SERIE RESEARCH MEMORANDA

SPATIAL VARIATIONS IN INFLOW RATES OF UNEMPLOYMENT
IN THE NETHERLANDS

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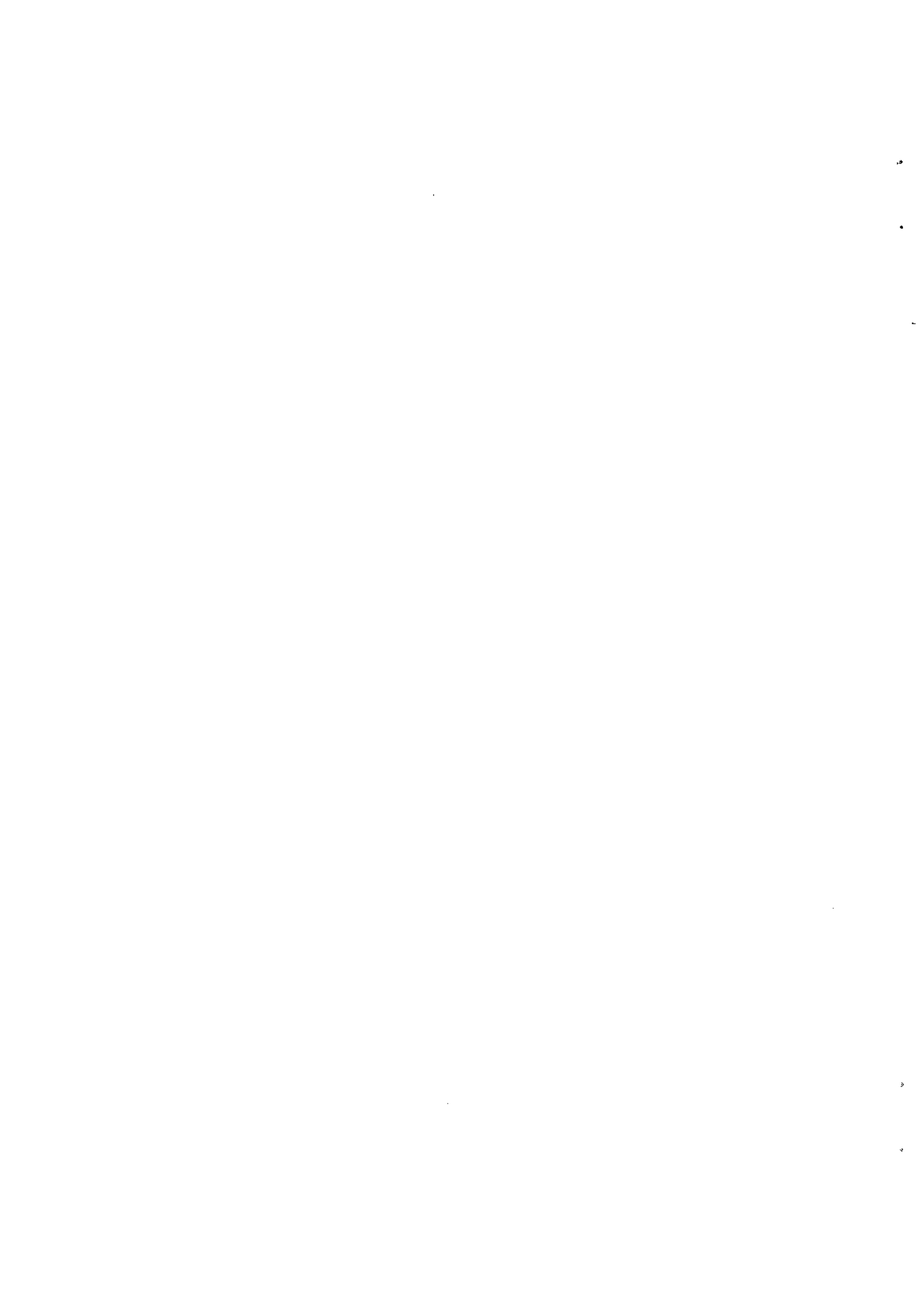
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Summary.

There are significant spatial variations in inflows and outflows of
unemployment in the Netherlands. In the present paper an attempt is
made at providing an explanatory framework for differences in (male)
unemployment inflow rates for Dutch provinces. This partial analysis
of spatial differences in unemployment uses a multiple regression
analysis to identify the relative importance of various explanatory
factors on the unemployment inflow. The results are compared with a
similar study for Great Britain and it follows that for both countries
demand side factors appear to be major explanatory variables. For the
Netherlands, the seasonal sensitivity of the region and the number of
vacancies relative to the regional labour force show up as important
indicators of the demand effect on unemployment inflow.

