POLICY-RELEVANT CHARACTERISTICS OF SPATIAL LABOR MOBILITY IN THE NETHERLANDS

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FOREWORD

Sharply reduced rates of population and industrial growth have been projected for many of the developed nations in the 1980s. In economies that rely primarily on market mechanisms to redirect capital and labor from surplus to deficit areas, the problems of adjustment may be slow and socially costly. In the more centralized economies, increasing difficulties in determining investment allocations and inducing sectoral redistributions of a nearly constant or diminishing labor force may arise. The socioeconomic problems that flow from such changes in labor demands and supplies form the contextual background of the Manpower Analysis Task, which is striving to develop methods for analyzing and projecting the impacts of international, national, and regional population dynamics on labor supply, demand, and productivity in the more developed nations.

The subtask that focuses on regional and urban labor markets includes investigations of spatial labor mobility over time. In this study, the authors analyze several important characteristics of recent labor migration in the Netherlands, with the aim of deriving valuable insight for the design of labor migration policies. The focus is on differences in spatial mobility between segments of the labor force, temporal patterns in the migration behavior of workers, and spatial characteristics of labor migration.

Publications in the Manpower Analysis Task series are listed at the end of this paper.

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ABSTRACT

Changed labor market conditions have created an increased interest in labor supply oriented regional policy. One component of such a policy is the encouragement of labor migration. In this paper it is argued that the design of an appropriate migration policy should be based on a rather detailed knowledge of the mobility characteristics of different groups of workers. We demonstrate how such knowledge could be useful for the design of mobility assistance programs by presenting recent information on policy relevant characteristics of spatial labor mobility in the Netherlands. We focus primarily on mobility characteristics of different groups, temporal patterns in spatial labor mobility, and certain spatial features of this mobility.

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POLICY-RELEVANT CHARACTERISTICS OF SPATIAL LABOR MOBILITY IN THE NETHERLANDS

1. INTRODUCTION

Spatial labor markets are generally characterized by a demand for specific skills that does not automatically match the supply of persons having such capabilities. Demand and supply are brought closer together by means of the spatial mobility of workers. It can be argued that the evolution of industrialized societies into societies of specialized education and labor demand, requires a mobility policy designed to avoid a growth in discrepancies in spatial labor markets (Bartels 1981; Öberg and Oscarsson 1979). In general, this mobility can take two forms: interregional migration or interregional commuting. We shall only focus on migration.

Governments have paid considerable attention in the past to the formulation of regional policies that should serve the principal goal of diminishing the quantitative and qualitative discrepancies in regional labor markets. A remarkable feature of these regional policies is that they have been almost completely based on instruments affecting the demand side of labor markets. Employment oriented measures dominated; a concept summarized in the slogan "work to the workers". (See also Vanhove and Klaassen 1980 for more information on regional policy in seveval European countries.)

There are, however, recent developments in spatial labor markets and in regional policies that give rise to doubts about the justification of this strong labor demand orientation.

In the case of the Netherlands, some of the most serious problem areas nowadays are the net recipients of mobile labor where no growth in employment is occurring. In these regions, native workers are likely to be substituted by immigrants. This fact creates completely different circumstances than those existing when the regional policy was first implemented. At that time structural net outmigration of workers was a useful indication of job shortages in certain areas.

It is further recognized that employment oriented regional policies have only very small effects on regional employment when national employment is hardly growing, as has been the case in many industrialized countries in the recent past.

Finally, we know that in a number of instances the positive effects of regional policy on employment have been partly offset by an unintended increase in regional labor supply. This has come about not only because of rising participation rates or a rise in the number of in-commuters, but also through the in-migration of workers, which thwarted the attainment of the principal policy's goal.

These changed circumstances have stimulated thinking on the redesigning of regional policies in the Netherlands giving a more prominent place to measures affecting regional labor supply (Bartels and van Duijn 1981). Among the possible ingredients of such a policy is the encouragement of labor migration. This concept is addressed in the most recent publication of the Dutch government on regional economic policy (Ministry of Economic Affairs 1981), which devotes more attention to migration encouragement than do similar, previous publications.

In this paper we shall argue that a policy of encouraging labor migration has more chances of being effective, if it is based on detailed knowledge of several types of labor migration characteristics. Three examples are the mobility differences

between groups of workers, the typical temporal pattern that can be observed in time series data, and some remarkable spatial patterns in interregional migration flows. We hope to demonstrate how detailed information on such characteristics could be of use in designing concrete migration assistance programs.

The empirical base of this study is formed by data on recent labor migration in the Netherlands. Before we start with a description of these data, we shall first briefly discuss the place of migration encouragement within the broader context of labor market policy.

2. THE ENCOURAGEMENT OF LABOR MIGRATION AS AN INSTRUMENT OF LABOR MARKET POLICY

It can be stated that one of the principal objectives of labor market policy is to diminish discrepancies between the supply of and the demand for labor. This objective is a common one in the context of *national* labor markets, and stands at the core of *regional* economic policy as well. In both cases not only quantitative discrepancies but also qualitative discrepancies are relevant.

In certain circumstances the encouragement of interregional labor migration may contribute to diminishing discrepancies in both national and regional labor markets. When job vacancies exist in certain regions while in other regions labor is in excess, discrepancies will occur. They would be diminished, however, if the unemployed workers were to move to places where jobs were available, provided the workers possessed the required skills. Labor migration would then contribute to a higher total level of employment and so to a higher economic output, which is also one of the goals of economic policy.

In the above example labor mobility seems to contribute in a very significant way to the attainment of certain policy goals. However, for an accurate assessment it is extremely important to consider not only the *direct* but also the *indirect* effects. To detect the latter effects a long time horizon is sometimes

required, because some reactions to spatial mobility occur only after a considerable delay.

It is not our intention to discuss here all possible indirect effects of labor migration (see, e.g., Richardson 1978 and Weiner 1975, for a more comprehensive discussion). But it may be revealing to mention some example of possibly important indirect labor market effects of interregional labor mobility, which could considerably affect the overall judgement of the attractivity of migration encouragement.

We distinguish between indirect effects related to the *labor migrant* himself, to the eventually present *rest of family* of the labor migrant, and to those related to the *family as a whole*.

1. There are four indirect effects related to the *labor migrant* that have labor market implications. First, labor migration can be viewed as a spatial transfer of labor supply. However, in some cases only the residence is changed whereas the workplace remains the same, thus leading to an increase (or decrease) in commuting flows. If these flows include commuting to regions other than the region of origin or destination, the picture becomes more complex. A simultaneous study of migration and commuting is then called for if a careful analysis is to be made.

   Second, the spatial transfer of labor supply influences the labor markets in both the region of origin and destination and possibly also in other regions. This induces new migration and changes in participation rates.

   Third, a migration-induced expansion of employment in the region of destination may lead to a further indirect employment growth, in the same region or elsewhere, which is caused by an increased demand for intermediate deliveries of goods and services. This indirect effect may have negative connotations for the

region of origin if employed labor moves out.

Fourth, spatial mobility of certain types of workers may also contribute to the improvement of job opportunities for other workers, for example when a shortage of labor with specific skills constitutes a bottleneck in the expansion of production capacity. Removal of this bottleneck can then generate better job opportunities for other types of workers.

2. Indirect labor market effects related to the labor migrant's *rest of family* that will eventually be present can be of the following types. A first and instantaneous effect exists when one or more persons of the rest of the family are also members of the labor force. In such a case the effects can be of the same type as those for the labor migrant.

   Second, this indirect impact may also be postponed when the dependents can be expected to become economically active after some period of time; so family migration also induces the spatial transfer of future labor supply.

3. Indirect effects related to the *family as a whole* can be described in terms of spatial transfer of purchasing power and of population-induced employment. These effects will especially influence the employment in the retail sector and in the public and semi-public sector (education, health care, administration).

These examples demonstrate that careful design of an appropriate labor migration policy is not an easy task. Much knowledge is required, not only about the type of direct effects that could be expected, but also about the frequently rather obscure indirect impacts. It is the aim of this paper to contribute to such a knowledge. We do not, however, intend to sketch a full picture of the labor market impacts of interregional migration that could completely justify the selection of a certain migration policy. Although such a picture would be difficult to obtain, policy makers still have considered it appropriate to use

migration encouragement as one of the instruments of labor market policy. This is at least common practice in European countries such as Sweden, France, the United Kingdom, and the Netherlands. It can be noted that even in the United States there have recently been pleas to give relocation assistance a more prominent place in urban and regional policy (Preident's Commission for a National Agenda for the Eighties 1980).

In general, the common type of labor migration policy is selective in two respects:

- assistance is given to certain groups of labor, e.g., unemployed workers, workers with bad employment prospects, and workers with specific skills moving with their firms into development areas
- migration has to occur between certain well-defined areas.

Relocation assistance may take the form of assistance in housing search, subsidization of moving costs, provisions of travel allowances, and provision of transitional assistance. Also the provision of housing facilities is sometimes used as an instrument of migration policy.

This common type of labor migration policy gives little attention to two important properties of internal labor migration. First, this migration is very selective, because mobility propensities differ considerably between groups of workers. Second, labor migration has an important dynamic component, demonstrated by the fact that both the number of mobile workers and the direction of their moves change over time.

