The Aging Process and its Implications in Europe and the USSR

Jack Habib

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1

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3
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Abstract

The population of Europe has been aging more rapidly than that of any other geographic region, and this process will continue in the future. Population aging has profound social implications that are only now being fully recognized and addressed. In this paper, we describe the aging process that has taken place over the past decade, and examine projections for population aging over the next 60 years, focusing on a number of basic issues.

We examine the rate at which the population of Europe is expected to age over coming decades, and the socio-demographic areas in which variation exists between different countries, for example, dependency ratios, proportion of women in the population, proportion of the very old, etc. Given that the various European regions will age along a similar trajectory, will these variations increase or decrease over time? Will different countries remain at different stages of the aging process, or will they converge?

Many researchers and policymakers, as well as the public at large, anticipate economic crisis as a result of the aging process. We discuss this issue in light of research into the possible impact of population aging on employment and public expenditure.

The paper examines the implications of the aging process for informal support: will informal support networks necessarily change, as is often suggested in the literature?

The paper points out the inadequacy of the existing data base on population aging: we identify important gaps in this data base -- insufficient data on social networks and on age-related patterns of service use -- and in so doing, propose an agenda for future research.

The Aging Process and its Implications in Europe and the USSR

EUROPE has been forerunner of all geographic regions in the process of aging and will continue to age rapidly in the future. This process has profound societal implications that all of modern society is struggling to understand and just beginning to address in a more serious way. In this paper we consider the aging process as it has unfolded over the last decade and as it is expected to unfold over the next 60 years. Against this background, we consider a number of basic issues or themes.

What will be the rate of aging in Europe in the coming decades and what are the major dimensions along which one finds diversity in the aging process within Europe? To what extent can we expect this diversity to grow or to contract in the future? Even if countries in Europe are and will remain at different points of the aging process, to what extent is the trajectory a similar one?

To what extent will the aging of our societies result in economic crisis and difficulties? There is a common view among the public at large and among many professionals and policymakers that a crisis will emerge. We shall examine this perspective in the light of research on the implications of the aging process for employment and public expenditure.

What are the implications of the aging process for the informal support system and the provision of care by providers outside of the market context? Does it necessarily imply fundamental change in the roles of the informal system, as is often suggested in the literature?

How adequate is the existing data base to answer these questions? What are the important gaps in the knowledge base and what should be the future research agenda?

Demographic Structure and its Variation in Europe

The percentage aged 65 and over

The «Age of Aging» in Europe began early in the 19th century. In 1860 between 4.2 per cent and

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Europe is experiencing a process of rapid aging, with major social and economic implications. In this paper we review the basic pattern of aging in Europe and the possible implications. We then analyze the adequacy of the available knowledge base to evaluate these consequences and attempt to define the research agenda for the future. Eur J Gerontol 1992; 3: 184-198.

Key words: Socioeconomic trends, ageing in Europe, social policy.

5.7 per cent of the population in most European countries was aged 65 and over. Circa 1900 this percentage reached as high as 8.4 per cent in France and Sweden. In the 1950's the proportion of the aged population ranged from 7.1 per cent to 11.4 per cent and in 1985 it ranged from 12.0 per cent in Spain and Portugal to 17.2 per cent Sweden (1). The trend in the last decade and up to 2025 for Europe, its major subregions, and the USSR, based on the U.N. medium variant, is presented in Table 1 (2). The medium variant assumes fertility will slightly increase from a Total Fertility Rate (TFR) of 1.74 to 1.86 and that life expectancy will increase from 74.2 to 79 years between 1980 and 2025. By 1990, the average percentage of elderly over 65 was expected to reach 13.4 for Europe, representing only a slight increase in the last decade. The rise in the percentage over 65 will be moderate in the next decade but will then accelerate, so that by 2025, 20.1 per cent in Europe are expected to be over age 65.

There is substantial variation in Europe, with the percentage aged much higher in Western and Northern Europe than in the East and South, and this heterogeneity is likely to persist or even increase,

TABLE 1

Percentage of Population Aged 65 and over, 1980-2025

	1980	1990	2000	2015	2025
Europe	13.1	13.4	14.9	17.3	20.1
Eastern Europe	11.8	11.3	12.9	14.4	17.6
Northern Europe	14.8	15.5	15.3	17.9	20.3
Southern Europe	11.5	12.7	15.1	17.1	19.7
Western Europe	14.4	14.5	16.0	19.3	22.4
USSR	10.3	9.6	11.7	11.9	14.8

Source: United Nations, World Population Prospects 1988, N.Y., 1989a. Following the U. N. classification, USSR is not calculated as part of Europe.

TABLE 2

Percentage of Population Aged 80 and over, 1980-2025

	1980	1990	2000	2015	2025
Europe	2.3	2.9	2.9	4.0	4.6
Eastern Europe	1.8	2.1	1.9	2.9	3.2
Northern Europe	2.7	3.4	3.7	4.2	4.8
Southern Europe	1.8	2.5	2.8	4.2	4.8
Western Europe	2.8	3.5	3.4	4.7	5.6
USSR	1.8	2.3	2.0	2.8	2.9

Calculated from: United Nations, Global Estimates and Projections of Population by sex and Age, 1988 revision, N.Y. 1989b. Following the U.N. classification, USSR is not calculated as part of Europe.

despite the common aging trajectory among the various regions in Europe. The percentage over 65 will range from 14.8 in the USSR to 22.4 in Western Europe by 2025. Southern Europe will age most dramatically with an increase from 11.5 to 19.7 over the 45-year period, 1980 to 2025, and this region will join the North and West as the most aged regions.

Composition of the Elderly Population

The aging process is accompanied by important changes in the composition of the elderly. According to the medium variant U.N. projection (throughout the rest of this paper we shall confine ourselves to this projection), the proportion of the very old (80+) is increasing even more rapidly than that of the elderly in general (see Table 2) (3). The very old will increase from 2.3 per cent of the total population of Europe in 1980 to 4.6 per cent in 2025.

