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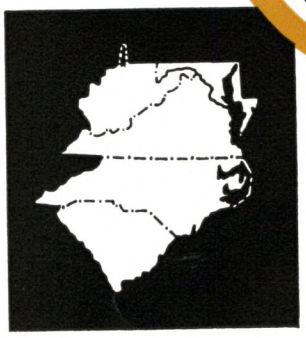
MONTHLY REVIEW

Changing Views of the Phillips Curve

The Fifth District Labor Force . . . A Profile of Change



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CHANGING VIEWS OF THE PHILLIPS CURVE

One of the more fashionable tools of contemporary macroeconomic analysis is the so-called "Phillips curve," named after its originator, British economist A. W. Phillips. An empirical relation between the rate of wage-price change and the rate of unemployment, the Phillips curve purportedly shows the set of inflation-unemployment "trade-offs," or feasible policy choices, available to the economic stabilization authorities. First introduced in 1958, the Phillips curve gained swift acceptance by economists who used it to analyze the persistent problems plaguing economic policymakers attempting to achieve simultaneously society's apparently conflicting goals of high employment and stable prices.

Over the past fifteen years the Phillips curve has played a prominent role in policy discussion and formulation. For example, Phillips curve analysis provided a rationale for the incomes (wage-price) and labor-market (manpower) policies implemented during the past decade. The recent Phase I and II programs, as well as the earlier wage-price guidepost, job-training, and retraining programs, were designed within a framework that can be described in terms of the Phillips curve.

Phillips curve analysis has not been limited solely to policy deliberations, however. The concept has also proved useful as an expository device illuminating both scholarly and popular discussions of macroeconomic problems. Accordingly, Phillips curves now occupy a prominent position in many textbook discussions of inflation and they frequently appear in newspaper and magazine articles as well.

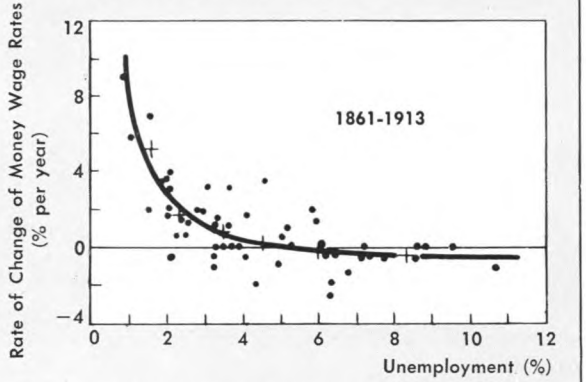
The rapid penetration and assimilation of early Phillips curve analysis in the non-technical economic literature has been matched by equally rapid recent shifts in economists' understanding and interpretation of the Phillips curve. Initially, the Phillips curve was interpreted as a simple, stable, and permanent empirical relationship between wage-price changes and unemployment. Subsequent research and experience, however, have revealed that the relation was neither as simple nor as stable as originally thought. Instead of a unique, invariant relation, economists have found a variety of shifting short-run Phillips curves, each corresponding to different underlying conditions and expectations in the labor and product markets. Economists now acknowledge the importance of a host of other variables ("shift parameters") influencing the position of the Phillips curve. Changes in these shift parameters have rendered the curve quite unstable.

The findings of the short-run instability of the inflation-unemployment trade-off have served to provoke a lively controversy over the usefulness and validity of the Phillips curve concept. Some economists have even gone so far as to deny the existence of a permanent trade-off between inflation and unemployment. Other economists, however, contend that a long-run trade-off exists and that, given a more sophisticated interpretation, the Phillips curve remains a valid and useful concept. Consequently, much ingenuity and a large proportion of recent research in the field of macroeconomics have been devoted to establishing theoretical and empirical support for a reformulated Phillips curve that may have relevancy in long-run economic analysis.

The purpose of this article is to familiarize *Monthly Review* readers with this widely-used concept and to indicate its changing policy implications. Accordingly, the article traces, with the aid of a sequence of charts, the development of the Phillips curve concept from its origins in 1958 to its current interpretation in policy analysis.

Chart 1

THE ORIGINAL PHILLIPS CURVE



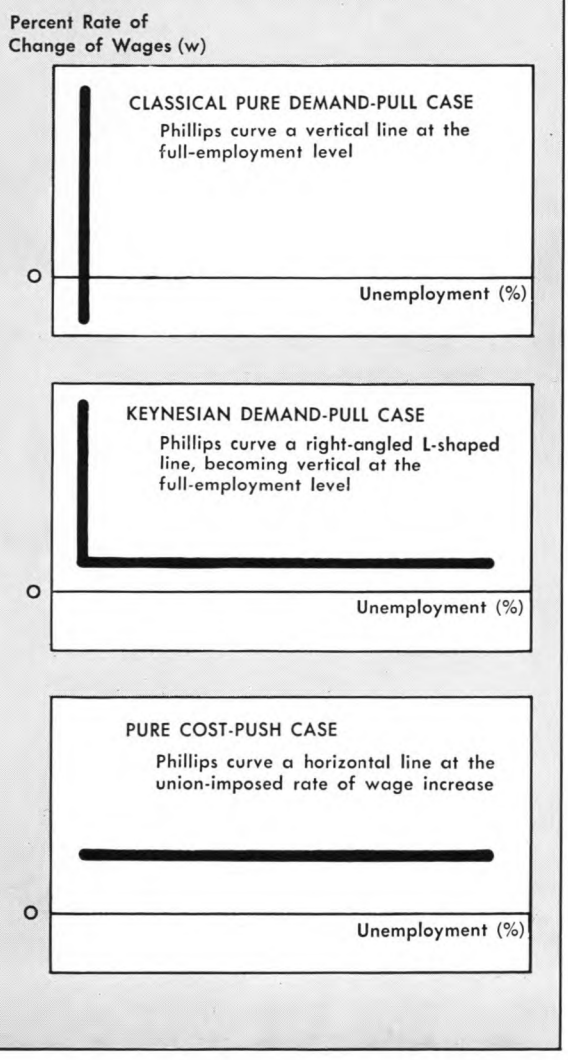
Source: A. W. Phillips. "The Relation Between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957," **Economica**, 25, No. 100 (November 1958) 285.

The Original Phillips Curve (Chart 1) The first Phillips curve appeared in a 1958 study investigating the influence of the rate of unemployment (taken as an index of the degree of excess demand or "labor shortage" in the labor market) on the rate of change of wages. In that study, Professor A. W. Phillips of the London School of Economics fitted an empirical curve to a statistical scatter diagram of time series data for annual percentage rates of money wage changes (w) and unemployment (u) for the British economy over the interval 1861-1913. The resulting curve was downward-sloping, indicating an inverse relation between the two variables. Thus Phillips' data showed that in years when the labor market was tight and unemployment low, money wages tended to rise at a rapid clip. But when the labor market was slack and unemployment high, wage changes tended to be very slight.

The chief novelty of the Phillips curve, however, was its apparent demonstration that inflation could coexist with unemployment. This finding had important policy implications. In the 1940's and 1950's, the policymakers' mission was viewed as one of achieving full employment without inflation. Price stability and full employment would indeed be attainable, compatible goals if inflation and unemployment were mutually exclusive phenomena. In this ideal case one could eradicate unemployment without generating inflation. According to the Phillips curve, however, wage-price increases in the U. K. actually would start to occur long before absolute full employment was reached. Wages would begin to rise at an unemployment rate of just under 5½ percent, the point at which the Phillips curve crossed the horizontal axis. And to the left of this intersection, progressively lower rates of unemployment would provoke faster wage inflation. The policy implications were unmistakable: it would be impossible for the authorities to hit the twin targets of zero inflation and full capacity. Price stability and full employment were incompatible, conflicting goals. More of one objective could be obtained only at the cost of less of the other, but it would be impossible to attain both. Thus, the hope of simultaneous achievement of stable prices and full employment gave way to the notion of trade-offs between these goals.

Chart 2

PHILLIPS CURVES FOR CRUDE DEMAND-PULL AND COST-PUSH CASES



Demand-Pull and Cost-Push Cases (Chart 2) Phillips himself contended that wages tend to be pulled up by rising demand. As numerous economists have since pointed out, however, the rising segment of the Phillips curve is consistent with the operation of supply-oriented cost-push, as well as demand-pull, forces. In conditions of excess demand for labor, money wages can be advanced by sellers, forced up by frictional or structural impediments ("bottlenecks") to labor mobility, and bid up by buyers. More generally, wage escalation is now viewed as partly stemming from a variety of market imperfections including labor-capital immobilities, job-information deficiencies, and employer-union monopoly power. Because of these imperfections or rigidities on the supply side, rising demand can exert upward pressure on wages even when sizeable numbers of workers are still unemployed.

Although both cost-push and demand-pull elements can be used to explain the rising portion of the Phillips schedule, there is more to the Phillips curve interpretation of inflation than just simple demand-pull and cost-push conceptions. The essence

of the Phillips curve approach is that it expresses an interdependent *relationship* between unemployment and wage changes that yields the dilemma of conflicting policy goals: less unemployment is attainable only at the cost of faster wage inflation. By contrast, these variables were treated as completely independent, unrelated, and therefore non-conflicting in crude demand-pull and cost-push theories that predated the Phillips interpretation.

Prior to Phillips' analysis, the chief explanations of wage-level determination were two versions of the demand-pull theory. The *Classical* version of this theory assumed that full employment would be maintained continuously by the operation of complete and instantaneous wage-price flexibility. Production and labor utilization would always be tied to full employment, and prices and money wages would float with the level of aggregate demand. In this extreme Classical case, the only magnitudes that could vary would be money wages and prices. With the economy always at full capacity, any increases or decreases in demand would be matched solely by rises or declines in money wages and prices. Consequently, the Phillips curve corresponding to the Classical demand-pull case would be a vertical line at the full-employment level.

The *Keynesian* version of the demand-pull theory combined the Classical postulate of upward wage-price flexibility at full employment with the assumption of rigid downward inflexibility of wages and prices at less than full employment. In the Keynesian system, falling aggregate demand would result in declines in output and employment rather than reductions in wages and prices. Thus, as shown by the right-angled Phillips curve, one could distinguish sharply between two mutually exclusive situations: (1) unemployment with wage-price stability, and (2) full employment with inflation. No policy conflicts could develop in the Keynesian case because wage-price increases could not occur before full employment was reached. Consequently, macroeconomic policy could eliminate unemployment without provoking inflation by maintaining aggregate demand just at the point of full capacity.

