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AN EMPIRICAL ANALYSIS OF VACANCY DURATIONS AND VACANCY FLOWS: CYCLICAL VARIATION AND JOB REQUIREMENTS

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J.C. van Ours

G. Ridder

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# AN EMPIRICAL ANALYSIS OF VACANCY DURATIONS AND VACANCY FLOWS:

# CYCLICAL VARIATION AND JOB REQUIREMENTS

J.C. van Ours
Department of Economics
Vrije Universiteit, Amsterdam

G. Ridder
Department of Econometrics
Faculty of Economics
Rijksuniversiteit Groningen

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**Abstract**

This paper presents an empirical analysis of vacancy durations and vacancy flows in the Netherlands over the years 1980–1988. We distinguish vacancies according to required educational levels. We derive estimates of average vacancy durations, and we use these to derive estimates of vacancy flows. We find that vacancy durations increase with the required educational level. Moreover, vacancy flows tend to be more responsive to the business cycle at lower educational levels, while vacancy durations are more responsive at higher educational levels. Finally, employers lower the job requirements if the vacancy has been open for some time. There is no evidence that they raise the job requirements in periods of high unemployment.

Keywords: Vacancies, vacancy durations, vacancy flows.
JEL classification: 810, 210

## 1. Introduction

This paper is a contribution to a small literature on vacancies. More specifically, we shall study the period of time that an employer needs to fill a vacancy, in other words the duration of the vacancy. The vacancy duration is a measure of the tightness of the labor market as seen by the employer, just as the unemployment duration is a measure of the tightness of the labor market as seen by an employee. There are few studies of vacancy durations. The only studies we know of are Beaumont (1978) and Roper (1988). This paper differs from these studies in a number of ways. Firstly, these studies focus on vacancy durations. We also consider vacancy flows. Secondly, they study a cross-section of vacancy durations. We shall study the cyclical pattern of vacancy durations and vacancy flows. Hence, our study is complementary to these studies.

The plan of the paper is as follows. In section 2 we provide some theoretical background. The data are discussed in section 3. The statistical model used in this study is introduced in section 4. Section 5 contains the empirical results. Finally, in section 6 we draw some conclusions.

## 2. Vacancy Durations and Employer Search

There are numerous empirical studies of unemployment durations. Moreover, there is a well-developed theory, job search theory, that can be used, either to formulate structural models for the duration of unemployment spells or to interpret the results of reduced form models (see Mortensen (1986) for a survey of job search theory). According to job search theory the search strategy of the unemployed job seeker is characterized by a reservation wage (or more generally a reservation value). A job offer with a wage (or value) that exceeds the reservation wage (value) is accepted, all other offers are turned down. The probability of finding a job in some time interval is equal to the product of the probability of obtaining a job offer and the probability that a job offer is accepted.

A number of empirical studies consider the decomposition of the probability of finding a job into the probability of obtaining an offer and the acceptance

probability (Narendranathan and Nickell (1985), Ridder and Gorter (1986), Lancaster and Chesher (1983) and van den Berg (1988)).Although the evidence is mixed, many authors conclude that the acceptance probability is almost one, i.e. the job seekers accept the first job offer. This is consistent with the finding of Barron, Bishop and Dunkelberg (1985) that 90% of the employers who had vacancies, needed only one offer to fill a vacancy. If unemployed job seekers accept the first job offer, then the length of a spell of unemployment is determined by the probability of obtaining a job offer in some time interval. This implies that interest shifts from the acceptance strategy of the job seeker to the acceptance strategy of the employer. The search and hiring strategy of the employer determines how long it takes to make an offer to a (possibly unemployed) job seeker and who receives this offer. The number of unemployed job seekers that find a job in a period is equal to the number of job offers made to such job seekers and the total number of job offers is equal to the number of job openings filled (we assume that only one offer is needed to fill an opening). The number of job openings filled in a period gives an upper bound to the possible reduction of unemployment in that period.

In the sequel we assume that the number of job openings filled in a period is equal to the vacancy flow and that the time that an employer needs to fill an opening is equal to the vacancy duration. We shall use vacancy and job opening interchangeably. Of course, we have to make sure that the vacancy data used in the empirical analysis contain all job openings. We may clarify these issues by looking more closely at the search behaviour of the employers.

There are several reasons why employers are searching for new employees (Holt and David (1966)). First, a new position may be created or the creation of a new position may be anticipated. Second, an employee may leave a position which remains in existence after he has left. Again, this departure may be anticipated or not. At the moment that an unfilled position is anticipated the employer may start searching for a new employee. Legal constraints restrict the possibility of advance hiring without full pay. Moreover, advance hiring with full pay is very costly, because the employer has to pay two employees until the present employee leaves. The loss associated with an unfilled position is only the surplus generated by that position. Hence the search period before the position is vacated will not be long. As a consequence there

is a large probability that an unfilled position arises. Of course, if the unfilled position is not anticipated, the employer can only start searching as it arises (given that the position is not eliminated when the present employee leaves).

During the period of search potential employees apply for the position. The size of the flow of applicants can be influenced by the firm through advertising. Applicants differ in productivity, but the productivity of applicants can not be observed. The employer can perform tests to learn about this productivity and/or he can use (imperfect) indicators of productivity (e.g. education, work experience). If we assume that the wage associated with the position is fixed, the employer will only employ employees whose value of production exceeds the wage rate. However, because applicants who satisfy this requirement, have different productivities there is a return to search. Of course, search is not costless. There may be advertising costs, screening costs etc. The return to search also depends (positively) on the flow of applicants for the position. An applicant will be accepted if the return to employing the applicant exceeds the return to further search. This decision rule takes the form of a reservation strategy: an applicant qualifies if this productivity exceeds an acceptance level. This can be translated into minimal acceptable levels of productivity indicators or job requirements.