The increase will be particularly dramatic in Southern Europe, where the very old will increase from 1.8 per cent to 4.8 per cent of the total population. The share of the very old in the total elderly population in Europe is increasing, from 17.4 per cent in 1980 to 21.8 per cent in 1990 to 23.1 per cent in 2025. In Northern Europe more than 22 per cent of the elderly are already over 80 (3). This has obvious implications for the percentage of disabled elderly within the aged and the total population.

Sex composition (see Table 3) is also an important indicator of the present and future needs of the elderly. Since the life expectancy of females is higher, the percentage of females exceeds that of males; some 61 per cent of the elderly in Europe are women. This varies between about 59 per cent in Northern and Southern Europe and 72.4 per cent in the USSR. Whereas in the past there has been a slight upward trend, a moderate decline in the percentage of women is expected in the future.

TABLE 3

Women as Percentage of Total Population aged 65 and over, 1980-2025

	1980	1990	2000	2015	2025
Europe	60.5	61.0.	59.7	58.3	57.8
Eastern Europe	60.4	61.9	60.4	59.2	58.2
Northern Europe	59.9	59.7	59.2	57.9	57.7
Southern Europe	58.4	59.0	58.4	58.1	57.3
Western Europe	62.3	63.0	60.7	58.3	57.9
USSR	69.7	72.4	66.9	63.8	60.9

Calculated from: United Nations, 1989b, op. cit. Following the U.N. classification, USSR is not calculated as part of Europe.

TABLE 4

Elderly Dependency Ratio, 1980-2025*

	1980	1990	2000	2015	2025
Europe	23.1	22.4	24.7	29.0	34.9
Eastern Europe	20.7	19.2	21.7	23.9	30.4
Northern Europe	26.4	26.4	25.7	30.5	35.7
Southern Europe	20.5	21.3	25.0	28.6	33.6
Western Europe	25.4	23.6	26.2	32.4	39.6
USSR	18.3	16.7	20.6	20.1	25.8

* [Population (65+)/population (20-64)] × 100.

Calculated from: United Nations, 1989b, op. cit. Following the U.N. classification, USSR is not calculated as part of Europe.

Dependency, Public Expenditures, Employment and Informal Support

Dependency ratios

A major focus in the discussion of the implications of aging is on the degree of dependency. Two frequently used indicators are the elderly dependency and total dependency ratios, defined, respectively, as the ratio of elderly dependents and the ratio of total dependents to those of working age (here assumed to be aged 20-64). Today in Europe, there is approximately one elderly dependent for every five persons of working age. The ratio varies from 1:6 in the USSR to 1:4 in Northern Europe. The changes over the last decade have not been significant and have varied from region to region. In the future, there will be increases in all regions such that by 2025 there will be one elderly person for every three persons of working age in Europe. The changes will become significant after

the year 2000. The gaps between the regions in the dependency ratio will vary from a low of 30.4 in Eastern Europe to a high of 39.6 in Western Europe in 2025 (see Table 4).

While the elderly dependency ratio clearly increases with the aging process, the total dependency ratio has a more complex pattern due to the decline in the number of children. In Table 5 we see that the total dependency ratio for Europe today is 67.5, with very little variation across the regions and no clear correlation with the rate of overall aging. During the decade of the 1980's there has been a decline of some significance in the ratio in all regions. This decline will continue at least through 2000, however by 2025 the dependency ratio will have risen again, although it will remain below the 1980 level in all regions except for Western Europe. The variation among the regions will be even less in 2025. The key issue here is how this change in the proportion of elderly to children will affect social expenditures.

Implications of aging for public expenditures

Relatively few studies have attempted to evaluate the changes in the net public support costs associated with population aging (4, 5). While the total dependency ratio may decline in some patterns of population aging, there will always be a shift to a larger share of elderly relative to children within the dependent population. The economic significance of this shift depends on the relatives needs of children versus the elderly.

There would not seem to be any conceptual basis for arriving at a single relative needs measure that encompasses public and private expenditure. Therefore two sub-questions arise: (1)How much does a decline in the number of children per family or a change in their age composition increase real family income? This question may be answered on the basis of estimated equivalence scales. (2) To what extent will changes in the population age structure increase the share of national income required to maintain the same level of public services over time? (6, 7, 8).

The OECD provides estimates for 8 European countries on the impact of population aging on public expenditures between 1980 and 2040 (4). We first consider the shift in the composition of the expenditures as implied by the aging process as presented in Table 6. The shift in the composition of expenditures by type of program is very significant, with the share of pensions (which was already quite high in 1980) rising by over 25 per cent in most countries by 2040 and the share of education declining even more significantly. The rise in

TABLE 5

Total Dependency Ratio, 1980-2025*

	1980	1990	2000	2015	2025
Europe	76.9	67.5	66.1	67.9	73.5
Eastern Europe	74.8	70.8	68.0	66.7	72.8
Northern Europe	78.6	70.7	68.2	70.2	75.4
Southern Europe	79.2	67.9	65.8	67.0	70.8
Western Europe	75.6	63.1	64.4	68.4	75.9
USSR	78.4	73.9	76.6	68.9	74.3

* [Population (0-19) + (65+)/population (20-64)] × 100.

Calculated from: United Nations, 1989b, op. cit. Following the U.N. classification, USSR is not calculated as part of Europe.

TABLE 6

Distribution of Social Expenditures by Major program and Share of the Elderly implied by Projected demographic change

	Program (%)				Age Group (%)	
	Education		Pensions		65+	
	1980	2040	1980	2040	1980	2040
Belgium	26	18	40	52	32	45
Denmark	29	19	30	42	31	47
France	21	13	42	56	40	53
Germany	20	11	47	61	46	62
Italy	23	13	47	59	35	50
Netherlands	23	13	34	46	27	49
Sweden	23	18	39	44	45	56
U.K.	28	22	34	40	36	48

Source: OECD, 1988, op. cit.

the share of the elderly in total public expenditures is also very significant, increasing from a low of 24 per cent in Sweden to a high of 81 per cent in the Netherlands between 1980 and 2040, and reflecting a shift both among programs and in the beneficiaries within the various programs. These projections imply a significant process of reallocating resources, with considerable practical and political obstacles to be overcome.

