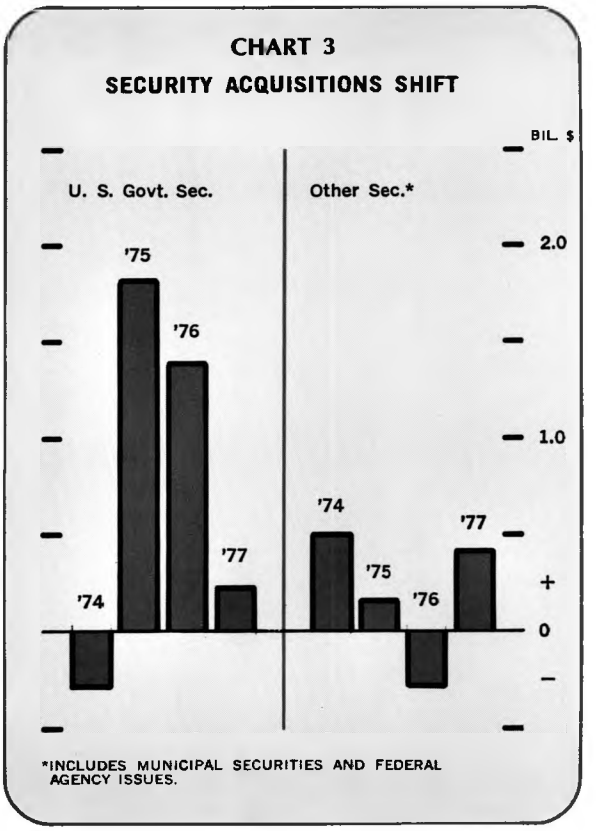


Loan demand in 1977 was strongest from households. Consumers' use of bank credit for purchases advanced nearly 20 percent, as they financed new and used automobiles, home improvements, and other retail purchases. Only in the area of mobile home credit did consumer instalment credit decline. Even though bank consumer lending rose throughout the District, Tennessee banks cut back on their extensions of consumer credit in late summer, responding to uncertainties generated by a court decision that more strictly enforced the state's usury ceiling.

Household borrowing was not limited to financing retail purchases. Home mortgage credit rose, too, as purchases of new and used single-family homes posted large gains. The sharp rise in real estate credit was not attributable only to home mortgage loans, however. Loans to finance commercial properties increased strongly at the larger banks in Tennessee, Georgia, and Florida. Loans to finance land development and construction loans were up at the larger banks in Alabama and Louisiana.

The major turnaround in bank credit demand last year reflected an upsurge in business borrowing. Increased use of business credit lines while other credit demands were heavy was partly responsible for the advance in bank prime lending rates during the year. They rose from a low of 6 1/4 percent in early 1977 to 7 3/4 percent by the end of the year. The higher interest charges and expanding business loan volume added significantly to banks' interest income.

The resurgence in business loans was most apparent at the larger banks. Commercial and industrial loans had risen slightly over $100 million in 1976, but strength had been evident only in lending to textile and apparel goods producers, wholesale and retail trade firms, and the mining and extractive industries. Last year, however, business loans jumped nearly $600 million (about 13 percent), expanding in all major industrial and commercial loan categories. In contrast, at large banks nationally, growth was about one-half the District rate. Those categories showing strong net loan increases in 1977, as compared with reductions or only weak gains in 1976, included durable goods manufacturers, transportation, communication



and other public utilities, construction firms, and the services industry. Lending also continued to the business customers who had been heavy borrowers in the previous year. This broad base for business credit expansion gave regional banks a much better balance in their loan growth.

While commercial banks enjoyed increased business from their commercial and industrial firms, even the larger banks found that financial institutions such as finance companies were weak, if not inactive, customers during the last three years. (Lending to these borrowers includes both direct loans and purchases of commercial paper issued by these companies.) Loans to sales and personal finance companies and business factors dropped about $31 million during 1977, the same as in the previous year. Since most banks price their direct loans to finance companies at the prime rate or above, they have in many cases priced themselves out of this loan market. The prime rate has recently been set at 125 basis points above the commercial paper rate. As a result, finance companies have been borrowing in the commercial paper market at the lower rates and repaying their bank loans. Other financial institutions—primarily mortgage and insurance companies, bank holding companies, savings and loan associations, and REITs—increased their bank borrowing by only $28 million in the past year following a $78-million reduction in 1976.

With the revival of overall loan demand in 1977, District banks had less need to increase their holdings of securities to obtain earning assets. District banks added to their holdings of U. S. Government securities by only 4 percent during the year, in sharp contrast to their more than doubling these holdings in the previous two years. Despite this small advance in government holdings, banks did make some portfolio adjustments that reflected changing credit conditions. They sharply pared their holdings of Treasury bills in favor of higher yielding intermediate-maturity notes. Positions in long-term Treasury bonds were unchanged.