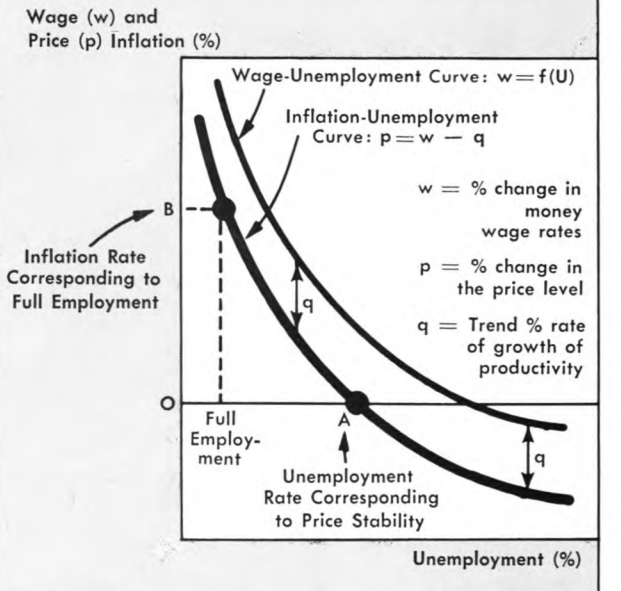
At the opposite extreme of the Classical demand-pull case was the hypothetical pure cost-push case. Here the rate of wage inflation would be determined solely by union wage demands, which are assumed to be independent of the level of unemployment. According to the simplistic pure cost-push theory, unions would adhere tenaciously to inflationary wage claims regardless of whether the labor market was brisk or slack. As in the Classical and Keynesian cases, the rate of wage change would be completely independent of the level of unemployment. Again, there would be no policy conflicts: unemployment could be reduced without causing additional inflation. The Phillips curve in this case would be a horizontal line at the union-determined rate of wage increase.

Derivation of the Inflation-Unemployment Trade-Off Via Conversion from Wages to Prices (Chart 3) The original Phillips curve related unemployment to wage changes. Other economists, however, soon transformed the wage-unemployment relation into a price-unemployment relation by assuming that the rate of change of prices (p) was simply the difference between the rate of change of wages (w) and the constant trend rate of increase of man-hour productivity (q), i.e., $p = w - q$. On the Phillips chart this conversion was accomplished via a vertical downward shift of the schedule in such a way that the new price-unemployment curve was located q percentage points below the old wage-unemployment curve.

The transformed Phillips curve, it was thought, would be more useful to the policymakers since

Chart 3

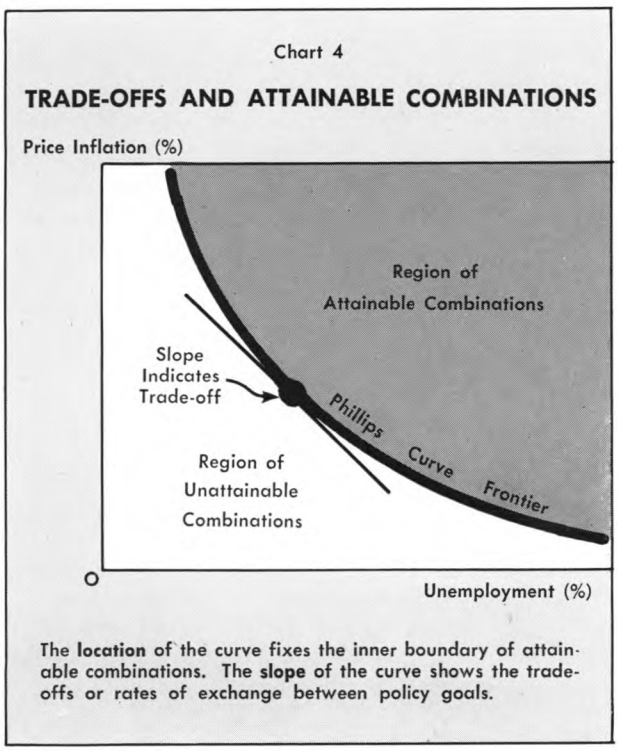
DERIVATION OF THE INFLATION-UNEMPLOYMENT TRADE-OFF VIA CONVERSION FROM WAGES TO PRICES



The inflation-unemployment curve (heavy line) is derived from the wage-unemployment curve by subtracting the trend rate of growth of productivity (q) from the latter. Note that point A shows the unemployment rate at which prices would be stable, while point B shows the rate of price inflation corresponding to full employment.

policy goals tend to be specified in terms of target rates of change of prices rather than of wages. From the inflation-unemployment curve, the authorities could determine how much unemployment would be associated with any given target rate of inflation and vice versa. For example, the curve would permit the policymakers to calculate both the rate of unemployment required to achieve complete price stability (point A) and the rate of inflation that would have to be tolerated as the price for maintaining a specified full-employment target (point B).

Trade-Offs and Attainable Combinations (Chart 4) Phillips curve analysis stresses the distinction between the *location* (i.e., distance from origin) and the *slope* of the curve. The location fixes the inner boundary, or frontier, of feasible (attainable) combinations of inflation and unemployment rates. Determined by the structure of labor and product markets, the position of the curve defines the set of all coordinates of inflation rates and unemployment rates the authorities could achieve via implementation of monetary and fiscal policies. Using these macroeconomic policies the authorities could put the economy anywhere on or to the right of the curve. But, according to the Phillips curve analysis of the early 1960's, the authorities would reject all combinations to the right of the curve because superior positions involving less unemployment and/or inflation would be available on the curve. Moreover, whereas the policymakers *would not* operate to the right of the curve, they *could not* operate to the left of it. The Phillips curve could be viewed as a constraint preventing the authorities from achieving still lower levels of both inflation and unemployment. Given the structure of labor and product markets, it would be impossible for monetary-fiscal policy alone to reach combinations in the region to the left of the curve.

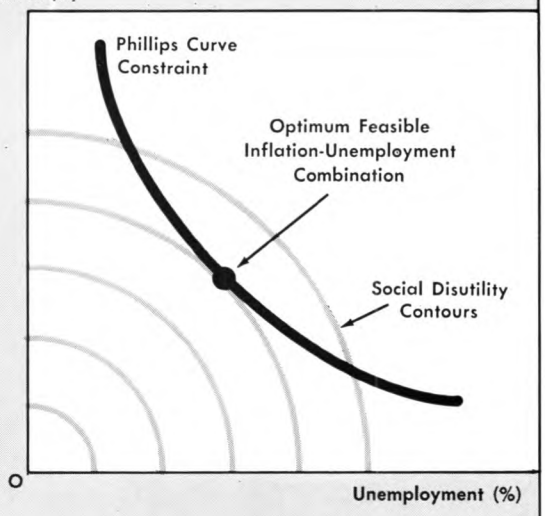


The *slope* of the curve was thought to be of critical importance since it shows the relevant policy trade-offs (rates of exchange between policy goals) available to the authorities. As explained by early advocates of the Phillips curve approach to policy problems, these trade-offs arise because of the existence of irreconcilable conflicts among policy objectives. When the goals of full employment and price stability are not simultaneously achievable, then attempts to move the economy closer to one will necessarily move it further away from the other. The rate at which one objective must be given up to obtain a little bit more of the other is measured by the slope of the Phillips curve. For example, when the Phillips curve is steeply sloped, it means that a small reduction in unemployment would be purchased at the cost of a large increase in the rate of inflation. Conversely, when the curve is flat, considerably lower unemployment could be obtained at a relatively cheap sacrifice of inflation objectives. Knowledge of these trade-offs would enable the authorities to determine the price-stability sacrifice necessary to buy any given reduction in the unemployment rate.

The Best Selection on the Phillips Frontier (Chart 5) In the 1960's it was frequently said that the Phillips curve offered policymakers a menu of feasible policy choices between the two evils, unemployment and inflation. If so, the policymakers had to select from the menu the particular inflation-unemployment mix resulting in the smallest social cost. To do this, they would have to assign relative weights to the twin evils in accordance with society's views of the comparative harm caused by each. Then the authorities could move along the Phillips curve, trading off unemployment for inflation (or vice versa) until they arrived at the optimum, or least undesirable, combination. At this point on the Phillips constraint, they would have reached the lowest attainable social disutility contour (shown as the convex or bowed-out curves radiating outward from the origin of Chart 5). Here the unemployment-inflation combination chosen would be the one that minimized social harm.

Chart 5

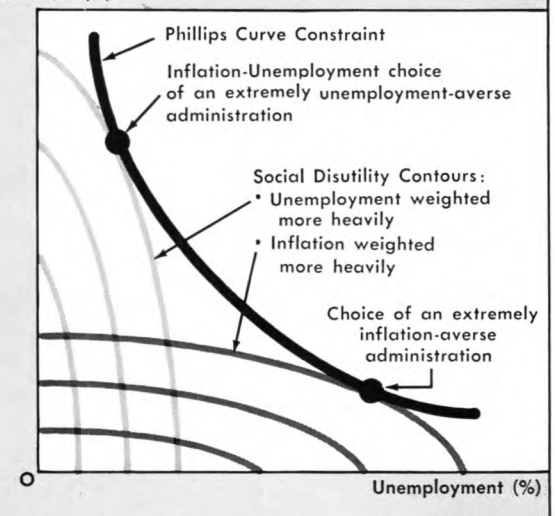
THE BEST SELECTION ON THE MENU OF CHOICES



The bowed-out curves are social disutility contours. Each contour shows all the combinations of inflation and unemployment resulting in a given level of social disutility. The closer to the origin the lower will be the level of disutility. The slopes of these contours reflect the relative weights that society (or the policymakers) assigns to the evils of inflation and unemployment. The best combination of inflation and unemployment that the policymakers can reach, given the Phillips curve constraint, is the mix appearing on the lowest attainable social disutility contour.

Chart 6

DIFFERENT PREFERENCES, DIFFERENT POLICY CHOICES



Successive political administrations may differ in their evaluations of the social harmfulness of inflation relative to that of unemployment. Thus in their policy deliberations they will attach different relative weights to the two evils of inflation and unemployment. These weights will be reflected in the slopes of the social disutility contours (as those contours are interpreted by the policymakers). The flat contours reflect the views of those attaching higher relative weight to the evils of inflation; the steep contours to those assigning higher weight to unemployment. The unemployment-averse administration will choose a point on the Phillips curve involving more inflation and less unemployment than would the combination selected by the inflation-averse administration.

