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Match and mismatch on the German labor market

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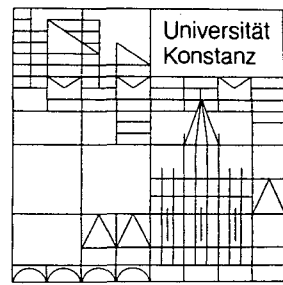
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Sonderforschungsbereich 178
„Internationalisierung der Wirtschaft“

Diskussionsbeiträge



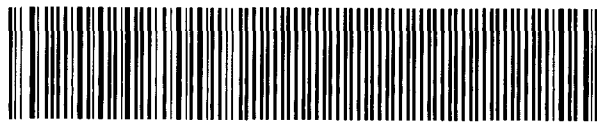
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Match and Mismatch
on the German Labor Market

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MATCH AND MISMATCH ON THE GERMAN LABOR MARKET

Wolfgang Franz

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Abstract

It is often claimed that growing labor market imperfections and maladjustments can be blamed for the increase and persistence of unemployment in the Federal Republic of Germany. This paper attempts to marshal the empirical importance of these factors. Higher structural unemployment seems to be significantly evidenced by shifts of the Beveridge curve and by results obtained from a macroeconometric disequilibrium model. Possible causes of higher structural unemployment are then examined such as reduced labor mobility, higher regional and qualifications mismatch, increased employer choosiness, lower search intensity, more institutional regulations such as dismissal protection laws, higher unemployment compensation, and the like. It seems safe to say that the probable increased malfunctioning of the labor market does not stem from an accelerated pace of structural change. Moreover, one can guess that some higher imbalances in terms of qualifications and a greater employer choosiness are more promising candidates which have interfered with the smooth equalizing of labor demanded and supplied.

Match and Mismatch on the German Labor Market

Wolfgang Franz, Konstanz (FRG)*

January 25, 1990

1 Introduction

In the past fifteen years, unemployment in the Federal Republic of Germany (FRG) as well as in other countries has experienced a tremendous increase up to postwar highs. At present it seems to be stuck at current levels. With respect to the causes of this rise and persistence of unemployment, the focus of explanation has shifted towards structural factors. More specifically, it is claimed, that, among other determinants of structural unemployment, growing labor market imperfections and maladjustments such as a regional or qualitative mismatch between labor demand and supply and/or a reduced search intensity partly supported by generous unemployment benefits are important factors which can be blamed for the joblessness.

This paper aims to take stock of the empirical evidence for and against these arguments. The prerequisite for an informed discussion of these issues is a theoretical framework which offers a clear-cut and empirically tractable definition of structural unemployment. The paper uses two theoretical tools namely the unemployment/vacancy-relationship (u/v -curve), often christened "Beveridge curve", and a macroeconomic disequilibrium model in order to provide a basis for the empirical investigations. The paper is organized as follows. In the next section both the Beveridge curve and the rationing model are employed to check whether there are structural imbalances on the German labor market and whether they have increased. As it turns out, there is some reason to accept both premises. Hence, in section 4 the paper goes on to try to identify the causes of these growing maladjustments. In section 5 the importance of some possible causes is tested using the two aforementioned tools. Section 6 presents concluding remarks.

2 U/V-Analysis

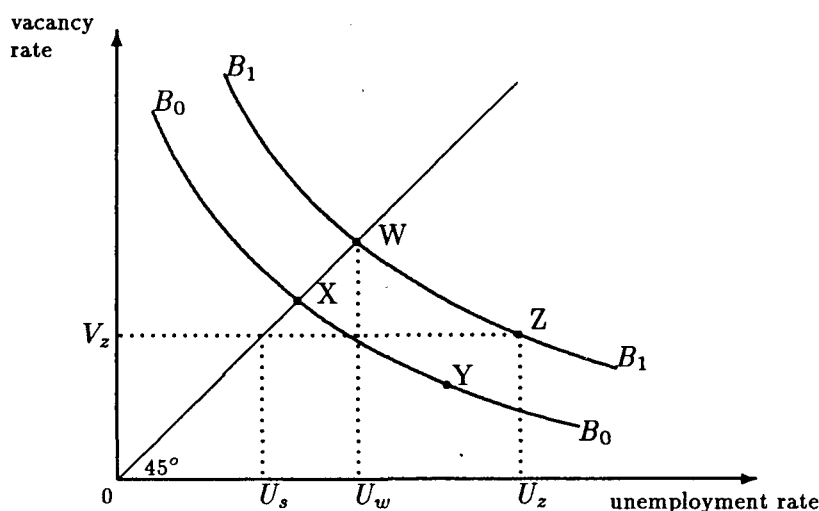
In this section the u/v -curve, i.e., the relationship between unemployment and vacancies is used as an analytical instrument to identify the extent and the causes of a possible increase of structural unemployment.

2.1 Theoretical Considerations

As it is well-known, the basic idea of the u/v -curve is as follows. For any given structure of the labor market, vacancies and unemployed persons may be related in a manner indicated

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Figure 1: Stylized Beveridge Curve



by the stylized curve B_0B_0 presented in *figure 1*. Locations on the 45° -ray represent situations in which the number of unemployed equals the number of vacancies. This means that unemployment is due to labor maladjustment since, in principle, there is a job for each unemployed. All positions on the Beveridge curve at which the number of unemployed exceeds the number of vacancies (i.e., all positions to the right of the 45° -ray) indicate that there is demand deficiency or that inflexible wages are too high. Hence, a movement on the Beveridge curve from, say, X to Y means that the increase in unemployment is mainly due to classical and/or Keynesian determinants. Worsening of the functioning of the labor market causes an outward shift of the Beveridge curve to, say, B_1B_1 . Moving from X to W indicates therefore, that the higher unemployment associated with this shift is the result of greater labor maladjustment rather than demand deficiency or classical factors. As has been mentioned, locations on the ray from the origin represent situations in which the number of unemployed equal the number of vacancies. In the present context, this amount of unemployment (such as \overline{OU}_w for B_1B_1) is defined as structural/frictional unemployment. This is due to the notion that the labor market is not able to match the unemployed to the existing unfilled job openings. It should be pointed out that combinations on the 45° -ray are not necessarily optimal. If policy-makers are free to choose any point on the Beveridge curve, the optimal vacancy/unemployment-relation is where the marginal costs associated with another unemployed person (such as the output losses) equal those associated with another unfilled job (such as the costs of waiting in a longer queue or some inflationary pressure).¹

While the u/v -relation presented so far seems intuitively plausible, it is necessary to base it on a sound theoretical foundation in order to exploit its implications for the functioning of the labor market. Such a theory is developed in more detail in a companion paper and is sketched here very briefly.² The theory consists of three elements:

- (i) The search process seen from the viewpoint of the firm with a vacancy: Leaving aside standard aspects of an optimal level of production and employment, the firm faces the following problem. The firm is uncertain about the abilities of each applicant (which determine the worker's efficiency) but it knows the density function of these abilities

¹See Abraham (1983), Hamermesh and Rees (1988), and Jackman, Layard and Pissarides (1983).

²See Franz and Siebeck (1989).

prevailing on a suitably defined labor market. Moreover, there is a ^{minimum hiring} standard to be met by the applicant due to specific requirements or legal restrictions for the job under consideration. The firm is allowed to train workers but it has to incur training costs. In sorting out workers, the firm sets its minimum hiring standard endogenously, then evaluates expected training costs, and makes finally a wage offer. From this viewpoint two aspects are important for the matching process. First, the minimum hiring standard which may or may not be met by the job seeker, and, second, the wage offer made by the firm which may or may not be accepted by the applicant.

- (ii) The search process seen from the viewpoint of the job seeker: The applicant's decision is based on a conventional job search model. The job seeker maximizes expected wealth by accepting a wage offer which is not lower than the ^{reservation} wage. The individual contacts several employers submitting wage offers. The distribution of wage offers is the source of uncertainty: Although its parameters are known to the searcher, each offer is a realization of a random variable. Determinants of the reservation wage are the search costs, the unemployment benefits, the density function of wage offers, and the discount rate.
- (iii) The matching technology governing the labor market: The probability that a vacancy is filled can be decomposed into two probabilities, namely that an unemployed person contacts an employer with a vacancy, and the probability that a match is formed conditional on a contact between both searchers (*contact* and *contract* probability, respectively). Factors influencing the first probability are the number of unemployed persons and vacancies and the availability of information about both groups. The probability that a match is formed depends on the probability that the applicant meets the minimum hiring standard and that the reservation wage does not exceed the wage offered by the firm.

The Beveridge curve can then be derived by making use of the identity that the change in the number of unemployed persons equals the difference between (exogenous)³ inflows into and outflows from unemployment. The foregone analysis concerns the outflows from unemployment to employment which is the number of vacancies times the probability that a vacancy is filled with an unemployed applicant. These relationships constitute the Beveridge curve and various sources for possible shifts of the u/v -curve can be identified:

- (i) The Beveridge curve shifts unambiguously outwards if the probability that a contact is made decreases. This may be due to a lower search intensity of the job seeker induced by higher unemployment benefits.⁴
- (ii) On the other hand, persons with a long duration of unemployment may run out of unemployment benefits and, therefore, intensify searching (the *contact* probability increases) and lower their reservation wage (the *contract* probability increases). From this one would conclude that a higher share of long-term unemployed causes an inward shift of the u/v -curve. If, however, firms use unemployment as a screening device in order to identify the unknown productivity of the applicant, then a higher share of long-term unemployed lowers the *contract* probability, i.e., we face an outward shift of the Beveridge curve. Hence, the total effect of the variable: share of long-term unemployed on the u/v -curve is ambiguous.⁵

³See Akerlof, Rose, and Yellen (1988) for an analysis of separations.