The discussion reveals an ambiguity in the definition of a vacancy duration. A vacancy duration may start at the moment that the search for a new employee begins or it may start at the moment that a position is vacated. We assume that the vacancy durations as reported by the employers refer to the period of search for an employee. Moreover, we assume that the number of vacancies as reported by the employers is equal to the total number of job openings. This number is larger than the number of vacated jobs.

Not much is known about the search strategy used by employers. This study concentrates on the outcome of employer search, i.e. the rate at which job openings are filled, and we shall not attempt to interpret our results in the light of a detailed theory of employer search. In particular, we shall not decompose the probability of filling a vacancy into the probability of obtaining an applicant and the probability that this applicant is found suitable for the job. The only empirical studies of employer search that we know of are reported in a series of papers by Barron, Bishop and Dunkelberg

(1985), Barron and Bishop (1985).

These authors study the number of applicants, the number of interviews, the number of job offers and the number of hours spent on recruitment needed to fill a particular vacancy. Following Rees (1966) they distinguish between search at the extensive margin and search at the intensive margin. As a measure of search at the intensive margin they use the time spent on recruitment (screening etc.) per applicant. Search at the extensive margin is measured by the number of applicants seen per interview and the number of interviews per employment offer. It is not difficult to see that these quantities are estimates of $1/P_I$ and $1/P_O$ with $P_I$ the probability that an application results in an interview and $P_O$ the probability that an interview leads to a job offer. Note that $P_IP_O$ is the probability that an application results in a job offer and ,if all offers are accepted, this is equal to the acceptance probability of the employer. If $\lambda_A$ is the rate at which applicants arrive at the firm, then vacancies are filled at a rate

$$(2.1) \qquad \lambda_H = \lambda_A P_I P_O$$

Hence, Barron et al.'s finding that the acceptance probability of the employers varies inversely with the educational requirements, does not imply that vacancies for which a high educational level is required are hard to fill.

The analysis in this paper is at the same time more comprehensive, because we take account of differences in the arrival rate and less detailed, because we can not distinguish between the arrival rate and the acceptance probability.

We shall discuss our empirical results using a simple theory of vacancy and unemployment flows/durations based on the seminal work of Holt (1970). Let U, V and S denote the stocks of the unemployed, of vacancies and of employed job seekers. Holt does not allow for employed job seekers, which is at variance with the observation that most job changes are without intervening unemployment. We assume that the number of contacts generated by these stocks is

$$(2.2) \qquad \frac{(U+S)V}{T_m}$$

with $T_m$ the (average) time between contacts, i.e. $1/T_m$ is the rate at which potential contacts materialize or the 'clock-speed' of the labor market (the rate at which vacancies and job seekers meet).The vacancy flow $F_v$ is equal to

$$(2.3) \qquad F_v = \frac{(U+S)V}{T_m} P_C$$

with $P_C$ the probability that a contact results in a job. As argued, this probability is mainly determined by the hiring strategy of the employer. We have data on U, V and $F_v$. However, S, $P_C$ and $T_m$ are not observed. In steady state we have

$$(2.4) \qquad V = F_v T_v, \qquad U = F_u T_u, \qquad S = F_s T_s$$

Because $F_v=F_s+F_u$, we find if we assume that $T_s=T_u$

$$(2.5) \qquad \frac{P_C}{T_m} = \frac{1}{F_v T_v T_u} = \frac{1}{VT_u}$$

In deriving (2.5) we assume that the average search time of unemployed job seekers is equal to the average search time of employed job seekers, i.e. that employed job search is as effective as unemployed job search. An implication of that assumption is that unemployed job seekers will accept any offer that exceeds their unemployment income. As far as we know, there are no empirical studies in which the search behaviour of employed and unemployed job seekers are compared.

The left-hand side of (2.5) is the rate at which contacts result in jobs. It is a measure of the effectiveness of the labor market corrected for the size of that market. Note that in the present formulation we do not need an estimate of the average vacancy duration or the vacancy flow. If we make the usual assumption that vacancies can only be filled by the unemployed we obtain

$$(2.6) \qquad \frac{P_C}{T_m} = \frac{1}{UT_v}$$

If we have data on vacancy durations we can compare the two indicators.

## 3. The Data

The vacancy duration data analyzed in this study were obtained from the Central Statistical Office (C.B.S.) of the Netherlands. They were collected by yearly vacancy surveys among employers. The first survey dates back to October 1980, and all subsequent surveys were conducted in October (1981-1983), September (1984) or January (1986-1987). The vacancy survey is a stratified random sample of some 20000 employers. The stratification is by size of establishment and by industry. Government agencies (central and local), educational institutions and temporal employment agencies are excluded from the survey. The employers in the surveyed population account for 80-85% of total employment.

