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PROBLEMS OF ASSEMBLING INTERNATIONAL MIGRATION DATA FROM CENSUS AND OTHER SOURCES FOR USE IN MIGRATION MODELS, POPULATION ACCOUNTS AND FORECASTS. A preliminary exploration.

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C O N T E N T S

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ABSTRACT

In attempting to model international migration at an international level the most fundamental problem relates to the difficulties involved in compiling an adequate collection of data with which to test the models. This paper is by way of a preliminary exploration of some of these data difficulties and some of the possible approaches that may be adopted in solving them. It is very much illustrative rather than comprehensive because the problems that must be faced are both varied and manifold. Hopefully this paper will give readers some feel for both the depth and variety of the problems that need to be tackled, and how successful are likely to be some of the solutions that are being examined in the ongoing work to produce appropriate data.

1. INTRODUCTION

That migration is one of the fundamental determinants of population change is a fact that is often forgotten in producing population projections in many countries. This is particularly so at the national level largely, one suspects, because of two factors. Firstly it has been frequently pointed out, by both academics and politicians, that statistics on migration between countries tend to be both inaccurate and lacking in useful detail. These data deficiencies have hindered the development of population modelling in particular and research into the process and patterns of international migration in general. Stone (U.N., 1975), for example, in setting out to describe the possibilities for constructing a system of integrated social and demographic statistics, commented, "it would be useful to have much more complete and detailed information on international migration than is generally available. There is a strong contrast between the meticulous requirements for naturalisation imposed in many countries and the lack of even the simplest data about immigrants. Sometimes even the number of immigrants is only a rough estimate and no regular information is available even about age and sex, to say nothing of other characteristics". Livi Bacci (1974), summarising the conclusions of the C.I.C.R.E.D. (Committee for International Coordination of National Research in Demography) Seminar on International Migration, went further and suggested that "the methodology used in the study of migration is outdated only in appearance, and this is due to the poor quality of the data. The Seminar clearly indicated that more sophisticated methods would be used as soon as basic reliable data became available". The second factor working against advances in projecting migration is perhaps more important in the final analysis. In most European countries immigration has become a very emotive issue and the subject of great political debate. Consequently migration levels are a function of the political controls over their other economic and social determinants. Projecting migration in such a climate may well have been avoided in response to the possibilities of sudden politically-determined fluctuations in migration, or as being too controversial in political terms.

Yet to attempt population projections without serious consideration of in- and out-migration is to make a mockery of the purpose of demographic modelling. The political element will almost certainly remain and it must be faced rather than ignored. Academic researchers can do no more. Their task must be to consider the first of the problems cited, that of inadequate information. The objective of this paper, therefore, is to do just that in the context of developing a demographic model of Western Europe that explicitly takes migration between the constituent countries into account. The problems encountered in assembling appropriate data for such a project will be discussed and some suggestions as to possible solutions to these problems will be made.

It is recognised that the approach adopted here, that of seeking to develop from existing data sources to make fuller use of them, is not ideal in that the best way to provide more reliable and extensive data is to reform and expand the collection and recording systems themselves. This paper, therefore, while covering some of the same ground as that of Courgeau (1974), takes rather a different view of the problems. He recognises the inadequacy of available data but "instead of starting from existing statistics to discover what kind of analysis they permit, it would be useful to plan the analysis first and then decide what statistics are needed". This approach is fine in theoretical terms but as Courgeau himself comments later, "almost fifty years after the first international effort to define and measure migration in a correct and uniform manner, the results obtained are disappointing". Given this slow response any developments based on redefined and improved statistics can only prove of interest in the long term. Problems related to international migration are very much part of the contemporary scene in Western Europe and the Mediterranean, however, and so there does seem to be a desperate need for information with which to work at the present time. Despite the many complaints about data deficiencies there have been few positive attempts to find answers to the problems. It is hoped that this paper will provide some relevant ideas.

The second section of the paper is a review of the methods that are used to collect migration statistics and of the problems that stem from each in terms of their likely influence on the level of accuracy and coverage. Much of the rest of the section is taken up by a review of the data recording systems of the countries of Western Europe and the Mediterranean as they relate to migration counting. Section 3 is an attempt to solve some of the problems that are outlined in the second section and Section 4 makes some conclusions as to the success of these solutions.

2. METHODS, SOURCES AND ASSOCIATED PROBLEMS

The aim of this paper is to consider the possibilities of compiling a series of international migration matrices which give the gross annual flows between a set of Western European and Mediterranean countries. Although it would be useful to have these matrices in as disaggregated a form as possible in terms of the migrants' characteristics, the intention here is to consider only the aggregate situation as this will amply illustrate the basic problems involved in an exercise such as this. These matrices may then be used as the basis for migration models and as a component in demographic accounting models for predicting national populations. The countries to be explicitly included as origins and destinations in the migration matrices are listed in Appendix 1 together with a list of basic data sources.

It is felt that a thorough examination of basic data is an important task since the objective of developing useful models of international migration is frequently scoffed at because of the data problems on the premise that "junk in equals junk out". Courgeau (1974), for example, suggests that, "When one examines the existing forms of measurement, one quickly sees that they are scarcely capable of use in research. These measurements, made for administrative and political purposes, give too imperfect a picture of the phenomenon and do not allow its integration with a demographic or economic analysis". This comment is symptomatic of the great emphasis that has been given to the data problems in this area, and that has led to some regarding all such migration statistics with suspicion. Figures are treated as only broadly indicative rather than in any sense more meaningful. This sort of attitude will tend to preclude any analysis beyond the rather superficial and descriptive. At the other extreme is the equally dangerous approach of adopting the recorded migration statistics for sophisticated mathematical exercises without first questioning them rigorously. Some sort of balance between the two possibilities is needed. It seems important, therefore, that an assessment of the level of inaccuracy in the data is made so that some allowance can be made for it. Obviously a set of perfect, immutable migration figures will never be arrived at, but then only adequate figures are required - as accurate as other demographic data that is used in what are considered to be respectable models.

Before going on to discuss the possible sources of migration data that may be used to assemble a set of flow matrices it is necessary to consider what is meant by a migration as it is recorded in each of these sources. In an international context migration is the event of crossing a national border. This is the broadest definition that can be adopted and as such is one that is generally applicable. In recording migration, however, various additional factors are taken into account in particular countries to qualify this broad definition since every border crossing is not automatically designated to be a migration. The term migration generally implies a change of residence on the part of the migrant for an extended period. The two factors commonly used to isolate visits from migrations are, therefore, the intended length of stay of the person moving and the purpose of the border-crossing. Usually tourist trips, business visits, commuter journeys and other similar movements are not recorded as migrations unless they are scheduled to last more than a certain given length of time. The selected time period varies from country to country as does the specified list of trip types not considered to be migrations. The precise details as they

apply to particular countries on these points are given later in the review of national migration data recording systems (see Section 2.3). Some countries also require that a registration of a change of address (i.e. entry or departure) is made for a border-crossing to be considered a migration in addition to the two factors noted above, while others require only the registration.

The first and perhaps most basic problem that arises, therefore, is that the definitions used as a basis for collecting migration statistics will vary slightly from country to country so that direct comparison of the figures is not strictly valid. Secondly because information is generally collected with reference to intended length of stay there will inevitably be some degree of error in the statistics reflecting the eventual hiatus between some people's intentions and the actual events, although there are legal requirements which seek to restrict evasion of the recording system and undeclared changes of intentions. These two problems exemplify the two types of problem that will recur throughout. On the one hand there are the difficulties that derive from attempting to synthesise data from different sources (not only from within one, but from several countries). On the other hand there is the problem that migration as it is defined in each of these sources may not have been recorded accurately or completely in the first place.

A consideration of the methods used to record migration and compile statistics is important in several respects. Along with the amount of resources allocated to the task, the method employed is one of the prime determinants of the accuracy of the forthcoming statistics. It also has an important bearing on the depth and type of information that can be obtained. Both the accuracy and coverage of available data need close inspection in compiling a "balanced" set of data matrices. The review of methods will concentrate on those Western European and Mediterranean countries defined in Appendix 1. A similar review was made ten years ago by Schwenk (1966) for the member countries of the Council of Europe. That paper was produced in response to the same sorts of problem that will be witnessed here, but in the intervening years few attempts have been made to build upon the results of that review to overcome the problems. The review in this paper is not as comprehensive as that of Schwenk, although in certain respects it is more detailed, since the aim here is to progress onto some solutions. Readers are, therefore, referred to Schwenk's paper for additional information to that found in the present paper. Details of even wider relevance, particularly relating to the more fundamental sources of migration data used in Third World countries are also to be found elsewhere (for example in C.I.C.R.E.D., 1974).

Two broad classes of method have been identified (see Figure 1) with reference to the problem at hand. These have been termed contemporary and retrospective. Contemporary methods are those which involve recording migration (either directly or indirectly) within a short period of its taking place, that is to say on a continuous basis. Retrospective methods, such as census questions, gather information from a particular population stock by inquiring of those present at the time of investigation about migratory events that have already taken place, often several years before, thereby exposing this type of method to "recall" problems. Since the objective is to seek gross annual migration flows current continuous sources rather than retrospective methods will be of more interest as the data they provide is in a more appropriate form. Retrospective sources are included for completeness, however, and also because they provide useful additional information, particularly in countries with poor contemporary recording systems, which may be used in a checking or estimating capacity.

2.1 REVIEW OF METHODS

In this section particular emphasis is placed on the data problems which directly result from the nature of each of the methods. This will obviate the need to repeat these particular problems when examining the recording systems of individual countries in Section 2.3.

(a) Contemporary The first two types of method may be considered "direct" in that they actually seek to record migration. The remaining methods in this category are "indirect" in terms of our objectives in that they do not record the event itself but either the number of migrants or else some broad indicator of the level of migratory activity, from which may be derived an albeit limited set of migration statistics. Generally these "indirect" migration statistics are a by-product of various administrative procedures which are not as such designed to produce demographic data.

(i) Headcounts at border The main advantages of this method are that only migrations that have actually taken place, although not necessarily all that do take place, are recorded, and that its coverage is complete in the sense that all heads (both nationals and foreigners) are counted. There are many disadvantages, however, and the system can only really be considered at all effective for island countries. There will be a low degree of accuracy in the statistics for countries with a land border since headcounts will only take place where border points are manned by officials. Even on islands there is scope for evasion so that this method will tend to under-

	CONTEMPORARY		RETROSPECTIVE
	Direct	Indirect	
TOTAL COVERAGE	1. REGISTRATION 2. HEADCOUNTS		1. CENSUS (FULL OR SAMPLE) Questions on – birthplace – location in past – place of last residence 2. SAMPLE SURVEYS – specifically designed for stat purposes
PARTIAL COVERAGE		"IMMIGRATION COUNTRIES" 1. ALIEN REGISTRATION – foreign entry 2. LABOUR ORGANISATIONS – foreign entry with bias towards workers "EMIGRATION COUNTRIES" 3. PASSPORT ISSUE – exit of nationals 4. EMIGRATION ORGANISATIONS – generally exit of nationals, particularly organised labour flows	

FIGURE 1 : POSSIBLE SOURCES OF INTERNATIONAL MIGRATION STATISTICS.

estimate migration flows. It is also difficult to get any level of detail in the information collected owing to the great amount of time and resources required for interviewing migrants. Britain employs this method of migration counting, but uses a sample to obtain greater detail. This, however, subjects the results to sampling errors.

