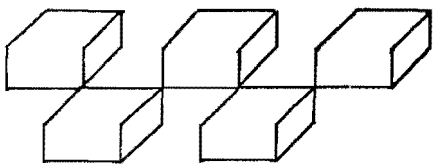
WORKING PAPERS

ARE IMMIGRANTS SUBSTITUTES FOR BIRTHS?

R. Lesthaeghe, H. Page and J. Surkyn

IPD-Working Paper 1988-3



INTERUNIVERSITY
PROGRAMME IN
DEMOGRAPHY

c/o Vrije Universiteit Brussel, Pleinlaan 2 — 1050 Brussel — Tel. 02/641 20 40 - 641 20 37

ARE IMMIGRANTS SUBSTITUTES FOR BIRTHS?

R. Lesthaeghe, H. Page and J. Surkyn

Vrije Universiteit Brussel
& Rijksuniversiteit Gent

IPD-Working Paper 1988-3

Paper prepared for the conference on "Population and European Society",
European University Institute, Badia Fiesolana, Firenze,
December, 1988

ORDERING INFORMATION

Extra copies of this working paper are available from :

Mr. E. Vanden Balck
Secretary/Librarian
Interuniversity Programme in Demography
c/o Centrum voor Sociologie
Vrije Universiteit Brussel
Pleinlaan 2
B-1050 Brussels
BELGIUM

at the cost of US $ 8.00 or BF 300. Please attach check or international money order.

ORDER FORM

Name .....
Address .....
.....
.....
.....
.....

wishes to receive ..... copies of Working Paper Nr.....
and includes payment of US $ ..... or BF.....

---

1. INTRODUCTION

Ten years ago, the issue of renewed immigration from LDCs to Western Europe was simply not on the agenda. Unemployment was rising rapidly in the EC, and the large native cohorts belonging to the baby boom were facing a difficult entry into the labour force. Most governments' objectives with respect to immigration were limited to accomodation to the situation that had sprung from the recruitment of "guest workers" during the 1960s, from the subsequent policy of family reunification and, in some countries, from the regularization of the status of illegal immigrants. During the 1980s, attempts were made to repatriate a portion of the immigrant stock, but it was soon realized that the majority of families were here to stay and that the EC was to be a permanent home for the children they raised here.

The European migration stop and the attempted repatriation policy of the late 1970s and early 1980s contrast markedly with the record number of immigrants into the United States during this period. Since 1970, legal immigration to the US has averaged half a million persons p.a. If estimates of the number of illegal immigrants are added in, figures of the order of 600,000-700,000 immigrants p.a. are reached (Bean et al., 1987). During the last ten years or so, Europe has seemed in the doldrums with respect to both modes of demographic recruitment -- not only has fertility been at unprecedentedly low peacetime levels, but immigration too has been extremely low; North America also had low (though not so extremely low) fertility, but it has been accelerating its intake of migrants to historic records.

Notwithstanding the differences in the historical role of immigration in the two regions and the marked difference in policies in the last 10-15 years, there are a number of essential similarities between the US and the EC, and there are several reasons for considering Western Europe too as a potentially multi-ethnic society (see, for instance, Castles, 1984).

First and foremost, there are already significant numbers of immigrants of non-European origin in some areas. The total number of African, Asian and Latin American (including Caribbean) nationals living in the EC-12 in 1985 has been estimated at 5.2 million (1.6% of the total EC-12 population) (Council of Europe, 1987). Hardly any of them were in Greece, Italy, Spain, Portugal

or Ireland, however, i.e. those member-states that themselves had a history of emigration until the late 1970s. 5.1 million lived in the other seven EC-member states, where they constituted 2.5% of the population. Since naturalized persons and those born in former colonies but carrying European passports are not included in these figures, the percentage of the population resident in the EC but born in these three continents must be considerably higher. Furthermore, these immigrants are strongly concentrated in the central parts of major cities in just five countries - the Netherlands, West Germany, Belgium, England and France. They often have substantially higher fertility than nationals, and there is still a tendency for the latter to move out of inner cities to peri-urban areas. As a result, the share of immigrants and their descendants in the population of the inner cities of northern Europe is bound to increase substantially in the coming decade.

Secondly, just like the US, the EC has rapidly expanding labour reserves on its immediate southern borders. For instance, the joint population of the three Maghreb countries (Tunisia, Algeria, Morocco) and of Turkey was merely 42 million in 1950; but this figure had risen to 103 million in 1985 and is expected to expand to 138 million in 2000 and to almost 200 million in 2025 (UN projections of 1986, medium variant). Relative to the EC (1985 population: 322 million), these figures are comparable to those of Mexico (with a projected population growth from 79 million in 1985 to 109 million in 2000 and 154 million in 2025) relative to the US (1985 population: 228 million). The situations on the two sides of the Atlantic are also similar to each other with respect to the standard-of-living differential between the sending and the receiving countries, and this differential is not expected to disappear before 2025. This obviously implies that the long-term pressure is on, both for the EC and the US.

The third reason is the EC's continued below replacement-level fertility and its implications for both future population size and age structure. Most of the baby-boom cohorts will have completed their entry into the labour force by 1990, and they will be followed by much smaller cohorts. This demographic ebb is already alleviating the youth-unemployment problem in some member-states (although it will lead to serious aging of the population 30-40 years from now) and a climate of careful optimism with respect to employment prospects is slowly developing: some forecasts predict local labour shortages before the end of the century. Furthermore, two structural props of the former pattern of south-north migration within the EC are weakening. As

standards of living in Ireland, Spain, Portugal and Greece catch up with those of northern Europe, the propensity to migrate from these countries to the original core of the EC is diminishing (cf. Tapinos, 1988). Furthermore, these countries too now face falling fertility, which will obviously result in smaller native cohorts arriving on their own labour markets. In short, the EC's own labour reserves could be entirely depleted by the year 2000. At this point it would be hazardous to forecast an incipient labour shortage for the 1990s. Nevertheless, we should recognize the validity of the argument that the structural features underlying migration and employment for the 1990s will not resemble those that have governed these phenomena during the last 25 years (Tapinos, 1988).

An important issue here is the function of non-European migrants for the EC's labour market: are they a complementary labour force, or a substitute for domestic manpower? The outcome of most American studies on the recent Hispanic immigration wave into the US shows that migrants generally did not displace natives (though this is less clear for women than for men), nor did they depress the wages of nationals (Bean et al., 1987). The evidence with respect to guest-workers in Western Europe during the 60s and 70s also indicates that complementarity outweighed substitution (Castles and Kosack, 1973; Brassé, 1983; Heijke, 1979). Since then, native European labour vintages have continued to benefit from increased scholing and have become better equipped to function in a high-technology environment. This means that non-European immigrants are even less likely to become susbstitutes for domestic labour than has been the case in the past, and that substitution effects are to be feared only in those sectors that continue to employ unskilled labour. Much depends on the prospective demand for low-qualified workers in general and on the extent to which automation makes unskilled workers superfluous, in particular.

Last but not least, the issue of social tolerance towards ethnic minorities needs consideration. It is evident that xenophobia grows in situations of concrete competition between natives and immigrants, for example with respect to jobs or housing. But, as Durkheim pointed out almost a century ago, a much more pervasive climate of intolerance can also be engendered among a wider public that is not confronted with direct competition. Economic uncertainty and frustration with national - and one should add, supranational - institutions affect the native self-image. Feelings of political abandonment typically produce the scapegoat efect: "when all else fails, blame

the coloureds" (cf. Castles and Kosack, 1973; Blalock, 1982; Banton, 1983; Van Leemput, 1988). Recent election results in a few member states are a vivid reminder of the importance of such a political alienation effect.

Yet also with respect to tolerance, there have been structural changes in the opinions held by the European public. Nationalist parties with an openly xenophobic stand have generally been alienated from all other parties, including major conservative ones, and their election successes have tended to be short-lived. Furthermore, the classic correlates of ethnic tolerance among Western publics are changing in directions likely to produce more, not less, tolerance. For instance, intolerance has a marked age profile with older generations being less tolerant, whereas greater affluence and higher social status, college education and a preference for "post-materialist" values are associated with greater tolerance.[1] (The latter refer to values that are centered on individual freedom of choice, self-fulfillment and a preference for transparent grass-roots democracy: thess values are contrasted to the "materialist" profile, which accentuates law and order, respect for authority, trust in institutions, personal safety and material security (Inglehart, 1977)). Post-materialist values are, for instance, particularly prevalent in the European Green parties, peace movements and anti-racism organizations (i.e. in the "new" rather than the "old" left), all of which have been particularly instrumental in counteracting attempts at "making racism more respectable" (Müller-Rommel, 1982; Castles, 1984; Van Leemput, 1988). A shift towards greater post-materialism has been observed in Western publics on both sides of the Atlantic: education has been rising steadily from generation to generation, and post-materialist values have increased almost pari passu in the successive birth cohorts, with a particularly large leap for the cohorts born in the two decades following the Second World War (Inglehart, 1985).

However, these positive trends do not imply that countercurrents can be ignored. The steady increase in the size of non-European populations in many of the major cities of Western Europe is conducive to heightened waves of tension.

Finally it should be noted that post-materialism is associated with the new patterns of family-building, both with respect to union formation (the increased incidence of cohabitation as opposed to marriage, and the increasing propensity to divorce or separate) and with respect to

childbearing (delayed parenthood and low fertility in general) (Lesthaeghe and Meekers, 1987; Lesthaeghe and Surkyn, 1988). The younger generations, with their greater degree of post-materialism, exhibit a clear preference for low as opposed to even moderate fertility, in combination with greater tolerance towards migrants than is expressed by the older generations. This does not necessarily mean that they would prefer immigration to an increase in fertility if they had to choose one or the other in order to achieve a particular level of demographic recruitment, but it does suggest that recruitment via immigration as opposed to recruitment via increased fertility may become increasingly acceptable to the public.

Given the above factors, the issue of the extent to which population recruitment through migration might serve as a substitute for recruiment through fertility naturally arises. The issue of interchangeability between the two forms of demographic recruitment involves two questions. First, to what it extent is migration capable of functioning as a demographic substitute for fertility? And second, to what extent would it be an acceptable policy? In the following analysis we treat the problem of substitutability from the demographic viewpoint only. We shall first consider the issue of the EC's overall population size, and then examine age-structure problems, more particularly the potential role of immigration as a counter to population aging.