With an elusive concept as a vacancy it is important how a vacancy is defined in the survey. The employers were asked whether at the time of the survey they had vacancies that they wanted to fill either immediately or as soon as possible. It was pointed out to the employers that they should also consider vacancies for which there are applicants, vacancies for which the selection procedure will take so much time that it is impossible to fill it in a short time interval and vacancies which they intend to fill with a temporary worker. The employers were asked to give a number of characteristics of the vacancies:

-occupation
-required education (level and kind of training)
-vacancy duration (interval)

We only have access to aggregate data, i.e. data on the number of vacancies stratified by required education (level and kind of schooling) and duration interval. The duration intervals are 0-1, 1-3, 3-6 and 6+ months. In the analysis we restrict ourselves to vacancies for which the succesful applicant needs a clerical/business training or a technical training.

Figure 3.1 shows the evolution of the total number of vacancies and the number of vacancies that require a clerical/business or a technical training over the period October 1980-January 1987. Figure 3.2 contains the corresponding numbers of the unemployed. In Figure 3.3 we present the vacancy

rates of clerical/business and technical vacancies by educational level. The

*Figures* 3.1–3.3 *about here.*

number of vacancies decreases until 1983 and rises after that year to a level that exceeds that in 1980. The extent of the increase after 1983 differs between the required educational levels, the increase for those vacancies that require a higher vocational training being much larger than the average increase. Over the same period the number of unemployed and the unemployment rate first rise and subsequently decrease to a level that is higher than in 1980. Note that the increase in unemployment for those with a business/clerical and a technical training is smaller than the increase in total unemployment.

## 4. The Statistical Model

In this paper we analyze grouped duration data. A similar analysis of grouped unemployment durations was conducted by Kooreman and Ridder (1983). We refer to that paper for technical details. The distribution of an individual vacancy duration, which is indexed by i, is fully characterized by its hazard rate. We choose a Proportional Hazard model as introduced by Cox (1972), i.e. the hazard rate has the following form

$$(4.1) \qquad \lambda_i(t) = \exp(x_i'\beta)\psi(t)v_i$$

In (4.1) $x_i$ is a vector of (exogenous) explanatory variables, $\beta$ is a vector of regression coefficients, the random variable $v_i$ captures the unobserved heterogeneity not accounted for in $x_i$ and $\psi(t)$ describes the duration dependence of the hazard. We shall assume that $\psi(t)$ has the Weibull form, i.e.

$$(4.2) \qquad \psi(t) = \alpha t^{\alpha-1}$$

and that $v_i$ follows a Gamma distribution with mean 1 and variance $\sigma^2$. In Ridder's (1988) classification this model is a Mixed Proportional Hazard (MPH)

model.

The statistical analysis is complicated by the fact that we do not observe the completed durations. All durations are censored at the date of the survey. Moreover our sample is not a random sample from the population of (completed) durations, but a random sample from the stock of vacancies at a particular moment. Because we sample from the stock, we have that vacancies that have been open for a longer period are more likely to be included in our sample. In the statistical literature this non-random selection is referred to as length-biased sampling. Censoring and length-biased sampling bias the duration in opposite directions. These biases cancel if the population distribution is exponential. The length-biased sampling bias dominates if there is decreasing duration dependence, and the truncation bias dominates if the duration dependence is increasing. The correct density of length-biased incomplete spell (as a function of the density of complete spells) can be found in Ridder (1984) and we use his expression. The only assumption made in the derivation is that the rate at which vacancies are generated is constant in the period preceding the date of the survey.

The density of an incomplete and length-biased vacancy duration is

$$(4.3) \qquad \tilde{h}_i(t) = \frac{\alpha(\sigma^2\phi_i)^{1/\alpha}}{B(1/\alpha, 1/\sigma^2 - 1/\alpha)} (1+\sigma^2\phi_i t^\alpha)^{-1/\sigma^2}$$

We do not observe the incomplete vacancy duration directly. Instead we only know that the duration is in a certain interval. Let $p_{ij}$ be the probability that a vacancy of type i has an incomplete duration between $t_{j-1}$ and $t_j$ ($t_0=0$, $t_4=\infty$).For j=1,...,4 ($t_1=1$, $t_2=3$, $t_3=6$), then

$$(4.4) \qquad p_{ij}(\theta) = \int_{t_{j-1}}^{t_j} \tilde{h}_i(t)dt$$

The likelihood function is (there are 4 educational levels x 7 years = 28 groups of vacancies)

$$(4.5) \qquad L(\theta) = \prod_{i=1}^{28} \prod_{j=1}^{4} p_{ij}^{n_{ij}}(\theta)$$

Maximum likelihood estimates of the parameters $\theta$ were obtained by minimizing the minus-loglikelihood function using GRMAX (Bekkering and Ridder(1986)). For the (numerical) integration in (4.4) we used the NAG-routine D01BAF which is based on a Gauss-Legendre quadrature algorithm.

The vector of regressors $x_i$ contains the following variables

-A set of dummy variables that indicate the year of the survey.

-The required educational level. We distinguish between lower vocational , intermediate vocational, higher vocational and university.

-The vacancy rate at the time of the survey.

The use of the vacancy rate as an explanatory variable seems to be problematic. In stationary equilibrium the vacancy rate equals the product of the inflow rate in the stock of vacancies and the average duration of a vacancy. However, the (possibly time-varying) regressors in a duration model need not be strictly exogenous. We only require that they are predetermined. To see this it is helpful to think of the process that determines a vacancy duration as a sequence of Bernoulli experiments. If the first Bernoulli experiment results in a success the vacancy is filled. If it results in a failure we proceed to a second (not necessarily identical) experiment which again may result in a success (the vacancy is filled in the second time period) or a failure (the vacancy duration is longer than the first two periods). Now note that the vacancy rate at any time only depends on the outcome of previous Bernoulli experiments, i.e. the vacancy rate can be considered as predetermined for the present experiment. Hence, we can use the vacancy rate as a regressor in the hazard.

