

**Report on the Doctoral thesis of  
Maciej Lis  
Warsaw School of Economics  
Collegium of Economics Analysis**

10<sup>th</sup> February 2016

I had the pleasure of reading and evaluating the doctoral thesis of Maciej Lis, titled "Selected implications of population ageing for productivity, economic activity and health care expenditure", dated May 2015. The aim of the thesis is to analyse economic consequences of population with a focus on labour market and public finance aspects. Specifically, the thesis studies how the decline in labour productivity is not the underlying reason behind low employment rates among older workers, and the increasing life expectancy will not cause a big increase in aggregate health care expenditure. The knowledge generated by formally testing of these two hypotheses will shake the negative beliefs and fears associated with population ageing, and I commend Maciej Lis and his supervisor to take on such crucial and complex issues in their research.

The thesis is very well written which is a reflection on a clear thinking process. Its scientific conceptual grounds and empirical work is most credible. The thesis is mainly economic but it employs very effectively learnings from other related fields such as demographics, sociology, public health and behavioural science. The choice of the country to study, Poland, is also very appropriate, since it has experienced a strong drop in the fertility in recent times alongside rising life expectancy. I also commend the innovative use of the data from NFZ (the Polish National Health Fund) on health care expenditure with breakdowns by age, gender, type of care and whether the person is a decedent or survivor, and its connection with the data from the National Statistical Office on population and mortality. The advanced statistical methods used, in particular the semi-parametric method of combined analysis of productivity and employment, make this piece of research most convincing.

On the basis of the above, I have no hesitation to recommend strongly that Maciej Lis is granted a doctoral degree. His thesis contains sufficient literature and knowledge to produce at least three papers to good quality journals of population ageing. I have some minor comments for different parts of his thesis, which I include in the Annex to this letter.

Please pass on my most heartfelt congratulations to "Dr." Maciej Lis in due time. Please inform me if you need any other information from me.

Sincerely

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**Annex: Minor Comments on the Doctoral thesis of Maciej Lis**

February 10<sup>th</sup>, 2016

It would be good to refer to and review the work of James Fries<sup>1</sup> to motivate your point about the compression of morbidity. Fries' hypothesis is that the burden of lifetime illness may be compressed into a shorter period before the time of death, if the age of onset of the first chronic infirmity can be postponed, and this is what comes out strongly in your work as well.

The use of hourly earnings will not point to prevalence of part-time or zero contract jobs in old age. Please point to this possibility.

In your analysis of hourly earnings by clusters, please provide an explanation for why in some countries average wage is rising after the age of 50? pp. 56-60. Please also note that graphs on pages 53 and 59 are difficult to read.

Employees exit labour market later in countries where average replacement age is low, and a higher replacement rate implies earlier retirement age. Understood. You should also point to and explain outliers, e.g. Sweden, please give some clear reasons why these outliers do not contradict your main finding. Nb. I am still in agreement with your general conclusion that the government policy influences the exit from the labour market – not loss of labour productivity.

The explanations (four reasons) why the growth of health care expenditure is higher than growth of GDP in OECD countries are good. The same holds true for the explanation on the relationship between age and health care expenditure when life expectancy increases. pp. 75-79

Please explain more clearly why expenditure at age 65 per survivor stabilises, whereas the same per decedent starts to drop.

Please explain the following concepts more clearly: death-related costs – page 108.

Graphs on pages 110, 112, 113, 115 are difficult to read and analyse.

Some conclusions are seemingly contradictory: lower paid individuals exit labour market prematurely (page 120, last paragraph), while people working longer are less productive (page 121, first paragraph) – please clarify.

How feasible are the conclusions that social benefits should be linked to the health status and the ability to work instead of age.

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<sup>1</sup> Fries, James F. (1980). "Aging, Natural Death, and the Compression of Morbidity". *New England Journal of Medicine* 303 (3): 130–5. doi:10.1056/NEJM198007173030304

