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From 1921 to 1938 unemployment in Britain averaged 14 percent and never fell below 9.5 percent. Three largely independent sets of evidence indicate that the prolonged high unemployment was due to the operation of an unemployment insurance scheme that paid benefits that were high relative to wages and available subject to few restrictions. We estimate that the insurance system raised the unemployment rate by five to eight percentage points on average and that in the absence of the system unemployment would have been at normal levels through much of the period. Although a few interwar observers saw clearly the effects of unemployment insurance, Keynes and his followers did not.

From 1921 to 1939 unemployment in Great Britain never declined below 9.5 percent. Since World War II the rate has never again been as high as 9.5 percent. The high and persistent level of unemployment in interwar Britain is thought by many economists to be anomalous—to be in conflict with generally accepted theories of unemployment: "The most obvious problem . . . is the failure to explain world unemployment and wages in the '30's or British wages and

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unemployment in the '20's. The 10% unemployment in Britain during the years prior to depression . . . cannot be reconciled easily with the proposition that workers voluntarily chose leisure" (Brunner and Meltzer 1976, p. 8).

The economists of interwar Britain, most notably Keynes, also found the high rate of unemployment difficult to explain. The high and persistent level of unemployment Keynes observed around him was the single most important force in leading him toward a new theory in which unemployment *equilibria* were possible if aggregate demand was deficient.

We have discovered an alternative clue to the riddle of high unemployment in interwar Britain: unemployment benefits were on a more generous scale relative to wages than ever before or since. Is the association between high benefits and high unemployment during the interwar period and between low benefits and low unemployment at other times in British history accidental? Or is it evidence that lowering the cost of an activity will increase the activity? Several recent studies suggested to us that a plausible route of causation was from the attractiveness of benefits to the unemployment rate (Feldstein 1973; Hoelen and Horowitz 1974; Grubel, Maki, and Sax 1975; and Maki and Spindler 1975). The crude long-term association between unemployment and benefits noted above tends to support this notion but is hardly a rigorous empirical test. We have found, however, three solid strands of evidence that link the generous level of benefits with the high rate of unemployment in interwar Britain: (1) Times-series evidence—the generosity of the insurance system over time within the interwar period is strongly and positively correlated with unemployment when other factors are taken into account. (2) Differences between young and old—young persons aged 16 and 17, for whom insurance benefits were least generous, had normal unemployment rates during the twenties and thirties. (3) Differences between men and women—changes in the stringency of the system, as applied to women, led to the predicted changes in their unemployment rate relative to the male rate.

Before discussing this evidence, we shall set the stage by describing in broad strokes the economic history of Britain during this period. This is followed by a description of the unemployment insurance system and by a presentation of our evidence. We conclude with a discussion of the views of contemporary observers of the period.

I. Britain between the Wars

Three stylized facts dominate almost all informed narratives of the economic history of Great Britain between the two World Wars: (1) an

unemployment rate which, at its *lowest,* was as high as the highest rate experienced prior to World War I; (2) the depressions of 1920–21 and 1930–31, as deep as any in British history; (3) growth in real income as rapid as ever achieved by Britain over a period of comparable length. Of these facts, perhaps the first is best remembered. In only two years from 1855 to 1920 was the unemployment rate as high as it was in *every* year from 1921 to 1938.

Although the high unemployment rate soon came to dominate the discussions of politicians and economists alike, its initial emergence did not constitute a puzzle to the leading economists of the period. From 1914 to 1918 the British price level had nearly doubled. After the war ended the inflation continued unabated as the price deflator rose 40 percent from 1918 to 1920. When a vigorous monetary restriction was begun in 1920 no contemporary economist was surprised to see the level of unemployment rise rapidly. Cannan, Fisher, and Keynes were all aware that few prices were perfectly flexible, so that a general deflation would be accompanied by an industrial crisis. They all felt that 15 percent unemployment was simply the cost of reversing the inflation.

From the viewpoint of subsequent experience the striking fact about the 1920–21 recession in Britain was the extent to which the decline in aggregate demand manifested itself in deflation rather than in a decline in output (see fig. 1).[1] From 1920 to 1921 real income fell 6 percent, the price deflator dropped 11 percent, and nominal wages fell 5 percent. During the next year, real income rebounded 4 percent as the price deflator and nominal wages fell an additional 17 percent. By 1924 unemployment had fallen from 17 to 10.3 percent, as real income rose an additional 8 percent. It was here that the puzzle began. Interrupted only by the general strike of 1926, real income rose throughout the rest of the decade at a rate of nearly 4 percent per year. Yet the unemployment rate remained settled at about 10 percent. Moreover, while prices continued to decline slowly, nominal wages remained constant.

In 1930 and 1931 a new gale of deflation, proceeding out of the United States and enveloping the entire gold standard world, chilled the British economy. Unemployment climbed to 22 percent and real income fell 6 percent, but nominal magnitudes were much less responsive than they had been in 1920–22. The price deflator fell only 5 percent from 1930 to 1932 and nominal wages declined but 3 percent.

By late 1931 the postwar restoration of the gold standard had led, so most felt, to a decade average of 12 percent unemployment. To the

[1] Statistics for real output and the price level are real GDP and the GDP price deflator from Feinstein (1972).

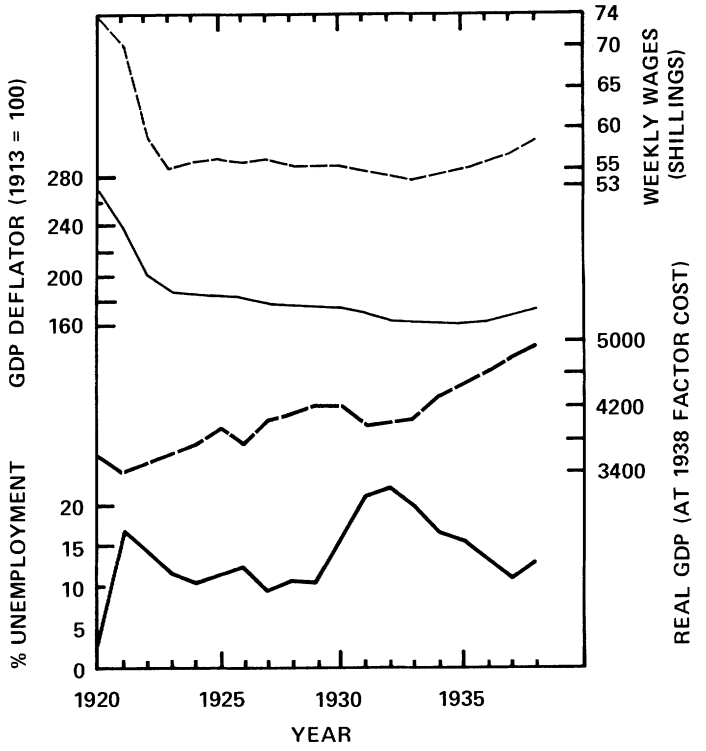

FIG. 1

great relief of almost everyone, the exchange rate of the pound was unpegged in September 1931. From 1932 to 1938 the economy expanded uninterruptedly, as real income surged upward at 5 percent per year. The price deflator fell 1 percent from 1932 to 1933 and then began rising at an accelerating pace, reaching 4 percent per year by 1938. Unemployment again declined, but after 5 years of expansion the level of unemployment was still more than three times its prewar level.[2]

The paradox of persistent unemployment was compounded by the prosperity enjoyed by the bulk of the population.[3] By 1938 real wages

[2] It seems likely that migration within Britain was hindered by the presence of rent controls and by the several classes of subsidized housing that were constructed after 1918. The most numerous type of subsidized housing was the Council Housing Developments. The rules adopted for the distribution of this housing tended to favor established residents. At least during the interwar period Council Housing had only a limited impact on the very poor and the unemployed: "The market for local authority houses was largely confined to a limited range of income groups; that is, in practice, the better off families, the small clerks, the artisans, the better off semi-skilled workers with small families and fairly safe jobs" (Bowley 1945, p. 129).

[3] A recent text begins: "The interwar years present a paradox in British history. The popular image is of a period of depression with a gathering storm of fascism abroad.

were 22 percent above the level of 1920 and real income had risen 32 percent. A new England of modern suburbs, automobile factories, and a general spread of prosperity unequaled in prior British history had been created.[4] Yet 10 percent of the labor force, a million-man army of prime working age, remained out of work. The memory of this army and its 20-year occupation of Britain remains the single most remembered fact of the era and the single fact in British history least tractable to explanation by neoclassical methods.

II. Unemployment Insurance in Interwar Britain[5]

Until shortly before World War I the only public assistance available to unemployed persons was locally administered and financed poor relief, although a number of unions had privately funded unemployment assistance funds.[6] In 1911, the Unemployment Insurance Act was passed, making centrally administered unemployment insurance benefits available to about 15 percent of the work force.[7] Amendments to the act in 1916 and 1919 extended coverage to an additional 10 percent of the work force and raised nominal benefits, although the World War I inflation produced a steady decline in real benefits. The Unemployment Insurance Act of 1920 increased weekly benefits by nearly 40 percent and extended coverage to more than 11 million workers; with the exception of agricultural and domestic

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On the other hand to set against that image is the record of economic growth. This record suggests that the interwar years were a period of progress with rising material standards" (Glynn and Oxborrow 1976, p. 13). This view is hardly eccentric. Pollard (1962) titles one of his subchapters "The Rise in the Standard of Living." Indeed, given that real income rose 1.7 percent per year from 1920 to 1938, compared with only 1.1 percent per year from 1857 to 1900, any other view would be difficult to defend.

[4] This description follows Taylor 1965. He titles p. 301 "The New England."

[5] In large part this section is a brief condensation of the important work by Burns (1941). The high standards of scholarship and documentation maintained by Burns dramatically reduced our costs of investigating this problem.

[6] Even after the massive expansion of compulsory insurance in 1920, some unions continued to operate private plans. The benefits they paid could be collected in addition to those paid by the central government, with no penalty. However, the benefits offered by the private plans were low relative to those of the compulsory scheme, and the high rates of unemployment kept the private plans in financial straits throughout the interwar period. Many of them failed outright and the rest were able to pay benefits only sporadically.

[7] The unemployment insurance system was one of the package of social reforms with which the Liberal government (following in large part the recommendations of the Poor Law Commission of 1908) first introduced the welfare state in Britain. The other elements of the package included old-age pensions, national medical insurance, and the inception of employment exchanges. The original intention of the insurance scheme was to have a fund accumulate in good times, so that payment could be made in bad times. Originally, the intention met with success; by the end of World War I, cumulative contributions exceeded benefit payments by a factor of more than five to one. The widespread unemployment of the twenties soon exhausted the fund, however, and throughout much of the interwar period the fund was heavily subsidized out of general revenues from the Exchequer (see Douglas and Director 1931, pp. 401–27).

workers virtually all of the privately employed workers over the age of 16 were thus included. The decade that followed witnessed a progressive liberalization of the insurance system. Contributory requirements were relaxed, and workers became eligible to receive benefits for increasingly extended periods. Moreover, nominal benefits were raised on several occasions, even in the face of a declining price level. By 1931 weekly benefits exceeded 50 percent of average weekly wages, and an adult worker who had made 30 weekly contributions at *any time* in his working career could draw full benefits for an unlimited period.