It could be argued that an effective labor migration policy should take these properties into account to some extent. It should account for "autonomous" differences in the mobility propensity for groups of workers. This selectivity could be motivated by three different types of arguments. The first argument is that, if one wants to affect, with a limited financial budget, the migration decision of as many people as possible, then it would make sense to select especially the most mobile

groups and apply the policy measures to them. The second argument could be that migration policy should assist in improving employment opportunities for the most disadvantaged groups of workers. This could imply that the policy measures should be directed especially to groups of workers that are less mobile and attempt to increase their spatial mobility. The third argument is related to the principal goal of diminishing qualitative discrepancies. When these discrepancies exist for only a few groups of workers and only a few areas, then an effective migration policy should not be too global but on the contrary also selective towards these groups and areas. Differences in mobility propensities then could be used to balance the necessary efforts, the available money, and the expected results, thus forming priorities in labor market policy.

With respect to the dynamic component, autonomous changes in the direction of moves should have implications for the spatial selectivity that is imposed when applying the policy measures. Furthermore, the intensity of migration policy could be related to temporal developments in the general mobility propensity, e.g., by increasing government efforts particularly in periods with relatively low spatial mobility (a kind of countercyclical migration policy).

So it is clear that the design of an effective and efficient labor migration policy could benefit from the availability of appropriate information on policy-relevant characteristics of labor migration. Below, we shall demonstrate what kind of information could be useful, by analyzing recent developments in internal labor migration in the Netherlands.

3. LABOR MIGRATION IN THE NETHERLANDS: A PRELIMINARY SURVEY OF THE AVAILABLE DATA

We are in the rather fortunate position of having available data on internal household migration in the Netherlands, assembled by the Central Bureau of Statistics, the CBS. These data also contain certain information on the economic activity status of heads of households, and can therefore be used to obtain insight

into spatial labor mobility. As the data are not completely ideal for our purposes, we need to mention explictly the most important peculiarities, in order to judge the following presentation correctly.

The basis of our analysis is information about the migration of households, as collected by municipalities and the CBS. The term *household* refers in this context either to a family (two or more persons) or to a single person (a one-person household). Each household is requested to fill in a special card (*verhuiskaart*) when moving from one municipality to another, and to hand this over to the municipality of destination. This card contains information on the old and new municipality of residence, on several personal characteristics of all the members of the household (age, sex, family status) and on the occupation of the head of the household. After registration of the arrival in the municipality of destination, the card is returned to the municipality of origin and from there it is passed to the CBS.

The CBS processes this information to obtain different types of tabulations for household migration. There exist stock tabulations and flow tabulations. The stock tabulations contain information for total in- and outmigration of all municipalities together. We used statistics on internal migration by sex, age, and occupation of the head of the household. When a spouse and/or children migrate with the head of the family, then these persons are separately registered according to their sex and age and according to the occupation of the head of the family. The flow tabulations contain information on the interprovincial flows of heads of households, subdivided according to sex and into 15 occupational groups (one of which is "students" and another is "no or unknown occupation").

Both types of tabulations have been used in the present analysis. Besides these statistics we also used information on total migration. Here, stock tabulations make it possible to cross-classify age, sex, and civil status. The flow tabulations are subdivided into sex and civil status simultaneously.

We decided to use, where possible, information on the occupational position of movers in the municipality of *destination* (instead of in the place of origin), because this is the most recent and therefore reliable registration of a person's occupation. So we do not take into account a change in occupational group at the moment of migration and assume that the occupational position in the place of origin is the same as the one registered in the place of destination.

A first approximation of internal labor migration can be obtained from the household migration data by using *the number of heads of households with a known occupation*, who moved from one municipality to another in a certain year. This implies that we delete the groups "students", "persons with no occupation", and also "persons with an unknown occupation", because this latter group cannot be separated from the "no occupation" category. The error introduced when deleting workers with unknown occupation, however, does not seem large. According to CBS information, approximately 5% of the "no and unknown occupation" group has in fact an unknown occupation.

A more serious error is caused by the fact that the registration of the occupational position refers only to heads of households. Only these persons are in the position to be possibly counted as a labor migrant. By definition, the man (when present) is the head of the household. Dependent family members, like spouses and children, who also have an occupation (other than "student" and "no or unknown") are thus not incorporated in our figures. Consequently, our official figures underestimate labor migration in a quantitative sense. They can also cause an important bias when we want to analyze sex, age, and occupational divisions, because these divisions are very different for the "registered occupation" and the "nonregistered occupation" groups.

A somewhat more realistic approximation of labor migration could be obtained from labor participation rates for dependent household members. Using several other statistical sources, it is also possible to calculate more reliable age and occupational divisions. Below, we shall demonstrate the effects of this

augmentation. Because information on participation rates and occupational and age division of dependent household members is not fully available for our time period, in most cases we shall be obliged to use the admittedly incorrect labor migration estimates as the basis of our analysis.

A difficulty related to the occupational subdivision of the data in the Netherlands is that the definition of occupational groups is far from ideal. Some occupations are very specific and consequently very few migrants belong to them (for example farmers, miners, farm laborers, and professionals). Other occupational groups are instead very heterogeneous and have a large number of registered migrants. They serve as a sort of rest-category, for example, "other employees" and "other laborers". Hence, there is a remarkable assymmetry. Another and corresponding difficulty is that the description of the occupation on the basic document (*verhuiskaart*) sometimes is rather vague. The CBS therefore states explicitly that one should be very careful about using these kind of data. According to them, only global conclusions can be rawn.

Besides, the occupational classification used in migration statistics does not correspond with those used in other data sources, e.g., labor force and unemployment statistics. We shall return to these problems when discussing the mobility differences for various occupational groups.

Let us now take a preliminary survey of the migration data by concentrating on the part of total internal migration covered by these data and on some indicators of the composition of household migration. As the regional demarcation level we shall use municipalities in some instances and the 11 provinces in most cases (see Figure 1). Although this latter demarcation is not ideal in a labor market context, it is nonetheless the most convenient one. This is because most information is available at the provincial level and because the provinces are the most important regional entities in the formualtion of regional economic policy. The period covered by our analysis is 1971-1978, for which years the required information was easily available (except 1978).

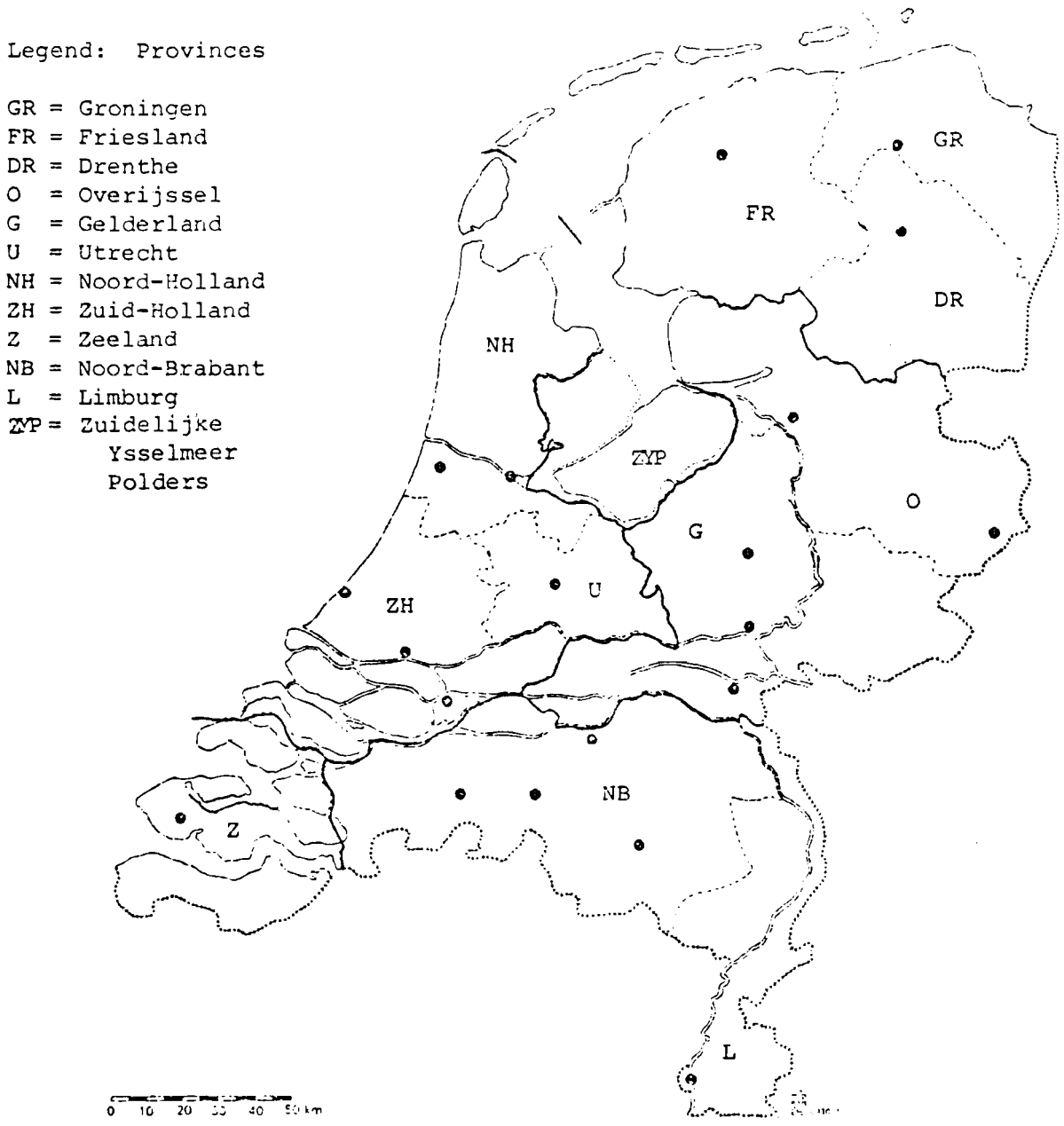

Figure 1. Regional demarcation of the Netherlands according to provinces. (The dots represent the locations of major cities.)