2. IMMIGRATION AS A COUNTER TO DECLINING EC-12 POPULATION SIZE

In this and the next section, we make use of five projections for the resident population of the EC-12. These projections are by no means intended as forecasts: they are merely illustrative scenarios that underscore a set of arguments. The scenarios are summarized in Table 1 for easy reference.[2] For simplicity we have projected just the female population.

The first two scenarios assume no further immigration: the other three assume migration of a constant number of immigrants per year. The number used (400,000 women per year, or an immigration rate of 2.4 immigrants per thousand population) corresponds roughly to the recent record migration level in the US.

Table 1. Illustrative population projections for the EC-12, 1985-2060 (female population only)[a]

Scenario	Subpopulation			Characterization
	EC nationals, 1985	Existing alien (non-EC) stock, as of 1985	New alien (non-EC) immigrants, entering after 1985	
1.	Constant subreplacement fertility (TFR = 1.64)	-	-	EC nationals, continued low fertility
2.	Fertility rises (from TFR = 1.64) to reach replacement level (TFR = 2.07) by 2010	-	-	EC nationals, fertility recovery
3.	As in 1	Fertility declines (from TFR = 4) to reach replacement level (TFR = 2.1) by 2010	-	"Absorption" of current alien stock
4.	As in 1	As in 3	400,000 immigrants p.a. Fertility decline (from TFR = 4) to reach replacement level (TFR = 2.07) by 2010	"Absorption + open door"
5.	As in 1	Fertility declines (from TFR = 4) to reach subreplacement level of EC-nationals (TFR = 1.64) by 2010)	400,000 immigrants p.a. Fertility decline (from TFR = 4) to reach subreplacement level of EC-nationals (TFR = 1.64) by 2010	"Absorption + open door + assimilation"

(a) All projections assume life expectancy (e_0) = 80. For more details, including the age-patterns of fertility, mortality and migration, see footnote 2 to the text.

Note that the term EC-nationals is used here throughout for all those who were citizens of one of the twelve member-state of 1985: no distinctions are made between the twelve individual nationalities. The term aliens as used here refers to all those residents of the EC who are not EC-nationals: a German national living in the Netherlands, for example, is not included among the aliens. Finally, a distinction is made between aliens already resident in the EC as of 1985, and those who immigrate subsequently.

2.1 Evolution of the total EC-population in the absence of further immigration

Of the total population of 322 million persons resident in the EC in 1985, 166 million were women. Of these, 163 millions were EC-nationals and 3 million were not. If they maintain the current total fertility (TFR) of 1.64 children per women, in combination with a life expectancy of birth (e_0) of 80 years,[3] then the stock of female EC-nationals will increase slightly (to about 165 million) in 2000, but will then decline - at first slowly (to 160 million in 2015), and then more rapidly (to 151 million in 2030 and to only 120 million in 2060)(see Figure 1, projection 1). Allowing for the 1985 stock of alien women and assuming that their fertility declines from 4 to 2.1 children per woman by 2010 (see below), the results are adjusted upwards by 4 million in 2000, 5 million in 2015, 6 million in 2030 and 7 million in 2060 (see Figure 1, projection 3).

From these illustrations it is obvious that the existing stock of aliens in the EC-12 is definitely not capable of stemming overall population decline, even if the daughters and grand-daughters maintain replacement-level fertility -- i.e. higher fertility than that of EC nationals and their descendants. By the middle of the next century, the EC population could be reduced by about 20-25% if current fertility prevails among natives and if no new immigration takes place.

2.2. How many immigrants would be needed to maintain current population size?

The next question is then: how many immigrants would be needed to keep the EC-resident population at its present size? Ansley Coale (1972) approached the reverse problem for the US: assuming an initial stationary population and a fixed annual number of immigrants (with a fixed age composition), he asked how much native fertility would have to decline in order to offset the impact of immigrants and their fertility, if the aim were to maintain a stationary population with the same number of births per year. A similar approach has also been used by Keely and Kraly (1977) for the US, and we shall extend the results to the EC-12.

If the EC-population were at present stationary with replacement-level fertility and started to take in a fixed number of aliens each year, the fertility of natives would have to decrease in order to offset the immigration effect. It would have to be reduced by a factor B_f/B, where B_f is the annual number of births occurring to alien women and B is the total annual number of births.[4] With a life expectancy of 75 years, the replacement level of fertility is about 2.11 children per woman: thus fertility of natives would have to be reduced to $2.11*(1-B_f/B)$. With these values and the age-composition of immigrants observed in the US in the late 1960s, Coale established that the ultimate stationary population of foreign-born women would be approximately 50 times the annual inflow, and that the number of female births per year would ultimately equal the annual flow of female immigrants (I) times 0.521. Since we have no age-schedule for immigrants for the EC as a whole, we shall use this value for the EC too. The number of births occurring annually to all alien women (B_f) is then given by $(0.521*I)(TFR_f/2.11)$, where TFR_f is the total fertility of foreign-born women. The net reproduction rate of native women (R_n) that would produce a stationary population is then (Coale, 1972, p. 601):

$$R_n = 1.0 - 0.521\ (I/B)(TFR_f/2.11)$$

or

$$R_n = 1.0 - 0.247\ (I/B)TFR_f.$$

Table 2. Anual immigration flow (women) relative to the annual birth stream (girls) needed to produce a stationary population, under varying combinations of fertility levels

Total fertility rate		Annual number of female immigrants over annual number of female births (I/B)
Foreign-born women	Native-born women	
2.1	1.94 (Rn=.948)	.10
3.0	1.90 (.926)	.10
4.0	1.85 (.901)	.10
2.1	1.84 (.896)	.20
3.0	1.75 (.852)	.20
4.0	1.64 (.802)	.20
2.1	1.73 (.844)	.30
3.0	1.59 (.778)	.30
4.0	1.44 (.704)	.30
2.1	1.62 (.793)	.40
3.0	1.44 (.704)	.40
4.0	1.24 (.605)	.40

Note: Rn = net reproduction rate

Table 2 contains the numerical results for various combinations of TFR_f and R_n, our problem being the estimation of the size of the annual intake of foreign women relative to the overall annual female birth stream (I/B). Coale's calculations show that the annual influx of foreign (here: non-EC) women has to be very substantial to compensate for the currently low total fertility of the host population (TFR= 1.64). For instance, an immigrant flow equal to 10% of the birth stream would not suffice, not even if immigrants were to maintain a TFR of 4 children per woman. An annual influx equal to 20% of the annual number of births would just be adequate to offset a native TFR of 1.64 -- but only if foreign-born women maintain their high fertility at 4 children. The latter could occur only in the absence of any covergence to the reproductive norms of the host population and in the absence, in addition, of a fertility transition in the migrants' countries of origin. These are obviously implausible conditions. If, more realistically, we assume that foreign-born women have replacement-level fertility, and combine this with a native TFR of 1.64, then the annual influx of alien women has to be as large as 40% of the female birth stream. In other words, nearly one-third of all new members of the population would be first-generation immigrants. In 1985, the number of girls born in the EC-12 was 1.9 million. This means that about 750,000 female immigrants would be required each year if these women themselves had replacement-level fertility (half as many in the unlikely event they would maintain a total fertility of 4 children per woman). It is obvious that migration as a solution to the EC's low fertility, and to the decline in population size it implies, involves record numbers of families moving into the EC each year.

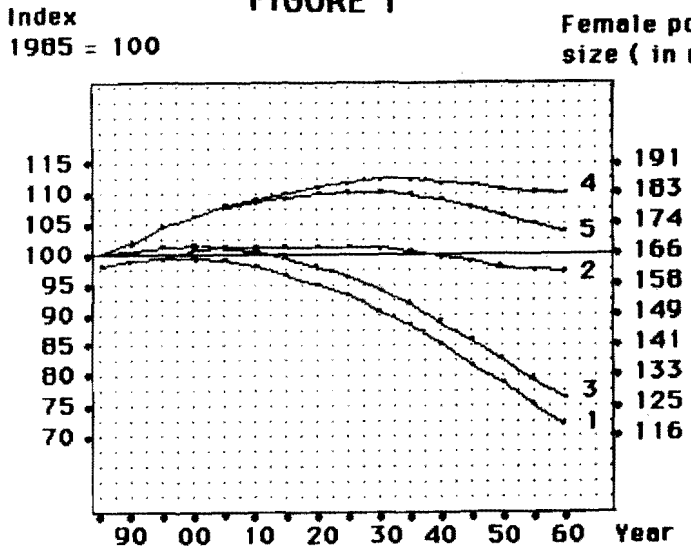
An ultimate stationary population can be reached even if the fertility of immigrants drops to below-replacement levels like those of the host population (Pollard, 1973). This holds regardless of the exact level of fertility, provided that at some point fertility becomes constant, at below replacement levels for both the host and the immigrant populations (Espenshade, Bouvier and Arthur, 1982; Espenshade, 1986); Mitra (1983) has shown in addition that a stationary population can be reached in any instance where a population can be decomposed into two segments, one with above and the other with below-replacement fertility, provided that a fixed proportion of the first segment adopts the reproductive norm of the second. The native population and its descendants eventually die out as a result of their deficient fertility, and a new population takes

over. The population of foreign-born women is the first to become stationary, followed by the population of first-generation descendants, and so on down the generational chain (Espenshade, 1986, p. 254). The total population size is the sum of the numbers in each generation, and this sum converges to a fixed total. As a consequence of below-replacement fertility, however, the number of people in each successive generation (first-generation immigrants, second-generation immigrants, etc.) is smaller than the number in the preceding generation.

Convergence to the stationary state is exceedingly slow: it takes several centuries for the host population to die out completely. Nevertheless, these theoretical models illustrate both the processes at work and the limiting situation. They show quite eloquently that the sub-replacement levels of fertility observed in the West for over a decade can be matched only by record number of immigrants. To maintain population at close to its present size, Europe would be dealing with a fundamentally new model of demographic recruitment, and the US with the long-term continuation of its recent record intake.

Espenshade also made an application of these properties to the US (Espenshade, 1986, pp. 255-257), assuming fixed below-replacement fertility for all (TFR=1.84) and a fixed influx of 560,000 migrants (both sexes), figures typical for the US in the period 1980-85. The value of I/B at the start is then 0.15, i.e. there are 15 immigrants entering the population for every 100 births. The annual number of immigrants plus the annual number of births is ultimately just enough to offset the annual number of deaths, but the resulting stationary population is 27% smaller and has a median age no less than 11 years older than the starting population. Furthermore, I/B increases to 0.29 in the ultimate stationary population, which shows clearly how such a population is increasingly fed by the immigrant stream (even though the absolute number of immigrants is held constant) if immigrants adopt the low fertility norms of the host population. Furthermore, it should be stressed that the TFR used by Espenshade was 1.84 children per woman, which is substantially higher than the present EC-value of 1.64. The EC's proportionate intake of migrants would have to be considerably larger that that for the US in Espenshade's simulation.