Different Preferences, Different Outcomes (Chart 6) It was recognized, of course, that policymakers would differ in their assessment of the comparative social disutility of inflation vs. unemployment. Thus, different policymakers might assign different weights to the two evils depending on their evaluation of the relative harmfulness of each. Policymakers who considered joblessness to be more undesirable than rising prices would assign a much higher relative weight to the former than would policymakers who judged inflation to be the worse evil. Hence, those with a marked aversion to unemployment would prefer a point much higher up on the Phillips curve than would those more anxious to avoid inflation, as shown in Chart 6. Whereas one administration might try to run a high pressure economy because it thought the social benefits of low unemployment exceeded the harm done by inflation, another administration might deliberately shoot for a low pressure economy because it believed that some economic slack was a relatively painless means of eradicating harmful inflation. Both groups of policymakers of course would prefer combinations to the southwest of the Phillips constraint, down closer to the diagram's origin (the ideal point of zero inflation and zero unemployment). But this would be impossible, however, given the structure of the economy, which determines the position or location of the Phillips frontier. Thus, as previously mentioned, the policymakers would be constrained to combinations lying on (or to the right of) this boundary, unless they were prepared to alter the economy's structure.

Pessimistic Phillips Curves and the "Cruel Dilemma" (Chart 7) In the mid-1960's, there was much discussion of the so-called "cruel-dilemma" problem imposed by an unfavorable Phillips curve. The cruel dilemma refers to certain pessimistic situations where *none* of the available combinations on the menu of policy choices is socially acceptable. For example, suppose there is some maximum rate of inflation, A, that society is willing to tolerate. Likewise, suppose there is some maximum tolerable rate

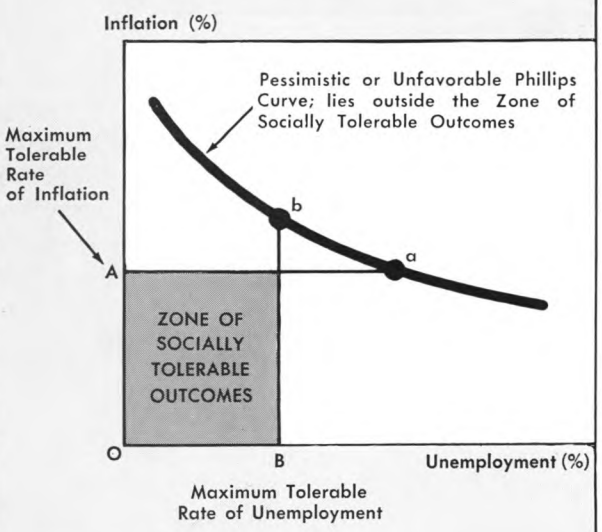
of unemployment, B. As shown in the chart, these limits define the zone of acceptable or socially tolerable combinations of inflation and unemployment. An economy that occupies a position anywhere within this zone will have performed adequately in satisfying society's demands for reasonable price stability and high employment. But if either of these limits is exceeded and the economy ends up outside the region of satisfactory outcomes, the system's performance will have fallen short of what was expected of it, and the resulting discontent may severely aggravate political and social tensions.

If, as some analysts alleged, the Phillips curve tended to be located so far to the right in the chart that no portion of it fell within the zone of acceptable combinations, then the policymakers would indeed be confronted with a painful dilemma. At best they could hold *either* inflation or unemployment down to acceptable levels. But they could not hold both simultaneously within the limits of toleration. Faced with such a pessimistic Phillips curve, policymakers would find it impossible to achieve combinations of inflation and unemployment acceptable to society.

It was this concern and frustration over the seeming inability of monetary-fiscal policy to resolve the unemployment-inflation dilemma that induced some economists in the 1960's to urge the adoption of incomes (wage-price) and labor-market (manpower) policies. Monetary-fiscal policies alone were thought to be insufficient to resolve the cruel dilemma. The most these policies could do, it was feared, was enable the economy to occupy alternative positions on the pessimistic Phillips curve. That is, monetary-fiscal policies could move the economy *along* the given curve, but they could not move the curve itself into the zone of tolerable outcomes. What was needed, it was argued, were new policies that would shift the Phillips frontier toward the origin of the diagram. Thus, the rationale for such measures as wage-price guideposts, job-training, and retraining programs was to shift the Phillips frontier down into the zone of toleration so that the economy could choose more socially acceptable inflation-unemployment combinations.

Chart 7

PESSIMISTIC PHILLIPS CURVE AND THE "CRUEL DILEMMA"



Given the unfavorable Phillips curve, policymakers are confronted with a cruel choice. They can achieve acceptable rates of inflation (point a) or unemployment (point b) but not both. The rationale for the wage-price guideposts and manpower policies, implemented in the 1960's, was to shift the Phillips curve down into the zone of acceptable outcomes.

Doubts About the Phillips Curve Up until the late 1960's, the Phillips curve had received widespread and largely uncritical acceptance. Despite a lack of convincing statistical evidence of a significant inverse inflation-unemployment relation for the U.S., few questioned the usefulness, let alone the existence, of this construct. In policy discussion as well as economic textbooks, the Phillips schedule was treated as a unique, consistent, and stable relation. In fact, so influential was this concept of a unique and stable trade-off, that it was instrumental in shaping several basic tenets of economic stabilization policy in the 1960's including: (1) the idea that permanently lower unemployment could be preserved at the price of some constant rate of inflation and (2) the notion that guidepost and/or manpower policies should be used to shift the Phillips curve down and to the left.

In the late 1960's, however, doubts about the Phillips curve began to develop. Contributing to the mounting skepticism were two major factors. The first of these was the inflationary experience in the closing years of the decade, when events consistently went counter to the predictions of the conventional trade-off view. According to the standard Phillips curve analysis of the 1960's, one would expect rising rates of inflation to be accompanied by falling unemployment; or, conversely, one should expect to observe an unchanged rate of unemployment maintained at a constant rate of inflation. Neither of these things happened, however. Instead, the record for 1967-1969 shows that although inflation accelerated sharply, the unemployment rate remained unchanged. Far from purchasing lower unemployment, escalating inflation evidently was required just to keep the unemployment rate fixed in place. In short, Phillips

curve forecasts parted company with experience. And the forecasting errors were even worse in 1970 when *both* inflation and unemployment increased.

A second source of skepticism was the steady accumulation of statistical findings that indicated that the Phillips relation might not be as stable or as consistent as was commonly believed. In numerous empirical studies conducted during the 1960's, Phillips curves had been statistically fitted to inflation-unemployment data for the U. S. These efforts, however, had not been entirely successful. The trouble was that there was usually a large degree of dispersion, or variance, of the actual inflation-unemployment observations about the fitted Phillips curves. In other words the simple, two-variable Phillips relationship was shown to be very loose and inexact. Additional variables—including, among others, corporate profits, the rate of change of unemployment, lagged changes in the cost of living, indexes of the dispersion of unemployment across separate labor markets, trade union membership, vacancy rates—had to be introduced to explain this variance and improve the statistical fit. Unfortunately, these studies proved that numerous, different Phillips curves could be fitted to the same set of inflation-unemployment observations depending on which specific additional variables were used in the curve-fitting procedure. This discovery, of course, made it difficult to determine which, if any, was *the* true Phillips curve.

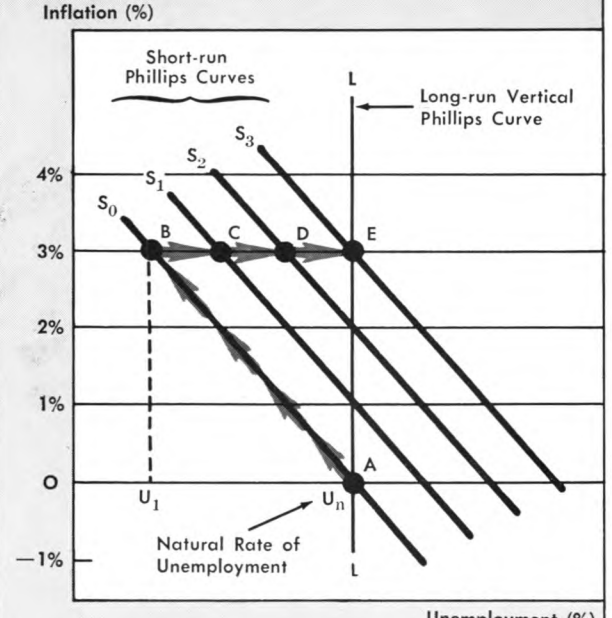
These findings ultimately led an increasing number of economists to question the consistency, uniqueness, and stability of short-run Phillips curves. Apparently, there was not one Phillips curve but rather numerous families of short-run Phillips curves corresponding to the host of other variables (shift parameters) influencing the inflation-unemployment relation. Because of these influences, a given observed short-run Phillips curve did not stand still, but instead, shifted over time as the values of the other variables changed. But which of these underlying variables exercised the dominant influence? In his 1967 Presidential address to the American Economic Association, Milton Friedman suggested the answer: inflationary expectations. He argued that expectation-induced shifts in the Phillips curve would, in every case, render trade-off policy ineffective. Thus, in the hands of Friedman and others, the expectations hypothesis emerged as the main challenge to the validity of the Phillips curve. By the late 1960's many other observers also had begun to suspect that price expectations might be the most important factor causing the short-run Phillips curve to shift.

Accelerationists, the Expectations Hypothesis, and the Vertical Phillips Curve (Chart 8) In its most extreme version, the expectations hypothesis denies the existence of a permanent trade-off between inflation and unemployment and asserts the accelerationist view that policymakers' attempts to preserve low unemployment will provoke explosive, ever-accelerating inflation. Led by Milton Friedman of the University of Chicago and Edmund Phelps of the University of Pennsylvania, accelerationists argue that in the long run the Phillips curve is a vertical line at the natural rate of unemployment, i.e., the rate of unemployment at which the rate of change of prices is steady (neither accelerating nor decelerating) and *real* wages are in equilibrium (money wages having been fully adjusted to allow for correctly-anticipated inflation).