⁴These results are also obtained by Jackman, Layard and Pissarides (1983) and Jackman and Roper (1985).

⁵See also Budd, Levine, Smith (1987) for this argument.

- (iii) The *contact* probability decreases when the regional dispersion between unemployed persons and vacancies increases because the concomitant greater information gap causes a malfunctioning of the matching process. On the other hand, the effect of such higher imbalances on the *contract* probability may be ambiguous. Consider the following example with two regions “south” and “north” for short, where south is a nice region with high standards of living and north is just the opposite. If the unemployed are located in the north and now vacancies are also opened in the south rather than only in the north this may *ceteris paribus* facilitate matching because the attractiveness can be viewed as a higher wage offer. Of course, the opposite may hold for the unemployed who are in the south. Moreover, a greater regional dispersion may imply higher (non-pecuniary) costs of changing location for the unemployed which lowers his or her willingness to accept a wage offer from a firm in a far distant region.
- (iv) An existing vacancy may not be filled even if an applicant shows up. First, the job seeker may not meet the minimum hiring standard due to several imperfections. He or she may not have the profession required for the job in question, his or her work experience is too short or is evaluated badly by the former employers. In short, this is called a “qualifications mismatch” in the sense that a vacancy is not filled by an (unemployed) applicant because his or her qualifications are inadequate compared to the requirements for the work place under consideration. Leaving aside a qualifications mismatch, higher qualifications (acquired, for example, by some training programs organized by the labor office) do not necessarily mean a higher *contract* probability: On the one hand, they increase the probability that the applicant meets the requirements set by the firm but, on the other hand, they raise the applicant’s reservation wage.

2.2 Empirical Analysis

The empirical investigation starts with a data analysis concerning the u/v -relationship. Official figures of vacancies include only those vacancies reported to the labor office. In the absence of other reliable data we attempt to adjust these data by dividing them by the fraction of new hires managed by the labor office. A correct measure of this ratio is also not available. Therefore we approximate it with the ratio of cumulated inflows of vacancies during one year to the sum of new hires also during the same year. The time series of this variable varies procyclically with a decreasing trend since 1969. The shortcomings of this approximation are obvious. Among other problems it assumes an equal duration of all vacancies regardless of whether they are registered at the labor office or not. *Figures 2 and 3* display, for 1962 – 1988, the u/v -curve using official and corrected vacancy data, respectively.⁶ A rough inspection of both figures reveals that a possible shift of the Beveridge curve is more obvious for corrected vacancy data. It has been shown elsewhere, however, that the u/v -curve based on official data exhibits shifts, too.⁷

⁶One might consider to correct data on unemployed persons, too, because official data contain only those unemployed who register as such at the labor office. Therefore they do not include discouraged workers, for example. It is not clear, however, to what extent those people are really looking for a job as required by the theoretical underpinning of the Beveridge curve. Therefore we stay with the official unemployment data in this study. See Franz (1987 a) for an analysis with corrected unemployment data.

⁷See Franz (1987 a) for details.

Figure 2 : Beveridge Curve (official data for vacancies)

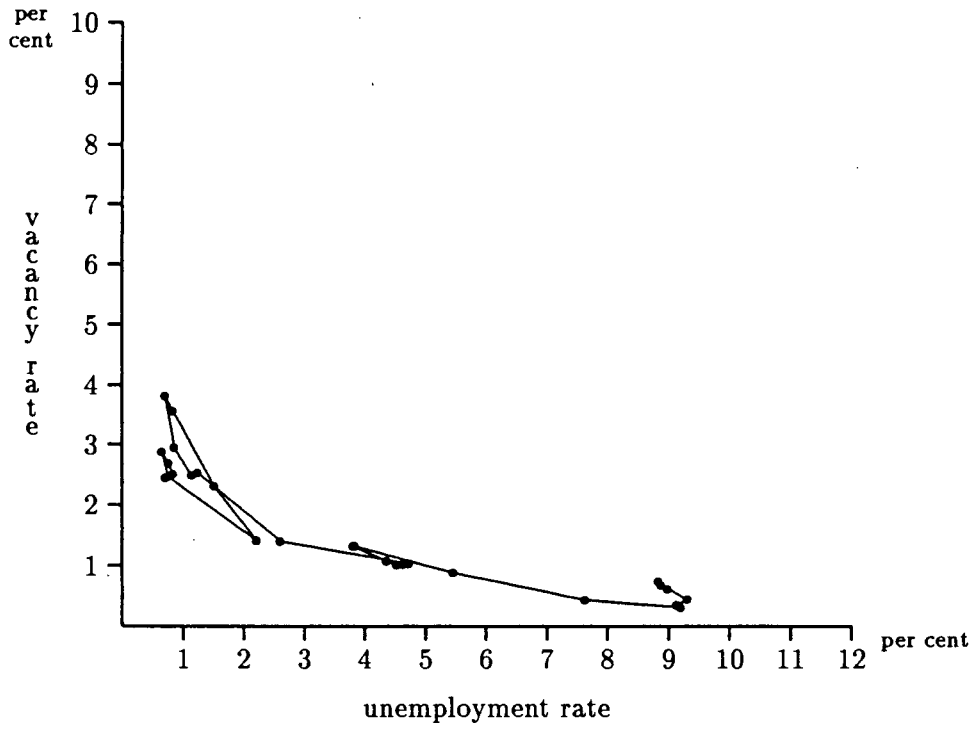
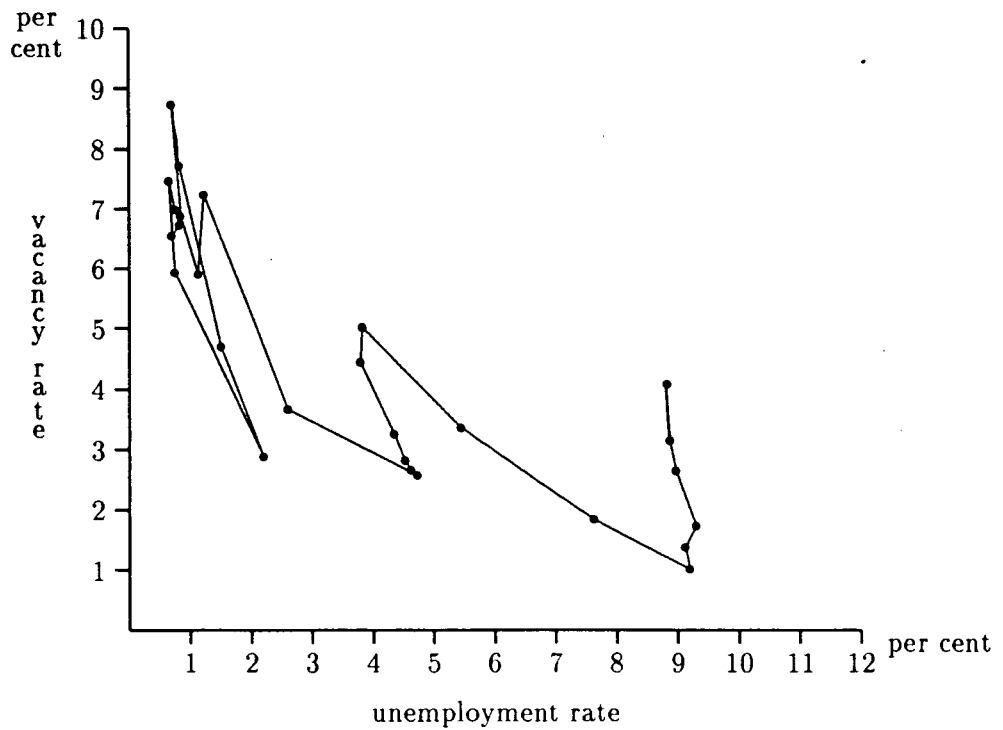


Figure 3 : Beveridge Curve (corrected data for vacancies)



When estimating the u/v -curve we used both *OLS* and Instrumental Variables estimation because unemployment and vacancies are determined jointly so that vacancies as the explanatory variable may not be truly exogenous. The results, however, differ only negligibly; hence, we chose to use *OLS* estimates. Moreover, we experimented with different linear and non-linear relationships. Most explanatory power (in terms of the square of the correlation coefficient and the sum of squared residuals) was obtained by using a log-linear form, i.e.,

$$\ln u_t = \alpha_0 + \alpha_1 \ln v_t + \varepsilon_t \quad (1)$$

where u_t = official unemployment rate
 v_t = corrected vacancy rate, i.e., vacancies divided by employed persons
 ε_t = residual.