FIGURE 1



All life expectancy at birth = 80 years

1 = EC-12 nationals in 1985 and their descendants, subreplacement fertility maintained (TFR=1.64)

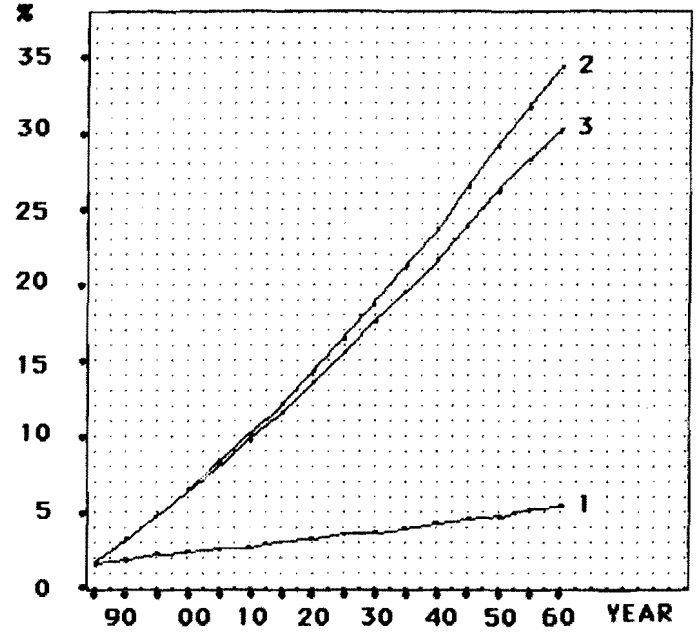
2 = EC-12 nationals in 1985 and descendants, fertility rises to replacement level in 2010 (TFR=2.1) and remains constant thereafter.

3 = same as 1 plus 1985 stock of aliens and their descendants. Aliens have falling fertility from TFR=4.0 to TFR=2.1 in 2010. They have replacement level fertility thereafter. No immigration after 1985

4 = same as 3 but new immigration of 400,000 women per year. Resident aliens have falling fertility from TFR=4.0 to TFR=2.1 in 2010, replacement level fertility thereafter.

5 = same as 3 but new immigration of 400,000 women per year. Resident aliens have falling fertility from TFR=4.0 to TFR=1.64 in 2010 ; thereafter sub-replacement fertility maintained at TFR=1.64.

FIGURE 2



SHARE OF ALIENS AND THEIR DESCENDANTS IN TOTAL FEMALE POPULATION OF THE EC-12, IF EC-12 NATIONALS AND THEIR DESCENDANTS MAINTAIN SUBREPLACEMENT FERTILITY (TFR=1.64), PERIOD 1985-2060.

1 = share of 1985 stock of aliens and their descendants if their fertility drops from high in 1985 (TFR=4.0) to replacement level (TFR=2.1) in 2010 and if replacement level is maintained thereafter.

2 = same as 1, plus immigration of 400,000 women p.a. with same fertility drop to replacement level in 2010. Age schedule of immigrants typical of high fertility prior to entrance until 2010.

3 = same as 2, but fertility drops from TFR=4.0 in 1985 to 1.64 in 2010. Resident aliens maintain this subreplacement fertility level thereafter.

Very much the same conclusion can be drawn from our illustrative projections. Scenarios 4 and 5, which are of interest now, have in common that a constant annual intake of 400,00 female immigrants occurs from the base year 1985 onwards. Recall that this number matches approximately the maximum number ever observed in the US, when considered relative to population size. In contrast to the examples given by Coale and Espenshade, our projections allow the fertility of migrants and their descendants to drop gradually. At the start, the TFR of aliens is set at 4 children per woman and in both scenarios a fertility transition occurs in the period 1985-2010. In scenario 4, the fertility of aliens declines only to replacement level (a TFR of 2.11 children per woman, assuming a life expectancy of 80 years) and remains constant at this level from 2010 onwards; in scenario 5, the convergence of alien fertility to that of nationals is complete -- their TFR declines to that of nationals (TFR=1.64) and remains constant at that level from 2010 onwards. The age structure of fertility also shifts, with fertility becoming pregressively more concentrated around the central child-bearing ages during the fertility decline.[5]

The evolution of the total female resident population under such conditions is again shown in Figure 1. If the fertility of aliens and their descendants drops only to replacement level, the EC-total population would be almost 10% greater in 2060 than in 1985: the size of the annual influx of aliens, combined with the temporarily higher-than-replacement fertility of aliens and their descendants would slightly overcompensate for the below-replacement fertility of nationals and their descendants (see Figure 1, projection 4). But if their fertility converges completely to that of nationals, as in scenario 5, the total resident poulation would stop growing shortly after the completion of the alien fertility transition: by 2060, the overall population size would then be barely above the present one, despite 25 years of high alien fertility and 75 years with a record annual intake of immigrants. In scenario 4, aliens and their descendants would consitute 34.3% of the total female population resident in the EC-12 by 2060 (including the 1985 stock of aliens and their own descendants - 3.8%)(see figure 2, line 2). With lower than replacement-level fertility for aliens and their descendants after 2010, their share in the total population would be 30.4 % in 2060 (see Figure 2, line 3).

The conclusions are clear. The EC-12, including the five member-states that now have hardly any non-EC nationals, would have to attract and absorb an immigration stream of the order of 2.5 to 3.0 immigrants per thousand population every year, if migration is to compensate for the currently highly deficient reproduction of their nationals; they would also have to accept that one-third of all EC-residents would be aliens or descendants of aliens by the middle of the next century. Since migration is likely to be unevenly spread, some areas (particularly urban areas in the northern member-states, which already have sizeable alien populations) would undergo even more marked and more rapid transformations.

Figure 1 also depicts the evolution of the EC-12 population of female nationals if their fertility is restored to replacement level by 2010 (Figure 1, scenario 2). If the descendants of current alien stock are added in, even after allowing for a fertility transition (to replacement levels) among them, then EC-population size can be maintained at its present level. In other words, a gradual restoration of replacement-level fertility among nationals during the next 25 years would be just as effective as the combination of record immigration and continued below-replacement fertility among nationals. It also follows that intermediate solutions are possible: smaller annual immigrant contingents would suffice to maintain population size provided that the fertility of nationals rises above its current historical low.

3. IMMIGRATION AS A COUNTER TO AGING

3.1. Evolution of the EC age structure with and without migration

It is a popular belief that Western population aging, which has received a new impetus from the very low fertility of the last decade, can be countered by a steady influx of young immigrants. One simply imagines that the gaps at the bottom of the European population pyramid can be filled through an age-selective immigration policy. The idea is appealing but too simple. Immigrants, almost by definition, tend to be young adults and their children, which means that specific measures to achieve the desired age-selectivity are largely unnecessary. But the idea pays

little attention to the aging of the immigrants themselves. Theoretically, aging of the immigrants would not occur if a "guestworker" policy was applied extremely strictly, i.e. if all immigrants came on strictly limited-duration visas and were required to return to their country of origin after a few years. However, the experience of the 1960s and 70s in Europe (and the rising numbers of illegal immigrants in the US in the 80s) illustrates the difficulties of applying such a policy. And, at any rate, the physical departure of an immigrant does not remove him or her from the population entirely when, for example, he or she has acquired pension rights through his/her contributions to the unfunded pension schemes typical of western Europe.

Neither, and perhaps more importantly, does the idea pay adequate attention to the future course of immigrant fertility. Unfortunately, if immigrants adjust their fertility to that of their host population, the overall age structure is altered only very slightly, and no significant immigration-induced rejuvenation of the population occurs (see, for example, Coale, 1986, pp. 207-211). Moreover, as Espenshade has shown for the US, the ultimate stationary population resulting from a regime with a fixed influx of young aliens who adopt sub-replacement fertility, would be <u>older</u>, not younger, than the present population. The future evolution of alien fertility is, therefore, of paramount importance for the future course of demographic aging in the receiving countries.

The recent evolution of alien fertility is summarized in Table 3 for major ethnic groups. The first observation is that ethnic differentials in total period fertility rates are huge. For instance, in England and Wales in 1982, Bangladeshi and Pakistani women still had a TFR of more than 6.0 children per woman in 1982, against 3.0 for Indian women and only 2.0 for Caribbean women. Similarly, in the Netherlands, Moroccan woman had a TFR of the order of 6.0 children in 1982, whereas Surinam women had below replacement-level fertility. The second observation is that all series show declining fertility over time. A third observation is that most groups show lower fertility than their country of origin. There are some exceptions to this last feature, however: Bengladeshi and Pakistani women in England and Wales, Turkish women in France, Denmark, Sweden and Austria, and Moroccan women in the Netherlands recorded slightly higher fertility than their counterparts in the respective sending countries. As these figures are not specific by age at entry or by education and since no data were avaialble to us with respect to the

Table 3. Total fertility rates of major non-European migrant groups; women resident in Europe and women resident in the countries of origin

	1968	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
Bangladeshi & Pakistani women in:																			
- Bangladesh	6.9				7.0	6.4*					6.7					(6.2)			
- Pakistan	7.2				6.5	6.3*					6.0					(5.8)			
- England & Wales				9.1								7.0		6.7	6.4				
- Denmark (Pakistani only)													5.4	4.7					
Turkish women in:																			
- Turkey	5.8					5.5				4.3*	4.3		4.0			(4.0)		4.0	3.6
- F.R. Germany								4.3	4.1	3.8	3.7	3.6	3.6	3.5	3.0				
- Netherlands									4.5	5.0	4.9	4.8	4.8	4.6	3.7				
- Sweden							4.7	4.6	6.2	5.9	5.2	5.3	5.0	4.9	4.0				
- France															4.9	5.1	5.0	4.6	
- Denmark													4.7	4.5					
- Austria														4.4					
Moroccan women in:																			
- Morocco	7.2					6.9					5.9	6.8*				(5.1)			
- France								5.6							5.2	4.9	4.8	4.5	
- Netherlands									8.0	8.0	7.3	7.2	7.0	6.7	6.3				
Algerian women in:																			
- Algeria	7.4					7.4					7.2				6.7				
- France	8.9							5.7							5.0	4.7	4.5	4.2	
Indian women in:																			
- India	5.7					5.4					4.8					(4.3)			
- England & Wales				4.3								3.9		3.1	3.1				
Caribbean women in:																			
- Jamaica	5.4					5.4		3.7*			4.0					(3.4)			
- Trinidad & Tobago	3.9					3.5		2.5*			3.1					(2.9)			
- England & Wales				3.4								2.5		2.0	2.0				

	1968	73	76	77	78	79	80	81	82	83
Surinam women in:										
- Surinam	5.9	5.3			4.6					(3.6)
- Netherlands			2.3	2.3	2.3	1.9	1.7	1.9	1.7	

Sources: R. Penninx (1984); M. Brahimi (1980); M. Tribalat (1988); UN (1986).