Accelerationists, of course, do not deny the existence of short-run trade-offs. But they think those trade-offs are transitory phenomena that arise from

Chart 8

THE EXPECTATIONS HYPOTHESIS AND THE VERTICAL PHILLIPS CURVE



Attempts to lower unemployment from the natural rate, U_n, to U_1 via movement along short-run trade-off curve S_0 will evoke wage bargaining and other adaptations to inflationary expectations. The economy will travel the path ABCDE to the new equilibrium, point E, where unemployment is the same but inflation is higher than it was originally.

unexpected inflation and vanish as soon as expectations adapt to inflationary experience. Accordingly, accelerationists argue that movements along a short-run Phillips curve would alter expectations, thereby inducing *shifts* in the schedule in the direction of the vertical zero-trade-off line.

The sequence envisioned by accelerationists can be illuminated with the aid of Chart 8. On the chart is shown the vertical long-run Phillips curve (labeled L) passing through the natural rate of unemployment. The natural rate of unemployment is that particular rate of unemployment at which expected inflation equals actual inflation and where the real wage rate is at its equilibrium level. Also shown on the chart are four short-run Phillips curves, labeled S_0, S_1, S_2, S_3, corresponding to expected rates of inflation of zero, one, two, and three percent, respectively. The position of each short-run curve depends on the expected rate of inflation; the higher the expected rate of inflation, the higher the short-run Phillips curve. Note that at the point where each short-run Phillips curve cuts the vertical long-run curve expected and actual rates of inflation would be identical. For example, S_3, the short-run curve corresponding to an expected rate of inflation of 3 percent, would intersect the vertical curve at an actual rate of inflation of 3 percent. Similarly, S_0, the short-run curve along which inflationary expectations are zero, cuts the vertical curve at a zero rate of inflation.

Now suppose the economy is initially at point A, where there is complete price stability and the rate of unemployment is at its natural level. The authorities, intending to reduce unemployment from the natural rate to some lower level like U_1, then engineer an expansion in aggregate demand. This expansion in aggregate demand initially bids up both product prices (which rise at a rate of 3 percent) and wages. According to accelerationists, and many other observers, however, product prices initially tend to respond to increased demand more rapidly than money wages. With prices rising more rapidly than money or nominal wages, real wage rates fall.[1] The decline in real wages induces employers to expand production and employment, thereby lowering unemployment temporarily to U_1. Inflation has temporarily stimulated the economy, moving it from point A to point B on the short-run Phillips curve, S_0.

In the accelerationist model, however, such an inflationary stimulus would be short-lived. The stimulus will start to weaken almost immediately as price expectations are revised in light of actual inflationary experience. At first workers were fooled by the 3 percent inflation; they did not anticipate that rising prices would erode their real wages. But workers cannot be fooled for long. Over time, as inflation persists at the 3 percent rate, workers learn to adjust their expectations to the actual rate of inflation and to incorporate these price anticipations in their wage bargains. Thus, as the gap between anticipated and actual inflation narrows, so too does the discrepancy between the rates of increase of prices and money wages. Money wage increases begin to catch up with price increases, thereby tending to lift the real wage rate back to its pre-inflation level. This rise in the real wage induces employers to cut back employment, thus reversing the initial downward movement of unemployment. As the unemployment rate rises back to its original natural level, the economy moves along the path BCDE to long-run equilibrium. In the long run, (1) price changes will be fully anticipated, i.e., the 3 percent expected rate of inflation will equal the actual rate of inflation; (2) the expected rate of inflation will be completely incorporated in wage demands, i.e., money wages will be rising at the same rate as prices; (3) the original real wage will be reestablished and the old natural rate of unemployment restored; but (4) the steady-state rates of wage and price inflation will be higher than originally.

Policy Implications of the Accelerationist View (Chart 9) Several important policy implications arise from the accelerationist analysis. The first is that attempts to hold unemployment below the natural rate will result in explosive, ever-accelerating inflation. Maintenance of unemployment at some target level U_1 (Chart 9) requires that real wage rates be kept low enough to induce employers to add sufficient numbers of jobseekers to their work forces. But the required permanent reduction in real wage rates can be achieved only if rising prices continually outstrip money wage increases. Since past rates of price increase (a proxy for expected inflation) tend to feed back into current money wage increases, however, the rate of price increase must be ever escalating to stay a step ahead of money wage increases. Alternatively stated, actual inflation must be kept running continually ahead of expected inflation, which workers incorporate in their wage demands. But since expected inflation is always rising

[1] For simplicity, productivity growth is assumed to be zero in this example. Thus the percentage change in real wage rates is just the difference between the percentage changes in nominal wages (w) and the price level (p), that is, w—p.

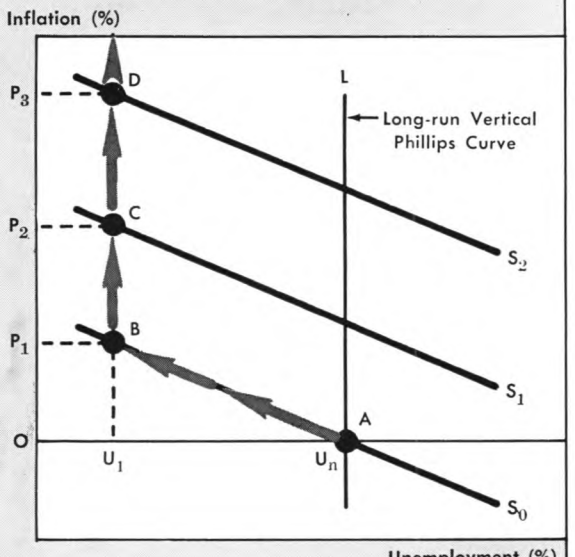
in an attempt to catch up with actual inflation, the latter must be continually accelerated, from P_1 to P_2 to P_3, etc., in order to keep the gap open and continually frustrate workers' attempts to close it.

A second policy implication is that a stable rate of inflation purchases little in the way of lower unemployment. Since any steady rate of inflation would eventually be fully anticipated, inflation could have no lasting impact on unemployment. This conclusion is in direct conflict with the Phillips trade-off view that a permanently low rate of unemployment could be achieved at the price of some constant rate of inflation. Accelerationists claim that the trade-off view offers a treacherous guide to policy. For if the policymakers follow it they will find that in the long run, they will have institutionalized inflation without permanently lowering unemployment.

A third policy implication is that since the natural rate of unemployment is consistent with *any* stable rate of inflation, the best thing the policymakers could do would be to choose the zero rate of inflation. But this means that the authorities should never try to reduce unemployment below the natural rate, since attempts to do so inevitably lead, via shifting expectations, to positive steady-state rates of inflation.

Chart 9

THE ACCELERATIONIST HYPOTHESIS



Attempts to maintain unemployment at some lower than natural rate, U_1, will provoke explosive, ever-accelerating inflation. The economy will travel the path ABCD with the rate of inflation rising from P_1 to P_2 to P_3, etc.

Finally, accelerationists also argue that the best path the economy can take in returning to its long-run, natural rate equilibrium is the path that leads to the zero rate of inflation. Since an economy in disequilibrium can return to equilibrium at *any* rate of steady, permanent inflation along the vertical Phillips curve, it might as well be the zero rate. Thus, accelerationists are willing to tolerate a deflationary policy that keeps unemployment high for as long as it takes to eliminate inflationary expectations and bring the economy to long-run equilibrium at the zero permanent rate of inflation. But they argue that inflationary expectations would vanish quickly, thereby necessitating only a short interval of high unemployment.[2]

The Non-Accelerationist Rebuttal (Chart 10)

Many economists have been unwilling to accept the policy conclusions flowing from the accelerationist model. They acknowledge that accelerationists have successfully demonstrated the crucial importance of price expectations in shifting the short-run Phillips curves. (Virtually no one believes in the existence of naive, stable short-run Phillips curves any more.) But they think accelerationists have adopted too extreme a position regarding price and employment policy. In particular, they dispute the accelerationists' interpretation of the natural rate of unemployment as corresponding to full employment in the labor market. Moreover, they point out that the natural rate of unemployment is a poor policy guide, not only because it results in too much joblessness, but also because it cannot be measured with precision.

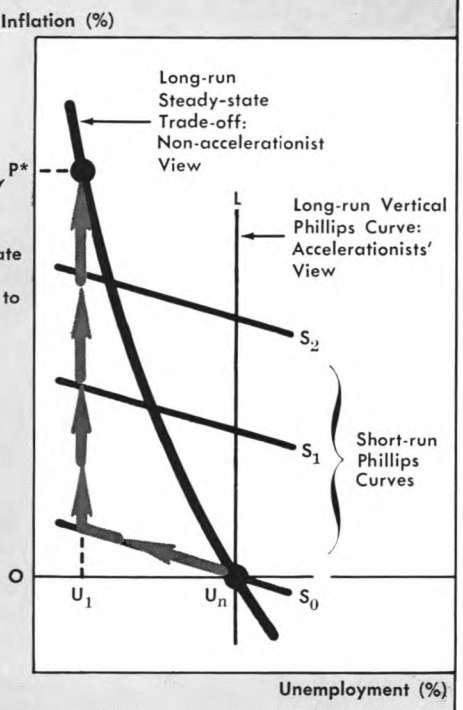
The main challenge to the accelerationist position, however, focuses on the issue of the long-run Phillips curve. Anti-accelerationists point out that, contrary to the natural rate hypothesis, recent econometric studies indicate that a long-run trade-off curve *does* exist. This curve, while steeper than short-run Phillips curves, is not completely vertical. Instead, it is negatively sloped, still providing trade-off opportunities for the policymakers.

These findings, if correct, would be extremely damaging to the accelerationist position. If a steady-state trade-off does exist, then permanent reductions in the level of unemployment will not require ever-

[2] When the economy is in the high-unemployment region to the right of the long-run vertical Phillips curve, actual inflation will always fall *below* anticipated inflation, thus inducing people to revise expectations downward. But how *fast* will these expectations be adjusted? Some accelerationists contend that the speed of adjustment is directly proportional to the discrepancy between expected and experienced inflation. Since this disparity tends to vary systematically with the rate of unemployment, high unemployment may be required for the swift dampening of inflationary expectations.