Table 1 summarizes some basic information about our labor migration data. It appears that information on the occupation of 61 to 63% of all persons moving between municipalities has been collected. When deleting "students" and "no or unknown occupation", approximately 40% of all persons moving between municipalities are counted as labor migrants in this study. This latter figure differs between the "individually migrating" and "migrating in a family-context" groups. For the individual migrants, between 56 and 60% are counted as labor migrants. This figure can be interpreted as the labor force participation rate of this population group. For family migrants, only 26% are counted as labor migrants. Alternatively, if we take all family heads together, then between 81 and 85% of these migrants are counted as belonging to the labor force.

Next, we made divisions of total labor migration according to type of household, sex, age group, and occupational group. To show the registration effect (the nonregistration of dependent family members in the official data), a comparison of official and estimated data was made for 1975. We estimated that about 40,000 persons were nonregistered labor migrants.* Compared with the official number of labor migrants, which is about 270,000 persons, the increase due to nonregistered labor migrants is about 15%.

Data concerning the four different divisions are presented in Table 2. First, according to *type of household* data, in the official statistics labor migration is dominated by individually migrating persons. Their share in total internal labor migration between municipalities varies from 63 to 68% in this period. Because all nonregistered labor migration refers to the family migration, the "real" share of individuals in 1975 is not 64% but 56%. The domination of individual migrants, therefore, has decreased.

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*This number can vary in the 1971-1978 period because of changes in total family migration (which reached a peak in 1973), of changes in family size (which declined), of changes in participation rates of married women (which were increasing) and changes in participation rates of children (which were declining).

Table 1. Indicators for the size of intermunicipality labor migration in the Netherlands, 1971-1977.[a]

Year	Absolute number of labor migrants	Share of migrants with registered occupation in total migration (%)	Share of labor migrants in total migration (%)				
			For all migrants	For individually migrating persons	For family migrants	For family heads	For all heads of households
1971	286.052	63	42	60	26	85	67
1972	285.032	62	41	59	26	84	66
1973	289.618	61	40	60	26	84	67
1974	287.979	61	40	59	26	83	66
1975	270.329	62	40	58	26	81	65
1976	260.732	62	40	57	26	81	64
1977	249.920	63	40	56	26	81	63

[a]For 1978 no data were available

Source: CBS (1971-1977)

Table 2. Indicators for the composition of intermunicipality labor migration in the Netherlands, 1971-1977.[a]

	Percentage share in total labor migration							
			Age groups					
Year	Individuals	Males	15-19	20-24	25-29	30-39	40+	White collar workers
1971	67	71	10	33	23	19	15	65
1972	65	70	10	32	24	19	15	66
1973	63	71	10	30	25	20	15	65
1974	63	70	10	31	25	20	14	66
1975	64	70	10	31	25	20	14	67
1976	64	70	9	32	24	21	14	68
1977	64	69	8	32	24	22	14	68

[a]For 1978 no data were available

Source: See Table 1

Second, according to *sex*, more males migrate than females, with the former representing about 70% of the labor migrants. For individually migrating persons this dominance is much less impressive, with only 54-55% of the labor migrants being males. The influence of the definition of head of the family here is very strong, causing the male share of labor migrants in this category to be about 98%. By adjusting the official data, to include nonregistered migrants, this male head of family share decreases to 74%. For total labor migration the male share in 1975 after adjustment is then 63% instead of the official 70%.

Third, labor migration is also selective with respect to *age*: 85% of the migrants are younger than 40 years, and nearly one-third belongs to the age group of 20-24 years. Here the new estimates using adjusted figures leads to roughly the same results with only 1% extra for the 15-19-year-old group and a similar loss for the oldest group.

Fourth, and finally, labor migration is selective with respect to *occupation*. White collar workers count for 65-68% of all labor migrants while their share in the labor force is approximately 53%. Also here the augmentation, the adjustment for nonregistered migrants, does not show concrete differences because of the global division; in a more detailed division there will be more differences (see Section 4).

A remarkable feature worth mentioning is that most indicators remain fairly constant over the whole period. The degree of selectivity therefore only slightly changes. In the next section we shall present more detailed information for the above-mentioned types of selectivity in labor migration.

4. SELECTIVITY OF LABOR MIGRATION: MOBILITY DIFFERENCES BETWEEN GROUPS

Most labor migrants in the Netherlands appear to be relatively young, possess a white collar job, and belong to the male sex. This general observation implies that labor migration rates for different groups of the population differ considerably.

We can demonstrate this by investigating the effects of age and occupation on spatial labor mobility. Because of the difficulties with the registration of female labor migration, a subdivision according to sex will not be made in general. For 1975, however, some data concerning this characteristic will be presented.

It is well known that the migration rates for different *age groups* of the population differ considerably. A prominent regularity that is found in many empirical schedules of age-specific migration rates, is the high rates for young adults in their early twenties, the low rates for young teenages and older adults and the high rates for infant children (Rogers and Castro 1981, and for more information on migration in the Netherlands see Drewe 1980).

It has been suggested that for labor migration a left-skewed unimodal curve approximates age-specific migration rates for labor force ages. In 1974 in the Netherlands, this curve peaked at approximately 21 years of age. (Rogers 1979; Rogers and Castro 1981.) It is not possible to test this hypothesis in a detailed way for our labor migration data, because the subdivision according to age groups is rather crude.

Nevertheless, the data reveal a pattern that seems roughly consistent with the hypothesis (see Table 3): the labor migration rates are highest for the age group 20-24 years and decline with increasing age. In Table 3 data are also presented for age-specific labor migration rates by sex. In both cases the effect of the augmentation to include nonregistered migrants is demonstrated. For registered as well as for estimated nonregistered labor migration, females are more mobile than males in the age-groups below 40 years. The correction of the official data clearly has its greatest influence for women and for the younger age-groups. The differences between age groups in general are large, with the 20-24-year-old rates about 7 times as high as the 50-64 year age group.

Table 3. Labor migration rates by age group and sex for registered and estimated nonregistered labor migration, the Netherlands, 1975 (per thousand).

Age	15-19	20-24	25-29	30-39	40-49	50-64	total[a]
Registered males	52.7	111.5	109.1	55.7	28.3	18.8	57.1
Registered females	84.5	149.7	111.5	26.9	14.9	14.9	75.8
Total	69.6	127.7	109.6	50.4	26.0	18.3	61.7
Augmented to include nonregistered males	67.9	118.4	110.4	55.9	28.4	18.9	59.0
Augmented to include nonregistered females	101.9	186.0	186.3	61.8	33.8	26.6	106.9
Total	86.0	147.1	124.9	57.0	29.3	20.0	70.7

[a]total includes persons older than 64 years

Source: CBS (1975a and b)

The data also allow us to calculate *occupation-specific* labor migration rates. However, the occupational subdivision that is used in the official statistics is very crude (15 occupational groups are distinguished). Unfortunately we had to consolidate these occupational groups still further in order to obtain a comparable subdivision of the labor force that would enable us to calculate labor migration rates. In Table 4 we give the original occupational subdivision of the data for 1975 and the aggregate subdivision for which the migration rates have been calculated. The lack of detail in the occupational registration is demonstrated by the fact that 42% of the labor migrants were classified as "other salaried workers". On the other hand, also very specific occupations appear separately, e.g., farmers, miners, farm laborers, while hardly any migrants in fact possess these occupations.

Table 4. Intermunicipality labor migration in the Netherlands by occupation, 1975.

Original occupational subdivision	Registered number of migrants	Share in total labor migration (%)	Aggregated occupational subdivision
1. Farmers	928	0	
2. Other employers and self-employed	6887	3	A Independent workers (1 + 2 + 3)
3. Professions	1490	1	
4. Administrative personnel (other than civil servants)	33680	13	B All administrative personnel (4 + 5)
5. Civil servants	16395	6	
6. Teachers	17148	6	C Teachers (6)
7. Other salaried workers	114366	42	D Other salaried workers (7)
8. Construction workers	7839	3	E Construction workers (8)
9. Domestic workers	9027	3	F Domestic workers (9)
10. Workers in factories and workshops	39352	15	
11. Farm laborers	2722	1	G Wage earners (10 + 11 + 12 + 13)
12. Miners	144	0	
13. Other wage earners	19811	7	
Total labor migration	270329	100	
14. Students	4812		
15. No or unknown occupation	143483		
Registered occupation	418624		

Source: See Table 1

Again, we augmented the registered number of labor migrants in order to calculate more realistic migration propensities. A division according to sex is also made. Results are presented in Table 5.

The labor migration rates by sex and occupation in Table 5 reveal large differences in spatial mobility. In the official data, the higest rate, 165.5‰ for male domestic workers, is sixteen times the lowest rate, 10.8‰ for female independent workers. The figures differ considerably between sexes. For some groups men are more mobile than women (e.g., administrative personnel and domestic workers), whereas the contrary is true for other groups (especially other salaried workers). When we consider the more reliable augmented data this overall picture remains the same. Only the magnitude of the differences has increased. For the total, the highest mobility rates are found for some of the white collar workers (teachers and other salaried workers) and surprisingly also for domestic workers. Spatial mobility appears to be low especially for independent workers and also for blue collar workers, i.e., construction workers and wage earners. The administrative personnel group also possess a below-average mobility level.