1. Introduction.

The dramatic growth of unemployment in the Netherlands (especially during the beginning of the 80's) has led to a large pool of unemployed, which turned out to be very persistent in size over the past years. Even though economic conditions improved somewhat in the mid 80's, the stock of unemployed in absolute size did hardly shrink. It is a surprising phenomenon however that the fairly constant level of unemployment occurred despite an increasing flow out of unemployment. Apparently, the number of people entering the state of unemployment did not decrease below a significant level, which was approximately equal to the number of people leaving the stock of unemployed. The Dutch government developed several labour market programmes, most of them aiming at improving the re-employment possibilities of the long-term unemployed, for example, by means of wage subsidies and educational training programmes.

However, a balanced labour market policy does not only need a focus on the re-employment probabilities, but also on the probability of becoming unemployed (i.e. on preventive measures). Research into the nature and determinants of inflow rates is fairly rare, although such insight is useful for the development of an adequate remedial policy for the problem of unemployment because the inflow is (clearly) the origin of a mismatch on the labour market. Empirical observation points also at the existence of a considerable variation in inflow rates between different types of workers and between different labour market areas (see also Fischer and Nijkamp, 1988). Especially, the spatial dimension of this phenomenon has hardly been investigated.

Therefore, a particular aspect of the unemployment rate and its spatial diffusion, namely the unemployment inflow, will be discussed in this paper. This partial but nevertheless important analysis may shed light on the contribution of the inflow component to the size of regional unemployment. It may also provide insight into the underlying causes of the spatial differences in unemployment rates due to differences in the unemployment inflow.

The paper is subdivided into four sections. In the first section, we briefly consider some possible explanations of the phenomenon of regional unemployment and its spatial differentiated pattern. Also, the relevance of a separate analysis of spatial differences in the components of unemployment (inflow and duration) is discussed.

A descriptive analysis of data on the inflow of unemployed males in the Netherlands is presented in section 2. First, we make a classification of components of unemployment inflow from a theoretical point of view. Secondly, the regional unemployment inflow are compared with unemployment itself and the second important component of unemployment, viz. the duration. Finally, the inflow data is studied form the viewpoint of the nature of the region in terms of economic importance for the national economy.

In section 3, the regional differences responsible for the differences in unemployment inflow rates are further examined. Following the approach of Armstrong and Taylor (1985) - who did a similar analysis for Great Britain - we are able to verify the validity of their results for the Netherlands. The approach is based on a multiple regression model including variables that may be attributed to demand and supply side influences.

In the final section, we draw some conclusions.

2. Regional Differences in the Unemployment Rate

The persistently high level of unemployment in the Netherlands is caused by a combination of influences, notably the lack of demand, the lack of international competitiveness, the problems of adjustment to structural change and the shifts in labour supply.

The "burden" of unemployment is clearly unequally distributed over individuals and regions. The main causes for the spatial variations in unemployment rates are spatial diferences in:
- job creation
- job redundancy
- occupational structure
- commuting and migration patterns
- participation

These factors do, together with personal characteristics, determine the chances for people to get and maintain a job in a certain region.

Conventional neo-classical theory predicts that in the long run labour flows would adjust and thus eliminate the differences in unemployment. The real wage would work as a signal of regional labour market conditions. In the case of excessive regional demand the real wage would rise, while in the case of unemployment the real wage would fall. In reality, however, the price mechanism does not work in the Netherlands: interregional wage differences are very small.

There may be many causes for the occurrence and persistence of unemployment, which will not be discussed at length here. We only briefly mention some possible causes of disequilibrium on the labour market,viz. wage rigidity, immobility and imperfect information.

However, in this article our interest lies mainly in the explanation of regional differences in unemployment. Two different schools of thought can be found on the subject of regional unemployment disparities (see Fischer and Nijkamp, 1989).
1) The aggregate demand pressures are unevenly distributed across the space economy.
2) The historically determined spatial division of labour plays an important role.

Dependent on which view is believed to be true, indicators of regional demand or supply have to be identified in order to examine their effects on regional unemployment. It is of course also possible that both views are true.

