# Should a pension reform be announced? A reply

Michael Hatcher*

July 2019

**Abstract**

Fedotenkov (2016) shows that a reduction of the pay-as-you-go (PAYG) contribution rate leads to larger losses for the first transitional generation if the reform is announced in advance. His analysis is based on expected lifetime utility. This note argues that an announced reform might still be preferable because this raises *realized* consumption of the first transitional generation in old age – an impact not captured in expected lifetime utility. Implications for social welfare evaluations are illustrated using a numerical example.

JEL Classification: E21, H55.

Keywords: Pension reform, announcement, savings, welfare.

## 1 Introduction

Many countries have recently reformed their public pension systems, or are soon planning to do so. One of the most popular reforms is a switch from pay-as-you-go (PAYG) to a more funded pension scheme. In a dynamically efficient economy, such a reform improves the welfare of the young and lowers the welfare of the current old (Breyer, 1989). To mitigate the losses of the old generation, governments may wish to announce the reform in advance so that agents may reallocate consumption in accordance with their intertemporal preferences.

In a recent paper, Fedotenkov (2016) challenges this intuition. He shows that an announced pension reform that reduces the PAYG contribution rate benefits all later generations but imposes relatively large losses on the first transitional generation, based on expected lifetime utility. Hence, a government wishing to mitigate the losses of agents most affected by the pension reform may prefer to implement the reform without any announcement.

This note argues an announced reform might still be preferable because it raises *realized* old age consumption of the first transitional generation. This contrasts with *expected* old age consumption, which is *lower* under an announced reform and enters into expected lifetime utility; see Fedotenkov (p. 136). The key distinction is that it matters for old age consumption whether we assess the reform from the perspective of the *announcement* date or the

*Department of Economics, University of Southampton, SO17 1BJ, m.c.hatcher@soton.ac.uk. I thank an anonymous referee and the Associate Editor (Eric Young) for helpful comments.

*implementation* date. This difference has important implications for social welfare evaluations of announced and unannounced reforms; in particular, it is shown that unambiguous welfare rankings of such reforms may not be possible even if generational weights are fully specified. Hence, policymakers face an extra difficulty when evaluating such reforms.

# 2 Impact of the pension reform

To make the above points, it suffices to focus on Equations (8),(9) and (10) of the model, reproduced here for convenience:

$$C_t^y = (1-\tau_t)(1-\alpha)k_t^\alpha \left(1 - \frac{\alpha}{\tau_{t+1}^e(1-\alpha)(1+\rho)+\alpha(2+\rho)}\right) \tag{1}$$

$$C_{t+1}^o = \left(\frac{\alpha(1-\tau_t)(1-\alpha)k_t^\alpha}{\tau_{t+1}^e(1-\alpha)(1+\rho)+\alpha(2+\rho)}\right)^\alpha \left[\alpha + (1-\alpha)\tau_{t+1}^e\right] \tag{2}$$

$$k_{t+1} = \frac{\alpha(1-\tau_t)(1-\alpha)k_t^\alpha}{\tau_{t+1}^e(1-\alpha)(1+\rho)+\alpha(2+\rho)} \tag{3}$$

where $\tau_t$ is the current PAYG contribution rate, and $\tau_{t+1}^e$ the expected future PAYG rate.[1]

Equation (1) is young age consumption. The term in big brackets is 1 minus the saving rate, and is increasing in $\tau_{t+1}^e$. Hence, young agents save more, and consume less, if a fall in pension benefits is anticipated. Equation (2) says that expected old age consumption depends on savings and the expected share of output paid to pensioners, $(1-\alpha)\tau_{t+1}^e$. Equation (3) is capital accumulation: it links saving to labour income net of pension contributions, and is decreasing in the discount rate $\rho$ and the expected generosity of pensions $\tau_{t+1}^e$.

An announced pension reform reduces $\tau_{t+1}^e$. This lowers consumption when young and expected consumption when old. Hence, expected utility $U_t = \log(C_t^y) + \frac{1}{1+\rho}\log(C_{t+1}^o)$ falls. Note that expected consumption $C_{t+1}^o$ is lower despite the fact that an announced reform *raises* capital accumulation. This is because young agents expect to receive a smaller share of output at pension age: $\left[\alpha + (1-\alpha)\tau_{t+1}^e\right]$ falls, see Equation (2). Under an unannounced reform, by comparison, $C_{t+1}^o$ is unchanged since $\tau_{t+1}^e = \tau_t$.

When the reform is implemented in period $t+1$, old agents are hit with a fall in their share of output $[\alpha + (1-\alpha)\tau_{t+1}]$, regardless of whether the reform is announced or not. But the fall in consumption is *smaller* under the announced reform, because pensioners can consume out of their extra savings; see Equations (2) and (3). Hence, by sacrificing current consumption, the old enjoy *more* consumption at the date when the reform is implemented.