A preliminary conclusion at this point can be that it is desirable to use augmented data. The deleting of dependent labor migrants from the official registration affects the age-, sex-, and occupation-specific migration rates in a disproportionate way and could therefore lead to wrong conclusions about the mobility propensities of these subgroups.

Another difficulty with the age- and occupation-specific labor migration rates is that when these factors are correlated, they could give us spurious information about mobility differences. More specificially, it could be that teachers and other salaried workers are on the average relatively young and that their age in fact determines their high mobility. On the other hand independent workers could be relatively old, so that age could again explain the low mobility for this group. To separate the effects of age and occupation, we present in Table 6 a cross-classification of

Table 5. Labor migration rates by occupation and sex for registered and estimated nonregistered labor migration, the Netherlands, 1975 (per thousand).

Occupational group	Registered			Augmented to include nonregistered		
	Male	Female	Total	Male	Female	Total
A Independent workers	20.5	10.8	19.7	20.5	10.8	19.7
B All administrative personnel	54.8	47.7	51.1	57.3	79.2	66.3
C Teachers	85.5	95.7	89.6	86.6	132.6	105.1
D Other salaried workers	91.5	120.6	99.6	92.8	154.1	109.8
E Construction workers	40.2	-	40.2	43.2	-	43.2
F Domestic workers	165.5	77.0	80.7	165.5	107.0	109.5
G Wage earners	46.9	64.7	48.3	49.6	95.4	53.2
Total	57.1	75.8	61.7	59.0	106.9	70.7

Source: See Table 3

the labor migration rates for these factors. Only augmented labor migration data are used; technical details, assumptions, and so on are given in Evers (1981). The differences between the several rates are very high. For both sexes mobility varies from 8.4‰ to 273.6‰, for men from 9‰ to 477.5‰ (almost 50%!), and for women from 2.7‰ to 307.9‰.

The already existing picture stays the same for both sexes. Again, highest rates are found for the 20-24 year olds in almost all the occupational groups (only for independents and the administrative personnel are the rates highest in the 25-29-year-old category). In all age groups the highest rates are found for other salaried workers, domestic workers, and teachers and the lowest rates for independents, construction workers, and wage earners.

For *males* there are some noteworthy points. The highest rates for migrants are generally found for the 20-24 age group. One major exception, however, is the other salaried workers group, which consists of about 40% of all labor migrants; the highest rates for this group appear in the 15-19-year-old category. Further, in all age groups, domestic workers show the highest rates. (However, one has to keep in mind that the absolute number of male labor migrants in this group is low.)

For *females* in almost all occupational groups the highest rates are found in the 20-24 age group. For all age groups other salaried personnel, teachers, and domestic workers (although less pronounced) are very mobile whereas independents and administrative personnel show a low migration rate.

Finally, to detect whether the age division or the occupational division is the main cause of differences in mobility some transformations of the data of Table 6 were made. The method is described in the Appendix. For *total* labor migration it is found that age contributes about 40% to these differences in mobility and occupation about 60%.* Occupation is especially discriminating in the age groups up to 30 years. Age determines most of the fluctuations for other salaried workers and teachers for all age groups.

For *male* labor migration the age effect contributes 53% and the contribution of the occupation effect 47% of the observed differences in mobility. Age effects have high magnitudes for

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*Data are also presented in the Appendix, Tables A and B.

Table 6. Augmented labor migration rates by occupational group and age group, the Netherlands, 1975. (per thousand).

Group[a]	Age 15-19	20-24	25-29	30-39	40-49	50-64	Total[b]
MEN							
A	24.9	59.2	64.4	30.3	12.3	9.0	20.5
B	52.4	104.4	119.1	53.1	28.0	21.4	54.8
C	56.1	219.1	160.5	76.3	37.1	22.3	85.5
D	313.3	240.9	152.9	81.6	42.0	29.0	91.5
E	24.9	83.1	72.1	30.5	20.3	19.4	40.2
F	325.0	477.5	284.0	145.8	81.6	77.4	165.5
G	29.4	88.0	91.1	44.8	26.0	15.8	46.9
Total	67.9	118.4	110.4	55.9	28.4	18.9	59.0
WOMEN							
A	46.0	53.3	27.9	11.6	5.5	2.7	10.8
B	41.8	121.9	155.4	48.9	29.6	20.2	79.2
C	231.5	242.1	196.9	69.8	38.9	33.4	132.6
D	202.4	307.9	243.6	80.1	39.4	28.6	154.1
E	-	-	-	-	-	-	-
F	115.9	199.8	184.9	60.4	36.1	32.7	107.0
G	62.5	191.2	183.2	61.0	33.8	21.1	53.2
Total	101.9	186.0	186.3	61.8	33.8	26.6	106.9
BOTH SEXES							
A	27.0	58.5	60.2	28.7	11.8	8.4	19.7
B	44.1	116.1	132.8	51.7	28.5	21.1	66.3
C	204.8	235.4	173.9	74.0	37.8	26.0	105.1
D	231.8	273.6	170.5	81.3	41.4	28.9	109.8
E	24.9	83.1	72.1	30.5	20.3	19.4	43.2
F	117.8	204.2	189.9	65.9	39.5	35.7	109.5
G	35.9	99.7	96.0	45.6	26.5	16.1	53.2
Total	86.0	147.1	124.9	57.0	29.3	20.0	70.7

[a] A = Independent workers
B = All administrative personnel
C = Teachers
D = Other salaried workers
E = Construction workers
F = Domestic workers
G = Wage earners

[b] Total includes persons older than 64

Source: See Table 3

other salaried personnel and domestic workers and low ones for independents, administrative personnel, construction workers, and wage earners. The occupation determines most of the fluctuations for the younger age groups. For the older age groups the migration propensities have more or less the same (corrected for general differences) value.

Finally *for women*, the contributions of age and occupation are 25% and 75% respectively. Age is only slightly discriminating for teachers and other salaried personnel, while occupation is very influential for the younger age groups up to 24 years.

5. TEMPORAL PATTERNS IN LABOR MIGRATION RATES: THE TEMPORAL DECLINE IN LABOR MOBILITY

Spatial labor mobility, expressed in either absolute or relative figures, is not constant over time. This is understandable, given the differences in the mobility between age and occupation groups and the high probability that group sizes will change over time. Besides, the within-group mobility could change over time for certain reasons. In this chapter we shall first present some data on total spatial mobility over time. Further we shall investigate whether changes in total spatial mobility largely reflects changes in migration rates for more homogeneous population groups or changes in population composition.

For the Netherlands, total labor migration has been declining since 1974, in absolute and in relative numbers (Bartels and Liaw 1981). It is informative to place this particular development in a broader time perspective. For this purpose we can use data on total internal migration (including non-labor migration) over a rather long time period. In Table 7 we present migration rates for intermunicipality and interprovincial migration for the period 1900-1978, and similar figures for labor migration in the 1970s. Total migration seems to have reached its postwar maximum in 1973-1974. Since then a steady decline has occurred. The same observation holds true for labor migration, which has also been continuously declining since 1974. For example, interprovincial labor migration declined 28% from 1973

Table 7. Long-term evolution of migration rates in the Netherlands, 1900-1978.

	Total migration		Labor migration	
	Between municipalities	Between provinces	Between municipalities	Between provinces
1900	56	21		
1910	59	22		
1920	69	27		
1930[a]	59	22		
1940[a]	52	20		
1950[b]	48	24		
1960[a]	44	22		
1970[a]	46	21		
1971	49	22	60	25
1972	52	21	59	23
1973	53	21	60	25
1974	53	22	59	23
1975	50	21	55	21
1976	48	20	52	20
1977	45	19	50	19
1978	42	18	46	18

NOTES: Migration rates are expressed in per thousand of the population at risk

[a]Annual average for preceeding 10 years

[b]Annual average for preceeding 5 years

Source: CBS (1979)

to 1978. If we compare the most recently observed migration rates with other figures in the table, we see that the recent observations for total migration are the lowest they have been during the whole century. (More detailed data reveal that equally low migration rates were observed in 1949 and 1950).

In another study (Bartels and Liaw 1981) arguments have been given that recent changes in the values of migration rates are mainly caused by changes in the migration rates of the composing population groups and less by changes in the population composition. This can be investigated more carefully by analyzing recent labor migration data in more detail. To do this we use data for 1971 and 1975 on labor migration and total labor force, both aggregated according to age, sex, and occupation. Labor force statistics for 1971 are included in the census. Again, the different divisions made in 1971 and 1975 make it necessary to aggregate some age and occupational groups still further.

Total registered intermunicipality labor migration decreased from 286,052 persons in 1971 to 270,329 persons in 1975, thus by 15,723 persons. In Table 8 we present figures on absolute increases and decreases in 1971-1975 for the different subgroups. The figures reveal rather large differences between the development of the number of migrants; some age and occupational groups show an increase whereas others show a decrease. The differences are also remarkable between the sexes.

In general, labor migration decreases for all occupational groups except construction workers (group E). For men, only the number of blue collar workers (groups B, C, D) decreases, whereas the opposite is true for women: here the number of independents (group A) and white collar workers (groups F, G) is less and the number of blue collar workers even rises. Measured in terms of the 1971 figure, the relative changes are mostly small. The only relatively large changes are found in the decline of the number of blue collar workers for men and for both sexes, the increase of the same group for women, and the decline for women of the number of independents.

Table 8. Increase and decrease of intermunicipality labor migration by sex, age, and occupation, the Netherlands, 1971-1975.