With taxable income up, District banks once again made modest additions to their municipal bond portfolios. Since banks can most effectively utilize tax-exempt income only when they have taxable income, the strong advance in interest income and a reduction of loan loss expenses paved the way for many District banks to return to the municipal bond market as active purchasers.

Deposit Inflows Advanced. The continued overall strengthening in deposit inflows was a major factor in enabling District banks to meet last year's revival in credit demands. Total member bank deposits rose $4.1 billion, a brisk 10.4-percent gain. Furthermore, last year's dollar growth in deposits exceeded the net increase of the two previous years combined.

The change in the distribution of the deposit gains was as important as the magnitude. Demand deposit inflows accelerated sharply in the District, just as in other parts of the country. Larger checking account balances provided banks with a more ample supply of interest-free funds (although these funds are not without some cost to the banks) and are but one further indication that the region's households, business firms, and governmental units required more funds to transact a

higher level of spending and financial transactions.

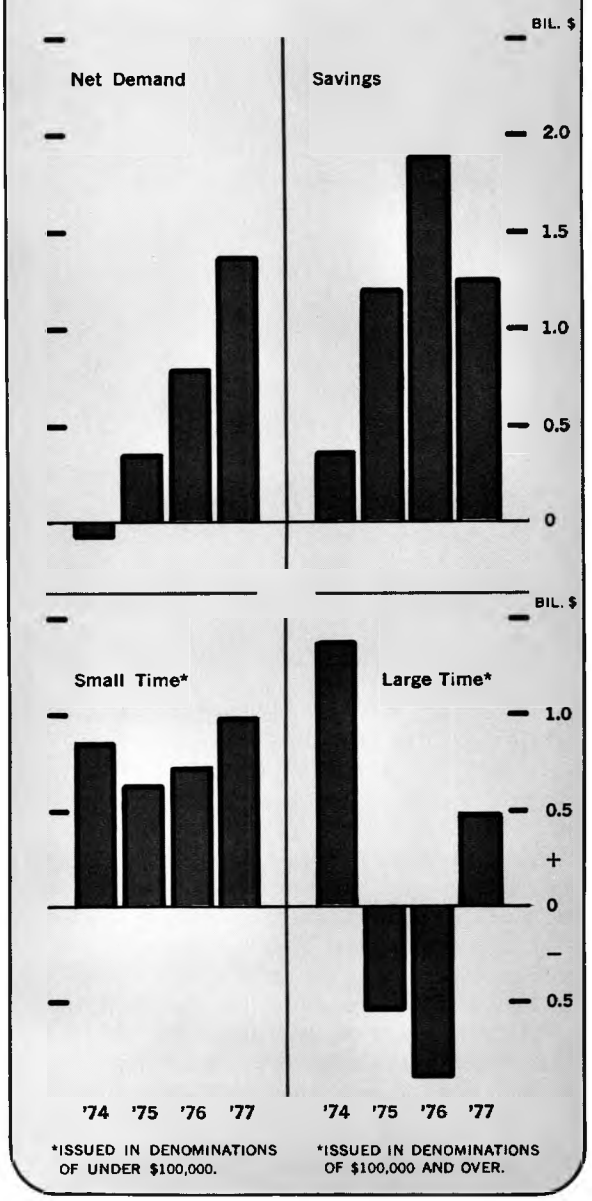
Although gains in passbook savings were considerably lower than those of the two previous years, they were certainly adequate. Growth in savings accounts is important because it helps ensure a relatively stable and low-cost deposit base. But since this single source of deposits had been supplying about three-quarters of the banks' net deposit gains in recent years, the more diversified deposit inflows in 1977 were beneficial.

For the first time since 1974, District banks posted net gains in time deposits, as both the smaller denomination time deposits and larger "money market" type deposits rose. The smaller denomination time deposits gave many consumers, businesses, and governmental units the opportunity to obtain higher interest yields by leaving their money on deposit for longer periods. While time deposits add to banks' interest expenses, they do help to ensure that these funds will not be suddenly withdrawn, should the return on competing financial instruments rise. The strongest inflow of time deposits came from those deposits maturing in four years or more. They were up nearly $700 million, a 20-percent gain. The District's smaller banks, where the competition from nonbank thrift institutions is less, accounted for most of the advance.

The expansion of long maturity time deposits must have been a particular relief to many banks, since they collectively faced the prospects of about $700 million in "wild-card" deposits maturing during the July-October period. These "wild-card" deposits were originally issued with four-year maturities in the summer and early fall of 1973, when they carried no mandated interest ceiling rates. By 1977, the interest on a number of these "wild-card" deposits exceeded the Federal Reserve Regulation Q interest ceiling rates and/or the current rate that many banks were willing to pay. Aside from a special situation in Louisiana, District banks were able not only to maintain their longer maturity time deposit levels but also to add to them throughout the rollover period.