Aside from these shifts in the allocation of resources, a major question is that of the impact of population aging on the total need for public services and the implied burden of finance that will have to be borne by the working age population. In Table 7 we present an index of the impact of demographic change in comparison to the levels experienced in 1980 (4). For each country the implied levels of total social expenditure are calculated

on the assumption that the age-specific levels of social expenditures in 1980 are maintained in the future. This trend is affected by both the change in the age structure and by the rate of total population growth. During the decade of the 1980's, we see that demographic change had very little impact on required social expenditures, and indeed this continues to be the case in a number of the countries up through 2010. After this date, demographic change leads to larger increases in social expenditures in a number of countries. More significant, however, is the implied financing burden.

The financing burden is defined as the level of expenditures per person of working age, or in other words, the level of taxes required per potential taxpayer. We see that the trend in financing burden can be quite different from that of total expenditures. Thus countries such as Belgium and

TABLE 7

Impact of Demographic Change on Social Expenditures and on Financing Burdens 1980-2040 (1980 = 100)

	1990	2000	2010	2020	2030	2040
Belgium						
Social expenditure	98	96	98	101	104	102
Financing burden per head of 15-64 age group	96	95	97	103	116	120
France						
Social expenditure	106	109	116	124	130	128
Financing burden	99	100	104	116	128	132
Germany						
Social expenditure	98	104	104	103	106	97
Financing burden	95	106	113	124	149	154
Italy						
Social expenditure	103	103	108	111	113	107
Financing burden	97	99	106	116	131	139
Netherlands						
Social expenditure	105	111	115	119	123	121
Financing burden	96	100	104	114	131	139
Sweden						
Social expenditure	101	98	101	107	111	109
Financing burden	99	95	100	110	119	122
United Kingdom						
Social expenditure	98	97	101	105	113	110
Financing burden	95	93	96	101	112	111

Source: OECD, 1988, op. cit.

TABLE 8

Percentage of Population Aged 20-64 Years, 1950-2025

	1950	1980	1990	2025
Europe	57.8	56.5	59.7	57.6
Eastern Europe	57.5	57.2	58.5	57.8
Northern Europe	59.6	56.0	58.6	57.0
Southern Europe	55.5	55.8	59.5	58.5
Western Europe	59.1	56.9	61.2	56.8
USSR	54.1	56.0	57.5	57.3

Calculated from: United Nations, 1989b, op. cit. Following the U.N. classification, USSR is not calculated as part of Europe.

TABLE 9

Labor Force Participation for Women circa 1985, 1984*

	1965	1984
Austria	50.1	55.2
Belgium	38.0	49.6
Denmark	49.3	74.2
France	45.7	54.7
Germany	49.0	49.4
Netherlands	25.8	39.8
Norway	36.9	66.1
Spain	29.2	32.7
Sweden	54.1	77.4
U.K.	49.0	59.0

* For women 15 to 64 years.

Source: OECD, Ageing population, the Social Policy Implications, Paris, 1988.

Germany, with very low rates of total population growth, will need little or no increase in social expenditure levels, however the levels per capita will increase substantially. In general, the increase in expenditure per earner varies from a peak of 54 per cent in German to 11 per cent in England.

The rise in the financial burden will not necessarily imply an increase in tax rates, i.e., taxes as a percentage of earned income. There are complicated relationships between the absolute financing burden and the tax rate per working person. The trend in the tax rate depends on two factors: the trend in income per capita (which in turn reflects the trend in GNP per capita and productivity) and the degree to which changes in income per capita

are translated into an increase in the cost of public expenditures. Such a translation will occur when wage rates in the public services increase along with general wage levels and when social security benefits are linked to wage levels. If income per capita does not increase, or if any increase in income is reflected in the same percent increase in public expenditure per capita, then the increase in financing burden will require an increase in tax rates. In this case, the percentage increase in financing burdens as shown in Table 7 will require an equal percentage increase in tax rates.

The calculation of the dependency burden assumes constant rates of labor force participation. In the next section we consider this assumption in the light of recent trends.

Rates of labor force participation and retirement

The percentage of employed individuals out of the total population will be affected in several ways by the aging process. One factor is the impact of aging on the percentage of the population of working age as presented in Table 8. On the whole, the changes in this percentage are very moderate. Since 1950, there has been a slight increase, but a decline is expected in the future. This rate is in essence a mirror image of the change in the dependency ratio reported in Table 5.

Rates of labor force participation within age groups are in part endogenous to the aging process. Thus, the decrease in fertility enables and encourages women to join the labor market. Table 9 illustrates this trend, which is particularly strong in Northern Europe. Labor force participation increased 25 percentage points in Denmark and about 29 percentage points in Norway over the twenty year period 1965-1984 (4).

Beside this endogenous process, there are other sources of change in age-specific employment rates. There has been a dramatic decline in participation rates for older men as indicated in Table 10. For example, in 1985 labor force participation rates of men age 55-59 in Southern Europe were as low as 71.6 per cent and of men 60-64 in the USSR, as low as 29.4 per cent. Participation rates after age 60 decline even for women, despite the overall increase in labor force participation rates for women (9).

The decline in participation has been influenced by a number of factors including the high rates of overall unemployment, major structural changes in the economies of Europe, technological change and

the share of the elderly in total public expenditures is also very significant, increasing from a low of 24 per cent in Sweden to a high of 81 per cent in the Netherlands between 1980 and 2040, and reflecting a shift both among programs and in the beneficiaries within the various programs. These projections imply a significant process of reallocating resources, with considerable practical and political obstacles to be overcome.

Aside from these shifts in the allocation of resources, a major question is that of the impact of population aging on the total need for public services and the implied burden of finance that will have to be borne by the working age population. In Table 7 we present an index of the impact of demographic change in comparison to the levels experienced in 1980 (4). For each country the implied levels of total social expenditure are calculated

on the assumption that the age-specific levels of social expenditures in 1980 are maintained in the future. This trend is affected by both the change in the age structure and by the rate of total population growth. During the decade of the 1980's, we see that demographic change had very little impact on required social expenditures, and indeed this continues to be the case in a number of the countries up through 2010. After this date, demographic change leads to larger increases in social expenditures in a number of countries. More significant, however, is the implied financing burden.