The generosity of the system, combined with a decade average of 12 percent unemployment, imposed heavy financial losses on the insurance fund, and the government moved to curtail the munificence and scope of the system in 1931.[8] Under the Unemployment Insurance (National Economy) Orders of October 1931, basic weekly benefits were cut 10 percent, contributory requirements were stiffened, and the maximum duration for receipt of benefits in any insurance year was limited to 26 weeks. Late in 1934 benefits were restored to their pre-1931 levels, and requirements for the receipt of benefits were relaxed. Subsequent increases in benefits followed in 1935 and again in 1938. The result was that by 1938 covered workers were indefinitely eligible to receive benefits equal to nearly 60 percent of average weekly wages.

While the insurance system was generous, this was not its extraordinary feature. What made the system of interwar Britain unique was the combination of three features that have received little attention in historical accounts of the system. First, the insurance contributions paid by worker and employer were unrelated to their past unemployment experience. While the Act of 1911 provided that each worker who collected less in benefits than he paid in contributions would receive a payment equal to the difference upon retirement, this provision was dropped after World War I. The lack of experience rating during the interwar years made benefits appear wholly external to worker and employer, giving them no pecuniary incentive to substitute wage reductions for layoffs.

Second, although benefits differed according to sex and age (16–17, 18–20 and >20), they were not otherwise tied to wages. Hence, the effective ratio of benefits to wages varied among workers. In general, such an arrangement results in higher unemployment

[8] The reduction in benefits was part of a comprehensive economy move aimed at saving the gold rate of the pound. The Labour party refused to back MacDonald and Snowden in Parliament, so the prime minister and chancellor of the exchequer founded a new National Government on September 8, 1931. On September 19, 1931, Britain went off gold.

than does a proportional benefits rule, for the same reason that increases in benefits relative to wages have increasing marginal effects on the unemployment rate. When benefits are low relative to wages, they cut into the wage distribution well out into its lower tail.[9] Hence variations in benefits relative to wages will affect the decision making of relatively few workers. As benefits get closer to mean wages, they cut into progressively thicker portions of the wage distribution, so more workers will be affected by any unit change in benefits.[10]

The third unusual aspect of the system was perhaps the most important. Throughout the interwar period, benefits were payable for spells of unemployment as short as 1 day, providing that a waiting period subsequent to the onset of unemployment had been served. Under the Act of 1920 the waiting period was the first 3 days of a continuous period of unemployment; it was increased to 1 week (i.e., 6 working days) in June 1921 where it remained thereafter, save for two brief intervals.[11] The peculiarity arose in the practical implementation of the waiting period. Any 3 days of unemployment during any 6 consecutive working days were regarded as "continuous" unemployment. Moreover, a pair of such 3-day periods, occurring within 3–10 weeks of one another, could be "linked up" to constitute a 6-day period of continuous unemployment. Once the waiting period, thus defined, had been served, a further waiting period was not required unless the interval or "bridge" between two periods of 3 days of continuous unemployment had been broken. Thus, with the exception of the first spell of unemployment of his career, judicious timing could ensure a worker of eligibility for benefits beginning with the first day of any unemployment.[12]

[9] Although we refer to benefits relative to wages, the relevant ratio is that of benefits relative to marginal value product. For price takers, wages will equal the expected marginal value product of labor, but the marginal value product will in fact vary from day to day and month to month. Employer and employee can enjoy some joint gain from a layoff whenever unemployment benefits exceed the marginal value product of work less the marginal value of nonwork time to the employee.

[10] We have been unable to discern any evidence of nonlinearity for the interwar period; perhaps there were few instances in which the ratio was low relative to its mean. As noted below, however, there is evidence from outside the interwar period that is consistent with the nonlinearity hypothesis.

[11] From August 1924 to October 1925 and from March 1937 through the end of our period the waiting period was 3 days.

[12] See Royal Commission on Unemployment Insurance 1932*a*, pp. 223–25 (hereafter cited as Royal Commission), and Burns 1941, pp. 102, 151. The system's definition of "continuous" unemployment apparently fostered the widespread practice of "short-time" working, a phenomenon that had been observed before World War I, but chiefly only in a few seasonal industries such as textiles. During the interwar period, it was not uncommon for workers to form "pools" or groups with five or six members who arranged with their employer to have one or two in each pool "play off" (be temporarily laid off) in turn, thus enabling the members to retain continuous eligibility for insurance benefits. By the middle of the interwar period organized short time such as this

III. Time-Series Evidence

In a world in which information was free there would be work and leisure, but there would be no unemployment. Persons who responded no to the question "Are you currently working?" would also answer no to the question "Would you be willing to work at your normal wage?" In the world as we know it, expectations are not always realized: information is scarce. As a result, persons sometimes devote resources to the act of search, becoming "unemployed" as a low-cost means of generating information about the highest valued use of their labor services. This type of behavior is widely termed "search unemployment" (Alchian 1969).

Recently, the cost associated with making and enforcing certain contracts has come to be recognized as another source of unemployment (Gordon 1974; Gordon 1976). When human capital cannot be sold and when well-developed markets for equity shares exist, employers will assume some of the risk of variations in the value of workers' human capital, particularly that which is firm-specific. Equity shareholders will be less averse to the risk of such variations because they can diversify their investments so as to greatly reduce the portfolio variance caused by changes in relative prices. Nevertheless, not all of the risk associated with investment in firm-specific human capital will be absorbed by the employer, since doing so would leave the worker with no incentive to stay with the firm when his alternatives elsewhere improved. In principle, the employment contract could specify that the share of risk borne by the worker come in the form of either wage or employment variations. It will generally be costly, however, for the worker to determine whether a proposed wage reduction has been prompted by (*a*) a reduction in the value of his marginal product or (*b*) an attempt by the employer to "steal" the worker's investment. Concerns valuing their reputations as good employers will be reluctant to use contracts that leave them open to

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came to be known as the "OXO" system due to the frequently observed arrangement of alternating days of work (O) and unemployment (X). The most common version of OXO involved 3 days each of work and unemployment per week. Workers who participated in organized short-time plans could be held ineligible for benefits during any week in which their short-time earnings exceeded one half of their normal full-time earnings. Hence the even division between work and unemployment each week met this constraint while also satisfying the definition of continuous unemployment (cf. *Unemployment Insurance in Great Britain* . . . 1925, pp. 41, 53–54, 58; Gilson 1931, pp. 664–65; Royal Commission 1932*a*, pp. 98–102, 1932*b*, pp. 630–31). In a 1 percent sample, taken February 2, 1931, of claimants to benefits, the Royal Commission on Unemployment Insurance found that the claimants had averaged 7.3 separate spells of unemployment during 1930. The median length of the spells was 4 days (Royal Commission 1932a, pp. 74–75).

charges of theft. Since employment variations contain no "theft" possibilities, it will often pay to specify a contract that provides for fixed wages and variable employment. The result is "contractual unemployment."

A. *The Role of Aggregate Demand*

In all societies the best employments for inputs change as the demand and supply of those inputs change. But in most developed societies, although such changes are responsible for appreciable amounts of unemployment at all times, they do not account for much of the variation over time in economy-wide unemployment. Movements in the extent of both search and contractual unemployment are instead caused chiefly by unexpected changes in aggregate demand. The amount of search unemployment is increased by a reduction in aggregate demand because in the absence of free information workers' estimates of the wages they can get do not change as rapidly as do the actual offers. Similarly, job contracts that fix nominal wages and leave the level of employment to be determined by the employer result in decreased employment when the real wage is increased by an unexpected decrease in aggregate demand. In the absence of a Walrasian auctioneer there is no way for the actors to avoid real responses to nominal shocks.

Once unemployment has been increased by such a shock, even the disappearance of the shock does not instantly eliminate the excess of unemployment over normal levels. Trade connections have been broken, new employment must be sought, etc. Thus, the amount of resources actually in use at any time is the result not only of contemporaneous shocks but also of the magnitude and direction of prior shocks.

Reductions in aggregate demand decrease the employment of all inputs. Moreover, much of the variation in the usage of labor does not appear in the unemployment figures. When "business is bad" trusted employees are retained to avoid the trouble and expense of rehiring them, as well as to fulfill contracts that grant them tenure (Gordon 1974, p. 446). These employees are then used for tasks that formerly were performed by employees who have been dismissed, or they are employed to do things such as maintenance that have been postponed to slower times. In part, they simply do not work as hard. Similarly, the rate of utilization of equipment is reduced, partly in order to enable it to be repaired. As a result, output is underestimated in slack times and for the reverse reasons overestimated in good times. Since many of the variations in the employment of resources and in output

are more costly to measure than are variations in the unemployment of labor, it is a commonplace observation that output varies more over business cycles than does the measured employment of factors of production.

The negative correlation between the unemployment rate and the level of output relative to trend has become dignified with the name Okun's Law. This law is a consequence of the fact that the employment rates of various inputs tend to move together whenever those employment rates are being moved by aggregate demand. Since output is a function of inputs, and since the total available supply of inputs normally grows relatively steadily, the result is a close inverse correlation between the unemployment rate of labor and the level of output relative to trend.

B. The Role of Unemployment Insurance

The presence of unemployment insurance also affects the utilization and employment of resources, although the effects differ between labor and nonlabor inputs. Search unemployment rises in response to an increase in unemployment benefits because the inventory services of such unemployment are subsidized by benefits. More of these services are used to produce any given good, and more "unemployment-intensive" goods are produced.

The amount of unemployment caused by provisions calling for fixed wages also rises. Consider a worker whose marginal product varies in value over time. One means of sharing this risk between worker and employer is a contract calling for continuous employment at a fixed wage equal to the expected value of the worker's marginal product. If the introduction of unemployment insurance raises the benefits (pecuniary and nonpecuniary) of unemployment above the value of the worker's marginal product during the "slack" season, there is a joint gain to altering the employment contract to allow for more temporary layoffs and less wage variation (Feldstein 1976).

