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ABSTRACT

**Demographic Change and Start-up Activity:
Conceptual Framework and Future Projections**

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In this paper we develop a conceptual framework to analyze systematically the complex causal relationship between demographic change and start-up activity and present future projections of start-up rates for several European Countries. Based on our conceptual framework, we conclude that, from a theoretical perspective, the net effect of demographic change on the level of start-up activity is ambiguous and, therefore, has to be investigated empirically. Using the European Labour Force Survey, we calculate the impact of the demographic change of the labour force on the level of start-up activity for several European countries. We find, for instance, that by 2020 the start-up rate will decrease due to ageing of the labour force to a larger extent in Germany than in the United Kingdom or in Sweden. Furthermore, using the German Income and Consumption Survey, we calculate the impact of changes in demand for goods and services on start-up activity in Germany and find that this will slightly increase start-up activity.

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Background

In Germany a discussion emerged around the question whether population ageing will reduce start-up activities and, therefore, decrease the beneficial impact of start-up activity on the economy. The expectation is based on the observation that (a) older people have a lower probability than middle-aged people to become an entrepreneur and (b) Germany will soon have the highest share of older people among all industrialized countries. In addition, however, there are other channels by which demographic change might influence start-up activity. For instance, the ageing of consumers is expected to induce a structural change in the demand for goods and services, which might stimulate start-up activity. Furthermore, demographic change might also affect the average quality of start-up projects. Thus, the relationship is rather complex and there is a need for conceptualizing these issues. Surprisingly, the relationship between demographic change and start-up activity is (still) neglected by scientific research. Our study is a first attempt to develop a systematic view on the impact of demographic change on start-up activity and to provide quantitative estimates.

Conceptual Framework

In the first part of the paper, we develop the conceptual framework. We consider two aspects of demographic change, namely population ageing and population growth. The outcomes under study are the quantity and quality of future start-up projects. Demographic change may affect these outcomes via two channels, first, changes in the size and composition of the labour force and, second, changes in the size and composition of demand for goods and services. Furthermore, based on the concept by Schmidt (2005), we take into account direct and indirect effects. The direct effect is the *ceteris paribus* change in quantity as well as quality of start-up projects due to mere composition changes. *Ceteris paribus* means that we assume that there are no changes in individual behaviour at this stage of analysis. The indirect effect refers to behavioural adjustments of individuals to changes in factor allocation. We use the conceptual framework to derive hypotheses on the impact of demographic change on start-up activity. An increase or decrease of the population size without changing the age composition just implies a proportional change of the number of start-up projects, leaving the start-up rate constant. The ageing of the labour force, in contrast, might decrease the start-up rate *ceteris paribus* because the relative size of age groups with a lower probability to start-up increases. The ageing of consumers will most probably lead to an increase of the relative size of sectors with higher start-up activity, and therefore increase the start-up rate. Age-specific entrepreneurial behaviour might change in the future and lead to indirect effects, as, for instance, future younger age groups might face lower risks of unemployment and thereby decrease the probability of younger workers to start-up a business.

Quantification of Selected Types of Impacts

In the second part of the paper, we present empirical evidence on the impact of demographic change on the quantity of start-up activity. In a first step we calculate the impact of the ageing of the labour force, and, in a second step, we calculate the impact of the ageing of consumers, that is the impact of changes in demand for goods and services. We consider only direct effects, assuming that there are no indirect effects, that is there is no adjustment of individual behaviour.

In the first part of the analysis, we compare several data sources for an international comparison of start-up rates, both on the firm level and the individual level. We discuss the main problems when using international data and choose the European Labour Force Survey for our projections. We calculate for France, Italy, Austria, Sweden, the United Kingdom and Germany age-specific start-up rates and the expected relative percentage change in start-up activity due to the predicted demographic change until 2020 and 2040, respectively. We find the relative start-up activity of older workers (that is the start-up activity of older workers relative to the start-up activity of younger workers) to differ largely across countries. The relative start-up activity of older workers is highest in the United Kingdom (0.82) and France (0.71) and lowest in Italy (0.36) and Austria (0.49). Germany (0.62) ranges in the middle. We find a negative impact of demographic change on the overall start-up rate in all countries. The *ceteris paribus* change is highest in Italy (-8.1%) and lowest in Sweden (-1.3%) and the United Kingdom (-1.5%). In Germany, it is -4.7%.

The second part of the analysis is restricted to Germany because we lack the appropriate data for other countries. We use the German Income and Consumption Survey (EVS) to calculate age-specific consumption profiles. Then we predict future sector-specific demand by weighing the age-specific consumption profiles by expected future population shares. Assuming that sector-specific start-up rates remain constant in the future, we can infer future start-up activity from predicted future sector-specific demand. We find that start-up activity will increase by 0.6% due to changes in demand for goods and services.

Conclusions and Policy Implications

All together, the results indicate a moderate decline of start-up rates until 2020. The number of start-up projects is predicted to fall by roughly 7%. Based on the findings of Fritsch and Müller (2004), this implies a decline in employment created by start-ups by 0.2%, suggesting that the reduction of the beneficial impact of start-up activity on the economy will be small. Based on our findings we see no need for public authorities to respond to demographic change by extending direct start-up promotion.