Occupational group[a]	Age group 15-19	20-24	25-29	30-64	65+	Total
MEN						
A	22	70	3	118	-79	134
B, C, D	-445	-5094	3974	2188	45	668
E	-86	-326	365	265	21	239
F, G	-602	-4878	-2962	-5431	-68	-13941
Total	-1111	-10220	1380	-2860	-81	-12900
WOMEN						
A	-2	-9	-44	-68	-17	-140
B, C, D	-2126	-2211	-327	-649	47	-5266
E	-	-	-	-	-	-
F, G	976	1696	471	-503	-60	2583
Total	-1149	-524	100	-1220	-30	-2823
BOTH SEXES						
A	20	61	-41	50	-96	-6
B, C, D	-2571	-7305	3647	1539	92	-4598
E	-86	-326	365	265	21	239
F, G	377	-3182	-2491	-5934	-128	-11358
Total		-10752	1480	-4080	-111	-15723

[a] A = Independent workers
B = All administrative personnel
C = Teachers
D = Other salaried workers
E = Construction workers
F = Domestic workers
G = Wage earners

Source: See Table 1

In general, labor migration decreases for all age groups, except for the 25-29 year olds. This conclusion also holds for both of the sexes separately. In relative terms the decline is greatest for the younger age groups, the men, and for both sexes. For women the relative changes are much smaller.

To investigate whether these changes are due to changes in labor force composition or to changes in labor migration rates for each subgroup, we calculated age, sex, and occupational labor migration rates for 1971 and 1975. The absolute increases and decreases of these rates in the 1971-1975 period are presented in Table 9. Before commenting on the results we want to point out that these results can only be looked upon as global. Because the labor force statistics of 1975 are based on a sample and those for 1971 on a census, and because we disaggregated the material for 1975, the corresponding confidence intervals are rather large. Further, the migration flows are not augmented for the two years, because this was not possible for 1971. Finally, the categorizations of 1971 and 1975 reveal differences with respect to the size of the occupation-unknown category.

Table 9 shows that overall labor mobility declined from 64.7 per thousand to 61.7 per thousand: by 3 per thousand. This decline is not equally spread over age groups and occupational groups.* For the younger age groups mobility has increased; for the 25-29 year olds and the 30-64 year olds it has declined. For the independents and for construction workers it has increased, and the mobility for white and blue collar workers has gone down.

Finally, we explain the change in the labor migration rate by two factors. First, we calculate the hypothetical overall migration rate in 1975 that would result if the group-specific rates were held constant at the 1971 level, and approximate in

*We do not present results by sex because of incomplete data.

Table 9. Changes in labor mobility rates by age and occupation in the Netherlands, 1971-1975 (per thousand of the population at risk).

Occupational group[a]	15-19	20-24	25-29	30-64	Total[b]
A	10.3	14.3	19.8	0.0	2.2
B, C, D	13.0	13.6	-23.7	-4.1	-4.5
E	-0.9	8.3	4.3	-4.1	-4.8
F, G	5.2	-3.7	-25.7	-7.9	-6.9
Total	6.5	4.8	-17.7	-3.3	-3.0

[a] A = Independent workers
B = All administrative personnel
C = Teachers
D = Other salaried workers
E = Construction workers
F = Domestic workers
G = Wage earners

[b] Older than 64 years included

Source: See Tables 1 and 3; CBS (1971)

this way the contribution of changes in group-specific rates to the change in the overall labor migration rate. The group-specific rates are those for occupational groups, for age groups, and for occupational and age groups combined. We then use group-specific rates to compare the possible contribution of changes in composition. In this case the composition of the total labor force (the distribution according to occupation, age, and occupation and age combined) will be held constant at the 1971 level.

The effects of changes in the propensity to migrate and the composition of the labor force were calculated separately for occupation and age groups to detect whether it is the economic factor or the demographic factor that is most important for the understanding of the overall labor migration rate over time.

As can be seen from the results in Table 10, the changes in the propensity to migrate clearly is the most important factor in the overall change in labor migration rates. Compositional changes have only a minor influence and have even an opposite effect in the case of occupation: the share of white collar workers in the total labor force has increased and as we have seen, this group has, on the average, the highest labor migration rates. Table 10 also reveals that economic (occupation) influences are much stronger than demographic (age) factors.

Table 10. Contribution of changes in mobility propensities and labor force composition to the change in the overall labor migration rate, 1971-1975.[a]

1. Total change of the rate	-3.0
2. Due to changes in propensity to migrate	
a) for occupations only	-4.1
b) for age groups only	-2.9
c) for combined occupational/age groups	-3.0
3. Due to changes in composition of labor force population	
a) for occupations only	+1.1
b) for age groups only	-0.1
c) for combined occupational/age groups	0

[a]Figures are expressed in per thousand of the population

Source: See Table 9

6. SPATIAL PATTERNS IN LABOR MIGRATION: INTERREGIONAL MOBILITY DIFFERENCES AND THE DIRECTION OF THE MOVES

Given the important role that labor migration plays as a determinant of developments in spatial labor markets, a description of its most remarkable spatial patterns is necessary. We shall devote attention to interregional differences in labor migration rates, the overall direction of the moves, and the imbalances of regional in- and outmigration for different occupational groups.

Relative outmigration differs considerably between provinces. For example, in 1975 we count a minimum of 15 outmigrants per 1000 of the labor force in the provinces of Noord-Brabant and Limburg and a maximum of 38 per 1000 in Utrecht, the latter figure being 150% higher than the former (see Table 11). Further, it appears that this relative range has been quite stable over time. A remarkable regularity in the pattern of provincial outmigration rates is that these rates are very closely associated with the corresponding inmigration rates. Consequently, the size of provincial net migration is in general rather small. Net migration figures easily possess a somewhat erratic behavior and will therefore reveal certain temporal regularities less easily than the original migration flows.

Why are the provincial outmigration rates so different? Two types of explanation could be given. The composition of the regional labor forces could differ, thus accounting for the observed mobility differences. Alternatively, if this composition were roughly the same in all provinces, then differences in migration rates for the more homogeneous segments of the labor force would be the cause. Explanation for this latter type of differences could be: the size of the regions (larger regions could have a relatively low outmigration), the location of the regions (centrally located regions could have a relatively large outmigration), and the influence of mobility determining factors such as labor market and housing market conditions (see Bartels and Liaw 1981).

Table 11. Labor outmigration by provinces and its destination, 1975.

Province	Out-migration rates	Percentage of outmigrants moving to										
		Gr	Fr	Dr	Ov	Ge	Ut	NH	ZH	Ze	NB	Li
Groningen	27	0	16[a] (4.1)	32[a] (3.3)	9 (1.2)	10 (1.1)	6 (1.0)	11 (2.0)	11 (1.6)	1 (0.3)	3 (1.0)	1 (0.7)
Friesland	19	19[a] (1.7)	0	13[a] (0.9)	13 (2.0)	13 (2.2)	6 (1.1)	20[a] (2.6)	11 (1.4)	1 (0.4)	3 (1.1)	1 (0.7)
Drenthe	31	33[a] (2.0)	9[a] (1.7)	0	16[a] (2.3)	22 (1.3)	6 (1.3)	10 (2.0)	9 (1.5)	1 (0.2)	3 (0.4)	1 (0.7)
Overijssel	23	6 (1.0)	6[a] (1.3)	11[a] (2.4)	0	33[a] (2.9)	10 (1.7)	13 (2.2)	13 (1.0)	1 (0.6)	5 (1.7)	2 (0.8)
Gelderland	27	3 (0.3)	4 (0.7)	3 (0.4)	16[a] (0.8)	0	18[a] (2.3)	15[a] (1.9)	17[a] (1.3)	2 (0.4)	16[a] (2.5)	6[a] (1.4)
Utrecht	38	2 (0.3)	3 (0.9)	2 (0.8)	5 (1.0)	25[a] (1.2)	0	25[a] (1.4)	24[a] (1.3)	2 (0.4)	9 (0.7)	3 (0.5)
Noord-Holland	20	3 (0.2)	5[a] (1.3)	3 (0.4)	5 (0.9)	14[a] (1.8)	22[a] (2.0)	0	30[a] (1.9)	5 (1.4)	10 (0.9)	3 (0.8)
Zuid-Holland	17	2 (0.8)	3 (1.1)	3 (0.7)	4 (1.3)	15[a] (1.6)	16[a] (1.7)	24[a] (2.6)	0	6[a] (1.5)	22[a] (3.9)	5 (0.8)
Zeeland	21	1 (0.7)	1 (0.7)	1 (0.3)	2 (0.6)	8 (1.4)	7 (0.8)	17 (3.7)	34[a] (1.7)	0	25[a] (2.6)	4 (1.1)
Noord-Brabant	15	1 (0.3)	1 (0.8)	1 (0.5)	3 (0.9)	21[a] (1.5)	9 (0.8)	14 (2.3)	25[a] (1.9)	7[a] (1.6)	0	18[a] (1.1)
Limburg	15	1 (0.4)	1 (0.5)	1 (0.3)	3 (0.6)	19[a] (1.0)	8 (2.0)	14 (2.3)	17 (2.7)	2 (1.3)	34[a] (2.6)	0

NOTES: Outmigration rates have been expressed by the number of outmigrants (to another province) per 1000 of the labor force in the corresponding province.
The figures in brackets represent the absolute maximal deviation of the corresponding allocation percentage in the period 1971-1978 from the value of this allocation percentage in 1975.

[a]Indicates that the province of destination is adjacent to the province of origin.

