"STRUCTURAL CHANGE, UNEMPLOYMENT BENEFITS AND HIGH UNEMPLOYMENT: A U.S.-EUROPEAN COMPARISON"

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Structural Change, Unemployment Benefits and High Unemployment: A US-European Comparison

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Abstract

This paper reconsiders the position that unemployment benefits have played a subordinate role in the evolution of unemployment in Western Europe. First we briefly review theories that predict a positive relationship between equilibrium unemployment and level of unemployment benefits. While there is evidence for this relationship in the most recent decade, the puzzle lies in explaining the low levels of European unemployment in the 1960s and early 1970s, when these programs were often just as generous. We then show that the sensitivity of unemployment to the inflow rate in Pissarides (1985) model of equilibrium unemployment is positively related to the level of unemployment benefits. This channel represents a potential explanation of the puzzle.

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1. Introduction

In addition to baffling policymakers and casting doubt on the viability of full employment, persistently high unemployment rates in Europe now pose a threat to a central paradigm of macroeconomics, the natural or equilibrium rate of unemployment.[1] Perhaps reflecting a North American bias, researchers in macroeconomics have emphasized cyclical fluctuations about the so-called "natural" or equilibrium unemployment rate rather than movements in the natural rate itself. Thus it is not surprising that the tripling in EEC unemployment rates over two business cycles since 1973 has prompted many to abandon this paradigm in favor of hysteretic theories without a unique natural rate. On the other hand, there is nothing in Friedman (1968) suggesting that the natural or equilibrium rate of unemployment should be a constant; to the contrary, Friedman (1968) suggested embedding "actual structural characteristics of the labor and commodity markets, including market imperfections, stochastic variability in demands and supplies, the cost of gathering information about job vacancies and labor availabilities, the costs of mobility, and so on" (emphasis added). Before jettisoning the theory, it should be natural to ask if all possible reasons behind a rise in the natural rate have been adequately investigated.

One potential factor determining the natural rate of unemployment that has received relatively little attention in the recent debate is the role of unemployment insurance (UI) and related benefits. Although many studies have uncovered

significant, if not always large, effects of UI benefits on labor supply at the individual level, economists have been reluctant to assign a major role to unemployment benefits in explaining the rise of European unemployment over the past two decades.[2] In addition to distaste for the idea, it is indeed difficult to identify a robust statistical relationship within a single country over time between the fraction of net income replaced by unemployment benefits and the unemployment rate.

This paper reexamines this position. First it surveys those theories that predict a role for unemployment benefits in determining the natural rate of unemployment. Second, it reviews some of the empirical evidence; it is argued that only through international comparisons can sufficient variability be uncovered. While there is considerable evidence that the generosity of UI programs is associated with the current level of unemployment, there is a puzzle in explaining the low levels of European unemployment in the 1960s and early 1970s, when many of the same programs were already in place. In the third section of the paper we show that Pissarides (1985) model of equilibrium vacancies and unemployment predicts that the inflow rate into unemployment --here a stand-in for structural change-- is a key determinant of the equilibrium unemployment rate, and the strength of its impact is positively influenced by the generosity of unemployment benefits. We conclude by presenting some evidence on structural change, unemployment benefits, and the unemployment-vacancy relationship from the US, Sweden, the Netherlands, and Belgium, and draw some policy conclusions.

2. Unemployment Benefits and the Natural Rate of Unemployment: Theory and Evidence

2.1. *Theory*

There is no shortage of models that generate a positive theoretical relationship between "normal unemployment" and the generosity of unemployment benefits.[3] Search and Matching Models link provision of unemployment benefits--or any income in the state of unemployment-- to the propensity of unemployed workers to accept job offers, and thereby the outflow rate out of unemployment. Stigler (1961) and McCall (1970) provided the first attempts at formalizing the search decision. In the sequential search model of McCall (1970), the optimal program has the reservation wage property: for a given distribution of wage offers w, risk aversion of the individual, discount rate, and utility available in the state of unemployment, the worker chooses reservation wage w^r below which she rejects job offers.[4] A compact summary of the current literature can be found in Mortensen (1987) or Sargent (1987). In general these models predict a negative relationship between unemployment benefits and the outflow rate out of unemployment, and thus a positive link between benefits and average duration of unemployment and the equilibrium rate of unemployment.[5]

Union models of wage determination predict an association between the equilibrium rate and UI benefits for different reasons. Here a trade union controls labor supply vis-a-vis a labor demand curve or an employer's association. While individual labor supply is usually presumed inelastic, the wage itself is determined through union-management interactions. Unions are

assumed to have well-defined preferences over wage levels and employment, just as in the theory of consumer choice.[6] In the monopoly outcome, the union chooses a point along the labor demand curve at which its utility is maximized, or where the marginal rate of substitution of employment for real consumption wages is equal to the slope of the labor demand curve in real consumption wage-employment space. Alternatively, consideration can be limited to Nash bargaining outcomes from the set of feasible and optimal contracts formed by tangencies of union indifferene curves with firms' iso-profit lines (Leontief 1946), or to "right to manage" contracts along the labor demand curve as in Nickell and Andrews (1983). At least locally, the wage outcome is a markup over the union's best available alternative, which in a single sector economy is given by the unemployment benefit.[7] In contrast to search models, individual unemployment is voluntary only with respect to the union, not the individual, since unemployed workers would generally be willing to work at the negotiated wage.

Two sector models or dual labor market models have recently enjoyed a renaissance (see Dickens and Lang 1988 for an optimistic review) although the idea dates back at least to Harris and Todaro (1970)or Doeringer and Piore (1971). Here two sectors compete for labor: the primary sector comprises "good jobs" which offer high wages and promotion possibilities, and a secondary sector of less desirable, lower paying employment. Why the dichotomy arises in a world where labor is (at least ex ante) homogeneous is a matter of some controversy, and several explanations have been offered. Training costs, high costs of adjusting employment, and the need for lower turnover in the primary sector are all potential reasons

for paying supra-normal wages there. Unemployed workers choose between accepting work in the competitive secondary sector at wage w^s or queueing (waiting) for work in the primary sector. Under general conditions "wait unemployment" will arise.[8] See Johnson and Layard (1986) for an extension to dynamic setting. This unemployment is not easily classified as voluntary or involuntary, since unemployed agents turn down employment in the secondary sector, yet at the same time would be willing to work in the primary sector. In such models the level of UI benefits raise w^s, which reduces labor demand in the secondary sector and for given labor supply increases unemployment. More elaborate versions of the model address the wage determination in the primary sector and allow feedback from labor market conditions to the primary sector wage. Other variants place less emphasis on the wait aspect, focusing on the lower bound the UI benefit places on the secondary sector wage.[9]

2.2. *Evidence*

Studies at the individual level have established only modest links between UI benefits and duration of unemployment. In the US, cross-state evidence offers the most powerful tests of the link between UI benefits and unemployment, since micro data with UI benefit records are not readily available. Ehrenberg and Oaxaca (1976) is the classic study, which finds a statistically significant and positive effect of benefits on duration (as well as wages of accepted jobs). Using a sample of UK males, Narendranathan, Nickell and Stern (1985) estimated a small but statistically significant elasticity of duration with respect to

UI benefits which declined sharply with age. More compelling evidence may be found in studies of individual exit probabilities for individuals with known benefit exhaustion dates. Moffitt (1985) and more recently Katz and Meyer (1988) have detected remarkable increases in hazards rates in US data before benefits are exhausted.