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Percentage of Population Aged 20-64 Years, 1950-2025

	1950	1980	1990	2025
Europe	57.8	56.5	59.7	57.6
Eastern Europe	57.5	57.2	58.5	57.8
Northern Europe	59.6	56.0	58.6	57.0
Southern Europe	55.5	55.8	59.5	58.5
Western Europe	59.1	56.9	61.2	56.8
USSR	54.1	56.0	57.5	57.3

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Labor Force Participation for Women circa 1985, 1984*

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Germany	49.0	49.4
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Source: OECD, Ageing population, the Social Policy Implications, Paris, 1988.

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Beside this endogenous process, there are other sources of change in age-specific employment rates. There has been a dramatic decline in participation rates for older men as indicated in Table 10. For example, in 1985 labor force participation rates of men age 55-59 in Southern Europe were as low as 71.6 per cent and of men 60-64 in the USSR, as low as 29.4 per cent. Participation rates after age 60 decline even for women, despite the overall increase in labor force participation rates for women (9).

The decline in participation has been influenced by a number of factors including the high rates of overall unemployment, major structural changes in the economies of Europe, technological change and

TABLE 10

Labor Force Participation Rates for Men and Women by age 1950, 1985*

Men:	55-59		60-64		65+	
	1950	1985	1950	1985	1950	1985
Europe	91.4	78.5	82.1	48.3	41.9	11.0
Eastern Europe	93.9	80.6	81.5	45.8	49.9	16.8
Northern Europe	96.4	89.2	91.4	71.1	36.6	11.7
Southern Europe	90.4	71.6	80.1	44.1	55.6	13.0
Western Europe	87.4	78.1	78.1	40.2	32.2	5.4
USSR	89.5	77.4	86.5	29.4	49.0	8.9

Women:	55-59		60-64		65+	
	1950	1985	1950	1985	1950	1985
Europe	31.1	36.0	24.8	17.4	11.9	4.0
Eastern Europe	55.3	75.7	39.7	22.4	21.3	8.0
Northern Europe	26.6	54.6	17.6	25.9	7.5	3.6
Southern Europe	17.5	18.8	14.7	11.5	9.3	3.1
Western Europe	32.1	35.5	26.9	14.7	11.4	2.5
USSR	50.9	23.9	42.6	8.8	35.0	2.5

* Participation rate - the percentage working out of the total population in the age group.

Source: United Nations, World demographic estimates and projections 1950-2025, N.Y. 1988.
Following the U.N. classification, USSR is not calculated as part of Europe.

government policies that have encouraged and facilitated withdrawal from the labor force. Yet these factors have tended to be largely offsetting, as in the last 40 years the total activity rate has not undergone significant change as the population in the various regions of Europe has aged (see Table 11). The trend in women's employment is unclear, and the key factor will probably be the trend in early retirement.

There is some evidence that the climate for employment of older workers may be improving as labor force shortages associated with low overall rates of population growth emerge in a number of countries. (See Habib & Nusberg (10) for a review of these factors). However, it is unclear whether aggregate employment rates have been affected as yet. The implication of the trend toward earlier retirement, particularly if it continues, is that the effective change in dependency ratios will be much greater than implied by Table 12.

The calculation of the dependency ratio depends upon the assumed cutoff points for the group of working age. The implications of population aging can be quite sensitive to the cut-off point at the up-

TABLE 11

Total Activity Rate 1950-1990*

	1950	1980	1990
Europe	46.2	45.0	46.5
Eastern Europe	52.1	51.5	51.6
Northern Europe	46.1	48.1	49.8
Southern Europe	42.4	38.8	40.5
Western Europe	45.6	44.2	46.5
USSR	52.2	51.6	50.2

* The total employed and unemployed population aged 10 and over as a percentage of the total population.

Calculated from: United Nations, World demographic estimates and projections 1950-2025, N.Y. 1988. Following the U.N. Classification, USSSR is not calculated as part of Europe.

per end of the age range, In Table 12, we analyze the implications of two alternative retirement ages, 60 and 55. We see that changing the retirement age in 1990 or in 2025 increases the elderly dependendy ratio sharply, as may be seen by compar-

ing the numbers in the columns of the table. A second type of question in the impact of a change in the retirement age from, let us say, 60 in 1990, to 55 in 2025. This may be observed by comparing the first and second columns. For example, the elderly dependency ratio would increase from 34.2 in 1990 to 78.3 in 2025. Thus the combined impact of the changes in the age structure and changes in the retirement age is particularly dramatic. Retirement age policies will play a more critical role in the development and or the prevention of future economic crises.

Informal support

In the overall discussion of dependency, attention has to be given to the implications of dependency for informal support as well as market production. Population aging may influence the need for informal support, as well as its potential and ac-

tual availability. The potential availability of support is affected first and foremost by the nature of family networks. Residential patterns also influence the availability of support. There are several major components of family networks including spouses, children and other relatives.

The aging of the age structure reduces the ratio of elderly to informal supporters. One indicator of the availability of children is the family dependency ratio - the ratio of those over 75 to those aged 45-65 (Table 13), in other words, the ratio of those most likely to have actual needs for significant informal care, to the age group most likely to be expected to provide this care (11). In 1990 this ratio was 25.7 in Europe, with a significant spread between a higher ratio in Northern Europe and a lower ratio in Eastern and Southern Europe and the USSR. Over the decade of the 1990's, there tended to be an increase particularly in Southern Europe, and the family dependency ratio is projected to continue to increase in all regions up to 2025. The rate of increase is far less than that of the elderly dependency ratio and will vary from 15 per cent to 31 per cent in the various regions from 1990 to 2025. The increase will be most dramatic in Southern Europe.

The ratio is calculated on the basis of aggregate data on age structure and not on the basis of direct information about the elderly and their children. Specific data about existing social networks at the national level in European countries are very limited and there have been almost no systematic cross-national comparisons of these networks. Even less information in available as to how the networks have developed over time or are expected to change in the future. We have assembled some

TABLE 12

Elderly dependency ratio for alternative retirement age patterns in Europe 1990, 2025

	1990	2025	% change
65+			
(20-64)	22.4	34.8	+55
60+			
(20-59)	34.2	53.1	+55
55+			
(20-54)	49.4	78.3	+58

Calculated from: United Nations, 1989b, op. cit.