As is typical when loan demand is rising, the larger District banks began increasingly

CHART 4
DEPOSITS STRENGTHEN



to acquire funds through managed deposit liabilities. By selling negotiable CDs and other large denomination time deposits, they raised about $500 million in "money market" funds. The majority of these funds were obtained in the last quarter of the year when lending was quite strong. While banks expanded their managed liabilities

(after letting them decline by nearly $1.5 billion over the two previous years) to the year-end level of $4.5 billion, the volume was nearly $1 billion below the peak reached in early 1975. And, in recognition of the more interest-sensitive nature of negotiable CDs, banks significantly increased their average maturity. Over the last year, all of the $270-million net increase in outstanding CDs was in maturities of over 90 days.

The Outlook for the Coming Year. Many of the conditions that had made for an improving and favorable banking climate had begun to change by late 1977. And while these developments do not necessarily mean that 1978 will be an adverse year for banking, it may not be as easy a year as 1977. Banks have already begun to experience a deceleration of inflows to household and business savings and short maturity time deposits because of rising yields on competing financial instruments. Slower growth in these types of deposits may force banks to rely more heavily on expensive longer maturity consumer time deposits and on money market deposits. Banks may also trim their most liquid holdings of government securities and depend more upon such managed liabilities as Fed funds.

Not only might banks find deposit growth becoming harder to achieve, but overall loan demand might well be strong during the year. Heavy use of bank credit by business customers, along with continued strong credit demands from households, might result in new loan volume exceeding last year's. Banks may also find that the spread between their net interest return and their net cost of funds will narrow during 1978, but the higher volume of loans should allow them to report earnings gains for the year. This year will most likely be a year of good, solid growth for banks, but bankers will have to work harder to achieve that growth than they did in the calmer environment of 1977. ■

A PRIMER ON NONRESIDENTIAL CONSTRUCTION

by B. Frank King

Over the years, construction analysts have concentrated on home building, while general information on nonresidential construction has remained obscure. This article is an attempt to remove some of the obscurity by providing rather simple answers to some broad questions about nonresidential construction.

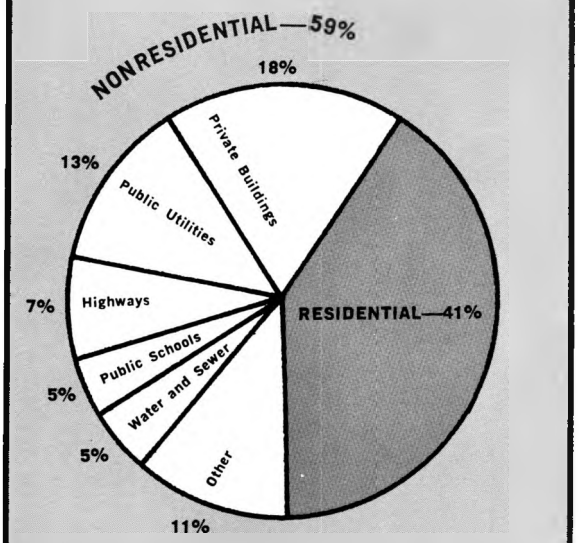
How important is nonresidential construction? Despite the impressions given by analysts' emphasis on housing, the nonresidential sector accounts for a majority of construction spending. In 1976, nonresidential projects accounted for almost three-fifths of the value of new construction put in place in the United States. The major types of construction contributing to this spending were streets and highways, schools, water and sewer systems, public utilities, and private nonresidential buildings, such as offices, warehouses, and stores.

In the economy as a whole, nonresidential construction is also relatively important. The $86 billion spent on nonresidential construction in 1976 was equal to about 5 percent of the Gross National Product. This was only slightly less than expenditures for motor vehicles and parts and slightly above spending on petroleum and coal products. Employment accounted for by nonresidential construction is more difficult to measure because employment data lump some employment in the residential sector with that in the nonresidential sector. However, the number of people at work on nonresidential construction in late 1977 was probably between 2.5 and 3.0 million, about as many as worked for the Federal Government in civilian jobs.

Does the output of nonresidential construction vary as widely during the business cycle as activity in residential building and durable goods production? Spending for nonresidential construction would seem likely to behave in much the same way as spending for residential buildings and for durable goods. Because most nonresidential projects are marginal additions to a large capital stock, they may be postponed when investors recognize that conditions are unfavorable. Conversely, they may be built more