In contrast, researchers have been notoriously unsuccessful in finding an econometric role for benefits, statutory or effective, in aggregate wage equations; one exception is Layard and Nickell (1986). One reason for this may be the extreme imperfection with which benefits are measured. Indeed, crude replacement ratios of aggregate UI disbursements to net income contain significant countercyclical variation unrelated to program generosity.[10] Another, more compelling reason is the lack of within-country variance of the benefit itself. Like taxation, optimal provision of benefits is probably smooth relative to other variables influenced by the business cycle, and is unlikely to have enough variability to permit precise estimation of its effects. Even discrete changes in statutory program benefits are not always associated with large changes in average unemployment rates. Portugal instituted an unemployment benefits program in 1975, with average unemployment sharply higher in the aftermath (from 2.3% in 1965-1974 to 7.4% over 1975-1984); Canada increased the generosity of its system in 1972 (Ashenfelter and Card 1986), with a rise of average unemployment from 4.7% (1962-1971) to 7.0% (1972-1981). In contrast, Israel introduced its program in 1970; unemployment over 1961-70 averaged 5.0% versus 3.4% in the 1970s.

If the generally negative conclusions with respect to the effect of unemployment benefits on labor supply are an artifact of focusing on a single country, a logical solution would be to move to international comparisons. This is not an easy task.[11] First, there exist a number of often semantic distinctions between types of benefits. In the first stages of unemployment, the qualified worker may collect insurance payments for periods ranging from a few months to several years. These may or may not be conditional on previous earnings, marital status, number of dependents, and may be followed by a means-tested unemployment assistance program. Unemployed individuals may also have access to welfare payments upon exhaustion of benefit claims, although these are in principle independent of labor force status and for the purposes of this study are ignored.

Furthermore, benefits must be differentiated along the lines of income replacement, coverage, and duration of the benefit. Significantly, most variation in programs across countries originates in the latter two factors rather than replacement rates. Differences in coverage can be be substantial; in the US only about third of the unemployed are eligible for benefits, while in Belgium and Holland the figure is well in excess of 80%. Switzerland and Holland provide similar rates of income replacement; in the former the period of duration of benefits is roughly six months, versus more than two years in the latter.

It would thus seem important to consider all aspects of unemployment benefits, including the <u>duration</u> and <u>extent of coverage</u> of these programs. Despite the high order of dimensionality of benefit characteristics, researchers have

focused attention almost exclusively on the replacement ratio, or the net rate of income replacement. In Burda (1988) I attempted to finesse, albeit crudely, these measurement problems by constructing an index of the extent of unemployment insurance which consolidates the three elements mentioned above. My conclusion is that the pattern of benefit provision in OECD countries can explain a considerable amount of international country variation in average rates of unemployment, especially rates of long-term unemployment.[12]

Notwithstanding, it has been forcefully argued (Burtless 1987, Layard 1988) that this evidence is insufficient to explain the current puzzle of European unemployment, or why unemployment rates in Europe were so low in the 1960s and early 1970s. It is indisputable that many of the programs that exist today were in place in the 1960s, and the four countries I consider below have changed the statutory provisions of their programs relatively little over the past twenty years.[13]

Yet the puzzle contains an important hint: the rate of inflow into unemployment has risen substantially in most European countries since the 1960s.[14] In 1973, hardly considered a bad year for the Belgian labor market, more than 50% of all unemployed had been out of work for more than one year; the average incompleted unemployment spell in the same year was almost 16 months. Yet the OECD standardized unemployment rate was only 2.8%! Such a low unemployment rate is consistent with a low outflow rate out of unemployment only if the inflow rate is also low (see footnote 5). In contrast, 69% of unemployed were out of work for more than one year in 1987, and unemployment rate was 11.2%; at least part of

this large increase (which actually began in the early 1970s) must be linked to an increase in the inflow into unemployment.

In the following section we take up the theme of structural change and show how the rate of inflow into unemployment can play a key role in the evolution of the equilibrium unemployment rate. More importantly, we ask how this role is affected by income in the state of unemployment. To analyze these questions, we clearly require a model of unemployment which captures in a simple way the interaction of equilibrium vacancies and unemployment with flow or turnover aspects of labor markets.

3. Structural Change and Unemployment Benefits in Pissarides' (1985) Model of Equilibrium Unemployment

3.1. *The General Setup*

Consider an economy populated by a large number of risk-neutral individuals and firms. The production technology is simple: each firm employs one worker and produces q. Entry is costless for the firm; to engage in production, however, the firm must first locate a worker. It does so by offering a vacancy at cost k. With a worker, the firm can produce output q in the current period. At the end of the period a fraction s of these relationships will go sour: the worker-firm pair is dissolved and the firm may post a vacancy and the worker resumes search. If the firm has posted a vacancy in the current period, it cannot produce. At the end of the elementary period, the slot is either filled with a productive worker or remains vacant for the consecutive period.

Whether vacancies and unemployed workers find each other is determined by a "matching technology" $x(u,v)<\min(u,v)$, which

returns the aggregate number of new productive employment relationships resulting from u unemployed workers and v vacancies.[15] To keep things simple, we ignore the "effectiveness" of firms and workers in search, which has been well explored.[16] We do impose x_1, x_2, $x_{12}>0$, and $x_{11}, x_{22}<0$. A central assumption is constant returns to scale in the matching technology, which rules out among other things, dependence of the equilibrium rate of unemployment on the size of the economy.[17] Henceforth the labor force is normalized to unity, so u and v are also unemployment and vacancy rates, respectively. Constant returns also implies that the job finding rate f for unemployed is $x/u=x(1,v/u)$ and the vacancy filling rate h of the firm is $x/v=x(u/v,1)=(u/v)f$.

Given our assumptions, a flow equilibrium condition for the labor market must be

$$(1) \qquad (1-u)s=x(u,v).$$

This curve is drawn as the u-v curve in Figure 1. Note that it is downward sloping, since total differentiation of (1) yields $dv/du= -(s+x_1)/x_2<0$.