Table 1 displays the results of this data analysis. Possible shifts of the Beveridge curve are taken into account by intercept and slope dummies: $D74$ ($D82$) is unity since 1974 (1982) but zero before these years. We also introduced either the lagged endogenous variable or the first difference of $\ln v$ in order to allow for partial adjustment and cyclical variations (not reported in *table 1*). While $\Delta \ln v$ turned out to be insignificant, $\ln u_{t-1}$ did not always lack significance. In any case, however, the dummies retained their significance and approximate values displayed in *table 1*.

Although the dummies are in accordance with the hypothesis of an outward shift of the Beveridge curve, these results should be viewed with some care. For example, since 1982 the sum of the coefficients associated with $\ln v$ is not significantly different from zero. An inspection of *figure 3* suggests that this zero slope may reflect the outward shifting Beveridge curve in those years. Alternative explanations, however, cannot be ruled out for certain such as that either a Beveridge curve simply does not exist any longer or that we are moving on an anticlockwise loop not adequately modelled (despite several efforts as mentioned above).

Summing up, several data deficiencies and methodological problems cloud the issue. There is weak evidence for outward shifts of the Beveridge curve. If so, the next relevant question is what caused these shifts?

3 Lessons from a Rationing Model

In this section we make use of the evidence for or against higher structural unemployment provided by a macroeconomic rationing model. Since a more detailed description of the model and its results is presented elsewhere, we very briefly outline the central idea of this approach.⁸

3.1 Basic Structure of the Model

When wages and prices are not adjusting fast enough to clear markets at any instant of time, some form of rationing is observed. On each micro market for goods transacted quantities can be constrained by demand YD , productive capacity YC , or by available labor YS . Rationing on each of N micro markets can therefore be described by:

$$Y_i = \min(YD_i, YC_i, YS_i), \quad i = 1, \dots, N. \quad (2)$$

⁸For more details the reader is referred to Entorf, Franz, König, Smolny (1989) and Franz and König (1989) on which the following considerations draw.

Table 1: Estimates of the Beveridge Curve 1967 – 1988^{a)}

Explanatory Variables	Dependent Variable			
	$\ln u_t$			u_t
	(1)	(2)	(3)	(4)
constant	2.89 (11.0)	2.14 (21.5)	1.58 (8.1)	0.26 (0.8)
$\ln v_t$	-1.32 (6.8)	-1.12 (18.0)	-1.04 (17.7)	
$1/v_t$				2.08 (2.4)
$\ln SLU$			0.18 (3.1)	
SLU				0.06 (2.6)
$D74$				2.45 (7.0)
$D82$				3.00 (5.0)
$D74 * \ln v_t$		0.55 (9.0)	0.52 (10.1)	
$D82 * \ln v_t$		0.62 (7.2)	0.47 (5.5)	
\bar{R}^2	0.68	0.97	0.97	0.97
DW	0.33	2.37	2.25	2.17
SER	0.50	0.16	0.13	0.57
SSR	5.00	0.44	0.28	5.44

^{a)} See text for explanation; t -values in brackets; SLU denotes the share of long-term unemployed; SER is the standard error of regression and SSR the sum of squared residuals.

In the absence of labor hoarding transacted labor (L) is the minimum of labor (LD) needed to produce YD , labor that can be employed by existing capital (LC) and of labor supply (LS):

$$L_i = \min(LD_i, LC_i, LS_i), \quad i = 1, \dots, N. \quad (3)$$

These min-conditions hold for micro markets. If the statistical distribution of demand and supply on the micro markets follows a joint log-normal distribution, aggregate transaction can be approximated by a CES-type function of the aggregate concepts of demand and supply denoted by:

$$L = [LD^{-\rho} + LS^{-\rho} + LC^{-\rho}]^{-1/\rho} \quad (4)$$

with $L \leq \min(LD, LC, LS)$ where the inequality sign holds for all finite values of ρ . The parameter ρ reflects the mismatch between demand and supply components on micro markets. For $\rho \rightarrow \infty$, the equation tends to the usual min-condition, i.e., the aggregate economy is subject to only one of the constraints.

The variables YC and LC are explained on the basis of a technology which can be characterized by ex-ante substitution possibilities but ex-post limitationality. More specifically, we assume an ex-ante CES-production function with constant returns to scale (K denotes the capital stock and γ stands for technical progress).

$$YC = \gamma[\delta(e^{\gamma_l(t)} \cdot LC)^{(\sigma-1)/\sigma} + (1-\delta)(e^{\gamma_k(t)} \cdot K)^{(\sigma-1)/\sigma}]^{\sigma/(\sigma-1)}. \quad (5)$$

When prices (P) are set as a constant mark-up on average production costs (such as wages W and user cost of capital Q) in the long run, firms can maximize profits by minimizing their input costs, which gives the following first order conditions:

$$A^* := (yc - lc)^* = const. + \sigma(w - \bar{p}) + (1 - \sigma)\gamma_l(t) \quad (6)$$

$$B^* := (yc - k)^* = const. + \sigma(q - p) + (1 - \sigma)\gamma_k(t) \quad (7)$$

Small-case letters denote logs of the variables. Optimal factor productivities are determined by the respective factor-product-price ratios and an efficiency term reflecting technical progress. Ex-post productive capacity is determined by fixed factor productivities and the stock of capital:

$$yc = B^* + k \quad (8)$$

$$lc = yc - A^*. \quad (9)$$

A disadvantage of the specification (2)–(4) may be seen in the inability to distinguish between capacity mismatch, i.e., the inadequacy of installed capital to match the composition of the demand for goods and mismatch between labor supplied and demanded due to differences in qualification profiles, regional immobility and other labor market inflexibilities. Since these different types of mismatch require different types of corrective policies, it is more appropriate to assume a two-stage process of firms' employment decisions.⁹ For the goods market we assume:

$$Y_i = \min(YG_i, YS_i) \quad \text{with} \quad YG_i = \min(YD_i, YC_i) \quad (10)$$

and, correspondingly, for the labor market:

$$L_i = \min(LG_i, LS_i) \quad \text{with} \quad LG_i = \min(LD_i, LC_i). \quad (11)$$

This means that the individual firm in a first step determines its labor demand in accordance with the restrictions of the goods markets and confronts in a second step its labor demand with available labor supply. If the minimum of lognormally distributed variables is itself approximately distributed lognormally, smoothing by aggregation results in a nested employment function:

$$L = [(LD^{-\rho_1} + LC^{-\rho_1})^{\rho_2/\rho_1} + LS^{-\rho_2}]^{-1/\rho_2}. \quad (12)$$

The parameter ρ_2 describes labor market mismatch, whereas ρ_1 captures capacity mismatch. Turning to the treatment of aggregate demand YD , private consumption, investment, exports and imports are endogenous variables, whereas government expenditures and housing

⁹See Gagey, Lambert and Ottenwaelter (1988), Lambert (1988), Franz and König (1989) and Entorf, König and Pohlmeier (1989).

investment are treated exogenously. Consumption depends on disposable income, the interest rate, and on a labor market indicator. The investment equation is based on the accelerator principle. Rationing is introduced in the following way. Excess demand for domestic goods will lead to additional imports to bypass the constraint, while on the other hand, excess demand on the world market will restrain German imports. The opposite may hold for exports: Domestic constraints will hinder foreign demand, while supply constraints on the foreign market may induce additional German exports. Rationing of the demand components other than exports and imports will be observed only in the case of simultaneous constraints on the domestic and the world markets. No significance of those effects was found. Therefore they may be regarded as rather small. Demand for exports (XD) and imports (MD) are calculated for a situation with no rationing on the domestic market. This gives the following identities for goods demand:

$$YD = C + I + G + XD - MD + \text{housing investment} \quad (13)$$

and for labor demand:

$$ld = yd - A^* \quad (14)$$

There are two central features of this model. Firstly, the model distinguishes proportions of firms being constrained by the demand for goods π_K , by existing capacities π_C or by available labor π_S , where

$$\pi_K = [(LC^{-\rho_1} + LD^{-\rho_1})^{(\rho_2 - \rho_1)/\rho_1} \cdot LD^{-\rho_1}] / L^{-\rho_2} \quad (15)$$

$$\pi_C = [(LC^{-\rho_1} + LD^{-\rho_1})^{(\rho_2 - \rho_1)/\rho_1} \cdot LC^{-\rho_1}] / L^{-\rho_2} \quad (16)$$

$$\pi_S = (LS/L)^{-\rho_2} \quad (17)$$

Secondly and more important for our considerations is the calculation of a so-called “structural rate of unemployment at equilibrium” ($SURE$), i.e., a situation of labor market equilibrium for which $LG = LS^{10}$:

$$SURE = 1 - 2^{-1/\rho_2} \quad (18)$$

In an analogous way a “structural rate of unused capacity at equilibrium” ($SUCE$) can be evaluated¹¹:

$$SUCE = 1 - 2^{-1/\rho_1} \quad (19)$$

$SUCE$ is calculated for an hypothetical situation of equilibrium (i.e., $LG = LS$) and absence of a mismatch on the labor market (i.e., $\rho_2 \rightarrow \infty$). Hence, $SUCE$ characterizes excess capacities exclusively due to rigidities and frictions on the goods market. In the presence of a labor market mismatch, however, one can calculate an analogous expression for $SUCE$ which also takes into account inflexibilities on the labor market.¹² It is defined as:

$$SUCEL = 1 - 2^{-[(1/\rho_2) + (1/\rho_1)]} \quad (20)$$

The difference between $SUCEL$ and $SUCE$ therefore, indicates, to what extent excess capacities, if any, are due to labor market imperfections.