Chart 10

NON-ACCELERATIONIST VIEW OF LONG-RUN STEADY-STATE TRADE-OFF



Non-accelerationists argue that a downward sloping steady-state Phillips curve does exist to prevent ever-accelerating inflation. Hence, unemployment can be maintained permanently at U_1, yet inflation will never exceed its stable, steady-state rate p*.

accelerating inflation. Instead, for each level of unemployment, including *low* levels, there will be some stable, constant, permanently sustainable rate of inflation. Thus, when unemployment is lowered, inflation will start to climb and will continue to rise until it reaches the long-run, steady-state Phillips curve, at which point it stops rising. Chart 10 illustrates this case. As indicated in the chart, when unemployment is lowered from U_N to U_1, price expectations are set in motion, causing inflation to rise until it reaches its steady-state rate of p*. Thereafter, unemployment can be maintained permanently at U_1 without the rate of price increase exceeding p*.

Accelerationists have not been slow in responding to this challenge. Downward-sloping, steady-state Phillips curves, they point out, imply that workers never fully adjust to inflation. Incomplete adjustment could occur if workers have irrational *money illusion* and fail to perceive the discrepancy between nominal (money) and real wages. If workers have succumbed to money illusion, this is tantamount to a willingness on their part to let real wages be eroded by inflation in order to induce employers to hire the unemployed. Accelerationists, however, do not believe that workers behave that way. Workers, they contend, are free from money illusion and actively seek to *protect* the purchasing power of their wages from erosion by inflation. Therefore, in the long run, correctly-anticipated inflation will be completely incorporated in money wage bargains, thereby maintaining real wages. And if expected price increases feed back completely into money wage increases, a downward-sloping long-run Phillips curve is logically impossible. Something must be wrong with the econometric models or empirical techniques that generate such curves. Perhaps the flaw in the empirical models is their assumption that people form expectations of future inflation by looking at a weighted average of past rates of inflation. If it were true that expectations are based solely on *past* experience and are adjusted with a lag, then in periods of monotonically rising inflation people would always expect inflation to be less than it actually is.

But this may not be an accurate description of how anticipations are formulated. Expectations are as likely to be generated from direct forecasts of the future as from mere projections of the past. Moreover, people probably base their anticipations at least as much on new information about a variety of current developments as on old data pertaining to past price changes only. Accelerationists contend that if the expectations formation process were correctly specified, then empirical models would not show systematic underestimation of inflation by workers.

Non-accelerationists acknowledge this latter shortcoming in their models, but they point out that accelerationists likewise have been unsuccessful in formulating satisfactory models of the formation of expectations. Moreover, Phillips curve advocates even concede that given sufficient time, e.g., several decades, steady inflation might conceivably cause the curve to become vertical. But they maintain that this very long run is of little practical importance. They still insist that over the policymakers' time horizon the trade-off does exist.[3] Finally, trade-off adherents argue that workers *are* willing to accept reductions in real wages if accomplished by inflation. Yet this does not necessarily signify irrational behavior or money illusion. Why? Because, it is claimed, workers care more about *relative* (comparative) real wages than about the absolute level

[3] Frequent disturbances, triggered by exogenous events, may prevent the economy from ever reaching long-run equilibrium. If so, then the intermediate-run Phillips curve may be most appropriate for policy purposes—and this curve could be negatively sloped.

of their wages. And inflation, which supposedly hits all wage earners alike, is a means of reducing absolute real wages without altering relative wage relationships. Debate on these issues continues, and the controversy over the existence of the long-run Phillips curve remains unresolved.

Optimal Paths Off the Phillips Curve (Chart 11)

Even if long-run trade-offs do exist, however, there still remains the very real problem of what to do if the curve is unfavorable, i.e., if it falls outside the zone of socially acceptable inflation-unemployment combinations. Several possible strategies have been suggested to deal with this likely situation. The simplest calls for the policymakers to pick a point on the bad Phillips curve and they stay there. This strategy, however, would probably be rejected by most policymakers.

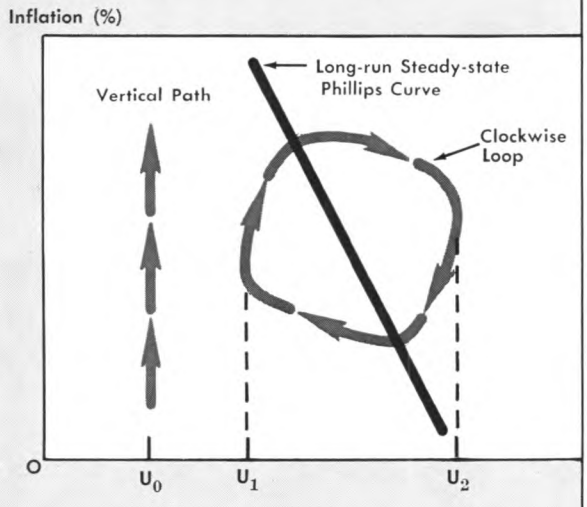
A better alternative, perhaps, would be for the policymakers to chart a course *off* the curve. Instead of choosing the best *point* on a bad long-run Phillips curve, the authorities can select the optimum *path* around the Phillips curve, deliberately abandoning the long-run equilibrium policy solution for a dynamic sequence of short-run disequilibrium positions.

For example, the authorities might opt for the vertical path lying completely to the left of the steady-state Phillips curve. This path corresponds to a policy decision to adhere to a low-unemployment target, fully accepting the accompanying risks of inflation. These risks, advocates argue, might not be as great as commonly believed. It all depends on how fast the path would unfold in the direction of higher inflation. If acceleration proved to be slow, then significant output and employment gains could be obtained before inflation began to approach socially intolerable levels. Moreover, future leftward shifts in the steady-state Phillips curve, owing to structural improvements in labor and product markets, might further reduce the danger of runaway inflation by lowering the ceiling toward which the path ultimately tends. Less sanguine observers, however, contend that the vertical path is too risky to be a practical alternative.

Another type of path the policymakers might consider takes the form of a dynamic loop or cycle

Chart 11

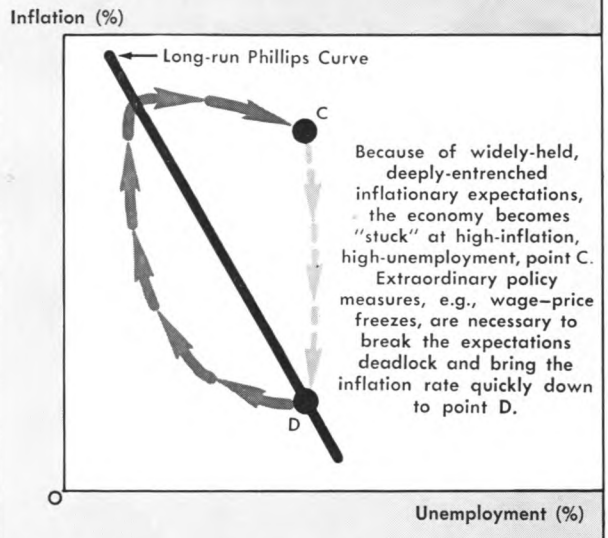
ALTERNATIVE DYNAMIC DISEQUILIBRIUM PATHS



Policymakers may elect to travel a path off the long-run Phillips curve instead of occupying a point on the curve. If they choose the vertical path at the left, they will hold unemployment at U_0 and hope that inflation will not accelerate too rapidly. If they choose the clockwise loop, they will be willing to let unemployment fluctuate within the range U_1 to U_2. Unemployment will be raised when inflationary expectations develop and lowered when they subside.

Chart 12

INFLEXIBLE PRICE EXPECTATIONS



If inflationary expectations are deeply entrenched and downwardly inflexible, inflation may be resistant to all but the most protracted seiges of severe unemployment. In such cases the economy may be trapped in a deadlock like point C, where both high inflation and high unemployment persist interminably. Here wage-price freezes and similar controls may be used to break up and dispel the inflationary expectations, thereby shortening the period of high unemployment needed for inflation to decline to acceptable levels like point D.

around the steady-state curve. This type of path results when policymakers permit fluctuations to occur in the economy. Instead of maintaining a continually high-pressure economy with its attendant risks of accelerating inflation, the authorities would rely on periodic, controlled variations in economic activity and employment to contain inflation and keep expectations in check. Growth would be slowed and unemployment raised via contractive monetary-fiscal policy when inflationary expectations needed to be subdued. Later, with inflation quelled and price expectations dormant, fast growth could be resumed. After a period of slack, the economy could move to a position of low unemployment with low inflation. Over the complete policy cycle the economy would move around dynamic clockwise loops.

Inflexible Price Expectations (Chart 12) The stop-go policy solution would indeed be an attractive alternative if inflationary expectations tended to fade quickly in downswings and build up slowly in upswings. Then, contractions could be kept short and expansions long. The trouble is, however, that things don't always go that smoothly. As we learned in the late 1960's and early 1970's, inflationary expectations can build up rapidly, thereby leading to swift acceleration in the pace of inflation. Moreover, these expectations may become so firmly entrenched and downwardly inflexible as to be resistant to all but the most protracted sieges of severe unemployment. In such cases stop-go could become a nightmare of long, painful contractions punctuated by brief but inflationary expansions.

In situations like these it might be necessary to supplement monetary-fiscal policy with wage-price freezes, guideposts, and similar controls. The purpose of such controls is two-fold: first, to break and quickly dispel price expectations, thereby shortening the period of slack needed for inflation to decline to acceptable levels; second, to stabilize (deactivate) inflationary expectations so that they will not intervene early to check a vigorous recovery.

The reversal and stabilization of inflationary expectations was a principal rationale for the wage-price controls imposed after mid-1971. In the preceding year, policymakers had thought that the high inflation rates built up in the late 1960's could be brought down to acceptable levels via a temporary period of slack. By 1971, however, inflation had declined only slightly even though unemployment had increased by almost a full percentage point to a level of roughly 6 percent. Moreover, computer forecasts were indicating that it might take as long as four or five years—with unemployment maintained at 6 percent—to bring the inflation rate down to acceptable levels. This contraction would have been too long. So the initial plan of de-escalating inflation via the unemployment route was scrapped, and wage-price controls were instituted.