3.2. *Worker Behavior*

The behavior of workers is characterized by their valuation of the state of unemployment versus that of having a job. Real wages w and unemployment benefits b are paid at the end of the period, as in Pissarides (1985). Let W and U be the present discounted value of working and unemployment respectively, using discount rate r. If the i<u>th</u> employed worker receives w_i, then

$$(2) \qquad W_i = w_i/(1+r) + sU/(1+r) + (1-s)W_i/(1+r)$$

where U is given. Some manipulation reveals that the difference between the two valuations W_i and U is given by

$$(3) \qquad W_i - U = \frac{1}{r+s}(w_i - rU)$$

which may be regarded as the worker i's net return from having a job now at wage w_i.

3.3. *Firm Behavior*

A firm in this setup may either employ a worker or, lacking one, post a vacancy. If the job is already filled at the beginning of the period, output q is produced; otherwise the firm may post a vacancy at cost k. If J and V are the present values of the firm in the two states and all revenues and costs are incurred at the end of the period, we have

$$(4) \qquad J_i = (q - w_i)/(1+r) + sV/(1+r) + (1-s)J_i/(1+r)$$

where V is taken as given. Similarly it can be shown that

$$(5) \qquad J_i - V = \frac{1}{r+s}(q - w_i - rV).$$

3.4. *Wage Determination*

Wages are determined by Nash bargaining between the meeting parties. Since there is no heterogeneity, all wages are equal in equilibrium. The bargaining process for the i<u>th</u> worker-firm pair maximizes the weighted combination of the gains to both parties from reaching an agreement; i.e. solves

$$(6) \qquad \max_{w_i} \ (J_i - V)^{(1-\beta)}(W_i - U)^{\beta}$$

where workers' bargaining strength is parametrized by β, $0<\beta<1$. The first order condition is

$$\beta(J_i-V)\partial(J_i-V)/\partial w_i = (1-\beta)(W_i-U)\partial(W_i-U)/\partial w_i$$

From (3) and (5) we have $\partial W_i/\partial w_i = -\partial J_i/\partial w_i = 1/(r+s)$, so the solution is given by

$$(7) \qquad (J_i-V)/(W_i-U) = (1-\beta)/\beta.$$

3.5. *Unemployment, Vacancies, and Wages in Equilibrium*

We consider only steady states. The number of vacancies on offer in equilibrium is given by a zero profit condition. As in Pissarides (1985), vacancies cost k to post and maintain each period; in the steady state, $J_i=J$ for all i so

$$(8) \qquad V = -k/(1+r) + hJ/(1+r) + (1-h)V/(1+r)$$

Combining (8) with (4) and solving for V yields

$$(9) \qquad V= \frac{1}{r(r+s+h)}[h(q-w)-k(r+s)]$$

which is equation (12) in Pissarides (1985). If free entry of firms leads to V=0 in equilibrium we have

$$(10) \qquad k(r+s)=h(q-w)$$

Note that (10) implies that for a *given* wage, an increase in either s or r will be associated with an equilibrium increase in h, the rate at which firms fill their posted vacancies, because the equilibrium rate of unemployment u and the unemployment-vacancies ratio u/v are higher.

The worker's equilibrium valuation of the state of unemployment is

$$(11) \qquad U = b/(1+r) + fW/(1+r) + (1-f)U/(1+r)$$

where f is the job finding rate as defined above. Returning to (3), we can combine (2) and (11) to obtain the worker's return

from unemployment when $W_i=W$:

$$(12) \qquad W-U = \frac{1}{(r+s+f)}(w-b).$$

From (10), (r+s) can be expressed in equilibrium as h(q-w)/k, we write (12) as

$$(13) \qquad W-U = \frac{k}{h[(q-w-kv/u)}(w-b).$$

Explicit solution for the equilibrium wage in terms of the model's parameters is now possible. Equations (5), (10), and the V=0 condition imply J=vk/x; inserting this and (13) into (7) yields the following final expression for the equilibrium wage:

$$(14) \qquad w = \beta(q+ kv/u) + (1-\beta)b$$

$$= b + \beta(q+ kv/u -b)$$

Note that for the match to have positive outside value to the meeting parties, q+kv/u-b>0.

Equation (14) has a convenient interpretation. As in most models, the bargaining outcome is a weighted average of the two net gains obtaining from the match. Thus the equilibrium wage w is affected directly by fallback positions as well as the bargaining power of the respective parties. As $\beta\to 0$ (firms have all the power) the wage is set increasingly close to the best outside opportunity or b; as $\beta\to 1$ (workers have all the power), the wage captures all the available surplus.

We can now characterize the full equilibrium of the model. Inserting (14) into (10) we have

$$(15) \qquad [(1-\beta)(q-b)-\beta k(v/u)]h = (r+s)k$$

The set of points in v-u space characterized by (15) is called the

V=0 locus, drawn as an upward-sloping curve in Figure 1. Together with the u-v curve (1), it closes the system, determining both v and u. Furthermore, since $h=x(u,v)/v=x(u/v,1)$, u/v is determined by expression (15), so the V=0 locus is a straight line emanating from the origin.

3.6. *Some Comparative Statics Results*

3.6.1. *An increase in the separation rate s unambiguously raises u and lowers v/u.*

To see this we analyze the effect of an increase in the separation rate s for the two curves in Figure 1. First, an increase in s shifts the u-v curve outwards. Heuristically, a higher rate of turnover at the same unemployment rate is consistent with flow equilibrium only if the outflow out of unemployment is higher. But outflow $f=x/u=x(1,v/u)$ is an increasing function of v/u; it follows that the level of vacancies must also have increased, ie the curve must have shifted out.

To determine the effect of an increase in s on the V=0 locus, we first rewrite (15) as

$$x(u/v,1)[(1-\beta)(q-b)-\beta k(v/u)] = (r+s)k \tag{16}$$

which we differentiate totally and solve for d(u/v)/ds:[18]

$$d(u/v)/ds = \frac{[k+(1-\beta)x]}{x_1[(1-\beta)(q-b)-\beta k(v/u)]+\beta kx(v/u)^2}. \tag{17}$$

From (15), $(1-\beta)(q-b)-\beta k(v/u)$ is unambiguously positive, so (17) is also unambiguously positive. Thus an increase in s shifts V=0 locus downwards. shifts. As Figure 2 show, this leads to both an increase in u as well as u/v, whereas the effect on equilibrium vacancies is ambiguous.