(ii) Registration Some countries require that each change of residence, both internal and external, is registered usually within a given period. Others go further by maintaining a full population register which is based on these registration procedures, together with the registration of births and deaths, but which is centrally coordinated thereby allowing for the cross checking of migration and other information. Very strictly speaking the statistics relate to the number of registrations and de-registrations rather than actual migrations, but as noted earlier in many countries using this system a migration is considered such by the act of registration itself. The major disadvantage of this type of method is that it is easy to avoid registration if desired and this frequently occurs in the case of emigration. Where the system is integrated with local public administration, as it is in the Netherlands, the reliability of migration records tends to be increased since there is a continuous exchange of information on all sectors of public life (education, welfare benefits, elections, passports, etc.). Consequently it is very difficult to lose much demographic information, the exception being emigration which administrative controls being internal to the country cannot check effectively. The primary advantage of this type of method is the wealth of additional information that can be collected about migrants, particularly when a full register is in operation, allowing the possibilities of much cross-tabulation. Personal life histories can then be compiled which provide valuable information on return and multiple migration, the length of stay of migrants and other elusive characteristics. To a certain extent these advantages have often been overstated since it would be very expensive in terms of time and money to obtain data as detailed as is theoretically possible.

(iii) Alien registration In most countries all non-nationals are required by law to register with the police or some other similar organisation when entering the country for any extended length of time. The count of new registrations is indicative of the level of movement into the country but not a direct measurement of it. Given the legal obligation to register it should be a fairly complete count of alien movement, but generally the figures may also include those re-registering for a new period of residence, who have not migrated at all in the period of reference. On the other hand people may make several migrations after their initial registration and these will

not be detected. As a form of registration opportunities are available for the collection of additional information but often publication of statistics from these sources is rather limited.

(iv) Labour organisation counts In those countries where migration and labour recruitment are very closely related politically the recording of migration statistics may become the indirect task of labour recruitment organisations. Consequently the emphasis in collecting information will be directed towards workers rather than migrants in general and in addition nationals returning to the country will not be counted. Certain categories of worker may not need to go through these official channels to obtain work permits, and so this method will not provide a complete count of migration on that score. Most of the comments in Section (iii) apply since the two methods are very similar, this being effectively a count of newly issued work permits, together with the attendant flows of dependents, and as the comments above have indicated is again only broadly indicative of the level of immigration.

The discussion so far has tended to concentrate on the methods employed in the "countries of immigration" to record migration. Those countries commonly termed the "countries of emigration" seek to monitor the departure of their citizens, and if possible their subsequent return, rather than concentrating on the immigration of foreigners which is of minor importance in relative numerical terms, although many foreign tourists may visit them temporarily.

The accuracy of migration figures collected in the emigration countries is generally lower than that of the richer destination countries as a result of the lower level of expenditure on statistical record-keeping and consequently the less rigorous methods used by a less developed system. These low standards are fostered by a typically archaic and slow administration which discourages contact with any official organisations. Two sources of statistics can be mentioned.

(v) Passport issue Some countries such as Ireland and Finland publish statistics on the number of new passports issued as an indicator of the level of emigration. This is a very crude measure which relates only to nationals and says nothing about immigration or return. In the countries that do publish such statistics it must be admitted that the main migratory characteristic to be observed is that which the figures refer to, namely the emigration of nationals. As the statistics relate to intention and are not necessarily specific as to the time of migration nor indeed its ultimate occurrence the usefulness of the source in providing demographic data is very limited.

(vi) Emigration organisation counts Increasingly labour has been recruited in the Mediterranean countries by reference to bi-lateral agreements, which require many administrative formalities to be undertaken in these origin countries, such as medical and literacy checks, before migration will be allowed. The strength of emigration-controlling organisations has grown, therefore, such that in some countries all persons wishing to leave the country are required to pass through their machinery. Illegal and unrecorded emigration occurs on a large scale, however, if only to avoid the gross inefficiency that typifies most of these bodies. Figures may also be collected on returning migrants, but seldom on foreigners.

(b) Retrospective

(i) Census questions There are three basic questions asked in the census which may provide information on migration, although generally no more than two of them are asked in any one country. These three questions are:

(a) Where did you live x years ago?

(b) How long have you lived in country x and where was your previous residence?

(c) Where and when were you born?

The great disadvantage of these questions is that they only provide information of the migratory activity of those resident in the country at the time of asking. Yugoslavia is an exception, however, since its last census in 1971 sought information on those of its citizens who were working abroad at the time. The information that is generally provided by census questions does not give a complete picture of the migratory patterns of even this resident sub-section of the migrant population. Questions (a) and (c), for example, only imply that a migration has taken place since there is no indication as to the date of the migration. Indeed several migrations could have been made as it is impossible to determine the number from the available information. Question (b) on the other hand is concerned solely with the last migration that a person has made, and there is no information on any previous migrations that may have been made. It is quite clear then that retrospective questions in this form are unsuited to providing reasonable gross annual migration data.

(ii) Surveys These have not been commonly used in Western European countries to collect data on the level of international migration. They have been used, however, to obtain detailed information on the characteristics of labour migrants, and to gain some insights into return migration (see, for example, Baucic and Maravic, 1971; Kayser, 1972, to name but two).

Nearly all Western European countries derive migration statistics from more than one of the sources listed in this section and this enables some of the weaknesses that have been outlined to be concealed by compiling data from several sources and by cross-checks between sources. On the other hand multiple sources of information on migration or migrants within a single country may prove to be as much a problem as a benefit. Almost inevitably there will be some conflict between the various statistics as a result of the possibility of different recording methods being adopted, that is assuming that the definitions being used do allow direct comparison, which is not always the case since organisations tend to select definitions most appropriate to their purposes (which are generally administrative). Since different sources are often considering different facets of migration ideally it might be possible to build up a full picture from these complementary sources. In reality, however, there is no such integrating scheme behind the data collection and so the emerging figures do not dove-tail neatly into a comprehensive unit.

2.2 "CROSS-CUTTING" PROBLEMS

In addition to the problems that arise as a direct result of the nature of the data recording systems are those that are largely independent of them. Those that will be identified apply particularly to the "indirect contemporary" methods that have been described to further limit their coverage.

(i) Colonial history Those countries with overseas territories or colonies, either past or present, usually have a less restrictive set of migration regulations applying in favour of citizens of these "colonial" states, who are generally not considered as aliens. Consequently registration for administrative purposes is often carried out by a completely different organisation to that dealing with aliens. This tends to result in statistics being collected using different methods and definitions, making it difficult to combine the various figures into a general migration total. These sort of problems are particularly evident in the case of France. Although most Western European countries have or have had "colonial" relationships with other states in the recent past those with full population registers or change of residence registration requirements tend not to be affected by such problems.

(ii) Economic partners Colonial relationships are being increasingly abandoned and replaced by economic unions such as Benelux, the Nordic Union and the E.E.C., and these have attempted to promote policies of free movement of labour between member states. Effectively this has made the citizens of

these states into what might be called "intermediate" citizens of the other states. That is to say they are treated neither as full nationals nor as aliens. Such policies have produced localised disruptions of the recording systems, particularly those based on "indirect" methods, since workers can now take up employment without seeking permits, or passports in the case of the Nordic countries. Other administrative measures have been adopted to record these flows when such disruptions have occurred.

(iii) Status exemptions Certain people are often made exempt from any migration counting process by virtue of their status. The two groups most commonly treated in this manner are foreign armed forces and their families, and foreign diplomatic personnel and their households. These groups are seldom recorded in any census or other population counts, however, and their existence is all but ignored, making their migratory activity of little interest.

(iv) Coverage The first three categories of "cross-cutting" problem related to groups, who by virtue of their nationality or status being regarded in some way special, are set apart or even ignored in the migration recording system of a particular country. On the other hand frequently no separate migration statistics are collected for flows to or from various countries, and this is a problem that applies to all methods of recording. When flows are small in relative terms in a particular country's experience records are collected for residual areas, such as the Rest of Europe or the Rest of the World, rather than all the individual component countries. This poses a problem where the absolute migratory activity of each country in the system varies widely as it is bound to when the size of the countries is so unequal (ranging from Luxembourg to France). Some of the flows considered too small to record separately in West Germany, for example, may be much larger than flows which are recorded individually in smaller countries. The example of Algeria points to another problem. Flows to and from Algeria have been particularly important in the French experience while few other Western European countries record independent statistics on migration with Algeria as origin or destination. Other less extreme cases of this same problem could be cited. Problems such as these make it very difficult to determine exactly which countries to include in the migration system, and further when this has been done to compile a set of system-wide statistics for anything beyond a small number of countries. Further mention will be made of these points in Section 3.

(v) Availability A distinction must be made between those statistics that are collected and those that are made generally available since the second category, which researchers must use, is far less comprehensive than the first. There will always be raw data that may be converted, albeit expensively, into better figures. Is it better, however, to develop on the theoretical side with the knowledge that better information is, or may become, available which national governments or international agencies themselves can apply given the necessary background work, or is it better to work solely with those figures that are readily available, developing techniques to overcome deficiencies that do not exist for those organisations with the raw data at hand, but at the same time illustrating research that they themselves could carry out more fully and fruitfully? In the following national review the level of information that is collected is indicated wherever possible.

2.3 NATIONAL REVIEW (the data sources and references relating to this section are to be found in Appendix 1)

So far the discussion of the problems that arise in attempting to compile a series of international migration matrices has been rather general. In this section the problems that have been outlined will be illustrated by examples from selected Western European countries. The aim is to review in detail the migration statistics of these countries with particular reference to the points raised in the first two sections. The juxtaposition of the national examples will stress the various differences in the coverage and accuracy of the data sets and further illuminate the problems of seeking comparability at the international level.

(i) Netherlands The Netherlands employs a continuous population-counting registration system which, since 1940, has been based on personal information cards. The municipal population registers, of which there are just over 1,000 in operation, are made up of a collection of these cards for all those persons normally resident in the particular municipality. They are supplemented by the Central Population Register in The Hague which records information for persons living on ships, in caravans and who have no fixed place of residence. The whole system is centrally co-ordinated by the Central Government Inspectorate of Population Registers, and the Centraal Bureau voor de Statistiek (Central Bureau of Statistics, C.B.S.) is responsible for the compilation of demographic, and other, data.

When a child is born a personal card is begun and entered in the appropriate register. This card is used to record all subsequent demographic events in the person's life (parents, birth, marriage, children, migration and death) together with other personal and administrative information such as nationality, occupation, religion and so on.

It is required by law that all changes of residence are declared to registry officials. A "removal-card" is given to each person moving which is handed in at the destination municipality. The register is then adjusted, the card sent to the municipality from which the person has arrived and then finally to the C.B.S. In the case of people emigrating all personal cards are removed from their municipal registers and sent to the Central Inspectorate where they are kept in a central archive. These cards are used again if the person later returns to the Netherlands. The municipality also sends a so-called certificate A to the C.B.S. which give the following information on each emigrant:

Name and sex
Date of removal from register and of departure
Place and date of birth
Nationality
Religion
Last occupation before emigration
Occupational status
Marital status (and date of marriage)
Members of family accompanying
Destination country
If immigrated after 1/1/40 date of last entry into register

For each person newly immigrating into the Netherlands a new personal card is entered into the population register of the appropriate municipality of residence. After each entry (new or return) the municipality sends a certificate B to the C.B.S. This gives largely the same personal information as certificate A plus intended length of stay (either less than or more than one year), and municipality and date of removal from its registry if previously resident in the country.

When a person leaves a municipality, either to go to another or abroad, and the personal card is removed from the register it is replaced by an "archive card" so that there is a record of all persons who have lived in the municipality.