Note: values followed by an asterisk are estimated by the World Fertility Survey; those in parentheses are UN-estimates.

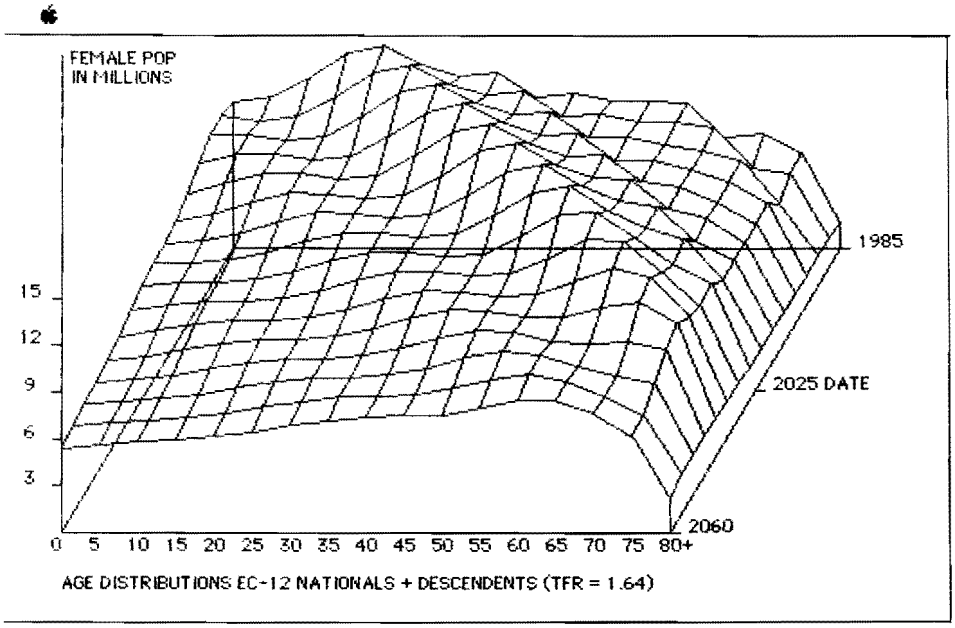


FIGURE 3

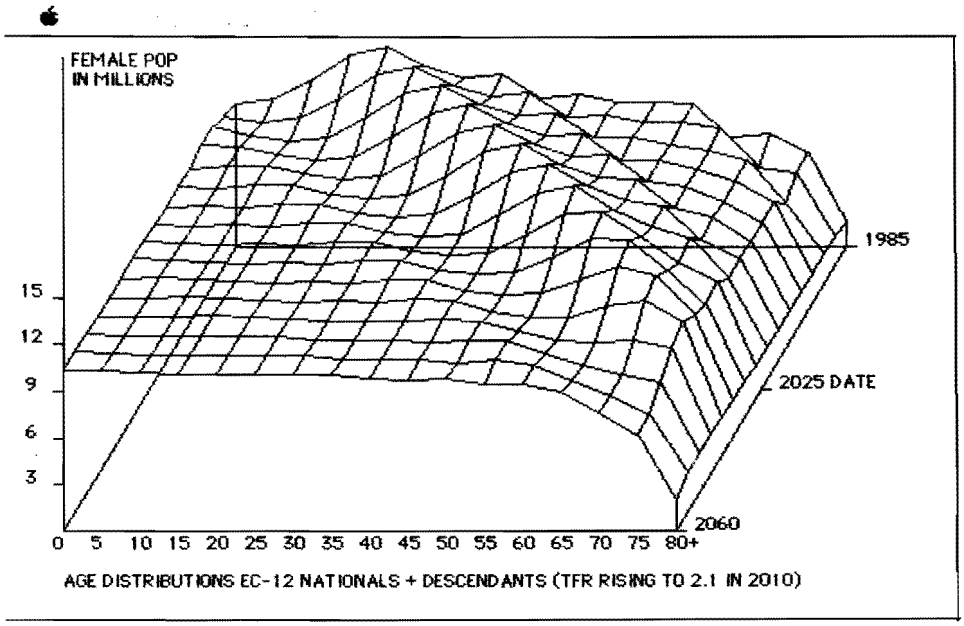


FIGURE 4

intermediate fertility variables such as marriage patterns, duration of breastfeeding and patterns of contraceptive use, the causes of these differentials cannot be established. Nevertheless, we can say that most aliens resident in Europe have at least tended to follow any move towards a fertility transition observed in their native country (eg. Moroccans, Turks, Bangladeshis and Pakistanis), whereas several groups are clearly ahead (especially Indians, Caribbeans and Surinamese). When the next generation, which is largely European-born and/or educated, reaches the child-bearing ages around 1990, a sharper decline in alien fertility is to be expected, particularly for those ethnic groups that still had TFR-values of 4.0 or more during the early 1980s.

Given declining fertility in the countries of origin and the adjustment process in the receiving countries, we have hypothesized that both the current stock and new immigrants could reach replacement-level fertility in a period of 25 years, i.e. by 2010. The series of population projections summarized in Table 1 illustrates the age-structure alterations for national and alien populations implied by different conditions of fertility and immigration (see also footnote 4 for projection details).

Again we consider scenarios 1 and 2 first since they show the alternative outcomes for nationals of the EC-12. Figures 3 and 4 portray respectively the gradual evolution of the age structure if the TFR of nationals remains at 1.64, and if it slowly regains replacement level by 2010. Both projections illustrate how the baby boom of the 1960s, aged about 20 in1985, moves on to produce the European aging bulge from 2025 to 2035. By 2060, however, the age distributions corresponding to the two fertility hypotheses are markedly different and are already close to their respective stable (with a growth rate of -0.8% p.a.) and stationary population models. In scenario 1, sub-replacement fertility pushes the percentage of women aged 65+ upwards from 16.5% in 1985 to 26.1% in 2060. In scenario 2, with restored replacement-level fertility, this percentage is only 19.7 in 2060 (the increase here stemming largely from the presumed small gain in life expectancy).

Figure 5 depicts the alterations in the age structure of the current alien stock, i.e. in the absence of further immigration. The various crests in the age-profiles are much more marked here than for the EC-nationals, and they correspond to: (a) the initial female immigration wave of the

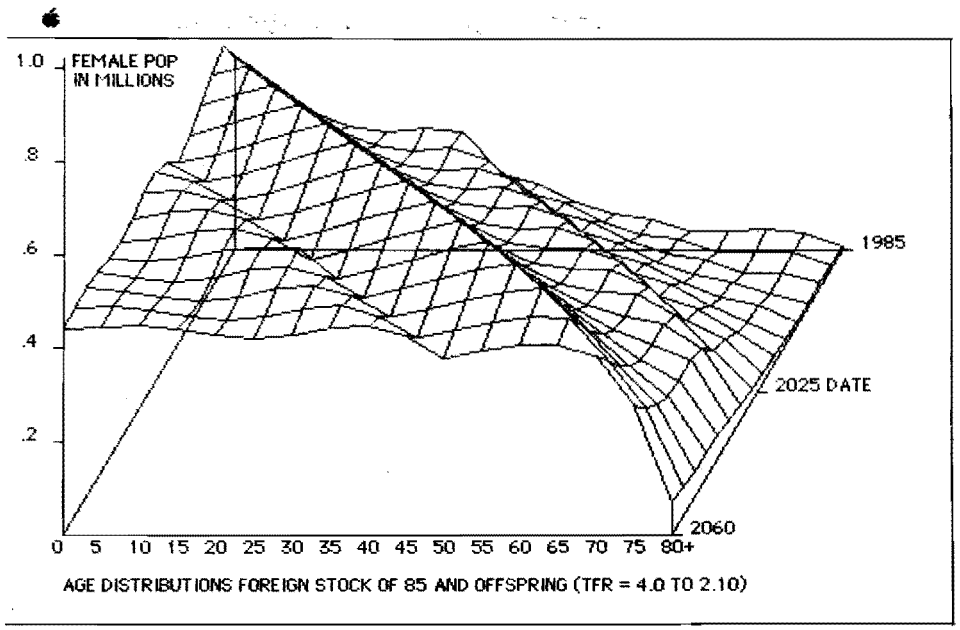
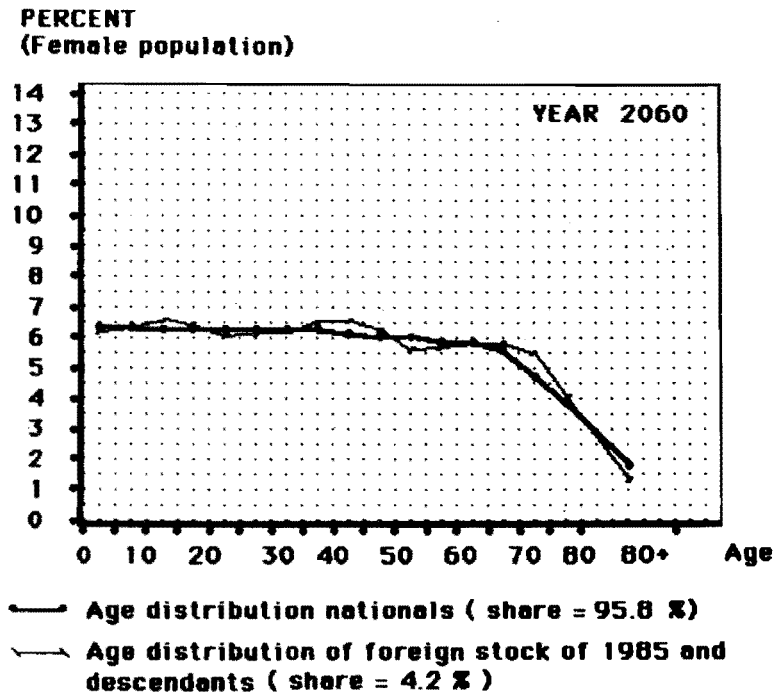


FIGURE 5



SCENARIO : All e_0= 80 ; TFR nationals = 1.64 in 1985 and restored to replacement level in 2010 ; no new immigration after 1985 ; TFR resident aliens falls from 4.0 in 1985 to 2.1 in 2010 and remains at replacement level thereafter.