Source: See Table 3

Our data enable us to find out which of the two explanations is the most appropriate one in this context. In Table 12 we present the rates for 1975 for interprovincial outmigration for three occupational groups: independents, white collar workers, and blue collar workers (the former groups A, B + C + D, E + F + G). The figures reveal that for all provinces the interprovincial labor mobility (measured in terms of outmigration) of white collar workers is highest, followed by blue collar workers, whose mobibility is about 50% of the former group. The interprovincial mobility of independents is relatively low.

Within each occupational group there are regional differences in mobility. For the total, the provinces of Utrecht, Drenthe Gelderland, and Groningen reveal a more than average mobility, whereas a less than average mobility is found for Zuid-Holland, Noord-Brabant, and Limburg. For independents this picture varies with respect to the remarkably low mobility in Friesland and Gelderland. For white collar workers the low mobility for the two main provinces in the Netherlands, Noord-Holland and Zuid-Holland, have to be mentioned. Finally, for blue collar workers, deviations from the general picture are found only for Zeeland, where this mobility is quite low. When we measure the magnitude of the differences between provinces as the sum of the absolute deviations of the outmigration rate of the province from the average outmigration rate, divided by this average rate (scaling factor), then for the total (all occupational groups together) the result is 2.8. For the independents, white, and blue collar workers the values are 3.2, 3.3., and 3.5 respectively, so they are in the same order of magnitude.

The effect of labor force composition on migration in the provinces is calculated by assuming the national division to be valid in all provinces. Using region- and occupation-specific rates, hypothetical provincial outmigration and hypothetical rates can be obtained. The results show that the hypothetical rates are lower than the actual ones for the provinces of Utrecht, Noord-Holland, and Zuid-Holland and higher for all other provinces, especially for Drenthe, Zeeland, Friesland, and Overijssel. The

Table 12. Interprovincial outmigration rates by occupation, 1975.[a]

Province	Independents	White collar workers	Blue collar workers	Total
Groningen	6.9	40.9	17.8	26.5
Friesland	4.1	32.0	13.1	19.0
Drenthe	10.1	51.5	21.1	30.6
Overijssel	8.9	39.1	13.4	23.1
Gelderland	5.3	41.9	18.0	26.8
Utrecht	13.1	48.5	29.6	37.8
Noord-Holland	6.5	24.9	16.9	19.8
Zuid-Holland	7.6	22.1	12.6	17.1
Zeeland	6.2	36.6	11.8	20.8
Noord-Brabant	5.3	26.0	8.2	15.3
Limburg	4.1	25.2	8.8	14.8
Total	6.8	30.3	14.4	20.9

[a] Expressed in per thousand of the provincial labor force at risk.

Source: See Table 3

degree of regional differences in mobility for total labor outmigration increases from 2.8 in the actual situation to 3.1 in the hypothetical situation. The conclusion therefore has to be that the influence of regional differences in labor force composition on the regional variation of outmigration rates is negative and rather small.

When we assume that the national mobility propensities for each occupation are vaild for each province, then, using a region-specific division of the labor force, the effect of the differences

in the propensities can be calculated. The hypothetical rates are higher than the actual ones for the provinces Friesland, Noord-Holland, Zuid-Holland, Noord-Brabant, and Limburg and lower for the other provinces. The degree of spatial variation of mobility now amounts to 0.8. This leads to the conclusion that regional differences in spatial mobility are caused by differences among the propensities to migrate rather than differences in the composition of the labor force.

One of the interesting features of the figures presented in Table 12 is the observed difference in outmigration rates for labor between the Groningen and Limburg provinces; the rate of the former is almost twice as high as that of the latter. We analyzed the effect of the differences in the labor force composition and the propensity to migrate. The total difference is 11.7‰ : 1.4‰ for composition and 10.3‰ for the propensity to migrate. Also here, the contribution of differences in mobility propensities is much higher (88%) than the contribution of differences in labor force composition (12%).

The possible explanations for mobility propensity differences, which we mentioned earlier (see Bartels and Liaw 1981) do not seem to be valid in this case. The area size of Groningen and Limburg are approximately the same (6.9% and 6.4% of the total area size of the Netherlands, respectively). Both provinces are peripherally located: Groningen in the north and Limburg in the south-east (see Figure 1). Also, both provinces reveal relatively high unemployment (5.6% and 7.9% of the labor force, respectively; for the Netherlands this figure was 4.7% in 1975). Housing and environmental factors are not equal. The housing increments in 1975 were 2.1% and 2.9%, respectively (national 2.5%) but on the other hand the environment (measured as the relative surface of land that is not occupied by buildings and roads) is better in Groningen than in Limburg (91% vs. 85%, national 88%).

This shows, that many other factors can influence provincial differences, such as typical intraprovincial settlement structures, which allow for a combination of migration and commuting across provincial borders, and several social and psychological/cultural factors (see also Bartels and Liaw 1981:23).

An impression of the direction of the moves can be obtained by considering the destination of the provincial outmigrants. In Table 11 we present the 1975 distribution of outmigrants over space, which is very much the same as in other years. This stability is demonstrated by the figures for the absolute maximal deviation of the allocation percentages in the period 1971-1978 from their value in 1975 (see Table 11). Especially for the large and thus important values of the allocation coefficients, these maximal deviations appear to be relatively small.

The figures in Table 11 reveal that a very large part of interprovincial labor migration occurs in fact over relatively short distances. The share of migrants who have an adjacent province as their destination varies from 48% in the peripherally located provinces of Groningen, to 88% in the more centrally located province of Gelderland. If we consider long distance labor migration, i.e., migration to nonadjacent provinces, then provinces with relatively good labor market conditions appear to be the most attractive destinations, especially the provinces Noord-Holland and Zuid-Holland, but in some cases also Gelderland and Utrecht. (For an indication of the provincial labor market conditions we refer the reader to Table 13).

Another impression of the overall direction of the moves is given by the figures for net labor migration by province. These figures reveal which provinces lost part of their labor force because of migration, and which provinces gained in labor force. For the time period studied here, the picture of gainers and loosers has been rather stable. Provinces that continuously lost labor supply because of migration were Noord-Holland, Zuid-Holland, Groningen (except for 1978) and Overijssel (except for 1977). Provinces that gained continuously were Drenthe, Noord-Brabant, and Zeeland.

A better indication of the importance of net labor migation for regional labor markets is obtained when we compare these figures with selected indicators for provincial labor markets. Table 13 contains such information for the study period.

Table 13. Net labor migration and other labor market indicators for provinces, 1971-1978.

Province	Rate of unemployment[a]	Net labor migration	Total change in labor supply	Increase in employment[b]
Groningen	5.0	-2885	3700	7636
Friesland	4.9	3956	13800	4860
Drenthe	5.9	5067	14700	4232
Overijssel	4.4	-3532	11600	8846
Gelderland[c]	3.7	17008	53650	18125
Utrecht	2.2	1831	32100	5924
Noord-Holland	2.9	-19492	45200	16398
Zuid-Holland	3.0	-22506	44200	28291
Zeeland	3.7	5135	10150	3316
Noord-Brabant	4.9	-1758	82800	28063
Limburg	5.9	-2240	20100	23129
Total	3.8	0	332000	148820

[a] Average value 1971-1978

[b] Calculated as the difference between average annual number of unemployed in 1971 and 1979

[c] Including the *Zuidelijke Ysselmeerpolders*

It appears that a relatively high unemployment level is not uniformly associated with a negative net migration. Only for the provinces Groningen, Limburg, and Overijssel can this traditional picture be observed, but the size of net labor migration is not large here. While a net emigration of labor occurred, for example, in the 1950s in regions with few job opportunities, this situation has now changed. Typical "problem" regions like Drenthe and Friesland received a considerable net inflow of labor, amounting

to 34% and 29%, respectively, of the total increase in their labor force. Also the "high unemployment" province of Noord-Brabant received a relatively large inflow of labor (21% of the total increase of labor supply). The significance of these figures is still clearer when we compare them with the change in unemployment: in Drenthe the net labor inflow was larger than the registered increase in unemployment, and in Friesland it was approximately 81% of this total increase. We do not argue that in the absence of any net migration would unemployment have been constant in these provinces. But what is clear is that the migration of labor into these depressed areas may have been a very serious explanation of the observed worsening of their labor markets. In order to obtain a complete picture in these cases, one has to take into account the relatively large commuterflows and other positive and negative effects we mentioned in Section 2.

On the other hand, the economically attractive provinces Noord-Holland and Zuid-Holland lost a considerable number of workers, equal to 43% and 51%, respectively, of the increase in their labor force, or about equal to the actual increase in unemployment here!

While in the past a net emigration of people was used in policy preparation as one of the indicators of a regional shortage of employment opportunities, now migration figures require a different interpretation. For example, net immigration of labor could be considered as an additional indication of excess supply in regional labor markets, given the already considerably high unemployment levels in most of the regions with a positive net migration.

Another characteristic of labor migration in the past was that especially the better-educated workers left the regions with the worst employment opportunities, traditionally the most peripherally located provinces. There existed a "brain drain" from these provinces towards the provinces Noord-Holland, Zuid-Holland, and Utrecht. The absence of workers with such specific skills could have formed a serious bottleneck for the economic development of the problem regions.

Our occupation-specific data can be used to investigate to what extent this is still the case. In Table 14 we present net immigration flows for the 7 occupational groups we have distinguished, for each province. Furthermore, the occupational groups have been combined into three groups: independents, white collar workers, and blue collar workers.

