

# The impact of population ageing on potential economic growth in Europe

Paper submitted for presentation at the European Population Conference 2014, Budapest 25-28 June

**Nicole van der Gaag • Joop de Beer**

Netherlands Interdisciplinary Demographic Institute, P.O. Box 11650, 2502 AR The Hague, The Netherlands  
Telephone: +31 70 356 52 00; telefax: +31 70 364 71 87; e-mail: [gaag@nidi.nl](mailto:gaag@nidi.nl); [beer@nidi.nl](mailto:beer@nidi.nl)  
Corresponding author: Nicole van der Gaag

## **EXTENDED ABSTRACT**

### INTRODUCTION

Looking at the impact of population growth on economic growth several studies showed that demography matters once you take into account the age structure of the population (Bloom et al., 2003; Prskawetz et al., 2007). In periods with rising proportions of the population in their productive ages, their contribution to economic growth can be regarded as demographic dividend (Bloom et al., 2003). Based on an extensive meta-analysis of macro-economic literature, Headey and Hodge (2009) showed that growing working-age populations have a positive effect on economic growth. However, good policies are needed to take full advantage of this demographic dividend. Without such policies instead of reinforcing economic growth demographic dividend may worsen it.

The main cause of demographic dividend is declining fertility and the subsequent change in the age structure of a population. The window of opportunity for benefitting from the gains of demographic dividend is limited due to population ageing. Once the growth rate of the working-age population will be slower than the growth rate of the total population, the share of the working-age population will start to decline and demographic dividend will turn into demographic burden. In this case an increasing share of the population depends on the output produced by a decreasing share of the working-age population. All other things remaining equal, demographic burden results in declining economic growth. While demographic dividend still may offer opportunities for economic growth to many countries in the developing world, for most European populations this demographic dividend is almost spent as the share of the working-age population will soon start to decline.

Labour input to economic growth is not only determined by the size of the working-age population but also depends on labour market participation, i.e. the proportion of the working-age population actually employed and the average number of hours worked per employee. To anticipate demographic burden, increasing employment rates is a central theme in many labour market policies in European countries, and is one of the headline targets of the Europe 2020 strategy for smart, sustainable and inclusive growth (CEC, 2008).

This paper focuses on the impact of population ageing on *potential* economic growth, i.e. we examine the extent to which GDP *could* grow as a result of the growth in human resources. We do not examine the growth in aggregate demand or investments in capital. We discuss recent and future developments in the contribution of labour input to potential economic growth in the European Union in the period 2000-2020. Point of departure is the prospect of a declining working-age population (Lanzieri, 2011; European Union, 2012). The main objective is to study the impact of population ageing on labour input and to examine to

what extent employment rates should raise in order to compensate for demographic burden, and whether the Europe 2020 employment targets are sufficient to reach these levels.

## METHOD

To identify the contribution of demography, labour market participation and productivity to potential economic growth in terms of GDP, we decomposed GDP into different components in a similar way as Denton and Spencer (1997): the total population of a country (Pop), the share of the working-age population (WAP) in the total population (WAP/Pop), the employment rate (workers/WAP), working hours per employee (hours/workers) and output per labour hour (GDP/hours). For all countries of the European Union for which all data were available in the Eurostat and/or OECD data base we calculated the contributions to GDP of the different components. Subsequently, we analysed past (2000-2010) and future (2010-2020) population developments and raised the question how much growth in employment rates is needed to compensate declines in labour input due to demographic change.

## OUTCOMES

While in the past decade growth in GDP as a result of changes in labour input mainly came from demographic change, in the years to come all EU27 countries will see the share of the working-age population in the total population decrease, resulting in the transition from demographic dividend to demographic burden. Although in the majority of the countries the total population will continue to grow, only for a limited number of countries the expected population growth will be sufficient to compensate the negative effect of demographic burden. In most countries, raising the employment rates to the national targets of the Europe 2020 strategy can compensate this negative impact of demography, given that the number of hours worked per employee will not decline. Differences in targets, however, are huge and in some countries targets may be unrealistically high.