In our approach of studying spatial differences of unemployment, we do not concentrate on the differences in the unemployment rate itself. Alternatively, we look at the two dynamic components of unemployment: inflow and duration. This make it possible to examine the spatial differences of each component separately. The spatial variation in the components inflow and duration may in fact be quite different from the variation in the unemployment rate itself. In addition, the underlying factors causing the differences in the inflow rate and the duration of unemployment do not have to be the same (see for example Nickell, 1982).

In this article the main focus is on the differences in unemployment inflow rates. An explanatory analysis of the duration of regional unemployment for the Netherlands at the provincial level was done in Folmer and Van Dijk (1988) and Gorter et al. (1989). The conclusion of the latter analysis of spatial variation in regional unemployment duration was that regional demand (measured by means of the vacancy rate) plays an important role and that the impact of supply side factors (measured by the age/occupational/educational structure of the labour force) was limited. In contrast, Folmer and Van Dijk (1988)

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found that differences in the duration of unemployment are mainly caused by personal characteristics and that the structure of the regional economy, viz. the regional demand for labour is of minor importance. Although these findings indicate the need for more rigorous empirical research on the effect of the regional economy on the duration of unemployment, research on the other component of unemployment (i.e. the inflow) should not be neglected.

Therefore, the spatial differences in the unemployment inflow rates are examined as a central research issue here. An attempt is made to identify the underlying causes of the observed differences in order to get more insight into the process of becoming unemployed. It was already mentioned in the introduction that this is of particular interest for the development of an adequate policy for the unemploymentproblem, because the inflow is the origin of the problem.

3. The Unemployment Inflow Data.

First, we mention the possible sources of inflow into the state of unemployment. Four possible categories of flows can be distinquished:
1) New persons entering for the first time into the labour force and registering as unemployed. This category will primarily consist of young people, who have finished their education and are unable to find immediately a job.
2) Workers laid-off permanently by their employers. The main part of this inflow is probably caused by mass-firing (e.g. firms closing down because of a bankruptcy). In addition there are workers fired individually.
3) Workers voluntarily quitting their job. It does not seem plausible that this type is a main part of the aggregate flow into unemployment under the current socio-economic conditions in the Netherlands.
4) The flow from "out of the labour force" to the stock of unemployed. This category consist of people who were absent from the labour force for some period (because of illness, maternity leave or activities in the household) and are now willing to work again but are unable to find a job and thus enter the stock of unemployed.

Ideally, we would know the volumes of each of these four flows within and between each regional labour market, which would make it possible to determine which labour market process would dominate in these regions. Consequently, we would then know on which type of worker to concentrate unemployment policies in order to minimize the unemployment inflow. For example, if the intraregional flow into unemployment is largely caused by first-time entrants then one might suggest to adjust the educational programmes in order to achieve a better match with the wishes of employers. Alternatively one might advocate the creation of new jobs for young people with a lower educational level.

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Unfortunately, we do not have data on the sources of inflow on a regional level[1]. Therefore, we have to investigate the differences in regional unemployment inflow rates in an alternative way, for example by comparing regional characteristics (see also section 2). Before doing so in the next section, we first give a description of unemployment inflow data for the Dutch provinces (for the year 1985)[2].

The data is approximated on the basis of the inflow into the unemployed stock during the period of one month[3]. In the approximation process, there is made an adjustment for the inflow of individuals not showing up in the first month after becoming unemployed because of a time lag in registration. The same data base was also used to estimate the average duration of unemployment for each region, so we can present the results for the inflow rates together with the duration of unemployment and the unemployment rate itself.

An interesting way of showing regional data on unemployment inflows _and_ duration is presented in Figure 3.2. In this graph we show the inflow-duration combinations of Dutch regions for the year 1985. A (so-called) iso-unemployment curve is drawn through the reference point of the national economy. This implies that the curve combines all points of unemployment inflow and mean duration, that lead to the same unemployment rate as the national rate (calculated under the assumption of stationarity, i.e. inflow = outflow)[4].

It appears that the regional variation of unemployment inflows is considerably and remarkably different from the regional variation in mean duration of unemployment. In addition, we observe that although the unemployment rate may be approximately the same (see the iso-unemployment curve), the outcomes for the inflow rate are quite different (see Figure 3.2).

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[1] The distribution of the inflow over the possible sources is known however. For the Netherlands as a whole, we can say approximately that seven of the ten people who become unemployed were fired, one left school and two came from other categories out of the labour force (on the basis of yearly averages).

[2] See Figure 3.1 for the geographical position of the provinces in the Netherlands.

[3] Gorter et al. (1989) gives the details of the statistical methods in this approximation procedure.