First, we look at the level of the 7 groups. The data reveal that the signs of total net migration (see Table 13) are the same for each occupational group, in only two provinces: Zeeland and Noord-Brabant. In all other provinces the total is the sum of both positive and negative occupational net migration. In the case of Drenthe, Gelderland, Noord-Holland, and Zuid-Holland only the sign of group F (domestic workers) is different from the others, with a remarkably high net outflow for Gelderland. In Friesland only the net outflow of teachers (group C) disturbs the general picture. Construction workers account for differences for Groningen, Overijssel, Utrecht, and Limburg. In Overijssel also the net inflow of teachers is relatively high. Relocation patterns of independents (group A) have a special impact for Groningen, Utrecht, and Limburg. Finally, for wage earners (group G), the different signs in Groningen and Utrecht must be mentioned.

The magnitudes of the net flows are also very different. They give information on the intensity of the spatial relocation process for each occupational group in the Netherlands. The degree of this intensity can be calculated as the sum of the absolute value of the provincial net flows, divided by the total labor force.* This is done for each occupational group. Results are presented in Table 15.

Also the influence of net migration on the provincial labor markets can be analyzed in these terms. The intensity of the relocation processes can be approximated as being the sum of the

*We used labor force data by occupation for 1975, which is an average year.

Table 14. Total net immigration by occupation and province over the period 1971-1978.

Province	Occupational group[a]							Occupational group		
	A	B	C	D	E	F	G	Independents	White collar workers	Blue collar workers
Groningen	30	-91	-1117	-3041	28	217	1089	30	-4249	1334
Friesland	596	275	-221	1448	378	162	1318	596	1502	1858
Drenthe	268	307	473	3196	235	-153	741	268	3976	823
Overijssel	-374	-464	891	-2500	130	-94	-1121	-374	-2073	-1085
Gelderland	1432	3258	1193	9082	331	-1290	2998	1432	13540	2039
Utrecht	-364	1345	-6	2480	-399	360	-1585	-364	3819	-1628
Noord-Holland	-1575	-4553	-830	-7164	-908	169	-4639	-1575	-12554	-5378
Zuid-Holland	-2114	-3159	-101	-10501	-829	445	-6249	-2114	-13761	-6633
Zeeland	295	507	9	1261	396	48	2618	295	1777	3063
Noord-Brabant	1202	3498	532	6348	506	586	5000	1202	10378	6092
Limburg	604	-923	-823	-609	132	-450	-171	604	-2355	-489

[a] See Table 4 for explanations

Table 15. Intensity of spatial relocation process by occupation and by region, 1971-1978.[a]

Occupational group	Intensity	Province	Intensity	Province	Intensity
A	-4.4	Groningen	6.6	Z. Holland	-3.1
B	-4.4	Friesland	0.2	Zeeland	20.6
C	9.3	Drenthe	14.5	N. Brabant	1.3
D	18.4	Overijssel	-6.8	Limburg	-13.2
E	-1.2	Gelderland	9.6		
F	12.4	Utrecht	-2.6		
G	-1.7	N. Holland	-0.9		

[a] A = Independent workers
B = All administrative personnel
C = Teachers
D = Other salaried workers
E = Construction workers
F = Domestic workers
G = Wage earners

[b] Intensities are expressed as deviations from the national average (23.1). Both have been multiplied by 1000.

absolute value of the occupational net flows, divided by the total regional labor force in 1975. Again, results are given in Table 15.

The figures for occupational groups reveal that the spatial relocation process intensity is high for other salaried workers (group D), domestic workers (F), and teachers (C) and low for the other groups. Thus, other salaried workers, domestic workers and teachers possess the highest propensities to migrate (see Table 5) as well as the highest spatial impact in interprovincial migration. These groups have a relatively high selective spatial migration pattern. For the other groups the distribution over provinces and therefore their selectivity and spatial impact is much smaller.

The figures for the provinces reveal that the intensity of spatial relocation has the relatively greatest impact for the provinces Drenthe, Zeeland, Gelderland, and Groningen. Of this quartet, only Groningen has an overall net outmigration. The effects of a large actual outflow in the provinces Noord-Holland and Zuid-Holland is small because of their large absolute labor force stock. The smallest intensities are found for Limburg and Overijssel. A closer examination of the data shows that in the four high intensity provinces the contribution of the net migration flows of other salaried workers is quite high. In the case of Groningen we also point at the high net inflow of wage earners, for Gelderland the additional contribution of the inflow of administrative personnel is important, whereas for Zeeland the remarkably high inflow of wage earners deserves attention.

When occupational groups are aggregated into three categories, the picture is, of course, less varying, as can be seen from Table 14. Most occupational signs correspond with the provincial totals. Exceptions are found for Groningen, Utrecht, and Limburg. In Groningen the overall net migration is fully determined by a high net outflow of white collar workers, which is not fully compensated by the observed net inflow of independents and blue collar workers. For Utrecht the opposite picture exists: the net outflow of independents and blue collar workers is more than compensated by a net white collar inflow. Finally, in Limburg, the net inflow of independents is remarkable.

For almost all other provinces the contribution of the net migration flow for white collar workers is the most important, with a share in the total that varies between 59% (Overijssel, Noord-Brabant) and 80% (Drenthe, Gelderland). The only exceptions are Friesland and Zeeland where the contribution of blue collar workers is 47% and 59%, respectively.

Finally, we investigated whether the observed brain drain in the past, where the better-educated left the peripheral provinces, still exists in the 1970s. For this analysis the provinces are grouped together into four new categories. The periphery is subdivided into two regions, i.e., the north-east region which consists of the provinces Groningen, Friesland, Drenthe, and

Overijssel, and the south region (Zeeland, Noord-Brabant, and Limburg). Also the center is subdivided into two regions, i.e., the west region (Noord-Holland and Zuid-Holland) and the middle region (Utrecht and Gelderland) (see Figure 1).

Since the educational level of the independents group is intermediate (the group contains farmers, shopowners, and scientific and medical independent workers among others), we concentrate on the white collar and blue collar workers. It is reasonable to consider white collar workers as having a medium or high educational level, whereas blue collar workers have a low educational level.

Data on net migration over the period 1971-1978 by education and region are given in Table 16. These figures reveal some interesting characteristics. In general, the periphery of the country has positive net migration for both educational levels (and thus the center possesses negative ones). However, highly educated people still leave the north-east region. Sixty-six percent of the net outflow of highly educated workers from the west region is absorbed by the middle regions,* thus these workers remain in the center. Only roughly 34% of these workers migrate to the south region.

For the lower educated workers there seems to be a much stronger relocation from the center of the country to the periphery. Here, 4% of the net outflow of the west region goes to the middle region with the majority of the relocation taking place in the south and the north-east region.

A preliminary conclusion may be that such a brain-drain analysis is heavily influenced by the definition of center and periphery. On the provincial level one cannot count the suburbanization involved. The rough figures in Table 16, therefore, give no arguments to reject or to agree with the brain-drain hypothesis. For such a test, data on a subprovincial level are necessary.

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*In general, in the case of more than two regions net flows cannot be used to detect the direction of the flows. However, given the geographical location of the distinguished regions, some very assumable results can be obtained.

Table 16. Net labor migration by education and region, 1971-1978.

Region	Educational level		
	High	Low	Total
North-east	-844	2930	2086
South	9800	8666	18466
Total periphery	8956	11596	20552
West	-26315	-12011	-38326
Middle	17359	415	17774
Total Center	-8956	-11596	-20552

7. THE POLICY RELEVANCE OF THE OBSERVED CHARACTERISTICS

We have claimed before that the characteristics of labor migration that have been described in this paper, provide relevant information for the design of migration policy. It remains to be shown what kind of policy suggestions can be derived from this information. In this section we shall therefore make an attempt to demonstrate the policy relevance of some of the features of labor migration in the Netherlands.

A first relevant finding is that our knowledge of the size of labor migration is incomplete. We have demonstrated that the data used here underestimate the spatial mobility of certain groups of workers considerably. If the size of this underestimation varies over time, then one has to be very careful in using the registered moves as the basis for temporal adjustments of migration policy. It is also important to correct for this underestimation when comparing spatial mobility differences between groups of workers.

Further, it has become clear that the goal of labor market equilibrium can only be attained if sufficient attention is given to the qualitative labor force composition and labor migration. We have seen, for example, that the net migration figures for different occupational groups do not always point in the same direction. A net outmigration of workers with a certain occupation sometimes coincides with a net inmigration of others. It is clear that in such circumstances, a nonselective labor migration policy could worsen instead of improve the labor market discrepancies in a region. The analysis has shown that the spatial impact of the relocation processess is very selective, both for different occupational groups and for different regions. Although provincial data no longer point to an aggreement with the brain-drain hypothesis, a clear rejection of this hypothesis is not possible. Therefore, selectivity with respect to direction of move and occupational qualifications simultaneously should be a property of an effective migration strategy.

The analysis has also shown that some high-unemployment regions nowadays are net recipients of labor migrants. This addition to the regional labor force cannot be neglected, since it was higher or equal to the increase in unemployment over the same period. This observation suggests that migration policy could be an important instrument in the attainment of equilibrated labor markets in certain regions.

Using migration encouragement as an instrument of labor market policy requires good insight into several direct and indirect effects of migration on the labor market. One would expect that at least short-run effects can be more easily estimated in the case of individually migrating persons than for workers accompanied by dependents. This could imply that the policy measures would preferably be directed to the group of single migrants.