¹⁰As with points X and W in figure 1, the $SURE$ is not an optimal unemployment rate. See Sneessens and Drèze (1986) for a general description of this concept which differs, however, from that employed by König and Entorf (1989).

¹¹König and Entorf (1989), p. 12.

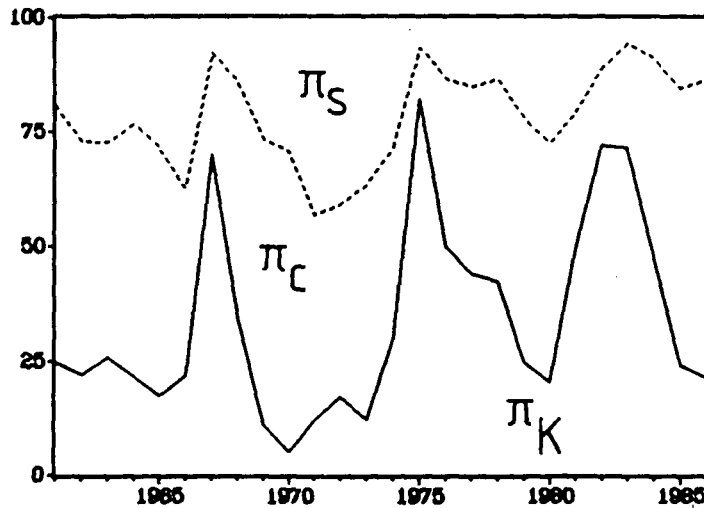
¹²König and Entorf (1989), p. 12.

3.2 Empirical Results

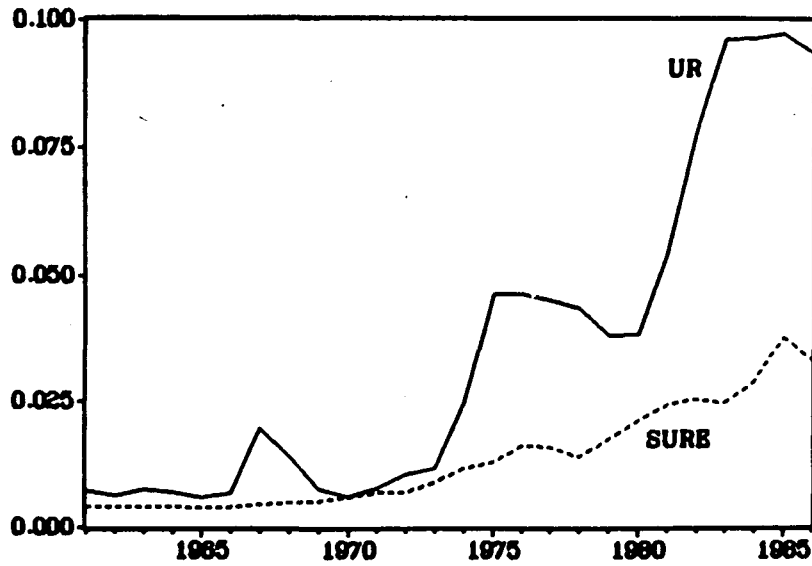
Referring to eqs. (15)–(17), figure 4 displays the shares of firms being either constrained by goods demand (π_K), existing capacities (π_C) or available labor (π_S). While the periods 1960–1966 and 1969–1974 are characterized by the preponderance of capacity and labor supply constraints, rationing from the demand side becomes dominant in recession periods with peaks in 1967, 1975, and 1982/83. In the course of a restrictive monetary and fiscal policy in the beginning of the eighties an investment squeeze took place, and hence to a growing extent existing capacities gain importance as a limiting factor. Turning to structural unemployment, figures 5 and 6 reveal the time pattern of *SURE*, *SUCE* and *SUCEL* together with the unemployment rate (*UR*) and the degree of capacity utilization (*UC*). We observe an increasing value of *SURE* indicating a greater importance of structural unemployment. This is confirmed by an inspection of the difference between *SUCEL* and *SUCE*. While *SUCE* remains, by and large, constant during the time period under consideration, this does not hold for *SUCEL*. The growing difference between both rates highlights possible spillovers from labor market imperfections to the underutilization of capacities.

Like the Beveridge curve and its possible shifts, the concept of the *SURE* and its estimation is everything but unambiguous or immune to attack. On the other hand, while the estimated values are subject to some imprecision the general outcome of an increase of the *SURE* holds regardless of which specification is used. Therefore, structural unemployment may in fact have gained importance. If so, what are the reasons?

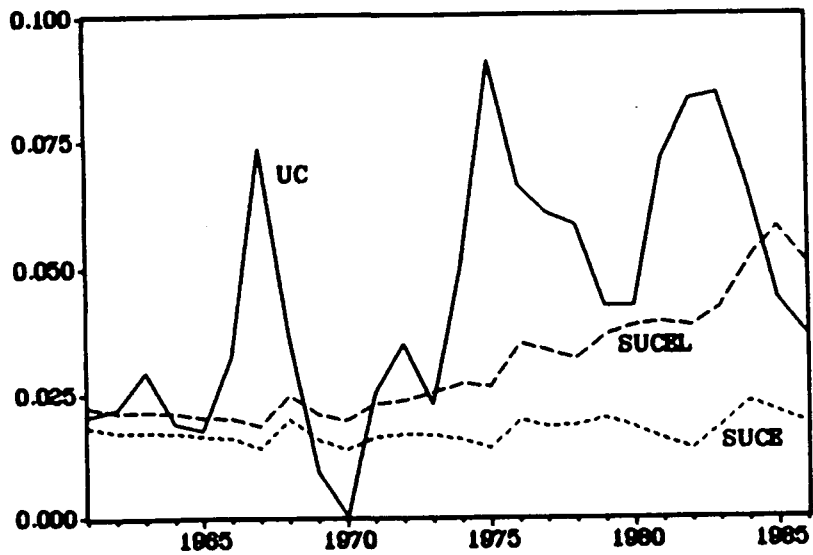
Figure 4: Share of Firms Being in Different Regimes



Unemployment Rate
 Figure 5: *SURE* and *UR*
 ↳ structural rate of unemployment at equilibrium



Capacity Utilization
 Figure 6: *SURE*, *SUCEL* and *UC*
SUCE = structural rate of unused capacity at equilibrium



Source of figures 4-6: König and Entorf (1989)

4 An Examination of Possible Causes

This section aims to provide an empirical assessment of various explanations for the increased maladjustments highlighted in the previous sections. As has been emphasized, economic theory offers a variety of reasons, but an empirical treatment is limited by the availability of adequate data.

The hypothesis that structural unemployment rose in the late 1970s and early 1980s rests on two distinctive but not mutually exclusive empirical assertions¹³:

- (i) There has taken place a more rapid structural change in these years than before. Put differently, a permanent increase in the pace of structural change has tended to raise the flows of people both into and out of unemployment and to enlarge the pool of those being unemployed between jobs.
- (ii) However, if the labor market were fully flexible adjustment mechanisms would sufficiently cope with the rise in structural change. As a second proposition, maladjustment on the German labor market not only has to exist to a non-negligible extent but must also worsened during this period.

To begin with, it is well documented that the first premise does not hold. Aggregate indexes of structural change do not support the hypothesis of a speed up in the pace of structural change. For example, *table 2* in a summary fashion displays an index which captures industrial variations in employment growth. The index (ED) is developed by Lilien (1982) and is defined as

$$ED = \left[\sum_i (\Delta \ln E_{it} - \Delta \ln E_t)^2 \cdot (E_{it}/E_t) \right]^{1/2}, \quad (21)$$

where E denotes employees and i refers to 8 industries of the manufacturing sector.

Table 2: Interindustrial Dispersion of Employment Growth

Time Period	1960– 1964	1965– 1969	1970– 1974	1975– 1979	1980– 1983
ED	2.64	3.21	3.21	2.29	1.85

Sources: Flanagan (1987), p. 181; Franz (1989), p. 333.

The declining trend of ED since 1975 is at variance with the proposition of a speed up in structural change. Therefore we turn to the second assertion namely the failure of labor supply to adjust to new patterns of labor demand.

4.1 Labor Mobility

Labor heterogeneity may be due to regional dispersions in the sense that jobs are located in other regions than the unemployed. These imbalances are, however, of minor importance if the unemployed are prepared to move. Therefore, we have to check two aspects:

- (i) Did regional dispersions between the unemployed and the vacancies increase during the past 15 years?

¹³See the paper by Flanagan (1987) and its discussion by J. P. Martin.

(ii) Did regional mobility of the unemployed decrease during the same time period?