## DISCUSSION AND CONCLUSION

This paper discusses the contribution of labour input to potential economic growth in the European Union. If we look at actual economic growth, however, we have to note that the different components of economic growth are not necessarily independent of each other. Rising employment rates, for instance, may result in changes in the composition of the work force by age or skills, which may affect productivity (Feyrer, 2007; Prskawetz et al., 2007; The Economist, 2013). Most low employment countries in the EU tend to have a relatively low share of low-productive workers in their work force (OECD, 2009). If rising employment rates means relatively more low-productive workers entering the labour force, this will reduce productivity. Also increasing the retirement age may have a negative effect on productivity if older workers are less productive. Furthermore, rising employment rates may be related to decreasing numbers of hours worked per employee, while increasing working hours may go together with decreasing productivity.

As the impact of demographic burden will negatively affect potential economic growth and raising the employment rates can restore growth opportunities only to a limited extent, productivity growth will become ever more important. In the course of the 2020s, productivity growth is expected to become even the sole source for economic growth (European Union, 2012). Whether increasing productivity growth is according to expectations, however, is open to question. Van Ark et al. (2013) showed that across European countries, after a severe drop in productivity in 2008/09 and a rapid recovery in 2010, productivity slowed down again significantly in 2011 and 2012. For the period up to 2025 they project a decelerating productivity growth relative to the past decade.

Finally, different views exist on the consequences of a declining working-age population. Some people fear a shortage of labour, threatening prosperity, while others hope for the end of unemployment. Most likely, the future will be somewhere in between. In the long term labour demand may adapt to labour supply, partly by reducing unemployment (but not remove it totally) and partly by improving productivity (De Beer, 2008). In the short term, however, a transitional period may be needed to reach a new balance. Given the large variation between countries, not only in terms of demographic burden, population growth, and labour market participation, but also in terms of productivity potential, this requires tailor-made country-specific solutions.

## REFERENCES

- Bloom, D.E., D. Canning, and J. Sevilla (2003) The demographic dividend, a new perspective on the economic consequences of population change. Population matters, a RAND Program of Policy Relevant Research Communication
- CEC (2008) Regions 2020 - An Assessment of Future Challenges for EU Regions. Brussels: Commission of the European Communities.
- De Beer, P. (2008) Krimpende arbeidsmarkt: nieuw perspectief, oude problemen ('Declining labour market: new perspective, old problems'). *B en M Tijdschrift voor Beleid, Politiek en Maatschappij*, 2008: 35(4), pp 278-288
- Denton, F. and B.G. Spencer (1997) Population, labour force, and long-term economic growth. IESOP Research Paper No. 25
- Economist (2013) Age shall weary them, the productive challenge of the rich world's economy. *The Economist*, 11 May 2013
- European Union (2012) The 2012 Ageing Report, Economic and Budgetary projections for the 27 EU Member States (2010-2060). *European Economy Series 2/2012*
- Feyrer, J. (2007) Demographics and Productivity. *The Review of Economics and Statistics*, 89:100-109
- Headey, D.D. and A. Hodge (2009) The Effect of Population Growth on Economic Growth: A Meta-Regression Analysis of the Macroeconomic Literature. *Population and Development Review* 35 (2), 221-248
- Lanzieri, G. (2011) The greying of the baby boomers, a century-long view of ageing in European populations *Statistics in Focus*, 23/2011. Luxembourg: Publications Office of the European Union.
- OECD (2009) Going for Growth 2009. OECD Economic Policy Reforms. <http://www.oecd.org/eco/growth/goingforgrowth.htm>
- Prskawetz, A., T. Fent, W. Barthel, J. Crespo-Cuaresma, T. Lindh, B. Malmberg, M. Halvarsson (2007) The Relationship between Demographic Change and Economic Growth in the EU, Report for Tender VT/2005/035
- Van Ark, B., V. Chen and K. Jäger (2013) European Productivity Growth since 2000 and Future Prospects. *International Productivity Monitor*, 25, 65-83

## ACKNOWLEDGEMENTS

This presentation is based on the paper: From demographic dividend to demographic burden: the impact of population ageing on economic growth in Europe, to be published in 'Tijdschrift voor Economische en Sociale Geografie' ('Journal for Economic and Social Geography', TESG, forthcoming). This paper has been written in the context of the NEUJOBS project 'Creating and adapting jobs in Europe in the context of a socio-ecological transition'. The NEUJOBS project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 266833. For further information, see [www.neujobs.eu](http://www.neujobs.eu).