FIGURE 6

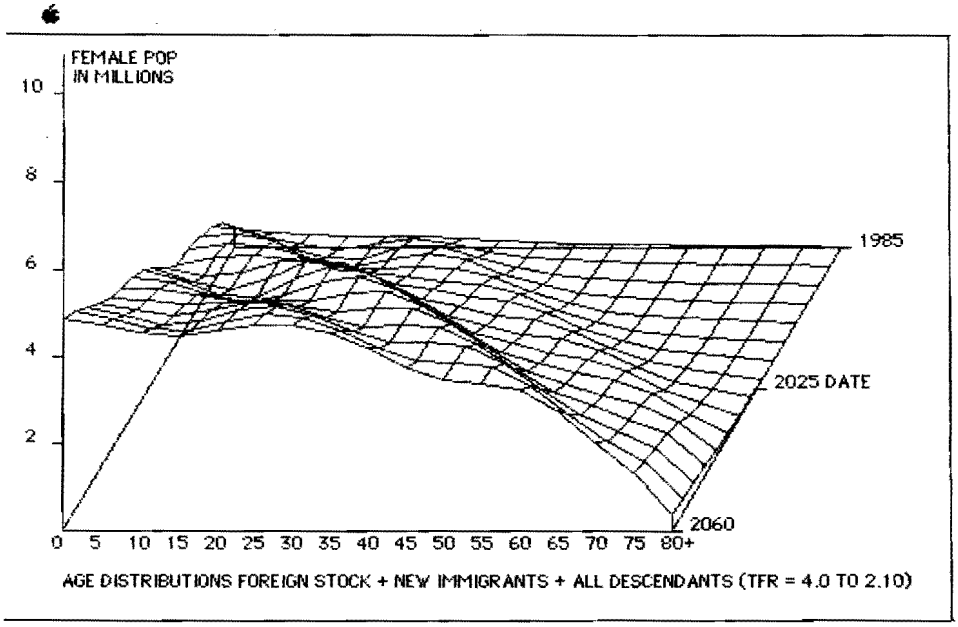


FIGURE 7

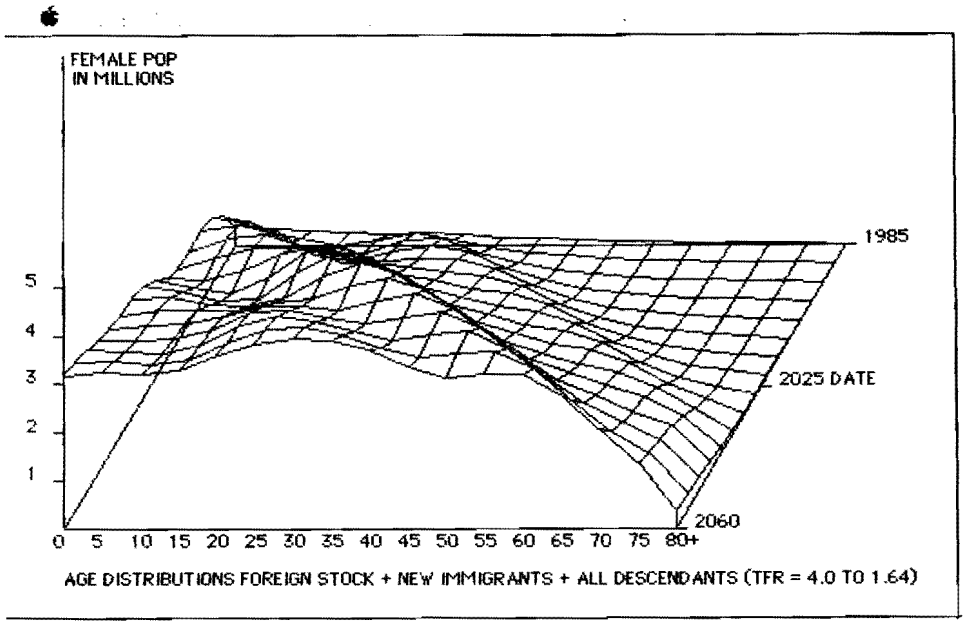
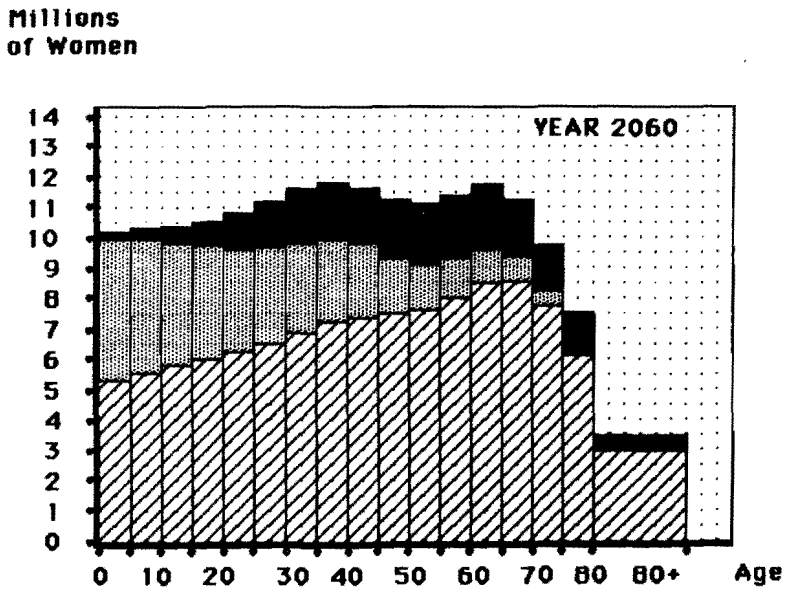
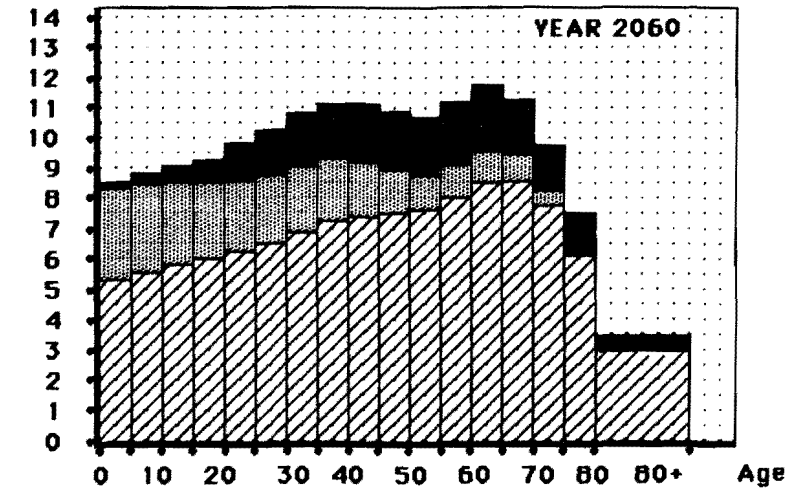


FIGURE 8



SCENARIO : All e_0= 80 ; immigration = 400,000 p.a. ; TFR EC-12 nationals = 1.64 constant ; TFR aliens drops from 4.0 in 1985 to 2.1 in 2010 and remains at replacement level thereafter ; age distribution immigrants characteristic of high fertility prior to entry till 2010.

FIGURE 9



SCENARIO : All e_0= 80 ; immigration = 400,000 p.a. ; TFR EC-12 nationals = 1.64 constant ; TFR aliens drops from 4.0 in 1985 to 1.64 in 2010 and remains at subreplacement level thereafter ; age distribution immigrants characteristic of high fertility prior to entry till 2010.

FIGURE 10

1960s and, especially, the 1970s (peak at age 35 in 1985); (b) the baby-boom produced by these immigrants during the 1980s and 1990s; and (c) the echo of this baby-boom, starting around 2015-2020. The age boundary of 65 is reached by the first crest in 2015, by the second one in 2050. These dates are respectively just before and just after the aging bulge among the EC-nationals. In other words, the immigration of the 1960s and 1970s slightly broadens the overall aging bulge during the first half of the next century. Furthermore, if the alien stock of 1985 reaches replacement-level fertility in 2010, the younger age structure still existing in the 20th century will, in time, be entirely "forgotten", and the age structure of their descendants in 2060 will completely resemble that of EC-nationals if the latter manage to regain replacement fertility during the next 25 years (see Figure 6). However, the share of the 1985 alien stock and their descendants in the total resident population will have increased from 1.7% in 1985 to 4.2% in 2060.

Figures 7 and 8 show the evolution of the age structure of aliens and their descendants if an annual immigration of 400,000 women occurs. In Figure 7, this immigration is coupled to a fall in fertility to replacement level in 2010, whereas in Figure 8, fertility is allowed to decline further to the level of EC-nationals (TFR=1.64). The crests produced in these figures by the large cohorts still correspond to the three waves exhibited in Figure 5 for the alien stock of 1985 and their decendants, but they are strongly dampened by continued immigration.

The hypotheses concerning the future course of alien fertility are again crucial. If alien fertility declines only to replacement level, overall aging can be attenuated. In scenario 4, the percentage 65+ rises from 16.3 in 1985 to 21.3 in 2060 (as against 26.1 for EC-nationals with continued below-replacement fertility). This attenuation is not so much due to the immigration of foreign women, but rather to the growth of the population of descendants of foreign mothers who are born in the EC-12 after 1985 (see Figure 9). If alien fertility declines to the European level by 2010, the population of EC-born aliens is considerably smaller (as can be seen by comparing Figures 9 and 10), and the overall proportion of women 65+ in 2060 is 22.6% instead of 21.4% (see Table 4). The share of the descendants of the EC-nationals will then be 69.6% and that of aliens and their descendants (i.e. the alien stock of 1985 + subsequent alien immigrants + both sets of descendants) will amount to 30.4% If alien fertility remains at replacement level after 2010,

Table 4. Percentages aged 65+ in female populations, 1985-2060: various scenarios[a]

Scenario[b]	1985	2015	2030	2060
A. No immigration after 1985				
1. EC-12 nationals, with TFR = 1.64	16.5 (100)	20.3 (123)	24.7 (150)	26.1 (158)
2. EC-12 nationals, with TFR restored to 2.1 in 2010	16.5 (100)	19.4 (118)	22.3 (135)	19.7 (119)
3. EC-12 nationals, with TFR = 1.64; plus alien stock of 1985 and offspring, with TFR falling from 4.0 to 2.1 in 2010	16.3 (99)	19.9 (121)	24.4 (148)	25.8 (156)
B. Immigration of 400,000 women p.a.				
4. EC-12 nationals, TFR = 1.64; plus alien stock of 1985, with new immigrants plus their respective offspring, all with TFR falling from 4.0 to 2.1 in 2010.	16.3 (99)	18.2 (110)	20.0 (121)	21.3 (129)
5. EC-12 nationals, TFR = 1.64; plus alien stock of 1985, and new immigrants plus their respective offspring; all with TFR falling from 4.0 to 1.64 in 2010.	16.3 (99)	18.3 (111)	20.4 (124)	22.6 (137)

Note: (a) Values in parentheses are ratios relative to the figure for EC-12 nationals in 1985.
(b) All scenarios assume an expectation of life at birth of 80 years.

the shares are respectively 65.6% and 34.4%. These shares by age group are still concentrated in ages below 50, which accounts for the dampening of the overall aging effect by 2060.