The selection of groups that can particularly be stimulated to migrate can also be based on the type of information presented here. If policy aims at increasing the number of spatial mobile

workers in general with as little money as possible, the most mobile groups of workers could be the target groups, i.e., workers in the age groups 20-24 years and 25-29 years, especially other salaried workers, teachers, and domestic personnel. If policy aims at increasing the mobility of distressed workers, the target groups would then be independents, construction workers, wage earners, and workers in the older age groups (30-64). The analysis shows that both age and occupation have an important influence on the observed mobility differences. So a combined strategy seems to be preferable.

Concentrating migration policy to such target groups could be done by specific measures such as building houses especially suited for young, one-person households and providing mobility assistance in accordance with the age and occupation of the potential migrant.

Another important finding of this study is that labor mobility changes over time. The observed overall decrease however is the result of quite different developments. Some occupations and age groups even showed an increase in the number of migrants and in the mobility rate. Changes in the overall rate are caused by changes in the propensity to migrate rather than changes in labor force composition. Furthermore, these changes in mobility propensity are mostly determined by occupation and not so much by age.

There seems to be a reason for applying a kind of counter-cyclical migration policy, i.e., by an intensification of policy during periods with relatively low labor market mobility. The analysis suggests that again such a policy should be selective with respect to age and occupation.

The present policy of labor encouragement in the Netherlands seems instead to work out to be rather procyclical. The annual number of assisted migrants was on the average 1700 in the period 1974-1976, but declined sharply to 700 in the period 1977-1979. This occurred in a period when policy makers became increasingly aware of the desirability of increasing labor mobility as a possible means to improve the labor market situation. The

disappointing results of the policy application suggest that a more serious attempt at designing a countercyclical migration policy should be undertaken. For example, one could increase the amount of financial assistance drastically at times with decreasing mobility.

8. CONCLUSION

This study has attempted to demonstrate the kind of information on internal labor migration that would be useful for designing mobility assistance programs. As a component of labor market policy, these programs have to be selective in their application with respect to groups of workers and also the directions of moves.

We have presented some arguments for preferring such a labor supply above a labor demand policy, but this does not imply that we favor the former alternative as the best. This choice will ultimately depend on subjective weighting of different objectives, which is left as a task for policy makers.

REFERENCES

Bartels, C.P.A. (1981) *Diminishing Qualitative Discrepancies in Regional Labor Markets: A Discussion of Some Policy Options.* WP-81-27. Laxenburg, Austria: International Institute for Applied Systems Analayis.

Bartels, C.P.A., and K-L. Liaw (1981) *The Dynamics of Spatial Labor Mobility in the Netherlands.* WP-81-87. Laxenburg, Austria: International Institute for Applied Systems Analysis.

Bartels, C.P.A., and J.J. van Duijn (1981) *Regional Economic Policy in a Changed Labor Market.* WP-81-64. Laxenburg, Austria: International Institute for Applied Systems Analysis.

CBS (Central Bureau of Statistics) (1971-1977) *Statistiek van de Binnenlandse Migratie (Statistical Data on Internal Migration 1971-1977).* Den Haag, the Netherlands: Staatsuitgeverij.

CBS (Central Bureau of Statistics) (1971) *14e Algemene Volkstelling, 1971 (14th General Census, 1971).* Den Haag, the Netherlands: Staatsuitgeverij.

CBS (Central Bureau of Statistics) (1975a) *Arbeitskrachtentelling 1975 (Labor Force Statistics 1975).* Den Haag, the Netherlands: Staatsuitgeverij.

CBS (Central Bureau of Statistics) (1975b) *Statistiek van de Binnenlandse Migratie 1975 (Statistical Data on Internal Migration 1975).* Den Haag, the Netherlands: Staatsuitgerverij.

CBS (Central Bureau of Statistics) (1979) *1899-1979: Tachtig Jaren Statistiek in Tijdreeksen (1899-1979: Eighty Years Statistical Time Series).* Den Haag, the Netherlands: Staatsuitgerverij.

Drewe, P. (1980) *Migration and Settlement: 5. Netherlands.* RR-80-13. Laxenburg, Austria: International Institute for Applied Systems Analysis.

Evers, G.H.M. (1981) *On the Selectivity of Labor Migration: Data Processing and Background Analysis.* Mimeograph.

Ministry of Economic Affairs (1981) *Nota Regionaal Sociaal-Economisch Beleid 1981-1985 (Report on Regional Social-Economic Policy 1981-1985).* Tweede Kamer, 1980-1981, 16633, No.1-2, the Hague, the Netherlands.

President's Commission for a National Agenda for the Eighties (1980) *Urban America in the Eighties: Perspectives and Prospects.* Washington, D.C.: U.S. Government Printing Office.

Öberg, S., and G. Oscarsson (1979) Regional Policy and Interregional Migration - Matching Jobs and Individuals on Local Labor Markets. *Regional Studies* 13:1-14.

Richardson, H.W. (1978) *Regional and Urban Economics.* Harmondsworth, UK: Penguin.

Rogers, A. (1979) Migration Patterns and Population Redistribution. *Regional Science and Urban Economics* 9:275-310.

Rogers, A., and L.J. Castro (1981) *Model Schedules in Multistate Demographic Analysis: The Case of Migration.* WP-81-22. Laxenburg, Austria: International Institute for Applied Systems Analysis.

Vanhove, N., and L.H. Klaassen (1980) *Regional Policy: A European Approach.* Farnborough, UK: Saxon House.

Weiner, M. (1975) *Internal Migration Policies: Purposes, Interests, Instruments, Effects.* Cambridge, U.S.A.: Center for International Studies, MIT.

APPENDIX: THE EFFECT OF AGE AND OCCUPATION ON LABOR MIGRATION RATES

Let

m_{ij} denotes the migration rate for occupational group i and age group j

$m_{i.}$ denotes the migration rate for occupational group i

$m_{.j}$ denotes the migration rates for age group j

$m..$ denotes the overall migration rate

If labor force migration is not selective with respect to age and occupation, then

$$m_{ij} = m.. \qquad \text{for all } i,j$$

The combined effect (AO) of age (A) and occupation (O) can therefore be calculated as

$$AO = \Sigma_i \Sigma_j \left| \frac{m_{ij}}{m..} - \frac{1}{n.p} \Sigma_i \Sigma_j \frac{m_{ij}}{m..} \right|$$

where n and p are the number of occupational groups and age groups, respectively. To separate the age effect and the occupational effect, the following transformations are made

$$X_{ij} = m_{ij}/m_{i\cdot}$$

$$Y_{ij} = m_{ij}/m_{\cdot j}$$

in order to correct for absolute differences.

The age effect can now be calculated as

$$A = \Sigma_i A_i = \Sigma_i \Sigma_j \left| Y_{ij} - \frac{1}{p} \Sigma_j Y_{ij} \right|$$

For each age group j, divide the rates m_{ij} by m.j, then the obtained values Y_{ij} are likely to be equal for each i when age has no effect. This effect is defined as the sum of the absolute differences between Y_{ij} and the mean value, for each group i. Finally, the total age effect is the sum of the age effects over all occupational groups.

Similarly, the occupation effect is calculated as

$$O = \Sigma_j O_j = \Sigma_j \Sigma_i \left| X_{ij} - \frac{1}{n} \Sigma_i X_{ij} \right|$$

When occupation is not a discriminating factor, then the transformed age-specific migration rates $m_{ij}/m_{i\cdot}$ are the same for all occupational groups within a certain age group. The degree of variation, then, shows the occupation effect for each age group, which can be aggregated for all age groups to calculate the total effect.

Because of composition effects (the $M_{i\cdot}$ and the $M_{\cdot j}$ are weighted averages) of course AO does not equal A + O. This composition effect can be denoted as R and S for occupation composition and age composition, respectively.

Then, the following approximations are valid:

$$AO = A.S \approx A. \Sigma_j \left| \frac{m_{\cdot j}}{m_{\cdot\cdot}} - \frac{1}{p} \Sigma_j \frac{m_{\cdot j}}{m_{\cdot\cdot}} \right|$$

$$AO = O.R \approx O. \Sigma_i \left| \frac{m_{i\cdot\cdot}}{m_{\cdot\cdot}} - \frac{1}{n} \Sigma_i \frac{m_{i\cdot}}{m_{\cdot\cdot}} \right|$$

The *contributions* of the age effect and the occupation effect are defined as

a) age effect contribution: A/(A+O)

b) occupation effect contribution: O/(A+O)

The *results*, when using Table 6 (see text) are presented in Table A and Table B.

Table A. Age effect and occupation effect contributions to migration rate differences, 1975 (in percent).

	Age effect contribution	Occupation effect contribution
Males	53	47
Females	25	75
Total	42	58

Table B. Age effect and occupation effect by sex, 1975.

1. AGE EFFECT A_i

Occupational group	Males	Females	Total
A. Independents	0.34	0.58	0.29
B. Administrative personnel	0.60	0.75	0.94
C. Teachers	1.34	1.81	1.78
D. Other salaried personnel	5.04	1.64	2.30
E. Construction workers	0.87	-	0.91
F. Domestic workers	4.87	0.42	0.90
G. Wage earners	0.70	0.80	0.72
Total	13.76	6.00	7.84

2. OCCUPATION EFFECT O_j

Age group	Males	Females	Total
15-19	5.35	5.28	3.63
20-24	2.72	6.54	2.46
25-29	2.45	3.53	2.42
30-39	1.03	1.47	1.41
40-49	0.29	0.69	0.48
50-64	0.44	0.32	0.41
Total	12.28	17.83	10.81

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