TABLE 13

Family dependency ratio, 1980-2025*

	1980	1990	2000	2015	2025
Europe	23.0	25.7	25.3	27.0	31.9
Eastern Europe	20.0	20.9	19.4	22.5	25.8
Northern Europe	25.7	31.2	29.2	26.8	35.0
Southern Europe	18.6	23.0	25.4	27.9	30.2
Western Europe	27.7	28.8	27.2	29.2	36.7
USSR	20.7	19.7	19.6	23.6	22.7

* [Population (75+)/population (45-65)] × 100.

Calculated from: United Nations, 1989b, op. cit. Following the U.N. classification. USSR is not calculated as part of Europe.

TABLE 14

Marital Status and Living Arrangements for population Aged 65 and over, 1970, 1980

	% Single		% Married		% Living Alone
	~1970	~1980	~1970	~1980	~1980
Austria	10.9	9.8	44.6	43.8	30.9
Belgium	8.7	8.2	50.6	49.8	31.9
Denmark	11.3	9.1	50.2	49.9	38.3
France	—	8.5	—	50.0	32.6
Germany	8.8	7.6	48.3	45.0	38.9
Greece	5.0	4.3	56.8	61.0	14.7
Italy	12.1	—	43.3	—	25.0
Norway	16.7	13.1	50.1	51.3	—
Sweden	16.1	12.8	49.5	50.7	40.0
U.K.	12.1	10.7	49.5	51.1	30.3
Spain	—	—	—	—	14.1

Source: Kinsella K 1990; Torrey B. Kinsella K, Taeuber C., An Anging World, 1987.

partial data on the nature of family networks focusing primarily on marital status and living arrangements.

Very limited data are available on the actual availability of children. While data are available for selected years for various countries, they have not, to the best of our knowledge, ever been compiled on a comparative basis. In a recent study, a comparison was made between the percentage of elderly with living children in Israel and Sweden. It was found that 77 per cent of Swedish elderly had children in 1954, with a similar percentage in 1981. In Israel, by contrast, as one would expect based on its younger population structure, the percentage with children in 1985 was 89 per cent (12). These data suggest that there is not a simple relationship between age differences and changes in the percentage of elderly without children.

Although often overlooked, spouses remain one of the major sources of informal carers for the disabled elderly. In Table 14, the marital status of the elderly in a number of European countries is presented for 1970 and 1980. The percentage married shows surprisingly little variation across the countries with no clear relationship to the national characteristics or degree of population aging. Over the decade, there seems to have been very little changes, with somewhat of an increase in a number of countries. Thus despite the decline in the availability of children as a source of informal support, the availability of spouses does not necessarily decline as part of the aging process (13).

As indicated in Table 15 there are significant differences in the marital status of men and women in all European countries. The percentage married is often twice as high among males as it is among females. The percentage of widows is always higher that the percentage of widowers, because of the average age difference at marriage, the higher rate of remarriage among males, and the higher life expectancy among women. It is also of interest to note that the percentage single is much higher among females than males and represents a significant percentage of the elderly in some countries, with the highest rates observed for Norway, Switzerland and Sweden (14).

In Table 14 we present the percentage living alone on the basis of data from around 1980. Here we find that the variation is considerably greater, with the rate of elderly living alone being particularly low in Southern European countries such as Greece, Spain and Italy, and highest in Sweden, in which 40 per cent of the elderly live alone (15).

Scattered efforts have been made to simulate the impact of population aging on kinship patterns. Table 16 is derived from a simulation model using data on fertility and mortality from The Netherlands between 1970 and 1980 as a base and assumptions about future fertility and mortality similar to that of the U.N. (16). Kinship pastterns for women are generated for an alternative scenario assuming a 40 per cent decrease in fertility rate compared to the base assumption. The estimates in the table reveal that the impact of reduced fer-

TABLE 15

Marital Status for Persons aged 65 and over, by Sex, circa 1980

	Single		Married		Widowed		Div/Sep	
	Males	Fem	Males	Fem	Males	Fem	Males	Fem
Austria	6.4	11.8	72.8	27.3	17.8	56.7	3.0	4.1
Belgium	7.2	9.0	70.4	36.4	20.6	52.6	1.8	2.0
Czechoslovaquia	4.1	6.2	73.7	31.8	19.3	58.6	2.9	3.4
Denmark	8.0	10.8	69.4	36.1	18.0	46.8	4.7	6.1
England, Wales	7.7	11.7	73.3	37.6	17.3	48.9	1.7	1.9
Finland	8.0	15.2	71.2	29.0	17.1	50.4	1.7	5.3
France	7.8	9.4	72.8	35.0	17.3	52.6	2.2	3.0
D.R. Germany*	1.9	6.6	71.2	31.4	25.0	55.5	1.9	6.5
F.R. Germany**	4.1	10.4	75.8	24.1	18.1	61.8	2.0	3.7
Greece	3.9	4.8	82.9	45.6	12.6	50.7	0.7	1.0
Hungary	3.9	6.3	74.5	31.1	19.0	58.7	2.6	3.8
Netherlands	6.1	11.4	74.8	41.6	16.5	43.4	2.6	3.6
Norway	11.5	15.0	69.7	37.6	16.1	44.0	2.7	3.4
Spain	7.1	13.8	73.0	35.2	19.3	50.5	0.6	0.5
Sweden	12.3	13.2	67.0	38.2	15.8	42.9	4.9	5.6
Switzerland	9.3	15.8	72.8	36.2	15.1	43.7	2.7	4.3

Source: Bartlema J 1987.
*D.R.: Democratic Republic
**F.R.: Federal Republic

TABLE 16

Simulated Kinship Patterns for Females under Base and Reduced Fertility Scenarios

Age Group	Percentage of population in age group		Percentage of age group with no living children	
	Base	Alternative	Base	Alternative
65-69	4	6	4	17
75-79	3	5	5	16
85-89	1	2	5	20

Age Group	Mean number of living children of those in age group		Average age of living children of those in age group	
	Base	Alternative	Base	Alternative
65-69	2.58	1.64	39	39
75-79	2.51	1.59	49	49
85-89	2.28	1.47	58	59

Alternative assumption: Reduced fertility.