[4] The analytical expression of this curve can be shown to be:

$$q = u/((1-u)*d)$$

where u denotes the unemployment rate,
   q is the inflow rate and
   d is the mean duration of unemployment.

Figure 3.1 Location of the Dutch Provinces.

Mean Duration
of Unemployment
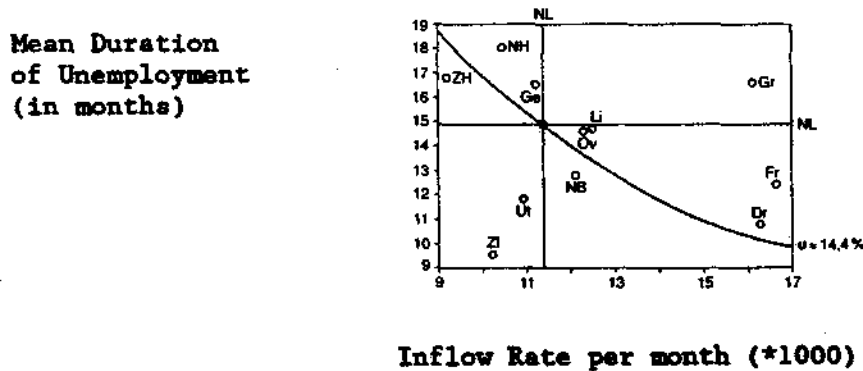(in months)

Inflow Rate per month (*1000)

Figure 3.2 Regional differences in unemployment inflow and the mean
duration of unemployment in the Netherlands (1985).

Next, we present the outcomes of the unemployment inflow rates
(related to the male working labour force) per month and the
unemployment rate for each Dutch region (province) for the year 1985 in
Table 3.1. Because we show the annual average of the inflow rate for
the regions, the seasonal fluctuations do not appear. It has to be
emphasized that the seasonal fluctuations can be quite high and may
vary among the regions.

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province		inflow rate per month (*1000)	unemployment (%)
Groningen	(Gr)	16.1	20.8
Friesland	(Fr)	16.7	18.2
Drenthe	(Dr)	16.3	15.9
Overijssel	(Ov)	12.3	16.5
Gelderland	(Ge)	11.2	15.8
Utrecht	(Utr)	10.9	11.6
Noord-Holland	(NH)	10.5	14.6
Zuid-Holland	(ZH)	9.2	12.9
Zeeland	(Zl)	10.2	9.9
Noord-Brabant	(NB)	12.1	15.0
Limburg	(Li)	12.5	16.4

Table 3.1. Inflow and unemployment rates for the Dutch regions in the year 1985.

The picture of the inflow rate in the various regions is rather clear. The northern (peripheral) part of the country has a substantially higher inflow rate than the other regions of the Netherlands. Without going into detail regarding specific regional characteristics, we will discuss this finding in the light of a simple classification of Dutch regions in core and peripheral regions. Usually, the economic core of the Netherlands is associated with the Rimcity ("Randstad") consisting of the main urban centres in the provinces of Utrecht, Noord-Holland and Zuid-Holland. Nowadays, there is a tendency to expand the core so that it also includes the main agglomerations in the provinces Gelderland and Noord-Brabant (see the recently published strategic policy report of the Ministry of Housing and Physical Planning: the so-called "Fourth Memorandum on Physical Planning").

On the basis of this demarcation of the Netherlands, we will now compare the core and peripheral regions with respect to their inflow rates of unemployment.

However, two main problems still remain. First, the classification of regions according to provinces is rather crude and hence it is sometimes difficult to determine whether or not a province is a core region. For instance, the southern part of the province Noord-Holland (including Amsterdam and the airport Schiphol) is definitely part of the economic core, but the northern part is rather isolated. Secondly, some regions may perhaps be peripheral from a national perspective, but from an international perspective these regions may have a rather central position. An example of the latter phenomenon is the Dutch province of Limburg (located near the important economic gravity centre Aachen-Liege in Germany-Belgium).

In addition, we have to realize that a comparison based on the unemployment inflow rate is a partial analysis of the economic condition of the region and that of course a classification based on other economic variables (for example, the unemployment rate) might lead to somewhat different results.

With these remarks in mind, now consider the cross classification of the position (central or peripheral) of Dutch regions and their inflow rates of unemployment.

inflow rate per month	core region	no core region
9-10 °/oo	NH,ZH,Utr	Zl
11-12 °/oo	NB,Ge	Ov,Li
13-15 °/oo	-	-
over 16 °/oo	-	Fr,Gr,Dr

Table 3.2. Cross-classification of the nature of the regions
with the inflow rates per month.