Each municipality is also required to send in a monthly statement of persons entering or leaving their register (not including births and deaths) by sex according to whether the origins and destination are:

(a) a municipality within the province
(b) a municipality in another province
(c) the Central Population Register
(d) abroad
(e) unknown

The concept of "external migration" adopted in the Netherlands is as follows. Any person, except for a few special cases, who intends to stay in the country for more than 30 days (or 180 days for aliens) has to be entered in the population register of the municipality of new residence. Removal from the register follows when a person intends to leave the Netherlands permanently or for an intended indefinite period exceeding 360 days. According to this definition the external migration statistics cover only those persons whose arrival in and departure from the Netherlands coincides with a change of normal residence. The statistics, therefore, do not include international passenger traffic (tourists etc.) or frontier workers.

The coverage of the Dutch population registration system with regard to migration is complete in the sense that all persons, whatever their nationality, moving in or out of the country subject to the time limits noted above are required to register their migration with one common body. Consequently none of the problems described earlier which are internal to the country arise in the Dutch case. Figures are available relating to a very wide series of origin and destination countries and in addition there seems to be a high degree of accuracy in the migration statistics, although the emigration figures may be underestimates. Generally the data is ideally suited in all respects to the task at hand.

(ii) Belgium Two types of population register are kept in each commune in Belgium. The first is a general register which records the following information on the normally-resident population:

Name and address
Date and place of birth
Status in household
Marital status and family
Nationality
Profession
Previous and subsequent places of residence and addresses
Date of entry and removal from register for those who have left the commune
Place and date of death
Administrative information

The second register records information on all foreigners intending to stay more than eight days in the country. Foreigners not obliged to register themselves are:

(a) those on business trips or studying for a period of less than three months in any six

(b) foreigners living in bordering countries even if they come to Belgium daily, on the other hand those coming to manage or run any sort of establishment are subject to normal rules

(c) foreign sailors authorised to disembark

(d) persons hospitalised during a visit

(e) imprisoned foreigners

(f) foreign diplomatic staff, E.E.C. officials, their families and foreign domestic staff

(g) foreign soliders in N.A.T.O. bases.

Belgian migration statistics compiled by the Institut National de Statistique are a record of the number of entries and removals from the population registers. The data is in a suitable form for use in the migration matrices but two problems must be faced. Firstly figures are only available for a limited set of origin and destination countries. Secondly the registration system is not as well co-ordinated and backed-up as its Dutch counterpart and consequently the migration statistics are rather suspect, and so would seem to need adjustment.

(iii) Luxembourg Here external migration refers to all persons of Luxembourgeois and foreign nationality who enter or leave the Grand-Duchy with the intention of settling for at least three months. The figures, therefore, exclude frontier workers. Those exempt from registering are foreign diplomatic staff, foreign armed forces, foreign civil servants working for international organisations in Luxembourg, plus the families of these three groups. The civil servants are only really exempt from the registration with the police that all foreigners must undertake, but in practice this privilege has been extended to the population registration procedure.

All migrants as defined above, with the exceptions noted, are required to complete a change of residence certificate in the commune in which they intend to stay if immigrating or in the commune they are leaving if emigrating within five days of the event. They are then entered in or removed from that commune's population register. Each commune is required to send an annual statement to the Service Central de la Statistique et des Etudes Economiques (S.T.A.T.E.C.), the central statistical organisation, on changes of residence within that year affecting their area. The information transmitted in this report is in the form of a list of persons who have changed their residence plus the following personal details:

Origin or destination
Age and sex
Profession
Marital status
Nationality

A summary of the number of arrivals and departures for a limited set of countries by sex also accompanies this report. This summary forms the basis of the published statistics on migration. It is thought that many people leave the country without deregistering and so emigration figures are underestimates.

(iv) France A detailed review of the French sources of statistics on migration and the immigrant population appears in Tapinos (1975), which is acknowledged as the primary source of the information in this particular summary.

France is the perfect example of a country with a multiplicity of migration data sources and contrasting recording methods. Consequently the synthesis of all the various pieces of information is not a simple exercise. The Office National d'Immigration (O.N.I.) is the central organisation in charge of the recruitment, placing and control of foreign labour flows into the country. It issues work permits and regularises the situation of illegal immigrant workers. As a result the statistics that are collected relate to the number of permits of each category issued (either to permanent or seasonal workers) plus members of the workers' families accompanying them, rather than being a direct count of migrations. These figures give an indication only of the level of immigration into France. The O.N.I. figures also only relate to those persons required to register with them. Certain categories of worker (and their families) are exempt as too are non-active persons not accompanying a registered worker and this includes tourists, students and other similar groups. In the past many thousands of "tourists" and seasonal workers stayed longer than they intended, usually deliberately, to become permanent workers as a result of France's willingness to regularise the position of such illegal migrant workers. The Portuguese in particular relied heavily on this means of entering the country. This situation meant that the O.N.I. figures were rather unreliable as the statistics on illegal migrants related to the year of regularisation rather than entry, and there was no telling how many undeclared illegal migrants there were in the country, particularly after about 1970 when the regularisation procedures were made less liberal.

Before the E.E.C. free movement policies came into operation citizens of the member countries had to go through the O.N.I. to obtain a work permit, but this is no longer necessary although the O.N.I. services may still be used if so desired. The O.N.I. still records the entry of all E.E.C. nationals, however, as they are still required to undergo a preliminary medical examination. No count is made of the return of French citizens since they obviously do not need work permits. Others not required to obtain these permits from the O.N.I. are Algerians and "Black Africans" (that is citizens of former French West African states). The arrivals and departures of people of these nationalities is recorded by the Ministry of the Interior (the French equivalent of our Home Office) by headcounts at the principal air- and sea-ports. The figures for Algerians relate to all civil passenger movements, as do those for "Black Africans" although only direct routes are covered and illegal immigration is said to be large, particularly since the French authorities have introduced increasingly stringent entrance regulations (on this see, for example, Adams, 1974).

The statistics collected by the O.N.I. and the Ministry of the Interior relate only to Metropolitan France. They do not generally include migration to and from the French overseas colonies ('départements' and 'territoires d'outre-mer'), although the O.N.I. figures may cover the small number of workers that are sometimes recruited from these areas. The only migration figures available for these colonies are the migration balance statistics, based on the number of entries and exits controlled by the police at air- and sea-ports.

It can be seen, therefore, that little data is available according to the origin of migration flows. The figures of the O.N.I. refer rather to nationality, as indeed do the statistics on permits issued in most countries. The remaining sources do by implication refer to origin countries, but only to nationals of those countries.

No emigration data of any nature, other than for the departures of Algerians and "Black Africans", is collected in France. Annual net migration figures for the country are produced by I.N.S.E.E. (Institut National de la Statistique et des Etudes Economiques), the central statistical organisation, but these have often been criticised, for example by Tugault (1971), as being subject to gross errors.

Any attempt to combine all these sources of migration statistics into a general total is bound to be fraught with problems. To begin with the various statistics are not comparable - some refer to permits issued, some to gross passenger trips and others to net passenger flows. In addition there are significant omissions, notably the lack of any information on the movement of French nationals, which must be compensated for.

France must, therefore, be the prime example of a country which collects detailed statistics on many aspects of migration but does little or nothing to co-ordinate them or facilitate their use in demographic work.

(v) Federal Republic of Germany A comprehensive review of all the aspects of migration records in West Germany must again be acknowledged as the main source of information in this section (see Bundesinstitut fuer Bevoelkerungsforschung, 1974) to which the reader is referred for further details.

Since 1st January 1950 it has been required that all changes of residence within, into or out of West Germany are registered within 14 days so that local card indexes of inhabitants can be kept up to date. A deregistration certificate must be completed by each head of household on behalf of any accompanying family members when moving to, and a registration certificate when arriving from another part of Germany or abroad. Generally registration certificates are thought to be more accurate than those for deregistration since they are filled in after the event and tend to be completed on more occasions. Consequently emigration figures are likely to be underestimates as observed in other countries with a registration system.

Migration figures are compiled direct from copies of the two types of certificate by the appropriate Land statistical offices, to whom they are supplied by the local community registration offices on a monthly basis. In the case of internal migration there is close cooperation over the exchange of certificates between the origin and destination communities of migrants, thereby enabling checks to be made on consistency, accuracy and completeness of the collected information. Unfortunately these possibilities do not exist in the case of external migration figures.

The law also requires that all foreigners, other than tourists, register at the local community aliens department. Particularly since 1967 there has been close contact between the registration offices, the aliens departments and the Federal Administrative Office which keeps a central register of foreigners. Registration offices also supply details of changes of residence to various administrative agencies. This integration of statistical record keeping and the local administration increases the validity of the data by ensuring that most aspects of life require some contact with the record system.

Migration statistics, therefore, refer to the number of completed registration certificates. The following characteristics are recorded on these certificates for the migrants:

Date of move

Old/new place of residence

Main or secondary domicile

Sex and age

Marital status

Economic activity or non-activity

Legal membership in a church, religious or political-philosophical association

Nationality

Of course published data, compiled by the Statistisches Bundesamt (Federal Statistical Office) from that produced by the Land Offices, is not available at this level of detail.

The German registration system gains, therefore, like other similar systems, in terms of the resulting data, by its being current and exhaustive in its coverage. Even though the system is designed largely to suit administrative purposes the migration statistics that are collected are considered satisfactory enough for there to be no need to ask any migration questions at the census. In addition there has been no provision made for data on the migration of foreigners to be compiled from the central register of foreigners. This is not to deny that there are still problems.

As already pointed out there is a great tendency for a registration system to underestimate emigration. On the other hand it has been said that the statistics are inflated by foreign workers and their families returning to their home countries for their Christmas holidays and deregistering so that they can reclaim their contributions to the old age insurance fund. Against these relatively minor problems can be set the great level of detail available in the statistics. External migration flows to areas that were part of Germany before partition are, however, distinguished from those to other countries. There are two of these areas - the German Democratic Republic, including East Berlin, and the "Deutsche Ostgebiete", that is the eastern territories of the former German Reich, as at 31st December 1937. Published statistics on migration to and from these areas tend to be less detailed than that to the remaining countries making the compilation of disaggregated totals rather difficult.

(iv) United Kingdom Various summaries of the migration data that is available for the U.K. exist but that of Moser (1972) is probably the most complete. Since 1964 the main source of information on gross migration flows into and out of the country has been the International Passenger Survey (I.P.S.), which is also described in Davis and Walker (1975). It replaced

what was considered to be a rather incomplete and inaccurate headcounting system which concentrated on recording the number of civilian passengers using long distance sea routes. Pre-1964 statistics must, therefore, be treated with great caution and should not be compared with the figures from the I.P.S.

The I.P.S. is based on interviews of a random sample of persons entering or leaving the country's main sea- and air-ports. The sample varies between 0.33 and 7.0 per cent of all travellers according to season and route. In 1973, for example, 315,000 interviews were carried out and just over 10,000 of these were finally classified as migrants. The definition of a migrant adopted by the I.P.S., a traveller intending to reside for a continuous period of one year in the U.K. if arriving or abroad if departing, means that the arrival number of migrants must be equivalent to the annual number of migrations. Information required of migrants includes citizenship, country of previous or intended residence, age, sex, marital status, last occupation, and since 1971, country of birth and area in the U.K. of previous or intended residence.