The provision of unemployment benefits also increases the unemployment rate through its effect on the wage-setting behavior of unions. The optimal wage of a union that is maximizing the present value of the monopoly rents collected by its members is higher the greater are unemployment benefits, since the collection of benefits is the relevant alternative of some of its members. Higher wages, combined with the subsidization of search, increases the fringe of workers seeking employment at union wages. If the number of those seeking employment in the industry is not restricted and if no special class of workers is awarded property rights in the monopoly rents, this fringe

of job seekers will grow until the unemployment rate is high enough to make the level of total compensation equal to other alternatives.[13]

In a variety of ways, then, the provision of unemployment benefits raises the full employment rate of unemployment. In addition, there are some partly illusory increases in unemployment. Vacations are relabeled "layoffs." Some people sign up for benefits even though they have no intention of returning to work. Others enter the work force so as to reap the subsidy to "part-time" (a few days per week or months per year) employment.

The exact effect of higher unemployment benefits on uncovered resources depends on the degree of substitutability or complementarity of these resources with covered resources. For some substitutes, such as uncovered labor, the effect of higher unemployment benefits is to increase their marginal product schedules and thus increase their employment. Conversely, the marginal product schedules and employment of resources that are complementary to covered resources tend to fall in response to higher unemployment benefits. Given these offsetting effects of unemployment insurance on the employment of uncovered resources, output falls less when a given rise in unemployment is caused by an increase in insurance benefits than when caused by a reduction in aggregate demand. In fact, it is this differential effect of unemployment insurance that enables us to discern its effects empirically in the time series.

C. *The Unemployment Rate Series*

The reported unemployment rate in interwar Britain was a measure of unemployment among persons covered by unemployment insurance, a group that comprised about 70 percent of the total work force. The unit of counting was the "lodged" unemployment book, a two-page card in which was kept a record of each worker's insurance contributions and benefits. When an insured person became unemployed, he was to obtain his unemployment book from his employer and "lodge" it with the employment exchange, where it remained for the duration of his unemployment. Upon obtaining work the individual had to retrieve his book from the exchange and give it to his

[13] The docks in Britain during the interwar period show this force at work. From 1928 to 1931 the total work force attached to this industry rose, while the industry's unemployment rate averaged 34.3 percent, rising from 31.7 percent in 1928 to 39.2 percent in 1931. During this same period, there were increasingly vigorous attempts, aided by the Ministry of Labour, to restrict new entry by workers (see Royal Commission 1932*a*, p. 89).

employer, who affixed contributions stamps in the book for each week of employment.

Unemployment books expired in July of each year, at which time they were delivered to the employment exchange to be exchanged for new ones. The denominator of the unemployment rate was the number of books issued in July of the corresponding calendar year. The annual unemployment rate was the average number of persons unemployed in each month divided by the number of books issued in July. Persons employed on government public works or relief projects were counted as being employed. Persons attending government training centers were counted as unemployed; at no time did the number of such persons exceed 10,000.[14]

D. *The Evidence*

We have attempted to capture the effects of the unemployment insurance system in interwar Britain by using the ratio of unemployment benefits to wages (B/W). The numerator of this ratio is the weekly benefit payable to an adult male who has one adult dependent and two dependent children. The denominator is the average weekly earnings of full-time employees.[15] To take into account the effects of aggregate demand changes we estimated a log-linear trend on net national product over the period 1920–38 and then calculated the deviations of the natural log of output ($\log Q$) from its trend value (log

[14] A monthly series on the unemployment rate is conveniently available in Department of Employment and Productivity (1971). A fuller discussion of the details of the unemployment rate series is contained in the Appendix.

[15] Using the ratio of benefits to wages removes the common influence of the price level on both. The use of benefits payable to an adult male with two dependent children was made to keep our measure comparable with other studies of the effects of unemployment insurance. Using statutorily specified benefits rather than average benefits paid per recipient eliminates problems caused by changes in the composition of the recipient population. It is possible for an increase in the benefits payable to all groups to result in a *decrease* in the average amount received, due to compositional changes. Throughout most of the period, the average recipient received an amount equivalent to that payable to an adult male with one adult dependent. Virtually all of the persons eligible for the insurance scheme had wages low enough to exempt them from income taxes. The worker's share of the weekly insurance contribution was about 1 percent of average weekly wages. Data on benefits are from Burns (1941). When a change in benefits took place during a calendar year, average benefits for the year were calculated as though the new benefits became effective on the first day of the month following the statutory date of change. We wish to thank Steve Easton for pointing out a calculation error in an earlier draft of the paper. Data on wages are from Chapman (1953). Weekly wages were computed by dividing by 52 the series on annual wages and salaries of full-time employees excluding directors' fees. The wage series reported by Chapman covers all industries, including those not covered by the insurance system. Using her data, we constructed an alternative wage series that excludes industries that were largely or wholly uncovered. The correlation between the two series is .999, and using the alternative wage series has no appreciable effect on the estimated coefficients.

Q^*). As noted above, this variable ($\log Q - \log Q^*$) is highly correlated with the unemployment rate because unexpected changes in aggregate demand cause output to move only by causing the employment of inputs to move. Combining the effects of the insurance system (B/W) and of past and present unexpected changes in aggregate demand ($\log Q - \log Q^*$) into a single equation produces the estimates below, with t-values shown in parentheses.

1920–38:

$$U = \underset{(2.64)}{5.19} + \underset{(4.46)}{18.3\,(B/W)} - \underset{(-8.30)}{90.0\,(\log Q - \log Q^*)} \qquad (1)$$

$$R^2 = .84,\ \bar{R}^2 = .82,\ \text{D-W} = 2.18,\ \text{SE} = 1.90.$$

These results are clearly consistent with the hypothesis that unemployment insurance had an important effect on the rate of unemployment in interwar Britain.[16] In subsequent sections we shall provide additional evidence that this estimated effect is not illusory. We shall then use the estimates above to calculate the approximate extent to which the high unemployment of interwar Britain can be attributed to the insurance system. Before going on, however, it is best to be explicit about the possible defects associated with the estimates shown above.

Our estimates have been obtained via ordinary least squares, and it is possible that we have interpreted the direction of causation incorrectly, that is, the high level of unemployment could be the cause of

[16] Concerned that our results might be due largely to the substantial movements in the benefit-to-wage ratio during the early years of the period, we reestimated eq. (1) omitting 1920, 1920–21, 1920–22, and 1920–23. The resulting coefficients were all significant and within 1 standard error of the estimate shown in eq. (1). A time trend added to the equation was insignificant and had no significant effect on the estimated values of the other coefficients. At the suggestion of Richard Sutch, we replaced the output variable in eq. (1) with one based on an output trend fitted for 1927 and 1937, 2 years with unemployment rates of about 10 percent. With the exception of the constant term, none of the coefficients was affected appreciably. We have also used gross domestic product rather than net national product in estimating all of the equations reported in the text. Using net national product produces results that are statistically slightly superior in the sense that the standard errors of the coefficients and the standard error of the estimate are lower. In order to test for possible nonlinear effects of the benefit to wage ratio we estimated the following equation:

$$\log U = \underset{(28.8)}{3.13} + \underset{(5.68)}{0.72}\ \log (B/W) - \underset{(-6.42)}{6.42}\ (\log Q - \log Q^*)$$
$$R^2 = .81,\ \bar{R}^2 = .79,\ \text{D-W} = 2.29,\ \text{SE} = 0.18.$$

By standard statistical criteria this functional form is indistinguishable from that of eq. (1). However, in their study of postwar Britain, when B/W was low relative to its interwar levels, Maki and Spindler (1975) found a coefficient for B/W in the linear version of the equation about one-fourth as large as our coefficient. This result is consistent with the nonlinearity hypothesis. Results discussed but not shown explicitly here and elsewhere in the paper are available upon request from the authors.

the high benefit-to-wage ratio rather than the reverse. There are two important mechanisms by which this reverse causation might have occurred: (1) high levels of unemployment could lead to low levels of wages, (2) high levels of unemployment could lead to high levels of benefits.

We believe that causation running from high unemployment to low wages is not a major problem here. Most of the variation in the benefit-to-wage ratio during the interwar period was due to movements in benefits rather than in wages. The correlation between the benefit to wage ratio and benefits is .985. Moreover, if benefits and wages are entered separately benefits remain strongly significant, while wages are insignificant.[17]

The possibility that the political system altered benefits in response to changes in the unemployment rate is more difficult to resolve. In principle, one could attempt to settle this matter by estimating a statistical model of the determination of benefits. But in the absence of any theory of how governments set social benefits, it is clear that any such attempt should be unconvincing to most.[18]

During the 19 years covered by our study, more than 40 unemployment insurance acts were passed by the British Parliament. In addition, important changes in the insurance system were included as part of legislation passed under other titles. In some years a major fraction of the parliamentary session was spent debating unemployment insurance bills. If we take the debate in Parliament as an indication, the largest increases in benefits were in response either to low predicted levels of unemployment or to experienced levels of unemployment below the previously predicted levels. Conversely, the only two substantial decreases in benefits during the period were reported to be in response to the then-high levels of unemployment and the deteriorating conditions of the Unemployment Fund. Indeed,

[17] For example, in the logarithmic specification, where the functional form is equivalent to that of the equation shown in n. 16, when real benefits (B/P) and real wages (W/P) are entered separately the results are as follows, with t statistics in parentheses:

$$\log U = \underset{(4.97)}{3.21} + \underset{(4.04)}{0.70} \log (B/P) \underset{(-0.82)}{-0.63} \log (W/P) - \underset{(-6.10)}{6.40} (\log Q - \log Q^*)$$

$$R^2 = .81,\ \bar{R}^2 = .78,\ \text{D-W} = 2.28,\ \text{SE} = 0.18.$$

[18] Maki and Spindler (1975) have estimated the effects of unemployment insurance on the unemployment rate in postwar Britain, using both ordinary least squares and two-stage least squares. The choice of estimation technique has no appreciable effect on the estimates. However, in light of the lack of any theory of benefits determination, as well as the unknown properties of two-stage least squares in small samples, it is not clear whether their results indicate a lack of reverse causation or are simply a statistical artifact.

throughout most of the period the officially espoused source of changes in benefits was that either actual or prospective revenues to the Unemployment Fund "allowed" an increase in benefits (February 1920, February 1921, April 1934, July 1935, and March 1938), or else the high experienced rates of unemployment and the consequent drain on the Fund "forced" a reduction in benefits (June 1921 and September 1931).[19] The only major change in the level of benefits that ran counter to this pattern occurred in November 1921 when dependents' benefits were instituted in response to the worsening unemployment situation.[20]

In summary, our reading of the parliamentary debates suggests that the most important force behind changes in the levels of benefits was the current and prospective financial condition of the Unemployment Fund.[21] Moreover, the direction of influence seems to have been such as to bias our estimates downward, if at all. Although we are reluctant to place much emphasis on this type of evidence, it is consistent with the hypothesis that reverse causation is not the source of the large estimated effects of the system.