To sum up, the overall aging trend in the EC-12 over the next 75 years can be attenuated, but it cannot stopped by a record annual flow of 400,000 immigrants, not even if the immigrants and the current alien stock would stop their fertility transition at replacement-level fertility, thereby maintaining considerably higher fertility than EC-nationals. Obviously, smaller annual immigration flows would produce smaller attenuation effets, unless the alien fertility transition were to fall short of reaching replacement level. But then the share of alien descendants in the total population would grow more rapidly. Moreover, persistance of such a large fertility differential would also mean that the cultural distance between aliens and nationals would be largely maintained and, presumably, that intermarriage between the two groups would remain limited. Finally, it should be stressed that the optimal long-term strategy with respect to aging, as envisaged by the five scenarios of Tables 1 and 4, is clearly the one in which EC-nationals regain replacement-level fertility by 2010. This scenario has a slightly higher overall percentage of persons aged 65+ in 2015 than the scenarios with record immigration (19.5% as against 18.3%), but the lowest figures by the middle of the next century (see Table 4). In the longer run, an effective pro-natalist policy for EC-nationals would be more effective with respect to aging than would massive immigration, assuming that aliens complete their fertility transition shortly after the turn of the century.

3.2. How many immigrants would be needed to maintain the existing age structure?

So far, we have approached the problem by assuming a fixed annual number of immigrants and by simulating the ensuing age-structure effects. The procedure can be turned around by imposing a fixed age structure and by deriving the variations in annual migrations flows needed to maintain it. This is exactly what Didier Blanchet has done for France (Blanchet, 1988). Blanchet fixed the adult-to-elderly ratio (i.e. population 20-59 to population 60+) at 3.0 (which is the current value for France (for both sexes together)), and assumed that migrants instantaneously adopt local fertility levels. He made three different projections, with TFR-values of 1.7, 2.1 and

2.5 respectively.

Blanchet's results are illuminating in more than one respect. For instance, if immigrants have a classic age-profile at entry with a modal age of 23 years, and if they bring in their foreign-born children, the migration rates required to keep the overall adult-to-elderly ratio constant would exhibit cycles with a periodicity of about 35 years. Moreover, the cycles would have to include periods of marked emigration as well as periods marked immigration. And, furthermore, the amplitude of the cycles would have to increase over time.

Blanchet's calculations show that immigration would first have to be stopped until 1990 and that emigration would have to be fostered in the period 1990-2005, a period that will be characterized by adult-to-elderly ratios that are particularly favourable, given the arrival of the small cohorts born between 1930 and 1945 in the oldest age-group and the presence of the postwar baby-boom cohorts among the adults. After 2005, the immigration valve would have to be reopened for about 20 years, with net immigration rates of the order of 15-20 immigrants per thousand population per year (i.e. migration rates in excess of the birth rate). This initial stop-and-go pattern, which in its turn is engendered by the need to compensate for fertility oscillations in the past, leads to amplifying cycles with a periodicity of about 35 years. The periodicity of 35 years closely corresponds to the difference between the mean age of adult migrants (close to 25) and the age at retirement (about 60): a new wave of young migrants is needed to bolster the pool of adults, each time the previous wave reaches retirement age. This causes the system to be self-perpetuating. And with each cycle the amplitude of the waves must increase. An emigration strategy would be needed from 2025, with emigration rates varying between 17 and 28 per thousand, the exact level depending on the level of fertility. In 2045, another immigration wave would have to start, this time with peak immigration rates of 35 per thousand: this is about 2.5 times the present birth rate in France. The cycles would then have to amplify rapidly: in 2085, a net immigration rate of five times the present birth rate would be required (see Blanchet, 1988, figure 4, p. 304). Moreover, Blanchet's requirement of an adult-to-elderly ratio fixed at the present level implies sustained population growth, despite periodic emigration. In 2081, the total French population would be 120 million, i.e. more than twice its present size (56 million).

Blanchet also calculated what the outcome would be if no periodic emigration took place. The result is still a system of exploding immigration cycles with peaks in 2020 and 2050 at 18-23 immigrants per thousand population if everyone had replacement-level fertility, or 23-28 immigrants per thousand population if everyone had below-replacement fertility (TFR= 1.7).

Finally, he also envisaged a different policy with respect to age selectivity. If only adult migrants were allowed with ages between 30 and 60 (i.e. no children, and a modal age of 42 years), the cycles in the immigration rates required to maintain a fix adult-to-elderly ratio would be less marked (the migrants would leave a large portion of their fertility behind), but they would then stabilize at the totally unacceptable rate of about 70 per thousand, implying a total French population of no less than 2.2 billion in 2081!

It is clear that maintenance of the present adult-to-elderly ratio through migration implies impracticable alternations of very heavy immigration and emigration in the short run, and an impossibly large total population in the long run. The age-structure waves created by Europe's demographic history will, at least in part, have to be ridden out. It is, therefore, more realistic, as Blanchet also shows, to take a fixed annual migraton flow as a point of departure, with the aim of estblishing an appropriate adult-to-elderly ratio <u>in the long run</u>. Blanchet obtains such a ratio of slightly over 3 (both sexes combined) from 2040 onwards and allows for an intermediate peak of the adult-to-elderly ratio in 2005. This result can only be obtained, however, with immigration rates of about 10 per thousand are maintained if the TFR is 1.7 (and about 6 per thousand if the TFR is 2.1).

Clearly, if a migration policy is resorted to, fixed contingents are far preferable to the stop-and-go policies needed if the age structure is to be held constant in the near as well as the more distant future. But the size of the migration stream required is still very large.

For comparison, we have calculated the adult-to-elderly ratios in our five simulations (see Table 5). A steady annual immigration flow into the EC-12 of 400,000 women (an immigration rate of 2.4 per thousand) is capable of preventing a population decline if migrants maintain at least replacement-level fertility (see previous section), but -- as predicted by

Table 5. Ratio of adults (20-59) to elderly (60+) persons (female populations), 1985-2060: various scenarios

Scenario[a]	1985	2015	2030	2060
A. No immigration after 1985				
1. EC-12 nationals, with TFR = 1.64	2.35	1.98	1.49	1.44
2. EC-12 nationals, with TFR restored to 2.1 in 2010	2.35	1.99	1.60	1.92
3. EC-12 nationals, with TFR = 1.64; plus alien stock of 1985 and offspring, with TFR falling from 4.0 to 2.1 in 2010	2.37	2.01	1.52	1.46
B. Immigration of 400,000 women p.a.				
4. EC-12 nationals, TFR = 1.64; plus alien stock of 1985, with new immigrants plus their respective offspring, all with TFR falling from 4.0 to 2.1 in 2010.	2.37	2.22	1.90	1.79
5. EC-12 nationals, TFR = 1.64; plus alien stock of 1985, and new immigrants plus their respective offspring; all with TFR falling from 4.0 to 1.64 in 2010.	2.37	2.22	1.88	1.70

Note: (a) All scenarios assume an expectation of life at birth of 80 years.

Blanchet's results --such a flow is still too small to prevent a deterioration of the adult-to-elderly ratio during the next century. If EC-nationals maintain their current below-replacement fertility (scenario 1), their female adult-to-elderly ratio will decline from 2.4 adult women per retired woman in 1985 to less than 1.5 in 2060. Inclusion of the current stock of aliens and their offspring (scenario 3 in Table 5) has hardly any effect on these ratios. Immigration of 400,000 women p.a. from 1985 onwards (scenarios 4 and 5 in Table 5) alleviates the problem somewhat, but the outcome for 2060 is still an adult-to-elderly ratio that is substantially below 2.0 Again, there is no hope of regaining a level of 2.0 adult women per retired woman in the period following the aging bulge of 2030 if the fertility of nationals is not restored to replacement level by 2010 (scenario 2 in Table 5).

4. THE MULTI-ETHNIC SOCIETIES OF EUROPEAN CITIES

The projections that assumed a steady immigration stream of 400,000 women p.a. (i.e. the number required to stop population decline in the EC-12 by 2060) show that about one-third of the resident population would be of foreign origin or descendance by that date. However, the current concentration of LDC-immigrants in western Europe's major cities and the recent "babyboom" among migrants mean that urban multi-ethnic societies are currently developing more rapidly than this.

Table 6 gives an idea of the situation in a number of such cities during the first half of the 1980s. Amsterdam, for instance, has an LDC-minority population that is already 15% of its total population, counting only the four major ethnic groups (Turkey, Maghreb, Surinam and Dutch Antilles). Paris follows with almost 11% migrants from northern and sub-Saharan Africa. The New Commonwealth and Pakistan (NCWP) group constitutes almost 10% of the population of Greater London and Manchester, whereas the EC-capital, Brussels, has an 8% minority from the Maghreb countries and Turkey. The figures for these cities are all well above 10% if other LDC-minorities are added in. (West German cities though generally have lower percentages, with Turks being the dominant group.) The actual size of the minorities is larger than the figures in

Table 6. Selected LDC-migrant populations as percentage of total city population, latest available data, 1975-1988

City	Origin of migrants[a]	Percentage of total city population
Greater London, 1981	New Commonwealth + Pakistan (NCWP)	9.6
Manchester, 1981	NCWP	9.3
Amsterdam, 1987	Maghreb + Turkey	6.9
	Surinam + Dutch Antilles	8.0
	Total of above	14.9
Utrecht, 1985	Maghreb + Turkey	6.7
Rotterdam, 1981	Maghreb + Turkey	4.7
	Surinam	0.8
	Total of above	5.5
Brussels, 1981	Maghreb + Turkey	7.9
Agglom. Paris, 1975	Maghreb	5.2
- Ville de Paris, 1975	Maghreb + rest Africa	10.5
Cologne, 1988	Maghreb + Turkey	6.9
München, 1987	Turkey	2.8
Frankfurt, 1984	Turkey	4.5
Hamburg, 1984	Turkey	3.5
Stuttgart, 1984	Turkey	3.0
Düsseldorf, 1984	Turkey	2.3
West Berlin, 1984	Turkey	5.5

Sources: Council of Europe (1983); Gemeente Amsterdam - bestuursinformatie (1988); Nationaal Instituut voor de Statistiek, Brussels (1985); INSEE, Paris, photocopy; Gemeente Rotterdam, photocopy; Stadt Köln - Oberstadtdirektor, photocopy; Landeshauptstadt München, computer output MIDAS.