To begin with, regional dispersion is measured by¹⁴:

$$M = \sum_i |u_i - v_i| \quad (22)$$

where u_i denotes the proportion of the unemployed who were located in region i and where v_i refers to the proportion of vacancies in region i . If $u_i = v_i$ for all i , M equals zero and indicates therefore that the co-existence of unemployed persons and vacancies is *not* associated with a *regional* dispersion between both but due to a qualifications mismatch, for example. Due to a lack of data this series can be calculated only since 1976 for all 141 regional labor market districts ("Arbeitsamtsbezirke").¹⁵ Col. (1) of *table 3* displays an increase of this measure of 37 percent between 1976 and 1985 with the major shift between 1976 and 1979 (27 percent). Despite some variation of this measure in the eighties, no clear cut positive or negative trend can be identified. Therefore regional mismatch does not seem to be able to contribute much to the outward shift of the Beveridge curve or the *SURE* in this decade.¹⁶

Table 3: Mismatch Indicators^{a)}

Year	Regional Dispersion	Professional Dispersion	Share of Unskilled Unemployed	Share of Unskilled Employed	Share of Unskilled Vacancies	(3)-(5)
	(1)	(2)	(3)	(4)	(5)	(6)
1976	0.359	0.730	52.3	34.4	47.3	5.0
1977	0.381	0.701	53.2	32.9	45.5	7.7
1978	0.443	0.707	54.4	30.7	44.0	10.4
1979	0.457	0.705	53.3	29.3	46.1	7.2
1980	0.438	0.721	54.0	28.2	41.3	12.7
1981	0.455	0.713	54.8	28.7	34.3	20.5
1982	0.456	0.703	51.8	29.3	29.8	22.0
1983	0.422	0.610	50.8	28.6	30.4	20.4
1984	0.476	0.592	49.4	27.6	30.5	18.9
1985	0.492	0.628	49.7	26.5	29.0	20.7
1986	0.462	0.625	50.8	25.7	36.5	14.3
1987	0.461	0.591	50.5	24.7	27.7	22.8
1988	0.444	0.573	50.8	-	27.4	23.4

^{a)} See text for definitions and sources.

Turning to regional mobility, *figure 7* displays two time series namely the growth rate of labor migration within the FRG and the growth rate of unemployment.¹⁷ As can be seen,

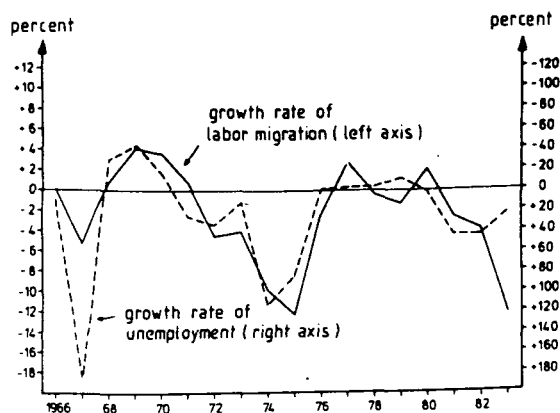
¹⁴See also Jackman, Layard, Pissarides (1983), Jackman and Roper (1986) and Franz and König (1986).

¹⁵These calculations are based on official unemployment and vacancy data. Source: Franz and König (1986), calculations by the author based on data from: Amtliche Nachrichten der Bundesanstalt für Arbeit, various issues.

¹⁶A similar time pattern of M is obtained when u_i and v_i enter the dispersion measure with weights such as the share of employment and the like.

¹⁷"Labor migration" refers to the migration of members of the labor force between the 11 states of the FRG. Unfortunately, data after 1983 are not comparable with previous data due to an important change of definitions. Moreover, a time series of migration of unemployed persons is not available.

Figure 7: Migration and Unemployment



Source: Birg (1985); calculations by the author.

inspection of both series suggests that the growth rate of unemployment is highly correlated with the growth rate of migration and is the leading variable.¹⁷ More specifically, to a major extent variations of labor migration seem to be a cyclical phenomenon.¹⁸ On the other hand there is a negative trend since 1970. Considering entries into states of the FRG Karr et al. (1987) have shown that an index of these entries of members of the labor force declined from 1970 = 100 to 1984 = 44. In the beginnings of the seventies this rapid slowdown may be due to an immigration stop for non-EC guestworkers enacted in 1973.¹⁹ But even if we restrict the analysis to the period between 1975 - 1984 a more than 20 percentage points decrease of the index is observed (1975 = 67).

While several empirical studies wind up with the conclusion that regional mobility of unemployed persons is higher compared with employees²⁰, it is unknown whether the time pattern of the regional mobility of the unemployed looks similar to the one outlined above. However, in follow-up studies of the unemployed undertaken in 1975 and 1983, respectively, there is a slight increase of the proportion of long-term unemployed who answered that they would (perhaps) be prepared to move to different areas (1975: 28 percent, 1983: 32 percent).²¹ This is, of course, only very scattered evidence which does not allow firm general conclusions. It points, however, to the possibility that regional labor mobility of the (long-term) unemployed may not possess as sharp and negative a trend as in the case for employees.

What, if anything, can be learnt from these observations? There is evidence for an increased regional mismatch especially in the late 1970s. Moreover, regional labor mobility

¹⁷See Franz (1989) for a more detailed analysis including causality tests.

¹⁸Karr et al. (1987) estimate that a one percent decline of the utilization of labor leads to a 3-4 percent decrease of regional labor mobility.

¹⁹See Franz (1981) for a theoretical and econometric analysis of in- and outflows of foreign workers.

²⁰See the studies quoted in Karr et al. (1987).

²¹Brinkmann (1987), p. 295.

What, if anything, can be learnt from these observations? There is evidence for an increased regional mismatch especially in the late 1970s. Moreover, regional labor mobility did decline although it is less obvious whether this holds for unemployed, too. In summary, labor mobility may be able to account for the rise in structural unemployment, but the extent of this contribution does not seem to be overwhelming.

4.2 Qualifications Mismatch

As a first attempt to measure a qualifications mismatch a corresponding measure to eq.(22) is calculated where the regional classification is replaced by 327 professions. As col. (2) of table 3 indicates, this series, by and large, remains constant between 1976 and 1982 and drops sharply afterwards. This stands in marked contrast to the increasingly popular argument that the unemployed to a growing extent do not meet the requirements concerning qualifications.

One reason for this discrepancy may be that "professions" do not sufficiently proxy "qualifications": The unemployed person may be a toolmaker – a profession many firms are looking for – but he may not be acquainted with computer aided machines – a requirement becoming increasingly widespread, to quote only one popular example.

In the absence of sufficient time series about the qualifications of unemployed persons and vacancies, we try to capture at least a possible mismatch between skilled and unskilled unemployed and vacancies, respectively. More specifically, we firstly calculate the share of unskilled unemployed among all unemployed and, secondly, the corresponding series for employed people and vacancies, respectively, where unskilled employment may mirror the respective situation concerning job opportunities. As can be seen from cols. (3) and (4) of table 3, the share of unskilled unemployed remains roughly constant at about 50 percent during 1976 – 1987, whereas the share of unskilled employees declines from one third to one quarter.²³ The corresponding development of unskilled vacancies is even more rapid. Crude as they are, all skill indicators point to an emerging wedge between supply of and demand for unskilled labor (such as col. (6) in table 3).

As has been outlined in the theoretical section long-term unemployment may also refer to some qualifications mismatch if firms use unemployment experience as a screening device. It has been stressed, however, that long-term unemployment may also facilitate the matching process if long-term unemployed reduce their reservation wage. Figure 8 displays the share of the unemployed with an unemployment duration of one year and more among all the unemployed.²⁴ This share shows a rapid rise until 1985 and remains roughly constant at the high level of about 35 percent. Between 1975 and 1983 this share triples while the unemployment rate doubles.

What are the reasons for this development? In the process of job matching over time a cohort of unemployed will develop which consists mainly of unemployed people with less favourable qualifications.²⁵ The longer and the more severe the unemployment period is the

²³ "Unskilled" is defined as the absence of a complete vocational education (including technical college or university degree). Calculations are based on data in: M. Tessaring (1988), *Arbeitslosigkeit, Beschäftigung und Qualifikation*, *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung*, Vol. 1/1988 and *Amtliche Nachrichten der Bundesanstalt für Arbeit, Arbeitsstatistik 1988 – Jahreszahlen*, p. 88. The data for unskilled vacancies are taken from so called "structural analyses" also contained in the *Amtliche Nachrichten der Bundesanstalt für Arbeit*, various issues.

²⁴ Sources: Institut für Arbeitsmarkt- und Berufsforschung; *Amtliche Nachrichten der Bundesanstalt für Arbeit*; calculations by the author. These data differ slightly from those officially published because we corrected for the structural break in 1981.

²⁵ See also Budd, Levine and Smith (1987).

Figure 8: Share of Long-term Unemployment ^{a)}



^{a)} See text for definition and sources.

We very briefly check these premises in turn:

- (i) In order to gain insight into the dynamic structure of how previous unemployment rates (UR) determine the present share of long-term unemployment (SLU) the following simple regression is estimated using the Almon - technique for distributed lag estimation:

$$SLU_t = a_0 + \sum_{i=0}^n \lambda_i UR_{t-i} + \varepsilon_t \quad (23)$$

As a result more than 90 percent of the variance of SLU can be explained by this crude specification. The pattern of the weights follows an inverted U with the maximum in $t - 4$ and $t - 5$ ($\lambda_4 = \lambda_5 = 0.87$; $\sum \lambda = 3.3$).²⁵ Hence, SLU is positively influenced by the history and severeness of unemployment.