CHART 1

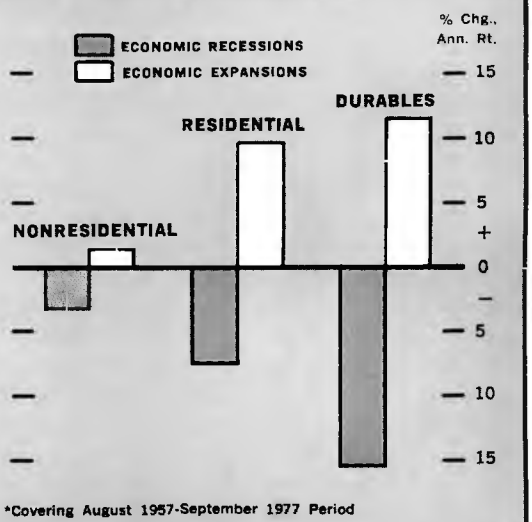
NONRESIDENTIAL CONSTRUCTION ACCOUNTS FOR A MAJORITY OF CONSTRUCTION ACTIVITY



TOTAL CONSTRUCTION EXPENDITURES, 1976

CHART 2

NONRESIDENTIAL CONSTRUCTION SHOWS LESS CYCLICAL CHANGE THAN RESIDENTIAL BUILDING OR DURABLE GOODS OUTPUT*



*Covering August 1957-September 1977 Period

quickly than the need for them is growing when conditions are considered more advantageous. Thus, taking a simple view, one would expect real nonresidential spending to be falling off more sharply than total spending during an economic downturn and rising more rapidly during an expansion, just as residential building and durable goods output do.

These expectations about timing are borne out in business cycles since 1957. Spending for nonresidential construction has varied with the business cycle, but its changes have been considerably less than changes in either residential construction spending or durable goods output. In real terms, its fall in recessions was less than half that of residential building and only about one-fifth that of durable goods output. In expansions, its gains were less than one-eighth as much as either residential or durables expenditures.

In pursuing reasons for the smaller variation in nonresidential spending, two lines of speculation appear fruitful. For both public and private spenders, time lags between the start and the end of nonresidential projects are generally long (certainly longer than for most residential projects or durables production). Recessions have been short. Sponsors of nonresidential projects have shown a strong affinity for completed projects; thus, nonresidential projects started near the end of expansions continue to induce spending in recessions. In the next expansion, there is little need to catch up.

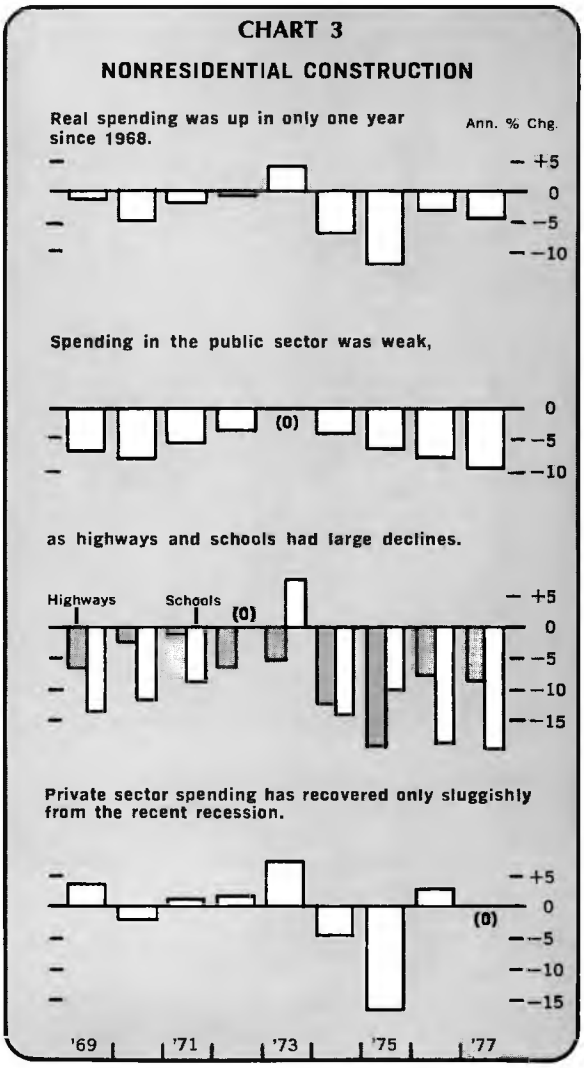
Further, about two-fifths of the spending in this category of construction is paid for by the public sector. Public construction spending has had little cyclical variation. Apparently, both national and subnational governments react slowly or not at all to tax problems caused by recession. Until the last recession, state and local governments' credit market access seemed assured. They also seemed to be successful in many cases in raising taxes to complete planned projects. Thus, governments were able to continue to finance construction projects.

What major trends have occurred in nonresidential construction spending in recent years? The late 1960s are a relevant

starting point because several longer term developments which still have major influences became apparent then. Since 1968, real spending on nonresidential construction has fallen. It moved up during only one year—in the early 1970s—but then plunged more steeply than before. This rather long period of decline is mainly accounted for by a steady contraction in public outlays.