IV. The Behavior of Juvenile Unemployment

On the basis of our results thus far there is a strong presumption that the unemployment insurance system was an important determinant of the level of unemployment in interwar Britain. Fortunately for the purposes of our investigation the operation of the system was such as

[19] It is important to remember that the increases in unemployment benefits in 1920 and 1921 were proposed when almost everyone was forecasting that future levels of unemployment would average in the same range as experienced prior to World War I. Moreover, both of these increases were instituted before the full extent of the postwar deflation was evident. An important change in the system that did not involve a change in the level of benefits was the extension of the period of eligibility of benefits in 1922. In proposing that the period of eligibility be extended, Minister of Labour MacNamara argued on July 12, 1922, "We are rather better off, as I have already indicated, as regards unemployment, than we had anticipated and therefore better off as regards to the position of the fund" (Great Britain 1922*a*). On December 6, 1922, MacNamara's successor, Sir M. Barlow, argued that "in view of the present burden on the Unemployment Fund I am not in a position to propose any increase in these allowances" (Great Britain 1922*b*).

[20] Many family men who had been unemployed for long periods were receiving supplementary aid from the Poor Law authorities. This was almost universally thought to be shocking, since even beggars used as a clincher in their pleas that if alms were not given they would be "pauperized," i.e., forced to accept aid from the Poor Law authorities.

[21] Although the increases in benefits in 1924 and 1929 appear to have been influenced in part by the attitude of the Labour party that if the capitalist system could not provide workers with jobs it still owed them a decent living: "The differences between the Conservative and Labour parties arose not over unemployment but the unemployed. Labour laid much greater emphasis on maintenance than did the other parties" (Skidelski 1967, p. 44).

to enable us to perform two additional tests of our hypothesis. We turn first to the behavior of juvenile unemployment.

During the years for which we have a consistent time series (1924–35), the cyclical pattern of unemployment among juveniles (persons aged 16 and 17) was much like that of the overall unemployment rate: it declined during the twenties, rose in 1930–31, and fell again from 1932 onward.[22] However, during these years juvenile unemployment averaged 5.0 percent while the overall unemployment rate averaged 14.6 percent. Moreover, unemployment jumped sharply at age 18 and again at age 21, thereafter remaining roughly constant until it rose again at ages 55 and 60. The unemployment rate among persons aged 18–20 was roughly double that of juveniles, while the rate among persons aged 21–24 was about 50 percent greater than among those aged 18–20.

Initially, we presumed that these features of unemployment among young persons could be explained in two ways. First, since the reported unemployment statistics refer to unemployment among insured workers, juveniles might not have shown up in the statistics until they were employed for the first time. If persons were not counted as insured workers (the denominator of the unemployment rate) until they had first held a job, the juvenile unemployment rate would tend to be biased downward relative to the overall rate. Second, due perhaps to their relative lack of skills, juveniles might have been employed in occupations unrepresentative of the overall labor force. The reported unemployment rate among juveniles would be reduced if such occupations had generally lower than average unemployment rates. Our investigation of these matters, however, suggests that they cannot fully account for the extremely low level of juvenile unemployment during the interwar period.

After 1934 data on employment among persons aged 14 and 15 was collected, and the unemployment rate among this group was about the same as that among persons aged 16 and 17 during the period 1936–38. The fact that most persons left school at age 14 combined with the good employment record among persons aged 14 and 15 suggests that most individuals were actively engaged in the labor force

[22] Prior to 1924 separate unemployment statistics were not collected for this group, while prior to 1935 data on persons aged 14 and 15 do not exist since they were not insured. After September 1934 individuals aged 14 and 15 were covered by unemployment insurance, and after 1935 the reported "juvenile unemployment rate" generally did not distinguish between persons aged 14 and 15 and those aged 16 and 17. Lacking data prior to 1924 and not knowing what the effects would be of the change in the age composition of the "juvenile" unemployment statistics after 1935, we have restricted our remarks to the years from 1924 to 1935. However, on the basis of several special surveys conducted by the Ministry of Labour, it appears that unemployment among persons aged 16 and 17 during the period 1936–38 behaved in a manner consistent with our remarks concerning 1924–35.

by age 16.[23] Furthermore, it was possible for an individual who had never been employed to show up as an unemployed insured worker. In signing up at an employment exchange, if the person stated that he was looking for work in an insured industry he would be issued an employment book and duly counted in the unemployment statistics.

Even more significant, however, is the unemployment rate for juveniles reported in the 1931 census. The census unemployment rate for boys aged 16–17 was 7.6 percent; for girls aged 16–17 it was 6.8 percent. The corresponding unemployment insurance figures for April 1931 (the month of the census) are 7.9 percent for boys and 7.1 percent for girls. The close agreement between these figures leads us to conclude that the low juvenile unemployment revealed by the insurance figures cannot be attributed to systematic undercounting.[24]

There is a possibility that occupational choice may account for a part of the low rate of juvenile unemployment. Irregularly conducted surveys reported in the *Ministry of Labour Gazette* and the *Ministry of Labour Annual Reports* indicate that juveniles largely were occupied in industries with lower than average unemployment rates. However, there exist no industries employing an appreciable number of juveniles for which the unemployment rate was as low as the economy-wide unemployment rate among juveniles. More important, it may simply have been the large numbers of juveniles in particular industries that accounted for the low reported unemployment rates in

[23] It should also be noted that compulsory schooling during this period terminated at age 14, and only infrequently did individuals pursue their education for a substantial period thereafter. In fact, several surveys of insured workers indicate that between 90 and 95 percent of them had left school prior to age 15 and that more than 95 percent of them had obtained their first job by age 16. Hence, it would appear that school attendance was not preventing large numbers of juveniles from showing up in the unemployment statistics (cf. *Ministry of Labour Gazette*, September 1932 and September 1933, and Royal Commission 1932*b*, pt. 5).

[24] The close correspondence between the census and the insurance figures for juvenile unemployment is particularly striking, since the census figures (1) reflected only persons who were wholly unemployed, excluding those on temporary layoff, and (2) included both covered and uncovered industries. (See the Appendix for a fuller discussion of the census figures.) However, temporary layoffs were much less pervasive for juveniles than for other persons, accounting for less than 10 percent of juvenile unemployment versus about 25 percent of overall unemployment. Second, we argue below that the low juvenile unemployment is largely explained by the low insurance benefits payable to juveniles. If this hypothesis is correct then juvenile unemployment in covered industries should be the same as in uncovered industries so that this difference in reporting between the census and the insurance system should produce no appreciable difference in the unemployment statistics for juveniles. It is worth emphasizing that the fact that the incidence of temporary layoffs among juveniles was (1) low relative to overall incidence during the interwar period but (2) approximately the same as the overall incidence during the immediate post–World War II period in Britain when benefits were low is consistent with our argument that an important portion of the insurance-induced unemployment during the interwar period was in the form of temporary layoffs (e.g., the OXO system).

those industries. Unfortunately, we have no way of determining the direction of causality.

Although the factors noted above seem unable to adequately account for the relatively low rate of unemployment among juveniles, we believe there to be a simple explanation of this phenomenon: unemployment was a relatively unattractive pursuit for juveniles. Insurance benefits available to single juveniles averaged about 6.5 shillings per week during the interwar period. At age 18, the weekly benefits for a single person more than doubled, and at age 21 there was a further increase of 50 percent. Since the system incorporated additional benefits for both adult and minor dependents, the effective benefits facing claimants must have risen at an even faster rate over the span from age 16 to 21.[25] However, wages would be expected to increase over this age span, and it is benefits relative to wages, rather than the absolute level of benefits, that are relevant. Although there exist no detailed surveys that report wages for the three age groups 16–17, 18–20, and 21–24 separately, we have been able to obtain some sketchy evidence on wages for these groups by examining the wage agreements for various industries reported monthly in the *Ministry of Labour Gazette*. In some cases, these agreements specify wages payable according to age over the age span in which we are interested. Based on this data, persons aged 18–20 earned roughly 40–50 percent more than juveniles, while persons aged 21–24 earned about 25–35 percent more than persons aged 18–20. Combined with the data on benefits payable to single persons, this suggests substantial increases in the benefit-to-wage ratio at ages 18 and 21.

Not only was the statutory benefit rate low for juveniles, it was impossible for many of them to collect *any* benefits. Between 20 and 30 weekly contributions had to be paid by an insured person before achieving eligibility for benefits. Since young persons were not covered by insurance until age 16, they paid no contributions until reaching this age. Thus, young persons had to spend roughly one quarter of the 2 years they were counted as juveniles building up their contributions, during which time they were ineligible for benefits. Moreover, none of the supplementary schemes designed to aid persons unable to satisfy the contributory requirements was open to juveniles.[26] Thus, there were substantial numbers of juveniles for whom the effective benefit-to-wage ratio was zero. Given the rela-

[25] In addition, persons aged 18–20 who were in receipt of benefits for their dependents were entitled to receive for themselves the higher benefits otherwise payable only to persons aged 21 or over.

[26] There was one exception to this. If a juvenile could show that he was living away from home and that his parents were financially unable to provide any support for him, he could collect transitional benefits.

tively low unemployment rate among juveniles, most of them would have satisfied the contributory requirement by age 18. Moreover, upon reaching age 18, young persons automatically became eligible for the supplementary schemes. Hence, if they had not yet satisfied the contributions rules, or had exhausted their regular insurance coverage, they could nevertheless collect benefits.

