Population Aging and the Measurement of Dependency: The Case of Germany*

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Abstract

Many industrialized countries have concerns about aging (and declining) populations and the level of future financial and other support required of the working-age population for the elderly. Concern over this is particularly acute in Germany. However, there are those who argue that these concerns are blown out of proportion. One line of argument is that the burden of caring for a larger elderly population could be offset by reduced spending on the young because of their declining numbers. Data for Germany suggest that acute concern about aging in Germany is warranted. As inquiries continue to be made into the ability of Germany and other countries to support their elderly populations, I suggest that the both the youth dependency ratio and the total dependency ratio be used in conjunction with the elderly dependency ratio to guide policy decisions.

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Introduction

The fact that the German Fulbright Commission held a three week seminar focused largely on the consequences of population aging ("The Challenges of Demographics," June 2003) underscores the concern that many industrialized countries have about aging (and declining) populations and the level of future financial and other support required of the working-age population for the elderly (Jackson and Howe, 2003; Birg, 2000). Concern over this is particularly acute in Germany, as evidenced by the presentations and materials provided during the "Challenges of Demographics" seminar. However, there are those who argue that these concerns are blown out of proportion (Mullan, 2000; Townson, 2001a, 2001b). Townson (2001b: 5) points out that the elderly are not the only "dependent" group in society that is not working - the under-20s are also dependents- and observes that the burden of caring for a larger elderly population could be largely offset by reduced spending on the young because of their declining numbers.

Townson's observation provides a useful point of departure for this short paper. The papers and presentations I have seen during the "Challenges of Demographics" seminar on the consequences of an aging population in Germany virtually ignore the fact that the number of "young dependents" will be declining as the number of "old dependents" increases.* Thus, in this paper I attempt to provide an answer for Germany to the implicit question posed by Townson. That is, to what extent, if any, will the increased burden of caring for the elderly on the part of the working-age population be offset by the decreased burden of caring for the young? In answering this question, the response will be at a general level and the data used – although real - will largely be used to illustrate the salient general points.[1]

Data and Methods

The data are in the form of a set of population projections taken from Birg (2000). The projections represent the "middle variant" of a set of projections commissioned by the German Insurance Association (Birg, 2000: 5-9).[2] Table 1 provides the middle variant projections to 2080 by selected age groups of interest and year. Under this scenario, the total population of Germany is expected to decline by 35.5 percent, from 82.1 million to 53.1 million; at the same time, the number of elderly will increase by 21.2 percent.

Table 1. Population (in millions) of Germany by Age Group and Year, 1998 to 2080

Age Group	*1998*	*2030*	*2050*	*2080*	*%Change 1998-2080*
under 20 years	17.7	12.0	9.7	7.8	-55.9%
20 to 59 years	46.5	36.2	30.5	23.5	-49.5%
60 years and over	17.9	29.4	27.8	21.7	21.2%.
Total Population	82.1	77.5	68.0	53.1	-35.3%

Source: Birg, H. 2000. *Demographic Aging and Population Decline in 21st Century Germany – Consequences for the Systems of Social Insurance*. New York, NY: Expert Group Meeting on Policy Responses to Population Aging and Population Decline. Population Division, Department of Economic and Social Affairs. United Nations

The methods are simple in that dependency ratios are calculated for the young and the elderly over the projection horizon, along with the total dependency ratio. I use the population aged 60 years and over as those comprising the "elderly" dependents because, as Birg (2000: 5-13) notes, the retirement age in Germany is currently around 60 in practical terms, rather than the

official age of 65 years. In a similar vein, I use the population under 20 as those comprising the "young" dependents in practical terms.

Results

Table 2 provides the elderly, youth, and total dependency ratios to 2080. The ratios are each expressed per 100 persons of working-age. For example, the Youth Dependency Ratio of 31.8 for 2050 means that for every 100 persons of working age, there will be 31.8 persons under the age of 20.