Source: Wolf, Douglas A, 1988.

tility on kinship patterns can be quite significant. Thus the shift from a population with 8 per cent over age 65 to 13 per cent is accompanied by a significant drop in the mean number of children per woman (from an average of 2.44 to 1.57) and a very large increase in the percentage of elderly women with no living children (from 14 per cent to 53 per cent).

In discussing the informal support implications of an aging population, it is important to remember that there are additional flows of informal support other than care for the elderly. Consistent with increasing elderly care needs, there are decreasing child care needs. These are of course reflected in the child dependency ratio that accompanies the aging process and dampens any tendency for total dependency ratios to increase. While this has implications for public expenditure needs, it also has implications for total informal support needs.

Another flow of informal support is from the elderly to their adult children. These flows can be quite substantial and may be much longer in duration that the period of intensive support by children of their elderly parents. Obviously, the opportunities for this kind of support per adult child increase as reflected in the inverse of the family dependency ratio. The elderly also provide informal support to grandchildren. The ratio of elderly persons per grandchild increases dramatically with the aging process, holding out the prospect of a much greater flow of such support per child. We term this the "grandparent ratio" (ratio of those over 65 those 0-20) as illustrated in table 17. This ratio varied from 29 in the USSR to 60 in Northern and Western European in 1990. It will approximately double (from 1:2 to 1:1) in all European regions between 1980 and 2025. By 2025 there will be more elderly than young people in Western Europe. Moreover, any trend toward earlier retirement can be expected to enhance the availability of grandparent support.

In sum, historical changes in family structure and fertility have had an impact on the average number of children available to support the elderly. Changes in labor force participation for women, which are endogenous to the aging process, also influence their availability to care for elderly family members. These changes have been accompanied by a remarkable change in the living arrangements of the elderly, with a marked decline in the percentage of those living with their children and a marked increase in those living alone (15). On the other hand the availability of spouses does not necessarily decrease with the aging process, but may increase. Consider the Swedish data as an illustration. The percentage of noninstitutionalized elderly living alone has risen from 27 in 1954 to 38 in 1986-7; and women's labor force participation in mid-life is over 80 percent, compared to less than half in the past. On the other hand, the percentage of elderly with a spouse increased from 33 in 1954 to 54 in 1986-7 (12).

It will be social norms and the social policies that influence these social norms which will determine the ultimate significance of the demographics. For example, as Southern Europe approaches the age structure of Northern Europe, will the reported cultural differences in family support remain? In addition, after several decades of expansion in public

TABLE 17

Grandparent ratio 1980-2025*

	1980	1990	2000	2015	2025
Europe	42.9	49.8	59.9	74.4	90.2
Eastern Europe	38.2	37.3	47.0	55.9	71.6
Northern Europe	50.5	59.6	60.7	76.8	89.7
Southern Europe	35.0	45.9	61.5	74.5	90.4
Western Europe	50.5	59.8	68.8	90.2	109.1
USSR	30.4	29.1	36.8	41.2	53.3

* [Population (65+)/population (0-19)] × 100.

Calculated from: United Nations, 1989b, op. cit. Following the U.N. classification, USSR is not calculated as part of Europe.

services, we are in a period of retrenchment. How will this affect the reality of family support and the development of the norms themselves?

Furthermore, we have emphasized that other flows of informal support change in ways that can partly offset some of these consequences, as child care needs decline and potential support from the elderly increases, as reflected in the Grandparent Ratio. Again, societal norms and policies may determine whether this abundance of elders will be utilized to create an abundance of love and care for the younger generations.

Alternative Scenarios and a Look Beyond ·

Up to now our analysis has been based on assumptions about future changes in mortality and fertility as reflected in the U.N. projections. The U.N. has calculated two alternative projections referred to as low and high variants. The low variant assumes a decline in TFR to 1.54 in 2025; the high variant assumes an increase in TFR to 2.18 in 2025. In the low variant 21.4 per cent of the European population is projected to be aged 65 and over in 2025 as compared to 18.9 per cent in the high variant. These assumptions are not accepted by all demographers. Lutz et al (17) describe 9 alternative scenarios (of which 7 are described here) based on a much wider range or assumptions on the future of fertility, mortality and migration (see Table 18). They also extend the basic U.N. medium variant projections for a longer period, up to

2050. (We are not able to make direct comparisons with the U.N. projections in Table 1 as the Lutz data use a different breakdown of Europe geographically). We therefore compare the alternative scenarios to that of the U.N., using the Lutz estimate based on U.N. asumptions for 2020. The effect of assumptions about fertility, mortality and migration on the percentage of 65 and over is discussed for two time frames, 2020 and 2050.

First of all, we indicate what is expected to happen by 2050, based on the U.N. medium variant's assumptions. According to this variant the aging process will continue in Eastern and Western Europe between 2020 and 2050, with the percentage over age 65 reaching 26.1 per cent in Western Europe. We now consider the alternative scenarios. As we will see, the percentage aged 65 and over well exceeds the baseline U.N. projection under some of the alternatives. Under the assumption of a decline in the total fertility rate to 1.1 (scenario # 3), the proportion of the elderly in 2050 in Western Europe would reach 34.3 per cent, as compared with 26.1 per cent for the U.N. scenario and with 22.1 per cent for a rise in TFR to replacement level (TFR = 2.18, scenario # 2). Two alternative mortality assumptions are considered: the Mortality Stagnation scenario (# 4) assumes life expectancy at birth to stabilize at 68.8 years for men and 75.6 for women in Eastern Europe and 73.3 and 79.4 respectively for Western Europe. The Strong Mortality Decline scenario (# 5) assumes that life expectancy for men will rise to 90 years and to 95 for women by 2025. This contrasts

TABLE 18

Percentage of population aged 65 and over in Eastern and Western Europe under various scenarios 2020, 2050*

		U.N.	Fertility		Mortality		Fer&Mor	Migration
		Base	High	Low	High	Low	Low	High
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
Eastern	2020	17.6	17.0	18.6	15.5	21.3	22.3	17.2
	2050	22.2	19.9	29.1	17.8	31.0	39.2	19.7
Western	2020	20.5	19.4	22.0	19.0	24.2	25.8	18.7
	2050	26.1	22.1	34.3	22.6	35.0	44.2	22.6

* Eastern Base for 1990 = 10.5, Western Base for 1990 = 14.2. In contrast to the rest of the tables Western Europe includes all Europe except the Communist block countries. Eastern Europe includes the USSR.