The preceding discussion has described three alternative strategies for policymakers confronted with an unfavorable long-run trade-off, namely: (1) stay on the curve, (2) hold unemployment down and let inflation go, and (3) follow a path of controlled loops around the curve. None of these solutions, however, is ideal. Perhaps the best solution, most analysts agree, would be to engineer a leftward shift of the curve by adopting policies to improve the structure and performance of labor and product markets. A host of measures could be used to this end, including job-retraining programs; job-information and job-counseling services; vocational training and similar policies that would improve the coordination of labor force skill characteristics with the economy's skill requirements; provision of relocation subsidies; reduction of discrimination in hiring; and the elimination or reduction of minimum wage laws, agricultural price supports, quotas, and tariffs. Whether the long-run Phillips curve is vertical or downward-sloping, moving it into close proximity of the origin would enable the economy to realize both high employment and reasonable price stability. In this happy state of affairs, the debate between accelerationists and non-accelerationists would become a purely academic issue, having no practical importance.

Thomas M. Humphrey

THE FIFTH DISTRICT LABOR FORCE . . .

A Profile of Change

The secular growth and development of any economy depends upon the availability and quality of its productive resources of land, labor, and capital. Undoubtedly, the most flexible and versatile of these resources is labor. Over the decade of the 1960's, the labor forces of both the U. S. and the Fifth District exhibited sustained growth, which substantially contributed to the rapid expansion of other economic resources. Particularly in the Fifth District, the manpower base looms as a bright spot for the continued expansion of the economy in the 1970's. During the 1960's, several noteworthy changes in the composition of the Fifth District labor force appeared that reflected broader changes in economic activity and the social structure. In order to better understand the composition of the Fifth District labor force and the economy it supports, it is necessary to look closely at data both for the District as a whole and for the individual states.

Labor Force Data In 1970, the total labor force in the Fifth District totaled 7.8 million workers, a 29 percent increase over 1960. Maryland, Virginia, and both the Carolinas shared in the gain, but the West Virginia and District of Columbia forces suffered small declines. In any given geographical area, the labor force, broadly speaking, is made up of a civilian component and a military component. The military is an important part of the Fifth District's manpower resources. Although the armed forces are relatively small in total number, there is at least one major military installation in each District state, with the exception of West Virginia. The impact of the military on the District's labor force is pointed up by the following statistics. Between 1960 and 1970, the District's total labor force expanded 29 percent. The civilian force grew only 22 percent during the same period, while the armed forces increased much more dramatically. Military cutbacks during the late 1960's in both Maryland and South Carolina explain why the civilian labor force grew more rapidly than the total labor force in those two states.

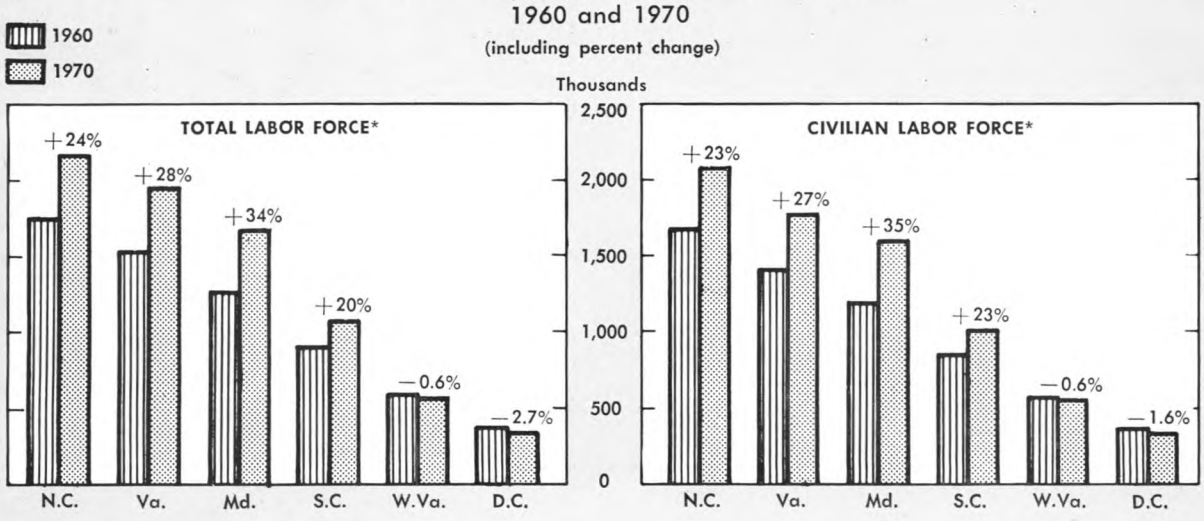
The civilian labor force is defined as all persons 16 years of age and over who are either employed or unemployed according to Bureau of Census criteria used in labor force surveys. To be counted as unemployed, a person must be without a job but

Chart 1

TOTAL LABOR FORCE AND CIVILIAN LABOR FORCE

1960 and 1970

(including percent change)



Note: Includes both sexes 14 years of age and older.

Source: **1970 Census of Population, General Social and Economic Characteristics, U. S. Summary.**

Table I

REGIONAL UNEMPLOYMENT RATE DATA

1962-1972

	U. S.	Va.	N. C.	S. C.	Md.	W. Va.	D. C.*
1962	5.5	3.9	5.3	5.7	5.6	12.0	2.3
1963	5.7	3.6	5.1	5.7	5.0	10.3	2.5
1964	5.2	3.4	4.8	5.4	4.5	8.8	2.5
1965	4.5	3.0	4.2	4.7	4.0	7.8	2.2
1966	3.8	2.7	3.2	4.2	3.1	6.8	2.4
1967	3.8	2.8	3.4	4.7	3.1	6.4	2.2
1968	3.6	2.7	3.2	4.3	3.2	6.4	2.2
1969	3.5	2.7	2.9	3.9	3.0	5.5	2.3
1970	4.9	3.2	3.8	5.0	3.9	6.3	2.6
1971	5.9	3.6	3.9	5.2	4.9	6.9	2.7
1972	5.6	3.2	3.2	4.3	5.0	7.7	2.9

*Data relate to Standard Metropolitan Statistical Area.
Source: **Manpower Report of the President, 1972.**

actively seeking work. Table I shows the unemployment rates for the District states and the U. S. As noted, with the exception of West Virginia and the District of Columbia, District unemployment rates have closely parallelled the national trends. Without exception, rates of unemployment in each state were lower in 1972 than in 1962, which is particularly impressive in view of the rapid growth of the labor force during the same period. The unemployment rate in the District of Columbia standard metropolitan statistical area rose slightly upward from 2.3 percent to 2.9 percent during the 1962-1972 period.

Those members of the civilian labor force counted as employed must have worked in one of the following capacities: (1) as a paid employee, (2) as a self-employed worker, or (3) as a farm worker. For purposes of analysis, employment statistics can be combined into two major categories: nonagricultural employment and agricultural employment.

A Picture of Growth and Decline Nonagricultural employment in each District state has grown steadily since 1960, as shown in Chart 2. Many factors have accounted for this growth, among which are the shift of workers from the farm to the industrial sector of the economy, the expansion in size, number, and type of industries located in the District, and a steadily increasing population. Nonagricultural employment in the District reached 6.7 million workers in 1971, a 42 percent gain over 1960. North Carolina led all District states with a 50 percent jump in nonagricultural employment during the same period. Other increases were 48 percent in South Carolina, 47 percent in Maryland and Virginia, 28 percent in the District of Columbia, and 13 percent in West Virginia.

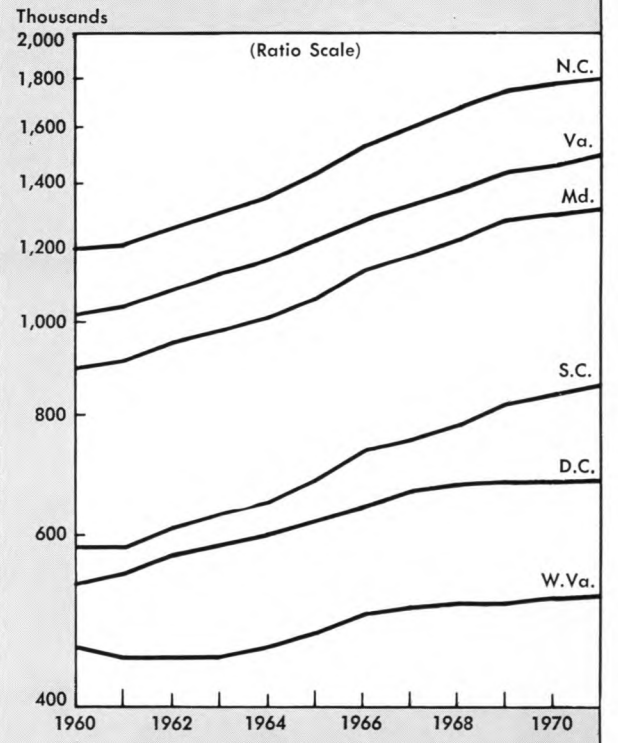
The shift from a rural, farm-oriented economy to a more urban, industry-oriented system has resulted in a steady decline in agricultural employment from 1960 to the present, as shown in Chart 3. The District's agricultural work force decreased from 16.2 percent of the civilian labor force in 1960 to 7.1 percent in 1970, representing a decline of nearly 50 percent in the number of workers engaged in agriculture. By states, the reduction in agricultural workers ranged from a high of 62 percent in South Carolina to a low of 43 percent in Virginia. This dramatic shift from agriculture to industry was reflected in growth rates in many industry groups that were far in excess of national growth rates.

Sources of Employment Employment can be broken down by industrial distribution and by the class of the employed worker. As shown in Chart 4, Districtwide service industry employment experienced the sharpest growth (66%) between 1961 and 1971, as the average citizen became increasingly dependent on service establishments. Expansion of

Chart 2

NONAGRICULTURAL EMPLOYMENT IN THE FIFTH DISTRICT

1960-1971



Source: **Employment and Earnings, States and Areas, 1939-1971.**

service industry employment in each District state exceeded the national growth of 52 percent, with a whopping 87 percent jump in Maryland.

During the 1961-1971 period, the government sector climbed to a high of 1.5 million workers, a 53 percent increase. Because of the relative size of government compared to service employment, the gains experienced by the government sector, although not the largest in percentage terms, represented the largest increase in terms of number of employees. As with service employment, Maryland experienced the sharpest rise in the government sector.

The construction, wholesale and retail trade, and finance, insurance, and real estate sectors in the District all grew within the 40-45 percent range between 1961 and 1971; and all exceeded the average rate of industry growth for the nation. Manufacturing employment, although the second largest in terms of numerical gain, expanded only 27 percent, with the most substantial gains in the nondurable goods sector. In relative terms, the transportation and public utility industry posted the smallest increase in employment, 22 percent. This increase far exceeds the national average growth, however, and represents a substantial expansion over the 10-year period.