Note: (a) Percentages pertain to persons with specified nationality at the time of census or registration, not to persons born in specified countries.

Table 7. Selected LDC-migrant populations as percentage of city population by age group; latest available data, 1975-1988

City	Origin of migrants[a]	Age group	Percentage
Brussels, 1981	Maghreb + Turkey	0 - 19	17.4
		20 - 44	8.9
		45 - 64	7.9
		65+	0.2
		All ages	7.9
Cologne, 1988	Maghreb + Turkey	0 - 19	16.1
		20 - 34	5.8
		35 - 64	6.6
		65+	0.2
		All ages	6.9
Agglom. Paris, 1975	Maghreb	0 - 14	7.9
		15 - 34	5.0
		35 - 64	5.3
		65+	0.9
		All ages	5.2
Amsterdam, 1987	Maghreb, Turkey, Surinam, Dutch Antilles	0 - 17	33.8
		18 - 39	15.2
		40 - 64	9.8
		65+	1.6
		All ages	14.9
Rotterdam, 1981	Maghreb, Turkey, Surinam	0 - 19	11.2
		20 - 34	5.7
		35 - 64	3.7
		65+	0.1
		All ages	5.5

Sources: Nationaal Instituut voor de Statistiek, Brussels (1985); INSEE, photocopy; Gemeente Amsterdam - bestuursinformatie (1988); Gemeente Rotterdam - gemeentelijk bureau voor onderzoek en statistiek (1981); Stadt Köln, Oberstadtdirektor, photocopy.

Note: (a) Percentages pertain to persons with specified nationalities, not to persons born in these countries

Table 6 suggest, since most of these figures are based on current nationality rather than on nationality at birth or place of birth, and they consequently fail to take account of nationality changes.

Table 7 gives age-specific percentages belonging to minorities for the largest LDC-minorities in a few cities. The recent high fertility of these migrants emerges here in the form of high proportions in the age group below ages 15 or 20. For example, a full third of all children aged 17 or younger living in Amsterdam have parents who immigrated from the Maghreb, Turkey, Surinam or the Caribbean and have not (yet) acquired Dutch citizenship. If children of naturalized parents or of Asian descent were to be added in, the figure would be over 35%.

Not only the metropoles of London and Paris qualify as multi-ethnic: the percentage foreign among children and teenagers in Brussels and Cologne, for instance, is already 17% Furthermore, as our population projections for Brussels illustrate (Table 8), this percentage is expected to increase to at least 25% around the year 2000, even if a rapid fertility decline among the Islamic minorities in Brussels is assumed (projection 2 in Table 8). If their fertility transition is slower (as hypothesized in projection 1, Table 8), the percentage of children and teenagers of Islamic descent is expected to increase to almost 33% by 2026. In the meantime, the children born in the recent Islamic "babyboom" in Brussels will move into the age-group 20-44 years. In 1981, only 9% of women in this age group in Brussels belonged to Islamic minorities: but irrespective of the speed of fertility transition after 1981, this figure will increase to almost 20% in 2001 and to over 30% in 2021. By the latter date, more than 20% of the entire Brussels population could be made up of persons of Islamic origin or descent -- unless, of course, Belgians and other Europeans exhibit a marked trend reversal in migration into the city. Such a return would foster urban renewal, but it could also result in real-estate price rises, competition for housing, and, possibly, the displacement of the inner-city minorities.

An open-door policy with respect to LDC-immigration (as hypothesized by the various scenarios that would curtail population decline in the EC-12 as a whole) would imply a much more rapid increase in the number of immigrants in Europe's cities than is illustrated by our projections for Brussels, which assume no new immigration. The concentration effect is a major

Table 8. Projected percentage of the population that is of Maghrebian and Turkish descent: Brussels, 1981-2021

		1981	2001	2021
Projection 1: migrant TFR reaches 2.1 in 2011, drops to 1.8 in 2021; life expectancy at birth (both sexes combined) = 75				
	0 - 19	17.4%	27.5	31.6
	20 - 44	8.9	19.1	33.5
	45 - 64	2.6	9.5	17.4
	65+	0.2	2.7	8.5
	All ages	7.9	15.4	23.1
Projection 2: migrant TFR reaches 2.1 in 2001, drops to 1.8 in 2011; life expectancy at birth (both sexes combined) = 75				
	0 - 19	17.4%	25.2	25.9
	20 - 44	8.9	19.1	31.2
	45 - 64	2.6	9.5	17.4
	65+	0.2	2.7	8.6
	All ages	7.9	14.8	21.2

Source: own projection.

additional obstace to a demographic policy that aims at counterbalancing very low European fertility through renewed immigration.

5. CONCLUSIONS

Are migrants substitutes for births in the EC-12? The answer is that immigration can prevent an overall population decline during the first half of the 21st century, but only if, year after year, record numbers of immigrants are allowed in. The order of magnitude required is about 400,000 women per year (about 1 million persons of both sexes), or more than 20% of the current female birth stream. If fertility of migrants drops to replacement level, the migration stream has to be hiked up to about 40% of the annual birth stream to compensate. Such large immigration figures essentially reflect the fact that the current fertility levels of EC-nationals are extremely low; for practical purposes they are out of the reach of compensation through migration. This illustrates that the goal of a long-term stationary population size (whatever that size might be) cannot reasonably be maintained unless European fertility can be raised to levels that are much closer to the replacement levels of 2.07 children per woman.

Immigration is even less able to serve as a counterbalance to the effects of very low fertility on the age structure. Even the record number of immigrants used in our simulations fails to prevent aging. Moreover, as Blanchet's work illustrates, maintenance of the present age structure would require a "stop and go" policy with alternating periods of immigration and emigration: the cycle would have to amplify over time, leading to unrealistic massive immigration waves, each succeeded by massive emigration (mass deportation?). Once again, and even more strikingly in this case, the lesson to be reaped from formal demography is that a fertility rise among EC-12 nationals to levels approaching replacement of each generation is a much more effective lever than is migration.

It should be stressed that these conclusions are not inspired by a fear of the coming of a multi-ethnic society. As the figures we have presented show, the multi-ethnic society is already a

reality in many cities of northwestern Europe. Since these cities are struggling with integration and adaptation processes for all parties concerned, and since the migrant babyboom in them will soon reach the age of entering into the labour force, the end of concern over their socio-economic integration is not in sight. These cities cannot be expected to absorb more than relatively modest contingents of new LDC-immigrants in the coming years, not the bulk of the large streams that would be required to keep national populations at a long-term stationary level. A number of EC-member states have little experience with LDC-minorities and hence no major integration problems at the moment, but they too either already face well-below replacement-level fertility (e.g. Italy) or may be confronted with it in the near future (e.g. Spain). It is possible that some of these contries will eventually become immigration nations and absorb their share of the African and Near-Eastern population pressure, but they are probably not yet better equipped to deal with multi-ethnic urban situations than their northwestern counterparts were during the 1970s.

Finally, the present paper has dealt far more extensively with the formal demographic aspects than with the economic and social ones. We have few illusions that national governments or supranational institutions in the EC would revert to an open-door migration policy solely on the strength of considerations of population size and age composition, even if important sectors such as education and social security depend heavily on the latter: other issues -- such as employment and social intergration -- are important too. One can also argue that they would be ill-advised to rely solely on migration to solve their demographic problems, because immigration is an inefficient counter to the problems posed by the current low fertility levels. The situation would be much more comfortable if we could combine moderate immigration and the economic absorption and social integration of migrant populations with recovery of native fertility levels. In other words, the smooth development of a multi-ethnic society in Western Europe, as well as the smoothing of our demographic future, is better served by smaller contingents of LDC-immigrants and at least a partial recovery of native fertility, than by continued extremely low native fertility offset by a very large migration stream.

FOOTNOTES

1. The European Values Studies (EVS) of 1982, conducted in nine EC countries (Belgium, Denmark, France, Germany, Ireland, Italy, The Netherlands, Spain and the UK), provide a description of the major covariates of ethnic intolerance. The latter is measured here as the proportion of the total sample (N=12,464) that does not want persons of another ethnic group, immigrants or guestworkers as neighbours. This proportion was 15% for the total sample, and the figures by country were as follows (Van Leemput, 1988):

Italy	8.5%	Ulster	12.9%
France	9.4%	England, Wales, Scotland	16.7%
Spain	9.9%	Netherlands	19.9%
Denmark	10.6%	Belgium	20.2%
Ireland	11.1%	FRG	25.3%

The percentages expressing intolerance are obviously highest in countries with substantial non-European populations. Results of earlier studies that used more detailed multi-item batteries provide similar results: Deakin (1970) reported 17% for the UK, Dooghe (1981) found 23% for Belgium, and Buikhuisen et al. (1976) obtained 16% in the Netherlands for intolerance with respect to Surinam immigrants. The results for France reported above seem underestimated in the light of the 15% vote for the Front National during the first round of the 1988 presidential elections. Moreover, results for other value dimensions taken from the French Values Study of 1982 seem equally biased (Lesthaeghe and Meekers, 1987).

For the total EVS sample, the percentages expressing ethnic intolerance vary as follows for the major covariates (Van Leemput, 1988):

Age	17-21 :	10%	Income	1+ st. dev. below mean :	21%
	22-34 :	11%		<1 st. dev. below mean :	16%
	35-49 :	13%		<1 st. dev. above mean :	13%
	50-64 :	18%		1+ st. dev. above mean :	11%
	65+ :	24%	(eta=.09, p<.001, N=11,252)		

(eta=.13, p<.001, N=12,449)

Education	Up to lower secondary :	15%	Inglehart-scale	Materialist :	19%
	Higher secondary :	16%		Mixed :	16%
	More than full secondary :	13%		Post-materialist :	9%

(eta=.03; p<.001; N=12,103) (eta=.08; p<.001; N=9,464)

2. Note that, for simplicity, we have projected EC-nationals and their descendants separately from the alien population and their descendants, as if nationality was defined solely by parentage and as if no naturalizations would take place. Moreover, the principle of "female dominance" accepted for the projections implies that group membership of girls is traced through their mothers in the case of mixed marriages. One could envisage the incorporation of varying degrees of intermarriage in the projections, especialy since such marriages are of major importance for the creation of "melting-pot" situations, but this is not done here since we are focussing only on the effect of migration and differential fertility on total population size and on age composition.