This is illustrated in Figure 1, which plots consumption under a pension reform which takes place at date 1 and is announced at date 0; the parameters values match those in Fedotenkov (2016).[2] The announced reform lowers consumption of the young at date 0 (upper panel), as shown by Equation (1). But when these agents become old in period 1

[1] Population growth is set at zero as in the numerical example in Fedotenkov (2016). Full details of the model can be found in that paper.

[2] Consumptions of young and old are expressed relative to their pre-reform steady state.

they enjoy *higher* consumption than if the reform were not announced (lower panel). Notice that the latter effect is *not* captured in expected lifetime utility because it refers to *realized* consumption at the reform implementation date, not *expected* old age consumption. Hence, the date at which the pension reform is evaluated matters for old age households.

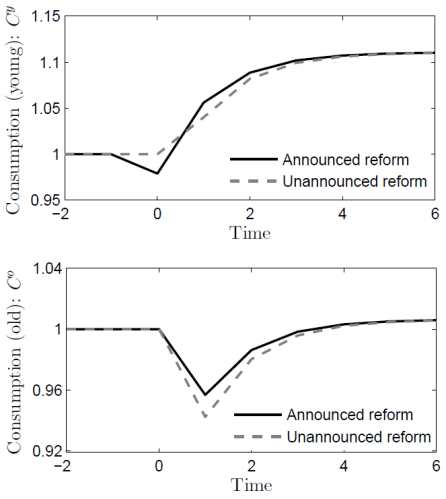


Figure 1: Consumption when young and old. Reform takes place at date 1.

# 3 Welfare implications

The result that old age consumption is higher under an announced reform has implications for social welfare analysis. To make this concrete, suppose our welfare criterion is a discounted sum of lifetime utilities of current and future generations:

$$W_t = \gamma^{-1}\overline{U}_{t-1} + \sum_{s=0}^{\infty} \gamma^s U_{t+s}$$

where $0 < \gamma < 1$, and $\overline{U}_{t-1} = \log(C^y_{t-1}) + \frac{1}{1+\rho}\log(C^o_t)$ is utility of the initial old.

For the reform at hand, a social planner could evaluate welfare either from the perspective of $t = 0$ (the announcement date) or $t = 1$ (the implementation date). The welfare as of $t = 0$ will differ in the announced and unannounced cases to the extent that expected lifetime utilities differ from $t = 0$ onwards. This is because, as shown in Figure 1, consumption by the old is *unchanged* up to $t = 0$ regardless of whether the reform is announced or not.[3] Note that expected consumption of the old at the reform date gets counted in $t = 0$ welfare, but their realized consumption does *not*. By comparison, welfare as of $t = 1$ includes the consumption of the old at the reform date and their past consumption when young. Hence,

[3]Likewise, the young-age consumption of these agents at $t = -1$ is not affected by the reform.

the difference between the welfare functions at $t = 0$ and $t = 1$ is that the former includes *expected* consumption on the reform date, whereas the latter includes *realized* consumption.

Because realized consumption is higher under an announced reform, an unambiguous welfare ranking may not be possible even if the generational weights $\gamma^s$ are known. Welfare evaluations in the above example are reported in Table 1, where $EV_0$ is the equivalent variation based on date 0 welfare, and $EV_1$ is the equivalent variation based on date 1 welfare. A positive value indicates social welfare is higher under the unannounced reform.[4]

**Table 1 - Welfare evaluations (%)**

| $\gamma$ | $EV_0$ | $EV_1$ |
|---|---|---|
| 0.99 | 0.02 | −0.02 |
| 0.95 | 0.11 | −0.10 |
| 0.75 | 0.79 | −0.35 |
| 0.50 | 2.03 | −0.17 |

We see that welfare reversals occur for a range of values of the social discount factor, $\gamma$. These reversals are driven by the differing impact of the reforms on expected versus realized consumption in period 1. In particular, the welfare evaluation at $t = 1$ consistently ranks the announced reform better because it raises realized consumption of pensioners at date 1, whereas the welfare evaluation at $t = 0$ prefers the unannounced reform because it avoids a drop in expected future consumption at date 1.

# 4 Conclusion

Fedotenkov (2016) shows that a cut in PAYG contribution rate leads to larger losses for the first transitional generation – in terms of expected lifetime utility – if the reform is announced in advance. This note has argued that it may nevertheless be beneficial to announce a pension reform because, by raising capital accumulation, this gives the first transitional generation higher old age consumption at the reform *implementation* date. The above result raises a difficulty inherent in social welfare evaluations of announced and unannounced reforms: there may be no clear welfare ranking of such reforms even if generational weights are specified. This is because both the announcement date and implementation date are valid standpoints for such comparisons, yet the information revealed to agents differs in the two cases.

# References

Breyer, F. 1989. On the intergenerational Pareto efficiency of pay-as-you-go financed pension systems. J. Inst. Theor. Econ. 145, 643-658.

Fedotenkov, I. 2016. Ignorance is bliss: Should a pension reform be announced? Econ. Lett. 147, 135-137.

[4]The equivalent variation is computed as the % increase in young age consumption that makes an announced reform welfare equivalent to an unannounced reform. Parameter values match those of Fig. 1.