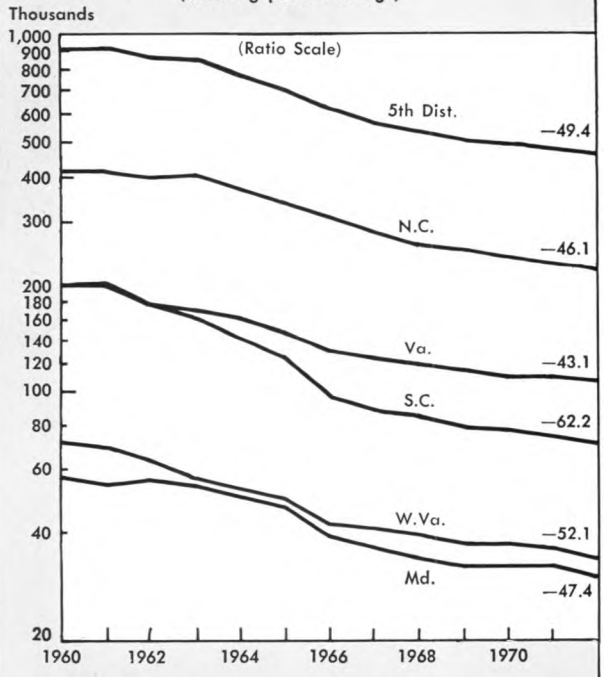
When analyzing the industrial distribution of employment, a number of questions must be dealt with. What kind of jobs do these workers have? Do they work in private industry? Are they self-employed? Are they even wage earners? An analysis of the labor force by class of worker is necessary before these questions can be answered.

In 1960, 75 percent of all employed workers in the District were in the private wage and salary class, as shown in Chart 5. By 1970, only 70 per-

Chart 3

AGRICULTURAL EMPLOYMENT* 1960-1972

(including percent change)

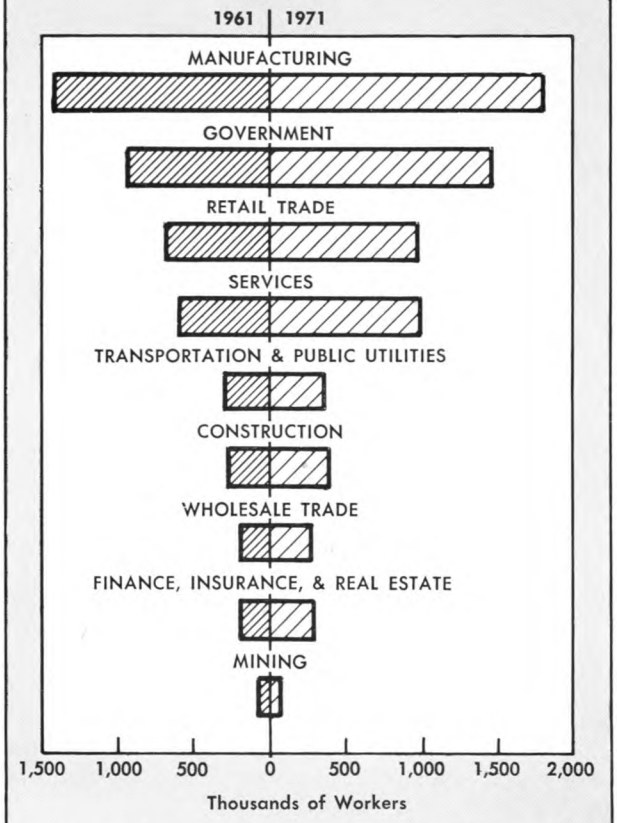


Note: Agricultural employment is total farm workers as reported by the USDA. Farm workers represent the number of family and hired workers during the survey week. Family labor includes farm operators working on farms one hour or more plus other family workers working 15 hours or more without receiving cash wages during the survey week. These data should not be confused with the data published by the Bureau of Labor Statistics, which are derived from a household survey where each member 16 years and older is classified as performing farm and nonfarm work on the basis of major activity during the survey week.

Source: U. S. Department of Agriculture, "Farm Labor", January release each year.

Chart 4

DISTRIBUTION OF EMPLOYED PERSONS BY SELECTED INDUSTRY



Source: **Employment and Earnings, States and Areas, 1939-1971.**

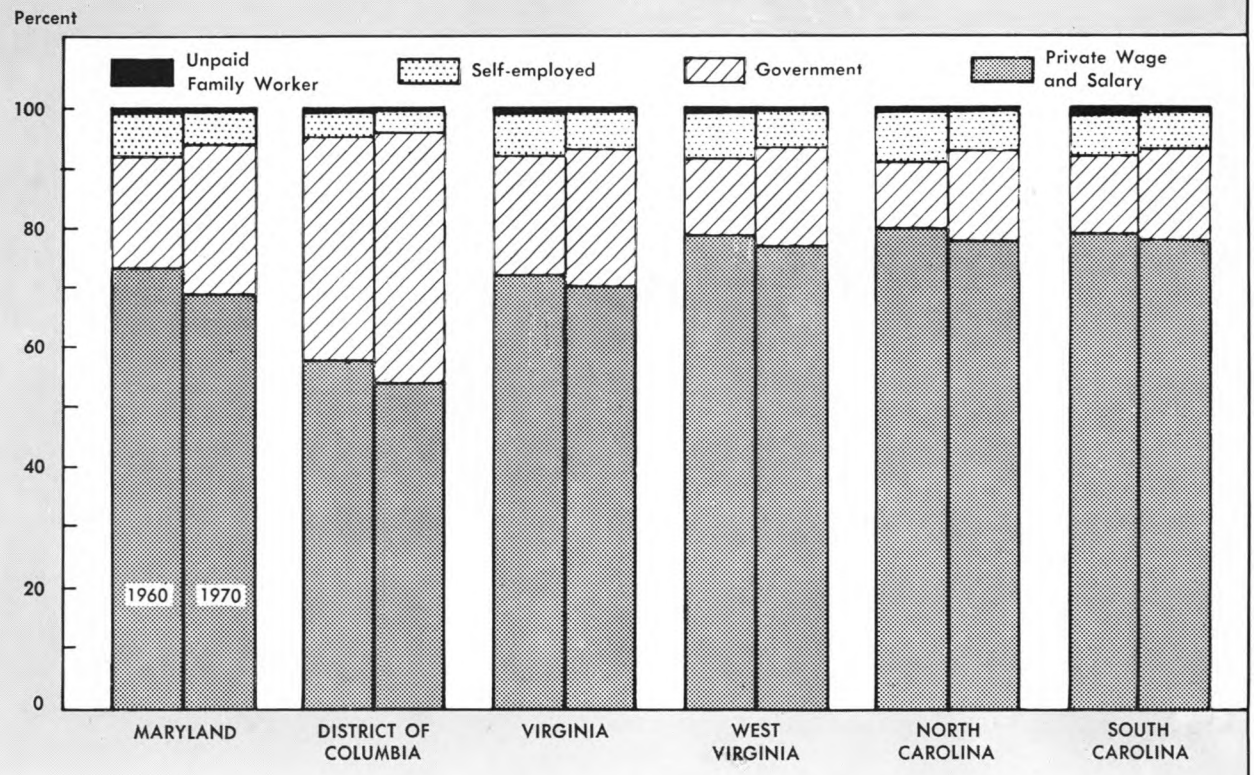
cent of the total was classed as private wage earners. In conjunction with this small decline in terms of percentage composition, however, the total number of workers in the private wage category increased 30 percent between 1960 and 1970. Districtwide, most of the shift in composition has been away from the private wage sector into the government sector. This is not to say that all of those workers leaving the private wage class moved directly to the government class, but between 1960 and 1970, private wage earners declined from 75 to 70 percent of the total, while government employment grew from 17 percent of the total to 23 percent. The other two categories, self-employed workers and unpaid family workers, remained relatively unchanged during the past decade. The District trends hold true for each state, where, without exception, the private wage class experienced small declines, government employment increased slightly, and the two remaining classes showed little if any compositional change.

Detailed Characteristics of the Labor Force During the 1960's, the Fifth District labor force reflected four important trends: (1) the proportion of persons 18-24 years of age increased, (2) the female sector of the labor force steadily expanded, (3) nonwhite employment rose, and (4) the number of rural farm workers declined.

Following the national trend, the age composition of the Fifth District labor force shifted during the past decade. As the population has become more youthful, so has the labor force. (See Chart 6.) District figures show that 19 percent of the labor force was from 18-24 years in 1970, compared to only 15 percent in 1960. By contrast, only 40 percent was between 25 and 44 years in 1970, while the group accounted for 47 percent in 1960. In both the Carolinas and Virginia, over 20 percent of the labor force was from 18-24 years old in 1970; in the remainder of the District the 18-24 year proportion ranges from 16 to 19 percent. On the other end of the spectrum, roughly 30 percent of each

Chart 5

CLASS OF EMPLOYED FIFTH DISTRICT WORKER

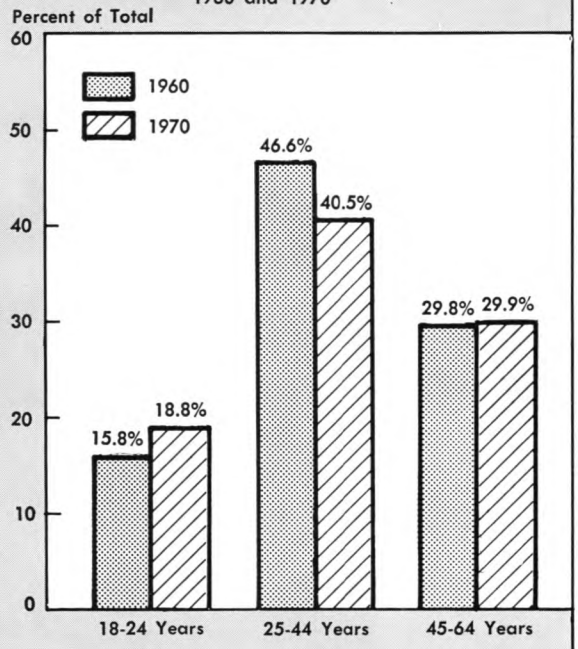


Source: 1960 and 1970 Census of Population, General Social and Economic Characteristics, U. S. Summary.