- (ii) It is also well documented that exit probabilities decline with unemployment duration. Controlling for heterogeneity it can be shown that the shape of the hazard function for unemployed youths is log-normal and that state dependence rather than occurrence dependence is the problem.²⁶ Wurzel (1988) finds evidence for a Weibull distribution for the hazard function thus indicating that escaping from unemployment becomes the more unlikely the longer the duration of unemployment. Note that this conclusion holds, too, when the age of the unemployed is taken into account. This point will be considered again.

²⁵See Franz (1987 b), pp. 113-114 for more details. The regression covers the time period 1961 - 1986 and is based on annual data.

²⁶See Franz (1982 b).

for the hazard function thus indicating that escaping from unemployment becomes the more unlikely the longer the duration of unemployment. Note that this conclusion holds, too, when the age of the unemployed is taken into account. This point will be considered again.

- (iii) In an empirical study based on Austrian micro-data Ebmer (1989) investigates the recruitment behaviour of firms. Using a bivariate logit model for the employer's and the job seeker's decision he finds evidence (for Austria) that recruitment possibilities are largely reduced by long-term unemployment and recurrent spells as well as by various "unfavourable" characteristics such as age, physical disabilities, and the like. Thus, there is reason to suspect that firms in fact use unemployment as a screening device.

Summing up, it should be stressed that in the absence of adequate data it is difficult to find evidence for or against a qualifications mismatch. There seems to be a qualifications mismatch in the sense that persons with a long duration of unemployment are viewed as less qualified candidates due to a high depreciation of (specific) human capital. Moreover, in contrast to the constant share of unskilled unemployed the corresponding share of unskilled employed has been declining. Hence, unskilled unemployed face greater difficulties to leave the unemployment register.

4.3 Employer Choosiness

Another argument for explaining the speed up in structural unemployment widely voiced in the media is that employers have become more choosy in selecting workers and/or unemployed persons in accepting jobs. In the theoretical section this proposition was discussed within the context of the qualifications requirements determined by the firm and the reservation wage of the unemployed. With respect to employer choosiness it is especially claimed that the extension of legislative protections against dismissal lead to a more intensive screening of the applicants for a job.

If increased employer choosiness was the reason for the observed outward shift of the Beveridge curve, the duration of vacancies (cyclically adjusted) should have risen. Figure 9 shows the time series of the average duration of vacancies (DV) 1973 - 1987. The following regression is a crude attempt to disentangle cyclical and trend movements of this series:

$$DV_t = 4.88 - 1.43 \cdot UR_t + 0.499 \cdot TIME \quad (24)$$

(2.4) (4.8) (2.8)

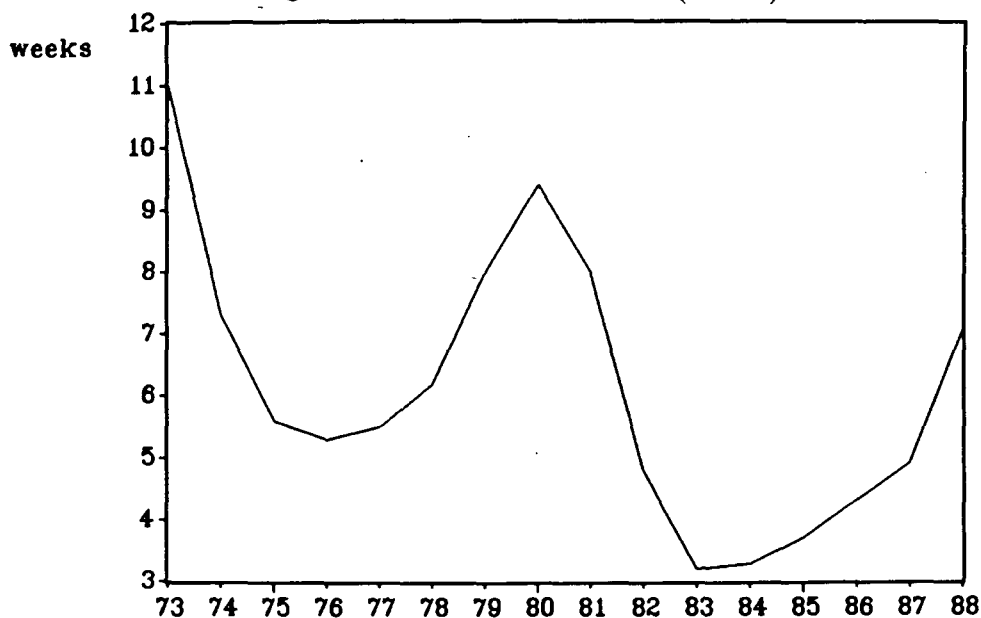
$$\bar{R}^2 = 0.901, \quad DW = 2.20; \quad \rho = 0.420$$

(1.6)

where ρ denotes the first order autocorrelation coefficient and where UR is instrumented by lagged values of UR and vacancy rates. In contrast to other countries such as the U.K. the average duration of vacancies increases over time. Without putting too much emphasis on this result, the significant positive time trend does not contradict with the employer choosiness explanation.

Moreover, the high and increasing duration of unemployment of older workers is often viewed as another piece of evidence. In order to get more insight *table 4* compares some characteristics of stocks and flows of unemployment. Although incomplete vocational training, by and large, does not differ tremendously between stocks and flows (except flows into

Figure 9: Duration of Vacancies (Weeks)



Source: K. Ermann (1988), *Arbeitsmarktstatistische Zahlen in Zeitreihenform. Jahreszahlen für die Bundesrepublik Deutschland - Ausgabe 1988 - Beiträge aus der Arbeitsmarkt- und Berufsforschung* 3.1, Nürnberg, p. 180-181.

employment) this observation is at variance with the importance of age and physical disabilities. While some 5 percent of all inflows into the unemployment pool are more than 54 years old, this number quadruples for the stock of long-term unemployed and is slightly more than one half for flows into employment.²⁸ Moreover, unemployed persons with health deficiencies are overrepresented in the stock of unemployed compared with the flows. With respect to age, these figures confirm the well-known result that for the elderly the risk of becoming unemployed is much lower compared with youths. The reverse holds, however, for the duration of unemployment.²⁹ It is argued that this phenomenon is due to institutional regulations which make it difficult, if not impossible, to lay off older workers. The same laws which protect the elderly prevent firms from hiring them. Recent experience in the FRG with fixed-term contracts casts some doubts on this argument, however. In an empirical study it has been shown that only a very limited number of new hires were initiated by those non-standard forms of employment and, more importantly, virtually no (older) unemployed persons benefitted from those fixed-term contracts.³⁰ Therefore, a better explanation of the high share of elderly people among all long-term unemployed may be that firms view them as incapable of coping with new technical developments and/or fixed costs of training are seen to be too high to justify hiring of these persons. Indeed, König and Entorf (1989) argue that labor has increasingly become a fixed factor and they claim that the rise of the *SURE*, to be discussed in section 5, can to a considerable extent be explained by this fixity.

Summing up, while there might be increased employer choosiness it seems that it is less due to effects of dismissal protection but more due to fixed costs of labor due to training

²⁸In 1987 nearly 9 percent of total labor force is in the age 55-65 years.

²⁹See Evans, Franz and Martin (1984) for an international comparison.

³⁰See Büchtemann and Höland (1988) for more details.

Table 4: Structure of Unemployment 1987 (Percentages)

Group of unemployed	More than 54 years old	With health deficiencies	Without complete vocational training
(1)	(2)	(3)	(4)
All unemployed	13.5	20.0	50.5
Long-term unemployed	21.8	22.2	46.4
Inflows	5.2	11.9	44.1
Outflows	5.0	11.1	41.9
Outflows into employment	2.9	9.2	38.2

Sources: Bach and Egle, *Die öffentliche Arbeitsvermittlung*, mimeo. Mannheim 1989, p. 34; Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung, *Jahresgutachten 1988/89*, Tables 10 and 11; calculations by the author.

and absence from work³¹ which lead firms to intensify search and screening efforts. Parenthetically we note that some of the persons with unfavourable characteristics are (or have been) employed only due to social reasons: Firms may be reluctant to fire those employees (such as alcoholics) bowing to social norms saying that it is an improper and/or unsocial thing to do so or because other employees largely do the work of these people in order to protect them. In the case of bankruptcy or larger dismissals these persons find themselves in the unemployment pool, of course, with virtually no chance to escape from unemployment.

4.4 Search

As has been outlined in the theoretical section reduced search intensity supported by generous unemployment benefits is another candidate especially put forward in the public discussion concerning the causes of unemployment. In order to be capable of explaining the outward shift of the Beveridge curve and the increase of the *SURE* search intensity must have decreased during the past 15 years. If so, we have to check whether the eligibility and/or the replacement ratio of unemployment benefits have changed and facilitated a longer search process.

To begin with unemployment benefits, several pieces of evidence are offered which give rise to the presumption that unemployment benefits are probably not a good candidate to explain search behaviour.