3.6.2. *An increase in b unambiguously raises u and lowers v/u and v.* Since the u-v locus is unaffected by b, we need only determine the effect of b on (u/v). Differentiating (16) and solving for d(u/v)/db, we find

$$(18) \qquad d(u/v)/db = \frac{(1-\beta)sx}{x_1[(1-\beta)(q-b)-\beta k(v/u)]+\beta kx(v/u)^2}$$

which is similarly unambiguously positive. The effect of an increase of the benefit b is shown in Figure 3.

3.6.3. *The effect of an increase in s on unemployment increases with the size of unemployment benefit b*

To demonstrate that d(u/v)/ds is increasing in b (or that d(u/v)/db is increasing in s) it is necessary to sign $d^2(u/v)/dbds$. Differentiating (18) with respect to s yields

$$(19) \qquad \begin{aligned} &(1-\beta)[x+sx_1 d(u/v)/ds]\Delta^{-1} \\ &-x(1-\beta)s\Big\{x_{11}[(1-\beta)(q-b)-\beta k(v/u)] \\ &\qquad -2\beta k(v/u)^3(x-x_1u/v)\Big\}[d(u/v)/ds]\Delta^{-2} \end{aligned}$$

where $\Delta \equiv x_1[(1-\beta)(q-b)-\beta k(v/u)]+\beta kx(v/u)^2>0$. We have already shown above that d(u/v)/ds is positive. Since by constant returns we have $x-x_1u/v=x_2$, expression (19) is unambiguously positive; the the effect on u/v of an increase in the separation rate s is more positive the larger is b, the unemployment benefit. As the u-v locus is independent of b, this holds for the unemployment rate as well. In terms of Figure 2, for a given exogeneous increase in the separation rate s, the equilibrium of the economy will move in the southeast direction.

4. Evidence for the Model

For obvious reasons, we do not attempt an econometric investigation of the framework presented in the last section. While the highly abstract nature of the model renders it unsuitable to estimation, it does however deliver important predictions about the behavior of unemployment and vacancies in response to increased exogenous "structural change" as measured by the inflow rate into unemployment.

4.1. *Evidence of Structural Change*

It is relatively uncontroversial that as industrial economies become more advanced, the relative shares of resources devoted to the production of services tends to increase (see e.g. Chenery 1960). This may be caused by high income elasticities of demand for services, differential rates of productivity growth, or simply emerging sources of foreign competition. In the past decade this shift seems to have accelerated; see Table 1. At the same time, service enterprises are smaller and tend to lead a more precarious existence. Table 2 documents a marked increase in the (normalized) number of bankruptcies since the 1960s, which some have associated with the increasing role of the service economy, but might also be due to a more volatile macroeconomic environment.[19]

The link to the model of unemployment and vacancies is the rate of inflow into unemployment. Burda and Wyplosz (1989) present evidence that this rate in Europe is more closely linked to the job separation and bankruptcies than to spurious labor force transitions as in the United States. This rate has increased

significantly over the past fifteen years, especially in the large European economies. Table 3 displays the evolution of inflow rates into unemployment over the past quarter decade. Even in Sweden this rate is considerably volatile, falling by about 30% from the 1960s to the 1970s, rising about 15% afterwards.

4.2. *Evidence on Benefits: Belgium-Netherlands versus US-Sweden*

Let us consider extremes I isolate in my earlier study: Belgium and the Netherlands versus Sweden and the US, here using a slightly different data set.[20] We consider a married male of age 40 with twenty years of work experience in the manufacturing sector at the average manufacturing wage, without assets and dependents. We then construct, using an annual discount rate of 20% (0.351% weekly), the present value of the anticipated stream of unemployment benefits (insurance and if appropriate, follow up assistance) expressed as a percentage of take-home wages.[21] Belgium's "indefinite duration" was truncated to five years. Because not all unemployed individuals have the necessary work experience to qualify for these benefits, we multiply the discounted percent-weeks measure by the fraction of all unemployed who receive any benefits (the coverage or insured unemployment ratio). Crudely, we proxy the present value to the representative unemployed person, unconditional on previous employment status.

Table 4 displays the measure and its decomposition as the product of the initial net replacement ratio in percentage points, the "effective duration" in weeks and the coverage ratio. The effective duration is defined as the discounted percent-weeks conditional on qualifying divided by the initial net replacement

ratio. It is important to stress that this initial replacement ratio declines over time in most countries as the individual passes from insurance to assistance status. Evidently, there is considerable variation in the measure, and it derives primariliy from duration and coverage of these programs rather than the replacement ratio.

4.3. *Evidence from Beveridge Curves*

Recall that the model's central prediction is that economies which provide more generous income in unemployment will experience more pronounced movements towards the southeast region of vacancy-unemployment space for any given increase in the inflow rate. It is crucial to stress that increased search behavior per se is not the cause, since both firms and workers are unable to vary the intensity of their search effort in this model. Rather it is due to the effect of benefits on the "fallback" position of the worker in bargaining subsequent to a match, which in a period of higher turnover can be exploited more often.

These predictions should be evident in more marked deterioration of the "Beveridge Curve," or the statistical relationship between vacancies and unemployment, for high UI benefit countries over the past twenty years. Figure 4 plots the evolution of vacancy and unemployment rates in Belgium, the Netherlands, Sweden and the United States.[22] In Belgium and the Netherlands, the relationship is clearly dominated by a secular movement to the lower right, with negligible reversal only in the recent past. In contrast, the unemployment-vacancy loci (or

"Beveridge curves" as they are often called) in the US and Sweden appear more stable with more movement associated with the business cycle. The dominant trend in the United States appears to be an outward shift, whereas in Sweden the relationship has remained stable for the past two decades. Sweden also exhibits the mildest increase in inflow rates in Table 3, so its experience remains consistent with the model of the last section.

5. Conclusions and Policy Implications

In this paper, I have argued that the level of unemployment benefits may not only affect the long run level of unemployment, but also its <u>responsiveness</u> to structural change. Thus the the generosity of programs need not have changed: they need only have been generous to begin with. It should be stressed that this model deemphasizes the importance of search in the evolution of unemployment; it does stress the role of increased flows, which is a neglected characteristic of high unemployment countries. Of course, my analysis implies that countries with highly generous programs will experience the most radical improvement of the u/v tradeoff when the pace of structural change declines.