There is a slight complication due to the fact that we do not observe the vacancy rate continuously, but only an average rate in a period that includes the survey date. However, it can be shown that this does not invalidate the argument in the previous paragraph.

## 5. Results

We have estimated the MPH model separately for the vacancies that require a clerical/business orientation and the vacancies that require a technical orientation. The maximum likelihood estimates are given in Table

*Table* 5.1 *about here.*

5.1. The MLE show that a larger vacancy rate is associated with a smaller probability that a vacancy is filled. We can interpret this as a congestion effect. The year dummies (the reference year is 1980) show that there has been a considerable increase in the instantaneous probability that a vacancy is filled during the early 80's. There is some evidence of a decrease in the second half of this decade. For the clerical/business vacancies we see that a higher required level of education means a smaller probability of filling a vacancy (the reference level is lower vocational training). Employers take (much) more time to find a suitable candidate for a position that requires a high educational level. This may be a consequence of the high costs of laying-off a highly paid worker. This finding is consistent with the results of Barron, Bishop and Dunkelberg who conclude that the acceptance probability of an applicant decreases with the level of education.

In the case of technical vacancies we do not observe such an easily interpretable pattern. Employers do not take much time to fill a technical vacancy that requires a higher vocational level. Of course, this may be due to a relatively large arrival rate of job seekers (employed and unemployed) with the required training, which offsets a relatively small acceptance probability.

The estimates also imply that in both cases there is positive duration dependence, i.e. the instantaneous probability that a vacancy is filled increases with the duration of the vacancy. This suggests that employers become less choosy, if a vacancy is open for a long period. Finally note that the estimate of $\sigma^2$ implies that there is a substantial amount of unobserved heterogeneity.

We now turn to the implications of our estimates. First we concentrate on the clerical/business vacancies. In Figure 5.1 we show the evolution of the

average complete vacancy durations by educational level. The order of the average durations is as expected. Again we find the by now familiar 'bath tub' pattern in the average durations. Note that the higher level vacancy durations

*Figure* 5.1 *about here.*

are more responsive to labor market conditions. We can decompose the labor market effect into a congestion effect (the effect of the vacancy rate) and a residual effect (the effect of the year dummies, holding the vacancy rate constant). This decomposition is illustrated in Figure 5.2. Note that for the higher vocational vacancies the increase in the vacancy duration is entirely

*Figure* 5.2 *about here.*

due to the congestion effect. This congestion effect is absent for the other educational levels.

Note that in Figure 5.1 the average vacancy duration is almost equal in 1980 and in 1987. This implies that the observed increase in the number of vacancies in the second half of the 80's must be due to an increase in the vacancy flow. This is confirmed in Figure 5.3 which also shows that the vacancy flows are monotonically increasing over the entire period except in

*Figure* 5.3 *about here.*

the final year. Note that the vacancy flows at the lower educational levels are more responsive to labor market conditions. We conclude that the rise in the number of vacancies that is observed after 1983 is a consequence of an increase in the number of vacancies that have been generated. Moreover the decrease in the number of vacancies that is observed before 1983 is entirely due to a decrease in the vacancy durations.

A similar picture emerges if we study the technical vacancies. From Figure 5.4 we see that the increase in the average vacancy durations after 1983 has been much smaller for the technical vacancies as compared to the clerical/business vacancies. If there has been an increase, as in the case of

*Figure* 5.4 *about here.*

the higher vocational level, then this increase is entirely due to the congestion effect (see Figure 5.5). Again the vacancy flow (see Figure 5.6) shows a monotonic increase over the entire period with the lower educational

*Figure* 5.5. *about here.*

*Figure* 5.6 *about here.*

levels being more responsive to labor market conditions. The increase is spectacular except for the vacancies that require a university degree. Again the increase in the number of vacancies is entirely due to the increase in the vacancy flow. The decrease in the number of vacancies prior to 1980 is due to a decrease in the vacancy duration.

The agreement between the results for both kinds of vacancies gives an intriguing picture of the developments on the labor market during the recession of the early 80's and the subsequent recovery. First of all, the number of job openings generated by employers has been constant during the recession and has increased considerably during the period of recovery. During the recession the vacancy durations have been relatively short. This is most likely due to an increase in the arrival rate of applicants. The recovery has led to an increase of the vacancy durations, in particular at the higher educational levels. However, this increase in duration is due to a congestion effect which points at a rather inelastic supply at these educational levels. The relatively large increase of the vacancy flows at the lower educational levels combined with a relatively small increase in the vacancy duration points at a rather elastic supply. This is not surprising, because higher educational requirements tend to be associated with more specialized jobs.

To obtain more insight into the functioning of the labor market we must take the other side of that market into account, i.e. we should have a closer look at the behaviour of the unemployed. For instance, the increase in the number of vacancies may have coincided with an increase in the average duration of unemployment or the decrease in unemployment may have coincided with an increase in the average vacancy duration. In section 2 we have suggested two

comprehensive indicators of the effectiveness of the labor market, i.e. the rate at which contacts between job seekers and employers with vacancies occur and result in a vacancy being filled (matching rate). Unfortunately, we only have data on unemployment durations by educational level as from April 1985. Hence, we have to restrict ourselves to average durations for all unemployed and all vacancies.