Most types of public construction have been rather flat in real terms since 1968. Spending for water and sewer systems has risen steadily, but spending in the two categories that accounted for a majority of public construction in the late 1960s—streets and highways and educational facilities—has moved steadily downward. In 1968, such expenditures made up almost three-fifths of public construction; in 1977, about two-fifths. Nearly two decades of building streets and highways to accommodate rising automobile and truck use and of building schools to accommodate rising school populations reached a climax in 1968. Highways began to catch up with the use. Spending on the interstate system began to slow as more and more was finished. Crowded transportation corridors, neighborhood resistance, and opposition based on continued encroachment on urban tax bases also curbed highway building. More public funds began to shift toward mass transportation. School populations began to level off, then to fall. These two declining sectors account for the persistent drop in public construction since the late 1960s.*

Private nonresidential construction has behaved more cyclically than public since the late 1960s but has only recently made a weak move toward recovery from the recession that ceased in the housing industry almost three years ago. No major type had regained its 1973 real output level by 1976, and none improved much in 1977. Commercial building and public utilities construction, particularly that of electric generating facilities, were hard hit during the continuing recession in this industry. Excesses resulting from the major overbuilding of commercial buildings that



occurred from the late 1960s through at least 1973 have not yet been completely worked off. Electric utilities' spending has been slowed by the recession, higher electricity prices and the resulting decline in peak-load growth, seemingly stricter public service commissions (possibly reacting to lower projections of peak-load growth), nuclear uncertainties, and other delays.

What does the past tell us about future trends? The future growth of nonresidential output is likely to be tied closely to demand for schools, highways, offices and stores, and energy. Demand for the first two seems likely to continue to fall. The school-age population will diminish for a

*Construction of private schools, a minor expenditure sector, has fallen even more abruptly than public school construction during this period

while longer at least. The back-to-school movement by adults may limit the effect of this decline on school construction but is unlikely to overcome it. At the same time, no large, new highway building initiatives are on the horizon. Further decreases in spending may be partially offset by increased needs to repair the interstate system. Mass transit construction may make up for some of the loss in highway building.

Construction of private nonresidential buildings seems more likely to pull out of its slide in the near future. Permits and contracts for these buildings have risen in recent months as the economic expansion has caused more idle space to be occupied. Public utility spending, particularly in the energy field, is an enigma. Although real spending picked up some in 1976, recent moves toward further conservation and higher prices of electric energy lead one to question whether power plant building may not have entered a long period of decline similar to that of highway and school expenditures. On the other hand, the dollar value of contracts for electric generating plants awarded in 1977 was much greater than in 1976 and more than twice the value of such contracts in 1975. Further, although not on line now, substitute energy sources are certain to require a great deal of construction over the long haul.

This primer has approached four questions. The simple answers provided are only a starting point for analysis of nonresidential construction.

How important is nonresidential construction? Quite important as a source of demand, employment, and capital.

How has spending in this sector moved over the business cycle? Much less volatile than spending for residential buildings or durable goods.

What have expenditure trends been? Overall, downward in real terms for the past ten years, with particular weakness in the public sector and long-delayed recovery from the most recent recession in the private sector.

What does the future hold? Continued weakness in the public sector is likely. There are signs of limited recovery in the private sector. ■

FARMLAND PRICE MOVEMENTS

by Gene D. Sullivan

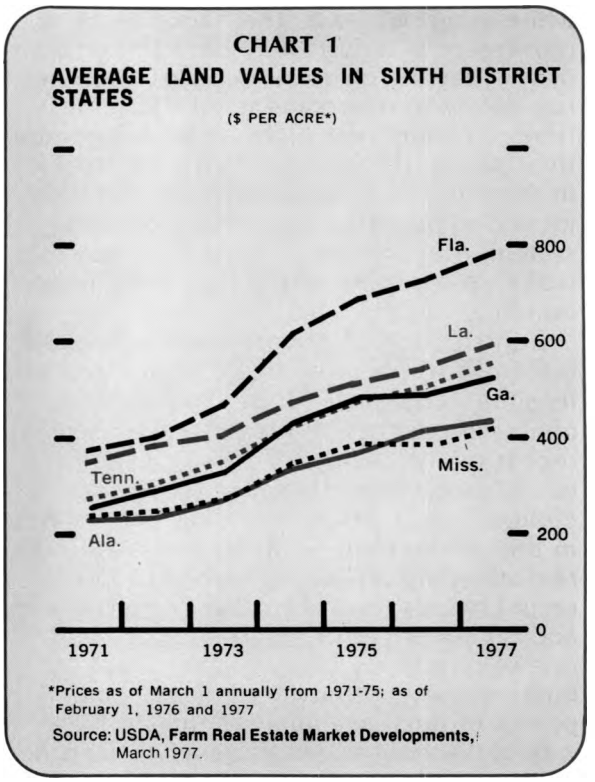
Prices of farm real estate have soared during the 1970s. Demand for rural land has appeared to be nearly insatiable in some areas of the country. In many cases, prices of farmland tracts have reached well above levels that returns from foreseeable agricultural production can justify.

Questions are rife in the current environment. Where are prices rising most rapidly and why? How long can they continue to go up? What happens if they stop increasing or even decline? This analysis cannot answer all these questions decisively. But it focuses on information about factors that will have heavy influence on farmland developments.

Where Farmland Prices Have Increased. From 1971 to 1977, average prices per acre of farm real estate nearly doubled for the combined District states (see Table 1). The gains were most rapid in Florida and Georgia, where prices more than doubled. Louisiana and Mississippi farmland showed the lowest rates of increase; however, Louisiana's land prices were the second highest in the District at the outset of the period, and that position was retained in 1977 (see Chart 1).