The circumstantial evidence presented in the last section may not convince skeptics who argue that structural change is a red herring, and that restrictive aggregate demand policies in the 1980s are the real current cause of high unemployment in Europe. Others may doubt the interpretation of increased unemployment inflows as corresponding to increased firings and severances.[23] On the other hand, the "hysteresis" model is hard-pressed to explain

the 1970s, when growth in Europe was still high and European unemployment was already rising.[24]

Since the model is abstract, policy recommendations should be made with caution. One obvious proposal is to reduce the fallback position of the worker or increase that of the firm, thereby influencing the gains from a match. Direct cuts in benefits --such as those effected in the US over the past decade-- would accomplish this end but entail other, more immediate human costs. As the Swedish experience has shown, there are alternatives policy options which can avoid reducing unduly the welfare of unemployed workers. Subsidization of severance benefits, stiffer application of job or retraining acceptance rules, and structural assistance plans all represent potential means of increasing the value of vacancies to the firm and thus increasing their equilibrium availability.[25] If the ultimate end of labor market policy is to move up the "Beveridge curve", these proposals merit careful attention.

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Table 1

Share of the Service Sector,
Percent of all employment

	1965	1970	1975	1980	1985	1987
UK	49.6	52.0	56.8	59.7	65.9	67.8
France	43.1	47.2	51.1	55.4	60.4	62.1
Germany	40.7	42.9	47.6	50.3	53.5	54.3
US	58.2	61.1	65.3	65.9	68.8	69.9
Sweden	45.9	53.5	57.1	62.2	65.5	66.3
Belgium	48.8	53.2	57.3	62.9	67.4	68.9
Netherlands	51.3	54.9	59.4	63.6	67.0	68.2

Source: OECD

Table 2

Bankruptcies, rate per 100,000 employees

	1969	1970-74	1975-79	1980-84	85-86	87
UK	NA	57	100	223	295	240
France	164	173	183	250	320	361
Germany	36	49	87	135	183	169
US	117	121	94	268	545	543

Source: Burda and Wyplosz (1989)

Table 3

Inflows into Unemployment,
Percent of Employment†

	1965-69	1970-74	1975-79	1980-84	85-86	87
UK	1.27	1.38	1.69	1.91	1.98	NA
France	0.45	0.63	1.04	1.32	1.58	1.64
Germany	0.63	0.57	1.03	1.14	1.21	1.20
Sweden	1.08	0.78	0.67	0.77	0.72	NA
US	2.15	2.81	3.20	3.50	3.24	2.93

†Monthly inflow rates as a percentage of total employment, except for UK (males only)

Source: Burda and Wyplosz (1989) except Sweden, which is estimated using Table 9 of Björklund and Holmlund (1989).

Table 4

UI Benefits in Four Countries, 1985

	Initial replacement ratio (1)	Discounted Percent-Weeks (2)	Implied Benefit "Duration" (3) =(2)/(1)	Coverage Ratio (4)	Global Index of Benefits =(2)×(4)
Belgium	60%	9850	164.2	0.94	9260
Netherlands	70%	11500	164.3	0.89	10600
Sweden	48%	2260	47.1	0.87	1970
US	50%	1240	24.8	0.34	422

Source: USDHHS (1985), communications from respective labor offices and the OECD, author's calculations.

Endnotes

[1]See, for example, Blanchard and Summers (1986, 1988) Summers (1988), Gordon (1989).

[2]See Burtless (1987), Layard (1988), Gordon (1988).

[3]For a review of other models not considered here, see Layard and Johnson (1986) or Björklund and Holmlund (1989).

[4]In one stripped-down partial equilibrium version, the worker solves the following dynamic programming problem:

$$V(w)=\max\{U(w)/(1-\beta),\ U(b) + \beta\int V(w')dF(w')\}.$$

where b is income in unemployment, w is a random wage offer drawn in the current period, w′ is drawn in the following period with density dF defined over the compact support Ω, and the optimization is over the decision {work forever at current offer wage w, turn down w and sample in the next period}. For general equilibrium formulations see Lucas and Prescott (1974) or Jovanovic (1979).

[5]If the unemployment rate u evolves according to the differential equation $\dot{u}=s-(s+f)u$, where s and f are the rates of inflow (per employee) and outflow (per unemployed), steady state unemployment is s/(f+s). Since average duration is 1/f, a lower outflow rate for a given inflow rate implies a higher equilibrium rate.

[6]These preferences may derive from the behavior of a "representative worker" or represent the outcome of a voting process. See Oswald (1985) or Farber (1986) for a summary of such models. A somewhat unsatisfactory aspect of these models is that the source of union power is rarely explained.

[7]Consider the following static example: a monopoly union sets real wages for its members' labor, which is employed by perfectly competitive firms. Labor demand $L=L(w)$ is known and has constant elasticity $\eta\equiv -L'w/L>1$. Union preferences are those of the representative member, who has isoelastic utility of the form $U(w)=w^{\gamma}/\gamma$, $\gamma\leq 1$. The union allocates employment randomly among its M members. The union chooses w to maximize $(L/M)U(w)+(1-L/M)U(b)$, subject to $L=L(w)$. The optimal wage w^* is $(1-\gamma/\eta)^{-1/\gamma}b$.

[8]Extend the example of footnote 6 to include a secondary sector characterized by market clearing. Labor demand in the secondary sector is $L^s(w^s)$ with $L^{s\prime}<0$. In addition, assume that a fraction δ of primary sector employment L^p retire each period. Unemployed workers have some chance of getting a primary job at wage w^p, but workers in the secondary sector do not; the model is closed and the secondary wage w^s determined by the condition

$$U(w^s) = (1-\lambda)U(b) + \lambda U(w^p) = \lambda\{U(w)-U(b)\} + U(b),$$

where $\lambda=\delta L^p/U<1$ is the probability of primary sector employment and unemployment $U=\bar{L}-L^p-L^s$. For a simple example see Burda (1988).

[9]See Minford (1985), Burda and Sachs (1987), van de Klundert (1988).

[10]See Klau and Mittelstädt (1985).

[11]For a detailed review of pitfalls, see the OECD Economic Outlook 1988.

[12]Clearly the issue of reverse causality cannot be rejected. I do find some evidence that the generosity of programs responds to past long-term unemployment. Thus a severe recession might lead to more generous UI benefits and an increase in the NAIRU.

[13]See Burda (1988) for a summary.

[14]See Burda and Wyplosz (1989) for a summary for the largest European economies.

[15]For one set of conditions that generate such a function see Hall (1979). There is evidence that this function is empirically stable, at least in the United States (Blanchard and Diamond 1989).

[16]See Jackman, Layard and Pissarides (1983) and Pissarides (1983, 1986).

[17]See Pissarides (1986, 1988) for a discussion.

[18]Here we exploit the constant returns property of x.

[19]It is noteworthy that, at least in the US, the most significant increase in bankruptcies has occurred in the service producing sectors rather than agriculture or manufacturing. Labor force survey evidence in both the UK (Bean 1990) and the United States (Darby, Haltiwanger and Plant 1986) suggest higher inflow rates in service sectors.