Taken together, these aspects of the unemployment insurance system are strikingly consistent with the pattern of unemployment among persons aged 16–24. Both the low level of benefits and the lengthy period that was required to initially achieve eligibility for benefits made unemployment an unattractive prospect for juveniles, hence their low unemployment rate. At age 18, benefits increased sharply relative to wages and eligibility for supplementary schemes began, while benefits relative to wages increased again at age 21. These facts also are compatible with the increases in unemployment that occurred at these ages.[27]

Ideally, we would like to perform the same tests on juvenile unemployment that we have on overall unemployment. Although we know the levels of benefits payable to juveniles, a time series on juvenile wages does not exist. Thus, we cannot test directly for the effects of the juvenile benefit-to-wage ratio on juvenile unemployment. However, we have conducted two alternative proxy tests. If the contributory requirements and the relatively low level of juvenile benefits reduced the attractiveness of unemployment among juveniles, then our measure of the insurance system, the benefit-to-wage ratio,

[27] While low benefits and the 30-contributions requirement would make unemployment less attractive for juveniles, these factors would also reduce the incentives for them to lodge their employment books with the insurance authorities upon becoming unemployed. We have found no evidence that such behavior was relatively more frequent among juveniles compared with the insured population as a whole. Indeed, there are several reasons to believe that there probably were not many juveniles who went uncounted because of a failure to lodge their books. First, insured persons using the employment exchanges were required to lodge their employment books at the insurance office, thereby ensuring their place in the unemployment figures. Due to the relative homogeneity of their skills, relatively more juveniles used the exchanges to find jobs. Moreover, vigorous attempts were made to inform juveniles of the usefulness of the exchanges, which became an increasingly dominant source of job placements for juveniles. By 1932, nearly 40 percent of all juveniles employed in insured occupations had obtained their jobs through the employment exchange. The corresponding figure for adults was 25 percent (see Seymour 1928, pp. 127–44; Gilson 1931, pp. 283–88; Chegwidden and Myrddin-Evans 1934, pp. 127–29, 173–78). Second, although insurance benefits were an unattractive alternative for *employed* juveniles, they must surely have been an inviting prospect for juveniles who were already unemployed. Simply by signing the insurance register, unemployed juveniles who had satisfied the contributory requirements could pick up weekly benefits amounting to about 25 percent of full-time wages. Doing so, of course, would ensure their place in the unemployment statistics. Finally, the results of the 1931 census (discussed above) and the care taken by insurance officials in maintaining complete records (discussed in the Appendix) both suggest that there could not have been substantial undercounting of juveniles.

should be relatively unimportant in explaining juvenile unemployment. If the ratio were found to be an important explanatory variable for juveniles, we would regard this as evidence that either (*a*) the benefit-to-wage ratio is capturing influences other than those ascribed to it by us, or (*b*) our explanation of juvenile unemployment is incorrect. Thus, we regressed the juvenile unemployment rate (U_J) on deviations of log output from trend and on the overall benefit-to-wage ratio for the period 1924–35. As a control we also estimated the overall unemployment rate for the same period. These results are shown below with *t*-values in parentheses.

1924–35:

$$\begin{array}{rcccc} U_J = & -0.91 & + 11.7\ (B/W) & - 24.2 & (\log Q - \log Q^*) \\ & (-0.22) & (1.40) & (-4.64) & \end{array} \tag{2}$$

$$R^2 = .77,\ \bar{R}^2 = .72,\ \text{D-W} = 1.27,\ \text{SE} = 0.77$$

$$\begin{array}{rcccc} U = & -14.4 & + 57.4\ (B/W) & - 73.7 & (\log Q - \log Q^*) \\ & (-1.72) & (3.44) & (-7.06) & \end{array} \tag{3}$$

$$R^2 = .90,\ \bar{R}^2 = .88,\ \text{D-W} = 2.03,\ \text{SE} = 1.55.$$

Although the coefficient on (B/W) is significant at the .5 percent level in the overall equation, it is not significantly different from zero at the 10 percent level in the juvenile equation. We regard these results as being consistent with our interpretation of the role of (B/W) and with our explanation of juvenile unemployment.[28]

Although we do not have a time series on juvenile wages, such evidence as we do have indicates that juvenile wages were about 40 percent as great as overall wages.[29] Under the assumption that ju-

[28] Since juveniles were disproportionately concentrated in the distributive trades and since these trades were below average in cyclical instability, we constructed an alternative measure of surprise changes in aggregate demand. Using an index of output in the distributive trades reported in Feinstein (1972, p. T 117), we estimated a log-linear trend for 1920–38. We then used the deviations from this trend ($\log Q_d - \log Q_d^*$) in place of ($\log Q - \log Q^*$). The results are shown below, with *t*-values in parentheses.

1924–35:

$$\begin{array}{rcccc} U_J = & 0.007 & + 9.51\ (B/W) & - 53.8 & (\log Q_d - \log Q_d^*) \\ & (0.002) & + (1.23) & (-4.26) & \end{array}$$

$$R^2 = .74,\ \bar{R}^2 = .68,\ \text{D-W} = 1.51,\ \text{SE} = 0.83.$$

As is evident, there is no appreciable change in the results for (B/W). The increase in the coefficient on the output variable reflects its lower variance. The correlation between the two output variables during this period is .828.

[29] Other than the wage agreements reported in the *Ministry of Labour Gazette*, mentioned above, our only evidence on this matter comes from detailed wage surveys conducted by the Ministry of Labour in 1935 and 1938 that decomposed wages according to males above and below age 21 and females above and below 18. (Other wage surveys conducted by the ministry during the interwar years decomposed wages

venile wages were perfectly correlated with overall wages, we calculated a proxy juvenile wage series, $W_J = 0.4(W)$. Using a juvenile benefit-to-wage ratio comprised of juvenile benefits (B_J) divided by our proxy for juvenile wages (W_J), we reestimated equation (2). The results differed negligibly: variations in benefits relative to wages appear to have had little effect on the juvenile unemployment rate.[30] Combined with the evidence presented earlier in this section, we are led to conclude that the low level of juvenile unemployment during the interwar period was due largely to the insulation of this group from the influence of the unemployment insurance system.

V. Married Women and the Anomalies Regulations

Unemployment among females during the interwar period displays two unusual features. First, although the unemployment rate for married women was substantially higher than for single women throughout the period, the two figures were much closer together after 1931 than before (*Ministry of Labour Gazette* 1927, 1933, 1937; Royal Commission 1932*b*, pt. 5). Second, although the overall unemployment rate for females was below that for males for the entire period, the ratio of male to female unemployment is substantially higher after 1931 than before (*Ministry of Labour Annual Reports* 1923–31; *Ministry of Labour Gazette* 1932–38, January issues). Both of these peculiarities appear to be due to a change in the unemployment system instituted in 1931.

Throughout the interwar period it was customary in some lines of business and branches of local civil service to (*a*) refuse to hire married women, and (*b*) discharge women employees in the event they became married.[31] Until 1931 women who thus became unemployed were eligible for benefits as soon as they had served the waiting period applicable to all insured persons.[32] If her employer did not customarily discharge married women, and if a woman quit her position upon marriage, she was required to wait up to 6 weeks before becoming eligible for benefits, a waiting period imposed on all individuals who

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only by sex and industry.) In 1935, the ratio of wages of younger males to older males was 0.36; in 1938 it was 0.38. In 1935 the ratio of wages of younger females to older females was 0.52; in 1938 it was 0.57.

[30] We also reestimated the juvenile equation using the alternative output variable discussed in n. 28. Again, the results were quite similar.

[31] Cf. Gilson (1931), pp. 116, 314; Cohen (1938), p. 136; and *Umpire's Decision* 122 (4/3/21), reprinted in Unemployment Compensation Interpretation Service (1938).

[32] *Umpire's Decision* 122 (4/3/21), reprinted in Unemployment Compensation . . . 1938. This was true where (*a*), a woman married knowing that her employer discharged married women, or (*b*) quit her job in the anticipation of the application of such a policy.

voluntarily left their jobs. However, upon the expiration of this waiting period, she regained full eligibility for benefits (*Umpire's Decision* 6986/30[2/7/30] and 1647[17/1/22], reprinted in Unemployment Compensation Interpretation Service 1938).

By 1930 it had become widely argued that many married women were exploiting these aspects of the insurance scheme, using the system as a convenient means of supplementing their husbands' income (Gilson 1931; Royal Commission 1932*a*, 1932*b*, pts. 1 and 2; Cohen 1938; Burns 1941). To alleviate this and other perceived irregularities in the operation of the insurance system, the so-called Anomalies Regulations were instituted in October 1931. As applied to married women, the regulations provided that, except for women whose husbands were incapacitated from work or unemployed and not receiving benefits, married women wishing to receive insurance benefits had to satisfy substantially more demanding contributory requirements than those imposed on other applicants.[33]

The implementation of the Anomalies Regulations led to wholesale disallowances of the benefits claims of married women.[34] On the basis of the two pieces of evidence we have found, it appears that this in turn markedly reduced measured unemployment among married women. First, unemployment among married women fell relative to unemployment among single women. Between October 1930 and July 1931 the ratio of unemployed married women to unemployed single women was 0.96. By November 1932 this ratio had fallen to 0.80. By November of 1935 it was 0.63. Second, unemployment among women as a whole fell relative to unemployment among men. This is revealed most strikingly in the unemployment figures for 1931

[33] Married women had to have paid 15 weekly contributions since marriage, and if more than 6 months had elapsed since marriage they had to have paid eight contributions during the 6 months preceding the beginning of the current benefit quarter (Ministry of Labour 1933). Failure to satisfy these two conditions was not an absolute bar to the receipt of benefits. Eligibility could be established if the woman could prove she was "normally employed in insurable employment and will normally seek to obtain her livelihood by means of insurable employment" and that she could "reasonably expect to obtain insurable employment." The onus of proof that both of these conditions were satisfied was upon the claimant (*Umpire's Decision* [14966/32] and [15980/32], reprinted in Unemployment Compensation . . . 1938).

[34] Between October 3, 1931 (the first day of operation of the Regulations) and April 29, 1933, 262,539 cases involving married women were heard by the Courts of Referees. Benefits were disallowed in 78 percent of the cases. From 1934 through 1936, an additional 167,655 cases were heard by the referees, with disallowances occurring 73 percent of the time. As of July 1932, there were approximately 655,000 insured married women. By contrast, between December 1929 and December 1930 a nationwide total of 560,590 cases had been heard by the referees, covering an insured population of approximately 12,400,000. Claims for benefits were heard by the Courts of Referees only when benefits had already been disallowed by a local insurance officer and when the claimant chose to appeal that decision. Hence there are an unknown number of disallowances that were not appealed to the referees.

and 1932. The Anomalies Regulations took effect in October of 1931. From 1931 to 1932 the unemployment rate among men *rose* from 21.0 to 25.4 percent, while the unemployment rate for women *fell* from 18.0 to 13.6 percent.[35]

The decline in female relative to male unemployment after the passage of the Anomalies Regulations can also be revealed by separately estimating female unemployment (U_F) and male unemployment (U_M) for the period 1923–37, with a dummy variable for 1932–37. The dummy variable is included in the male equation to ascertain whether some force other than the Anomalies Regulations was operating during the 1932–37 period. The results are as follows, with t-statistics shown in parentheses.

1923–37:

$$U_F = \underset{(-1.45)}{-9.53} + \underset{(3.12)}{42.4\,(B/W)} - \underset{(-5.47)}{70.0}\,(\log Q - \log Q^*) - \underset{(-3.39)}{4.55}\,(\text{Dummy}) \quad (5)$$

$$R^2 = .75,\ \bar{R}^2 = .68,\ \text{D-W} = 1.79,\ \text{SE} = 1.79$$

$$U_M = \underset{(0.23)}{1.63} + \underset{(1.85)}{27.3\,(B/W)} - \underset{(-6.79)}{94.0}\,(\log Q - \log Q^*) + \underset{(0.30)}{0.43}\,(\text{Dummy}) \quad (6)$$

$$R^2 = .87,\ \bar{R}^2 = .83,\ \text{D-W} = 2.37,\ \text{SE} = 1.93.$$

These results imply that the operation of the Anomalies Regulations reduced the unemployment rate among females by roughly four percentage points. Although the standard errors are large enough to make us reluctant to place too much weight on this specific estimate, the several pieces of evidence that we have found all point clearly to the same qualitative conclusion. The Anomalies Regulations substantially reduced measured unemployment among married women and thereby reduced the overall female unemployment rate.