*Figure* 5.7 *about here.*

The evolution of the two indicators is shown in Figure 5.7. Both matching rates peak in the early 80's, and decline afterwards until 1988. However, in both instances the labor market is not as effective in filling job openings in 1988 as it was in 1980. Figure 5.7 also points at a disturbing inconsistency in the data. Until September 1984 the matching rate as computed in (2.5) is larger than that computed according to (2.6). It is easily seen that this implies that $F_U > F_V$, i.e. the number of unemployed that find a job is larger than the number of job openings that are filled. This is clearly contrary to our expectations. There are several explanations for this phenomenon, but they are all tentative. First, $F_U$ may be an overestimate of the number of unemployed who find a job in a particular month. This may be due to registration problems (if unemployed individuals fail to renew their registration they are assumed to have found a job, and consequently they are in $F_U$), or to the fact that the unemployed may withdraw from the labor market (and hence do not find a job, but are in $F_U$). Secondly, $F_V$ may be an underestimate of the number of job openings that are filled in a month, because some employers may fill jobs without announcing (in the survey) a job opening. Irrespective of the explanation, it should be stressed that there are major inconsistencies in the data on labor market flows.

## 6. Conclusion

In this paper we have studied vacancy durations and vacancy flows for two types of vacancies which account for 60% of all vacancies . We have concentrated on the effect of educational requirements and the cyclical

variation of vacancy durations and vacancy flows. It turns out that the cyclical pattern in flows and durations differs between educational levels, but that this pattern is quite similar between the two types of vacancies. At lower educational levels the vacancy flow is more sensitive to labor market conditions, while for jobs that require a higher educational level we observe a greater sensitivity of the average vacancy duration. We have interpreted these differences by referring to the association between the degree of specialization and the educational level. The difficulties that employers encounter in filling a vacancy increase with the level of the education required. A rather surprising conclusion is that the number of vacancies generated by employers has not decreased during the recession in the early 80's. All this points to a dominant role of the supply of applicants in explaining the cyclical pattern of vacancy durations and vacancy flows. There is no evidence that employers change their hiring standards over the cycle. However, there is evidence that they lower their hiring standards if they can not fill a vacancy.

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**Table 5.1.** *Maximum Likelihood Estimates (Standard Errors) MPH Model for Vacancy Durations.*

| | Clerical/Business Vacancies | Technical Vacancies |
|---|---|---|
| CONSTANT | .36 (.006) | -.78 (.060) |
| VACANCY RATE | -.24 (.030) | -.37 (.020) |
| 1980 | - | - |
| 1981 | 1.23 (.084) | .45 (.036) |
| 1982 | 1.32 (.093) | 1.34 (.059) |
| 1983 | 1.48 (.089) | 1.88 (.069) |
| 1984 | 1.08 (.075) | 1.66 (.058) |
| 1986 | 1.15 (.084) | 1.67 (.057) |
| 1987 | .74 (.074) | 1.55 (.054) |
| LOWER VOC | - | - |
| INTERMED VOC | -1.10 (.010) | -.33 (.022) |
| HIGHER VOC | -2.32 (.120) | .22 (.028) |
| UNIVERSITY | -2.86 (.140) | -.89 (.044) |
| $\sigma^2$ | 1.11 (.059) | .58 (.027) |
| $\alpha$ | 2.32 (.107) | 1.28 (.042) |

Figure 3.1. *Number of vacancies, total, technical and clerical/business*; (* 1000)

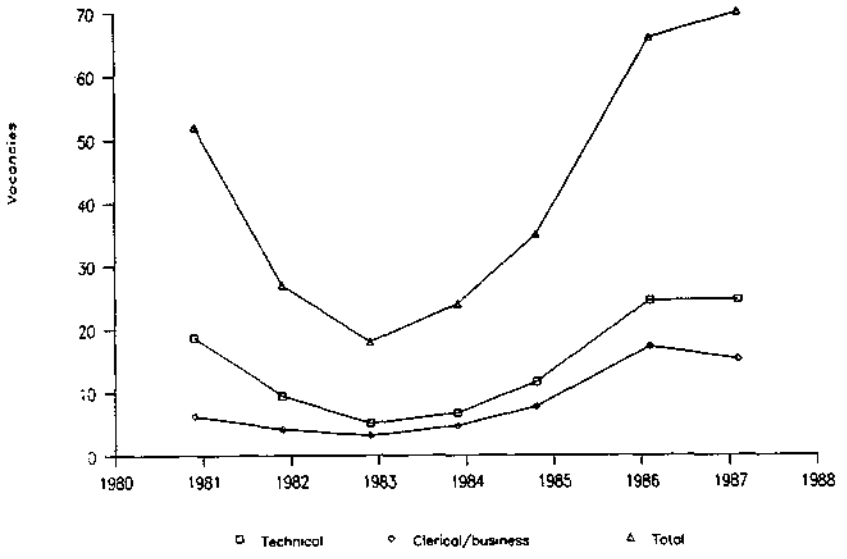



Figure 3.2 *Unemployment, total, technical and clerical/business workers* (*1000)