- (i) The share of unemployed receiving unemployment benefits (“Arbeitslosengeld”) declined substantially from 65.8 percent to 42.2 percent between 1975 and 1988. The respective figures for unemployment assistance (“Arbeitslosenhilfe”) – which is lower and the entitlement to which is restricted – are 10.3 percent and 23.6 percent.³² Even if both types of unemployment compensation are taken together, a decrease of the share of 10 percentage points is observed.
- (ii) Though not very conclusive, the most commonly calculated aggregate replacement ratio, i.e., unemployment benefits per unemployed recipients divided by net income per

³¹Due to maternity leave or educational leave, for example.

³²Source: Amtliche Nachrichten der Bundesanstalt für Arbeit, *Jahreszahlen 1988*, pp. 34–35, 238–239, 242–243; calculations by the author.

employee – decreased from 54 percent to 48 percent between 1975 and 1988.³³ These figures are in accordance with figures obtained by others such as Bruche and Reissert (1985) or Burtless (1987) which exhibit stability through the early 1980s and a slight decline then. Moreover, it is hard to see why much of the spurt in unemployment in 1975 and 1981 can be accounted for by a system of unemployment insurance which remained virtually unchanged for two decades.

- (iii) Data on unemployment duration which distinguish between persons who receive unemployment benefits and those who do not, do not support the assertion that the duration is longer for the first group. *Table 5* gives rise to the suspicion that just the opposite is true.
- (iv) The econometric evidence of the effect of unemployment benefits on the duration of unemployment is mixed. Using panel data Wurzel (1988) finds no indication that receipts of unemployment benefits exert a negative influence on the re-employment probability. Hujer and Schneider (1989) in a study based also on panel data conclude that the entitlement to unemployment benefits does not affect exit probabilities. Franz (1982 a) evaluates in an econometric analysis based on individual data that the reservation wage of unemployed persons increases only marginally if the person is entitled to unemployment benefits. Finally, Franz and König (1986) calculate complete spell durations using a Markov approach to estimate the transition probabilities. For males until 1981 the complete spell length is slightly higher for those entitled to benefits. Since 1982, however, there is a duration reversal such that the duration of unemployment is lower for those males entitled to benefits. This reversal is valid for females throughout the period since 1974. The same authors conclude from an aggregate time series study that there might be a positive effect of benefits and entitlement on unemployment, but the regression results are anything but robust with respect to differing variable definitions, time period under consideration, and the like [König and Franz (1978)].

Summing up, given this mixture of results it is extremely difficult to draw firm conclusions. At best, unemployment benefits exert a small positive effect on unemployment duration. Therefore, unemployment benefits do not seem to be the most promising candidate for explaining a more than negligible part of the development of structural unemployment.

In the absence of time series data about search behaviour of unemployed persons, it is impossible to check whether search intensity has fallen during the past 15 years. There is, however, empirical evidence which indicates that long-term unemployed may reduce search or even give up to look for a job due to discouragement.³⁴ Therefore the increasing share of long-term unemployed may be negatively correlated with search intensity.

5 The SURE and the Beveridge Curve Reconsidered

In the previous section several causes of a possible increase of mismatch have been investigated empirically. The results are, however, partly inconclusive and somewhat speculative. The

³³Sources: Institut der deutschen Wirtschaft, *Zahlen zur wirtschaftlichen Entwicklung in der Bundesrepublik Deutschland, 1989 (Table 30)*; Amtliche Nachrichten der Bundesanstalt für Arbeit, *Jahreszahlen 1975 and 1988*. Unemployment benefits per worker are calculated as the ratio: expenditures of the Federal Labor Office for "Arbeitslosengeld" (except contributions to health insurance and to old age pensions) divided by the number of recipients to net monthly income per employee.

³⁴See Noll (1985), p. 294.

Table 5: Duration of Unemployment by Sex and Receipt of Unemployment Benefits (Months)

	1980	1988
Incomplete Duration		
Recipients: Males	5.3	8.0
Females	5.4	8.0
Non-Recipients: Males	12.0	10.5
Females	12.3	14.4
Complete Duration ^{a)}		
Recipients:	5.5 ^{b)}	4.9
Non-Recipients:	8.9 ^{b)}	9.1

^{a)} Taken from unemployed leaving the unemployment register;

^{b)} 1982

Sources: Amtliche Nachrichten der Bundesanstalt für Arbeit 3 (1989) p. 347, 2 (1981), p. 176 (incomplete duration), 11 (1988), p. 1563, 11 (1983), p. 1397 (complete duration); calculation by the author: for the last duration interval ("2 years and more") 36 months have been assumed.

obvious question is whether more insight can be gained by an econometric analysis of the Beveridge curve and of the *SURE* discussed in section 2. More specifically, to what extent can the aforementioned candidates for a mismatch account for the outward shift of the Beveridge curve and/or the increase of the *SURE*?

Unfortunately, such an econometric examination must be narrowed down to a very scattered treatment. Reliable data for most of the mismatch variables in question are available only through the mid-seventies. Hence, even a modest estimation winds up with some 10 degrees of freedom which is insufficient by all conventional standards. Therefore, only a few econometric studies can be discussed which are not (so much) plagued by this problem.

To begin with the development of the *SURE*, König and Entorf (1989, p. 14) obtain the following regression result for the parameters ρ_1 and ρ_2 [see eq. (12)]:

$$\begin{aligned} \rho_1 &= 51.3 - 4.89 \cdot MM \\ &\quad (6.3) \quad (2.5) \\ \rho_2 &= 538.3 - 840.7 \cdot NWC - 50.4 \cdot RR \\ &\quad (3.2) \quad (3.4) \quad (2.5) \end{aligned}$$

$$\bar{R}^2 = 0.997, \quad DW = 1.64 \quad \text{Sample period: 1961 - 1986}$$

where *MM* stands for a mismatch indicator of the goods market, *NWC* is the share of non-wage labor costs among all labor costs and *RR* denotes the replacement ratio of unemployment benefits. The latter two variables and their influence on the labor market mismatch indicator ρ_2 deserve some comments.

NWC is, in the study by König and Entorf, designed to approximate the higher degree of fixity of labor due to legislative employment protection (see section 4.3) and higher investments in firm-specific human capital undertaken by the firm, to mention two examples. While the *NWC* variable exhibits a strong positive trend, the *RR* variable is, by construction,

subject to cyclical variations.³⁵ The explanatory power of NWC depends, of course, on the suitability of this variable as a proxy for fixity of labor which is difficult to infer. But if so, the significant positive impact of NWC on the rise of the *SURE*³⁶ supports our suspicion of a shift in hiring patterns in the sense that employers appear to have become choosier. Turning to unemployment benefits, a simulation experiment³⁷ which fixes *RR* on its average value $\overline{RR} = 35.8$ percent leaves the *SURE* virtually unchanged until 1978. From 1979 to 1983 the simulated *SURE* is slightly lower than the *SURE* estimated with actual values of *RR*. Afterwards, however, since $RR < \overline{RR}$, the simulated *SURE* exceeds its actual value by a considerable magnitude. In other words, while the development of *RR* does not much contribute to an explanation of the rise of *SURE* in periods other than after 1983, the *SURE* of that time period would have been much higher had there not been a declining *RR*.

Turning to the outward shift of the Beveridge curve, several attempts have been undertaken to replace the dummies reported in *table 1* by economic variables. These efforts are plagued by the scarcity of sufficient time series. In the absence of other reliable data, we experimented with the replacement ratio, various regional mismatch indicators, and the share of long-term unemployed among all unemployed. As a result, both the replacement ratio and the regional mismatch indicator yielded insignificant and incorrectly signed parameters. On the other hand, as can be seen from the columns 3 and 4 of *table 1*, the share of long-term unemployment is highly significant and indicates that the effect of a possible deterioration of human capital and the screening hypothesis outweigh the impact stemming from a reduced reservation wage. Of course, this variable does not explain everything as the dummy variables are still significant.

6 Concluding Remarks

A popular view widely voiced in the media and in the economists' profession says that the most convincing explanation of the spurt in unemployment and/or its persistence is that labor market imperfection have increased. Germany is seen as a good example for what is termed "Eurosclerosis". It is argued that a myriad of regulations, protections, and generous benefits prevent labor market forces from working. More specifically, various kinds of inflexibilities such as reduced labor mobility, a higher qualifications mismatch between labor supplied and demanded, and the increased choosiness of employers and job seekers are viewed as factors which share most of the responsibility for greater maladjustment.

Based on a theoretical foundation this paper tries to marshal the empirical evidence for or against the mismatch hypotheses. The outcome of this analysis is fairly mixed. Both, the adverse shifts of the Beveridge curve and of the structural rate of unemployment at macroeconomic equilibrium suggest higher labor market imperfections. The reasons are, however, less clear. Due to a fragility of the empirical foundations of some explanations it is extremely difficult to identify the sources and the nature of a possible mismatch, let alone to make a quantitative assessment of the extent to which these factors can account for the outward shift of the Beveridge curve. Given this unsatisfactory empirical basis it is impossible to wind up with firm conclusions. It seems safe to say that the probable increased malfunctioning of the labor market does not stem from an accelerated pace of structural change. While there exists a mismatch between jobs and the unemployed in terms

³⁵The reason is that new entrants in the unemployment pool are to a larger extent entitled to unemployment compensation.