As we noted earlier, any system of unemployment insurance will generally cause a rise in measured unemployment in two separate ways: some persons who otherwise would have chosen work will now

[35] In only one other year between 1923 and 1937 did unemployment rates for men and women fail to move in the same direction. From 1924 to 1925 the rate for men rose from 11.1 percent to 12.3 percent while the rate for women fell from 8.8 percent to 8.6 percent. The impact of the Anomalies Regulations is clear over the longer period as well. Between 1923 and 1930 the average ratio of female to male unemployment was 0.71, while between 1932 and 1937 it was 0.55. The difference between these ratios is significant at the 1 percent level. Unemployment rates by sex are not available prior to 1923. The year 1931 was excluded in this test since the change in regulations took place in October 1931. The ratio of female to male unemployment for 1931 was 0.855. The year 1938 was excluded because certain classes of domestic workers became eligible for unemployment insurance in that year. Although it is possible to correct for this change in coverage in the aggregate data, it is not possible to correct the disaggregated data.

choose leisure; some who otherwise would have chosen leisure will simply avail themselves of the implied income supplement provided by benefits. The extent to which the Anomalies Regulations reduced "true" unemployment rather than simply "counted" unemployment is unknown. The censuses of 1921 and 1931 indicate that the participation rate for males ages 16–64 was about 96 percent; for females the participation was only about 45 percent. Thus, while it is likely that most of the insurance-induced unemployment among males represented substitution out of work, a substantial portion of the system's effects on female unemployment may simply have represented changes in counted unemployment.

The separation of true unemployment from counted unemployment is essential if one is to estimate the social costs of an unemployment insurance system. Nevertheless, it is not of central importance to our task here—that of resolving the puzzle of high measured unemployment in interwar Britain. We suspect that virtually all of the insurance-induced unemployment among men and single women represented substitution out of work. Yet even if none of the unemployed married women would have worked in the absence of the system, understanding the system's effect on this group remains important, for it aids in resolving the apparent paradox of the interwar era.

VI. How Much Did the Dole Raise the Unemployment Rate?

The preceding sections have presented evidence that the dole, as the unemployment insurance scheme came to be called, raised the unemployment rate in interwar Britain. Here we provide estimates of how much lower the unemployment rate would have been if there had been no insurance-induced unemployment. Our estimates imply that the unemployment rate would have averaged more than one-third lower, and that in 1927–29 and 1936–38 unemployment would have been at or near normal levels, if the dole had been no more generous than it was when first set up in 1913.

The time-series estimates presented in equation (1) provide an indication of how unemployment insurance raised unemployment, holding output constant. However, holding output constant is not the same as holding aggregate demand constant. To the extent that increases in the attractiveness of benefits decrease the number of persons employed, such variations also decrease output. The output variable in equation (1) thus captures some of the effects that are in fact due to the insurance system.

This effect may be seen clearly in the following simple model:

$$U_t = U_t^* + a(B_t/W_t - 0.27) + bX_t + \epsilon_1 \tag{7}$$

$$\log Q_t = \log Q_t^* + d\,(U_t - U_t^*) + cX_t + \epsilon_2 \tag{8}$$

where U_t, B_t/W_t, $\log Q_t$, and $\log Q_t^*$ are as previously defined;[36] U_t^* is the natural rate of unemployment when there is no insurance-induced unemployment; and X_t is some measure of unanticipated changes in aggregate demand.

The coefficient of the benefit-to-wage ratio will be positive to the extent that increases in benefits induce increases in unemployment. The coefficient of X_t in equation (7) will be negative since unanticipated movements in aggregate demand will induce movements in unemployment in the opposite direction. Since increases in unemployment reduce output the coefficient of the unemployment rate in equation (8) is also negative. The coefficient of X_t in equation (8) measures the influence of aggregate demand on the employment of factors of production *other* than covered labor. Since an unanticipated rise in aggregate demand increases the employment of these factors, this coefficient is positive.

Our primary interest is in obtaining an estimate of a, the true coefficient of the benefit-to-wage ratio in equation (7). We could directly estimate this equation only if we had a measure of unanticipated changes in aggregate demand. We have no such measure.[37] However, if the effects of changes in unemployment on output can be estimated from other data, an estimate of a can nevertheless be derived. Solving the model yields[38]

$$U_t = U_t^* + \frac{a}{1 + (b/c)d}(B_t/W_t - 0.27) - \frac{b/c}{1 + (b/c)d}(\log Q_t - \log Q_t^*) - \frac{b/c}{1 + (b/c)d}\epsilon_2 + \frac{1}{1 + (b/c)d}\epsilon_1. \tag{9}$$

[36] The initial level of the benefit-to-wage ratio was 0.27 when the system was established in 1913. We have chosen 0.27 as the "zero-effect" level of the ratio because the system appears to have had little effect on unemployment in 1913 or in the immediate post–World War II years when the ratio was again under 0.30.

[37] The best measure of unanticipated changes in aggregate demand of which we are aware is contained in Barro (1977). But even his measure is largely ad hoc.

[38] Given this simple model, the error term of eq. (1) will be positively correlated with the output variable, tending to bias its coefficient upward. This in turn will tend to increase our estimate of the true coefficient of the benefit-to-wage ratio. However, even if the effect of this statistical bias is to raise the estimated coefficient on the output by as much as 50 percent, the effect on the calculated lower bound on the effects of the system is altered negligibly and the effect on the upper bound is to raise it only about one percentage point.

This, of course, is what we have already estimated in the form of equation (1), where

$$\frac{a}{1 + (b/c)d} = 18.3 \tag{10}$$

$$\frac{b/c}{1 + (b/c)d} = -90.0. \tag{11}$$

The coefficient d is the effect of a one percentage point rise in the unemployment rate on output, holding constant the employment of inputs other than covered labor. Under the assumption that the elasticity of substitution is one, a maximum estimate of d can be derived if it is assumed that all of the increase in covered unemployment corresponds to a decrease in employment and that the foregone output associated with these persons is equal to the wages they received while working. A lower bound estimate of d can be obtained by assuming that only one half of the unemployed would have been in the labor force in the absence of the unemployment insurance system, and that the marginal product of the typical unemployed person was equal to the unemployment benefits he received.[39]

Armed with these estimates of d, we can obtain estimates of the ratio b/c by solving equation (10). This enables us to estimate upper and lower bounds on the true coefficient of the benefit-to-wage ratio by solving equation (11). The implied effects of the insurance system are shown in table 1 and figure 2. The system's greatest impact was felt in 1936, when the benefit-to-wage ratio was at its peak. According to our estimates, the insurance system raised the unemployment rate by

[39] The upper bound is given by $d_u = -(W_{un}/W)(\alpha)(0.01/1 - 0.01U)$ where W_{un}/W is the ratio of the wages of unemployed workers in their normal employments to the wages of employed workers (based on surveys conducted in the late thirties, and reported in Unemployment Assistance Board [1937], this ratio was about 7/8, implying that the unemployed were slightly less productive than average); α is covered workers' share of total output (during the interwar period this was approximately 1/2, obtained by dividing the labor income of covered labor by total income); and $(.01/1 - .01U)$ translates changes in the unemployment rate (expressed in whole numbers) into percentage changes in the amount of labor employed. A rise in unemployment from 10 to 11 percent corresponds to a reduction in amount of labor *employed* of about 0.011 (i.e., 1.1 percent). Assuming that half of the induced rise in unemployment was caused by movement into the labor force and that the alternative wages of the unemployed equaled their benefits, the lower bound on d is given by $d_L = -(1/2)(B/W)(\alpha)(0.01/1 - 0.01U)$. As reported by the censuses, the participation rate of all persons aged 20–65 was 61.7 percent in 1921 and 61.8 percent in 1931, so that this is surely a generous allowance for insurance-induced movement into the labor force. The use of benefits as the foregone output of the unemployed assumes that they will become unemployed only when their pecuniary income from unemployment exceeds their potential pecuniary income from work. Equivalently, it assumes that the marginal value of time off to the unemployed is zero.

TABLE 1

UNEMPLOYMENT RATES WITH AND WITHOUT HIGH UNEMPLOYMENT COMPENSATION

YEAR	ACTUAL UNEMPLOYMENT (%)	UNEMPLOYMENT ASSUMING 1913 RATIO OF BENEFITS TO WAGES (%)	
		Upper Limit	Lower Limit
1920	3.9	3.9	3.9
1921	17.0	17.0	17.0
1922	14.3	12.2	10.8
1923	11.7	9.1	7.5
1924	10.3	6.7	4.5
1925	11.3	7.0	4.4
1926	12.5	8.0	5.4
1927	9.7	5.3	2.9
1928	10.8	6.1	3.4
1929	10.4	5.5	2.8
1930	16.1	10.6	7.1
1931	21.3	15.5	11.5
1932	22.1	17.1	13.4
1933	19.9	14.8	11.4
1934	16.7	11.2	7.8
1935	15.5	9.5	5.9
1936	13.1	6.6	3.0
1937	10.8	4.6	1.3
1938	12.9	6.8	3.3

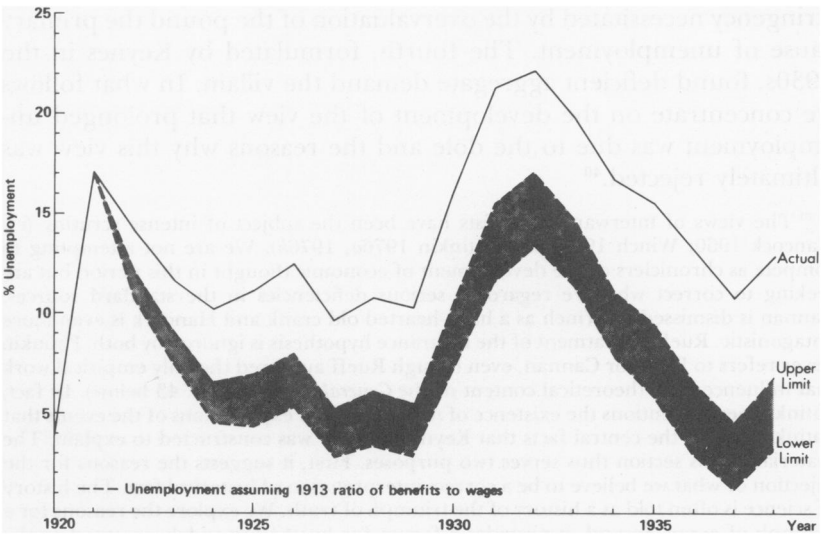

FIG. 2

6.5–10 percentage points in that year. In contrast, the system had no appreciable effect on measured unemployment in either 1920 or 1921. Over the period as a whole, the insurance system raised the average unemployment rate by about five to eight percentage points. Moreover, while the members of the army of the unemployed were chiefly conscripts in the two major depressions of the era, they seem to have been willing volunteers during the late twenties and late thirties.