It is generally thought that the I.P.S. figures are broadly accurate, but several problems still limit the accuracy and coverage that can be achieved. Firstly since the survey is based on a sample the statistics are subject to sampling errors and possible sampling bias. Secondly statistics are collected on the basis of the travellers' intentions for the following twelve months. Obviously intentions will change as those classified as visitors stay long enough to be considered migrants and vice versa. Such changes are inevitable particularly over a twelve month time period which is much longer than that generally used to distinguish the two groups in other European countries. The third problem is that the published statistics are not very detailed in their origin and destination breakdown, particularly in terms of migration between the U.K. and the various Western European countries. Finally the I.P.S. does not cover any movement between the U.K. and Eire.

It must be said, however, that the I.P.S. does have the advantage of seeking to record all migratory flows (other than the Irish exception) whether the migrants be British, Commonwealth citizens or aliens. In contrast the statistics recorded by the Home Office relate only to the second and third of these groups and are essentially collected for administrative purposes. The categories adopted in classifying those subject to immigration controls largely reflect this. In addition information is collected on nationality rather than origin or destination

but these Home Office statistics, and indeed some census figures, do prove useful in carrying out checks on the I.P.S. results.

(vii) Eire In reviewing the United Kingdom's migration records it was pointed out that little information is available or even collected, about flows between Eire and the U.K. This statement applies equally to the Irish records, but because such a high proportion of flows into or out of the Republic of Ireland involve the U.K. as origin or destination this implies that in the Irish case the overall statistics will be very limited indeed. This is indeed the case.

This dearth of information is a reflection of the close ties that have always existed between the two countries and the consequent lack of migration controls. It also reflects the realities of the North-South Irish situation and the impossibility of recording flows between the two parts, particularly given the current political climate. Indeed as Schwenk (1966) notes "there are no statutory regulations of any kind for the coverage of migration in Ireland".

There are two types of record kept by the Irish authorities on "migration". The first is a headcounting of all passengers into and out of the country, except those travelling to Northern Ireland by private transport. The second is the number of new passports issued to persons intending to leave Ireland to go to employment or a new permanent residence, plus a count of the families included on these passports. Both of these measures are incomplete in their coverage for reasons that have already been listed. Neither is particularly useful for the purpose at hand - not even the first of the records since it relates to trips rather than migrations (and even then not all trips) and also the statistics relate to only three origins/destinations, namely Great Britain, the Six Counties and the Rest of the World.

It seems necessary, therefore, that various estimations need to be made, on the basis of the pieces of fragmentary data that exist, if sounder and more extensive flows statistics are to be compiled. Here census material will play a role and various researchers have already considered some of the possibilities. Walsh (1970), for example, has used the 1966 British census to look at Irish migration.

(viii) Switzerland Swiss external migration statistics have much in common with those of France, being characterised by the collection of information by more than one organisation and largely concentrated on the recording of foreign labour movements into the country. The Swiss situation

is not complicated by any colonial heritage such as that of France, and unlike France, Switzerland collects statistics on the migration of its own citizens.

The level of migration of aliens into Switzerland is indicated by the number of new residence permits issued, that is not including renewals. The statistics are classified into a number of permit types reflecting the essentially administrative function of the records. In terms of the objectives here the simplest measure of immigration is arrived at by adding the figures relating to non-seasonal workers to those for non-active persons, thereby omitting those for seasonal and frontier workers and "stagiaires" (literally probationers). As with any count of permits the statistics will be classified according to the nationality rather than the origin or destination country of the permit holders.

(ix) Denmark, Sweden, Norway and Iceland All these countries maintain full population registers to which all changes of residence must be reported. In terms of external migration there are, however, small variations as to the intended length of stay definitions adopted to distinguish visitors from migrants. Otherwise the data is perfectly suited to the present exercise's requirements and it is not thought necessary that a description of the system be repeated (see the Netherlands section for such a description).

(x) Finland Although Finland maintains a population register the requirement to report any changes of residence has not been as strictly enforced as in the other four Nordic countries. Consequently up to about 1969 the external migration statistics provided by the register were very incomplete. Equally the statistics on the issue of new passports provided very unsatisfactory data since no passports or work permits have been required for travelling between the Nordic countries since 1954 (1955 for Iceland). Since the migration from Finland is overwhelmingly to Sweden (and return from there) these passports statistics were gross underestimates.

According to Nieminen (1973), "An agreement between Finland and other Nordic countries on the registration of immigrants came into force in 1969, and this will make it easier to prepare statistical data on emigration within the Nordic area". Since then the quality of registration figures in Finland has improved considerably so that they are now broadly comparable with those of other Nordic states.

(xi) Greece External migration statistics are collected by the Passport Control Office through headcounts at the major land, sea and air points of arrivals and departures. The figures refer to Greek citizens only, however, as most non-Greeks are tourists.

Emigration is classified into two categories - permanent and temporary. The first category relates to Greek citizens permanently residing in the country who go abroad to reside for at least one year, and the second to those who leave to work or sign on for under a year. Similarly immigration statistics cover only Greek citizens permanently residing abroad. Repatriated Greeks are those who after having lived abroad continuously for at least a year return to Greece permanently or for a minimum of twelve months. These repatriation figures have only been collected since 1968.

The Passport Control Office also makes a count of all passengers arriving in and departing from the country, except for those in transit and those intending to stay in Greece for over a year. All these persons are classified as tourists and statistics relate to both Greeks and foreigners. There does seem to be a lack of clarity, therefore, in the organisation behind these records and the exactness of any of the categories of migration is very much open to question.

(xii) Austria Virtually no migration data is collected in the country. A migration question was asked at the last census (12.5.71), however, which allowed information on those who had immigrated in the previous five years to be gathered. There was no inquiry into the year of entry so that it is impossible to produce even crude annual immigration statistics for that period.

(xiii) Portugal The Portuguese Office of Emigration (Junta da Emigracao) is the organisation which controls migration into and out of the country and issues passports to potential emigrants. As noted earlier in discussing the French records there have been many thousands of illegal immigrants entering France from Portugal. These are not recorded in the Portuguese emigration statistics, until they have regularised their situation in France by obtaining a work permit there. Having done this they may then also regularise their position with the Portuguese authorities, and in doing so are counted as emigrants leaving for the first time (when in fact they left much earlier). Consequently the official emigration statistics need to be treated with extreme caution.

(xiv) Yugoslavia The Federal Secretariat of the Interior records external migration data in Yugoslavia. Its immigration statistics cover persons living abroad who enter the country to settle permanently having obtained the necessary permit. Emigration figures refer to all persons (both Yugoslavs and foreigners) living in the country who leave to settle permanently elsewhere. These emigration statistics do not, however, include those classified as leaving for a "temporary stay". This category seems to refer to most Yugoslavs working abroad and their families since a temporary stay can last almost indefinitely. The Yugoslav Labour Exchange Service registers those Yugoslavs who go to work abroad through its intermediary. These figures are thought to underestimate the real flows.

The 1971 (31st March) census sought to gather information on Yugoslav workers temporarily abroad. The questions were asked of relatives or neighbours who could provide the necessary information, which included year of last migration. Obviously using such methods many errors and omissions were bound to occur but the information that was collected gave a detailed insight in Yugoslav labour emigration although in terms of providing for the compilation of gross annual flows its usefulness may be very limited.

Unfortunately it has not been possible to discover adequate details of the migration recording systems in the remaining countries. Most of them do only have a very fragmentary set of records anyway.

It is hoped that this section has illustrated the many types of problems that exist in relation to using external migration statistics. Further problems in synthesising all the data from the individual national sources become evident in seeking to compile the annual migration matrices. These will be discussed in the next section and some possible solutions will be put forward for examination.

3. TOWARDS AN INTERNATIONAL MIGRATION MATRIX FOR WESTERN EUROPE AND THE MEDITERRANEAN

If perfect migration statistics existed each element in the matrix in Figure 2 would contain two numbers - one the level of emigration from any country i to any country j as recorded by country i, and the other the level of immigration from country i into country j as recorded by country j - and both of these would be exactly the same. The existence of such a perfect situation would require that:

(a) all records are completely accurate and are available in a fully disaggregated form (in terms of origin and destination countries),

(b) every country defines migration in the same manner and therefore that the figures both refer to exactly the same flow of people.

Figure 2 is a simple attempt to illustrate how far the reality of the situation is from this ideal. The diagram summarises the figures that are available in an approximately suitable form for the purposes of compiling a data matrix (although it must be emphasised that the sources used are not necessarily always the most detailed that exist). The following figures have been omitted, however, as requiring significant adjustment before use:

(i) data classified by nationality rather than origin and destination, although there is a close relationship between the two characteristics which will be used later to allow the conversion of nationality-specific figures,

(ii) data where only figures for nationals are available by origin and destination, except in the case of "emigration" countries when nationals form the majority of migrants.

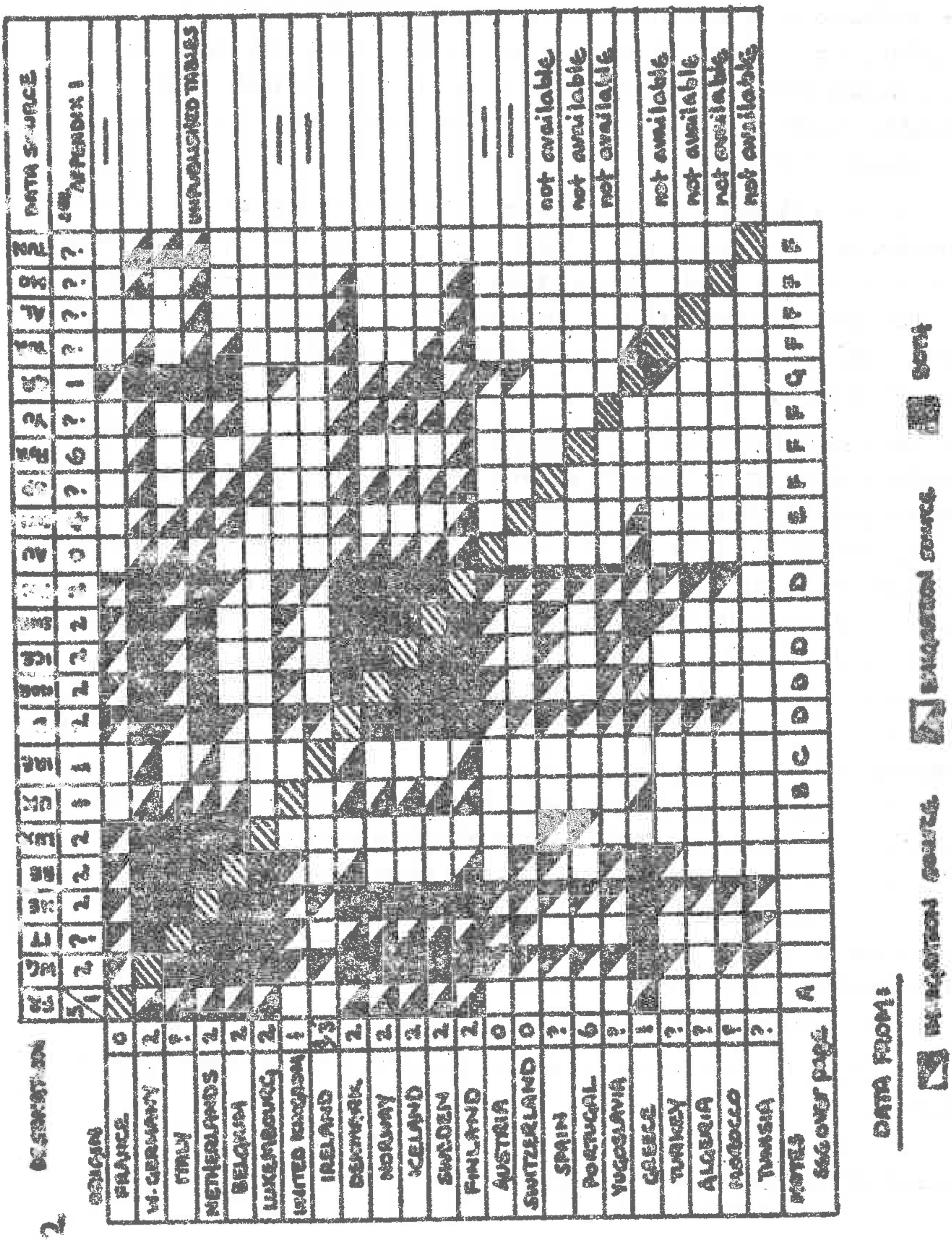
The blank elements in Figure 2, therefore, represent data that is available in either an unsuitable form or unavailable in any form (apart from fragmentary pieces of information). The level of unshaded elements is consequently a good indicator of the level of data estimation and adjustment that will be required to arrive at a complete and reasonable matrix. At the head of each column is given the type of source of the immigration data and the row code relates to emigration data. The discussion in Section 2.1 will have indicated the particular difficulties associated with each of these sources which need to be borne in mind when interpreting the available statistics.