Chart 6

DISTRIBUTION OF THE FIFTH DISTRICT LABOR FORCE BY AGE

1960 and 1970

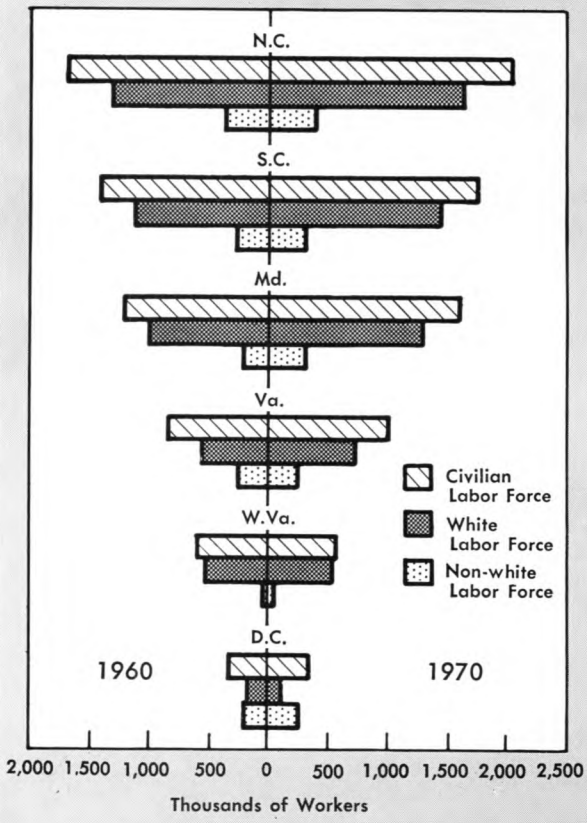


Source: **1970 Census of Population, General Social and Economic Characteristics,** individual state volumes.

Chart 8

FIFTH DISTRICT LABOR FORCE BY RACE

1960 and 1970



Source: **1970 Census of Population, General Social and Economic Characteristics; 1960 Census of Population, Detailed Characteristics,** individual state volumes.

District state's labor force was from 45-64 years old in 1970. The exception is West Virginia, where the 45-64 year group accounts for almost 40 percent of the labor force.

When considering this trend toward a more youthful worker and the increasing role of women in the labor force, another trend becomes apparent. While labor force participation rates for males, even in the 18-24 year class, have not varied substantially over the past decade, the participation rate for females 18-24 years has increased up to 9 percent within the District. Although participation rates have increased in all age categories for female workers, the trend seems to be toward the growing importance of the young working woman. Chart 7 illustrates the percentage gains in female employment in all District states during the 1960-1970 period. When the male-female distribution of the labor force is viewed by class of worker, two shifts in composition are clear. Between 1960 and 1970, female employment increased in the private wage and salary, government, and self-employed classes in all states; by contrast, the number of females has declined sharply as a percentage of total unpaid family workers. As more opportunities for women begin to open up, which seems likely, it is reasonable to assume that these trends will continue throughout the 1970's.

Many of the same forces that have made it possible for women to enter the labor force freely have also improved the plight of the nonwhite worker. Chart 8 illustrates that the nonwhite labor force, although still small in relative terms, has been increasing during the past decade. In both Maryland and the District of Columbia, the growth in nonwhite employment far exceeded both the civilian labor force growth and the expansion of the white labor force. Because of the many programs to encourage the hiring of both females and nonwhites initiated during the 1960's, nonwhite-female employment grew 33 percent between 1960 and 1970, far exceeding the 22 percent growth of the civilian labor force in the District.

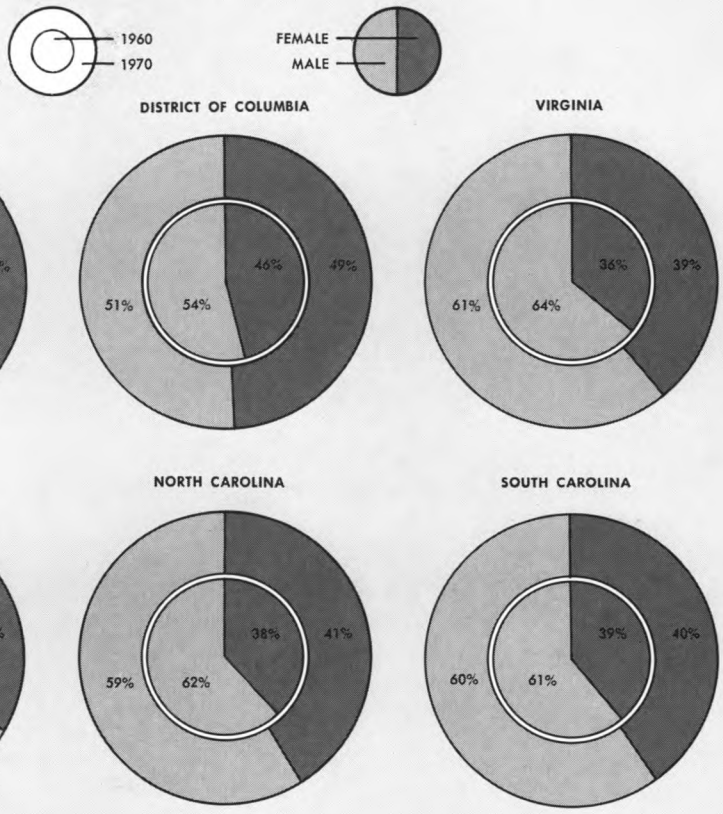
As whites and nonwhites alike move from their rural homes into urban centers in search of jobs and higher incomes, the rural farm worker is slowly becoming a creature of the past. During the period from 1960 to 1970, rural farm employment declined in each District state, both in absolute number and as a percentage of the total labor force. (See Chart 9.) The Carolinas experienced the sharpest decline in rural farm employment; however, rural non-farm employment has grown in the Carolinas since 1960. Indications are that there may have been some shifting from the rural farm to the rural non-farm sector, rather than solely a shift from rural farm to urban employment. Excluding the District of Columbia, which has no rural sector, Maryland led the District in 1970 with 74 percent of the total labor force in urban centers. Virginia and North Carolina followed next with 67 and 51 percent, respectively. In both West Virginia and South Carolina, less than half of the total labor force resided in urban areas in 1970.

Conclusion The labor force is easily affected by such factors as government legislation, population changes, economic expansion, fluctuating comparative wage scales, and industrial innovation. At the

Chart 7

FIFTH DISTRICT EMPLOYMENT BY SEX

1960 and 1970

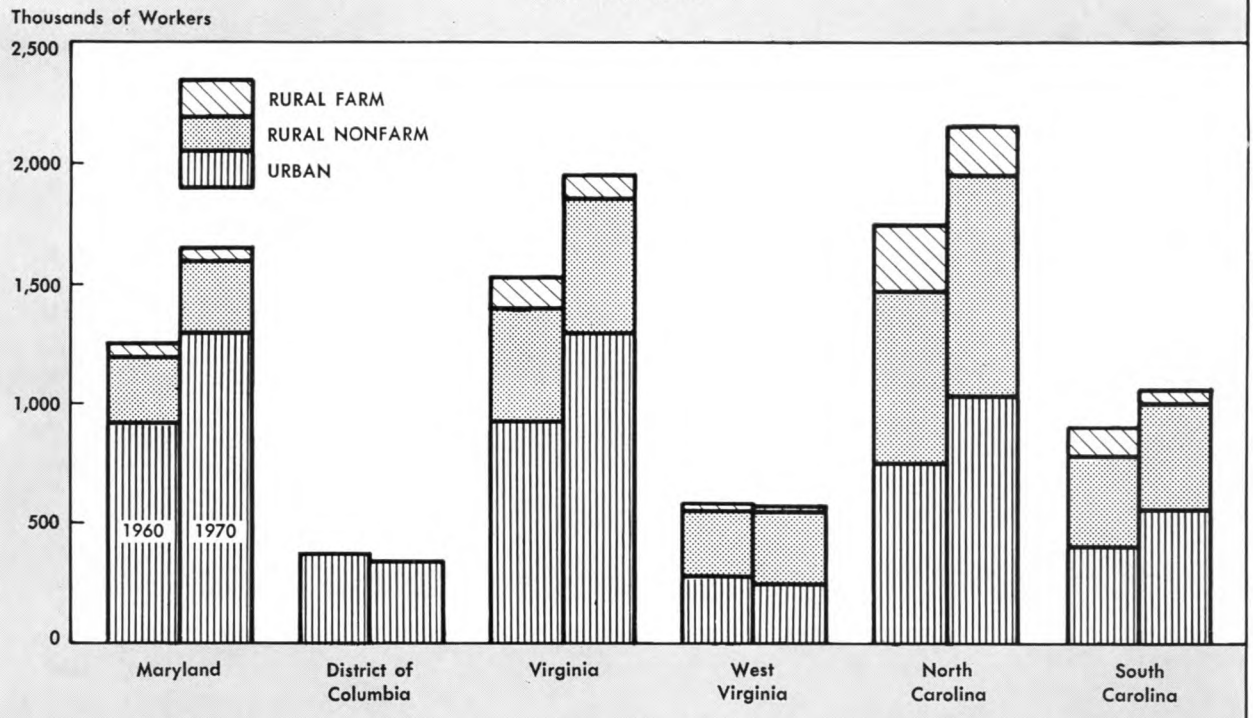


Source: 1960 and 1970 Census of Population, General Social and Economic Characteristics, U. S. Summary.

Chart 9

LABOR FORCE STATUS BY URBAN AND RURAL RESIDENCE

1960 and 1970



Note: 1960 data include ages 14 years and above; 1970 data include ages 16 years and above. The discrepancy is less than one percent.

Source: **1960 and 1970 Census of Population, General Social and Economic Characteristics, U. S. Summary.**

present time, however, a number of definite conclusions can be reached regarding the Fifth District labor force. Agricultural employment is declining in conjunction with a rise in nonagricultural employment. The youthful component of the labor force has been the fastest growing age group since 1960. Females and nonwhites are entering the labor force in increasing numbers. These major trends have already laid the groundwork for changes in the Fifth District labor force that should become increasingly obvious in the 1970's.

B. Gayle Ennis