U. S. farmland prices rose even more rapidly in the 1971-77 period, although the average remained below the average price for the District states (see Chart 2). The faster rate of gain in the U. S. was largely attributable to unusually strong increases in the midwestern states. For example, land prices tripled in Iowa. Although preliminary data for November indicate that the national rate of increase slowed in 1977, substantial gains continued in the Midwest.

Returns from Agricultural Production Often Fail to Justify Land Values. The continued uptrend in farmland prices has been puzzling to many observers in view of the decline in the returns from agricultural production in recent seasons. In the southeastern states, for example, sales of



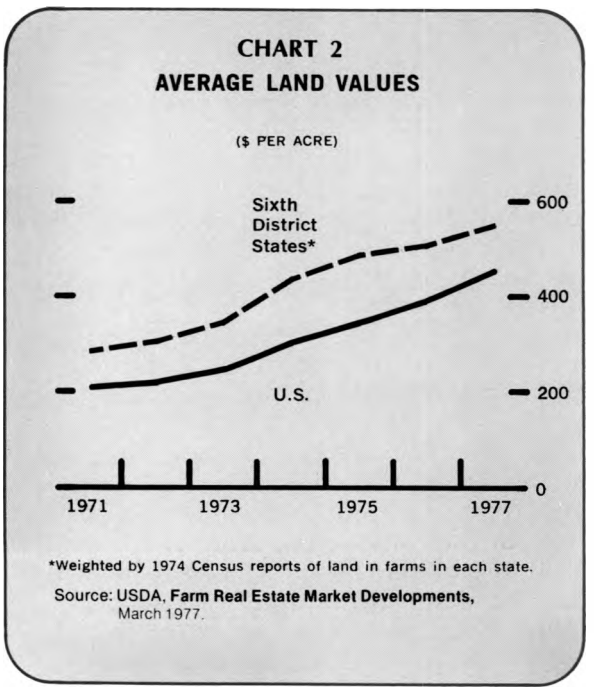


TABLE 1

FARM REAL ESTATE PRICES

($ per acre)[1]

	Ala.	Fla.	Ga.	La.	Miss.	Tenn.	Average[2] District States	U.S.
1971	227	378	256	350	238	277	284	202
1972	238	404	292	382	242	303	306	218
1973	270	466	333	406	271	349	346	245
1974	337	613	432	474	344	421	436	303
1975	370	692	486	518	386	477	487	343
1976	410	732	488	545	388	507	509	390
1977	437	783	524	590	411	556	548	456

[1]Prices as of March 1 for 1971-75; as of February 1, 1976 and 1977.
[2]Weighted by 1974 Census estimates of land in farms in each state.
Source: USDA, **Farm Real Estate Market Developments,** March 1977

agricultural products at recent prices frequently have not generated sufficient returns above production outlays to repay the interest cost of funds borrowed to purchase land.

For soybeans, the largest single use of cropland in the District, the estimated costs of production, excluding land, were $121 per acre in 1977.[1] At an average yield of 23.5 bushels per acre, the estimated cost per bushel was $5.15. During the fall of 1977, soybean prices averaged $5.38 per bushel—only slightly above the estimated cost per bushel. Growers who borrowed money at 8.5 percent interest to purchase land at the average 1977 price of $550 per acre had little money from soybean returns to apply to the $47 annual interest charge per acre. Lenders would normally expect some repayment of principal as well as interest. The lack of returns for loan repayments suggests that farmland prices have reached levels that cannot be justified by returns from agricultural production.

Whether or not he had a debt outstanding, an owner should have earned at least $47 from an acre of cropland to compensate for the forgone opportunity to invest $550 in an alternative that would have paid 8.5 percent interest. The average return from land employed in soybean production in 1977 did not equal the opportunity cost of invested funds. And unless the support price is raised substantially from its $3.50 level in 1977, the intended expansion in plantings indicated for 1978 is expected to exert continuing downward pressure on prices. While returns from other crops may be higher, the land on which crops, such as cotton, corn, and peanuts, are produced usually commands prices well above the average.[2]

Appreciation in Land Values. The initial major thrust for the rise in land prices was the high farm profits associated with worldwide shortages of food in the early Seventies. More recently, the source of the upward push has apparently been expectations of further increases in the value of the asset itself. Investors are willing to purchase a future stream of income at a discounted present value. That is to say, if one anticipates a given annual return from an asset over a span of years, that income stream has a determinable value in the present. It is not the sum of the expected dollar income in all future periods, because a dollar to be received one year from now is worth less than a dollar of current income. A dollar received currently could be placed in an interest-earning investment which would yield $1.06 at the

[1]See W. F. Woolf and B. J. Vidrine, D.A.E. Research Report 526, Louisiana Agricultural Experiment Station, January 1978. Costs varied both above and below the indicated figure, depending upon the type of farm and the method of production.