In reality how well do the immigration and emigration based statistics of each flow compare? A small section of Figure 2 that can be completed very simply with the recorded statistics is given in Table 1 for four countries. It demonstrates that, even in those countries with what must be considered as some of the better statistical recording systems, large discrepancies in the figures do occur. The differences that are evident arise from either or both of two factors:

(a) there are errors in the recording of either or both of the sources,

(b) the two sources are not recording exactly the same flow and therefore the figures are not really directly comparable.

FIGURE 2: A SUMMARY OF ORIGIN AND DESTINATION BREAKDOWN IN MIGRATION RECORDS.



Notes to Figure 2

DATA SOURCE TYPE CODE

0	No records collected
1	Frontier headcounts
2	Registration
3	Passport issue
4	Alien registration
5	Work permit counts
6	Emigration organisation
?	Not known

NOTES

A France The data that is available refers to aliens only, and is almost exclusively classified according to nationality.

B United Kingdom The breakdown of origins and destinations is very limited and relates to broad regions.

C Ireland Virtually no regional breakdown - data also in an inappropriate form.

D Denmark, Norway, Iceland, Finland Data relates to East and West Germany together rather than simply West Germany as suggested in the Figure.

E Switzerland Data for nationals is available by origin and destination, but that for aliens by nationality (and for immigration only).

F Spain, Portugal, Yugoslavia, Turkey, Algeria, Morocco, Tunisia Information on origins and destinations not presently available.

G Greece The data used in the Figure relates to "permanent" migrants only (i.e. Greek citizens). Note D also applies.

The data used to compile this Figure is from the sources given in Appendix 1 (section b for each country) except if otherwise indicated.

Obviously it is difficult to isolate the level of influence of either of these possibilities where both are acting simultaneously. Here is a further problem then - when two different figures are available for the "same" flow which is to be used?

It could be argued, on the evidence of the review of various data collection systems in Section 2.1, that a hierarchical ordering of these methods, from the most accurate to the least (in terms of both immigration and emigration), can be defined to formalise the selection of the figures with the least suspected errors. Registration seems to be the most proficient means of recording external migration statistics, but empirically it is much more suited to providing immigration rather than emigration data. Consequently it is suggested that the immigration rather than emigration records of registration-using countries should be selected for use in the data matrices. In addition the migration records of the registration-using countries (generally the "immigration countries") should be selected as preferable to those of countries using other systems. A finer definition of the hierarchy could be made but will be of little further use since the broad principles outlined cover almost all of the cases where the two sources of information for a single flow exist.

Choosing the least inaccurate figure however does not necessarily mean that a good estimate of the migration flow has been selected. The emigration data of a registration-using country is preferable to the immigration data of non-registration countries, but as mentioned several times earlier it is probably still a significant underestimate. Periodically evidence occurs which runs contrary to all these principles and tends to weaken the trust placed in their reliability. In the example in Table 1, for example, the flow from the Netherlands to Belgium is greater according to the emigration rather than the immigration statistics contrary to what would have been expected. This tends to suggest how dangerous it is to attempt any generalisation in an exercise such as this! It also emphasises that not only should the characteristics of each of the recordings systems be given close attention but also each country's particular use of and experience with them, hence the validity of the review in Section 2.3. In examining the difference in figures from twin sources the fact that the definition of migration varies perhaps only very slightly must not be forgotten since this may also partly explain the unexpected recorded level of some flows in the numerical example for four countries using the same basic type of recording system.

Dest'n / Origin	NETHERLANDS	LUXEMBOURG	BELGIUM	WEST GERMANY (FDR)
NETHERLANDS		198 / 195	4964 / 5409	14397 / 11843
LUXEMBOURG	139 / 148		548 / 482	1184 / 556
BELGIUM	5011 / 4145	681 / 589		5391 / 3281
WEST GERMANY (FDR)	11241 / 10030	660 / 836	4235 / 4455	

IMMIGRATION DATA / EMIGRATION DATA

TABLE 1 : IMMIGRATION AND EMIGRATION STATISTICS FOR 1972 COMPARED IN FOUR WESTERN EUROPEAN COUNTRIES.

The compilation of a reasonable data matrix is not, therefore, just a question of selecting the best observed figure for each element and estimating the unknowns. There must be comparability between the elements of the whole matrix in terms of the flows that the figures represent, and also the figures must be as accurate as all known information allows them to be. It is important that some numerical estimate is made of the inaccuracy of the recorded migration statistics so that they may be adjusted where necessary. The reviews in Section 2 of this paper gave a qualitative indication of this, but a quantitative estimate is much more difficult to arrive at.

The key to many of the problems that have been discussed may well be to place migration in its overall demographic context, that is as a component of demographic change. This also makes sense in the light of the modelling objectives for which the data is being assembled. An attempt should be made to define a methodology rather than relying on a series of piecemeal estimates and adjustments.

3.1 DEMOGRAPHIC CONTEXTS AS CONSTRAINTS: A HIERARCHICAL VIEW?

External migration figures have often been calculated by what is usually termed the "residual method" (see, for example, Adams, 1971), that is by subtracting the natural increase over a given period in a particular country from the difference between the population stock totals bounding that period. The source of these stock figures is commonly the census. This method has been frequently criticised, however, because all errors in this demographic data are transferred to the residual term, in this case migration. In addition only a figure for net migration over the whole period, rather than gross annual flows, can be calculated. Net one year migration totals could be calculated by this method if accurate end-of-year population estimates were available, but this is seldom the case since these stock estimates are generally calculated using the observed or estimated migration statistics. The stock estimates are even more unreliable than the migration figures as a result and are usually recalculated after the next census. The residual method appears rather limited and inaccurate, but it can be used as the basis of a more meaningful set of calculations to produce annual origin and destination-specific figures.

Strangely in other types of demographic modelling the errors cited above as being compounded into the resulting migration totals tends to be conveniently ignored. Why then should they be any more serious in the estimation of migration data? Why should the observed annual migration figures, when available, not be compared with the calculated net migration totals provided by the residual method to give some indication of the accuracy of the recorded figures?

Before any progress can be made, however, a series of assumptions needs to be made indicating how the reliability of data in the demographic field is judged. A hierarchical ordering may be proposed which classifies types of demographic data according to their RELATIVE accuracy, on the basis of empirical observations. A relative ordering must be adopted since no source of information is absolutely accurate - but one at least must initially be assumed to be so. The sequence of this hierarchy will almost certainly need to vary from country to country to reflect the particular experience of each, but that in Figure 3 will be the most common. The census heads the sequence as it is intended to be the most comprehensive inquiry into population conducted in nearly every country. Birth and death statistics are placed next in the hierarchy, with migration figures a stage below. On the basis of the review in Section 2.1 immigration data is placed before emigration data, although in the "emigration countries" the reverse may be more appropriate. The list is completed by population estimates, because they must be calculated with reference to all sources of information above them.

This is not to deny that there are errors in the census. Immigrant groups in particular tend to be underevaluated by virtue of their unstable housing situation and uncertainty as to their right to residence in the country (prompting avoidance of the authorities). On the other hand many of these same people will not declare births and deaths in their families, or have not been recorded by the migration figures either. In estimating migration by the residual method the errors in the data are just as likely to cancel out as to be compounded.

Most countries undertake a process of calculating annual population estimates with reference to census figures, birth, death and migration data - either using a population register or also on a less formal accounting basis. This process may be simply specified in terms of the hierarchy in Figure 3, as in Figure 4 which illustrates the mechanics of the estimation. These annual calculations continue until a new census is taken, when it is possible to compare the population estimate with the census total. The census figure is taken to be the more accurate and any difference that is observed between the two totals is allocated on a proportional basis to all the annual population estimates in the intercensal period so that they are consistent with the census findings.

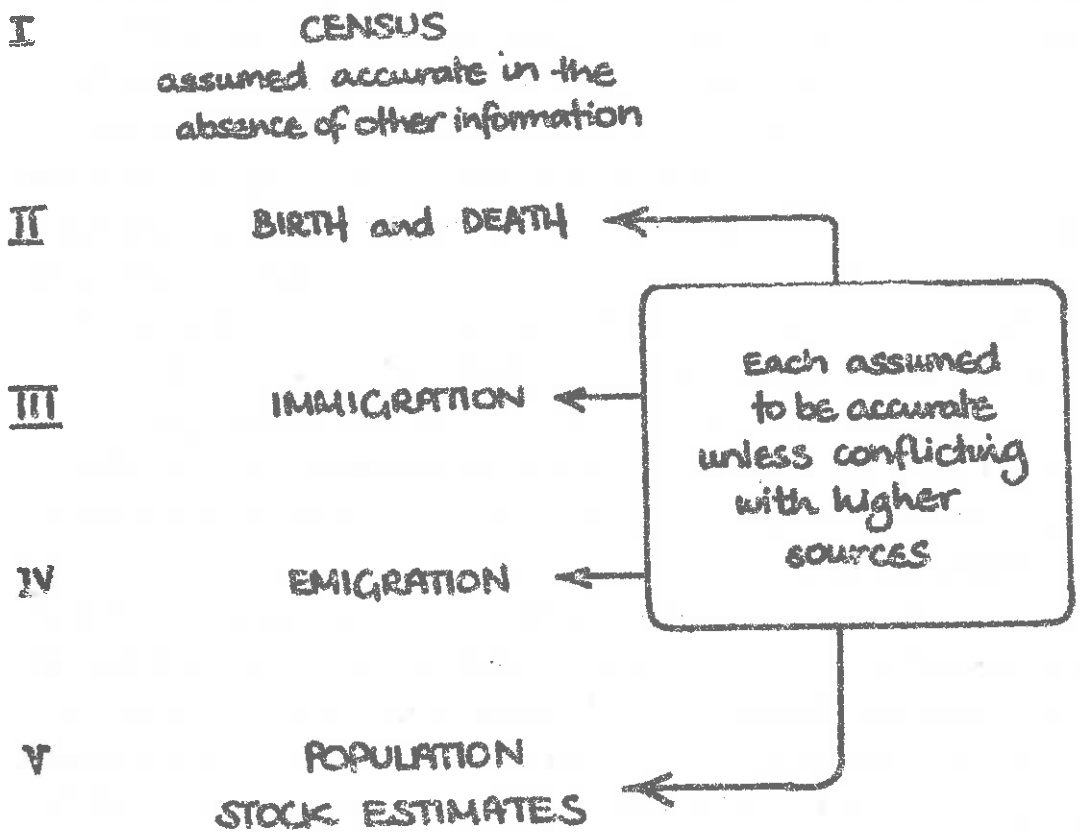


FIGURE 3: A HIERARCHY OF DATA TYPES: GENERAL VERSION.