³⁶Recall that the *SURE* increases with ρ_2 falling.

³⁷I am grateful to Horst Entorf for carrying out this simulation for me.

of regions and skills and, moreover, some choosiness on both sides of the labor market may be present, it is less obvious whether the importance of these explanations has increased. At best, one can guess that some higher imbalances in terms of qualifications and a greater choosiness on the part of employers may have interfered with the smooth balancing of labor demanded and supplied. In order to keep pace with technical progress firms need willing and qualified workers who will stay with the job because employers invest in their training. Screening is costly and even when done is imperfect. Therefore, firms are reluctant to hire apparently less qualified workers such as long-term unemployed, the share of whom among all unemployed has increased considerably. If so, structural unemployment feeds on itself, i.e., the Beveridge curve is plagued by the hysteresis phenomenon. This view discounts the notion that, although increasingly present, rigidities did not hit the German labor market in prosperous times until, say, the early seventies but serve as a ratchet or threshold for labor market clearing afterwards. The hysteresis explanation proports that the events after prosperity in fact caused these problems, rather than simply revealing their existence. While this does not seem to be a totally unconvincing diagnosis, it still remains to be proven.

References

- Abraham, K.G.** (1983), Structural/Frictional vs. Deficit Demand Unemployment: Some New Evidence; *American Economic Review* 73, 708-724.
- Akerlof, G., A. Rose., and J. Yellen** (1988), Job Switching and Job Satisfaction in the U.S. Labor Market, *Brookings Papers on Economic Activity* 2:1988, 495-594.
- Birg, H.** (1985), Der Bevölkerungstrend von den nördlichen nach den südlichen Bundesländern und der Bevölkerungsverlust von Berlin (W) an das Bundesgebiet, *Jahrbuch für Regionalforschung* 6, 5-27.
- Brinkmann, C.** (1987), Unemployment in the Federal Republic of Germany: Recent Empirical Evidence, in: P.J. Pedersen and R. Lund (eds.), *Unemployment: Theory, Policy and Structure*, Berlin, 285-304.
- Bruche, G. and B. Reissert** (1985), *Die Finanzierung der Arbeitsmarktpolitik: System, Effektivität, Reformansätze*, Frankfurt/M. and New York.
- Budd, A., P. Levine, and P. Smith** (1987), Long-Term Unemployment and the Shifting U-V Curve; *European Economic Review* 31, 296-305.
- Budd, A., P. Levine, and P. Smith** (1988), Unemployment, Vacancies and the Long-Term Unemployed; *The Economic Journal*, 98, 1071-1091.
- Büchtemann, C.F. and A. Höland** (1989), *Befristete Arbeitsverträge nach dem Beschäftigungsförderungsgesetz 1985. Ergebnisse einer empirischen Untersuchung i.A. des Bundesministers für Arbeit und Sozialordnung*, Bonn.
- Burtless, G.** (1987), Jobless Pay and High European Unemployment, in: R.Z. Lawrence and C.L. Schultze (eds.), *Barriers to European Growth. A Transatlantic View*, Washington D.C., 105-162.
- Cramer, U.** (1988), Gewinne und Verluste von Arbeitsplätzen in Betrieben - der "Job-Turnover"-Ansatz, *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung* 21, 361-377.

- Ebmer, R.** (1989), Some Micro Evidence on Unemployment Persistence, Paper presented at the 4th Annual Congress of the European Economic Association, mimeo.
- Entorf, H., W. Franz, H. König, and W. Smolny** (1989), The Development of German Employment and Unemployment: Estimation and Simulation of a Disequilibrium Macro Model; in: C. Bean and J. Dreze (eds.), *European Unemployment* (forthcoming MIT Press).
- Entorf, H., H. König and W. Pohlmeier** (1989). Labor Utilization and Non-Wage Labor Costs in a Disequilibrium Macro Framework, in: R.A. Hart (ed.), *New Issues in Wages, Non-Wages and Employment. The Conference Proceedings, Luxembourg: Office for Official Publications of the European Communities.*
- Evans, J.M., W. Franz and J.P. Martin** (1984), Youth Labour Market Dynamics and Unemployment: An Overview, in: OECD (ed.), *The Nature of Youth Unemployment. An Analysis for Policy Makers*, Paris, 7-28.
- Flanagan, R.J.** (1987), Labor Market Behavior and European Economic Growth, in: R.Z. Lawrence and C.L. Schultze (eds.), *Barriers to European Growth. A Transatlantic View*, Washinton D.C., 175-211.
- Franz, W.** (1981), Employment Policy and Labor Supply of Foreign Workers in the Federal Republik of Germany: A Theoretical and Empirical Analysis, *Zeitschrift für die gesamte Staatswissenschaft* 137, 590-611.
- Franz, W.** (1982 a), The Reservation Wage of Unemployed Persons in the Federal Republic of Germany: Theory and Empirical Tests, *Zeitschrift für Wirtschafts- und Sozialwissenschaften* 102, 29-51.
- Franz, W.** (1982 b), Youth Unemployment in the Federal Republic of Germany. Theory, Empirical Results, and Policy Implications. *An Economic Analysis*, Tübingen.
- Franz, W.** (1987 a), Hysteresis, Persistence, and the NAIRU: An Empirical Analysis for the Federal Republic of Germany, in: R. Layard and L. Calmfors (eds.), *The Fight Against Unemployment*, Cambridge (MIT Press), 91-122.
- Franz, W.** (1987 b), Strukturelle und friktionelle Arbeitslosigkeit in der Bundesrepublik Deutschland: Eine theoretische und empirische Analyse der Beveridge-Kurve; in: G. Bombach, B. Gahlen, and A. Ott (eds.), *Arbeitsmärkte und Beschäftigung: Fakten, Analysen, Perspektiven*; Tübingen, 301-323.
- Franz, W.** (1989), Beschäftigungsprobleme auf Grund von Inflexibilitäten auf Arbeitsmärkten?, in: H. Scherf (ed.), *Beschäftigungsprobleme hochentwickelter Volkswirtschaften*, Berlin, 303-340.
- Franz, W. and H. König** (1986), The Nature and Causes of Unemployment in the Federal Republic of Germany since the 1970's: An Empirical Investigation, *Economica* 53, S219-S244.
- Franz, W. and H. König** (1989), A Disequilibrium Approach to Unemployment in the Federal Republic of Germany, Paper presented at the 4th Annual Congress of the European Economic Association (forthcoming in *European Economic Review* 1990).

- Franz, W. and K. Siebeck** (1989), Theoretical Aspects of the Relation between Unemployment and Vacancies. Paper presented at the 9th World Congress of the International Economic Association in Athen, Universität Konstanz, Discussion Paper.
- Gagey, F., J.P. Lambert and B. Ottenwaelter** (1988), A Disequilibrium Estimation of the French Labor Market Using Business Survey Information, Paper presented at the May 1988 Meeting of European Unemployment Programme, Chelwood Gate.
- Hamermesh, D. and A. Rees** (1984), The Economics of Work and Pay, 3rd ed., New York.
- Hujer, R. and H. Schneider** (1989), The Analysis of Labor Market Mobility Using Panel Data, *European Economic Review* 33, 530 – 536.
- Jackman, R., R. Layard, and C. Pissarides** (1983), On Vacancies; Centre for Labour Economics, London School of Economics, Discussion Paper No. 165.
- Jackman, R. and S. Roper** (1985), Structural Unemployment; Centre for Labour Economics, London School of Economics, Discussion Paper No. 233.
- Karr, W., M. Koller, H. Kridde, and H. Werner** (1987), Regionale Mobilität am Arbeitsmarkt, *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung* 20, 197–212.
- König, H. and H. Entorf** (1989), Strukturelle Arbeitslosigkeit und unausgelastete Kapazitäten: Ergebnisse eines makroökonomischen Rationierungsmodells, mimeo, Mannheim.
- König, H. and W. Franz** (1978), Unemployment Compensation and the Rate of Unemployment in the Federal Republic of Germany, in: H.G. Grubel und M.A. Walker (Hrsg.), *Unemployment Insurance. Global Evidence of its Effects on Unemployment.* Vancouver (The Fraser Institute), 236–266.
- Krugman, P.R.** (1987), Slow Growth in Europe: Conceptual Issues, in: R.Z. Lawrence and C.L. Schultze (eds.), *Barriers to European Growth. A Transatlantic View*, Washington D.C., 48–76.
- Lambert, J.P.** (1988), *Disequilibrium Macroeconomic Models. Theory and Estimation of Rationing Models Using Business Survey Data*, Cambridge (University Press).
- Lilien, D.M.** (1982), Sectoral Shifts and Cyclical Unemployment, *Journal of Political Economy* 90, 777–793.
- Noll, H.-H.** (1985), Arbeitsplatzsuche und Stellenfindung, in: H. Knepel and R. Hujer (eds.), *Mobilitätsprozesse auf dem Arbeitsmarkt*, Frankfurt/M.–New York, 275–303.
- Wurzel, E.** (1988), Unemployment Duration in West Germany – An Analysis of Grouped Data, Universität Bonn, Institut für Stabilisierungs- und Strukturpolitik, Discussion Paper 88/2.