

# Comments on “Can an ageing workforce explain low inflation?”

Kenichi Sakura<sup>1</sup>

## Summary of the paper

This paper investigates the effects of demographic changes on wage inflation. The authors are motivated by three recent phenomena in advanced economies: low inflation, decline of unemployment, and ageing of baby boomers. Specifically, they conjecture that the weakness of wage inflation over the last five years reflects the increase of labour supply by elderly workers (baby boomers). They use a simple model and empirical analysis to show the determinants of wage inflation.

The paper assumes that three types of workers exist in the model: the young, the elderly with continuous careers, and the elderly with discontinuous careers. The average wage in the economy is the weighted average of wages of those three worker groups. On the basis of several stylised facts found in the existing literature, the authors derive the following predictions from a simple model. First, an increase in the participation rate of discontinuous elderly workers decreases the average wage. Second, an increase in the participation of continuous elderly workers has a mixed effect on aggregate wages. Third, wages are more sensitive to the business cycle when the participation rate of discontinuous elderly workers increases and less sensitive when the proportion of continuous elderly workers increases. Overall, the impact of population ageing on the average wage is ambiguous, and the paper attempts to examine it empirically.

In the latter half of this paper, the authors estimate the wage Phillips curve using both country-level and regional-level panel data. The country panel data include 19 OECD countries from 1996 to 2016 and the regional panel data include 203 regions of 24 countries from 1999 to 2016. In addition to the standard wage Phillips curve, the authors include the participation rate of elderly workers (or the difference in the participation rate of workers aged above 55 and those below 55) as an explanatory variable. The results show the negative association between wage inflation and the participation rate of elderly workers, thereby suggesting that the increase in labour supply of elderly workers negatively impacts wage inflation. They also examine this relation by dividing regional samples into two groups according to the pace of population growth. They find it robust even after controlling for possible effects of a shrinking labour force that might cause both lower wages and higher participation rates.

<sup>1</sup> Bank of Japan.

The views expressed herein are those of the author alone and do not necessarily reflect the official views of the Bank of Japan. The author would like to thank Maiko Koga for her comments and discussions and Enago for the English language review.

## Comments

This is an interesting and thought-provoking paper, and the authors discuss a very important topic: the relationship between demographic changes and inflation. Although we observe population ageing and low inflation in many advanced economies, research studies on demographic effects on inflation are relatively limited. The authors contribute to this area of study by empirically showing that an increase in labour supply by baby boomers negatively affects wage inflation rates. From the perspective of making the paper more persuasive, I have three brief comments.

### 1. Relation of model prediction and empirical analysis

Although the authors present the model to account for the determinants of wage inflation, the connection between the model prediction and the empirical analysis is not well explained.

First, while the model identifies discontinuous and continuous elderly workers, the empirical analysis does not consider this distinction. To fill this gap, it might be more persuasive to add an empirical exercise using employment data by job tenure (duration of employment).

Second, although the authors have derived a prediction regarding the business cycle effects on wages, they do not test it in their empirical section. According to their model, the “slope” of the wage Phillips curve would also be affected by the labour supply of elderly workers; for example, wages are more sensitive to the business cycle when the participation rate of discontinuous elderly workers increases. It would be interesting to verify this prediction, for example, by introducing an interaction term of the participation rate of elderly workers and a variable representing economic slack.

### 2. Specification of wage Phillips curve

The paper presents the wage Phillips curve in which wage inflation is determined by lagged inflation, labour productivity growth, unemployment rate and participation rate. One concern is that it is unclear what each term represents. It would be more persuasive if the authors could explain on which model their specification is based.

For example, in a recent work on the wage Phillips curve, Gali (2011) gives a similar specification based on the standard New Keynesian model. In his model, wage inflation is associated with price inflation, unemployment and productivity growth. He theoretically shows that wage inflation is proportional to the discounted sum of expected deviations of current and future average wage markups from their desired levels. Assuming wage indexation to price inflation and showing the relationship between the wage markups and the unemployment rate, he explains that price inflation, unemployment and productivity growth are relevant variables.

### 3. Alternative explanation

Some previous studies analyse demographic effects on inflation on the basis of other mechanisms. Therefore, it should be noted that the observed correlation between population ageing and low inflation could also reflect other factors than those the authors point out.

One alternative explanation is based on the secular stagnation hypothesis (Summers (2013)). Eggertsson et al (2019) formally model a mechanism in which a decline of population growth decreases loan demand, thereby resulting in downward pressure on the natural interest rate. As the lower bound of nominal interest rates becomes binding, the impact of monetary policy declines and this could lead to longer recessions and lower inflation.

Second, Katagiri et al (2019) describe the association between demography and inflation from the political economy perspective. In their model, population ageing stemming from an increase in longevity leads to deflation by increasing the political influence of the older generation. Under the fiscal theory of the price level (FTPL) setting, the government increases its income tax rates (which harms the young) to avoid an increase in prices (which would harm the elderly).

Third, Fujita and Fujiwara (2016) develop a New Keynesian search/matching model to demonstrate that changes in demographic structure induce skill (productivity) heterogeneity in the workforce, which results in low-frequency movements in the real interest rate. When monetary policy follows the standard Taylor rule that fails to internalise the time-varying nature of the natural interest rate, the economy experiences low-frequency movements in the inflation rate as well.

Finally, other studies have also attempted to explore empirically the relation between age structure in the economy and inflation (eg Juselius and Takáts (2015); Yoon et al (2018); Barbiellini Amidei et al (2019)).

## References

- Barbiellini Amidei, F, M Gomellini and P Piselli (2019): "The price of demography", *MPRA Paper* no 94435, February.
- Eggertsson, G, N Mehrotra and J Robbins (2019): "A model of secular stagnation: theory and quantitative evaluation", *American Economic Journal: Macroeconomics*, vol 11, no 1, January, pp 1–48.
- Fujita, S and I Fujiwara (2016): "Declining trends in the real interest rate and inflation: the role of aging", *Federal Reserve Bank of Philadelphia Working Papers*, no 16–29, October.
- Gali, J (2011): "The return of the wage Phillips curve", *Journal of the European Economic Association*, vol 9, no 3, June, pp 436–61.
- Juselius, M and E Takáts (2015): "Can demography affect inflation and monetary policy?", *BIS Working Papers*, no 485, February.
- Katagiri, M, H Konishi and K Ueda (2019): "Aging and deflation from a fiscal perspective", *Journal of Monetary Economics*, forthcoming.
- Summers, L (2013): Remarks at the IMF Fourteenth Annual Research Conference in Honor of Stanley Fischer, Washington DC.
- Yoon, J, J Kim and J Lee (2018): "Impact of demographic changes on inflation and the macroeconomy", *KDI Journal of Economic Policy*, vol 40, no 1, February, pp 1–30.