[20]The data I used were obtained from USDHHS (1985), supplemented by various other sources, including the OECD Employment Outlook (1988). In my previous paper I employed Emerson's (1988) survey which is based on the same UHSS document. I also took midpoints of ranges declared in that survey. Coverage rates were calculated from national sources and unpublished communications from employment offices using annual averages of weekly or monthly claims data. The replacement rates apply to gross wages in all countries. When necessary (Sweden), wage data were taken from "International Comparisons of Hourly Compensation Costs for Production Workers in Manufacturing, 1975-86," US Department of Labor Bureau of Labor Statistics, report 745, and the International Encyclopedia for Labor Law and Industrial Relations.

[21]Since benefits are taxable in all four countries considered (OECD 1988), taxes were ignored.

[22]As there are no nationwide vacancy data in the US, we plot the Conference Board's Index of job advertisements, normalized by the labor force.

[23]For an evaluation of these arguments, see Burda and Wyplosz (1989).

[24]Similarly, the most recent recovery in British vacancies is hard to explain using the insider-outsider approach.

[25]Curiously, increasing the level of severance benefits in the model explored above actually reduceds the worker's fallback position. Like the "entitlement effect" in the provision of unemployment insurance, it increases the value of the match to the worker, since having been employed increases the value of unemployment. These issues are explored in Burda (1989).