   Note also that the scenarios do not envisage return migration as we are predominantly preoccupied with the female half of the population. Women from developing countries still generally move as members of families, and while their children are raised and educated in Europe, major spontaneous return migration movements of mothers are unlikely. Once the children of aliens have grown up, old-age return migration may occur, but it is still too early to estimate the extent of any such movements. At any rate, the EC would still be responsible for major social security expenses such as pensions and, possibly, a part of health-insurance costs, so return migration would not entirely remove the return migrants from the population.

3. This is slightly higher than recent values, thereby allowing for a slight improvement in mortality in the coming years.

4. With a life expectancy of 80 years, the formula would be simply $2.07(1.0-B_f/B)$, but this would hardly change the results presented in Table1.

5. a) The 1985 stock of non-EC nationals (7,069,000) is taken from the Council of Europe 1987 country report (CDPO 87-1). We estimated the share of women as 40%, which brings the estimated female alien stock used in our projections to 2,829,000. Of these, 402,000 had a NCWP-nationality, 839,000 a Maghreb nationality, 713,000 were Turkish and 874,000 had other nationalities. Age schedules for these four major groups were subsequently taken from the 1981 Belgian census, and weighted by the group sizes reported by the Council of Europe for Belgium, France, Netherlands, UK and the FRG. The resulting estimated age distribution is:

Age	'000s	%	Age	'000s	%	Age	'000s	%
0-4	416	14.7	30-34	233	8.2	60-64	39	1.4
5-9	353	12.5	35-39	165	5.8	65-69	42	1.5
10-14	300	10.6	40-44	144	5.1	70-74	45	1.5
15-19	265	9.4	45-49	104	3.7	75-79	37	1.3
20-24	254	9.0	50-54	76	2.8	80-84	22	0.8
25-29	260	9.2	55-59	66	2.3	85+	8	0.3

b) Two age structures for the annual female migrant flow are used. The first is more typical of women with relatively high fertility prior to immigration and has 580 girls below age 12 per 1,000 women aged 15-34: this schedule is used up to 2010. The second schedule is typical for low-fertility migrants and has 320 girls below age 10 per 1,000 women aged 15-34: it is used for the migrant flow after 2010. The first schedule is based on information for the flow of Algerian women into France, 1980, as reported by Tribalat (1983), and has the following percentage distribution by age :

0-4 : 14.9%	15-19 : 5.0%	30-34 : 13.0%	45-49 : 1.9%	60-64 : 0.1%
5-9 : 13.7%	20-24 : 11.5%	35-39 : 6.0%	50-54 : 0.7%	65-69 : 0.1%
10-14 : 9.2%	25-29 : 20.2%	40-44 : 3.5%	55-59 : 0.1%	70-74 : 0.1%

The second schedule is based on the flow of all female immigrants into France in 1974, i.e. at a time when Italian, Spanish and Portuguese migration was still substantial (Tribalat, ibid.). Its age structure is as follows:

0-4 : 11.0%	15-19 : 13.9%	30-34 : 8.6%	45-49 : 1.6%	60-64 : 0.6%
5-9 : 8.6%	20-24 : 23.0%	35-39 : 5.5%	50-54 : 1.0%	65-69 : 0.5%
10-14 : 5.7%	25-29 : 16.4%	40-44 : 2.7%	55-59 : 0.8%	70-74 : 0.1%

c) The age schedule of fertility used at the outset is that of Turkish women in Sweden 1981, scaled down to a TFR of 4.0. The age-specific feritlity rates are :

15-19 : 0.104	25-29 : 0.190	35-39 : 0.106	45-49 : 0.006
20-24 : 0 .223	30-34 : 0.144	40-44 : 0.026	

As the fertility transition proceeds to a TFR of 1.64, the above age schedule of fertility converges to :

15-19 : 0.0165	25-29 : 0.1210	35-39 : 0.0260	45-49 : 0.0005
20-24 : 0.0870	30-34 : 0.0716	40-44 : 0.0056	

d) Finally, the mortality schedule used throughout is the Coale and Demeny (1983) West model schedule with e_0 = 80 years.

REFERENCES

Banton, M.,1983. Racial and ethnic competition. Cambridge, England: Cambridge University Press.

Bean, F., E. Telles and B. L. Lowell. 1987. "Undocumented migration to the United States: Perceptions and evidence". Population and Development Review, 13 (4): 671-690.

Blalock, H. M. Jr. 1982. Race and ethnic relations. Englewood Cliffs, N.J.: Prentice Hall.

Blanchet, D. 1988. "Immigration et régularization de la structure par âge d'une population." Population, 43 (2): 293-309.

Brahimi, M. 1980. "Chronique de l'immigration." Population, 35 (1): 173-188.

Brassé, P. et al. 1983. Jonge Turken en Marokkanen op de Nederlandse arbeidsmarkt. Amsterdam: Instituut voor Sociale Geografie.

Buikhuisen, W., Drost and Schilt. 1976. Het gezicht van de onverdraagzaamheid: Analyse van de factoren die aan onverdraagzaamheid ter grondslag liggen. Assen and Amsterdam: Van Gorcum.

Castles, S., and G. Kosack. 1973. Immigrant workers and class structure in Western Europe. Oxford, England: Oxford University Press.

Castles, S. 1984. Here for good: Western Europe's new ethnic minorities. London: Pluto Press.

Coale, A.J. 1972. "Alternative paths to a stationary population." In: Demographic and social aspects of population growth, eds. C. Westoff and R. Parke. Washington, D.C.: Commission

on Population Growth and the American Future, 598-603.

Coale, A.J., 1986. "Demographic effects of below-replacement fertility and their social implications." In: Below-replacement fertility in industrial socieities, eds. K. Davis et al. New York: The Population Council (supplement to Population and Development Review, vol. 12).

Coale, A.J. and P. Demeny. 1983. Regional model life tables and stable populations. New York: Academic Press.

Council of Europe. 1987. Recent demographic development in member-states. Strasbourg: Council of Europe (CDPO(87).1).

Deakin, N. 1970. Colour, citizenship and British society. London: Panther Books.

Dooghe, G. 1981. "De gastarbeiders: Feiten en meningen." In: Feiten en meningen over actuele problemen, eds. G. Dooghe et al. Antwerp: De Sikkel and De Nederlandsche Boekhandel.

Espenshade, T., L. Bouvier and W.B. Arthur. 1982. "Immigration and the stable population model." Demography, 19 (1): 125-133.

Espenshade, T. 1986. "Population dynamics with immigration and low fertility." In: Below-replacement fertility in industrial societies, eds. K. Davis et al. New York: The Population Council (supplement to Population and Development Review, vol. 12).

Evrigenis, D. 1985. "Ontwerpverslag over de resultaten van het onderzoek: Onderzoekscommissie Opkomst Fascisme en Racisme in Europa." Strasbourg: European Parliament (mimeo, PE 97/547).

Gemeente Amsterdam. 1988. De Amsterdammers in zeven bevolkingskategorieën. Amsterdam: Statistisch Informatiecentrum.

Heer, D. 1986. "Immigration as a counter to below-replacement fertility in the United States." In: Below-replacement fertility in industrial societies, eds. K. Davis et al. New York: The Population Council (supplement to Population and Development Review, vol. 12), 262-269

Heijke, J.A.M. 1979. Migratie van mediterranen: Economie en arbeidsmarkt. Leyden: Stenfert-Kroese.

Inglehart, R. 1977. The silent revolution: Changing values and political styles among western publics. Princeton, N.J.: Princeton University Press.

Inglehart, R. 1985. "Aggregate stability and individual flux: The level of analysis paradox." American Political Science Review, 79: 97-116.

Keeley, C. and E. Kraly. 1978. "Recent alien immigration to the United States: Impact on population growth and native fertility." Demography, 15: 267-283.

Lebon, A. 1986. "Les travailleurs étrangers en Europe: Combien sont-ils; qui sont-ils; où travaillent-ils?" Revue Européenne des Migrations Internationales, 2 (3): 169-184.

Lesthaeghe, R., and D. Meekers. 1987. "Value changes and the dimensions of familism in the European Community." European Journal of Population, 2: 225-268.

Lesthaeghe, R., and J. Surkyn. 1988. "Cultural dynamics and economic theories of fertility change." Population and Development Review, 14 (1): 1-45.

Mitra, S. 1983. "Generalization of the immigration and the stable population model." Demography, 20 (2): 111-115.

Muller, T. and T. Espenshade. 1985. The fourth wave - California's newest immigrants.

Washington D.C.: The Urban Institute.

Müller-Rommel, F. 1982. "Parteien neuen Types in West Europa: Eine vergleichende Analyse." Zeitschrift für Parlementsfragen, 3: 369-390.

Nationaal Instituut voor de Statistiek. 1985. Volkstelling 1 maart 1981: Bevolking naar nationaliteit. Brussels: Ministerie van Economische Zaken.

Penninx, R. 1984. Immigrant population and demographic development in the member-states of the Council of Europe. 2 vols. Strasbourg: Council of Europe (CDDE 84-12/13).

Pollard, J. 1973. Mathematical models for the growth of human populations. Cambridge, England: Cambridge University Press.

Tapinos, G. 1988. "L'immigration étrangère dans la France contemporaine." In: La mosaïque France: Histoire des étrangers et de l'immigration en France, réd. I. Lequin. Paris: Editions Larousse (in press).

Tribalat, M. 1983. "Chronique de l'immigration." Population, 38 (1): 137-160.

Tribalat, M. 1986. "Migrations d'étrangers en République Fédérale d'Allemagne." Population, 41 (3): 547-584.

Tribalat, M. 1988. "Chronique de l'immigration." Population, 43 (1): 181-206.

United Nations. 1988. World demographic estimates and projections, 1950-2025. New York: United Nations (ST/ESA/SER.R/79).

Van Leemput, J. 1988. Intolerantie ten aanzien van migranten. Licence thesis in sociology. Brussels: Vrije Universiteit.