VII. The Views of Contemporary Observers

The persistently high level of unemployment in interwar Britain was an impelling force behind the development of Keynesian economics. Why unemployment remained year after year above prewar levels was the principal topic of British economics, and the solution to this problem was the principal issue of British politics. The trauma of the "army of one million unemployed" impressed itself upon the attitude of more than one generation and has not—as yet—wholly disappeared.

Four approaches dominated attempts to explain prolonged unemployment. One approach—pioneered by Jacques Rueff and Edwin Cannan—argued that the problem of high unemployment was caused in large part by high unemployment benefits. The second approach argued that the unemployment was structural in nature, caused by a decline in the demand for British exports. The third view, of which Keynes was the principal proponent in the 1920s, found the monetary stringency necessitated by the overvaluation of the pound the primary cause of unemployment. The fourth, formulated by Keynes in the 1930s, found deficient aggregate demand the villain. In what follows we concentrate on the development of the view that prolonged unemployment was due to the dole and the reasons why this view was ultimately rejected.[40]

[40] The views of interwar economists have been the subject of intense scrutiny (cf. Hancock 1960; Winch 1969; and Patinkin 1976*a*, 1976*b*). We are not attempting to compete as chroniclers of the development of economic thought in this period but are seeking to correct what we regard as serious deficiencies in the standard sources. Cannan is dismissed by Winch as a hard-hearted old crank and Hancock is even more antagonistic. Rueff's treatment of the insurance hypothesis is ignored by both. Patinkin never refers to Rueff or Cannan, even though Rueff authored the only empirical work that influenced the theoretical content of the *General Theory* (see n. 43 below). In fact, Patinkin never mentions the existence of non-Keynesian explanations of the events that Patinkin sees as the central facts that Keynes's theory was constructed to explain. The material in this section thus serves two purposes. First, it suggests the reasons for the rejection of what we believe to be a correct interpretation of historical fact. The history of science is often told as a history of the triumph of truth. We explore the reasons for a triumph of error. Second, it provides a forum for presenting widely accepted explanations of prolonged unemployment in interwar Britain and the reasons why we believe those explanations to be inadequate.

Jacques Rueff's position was based on the high positive correlation between unemployment and the level of real wages in interwar Britain.[41] To Rueff the excess of unemployment was caused by what was in essence a government price-support scheme. The high level of unemployment benefits encouraged labor unions to resist any reduction in nominal wages, no matter what the level of unemployment among their members.[42] The high levels of unemployment benefits also acted directly on the unemployed by making unemployment a superior option to employment at wages little, if any, higher than unemployment benefits.

The link that Rueff maintained between high wages and unemployment was widely accepted.[43] Yet his insight into the importance of the insurance system was widely dismissed for two reasons. Rueff's insistence that unions were playing the pivotal role was flawed on several grounds. Union membership peaked at about 45 percent of the labor force in 1920 and declined throughout most of the interwar period. Why did the growing nonunion sector not absorb the unemployed? In the depression of the early twenties, when the union share of the labor force was nearly double the level of 1930–31, nominal wages fell swiftly. In 1930–31 wages stayed nearly constant, even

[41] In Rueff's original article, this association is shown graphically (Rueff 1925). Soon the then-new technique of correlation analysis was applied to Rueff's data by Sir Josiah Stamp, later Lord Stamp; the correlation as published in the *Financial Times, Supplement* (1926, p. vi) was .95 for 1919–25. Each 10 percent rise in real wages was associated with a rise in the unemployment rate of four percentage points.

[42] "The discipline of the trade unions in the first place is extremely powerful in England and the system of collective bargaining more widely used than elsèwhere. But this tradition would have been insufficient to maintain the resistance of the unemployed worker to the inevitable movements in wages if a policy of subsidizing the unemployed which was both generous and paid for by the nation had not permitted the unemployed to remain indefinitely without work rather than violate union orders" (Rueff 1925, p. 433–34, translated from the French).

[43] Jacques Rueff's finding of a positive association between real wages and unemployment was, Keynes averred later, one of the reasons why this association was part of his *General Theory* (see Keynes 1939). Keynes accepted neither Rueff's exact methods nor Rueff's explanation, but he did, at least until after the publication of Keynes (1936), accept a tendency for real wages and employment to vary inversely as a fact. Rueff's results were the subject of articles in the *Times* of London on June 11 and June 12, 1931, and of an approving editorial in the *Times* of June 12, and were a subject of debate in the British Parliament on June 22, 1931, and in the French Chamber of Deputies on November 12, 1931. Rueff had important supporters in the academic community as well. W. H. Beveridge, then the head of the London School of Economics, acting on the advice of his thesis supervisor, Lionel Robbins, reproduced Rueff's key chart without substantial criticism in Beveridge (1930, p. 370). Pigou also accepted Rueff's explanation for the high unemployment, though he was critical of the statistics: ". . . partly through state action and partly through the added strength given to workpeoples' organizations engaged in collective bargaining by the development of unemployment insurance, wage rates have been set at a level which is too high . . ." (Pigou 1927, p. 355). On p. 357 of the same article, Pigou estimated that unemployment benefits had added five percentage points to British unemployment.

though the unemployment rate was considerably higher. If unions were the key, wages should have declined more slowly in 1921 than in 1930. Moreover, if unemployment was being caused by union obstinacy, one would expect the levels of unemployment in different industries to have been positively correlated with the relative rise in wages in those industries, since the more obstinate unions would have caused more unemployment. As Henry Clay (1928) pointed out, the correlation was in the reverse direction. Wage changes by industry from 1914 to 1927 were inversely correlated with unemployment in those industries in 1927.

The second reason for the dismissal of Rueff's explanation was his insufficient subtlety in explaining how unemployment compensation operated on individual behavior so as to raise the unemployment rate. In his view the effects of the system would manifest themselves in the prolonged unemployment of persons whose normal wages were not much above or even below the level of unemployment benefits.[44] This stance made it easy enough even for persons who admitted the potential effects to dismiss the actual effects as insignificant. A striking example of this is found in Eveline Burns's otherwise excellent study of the insurance system. From her viewpoint, unemployment insurance did not significantly add to unemployment since less than 1 percent of the male applicants and 3 percent of the female applicants received benefits that exceeded their previous wages, while 95 percent of the men received benefits that were at least 4 shillings per week less than their previous wages (Burns 1941, p. 257). But of course this approach suggests that if we wish to determine the effects of a fall in the price of beef we should discover how many consumers now find beef a cheaper source of calories than day-old bread. A similar example is found in the *Final Report of the Royal Commission on Unemployment Insurance,* which concluded that unemployment benefits had had only a small effect on the unemployment rate (Royal Commission 1932*a*, p. 125). The principal evidence adduced in support of this conclusion was the small proportion (less than 10 percent) of the unemployed who had been receiving benefits for more than 1 year. Prolonged unemployment, however, is only one manifestation of the effects of unemployment insurance. Measuring the impact of the insurance system in this way is rather like measuring the effects of a fall in the

[44] "The consequence of such a regime was to set a minimum level of wages below which the worker preferred to tap the dole rather than work for a wage which could only give him a small excess over the sum which he could receive as unemployed. It seems clear that until the beginning of 1923 wages in England followed the decline in prices and would have reached an equilibrium level. They then brusquely stopped in their fall and since then wages have ceased to vary" (Rueff 1931, p. 222, translated from the French).

price of meat by counting the number of people who have shifted to a wholly carnivorous diet.[45]

While Rueff's exposition was seriously flawed, Edwin Cannan did a superb job of explaining how unemployment insurance operated at various margins to increase unemployment by increasing the amount of job search, by raising the incidence of layoffs as a substitute for inventories, and by acting as a subsidy to those industries whose workers could most easily maintain their eligibility:

> To throw numbers of your employees out for short intervals to suit your convenience is obviously less likely to create friction, and is therefore more likely to be profitable, when the persons thrown out can draw on a common fund raised by stamp duties on employment and other taxes. . . . [E]specially in the occupations in which the superiority of employment over unemployment is least, the insurance scheme has reduced the economic pressure which used to make persons grab at every chance of employment. . . . He [the unemployed worker] takes the alternatives to be, "Take what you can get now, or hold out another week, when something better may turn up." . . . [T]he magnitude of the turnover of labour . . . is so great that a very little average delay will make a very large addition to the unemployment. [Cannan 1930, pp. 46–47]

More graphically: "The endowment of unemployment isn't made any better by calling it insurance: fire insurance wouldn't do if you let people set their property on fire and keep it burning on condition of signing their names once a week at the insurance office."[46]

[45] In some ways the rejection of the hypothesis that high unemployment benefits were importantly responsible for high unemployment reminds us of the rejection of Wegener's hypothesis of continental drift. In both cases the hypothesis was rejected in part because the posited mode of action could be shown to be incorrect (see Hallam 1975).