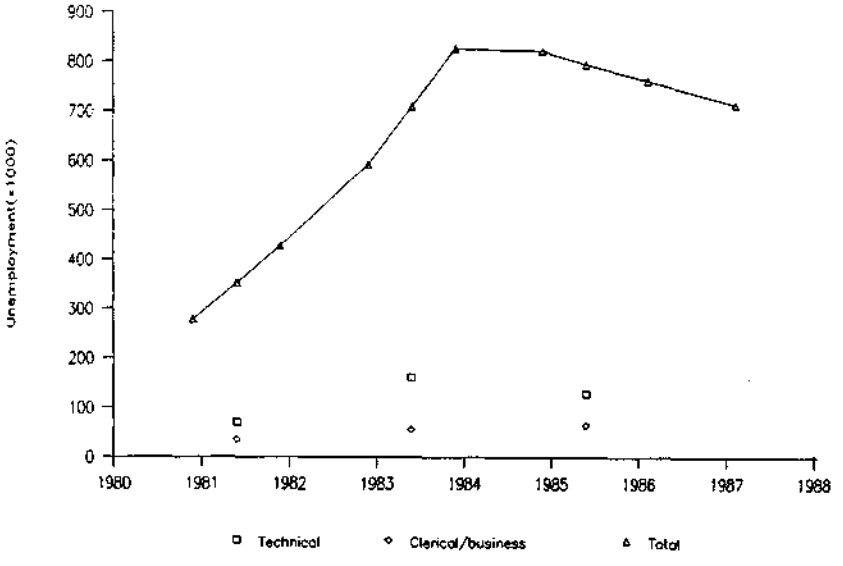
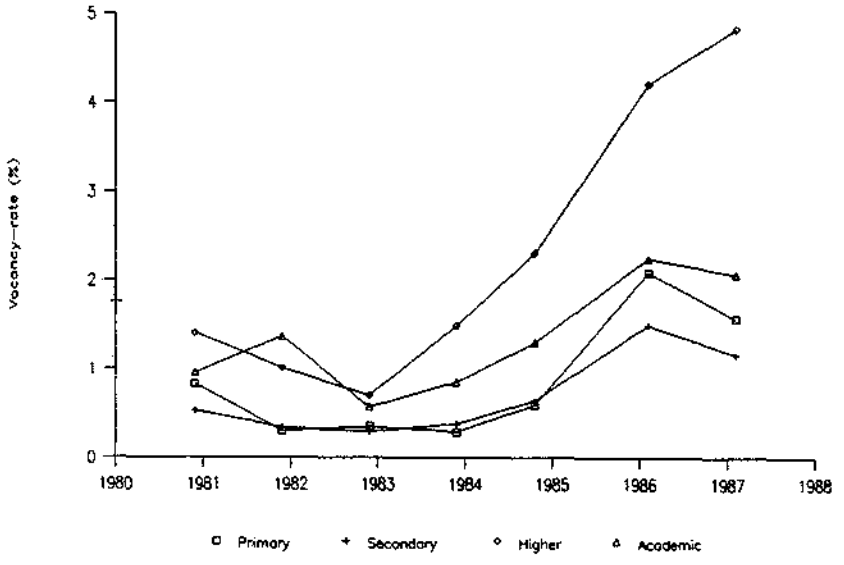


Figure 3.3 *Vacancy-rates by educational level (o/o)*

*a. clerical/business vacancies*




*b. technical vacancies*

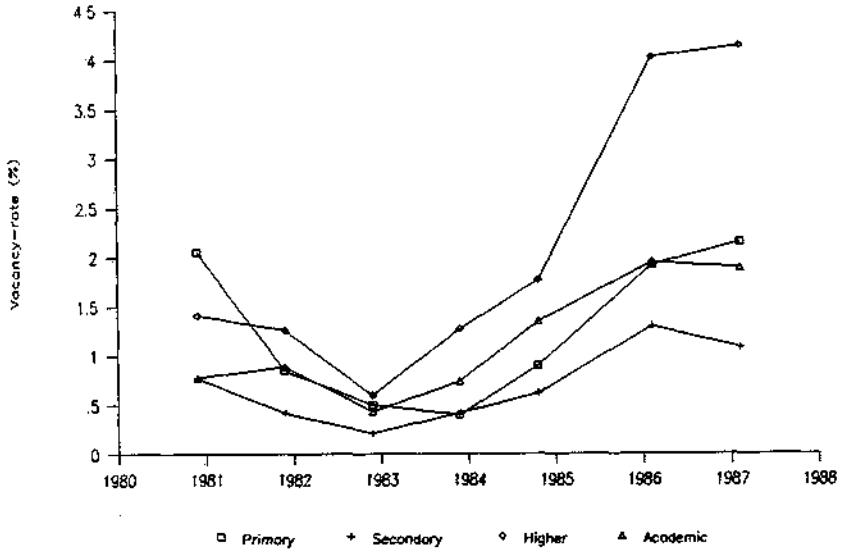


Figure 5.1. *Average complete durations of clerical/business vacancies by educational level (months)*