As suspected, the Youth Dependency Ratio shows an overall decline between 1998 and 2080 while the Elderly Dependency Ratio shows an increase. However, the Total Dependency Ratio also shows a substantial increase over the same horizon. Thus, under this projection scenario, the increased burden of caring for the elderly on the part of the working-age population will ***not*** be offset by a decreased burden of caring for the young. This can be seen by the relatively modest decline in the Youth Dependency Ratio between 1998 and 2080, which is more than compensated for by the large increase in the Elderly Dependency Ratio between 1998 and 2080.

The initial increase in the Total Dependency ratio is substantial. From 1998 to 2030 it increases by 49.3 percent. The rate of increase then slows to 7.5 percent between 2030 and 2050 and 2.0 percent from 2050 to 2080.

Table 2. Dependency Ratios for Germany by Year, 1998 to 2080

	1998	*2030*	*2050*	*2080*	*%Change 1998-2080*
Youth	38.1	33.1	31.8	33.2	-12.9%
Elderly	38.5	81.2	91.1	92.3	139.7%
Total	76.6	114.4	123.0	125.5	63.8%

*The Dependency Ratios are calculated as: Youth = (population <20/population 20-59)*100
Elderly = (population 60+/population 20-59)*100
Total = [((population <20)+(population 60+))/(population 20-59)]*100
Source: Data for computations in Table 2 can be found in Table 1.

Discussion

The Total Dependency Ratio figures shown in Table 2 do not bode well for the working-age population in Germany if anything resembling the projection scenario underlying them comes to pass. An increase of 63.8 percent in the Total Dependency ratio is a tremendous increase, and particularly notable given the high starting point – a Total Dependency Ratio of 76.6. Compare this change with that expected to occur in the United States. Over approximately the same period (2000 to 2080), the United States will experience only a 35.9 percent increase in the Total Dependency Ratio.[3]

Given that something resembling the projection scenario used here does come to pass in Germany, there appears to be a very different situation in regard to the total burden faced by the working-age population in Germany in comparison to the United States, on the one hand, or to Canada, on the other; the latter being a country that Townson (2001b: 6) regards as being unduly alarmed by dependency burden fears.

While, as both Townson (2001a, 2001b) and Mullan (2000) argue, there are economic and other factors that will likely offset the rather grim picture shown by demographic changes alone, the demographic picture suggests that they will have to be substantial in the case of Germany. This further suggests that acute concern about aging evidenced to-date in Germany is warranted. As inquiries continue to be made into the ability of Germany to support its elderly population, I suggest that the both the Youth Dependency Ratio and the Total Dependency Ratio be used in conjunction with any Elderly Dependency Ratio derived from population projections used to guide policy decisions in Germany regarding aging and immigration, and the reform of pensions, health care, and social support.

Endnotes

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1. At this "general" level no attempt is made to account for a number of points that would be important in a refined analysis, For example, many elderly and youth also are or will be working and, as such, relieving some of the burden of those of working age. Similarly, not all those of working age are or will be working and, as such, will not be shouldering the same burden as those who are.

2. Birg (2000: 5-9 to 5-10) provides a brief description of the assumptions underlying the middle variant. Details on assumptions, data, and results, are available in Birg and Börsch-Supan (1999).

3. The data for the United States are taken from the U. S. Census Bureau (2000) and represent the "middle series" of projections, as shown below in tables 3 and 4.

Table 3. Population (in millions) of the United States by Age Group, 2000 and 2080

Age Group	*2000*	*2080*	*%Change 2000-2080*
under 20 years	58.67	97.38	66.0%
20 to 59 years	151.34	235.56	55.7%
60 years and over	65.29	164.89	152.6%.
Total Population	275.30	497.83	80.8%

Source: U.S. Census Bureau (2000)

Table 4. Dependency Ratios for the United States, 2000 and 2080

	2000	*2080*	*%Change 2000-2080*
Youth	38.8	41.3	6.4%
Elderly	43.1	70.0	62.4%
Total	81.9	111.3	35.9%

Source: U.S. Census Bureau (2000)

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