[46] Cannan 1928, p. 398. Of course, Cannan was not disputing the usefulness of fire insurance or unemployment insurance per se; his chief concern was rather that the system be modified so that any given level of aid to those in need have the least possible net costs in taxation and economic distortion. Winston Churchill also understood the way the system was operating. His attitude toward it was that of a father toward his prodigal son. As president of the Board of Trade in a Liberal government, Churchill had been responsible for the proposal in 1908 and the drafting in 1909 of the original legislation that eventually became transformed into the dole. He defended the original system but argued that it had been so liberalized as to produce an inflation of the unemployment figures: "But now every case of unemployment, even for short periods, is recorded in the national register, and the benefit is increasingly applied for, even by those not in actual want, . . . as a contribution toward what may be little more than a needed holiday after years of continuous work. . . . It is significant that after every

Cannan's insights were largely ignored or dismissed by contemporaries and later commentators. At times, dismissal was based on the belief that anyone who argued that the system was leading to more unemployment must necessarily be advocating the system's abolition. Thus, Cannan was attacked as being "harsh" and lacking in compassion for the unemployed (Hancock 1960; Winch 1969, chap. 6). The insurance hypothesis also met with resistance on the grounds that it assumed that the unemployed did not want to work and were using the system to subsidize extended vacations (Winch 1969). In fact, Cannan only assumed that leisure is like any good—more of it will be consumed if the cost of doing so is lowered. Moreover, he recognized that the added unemployment induced by the system was not principally prolonged but rather frequent short spells of unemployment, often only a few days long.[47]

The hostile reception accorded Rueff and Cannan, combined with evidence such as that presented by Burns and the Royal Commission, led even sympathetic commentators to look elsewhere for explanations. By the end of the twenties many contemporaries had joined Keynes in regarding Britain's attempt to return to gold at an overvalued rate, combined with the difficulties of wage deflation, as being the principal source of the high unemployment (Winch 1969, chap. 8). While this approach is appealing for the early twenties, it fails to explain why wages did not decline after 1923. From 1920 to 1923 wages fell 25 percent. From 1923 to 1929 nominal wages were constant, despite unemployment more than double the level that had been consistent with stable prices before World War I. It is difficult to attribute the failure of wages to continue falling to the behavior of unions, since union membership declined sharply throughout the twenties. Moreover, the "required" decline in wages could hardly have been a surprise. The new exchange rate, reached in 1925, was

public holiday—Christmas, Easter, Whitsuntide—there is a very large addition to the unemployment total, which falls off again a few weeks later" (1930, p. 7). Churchill also argued that employers readily acquiesced to their workers' wishes for more "holidays": "Many British employers have lent themselves to an abuse of the system of unemployment insurance. . . . They systematically arrange to give their workers just that amount of employment as will enable them to qualify for the benefit" (ibid.). Both Cannan and Churchill thought that the greatest harm that the high rate of reported unemployment could cause was the misdirection of public policy. Cannan recommended that publication of the figures be stopped (Winch 1969, p. 103), while Churchill urged that the weekly figures on unemployment be disregarded. As Churchill put it: "Everyone who has some wonderful plan for enabling countries to get rich quickly, every advocate of the art of doing business at a loss—all point to these weekly totals exclaiming, 'There! Up again this week. What did I tell you? We shall never be right till we adopt ———.' The frequent general elections which so greatly hamper British trade revival are nearly all fought upon the numbers of the unemployed" (1930, p. 6).

[47] See n. 12 above.

widely regarded as the cornerstone of the government's economic policy. Our explanation for the failure of wages to continue falling was that the British economy was fully employed at 10 percent unemployment—given the level of unemployment benefits.

The heavy regional and industrial concentrations of unemployment that were present spawned yet another hypothesis. In general, the highest unemployment was found in those industries that had specialized before World War I in exports—textiles, shipbuilding, and, after 1925, coal. Similarly, areas where these industries had been predominant—Wales, Northern England and Scotland—suffered correspondingly high regional unemployment rates. These patterns led to the hypothesis that the high national unemployment was due to a decline in the demand for British exports (Clay 1927). While this argument is consistent with reduced *employment* in coal, textiles, and shipbuilding, it fails to explain why workers remained *unemployed*. These industries had abnormally high unemployment rates through the late twenties and even into the late thirties. After World War I, ex-soldiers and ex-munitions workers had found new employment without great difficulty—why should the shift from one peacetime employment to another have been so much more difficult?

We suspect that these regional and industrial concentrations of unemployment were due in large part to cross-sectional variations in wages and hence in benefit-to-wage ratios. Unfortunately, there is very little data on regional wages, and neither industrial nor regional wage data enable one to determine whether observed wage variations are due to differences in (1) skill and experience, (2) working conditions, or (3) seasonality of the occupation. Nevertheless, the fragmentary evidence we have found is consistent with our hypothesis. Among Unemployment Insurance Statutory Committee clients in 1937 the correlation between regional wages and regional unemployment was −.40. In 1938 a special nationwide survey of wages revealed a similar pattern across industries. Among men the correlation between industry wages and unemployment rates was −.30; among women, −.54.[48]

[48] Unemployment Insurance Statutory Committee 1938, pp. 63–64, and Department of Employment and Productivity 1971, p. 138. Two administrative features of the insurance system probably also helped foster the uneven distribution of unemployment. First, even relatively brief spells of employment in an uninsured industry could result in the subsequent loss of the right to insurance benefits. Second, extremely prolonged periods of unemployment were not a bar to the receipt of payments under the various supplementary schemes; even men who had been unemployed in excess of 10 years were held eligible for transitory payments, so long as their last employment had been in an insured industry (Royal Commission 1932*a*, pp. 145–46). Subsidized Council Houses and rent controls, both discussed in n. 2 above, probably also reduced mobility.

By the middle thirties even the hypotheses that had supplanted the arguments of Rueff and Cannan were under pressure. After 1929 interest rates declined, suggesting that monetary stringency could not be held responsible for the high and rising unemployment rates that followed (Friedman 1967). After the pound was floated in 1931, it became increasingly difficult to blame incorrect exchange rates for the chronic unemployment that lingered. In response to these facts as well as to the internal logic of the progression of his own ideas Keynes began developing a new theory which could, he believed, encompass high unemployment as an equilibrium as well as a disequilibrium phenomenon and so explain prolonged high unemployment. To Keynes and soon to most of the economics profession, the source of the problem was deficient aggregate demand and the remedy deficit spending.[49] Once this approach was accepted the dole disappeared from view in discussions of the unemployment problem.[50]

The evidence suggests that this approach was incomplete. To be sure, the sharp increases in unemployment in 1921 and 1930–31 were mostly the result of monetary and other shocks to aggregate demand, and the adjustments to these shocks were surely hampered by the contraction in international trade. However, the late twenties and thirties were characterized by high and rising real income, and the high unemployment at those times was the consequence almost solely of the dole. The army of the unemployed standing watch in Britain at the publication of the *General Theory* was largely a volunteer army.

VIII. Conclusions

We have shown that the persistently high rate of unemployment in interwar Britain was due in large part not to deficient aggregate demand but to high unemployment insurance benefits relative to wages. The unemployed of the late twenties and late thirties were pulled into unemployment, not pushed out of employment. Of course, nothing in this paper should be construed as a defense of the aggregate demand destabilization policies pursued by the British government during this period.

[49] In 1931 Keynes campaigned against the economy measures in terms that make it clear that he saw no connection between a decline in unemployment benefits and unemployment except through aggregate demand (see Keynes 1931).

[50] Earlier, J. R. Hicks, in explaining the unemployment around him, found the dole to play a key role (see Hicks 1932, pp. 177–78 and 195–96). Even after his conversion to Keynesianism, this idea persisted (see Hicks 1942). Hicks (1975) makes the failure of wages to decline in interwar Britain despite the high and persistent unemployment a central part of his thesis without once mentioning the dole. Harry Johnson pointed out this curious progression to us.

Appendix

Measuring Unemployment[51]

As noted in the text, the unemployment series we use is a measure of unemployment among insured persons, with the unit of counting being the lodged unemployment book. The great majority of persons whose books were lodged at the exchange were claiming benefits, although a small number were continuing to register even though their claims to benefit had been disallowed or their benefits exhausted. Some insured persons ceased to register upon denial or exhaustion of benefits, even though they remained unemployed. To account for this, the official unemployment figures included persons for 2 months after they had ceased to register if (*a*) their unemployment books remained lodged and (*b*) it was not known that they had found employment.

Until January 1932 the counting of the unemployment register was performed on Monday of every week. Subsequently, it was performed on one Monday of each calendar month. Unemployed persons were required to reaffirm their status by signing the unemployment register on 2 or more days of each week. They were counted as unemployed if they had signed the register on the day of the count or, if they were not required to attend the exchange on that day, they had signed on the last preceding "signing day" and were not known to have found work in the meantime. Subsequent to September 1937 the count was revised on the Monday following the "statistical" Monday to allow for (*a*) deductions of persons included in the original figures subsequently found to have been employed on the day of the count, and (*b*) additions of persons registered later in the week who produced evidence that they were in fact unemployed on the day of the count.

Insurance officials were extremely meticulous in attempting to maintain complete industrial histories on all insured persons. In part, this was prompted by a desire to place unemployed persons in employments best suited to their talents; in part, officials were simply determined to avoid fraud. The practical consequences of this careful record keeping for those unemployed persons who failed to lodge their unemployment books were not trivial; lengthy interviews and considerable delays were often incurred as insurance officials attempted to fill in the gaps in the unemployment books (Chegwidden and Myrddin-Evans 1934, pp. 185–205). Apparently, the officials were not derelict in their duties; in 1931 the Royal Commission on Unemployment Insurance found that among their 1 percent sample of all insured persons there existed complete industrial histories for more than 95 percent of these persons, dating back to their entry into the insurance scheme (Royal Commission 1932*b*, p. 241).

Other than the insurance records, there exist two independent sources of information on unemployment in the interwar period—trade union data and the census of 1931.[52] The trade union unemployment figures cover unions that paid privately funded unemployment benefits and collected unemployment statistics incidental to those payments. For the 7 years for which the union series and unemployment insurance series overlap during the interwar period (1920–26) the series correspond closely. According to the insurance

[51] A fuller discussion may be found in Chegwidden and Myrddin-Davis (1934, pp. 136–44); Burns (1941, pp. 339–43); Department of Employment and Productivity (1971, pp. 16–17).

[52] The census of 1921 did not record unemployment data.

series the average rate of unemployment during those years was 11.5 percent; according to the union series it was 10.6 percent. The correlation coefficient between the two series is .96.

It is also possible to compare the unemployment insurance data with the census data for April 1931 (the month of the census), although some care is needed in doing so. The census excluded from its count of the unemployed those persons who were temporarily laid off and expecting to return shortly to their previous job. Hence the census definition of unemployment corresponds to the unemployment insurance category "wholly unemployed." On a nationwide basis, for all persons aged 14 and over, the census reported an unemployment rate of 12.7 percent for males and 8.6 percent for females. In April 1931 the corresponding unemployment insurance figures for wholly unemployed persons aged 16–64 were 17.0 percent for males and 13.0 percent for females.

The differences between the census and insurance figures are substantial but appear to be due chiefly to the fact that the census figures include uncovered industries. The Unemployment Insurance Statutory Committee subsequently examined the census figures to determine the census unemployment rate for covered industries. For wholly unemployed males (female rates were not examined by the UISC) the unemployment insurance figure was 15.4 percent; the census figure was 16.6 percent. Across 43 industry groups, the correlation coefficient between the unemployment insurance and census figures is .96 (Ministry of Labour 1934, pp. 56–57).

Feinstein (1972) presents an unemployment series that purports to be a comprehensive figure for both covered and uncovered industries. By his method of construction, however, his series is almost perfectly correlated with, although lower than, the insurance series. For 1931, he uses census and insurance data to construct an economy-wide employment rate (although this is still not a true rate, since he uses insurance data on the proportion of persons temporarily stopped to adjust the census data for its omission of these people). He then assumes that the number of uncovered unemployed persons is a constant 16.8 percent of the total number of unemployed persons for 1921–30 and a constant 13.8 percent for 1932–38, the difference in percentages being due to additional insurance data that were available for 1932–38. The correlation coefficient between Feldstein's unemployment rate and the insurance unemployment rate for 1920–38 is .999.

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