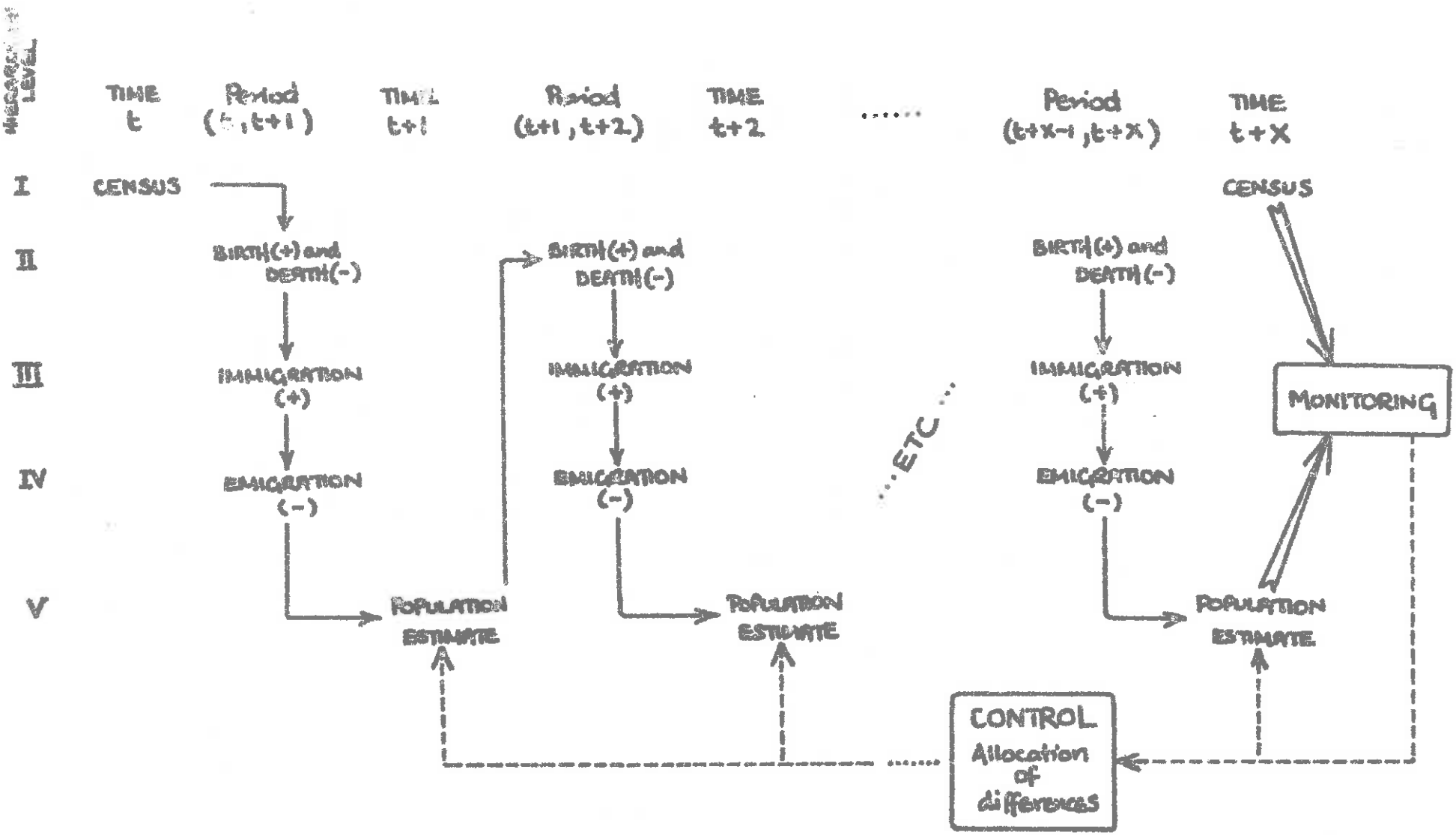


FIGURE 4: POPULATION MONITORING AND CONTROL IN AN INTERCENSAL PERIOD.

Figure 4 emphasises that these annual population estimates are made up of all the components above them in the hierarchy. The process of demographic monitoring and control outlined above should, therefore, also be applied to these components since effectively the errors in them are simply transferred into the estimates. In the absence of any other relevant information, and on the basis of the hierarchical scheme adopted, all errors must be assumed to occur in the lowest appropriate level of the hierarchy. In this case all the known errors will be allocated to the emigration component. The adjustment of the emigration total will be on an annual basis, in proportion to the recorded flow in any one year (in the absence of any other better information). The adjustment values allocated to each year can then be further distributed between destination countries, again proportional to the level of observed flows. Other more sophisticated allocation procedures can be introduced later.

This process of monitoring and control with particular reference to the adjustment of migration figures will now be demonstrated for Luxembourg. Luxembourg has been chosen because three censuses were carried out on 31st December in 1960, 1966 and 1970, giving two recent intercensal periods for which numerical examples can be calculated. The advantage of having intercensal periods that coincide with calendar years is that no artificial errors are introduced into the statistics by having to adjust them so that they relate to comparable time periods. All the errors and inconsistencies that are discovered are therefore in the original figures. One particular disadvantage does arise, however, in using census figures collected at this time of year. Many foreign workers and their families living in Luxembourg return home to their native countries over the Christmas period for extended holidays, particularly those employed in the construction industry. The underestimation of immigrants commonly suspected is, therefore, further exaggerated by the selection of the census date. Nevertheless the example will serve if not to demonstrate the techniques then to demonstrate the problems.

The results in Table 2 show that in the first intercensal period there is a difference of 6,922 persons between the observed and calculated populations for men, and only 521 for women. These "errors" have been allocated to the emigration figures over time and between destination countries, and the results for male emigration appear in Table 3 together with figures from the second intercensal period. The first row of figures for each year gives the original emigration flows recorded, and the second the adjusted flows. All emigrants classified as moving to

"unknown" destinations have also been allocated proportionately to the set of known destinations. The female equivalent of these figures has not been reproduced here since the adjustments required are relatively small.

The results indicate several further problems that must be faced, and some also require comment. Firstly if the differences that have been estimated for the two periods are compared it will be seen that those in the second are much smaller. This is probably a function of the improvements in all aspects of data collection over the whole period. Allocating the errors on an annual basis within the intercensal periods has produced a rather unsatisfactory feature in the calculations. Effectively the difference being allocated to the emigration term is being interpreted as the underestimation of the actual flow by the records. In the first intercensal period this has an average annual value of around 1,000, while in the second period it is under 100 per annum. Such a large improvement over such a short period (i.e. between 1966 and 1967) makes the interpretation above a little hard to accept. A better solution would be to make the annual allocation allow also for the gradual improvement in data over time.

Table 2 Net migration constraints and adjustments for Luxembourg

	INTERCENSAL PERIOD 31.12.60-31.12.66		INTERCENSAL PERIOD 31.12.66-31.12.70	
	MALE	FEMALE	MALE	FEMALE
1. Initial population	155481	159408	164575	170215
2. Final population	164575	170215	166550	173291
3. Calculated final population	171497	170736	166865	172983
4. Difference (3-2)	6922	521	315	-308
5. Recorded emigration	35379	14056	15768	10036
6. Adjusted emigration (5+4)	42301	14577	16083	9728*

*Alternatively

7. Recorded immigration 11263
8. Adjusted immigration 11571 (7-4)

Table 3 Emigration from Luxembourg (Males) - Before and After Adjustment

	BELGIUM	FRANCE	WEST GERMANY	ITALY	NETHS	SPAIN	PORTUGAL	OTHERS	UNKNOWN	TOTAL
1961	311	299	960	4021	92			291	157	6131
	381	367	1178	4934	113			357	-	7330
1962	301	350	941	4091	75			403	345	6506
	380	442	1188	5165	95			509	-	7779
1963	394	423	612	3719	92			835	460	6535
	507	544	787	4784	119			1074	-	7814
1964	328	504	635	2955	76	NO SEPARATE INFORMATION BEFORE 1969		1120	470	6088
	425	653	823	3829	98			1451	-	7279
1965	411	455	487	2641	67			1040	320	5421
	522	578	619	3355	85			1322	-	6481
1966	374	380	366	2376	51			819	333	4699
	481	489	471	3057	66			1054	-	5618
1967	325	480	358	1965	59			511	403	4101
	367	553	405	2223	67			578	-	4183
1968	314	409	411	1583	105			673	275	3670
	346	451	453	1745	116			742	-	3743
1969	288	372	377	1278	72	274	316	303	841	4121
	369	477	483	1638	92	351	405	388	-	4203
1970	309	408	409	1016	71	229	828	327	279	3876
	340	448	450	1117	78	252	910	359	-	3954

Source of recorded data: STATEC (1974)

The second problem that is posed is that no checks of the sort illustrated here can be made for the period between the last census and the present. The only feasible solution to this problem is to assume that the level of errors observed in the last intercensal period will be witnessed in the current period, with some allowance for the gradual improvement of data as suggested above.

Thirdly the large difference between the "errors" for males and females in the first period may seem strange, but can be easily explained. Generally it will be the highly-mobile, single (or unaccompanied), young male migrant that would be expected not to record his presence and movements. Female migration, on the other hand, is associated more with family movement and the establishment of a more permanent residence, and consequently more frequent contact with the administrative system.

More significant and more problematic, however, is the fact that a negative "error" has been arrived at for the calculations with the female population in the second intercensal period. Effectively this result says that the emigration figures are overestimates, a conclusion which is very hard to justify. The error could be taken from the recorded emigration figure, but a more satisfactory solution would be to add it to the recorded immigration total since this has the same effect in numerical terms. It is also a better interpretation of the evidence as the error is now being allocated to illegal immigration. But the underestimation in the emigration records cannot conveniently be forgotten. The error has been transferred to the level in the hierarchy immediately above emigration, that is immigration, because it was believed that the resulting adjustment would be inappropriate. This error must now be considered a net error as the hierarchy assumes that if there is any error in the data at any level then there must also be errors at all lower levels. In other words, in the Luxembourg example, the adjustment being applied to the immigration data is 308 more than that which must be applied to the emigration data to compensate for the expected under-recording. An estimate of this second adjustment is therefore also now required.

The idea of assembling migration statistics that are "accurate" within the context of what are generally considered more solid demographic data sources, which are effectively being used as constraints, is the basic development being proposed here. Such a process can be considered, therefore, as the application of internal demographic constraints, where internal signifies data specific to the one country. This is obviously a very

simple method of checking the accuracy of migration data, and several problems (some of them serious) which arise in applying it have been pointed out, but in the context of the hierarchical framework that has been proposed it may become a stronger technique, particularly if data from a wider selection of internal sources is used in a constraining capacity.