FIGURE 1

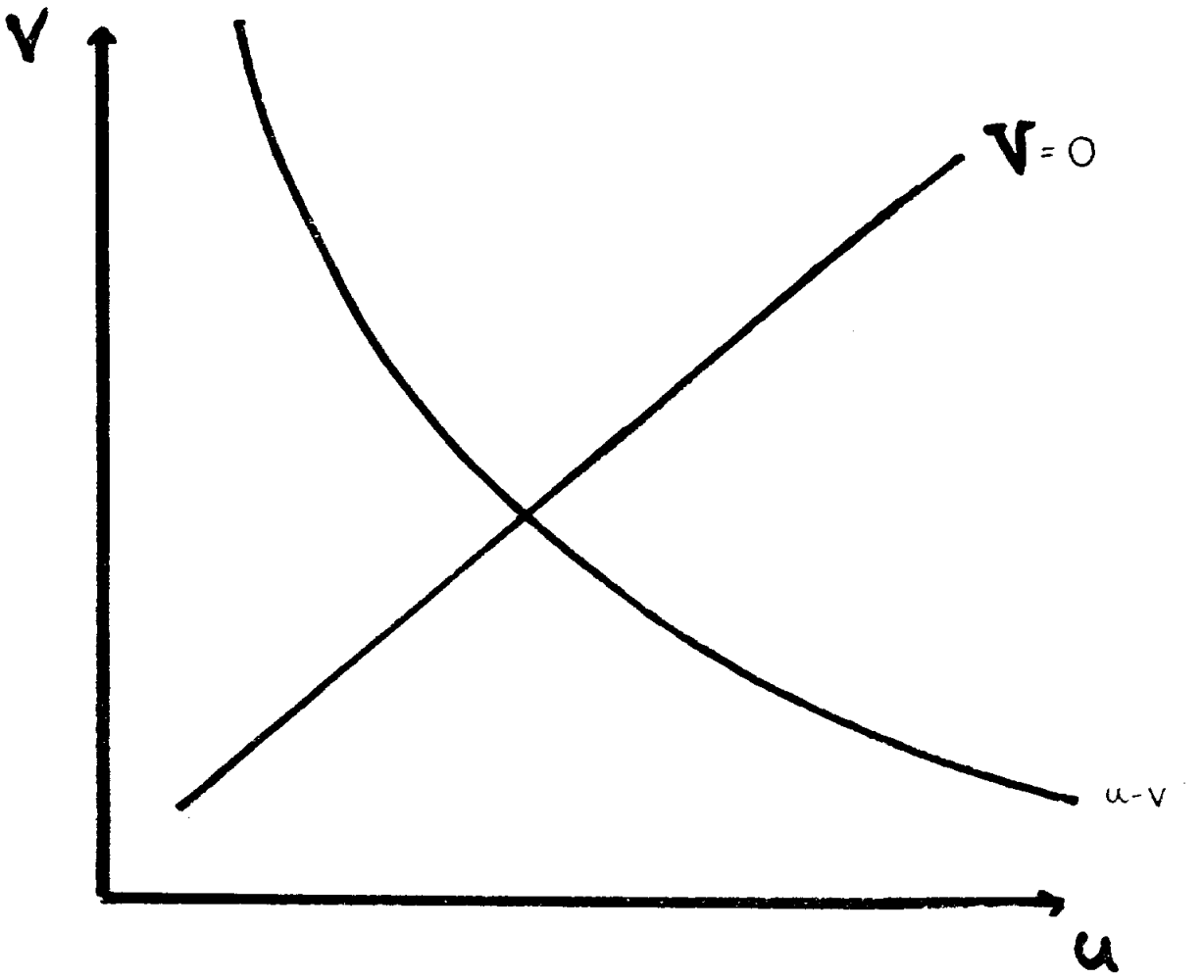


FIGURE 2

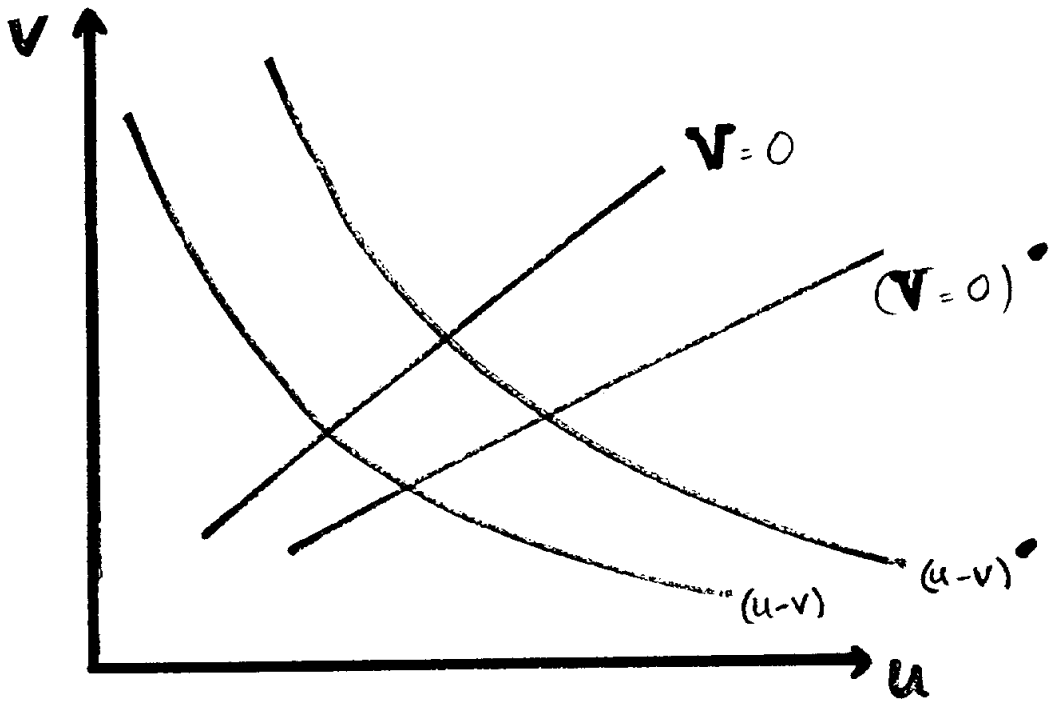


FIGURE 3

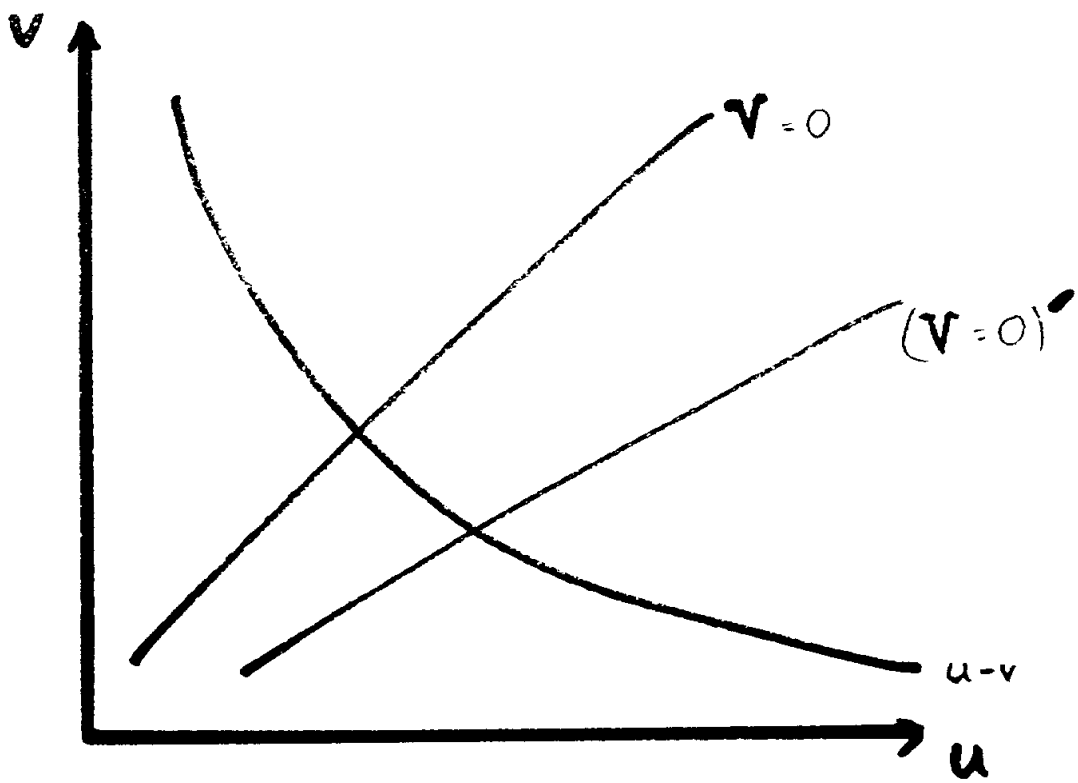
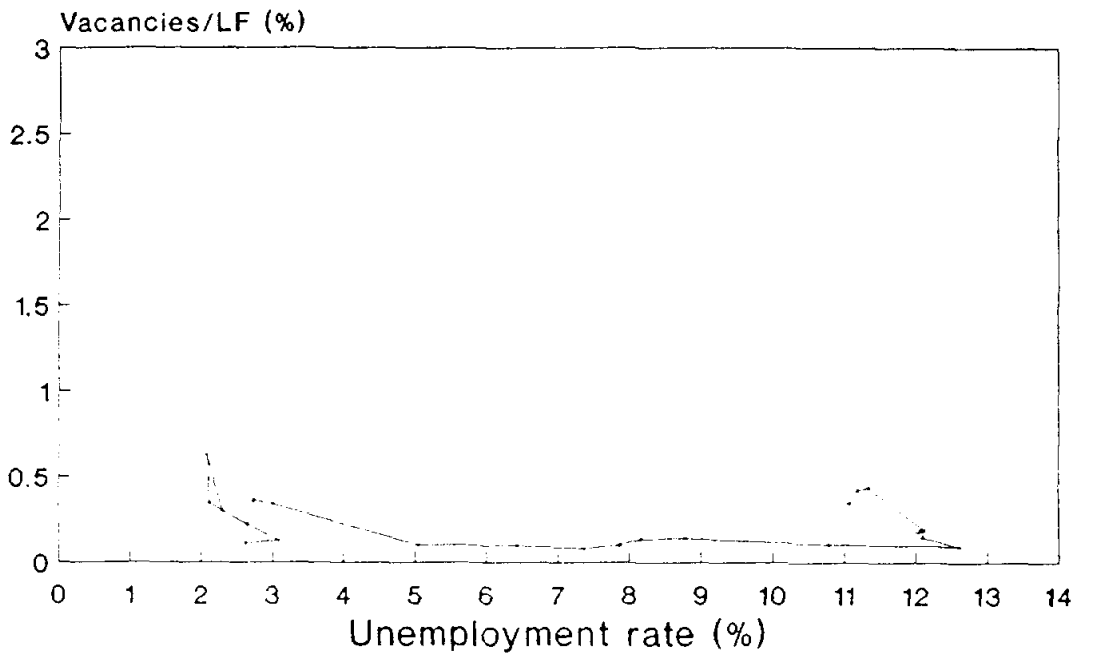