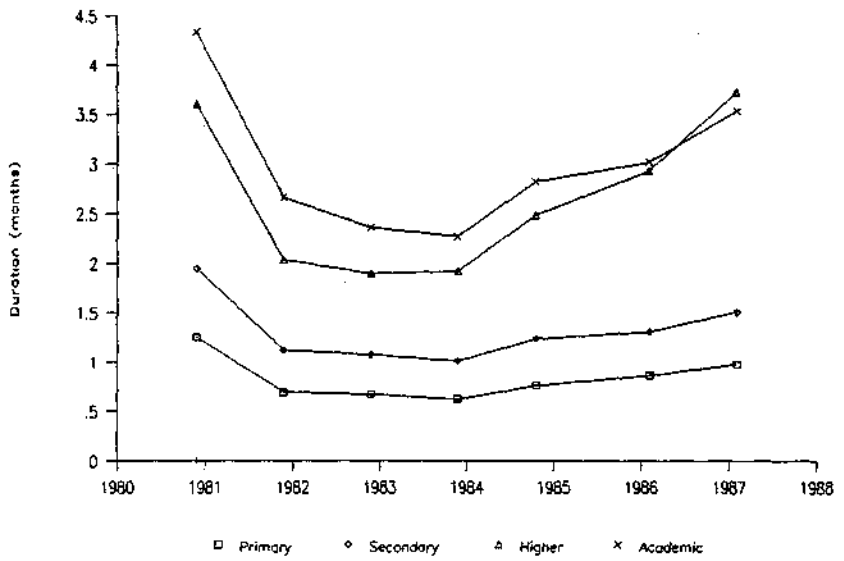



Figure 5.2 *Decomposition of the average complete durations of clerical/ business vacancies at higher educational level*

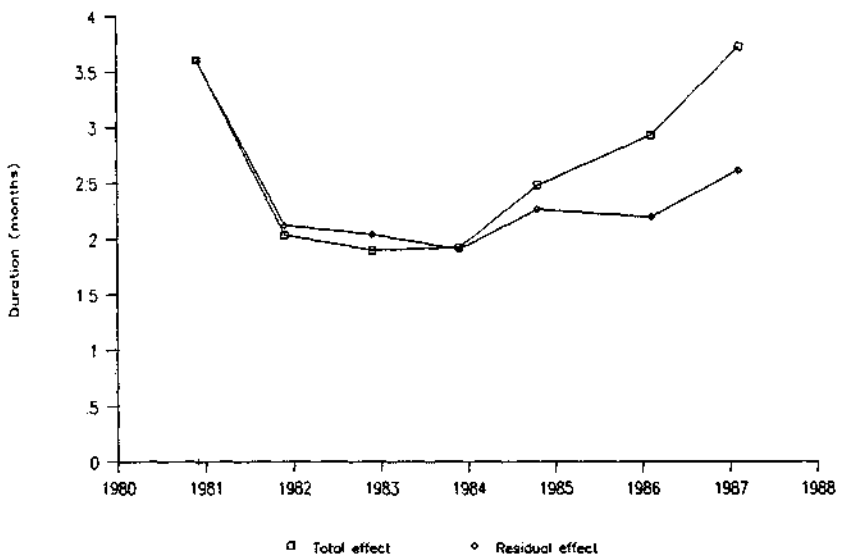


Figure 5.3 *Flows of clerical/business vacancies by educational level (numbers/month)*

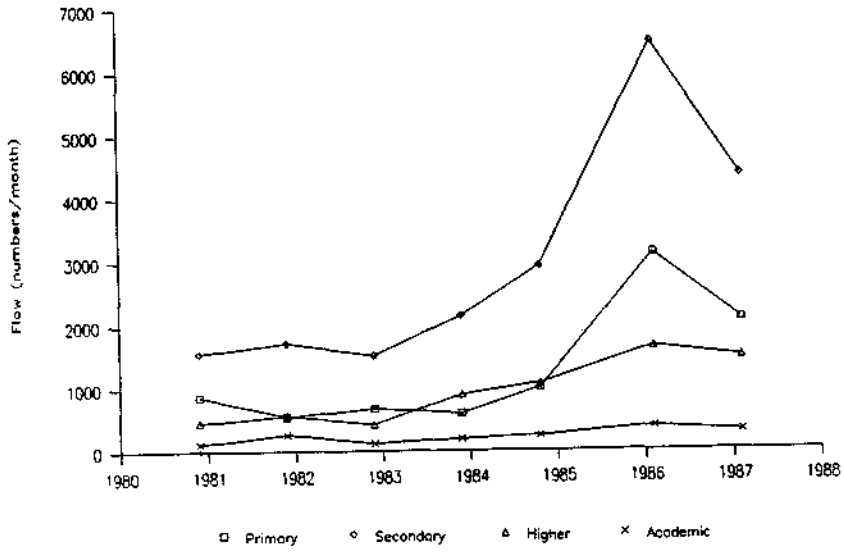



Figure 5.4 *Average complete durations of technical vacancies by educational level (months)*

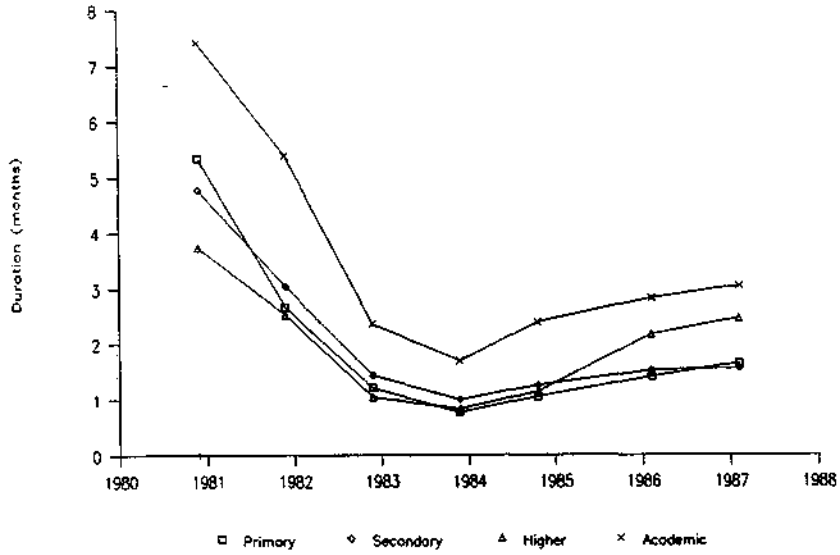


Figure 5.5 *Decomponsition of the average complete duration of technical vacancies at higher educational level*