We see that in general the core regions are characterized by relatively low inflow rates. The northern provinces, all peripheral, have a relatively high inflow rate (about 50 % higher than the other regions). For the other three provinces (Ov,Li,Zl) the picture is less obvious, which might be due to the cross-border economic influence of Germany and Belgium. Thus from the viewpoint of inflow rates, the main difference is not between "the core" and "the periphery", but between the northern periphery and the rest of the country.

In summary, we have investigated the relationship between the unemployment inflow rate and the position (core or peripheral) of the region and found that several peripheral regions perform equally with the core regions, but that the inflow rates in the northern countries are relatively high. In order to get more insight in the underlying causes of the observed regional differences in the inflow rates a comparison of regional characteristics is made by means of a multiple regression analysis in the next section.

4. **An Explanatory Analysis with Regional Characteristics.**

A possible explanation for the observed spatial differences of the regions is the difference in economic and demographic structure. In this section we will try to explain regional unemployment rates by means of economic and demographic variables with a multiple regression model. Following the approach of Armstrong and Taylor (1985), two groups of variables are included in the regression analysis : variables reflecting pressures of regional demand (seasonal/sector structure, vacancies) and variables reflecting the structure of the regional labour force (age composition, educational level)[5].

Armstrong and Taylor expect that the seasonal and cyclical fluctuation of changes in the regional demand for labour (employment change) are important determinants of the regional unemployment inflow rate. Regarding the effect of employment change on the unemployment inflow via the number of lay-offs Armstrong and Taylor note that (1985, p.46): "The lay-off rate is likely to be higher in localities heavily dependent upon industries which are highly sensitive to either seasonal or cyclical fluctuations in labour demand". In addition, they expect that changes in regional labour demand may also have an effect on the other main inflow components (voluntary quitting, first-time entrants

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[5] Institutional and social differences in the regions (like the existence of employment agencies, the propensity to register, the attitude of the social environment etc.) could also be of significant importance, but it is extremely difficult to capture these effects in relevant variables.

and re-entrants). For example, search and quit behaviour may become more intensive when the chances of finding a job are favourable. Better job prospects may also attract people from "out of the labour force", whilst school leavers are more likely to enter the stock of employed in stead of becoming unemployed or delaying their entrance.

In our empirical application for the Netherlands, the cyclical component is left out because the differences in regional flow data are studied for the period of one year only. So we try to estimate a measure of the seasonal sensitivity of each region by regressing the regional unemployment rate on the national unemployment rate together with a suitable time trend for the 12 (monthly) observations during the year 1985 (analogous to Taylor and Bradley, 1983). The estimated coefficient of the national unemployment rate is then used as an index of seasonal variation of unemployment relative to the national pattern[6]. It is obvious that we expect a positive correlation with the inflow rate.

An alternative way of capturing the seasonal effect on the unemployment inflow rate would be to consider the relative share of sectors with a high degree of seasonality in a regional economy. We take into consideration the percentage of employees in the construction sector, because for this sector we expect the highest seasonal sensitivity.

Another demand side variable to be included in the regression model is the number of vacancies relative to the labour force. This variable is used as a proxy of regional labour demand (number of job opportunities) and consequently we expect it to be negatively correlated with the flow into unemployment. If the number of vacancies is large, people (re)-entering the labour force may find a new job without becoming unemployed and people facing lay-offs may find a new job without becoming unemployed.

Next, variables reflecting supply side influences on the level of the inflow rate have to be considered. First, the age composition of the regional labour force (reflected in the percentage of people younger than 25 years) may play a role in the level of the inflow rate. A region with a relatively young labour force is expected to have a higher inflow rate because of the higher rotation of jobs among young people. On the other hand, young people may have lower wage costs and may be more able to adjust to changing conditions. Therefore young people may become less unemployed than older people. The outcome of the sign of the estimated coefficient is thus uncertain; it depends on the magnitude of the positive and negative effects of age on the inflow rate.

Secondly, the educational level of the labour force in a region might influence the number of individuals becoming unemployed in that region. The people with a higher education tend, on the average, to suffer less from unemployment and hence we expect this variable to be negatively correlated with the inflow rate.

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[6] In this regression model, time trend variables take account of the structural development of regional unemployment. The partial correlation with the fluctuations in the national unemployment rate is then thought to be an index of seasonal sensitivity of the region.

