

Demographic impacts on housing demand in Germany

Details on the authors:

Dr. Philipp Deschermeier
Economist at the Research Unit for
Financial and Real Estate Markets
Cologne Institute for Economic Research,
Germany
Mail: deschermeier@iwkoeln.de
Phone: +49 221 4981 889

Dr. Ralph Henger
Senior Economist at the Research Unit for
Financial and Real Estate Markets
Cologne Institute for Economic Research,
Germany
Mail: henger@iwkoeln.de
Phone: +49 221 4981 744

Keywords: Demographic change, Living space demand, housing demand, forecasting models

Introduction

Demographic change is dramatically transforming the German society: the ratio of young to old and of the gainfully employed to pensioners is shifting in favor of older persons. In the coming decades this development causes substantial macroeconomic structural transformation affecting all of the important markets in Germany. For example the labor market will lack young workers or the capital market will see changing saving behaviors and investment rates. With respect to the real estate market the change in the age structure and the regional distribution of the population will affect the demand for personal living space.

Besides the macroeconomic dimension, the demand for personal living space is determined by social factors (e.g. more “living apart together” relationships increase the demand for smaller flats in the metropolitan areas), demographic factors (old people demand other housing as young) and individual preferences (buying vs. renting properties). The research proposal aims at providing forecasts of the age specific demand of personal living for Germany until 2030. The analysis will use data of the German Socio-Economic Panel, a longitudinal panel dataset of the population in Germany. The analysis will feature a functional data model with time series coefficients, which are used to model the age-specific demand for living space, differentiated to types of housing and regions. This model will be forecasted up to the year 2030. The results provide an insight on the challenges of the demographic transition in Germany with respect to the demand for housing and real estate markets in general.

Data and method

The German Socio-Economic Panel (SOEP) study offers microdata for research in the social, economic, and behavioral sciences. SOEP is a wide-ranging representative longitudinal study of private households in Germany. The same private households, persons and families have been

surveyed annually since 1984. The data provide information on objective living conditions, values, willingness to take risks, current social changes, and the relationships and interdependencies among all these areas. We use the SOEP to generate information on the per capita living space consumption by groups of age. We use regression splines to smooth these information to receive smooth functions broken down by single years of age. We repeat this process for all available years (1984-2014). In order to get forecasts for these smooth curves up to the year 2030, we use a time series approach based on the functional data paradigm. Unlike a scenario-based approach, this stochastic modelling provides point forecasts and confidence intervals that help to quantify the uncertainty. As we want to forecast the living space consumption broken down by region and housing types, we model the correlation between these different types by using a coherent modelling approach.

These overall assessments are accompanied with analyses that try to differentiate across important housing types and regional categories. For example, one can argue that the living space consumption is different across multi-family houses and detached houses. This is an important issue in Germany, as units in multi-family houses in Germany are usually (round about 80 to 90 Percent) rented and not owner-occupied, so that different parameters with different intensity affect the demand on space consumption. As well, there are regional differences across regional categories, e.g. high-density vs. lower rural areas or East vs. West Germany. These three dimensions (multi-family vs. detached houses, owner-occupied vs. rented and high vs. low density areas) are to be expected to be highly correlated with each other. For example, in Berlin a typical inhabitant is renting a unit in a multi-family house. On the other hand, most people in rural areas are living in a self-occupied detached house. The interdependencies across these variables are analysed since the German unification.

This analysis is combined with statistics on building activity, so that the living space consumption can be translated to housing demand. The aim is to develop a model that could capture all of the various important factors that drive the growth of living space and housing demand in different German regions.

Effects

The living space consumption of a person is described by several effects. The first effect is based on the age structure: the older you are the more living space you consume, mainly because you earn more money and make fortune (see table 1). Furthermore there is a cohort effect. Each “generation” has a higher living space consumption than the previous, as income and wealth rise continuously over time. Finally, a quantity effect results from the changes in the population. These three effects sum up to a total effect. In many regions in Germany we could observe that the population of a region is shrinking (negative quantity effect) while the total effect living of space consumption is (still) positive (positive cohort effect and positive age structure effect).

Table 1: Per capita living space consumption for Germany (1984-2013)

Age	1984	1991	1999	2004	2009	2013
< 18	26,0	25,2	28,5	29,2	30,4	30,5
19 - 24	30,7	31,1	33,3	34,7	36,4	35,5
25 - 44	32,8	33,0	36,6	38,1	40,4	39,7
45 - 64	39,6	40,3	45,5	47,4	48,9	50,9
65 - 79	49,3	49,6	55,8	55,4	58,6	61,4
80+	53,1	52,4	55,2	57,6	64,4	63,7
Deutschland	35,7	36,1	40,1	42,4	45,1	46,2

Source: own calculations based on SOEP

Policy Implications

The results allow to draw conclusions on the development of the regional housing markets. On the one hand, regions with a minor loss in population might see a growth of living space consumption, if the overall effect is positive. This would stabilize the prices for housing and ground. On the other hand age-based renovations gain importance and will cause, alongside the regular investments due to usual replacement need, a significant increase in housing stock. The demographic transition in Germany and especially the shifting of the age structure will affect the consumers' preferences that need to be addressed in the long run. Furthermore, vacancies, especially in the rural regions will be a significant future challenge.