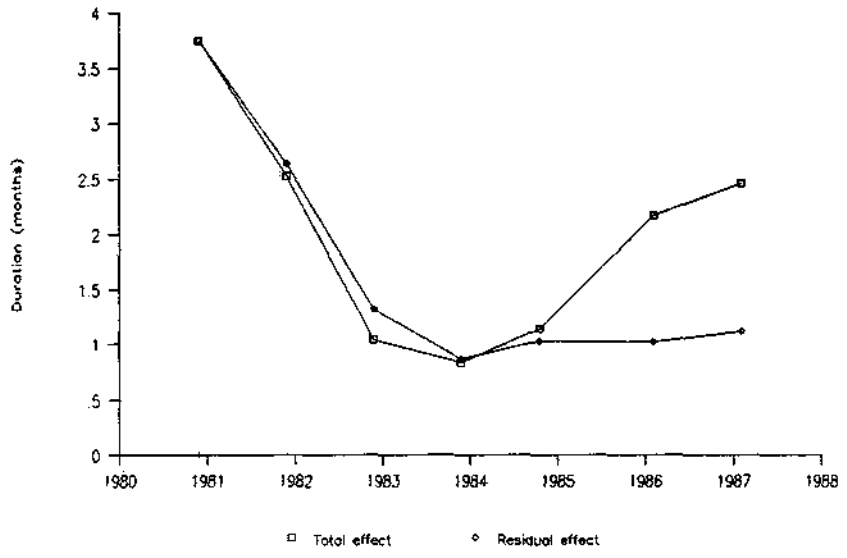



Figure 5.6 *Flows of technical vacancies by educational level (numbers/month)*

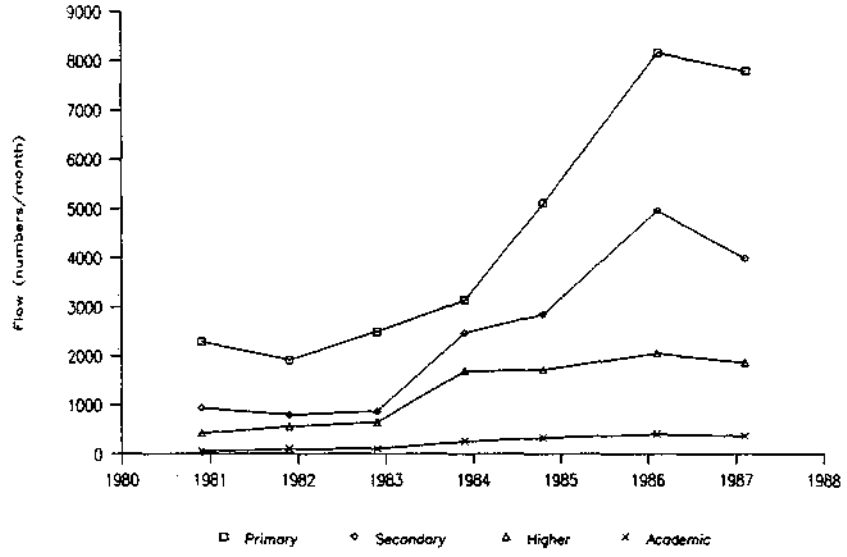
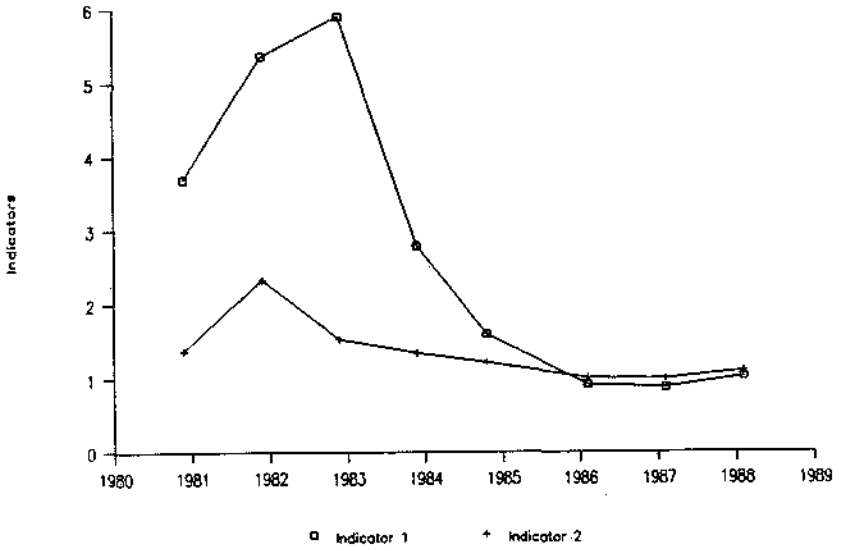


Figure 5.7 *Indicators of labour market efficiency*
(*indicator* 1: *see* (2.5), *indicator* 2: *see* (2.6))



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