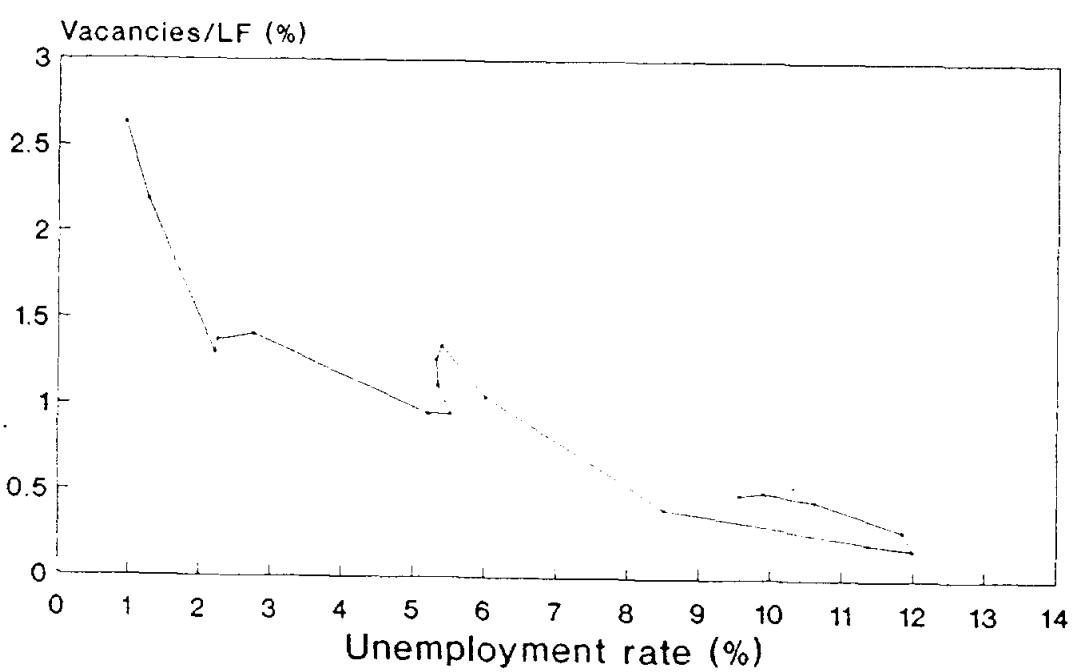
FIGURE 4

BELGIUM
Beveridge Curve



1967-87

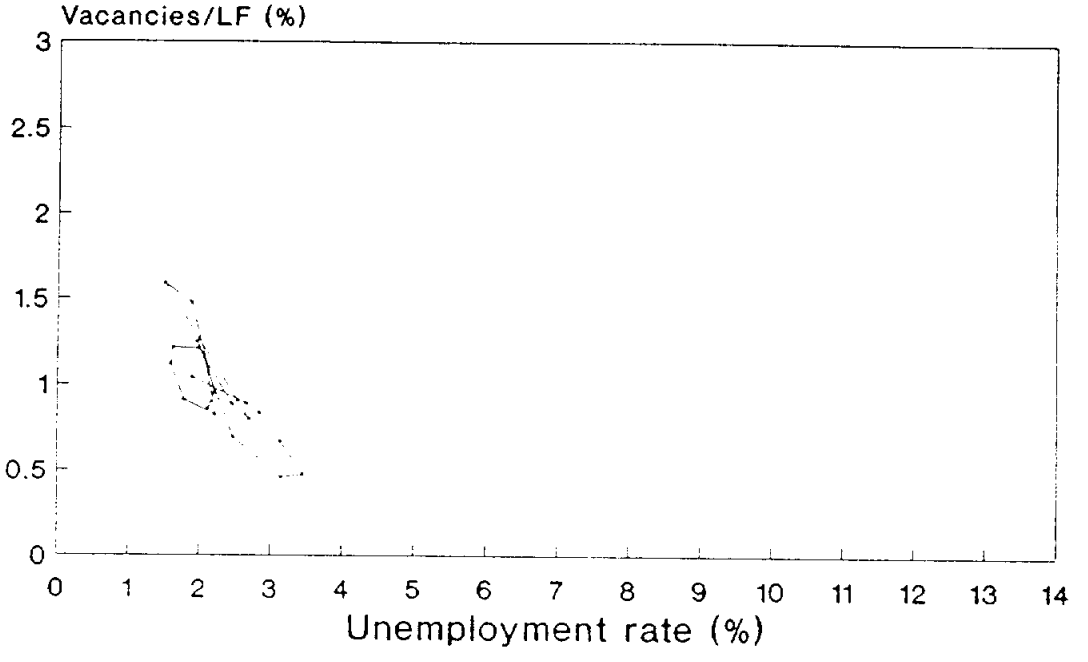
NETHERLANDS
Beveridge Curve



1970-87

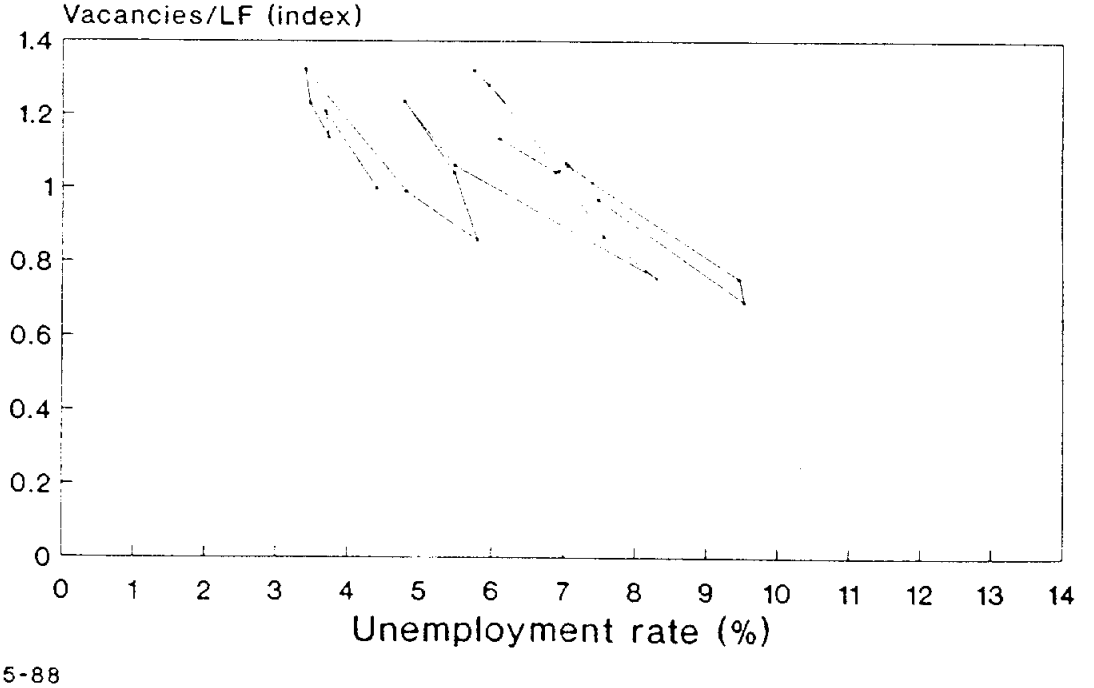
FIGURE 4 (CONTINUED)

SWEDEN
Beveridge Curve



1967-87

United States
Beveridge Curve



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