3.2 BASIC DATA PREPARATION

The discussion so far has assumed that there is a set of origin/destination-specific gross annual migration flows already available for each country waiting to be adjusted according to the results of the internal demographic constraining process outlined in Section 3.1. Certainly most countries have the requisite census, and birth and death information, but as Figure 2 has attempted to show the migration statistics in many countries require major repair to convert them into an appropriate form, either from statistics in an unappropriate form or from pieces of fragmentary information. Indeed some countries do not even have basic migration totals to examine.

A list of some of the pieces of basic data preparation is given below for a selection of countries, and is followed by a few suggestions for techniques to achieve these ends.

(i) France: alien immigration data by nationality needs converting to data by origin country, to this needs to be added the number of French citizens returning from each country (i.e. a total needs to be estimated and distributed); no viable emigration data exists and full estimation is required.

(ii) Switzerland: as for France except data on the immigration and emigration of Swiss nationals by origin and destination is available.

(iii) United Kingdom: immigration and emigration data needs very full disaggregation; flows to and from Ireland need estimating.

(iv) Ireland and Austria: virtually no data is available and therefore needs full estimation.

Most other countries require partial disaggregation of their origin and destination-specific data as Figure 2 has shown plus a host of minor adjustments.

Some insight may be gained into possible solutions for converting data by nationality into origin and destination-specific figures by considering the structure of migration flows where statistics are available by both characteristics as they are in West Germany for both immigration and emigration. In Table 4 the immigration into West Germany in 1972 from ten

Table 4 Immigration into West Germany 1972 by Origin and Nationality

	I Alien Immigration from	II Immigration by nationality	Conversion factor (I/II)
"IMMIGRATION COUNTRIES"			
FRANCE	20317	15205	1.34
AUSTRIA	37781	31568	1.19
NETHERLANDS	11225	10064	1.12
U.K.	13629	13064	1.04
"EMIGRATION COUNTRIES"			
SPAIN	44540	44467	1.00
GREECE	51083	51710	0.99
ITALY	147207	148649	0.99
PORTUGAL	24549	24946	0.99
YUGOSLAVIA	134117	136845	0.98
TURKEY	184549	193796	0.95
OTHERS	118165	118419	
TOTAL	787162	788733	

SOURCE: STATISTISCHES BUNDESAMT STATISTISCHES JAHRBUCH FUER DIE BUNDESREPUBLIK DEUTSCHLAND 1974

(Note - the totals do not tally in the original data source)

countries is compared with the number of immigrations by persons of those ten nationalities. An interesting characteristic emerges in this and other years examined. There are more migrants from the "immigration countries" than there are immigrations of the appropriate nationality. The reverse is to be observed in the case of the "emigration countries". Clearly this effect must be attributed to what is generally termed "third country" migration, particularly by nationals of the "emigration countries". A conversion factor for applying to nationality-specific data has been calculated for each of the countries in the West Germany example (see Table 4) and applied to the French immigration data for that year. The results appear in Table 5. The German experience is not particularly typical and the application of its figures to France is certainly a little arbitrary. The high conversion factors for France and Austria in the German example probably reflect the fact that many Spaniards, Portuguese and North Africans, and Yugoslavs, Greeks and Turks enter via these two countries respectively. In the French example Spain would probably replace Austria as the main intermediate country, given that the main migrant groups are the Portuguese and North Africans. These conversion factors are therefore a function of a country's geographical position in relation to the major inter-European migration flows, and secondly of the country's own migratory experience. On the basis of the German figures and these observations some reasonable estimates of other conversion factors can be made, and have been used to complete the adjustment of the French data in Table 5. The aim has been solely to redistribute the existing figures while being constrained by the original total. The conversion factor used for the "others" figure is that which ensures the new figures sum to this original total. Such techniques could also be applied to the Swiss data.

Another problem in the French statistical coverage of migration is that no annual data is available on the movement of the country's own citizens. This problem may be used to illustrate how census information may be of value in estimating immigration figures. Tugault (1971) has suggested other possibilities for calculating and examining migration data from the French census, although his paper is concerned rather with net migration totals.

Table 5 The conversion of nationality-specific to origin-specific immigration figures for France 1972

	BY NATIONALITY			BY ORIGIN	
	PERMANENT WORKERS	FAMILY MEMBERS	TOTALS	CONVERSION FACTOR	ADJUSTED TOTALS
Using 1972 German conversion factors					
U.K.	1129	472	1601	1.04	1665
NETHERLANDS	466	204	670	1.12	750
AUSTRIA	128	37	165	1.19	196
SPAIN	9925	8385	18310	1.00	18310
GREECE	224	126	350	0.99	346
ITALY	5193	3221	8414	0.99	8329
PORTUGAL	30475	38217	68692	0.99	68005
YUGOSLAVIA	7317	2374	9691	0.98	9497
TURKEY	8213	1169	9382	0.95	8912
Using estimated conversion factors					
W. GERMANY	1400	405	1805	1.15	2075
BELGIUM	953	699	1652	1.10	1817
MOROCCO	17328	9041	26369	0.99	26105
SWITZERLAND	287	101	388	1.10	426
TUNISIA	9890	4223	14113	0.99	13971
OTHERS	5146	6281	11427	1.10	12625
TOTAL	98074	74955	173029		173029

SOURCE OF DATA: OFFICE NATIONAL D'IMMIGRATION
STATISTIQUES DE L'IMMIGRATION 1972

It is possible to obtain a broad idea of the level of entry of French citizens into France by reference to the 1968 census results. The tables relating to those persons living outside Metropolitan France on 1st January 1962 and resident in France on census day 1968 (3rd March), by year of entry and nationality, are based on a 5% sample and give the figures set out in Table 6. These figures cannot be directly adopted as the annual immigration flows since they do not cover all the migrants over the period to which they refer and are consequently underestimates. The following groups are the main ones that have been omitted:

(a) those persons who entered France during the reference period but died before the 1968 census,

(b) those who entered but subsequently departed and were living abroad on 3.3.68 or had died there.

Underestimation will also occur as a result of multiple migration in the reference period by persons in the appropriate initial and final locations (i.e. abroad in 1962; France in 1968). Confusion may also arise because children who had not been born on 1.1.62 are classified according to their mothers' location on that date. There is no indication, however, whether the child was born before or after the mother's migration.

It is necessary to inflate the figures in Table 6, therefore, to compensate for the differences in coverage between the observed and required statistics. Generally the closer the year of entry to the year of the 1968 census the smaller will be the compensations required, given that there is a shorter period in which migrants may die or further migrate. Some information is available by age which will allow crude death rates to be applied, thereby giving a rough estimate of the number of migrants that may have died. The totals finally arrived at must then be distributed according to origin countries. Again there is some indication in the census tables on this point. The great majority have come from Algeria, particularly in 1962 and 1963 when the country gained its independence (see McDonald, 1965). It may also be useful to consider the stocks of French citizens in particular countries, as measured by their records, in this distribution process since the level of return to France will probably in some way be proportional to these populations. This idea could also be used to disaggregate origin and destination-specific data in other countries by a wider set of countries using the figures provided by the census or alien registration counts.

Table 6 The return of French citizens as recorded in the 1968 census

Year of Entry	French including Moslems born in Algeria
1962	629380
1963	186720
1964	134200
1965	101580
1966	79100
1967	82780
Jan & Feb 1968	12460
TOTAL	1266220

These figures give the number of French citizens resident in France on 3.3.68 who were living abroad on 1.1.62 by their year of entry into the country.

3.3 EXTERNAL DEMOGRAPHIC CONSTRAINTS

The idea of using external demographic information in a constraining capacity also needs to be considered, and there have already been suggestions made earlier in this paper which implicitly recognised these possibilities.

Any external interchange of information (that is from one country to another) is bound to come up against problems of incompatible definitions at some stage or another, and indeed one of the conclusions of this paper must be that definitional problems are likely to provide one of the major obstacles to the development of international data systems and models. Consider Table 1, for instance, which is an example using recorded and not adjusted figures. Suppose, however, that internal demographic constraints had been applied in each of the four countries and the figures in the Table were those arrived at after adjustment. It could be possible that the results in the Table were not inconsistent, that is to say that the migration definitions in each country related to the concept of a resident as adopted in the census of each nation. In other words all the figures could be totally accurates as there can be two valid definitions and records of what is basically the same flow. In such a situation which definition and concept is chosen, given the immense difficulties of adjusting all the information of every other country accordingly? Eventually a situation will be arrived at when most of the recorded migration statistics will have been adjusted so much that they will be virtually unrecognisable. It is therefore suggested that in theoretical terms external demographic constraints are undesirable and impractical, although the use of external information to fill information vacuums is probably necessary in some countries where only a minimum of information on migration is available.

4. SUMMARY AND CONCLUSIONS

The principal aim of this paper has been to discuss the problems that arise in attempting to compile a series of gross annual international migration matrices, and to propose some solutions to some of these problems. In addition the intention was to explore what level of accuracy one could reasonably expect to achieve in such an exercise. It is felt that it has been a success in terms of illustrating the difficulties, but often attempts to solve them have raised even more problems.

It is felt that the quality of migration data has been considered against standards that are probably too rigorous, indeed more rigorous than those applied to many other types of demographic information at present. This paper set out to apply such a set of rigorous checks but the conclusion that such a course of action was not very productive in finding any answers was rapidly arrived at, and answers rather than problems were what was required. The aim of the paper then became to adopt some reasonable assumptions within which data consistency and accuracy could be achieved. It is probably useful to summarise the simple methods that have been suggested to compile a reasonable set of migration figures. The process to be described is illustrated diagrammatically in Figure 5.

The aim is to produce an annual series of immigration and emigration flow statistics relating to a given set of origin and destinations for each country in the system of interest. The first step towards this end is to examine the methods and sources that may provide migration information in the particular country, and to assemble all the relevant statistics with the aim of producing basic migration totals and secondly a basic distribution of these totals by origin and destination countries respectively. Where it is not possible to do this fully those figures that are not available from existing records must be estimated either from internal information or from external figures (for example, by adopting the record of the flow that may be available in the appropriate origin or destination country). Once these basic statistics are complete the object is to test their accuracy in terms of a set of what have been called internal demographic constraints (given certain assumptions about the reliability of the various demographic data sources). This constraint procedure simply involves comparing the compiled flow statistics with any other independent measure of migration that can be said to be more or as reliable according to the hierarchical assumption scheme proposed. If the compiled figures do not meet these constraints then the differences should be allocated accordingly. This process is carried out for each country and the adjusted flow statistics should be accurate within the