Thus, the following regression equation is used:

$$y = \alpha_0 + \alpha_1 \cdot x_1 + \alpha_2 \cdot x_2 + \alpha_3 \cdot x_3 + \alpha_4 \cdot x_4 + \epsilon$$

with

y = the flow into unemployment as a percentage of the total regional employed stock

x_1 = the reaction coefficient of the regional unemployment rate on variations in the national unemployment rate

x_2 = the number of vacancies divided by the total regional labour force

x_3 = the percentage of people in the group of employed people younger than 25 years

x_4 = the percentage of people in the group of employed people with a higher than average education

ϵ = error term $N(0,\sigma^2)$ distributed

The results of the regression analysis on the basis of data on 11 regions (using average values of the variables for the year 1985) are presented in Table 4.1.

In a second and a third regression we eliminated the percentage employees with a higher than average education and the percentage employees younger than 25 respectively, because these variables did just have small effects (reflected by the t-values) on the flows into unemployment.

run	α_0	α_1	α_2	α_3	α_4	R^2
1	22.78	3.09 (2.26)	-2.97 (3.70)	-0.68 (1.37)	0.02 (0.34)	0.63
2	23.55	3.13 (2.02)	-2.82 (2.75)	-0.72 (1.15)	****	0.63
3	12.26	3.10 (1.94)	-2.57 (2.62)	****	****	0.61

number of observations: 11

Table 4.1. OLS estimates (standard errors in parentheses)

An attempt to incorporate a more specific variable reflecting the seasonal sensitivity (i.e. the share of the construction sector in regional employment) failed, because this variable did not have a significant effect on the inflow rate (t values were almost 0).

Other omitted variables in the regression analysis are migration and participation (see section 2). This omission has no impact on the analysis because:

1) migration does not play a role, because men do rarely change from region of residence without having first a job in the new region.

2) there is not much regional variation in the male participation rate on the provincial level, so that there is no need to include the

participation variable in the regression analysis[7].

The coefficients of the index of seasonal sensitivity and the vacancy rate have the theoretically correct sign, while the first one is different from zero at a significance level of 5%. This indicates that the indicator for seasonal sensitivity can explain the higher inflow in some regions by a stronger seasonal pattern of regional unemployment. From a policy viewpoint this would imply that some regions have to develop strong anti-seasonal policies in times of a recession in order to reduce the flow into unemployment (like for example, temporally employment programmes).

In summary, the regional variation in inflow rates can mainly be explained by regional differences in seasonal patterns and by the indicator of regional demand, viz. the number of vacancies. Unfortunately, we were unable to find more specific significant explanatory variables responsible for the spatial differences in unemployment inflow rates. We found almost no effects for the percentage of employees in the construction sector, the educational level and the age composition of the regional labour force.

The validity of the Armstrong and Taylor model for the Dutch regions thus seems to be limited; we found no effect of supply side variables in the Dutch model and the profound influence of the demand side variables in Armstrong and Taylor is less clear for the Netherlands given the relatively low t-values.

The general conclusion is that it is not easy to find regional characteristics which give a statistically explanation of the flow into unemployment. A possible explanation could be the level of spatial aggregation on which this analysis was carried out. The geographical scale is probably too high, so that other relevant explanatory variables are likely to play no role. However, this might be different at a lower level of aggregation (cf. the problem of "ecological fallacy"; see Openshaw and Taylor, 1981).

Besides the high level of aggregation, the present regression analysis has the limitation that the labour market areas, discerned on statistical grounds, are not equal to the "real" labour market areas classified by, for instance, the criterion of a given commuting radius of employees.

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[7] The final model could not be improved significantly by including the regional participation rate (t-value less than 0.5).

4. Concluding Remarks

In this paper, we have investigated the "roots" of unemployment, namely the inflow. This flow may vary considerably between different types of workers and different regional labour market areas. We have explored Dutch data concerning the existence of the latter phenomenon and examined the relationship between the inflow rate and the geographic position (core or periphery) of the region.

We tried to explain spatial differences in the unemployment inflow rate by means of a regression model with the regional characteristics as explanatory variables. It turned out to be very hard to find significant coefficients for the supposedly relevant variables. This might be due to the high level of spatial aggregation. However, we did find a significant (demand-side) effect of the seasonal sensitivity of the region on the unemployment inflow in line with previous findings of Armstrong and Taylor.

Our final remark concerns the desirability of an inflow reducing policy. In order to reduce regional unemployment, special programs to stimulate the reentry of long term unemployed are welcome, but measures aiming at reducing the flow of people becoming unemployed should not be neglected.

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