Source: Wolfgang Lutz, Future Demographic Trends in Europe and North America, London, 1991.

with the U.N. assumption on life expectancy of 77.4 years for Western European men and 83.3 for women and two years less for the East Europeans. Under these assumptions, the percentage of elderly would vary between 22.6 and 35.0 in Western Europe in 2050. Combining low mortality and low fertility (# 6) would imply that 44.2 per cent of the population would be over 65 in Western Europe and 39. 2 per cent in Eastern Europe in 2050.

Migration is not included in the U.N. calculations. Lutz presents a high migration alternative (# 7) which assumes that migration from the Third World to Western Europe rises to 1.5 million annually by the year 2010. There would be a similar rise in migration to Eastern Europe, however it would proceed at a slower pace. It also assumes a 500,000 annual migration from Eastern to Western Europe, up to the year 2000 and no further East-West migration subsequently. The projections reveal that even high migration would not significantly affect the rate of aging.

In conclusion, not unreasonable assumptions about fertility and mortality trends could lead to rates of aging well beyond those that were considered possible in the context of the U.N. projections. By contrast, as Lutz notes, "the potential for aging in the present population structure is so massive that only absurd assumptions – all people die at 60, TFR increases to 6 or so – would be sufficient to reverse this trend" (17).

Adequacy of Available Data

The review of socioeconomic trends is significant not only for what has been said but also for what has not been said. This reflects the lack of information in many basic areas. Many types of data are not available at all or only on an incidental basis and as a result many of the analyses of the implications of aging have been based on underlying data that are really quite weak.

We shall comment selectively on two major gaps in the data base. A major deficit is the lack of any consistent data on trends in the structure of actual social networks and of projections as to how these networks will develop over time. There are almost no projections of marital status and data or projections on living children of the elderly are hardly available. These data are so fundamental to the understanding of the meaning of population aging that they demand much more serious attention.

A second major gap is the absence of adequate

data on basic age-related patterns of service need and service use in terms of physical units or expenditures. The age-specific incidence, prevalence, and utilization rates are the building blocks for the projection into the future of need patterns, expected service utilization, and required expenditures. There have been various efforts to develop such age-related parameters (18, 19, 20, 21, 22). However, these are more the exception rather than the rule. As a result, the efforts to project total social expenditures of the type that we presented in the previous section are based on a very shaky set of age-related expenditure parameters. Moreover, we do not have projections of future profiles of needs of the elderly in a broad range of areas.

Discussion

At the outset of this paper we raised several broad themes. We conclude by commenting on the implications of our findings for each of these themes.

We have seen that there are significant differences in the present degree of aging among the various regions of Europe and the USSR. All the regions will age along a similar trajectory, with some gaps narrowing and others widening. In general two poles exist today: Eastern Europe, the USSR and Southern Europe on one hand and Northern and Western Europe on the other. The difference between the poles is significant along several demographic dimensions; the percentage of elderly and the very old in the population, Elderly and Family dependency ratios, the Grandparent ratio, and the percentage single. For other dimensions such as the proportion of elderly women and the total dependency ratio the difference between the regions is less pronounced both for 1990 and as projected for 2025.

Labor force participation rates show a different pattern, perhaps because they are more sensitive to economic and political factors rather than demographic variables. The rates for Northern and Eastern Europe are relatively high.

With the rapid growth rate of the 65+ and 80+ groups, Southern Europe can be seen as region in transition, with the proportion of elderly in the population becoming more similar by 2025 to the more developed regions of Northern and Western Europe. The difference in the proportion of elderly between Eastern Europe-USSR and the Wes-

tern and Northern regions will remain intact or widen. By 2025 the percentage of elderly in Eastern Europe will be similar to that reached in the developed regions 25 years ago and in the USSR to that reached 45 years ago.

These differences in the proportion of the elderly will be mirrored by similar interregional variation in the elderly and grandparent dependency ratios in 2025. These ratios will be highest for the Northern and Western regions and lowest for Eastern Europe and the USSR, with the Southern region becoming more similar to the North and West by 2025.

A second broad theme that we addressed in this paper was the overall economic implications of the aging process. It is very difficult to provide a comprehensive analysis of the implications of the aging process which accounts for private expenditures, public expenditures, rates of labor force participation and the implications of lower population growth in terms of reduced needs for capital expenditures. For the most part only partial analyses are available. See Cutler et al. for a recent, more comprehensive effort for the United States (23). We have shown that the elderly dependency ratio will not increase until the year 2000, but then at later stages of the aging process there will be a significant increase, leading to a greater burden of finance for the public services. The critical element in evaluating this impact is the degree to which service costs will be ajusted for future increases in productivity, which will determine the degree to which higher taxes will be required to support these services. In any case, the increase in tax rates will take place over a long period and will imply an adjustment but not a crisis. Moreover, there is an upward bias, as these estimates do not fully allow for reduced capital expenditures implied by aging societies with lower rates of population growth and even negative population growth.

A key intervening factor will be the future trend in labor force participation rates and in particular the age of retirement. We have indicated how sensitive the dependency ratio can be to changes in the retirement age. While actual calculations are not available, such changes influence both the required expenditures and the number of employees available to finance these expenditures and thus can dramatically change the financial burden. The future trend in the retirement age is a function not only of underlying economic and social forces, but very much of the nature of public policy. These policies more than any other will probably determine

whether population aging will lead to significant economic difficulties and crises.