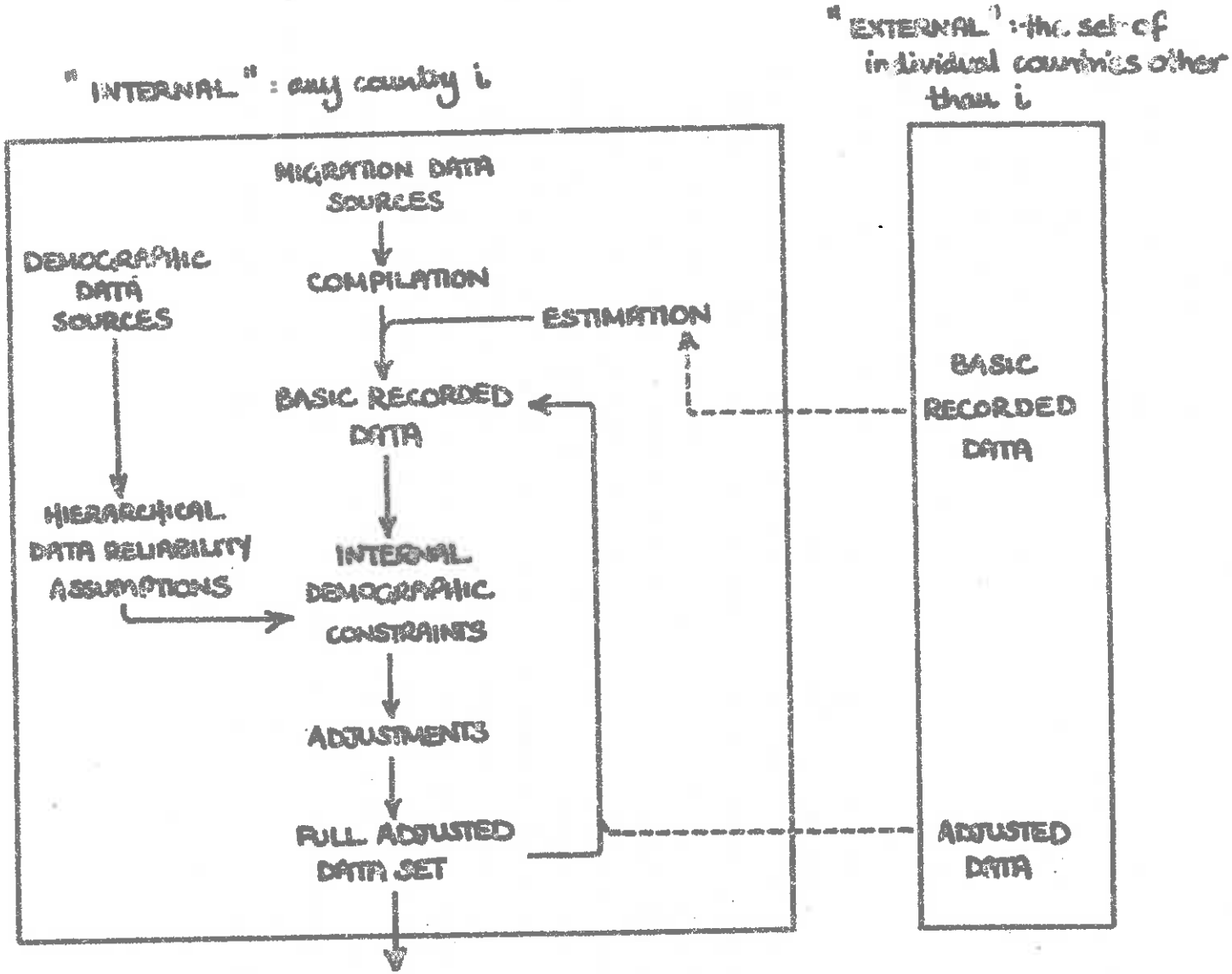


FIGURE 5: THE DATA CHECKING AND ADJUSTMENT PROCESS.

limits of the assumptions that have been made. Some iteration may be required where external sources have been used as inputs when no internal information was available. This is because these external flow statistics have been adjusted in the context of their own internal constraints. As Section 3.3 briefly indicated, however, the possibilities for formalised external demographic constraints (parallel to the internal constraints) to ensure some degree of international comparability in the figures are very limited. This will probably restrict the range of applications for the statistics produced by the methods outlined here, but ultimately external migration statistics are generally to be used in exercises related rather to the internal demographic (and economic) situation of individual countries. Although the constraints and assumptions that have been suggested are not particularly sophisticated it is felt that they are better than those used previously, that is when the figures were either totally rejected or not adjusted to conform to any constraints.

On the basis of the evidence in this paper it must be concluded that, as most commentators have suggested, the use of international migration statistics does present very many problems, some of them difficult, but equally that there are possibilities for further development. It is hoped that this paper will provoke other attempts to find solutions to the various problems that have been described. Problems at this international scale of interest are probably only going to be dealt with adequately in the final analysis by international organisations. Only they will be able to organise detailed studies (to consider migration statistics disaggregated by age, sex and occupation for example) and encourage the participation of national governments in the work. There are indications that some of these organisations are indeed awakening to these needs, and projects have been initiated to collect and co-ordinate information and statistics on international migration, immigrant workers and populations, and associated subjects.

REFERENCES

Edith ADAMS (1971) "International migration trends affecting Europe in the 1960's", I.U.S.S.P. INTERNATIONAL POPULATION CONFERENCE, LONDON 1969: VOLUME 4, pp. 2536-2552.

Ivo BAUCIC and Zivko MARAVIC (1971) VRACANJE I ZAPOSLJAVANJE VANJSKIH MIGRANTA IZ SR HRVATSKE (Conditions for the return of Croatian Emigrant Workers and prospects for their employment), University of Zagreb, Institute of Geography. With English and German summaries.

C.I.C.R.E.D. (editor Georges TAPINOS)(1974) INTERNATIONAL MIGRATION, Proceedings of a Seminar on Demographic Research in Relation to International Migration held in Buenos Aires (5-11th March 1974), C.I.C.R.E.D., Paris.

Daniel COURGEAU (1974) "Methodological Aspects of the Measurement of International Migration" in C.I.C.R.E.D. (1974), pp. 69-82.

Bernard KAYSER (1972) CYCLICALLY-DETERMINED HOMEWARD FLOWS OF MIGRANT WORKERS, O.E.C.D., Paris.

Massimo LIVI BACCI (1974) "Final Report" in C.I.C.R.E.D. (1974), pp. 284-291.

J.R. McDONALD (1965) "The Repatriation of French Algerians 1962-1963", INTERNATIONAL MIGRATION, Volume 3(3), pp. 146-155.

Heinz SCHWENK (1966) "An outline of data on migration statistics in the member countries of the Council of Europe", COUNCIL OF EUROPE EUROPEAN POPULATION CONFERENCE, STRASBOURG 1966: OFFICIAL DOCUMENTS OF THE CONFERENCE, VOLUME 2.

Yves TUGAULT (1971) "L'immigration etrangere en France: une nouvelle methode de mesure", POPULATION, Volume 26(4), pp. 691-705.

UNITED NATIONS, Richard Stone (1975) TOWARDS A SYSTEM OF SOCIAL AND DEMOGRAPHIC STATISTICS, United Nations, New York.

APPENDIX 1 WESTERN EUROPE AND THE MEDITERRANEAN - A SHORT REFERENCE LIST ON MIGRATION RECORDING AND DATA SOURCES

This list is not intended to be in any way exhuastive but merely to point to some of the more important and accessible sources of external migration data in each of the countries, primarily those described in Section 2.3 of this paper, together with references which describe the methods used to collect this data (and their shortcomings):

(a) References on data systems

(b) Data sources

1. NETHERLANDS

   (b) C.B.S. (bi-annual) STATISTIEK VAN DE BUITENLANDSE MIGRATIE 19-/-

2. BELGIUM

   (b) I.N.S. (monthly) BULLETIN DE STATISTIQUE (up to and including 1967); STATISTIQUES DEMOGRAPHIQUES (after 1968).

3. LUXEMBOURG

   (b) S.T.A.T.E.C. (1966) STATISTIQUES DU MOUVEMENT DE LA POPULATION: ANNEES 1953 A 1965

   S.T.A.T.E.C. (1974) STATISTIQUES DU MOUVEMENT DE LA POPULATION: PARTIE III - ANNEES 1966 A 1973

4. FRANCE

   (a) Georges TAPINOS (1975) L'IMMIGRATION ETRANGERE EN FRANCE 1946-1973, I.N.E.D., Cahier No. 71, Paris.

   Adrian ADAMS (1974) "Prisoners in Exile: Senegalese Workers in France", RACE AND CLASS, Volume 16(2), pp. 157-179.

   Yves TUGAULT (1971) "L'immigration etrangere en France: une nouvelle methode de mesure", POPULATION, Volume 26(4), pp. 691-705.

   (b) O.M.I. (annual since 1967) STATISTIQUES DE L'IMMIGRATION, La Direction de la Population et des Migrations (Ministere du Travail, de l'Emploi et de la Population)(annual) BILAN DE L'IMMIGRATION EN 19-

5. WEST GERMANY (F.D.R.)

(a) Bundesinstitut fuer Bevoelkerungsforschung (1974) "Systems of Registration of International Migrations: Permanent Registration (The case of the Federal Republic of Germany)", in C.I.C.R.E.D. (1974), pp. 26-38.

(b) Statistisches Bundesamt (annual) WANDERUNGEN, Fachserie A: Bevoelkerung und Kultur, Reihe 3.

Statistisches Bundesamt (monthly) WIRTSCHAFT UND STATISTIK.

Statistisches Bundesamt (annual) STATISTISCHES JAHRBUCH FUER DIE BUNDESREPUBLIK DEUTSCHLAND.

6. UNITED KINGDOM

(a) C.A. MOSER (1972) "Statistics about immigrants: objectives, sources, methods and problems", SOCIAL TRENDS, Volume 3, pp. 20-30.

Norman DAVIS and Christopher WALKER (1975) "Migrants entering and leaving the U.K., 1964-1974", POPULATION TRENDS, Volume 1, pp. 2-5.

(b) O.P.C.S. (irregular, from 1975) O.P.C.S. MONITOR, Series MN: Migration.

O.P.C.S. (from 1975) POPULATION TRENDS.

O.P.C.S. (annual) REGISTRAR GENERAL'S STATISTICAL REVIEW OF ENGLAND AND WALES, PART II: POPULATION.

7. EIRE

(a) Brendan M. WALSH (1970) "Migration to the United Kingdom from Ireland, 1961-66", ECONOMIC AND SOCIAL RESEARCH INSTITUTE MEMORANDUM No. 70, Dublin.

(b) Central Statistics Office (annual) STATISTICAL ABSTRACT OF IRELAND 19-.

8. SWITZERLAND

(b) Bureau federal de statistique (annual) ANNUAIRE STATISTIQUE DE LA SUISSE 19-.

9. DENMARK)
10. NORWAY)
11. ICELAND)

(b) Nordiska Statistiska Sekretariatet (annual) NORDISK STATISTISK ARSBOK.

12. SWEDEN

(b) as for 9, 10 and 11 plus
Statistiska Centralbyran (annual) STATISTISK ARSBOK FOR SVERIGE -19-.

13. FINLAND

(a) Mauri NIEMINEN (1973) "Development of Finland's population, 1950-1970", BANK OF FINLAND MONTHLY BULLETIN, Volume 47(1), pp. 20-27.

(b) as for 9, 10 and 11 plus
Central Statistical Office (annual) STATISTICAL YEARBOOK OF FINLAND.

14. GREECE

(b) National Statistical Service of Greece (annual) STATISTICAL YEARBOOK OF GREECE.

15. AUSTRIA

16. PORTUGAL

(a) Hommes et Migrations (1966?) "L'immigration portugaise", HOMMES ET MIGRATIONS-ETUDES, No. 105.

(b) Junta da Emigracao (annual) BOLETIM DA JUNTA DA EMIGRACAO.

17. YUGOSLAVIA

(a) Ivo BAUCIC (1973) RADNICI U INOZEMSTVU PREMA POPISU STANOVNISTVA JUGOSLAVIJE 1971 (Yugoslav workers abroad according to the 1971 Yugoslav census), University of Zagreb, Institute of Geography.

Mustafa BEGTIC (1972) "Yugoslav nationals temporarily working abroad", YUGOSLAV SURVEY, Volume 13(1), pp. 17-30.

18. ITALY

(b) Istituto Centrale di Statistica (annual) ANNUARIO STATISTICO ITALIANO.

19. SPAIN

20. TURKEY

21. ALGERIA

22. MOROCCO

23. TUNISIA