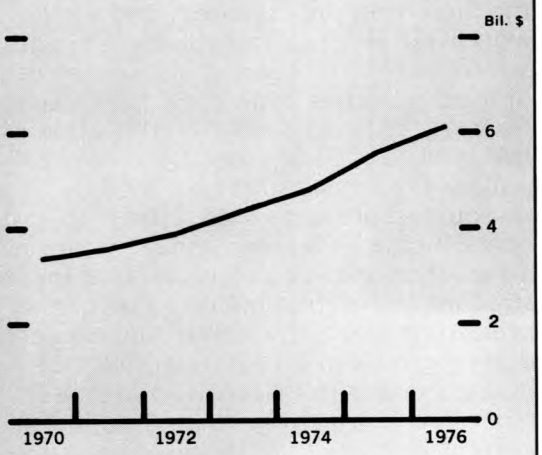
[2]It is difficult to make general statements about land values on the basis of averages. Most agricultural statistics vary widely around their average values. That is particularly true of production costs and yields or output per acre. Those farmers who obtain above-average yields and have below-average costs can, of course, justify much higher prices for land than can their less efficient counterparts. Thus, land prices that are unreasonably high for average or inefficient producers may be quite justifiable for above-average producers. It is the latter who are reportedly bidding most briskly for productive land.

TABLE 2
GROWTH IN PRICES OF FARM REAL ESTATE
1971-77

	Trend Rate[1] of Growth ($ per acre)	Compound Annual[2] Growth Rate (%)
Alabama	38	12.8
Florida	75	14.4
Georgia	48	13.5
Louisiana	41	9.4
Mississippi	33	11.1
Tennessee	49	13.0
District States	48	12.6
United States	43	15.1

[1]Derived from a straight line equation of type $\hat{y} = a + bx$ where $\hat{y}$ is the estimated land value, x is the year number where 1971 = 0, 1972 = 1, etc.; a is the estimate of $\hat{y}$ when x = 0, and b is the estimated change in $\hat{y}$ for each 1-unit change in x. See Appendix for each equation.
[2]Derived from an exponential equation of the type $\hat{y} = ab^x$ where $\hat{y}$ and x are as defined above, a is the value of $\hat{y}$ when x is 0, and b is the percentage change in $\hat{y}$ for each 1-unit change in x. See Appendix for each equation.

CHART 3
TOTAL FARM MORTGAGE DEBT
SIXTH DISTRICT STATES*



*Debt outstanding as of January 1 of each year.

end of a year. Alternatively, one could obtain $1 after one year by putting less than $1 (about 94 cents) in an account earning 6 percent annual interest.

As the rate of appreciation in land values became apparent during the past seven years, the ranks of land purchasers were undoubtedly enlarged by investors whose bid prices were keyed to anticipated gains in asset value rather than the actual return from agricultural production. The record shows that such investors have certainly not been disappointed since 1971. It has been increasingly reported of late that foreign investors are frequently numbered among potential purchasers of land.

What price for land is justifiable on the basis of expected appreciation in value alone? The technique of determining the present value of a future stream of income provides an answer.

Land prices in District states have been increasing at an average rate of $48 per year since 1971 (see Table 2). The present value of a perpetual $48 annual income stream, discounted at 8.5 percent interest, is $565,[3] only slightly above the average price recorded for 1977. When average annual taxes on farm real estate are considered, the present value of farmland is approximately equal to the 1977 price. The average price of $284 per acre in 1971 provided an outstanding bargain to purchasers whose land value appreciated to $548 per acre by February 1, 1977. An asset offering a return of that magnitude after six years would have had a discounted present value of $336 in 1971.[4] It was not until 1973 that average land prices

[3]When annual income is constant and continues in perpetuity, the present value of future income is derived by using the equation:

$$V = \frac{I}{i}$$

where V is present value, I is constant annual (net) income, and i is the discount (capitalization) rate. For the appreciation in land values in the District states (ignoring taxes and other ownership costs of land), the present value per acre is

$$V = \frac{\$48}{085} = \$565.$$

[4]The present value of a given income in a future year is given by

$$V = \frac{I}{(1 + i)^n},$$

where V and i are as described in footnote 3, I is future income, and n is the number of years before the income will be received. Assuming land was sold at the average price per acre in District states in 1977, its present value in 1971 would have been

$$V = \frac{\$548}{(1 + .085)^6} = \$336 \text{ per acre.}$$

TABLE 3

EFFECTS OF LAND PRICE CHANGES ON FARM REAL ESTATE ASSETS SIXTH DISTRICT STATES, 1971-77

	Land in Farms*	Value of Farm Real Estate	
		1971	1977
	mil. acres	billion $	
Alabama	12.0	2.7	5.2
Florida	13.2	5.0	10.4
Georgia	14.0	3.6	7.3
Louisiana	9.1	3.2	5.4
Mississippi	14.4	3.4	5.9
Tennessee	13.3	3.7	7.4
Total Sixth District States	76.0	21.6	41.6

*Taken from 1974 **Census of Agriculture** and used with average prices to calculate values in 1971 and 1977.

actually reached that level. By 1977, however, investors had bid land prices much closer to the level that was justified by the experienced rate of annual appreciation. Only in Florida and Georgia were prices still substantially below that level.