A third theme has been the implications of the aging process for informal support. We have indicated that there will be fewer elderly with living children and on the average fewer living children per elderly adult. At the same time, there will be a higher ratio of elderly to adult children and grandchildren. This has dual implications for the informal support network. On the one hand, greater opportunities for the elderly to provide a range of informal support services to the younger generations; and on the other hand more limited opportunities for the younger generation to supply such services to the elderly. The significance of the decline in the availability of children is difficult to assess. There are no data available on the rapidity of the rate of change in actual number of children per elderly person. We have also shown that the role of spouses could increase, possibly significantly, as a component of the informal support network. Moreover, more and more of the adult children of the aged will be aged themselves and retired, with more free time available to deal with the needs of parents. On the other hand, adult women are busier as a result of their participation in the labor force (albeit with fewer child care reponsibilities) and there may be changes in the norms of family care. Yet some studies have shown that labor force participation and the number of children does not affect the likelihood of family support, but rather the presence of at least one child within a reasonable distance. Beyond the broad trend in Europe as a whole, a key question in whether, as the age structures become more similar within Europe, the patterns of actual support across the generations will become more similar or whether there are also differences in degrees of family orientation that will prevail among the various regions. Public policies will both respond to demographic change but also influence the nature of the changes in family care. Recent changes in the availability of formal services in Europe may be inducing an increase in the role of the family in Western and Northern Europe, while increases in service availability in the South may be accelerating changes in the families role. A comparison of Israel and Sweden has shown that despite the much greater availability of formal support, the more limited number of children per elderly person, the higher rates of female employment, and the supposedly weaker family orientation in Sweden, the family remains the major source of support in both societies (12).

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whether population aging will lead to significant economic difficulties and crises.

A third theme has been the implications of the aging process for informal support. We have indicated that there will be fewer elderly with living children and on the average fewer living children per elderly adult. At the same time, there will be a higher ratio of elderly to adult children and grandchildren. This has dual implications for the informal support network. On the one hand, greater opportunities for the elderly to provide a range of informal support services to the younger generations; and on the other hand more limited opportunities for the younger generation to supply such services to the elderly. The significance of the decline in the availability of children is difficult to assess. There are no data available on the rapidity of the rate of change in actual number of children per elderly person. We have also shown that the role of spouses could increase, possibly significantly, as a component of the informal support network. Moreover, more and more of the adult children of the aged will be aged themselves and retired, with more free time available to deal with the needs of parents. On the other hand, adult women are busier as a result of their participation in the labor force (albeit with fewer child care reponsibilities) and there may be changes in the norms of family care. Yet some studies have shown that labor force participation and the number of children does not affect the likelihood of family support, but rather the presence of at least one child within a reasonable distance. Beyond the broad trend in Europe as a whole, a key question in whether, as the age structures become more similar within Europe, the patterns of actual support across the generations will become more similar or whether there are also differences in degrees of family orientation that will prevail among the various regions. Public policies will both respond to demographic change but also influence the nature of the changes in family care. Recent changes in the availability of formal services in Europe may be inducing an increase in the role of the family in Western and Northern Europe, while increases in service availability in the South may be accelerating changes in the families role. A comparison of Israel and Sweden has shown that despite the much greater availability of formal support, the more limited number of children per elderly person, the higher rates of female employment, and the supposedly weaker family orientation in Sweden, the family remains the major source of support in both societies (12).

We approach the years ahead with a great deal of uncertainty. The basic demographic projections are subject to debate and demographers have shown that not unfeasible assumptions about the nature of the basic parameters could radically change the prospects of an aging society. What is fairly certain is that we will surpass the 20 per cent barrier in most of Europe. On the other hand, the reasonable limits of the aging process vary between 20 to 44 percent over age 65 in the Europe of the future. If the 20 per cent estimate itself requires us to rethink present societal arrangements, the 40 per cent estimate requires even a greater sense of urgency. There are many opportunities posed by an aging society that offer themselves but the question is how well we will take advantage of them. Yet, as has been reflected in the information gaps in this paper, the data are inadequate. Against this background, we need to act, but we also need to make a major effort to enhance the data base on which we plan these actions.

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תקציר

יבשת אירופה היתה עד כה המובילה במגמת הזדקנות האוכלוסייה, ותמשיך להזדקן במהירות גם בעתיד. למגמת ההזדקנות השלכות חברתיות משמעותיות, הזוכות רק עתה להתייחסות וללימוד. במאמר זה אנו מתארים את מגמות ההזדקנות שהתרחשו במהלך העשור האחרון, ובוחנים תחזיות להזדקנות האוכלוסייה ב-60 השנים הבאות, תוך התמקדות במספר סוגיות בסיסיות.

במאמר נבחנים שיעורי הזדקנות אוכלוסיית אירופה הצפויים בעשורים הבאים, וכן התחומים הסוציו-דמוגרפיים שבהם קיימים הבדלים בין ארצות שונות, כגון יחסי התלות, שיעור הנשים באוכלוסייה, שיעור הישישים, וכו'. בהתחשב בכך שחלקי אירופה השונים יזדקנו על פני מסלול דומה, נשאלת השאלה האם הבדלים אלה יגדלו או יקטנו במשך הזמן? האם הארצות השונות יישארו בשלבים שונים של התהליך או שתהיה התלכדות של מסלולי ההזדקנות השונים?

חוקרים וקובעי המדיניות, כמו גם הציבור בכללו, צופים שכתוצאה מתהליך ההזדקנות יחול משבר כלכלי. אנו דנים בסוגייה זו לאור מחקרים שבדקו את ההשפעה האפשרית של הזדקנות האוכלוסייה על תעסוקה והוצאות ציבוריות.

המאמר בוחן את השלכותיו של תהליך ההזדקנות לגבי התמיכה הבלתי פורמלית: האם בהכרח יישתנו רשתות התמיכה הבלתי פורמלית, כפי שנטען בספרות לעתים קרובות?

המאמר מצביע על אי ההלימות של מאגר הנתונים הקיים לגבי הזדקנות האוכלוסייה, ומזהה פערים משמעותיים במאגר נתונים זה: מחסור בנתונים על רשתות חברתיות והעדר ידע על דפוסי השימוש בשירותים של אוכלוסיות בגילאים שונים. תוך כדי כך מצביע המחקר על כיוונים עיקריים למחקר עתידי.