Effects of Rising Land Prices. One of the most immediate and direct effects of rising land prices is their influence on the asset positions of the balance sheets of farm owners. As land prices rise, the estimated value of total assets increases, almost in direct proportion. The value of real estate accounted for 74 percent of total U. S. farm assets in 1977. Rising land prices pushed up the estimated value of farm real estate in the Sixth District states from $21.6 billion in 1971 to over $41 billion in 1977 (see Table 3). Florida was the leading state in both value and gain, although it ranked fourth in farmland area.

The increase in asset values raised proprietors' equities along with it and enabled farmers to expand borrowings, using the higher valued real estate as collateral. Total farm mortgage debt (shown in Chart 3) advanced about in pace with farm real estate values during the period. The rise in outstanding farm mortgages from $3.4 billion in 1970 to $6.1 billion in 1976 represented a sharp increase in farm loan volume by lenders in Sixth District states as well as greater interest expenses for land owners (who paid rates on new loans averaging between 8¼ and 10 percent during the period). If it continues to grow at its 1970-76 trend rate, farm mortgage debt will climb nearly $500 million annually, as owners utilize their rising equity in land to obtain the capital needed for production.

Will Appreciation Continue? Will farmland prices continue to escalate? How much higher can they go in the absence of returns of agricultural production to support these values? If values stop increasing from year to year, will prices then plunge to the levels that production returns can support? These are difficult questions that are currently being asked by a broad spectrum of people associated with farm real estate markets.

Factors that could produce continued rapid increases in value include:

1. an increase in inflationary expectations that would cause investors to turn to land as a hedge against loss of value in financial assets. Competition among potential land purchasers for available tracts would essentially guarantee a continued upward push on values.

2. a growing demand for farmland located near urban areas for future expansions of residential areas, office parks, and industrial parks. This has already been an important influence on land prices, particularly in the states of Florida, Georgia, and Louisiana.

3. the possibility of higher production returns. Should prices of farm products again rise as rapidly as they did in 1973 (e.g., if world shortages of food crops

should recur), the increased returns from agricultural production would swell the expected future income stream and produce even greater appreciation.

On the other hand, a halt in the escalation of land values, or even a substantial reduction in the expected rate of appreciation, could trigger deflation. In such a case, investors would reduce bids to the values that production returns would justify.

Before the passage of the Agricultural Act of 1977, prices of many agricultural products had dropped sharply and appeared to be headed for still lower levels. That situation, compounded by drought-reduced crop yields in the Southeast, may have slowed the rate of growth in District land prices from 1977 to 1978. In 1975 and 1976, a severe reduction in cattle and calf prices was no doubt responsible for the slower rate of growth evident in farmland prices within the District. Despite the long period of adversity in cattle production, however, prices of land only leveled; they did not decline. Thus, it is not certain that a downturn will accompany the recent poor returns to crop production. However, if the agricultural legislation that supports prices and incomes of producers of major crops were to expire or become less supportive in the future, the threat of farmland price deflation would be substantially greater. ■

APPENDIX

Equations were fitted to annual average land prices from 1971 to 1977. Variables are defined in footnotes to Table 2. The coefficients of determination (r^2) signify the proportion of variation in Y explained by changes in X.

	Trend Equation	Exponential Equation
Alabama	$\hat{Y} = 211.929 + 38.357X$ ($r^2 = .978$)	$\hat{Y} = (221.390)\ (1.128)^X$ ($r^2 = .973$)
Florida	$\hat{Y} = 356.464 + 74.892X$ ($r^2 = .965$)	$\hat{Y} = (347.050)\ (1.144)^X$ ($r^2 = .954$)
Georgia	$\hat{Y} = 257.036 + 48.179X$ ($r^2 = .950$)	$\hat{Y} = (265.485)\ (1.135)^X$ ($r^2 = .936$)
Louisiana	$\hat{Y} = 342.357 + 41.357X$ ($r^2 = .988$)	$\hat{Y} = (350.279)\ (1.094)^X$ ($r^2 = .985$)
Mississippi	$\hat{Y} = 226.500 + 33.071X$ ($r^2 = .933$)	$\hat{Y} = (232.319)\ (1.111)^X$ ($r^2 = .924$)
Tennessee	$\hat{Y} = 265.750 + 49.036X$ ($r^2 = .988$)	$\hat{Y} = (277.394)\ (1.130)^X$ ($r^2 = .981$)
District States	$\hat{Y} = 273.236 + 47.764X$ ($r^2 = .971$)	$\hat{Y} = (283.394)\ (1.126)^X$ ($r^2 = .961$)
United States	$\hat{Y} = 179.143 + 43.000X$ ($r^2 = .973$)	$\hat{Y} = (194.063)\ (1.151)^X$ ($r^2 = .991$)