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Discussion of Ariu and Vandenberghe: Assessing the role of ageing, feminising, and better educated workforces on TFP growth

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What's the issue?

- ▶ **The share of older workers, female workers and better educated workers in the workforce will increase over the next decades.**
- ▶ **If their relative productivities are different from unity, we have to expect effects on total factor productivity.**
- ▶ **The paper assesses these effects.**

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Results

- ▶ **Women and better educated workers have relative productivities equal to unity.**
- ▶ **Older workers have relative productivities lower than unity.**
- ▶ **Population ageing entails a cumulative productivity loss of 7% over 30 years.**
- ▶ **Productivity loss would be much smaller if labor market participation rates of older workers stayed low.**

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Remarks

▶ **Very interesting paper, suprising results!**

But...

▶ **I do have a few remarks...**

What's Total Factor Productivity?

$$Y_{it} = A_{i0} \cdot e^{r \cdot t + \omega_{it}} \cdot K_{it}^{\alpha} \cdot \left(\sum_j \mu_j \cdot (L_{it}^j)^{\rho} \right)^{\frac{\beta}{\rho}}$$

$$TFP \stackrel{\text{def}}{=} \frac{Y_{it}}{K_{it}^{\alpha} \cdot \left(\sum_j \mu_j \cdot (L_{it}^j)^{\rho} \right)^{\frac{\beta}{\rho}}} = A_{i0} \cdot e^{r \cdot t + \omega_{it}}$$

$$Y_{it} = A_{i0} \cdot e^{r \cdot t + \omega_{it}} \cdot K_{it}^{\alpha} \cdot (L_{it})^{\beta} \cdot \left(\sum_j \mu_j \cdot \left(\frac{L_{it}^j}{L_{it}} \right)^{\rho} \right)^{\frac{\beta}{\rho}}$$

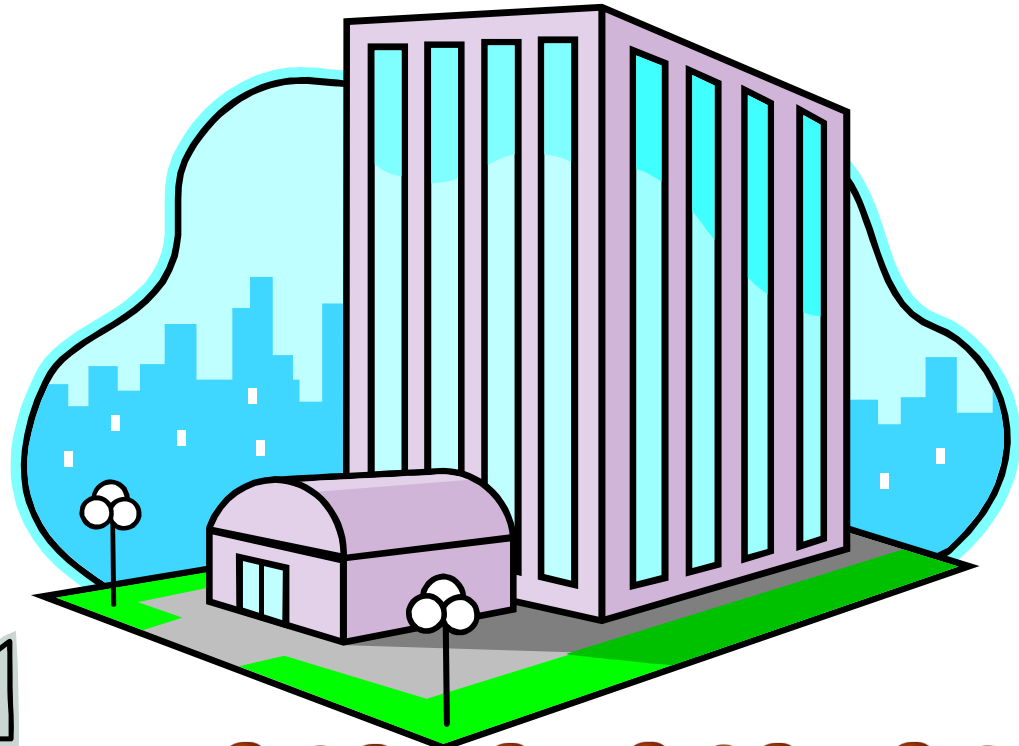
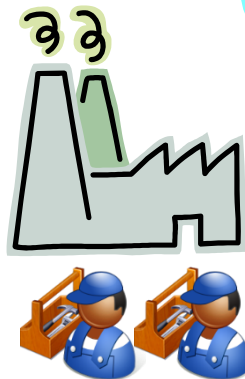
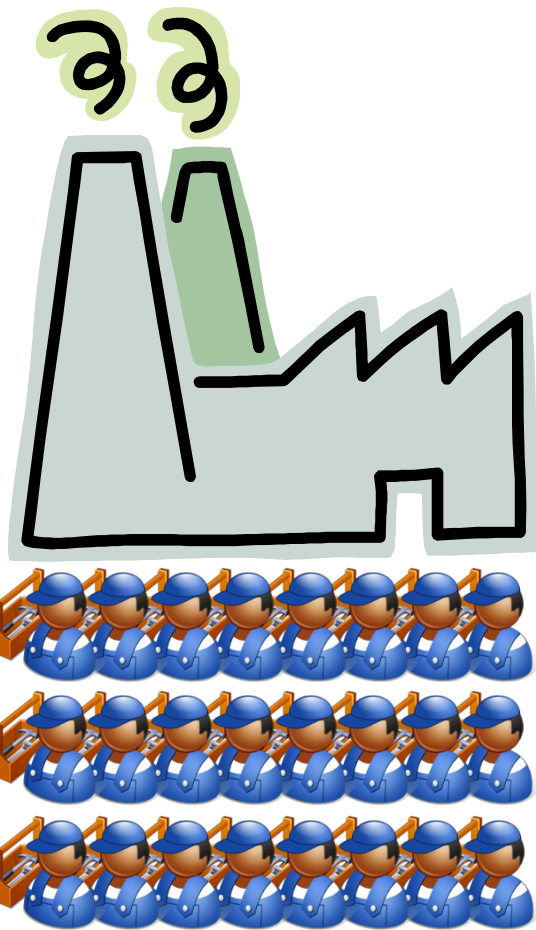
$$TFP \stackrel{\text{def}}{=} \frac{Y_{it}}{K_{it}^{\alpha} \cdot (L_{it})^{\beta}} = A_{i0} \cdot e^{r \cdot t + \omega_{it}} \cdot \left(\sum_j \mu_j \cdot \left(\frac{L_{it}^j}{L_{it}} \right)^{\rho} \right)^{\frac{\beta}{\rho}}$$

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**There's something
wrong with education.**

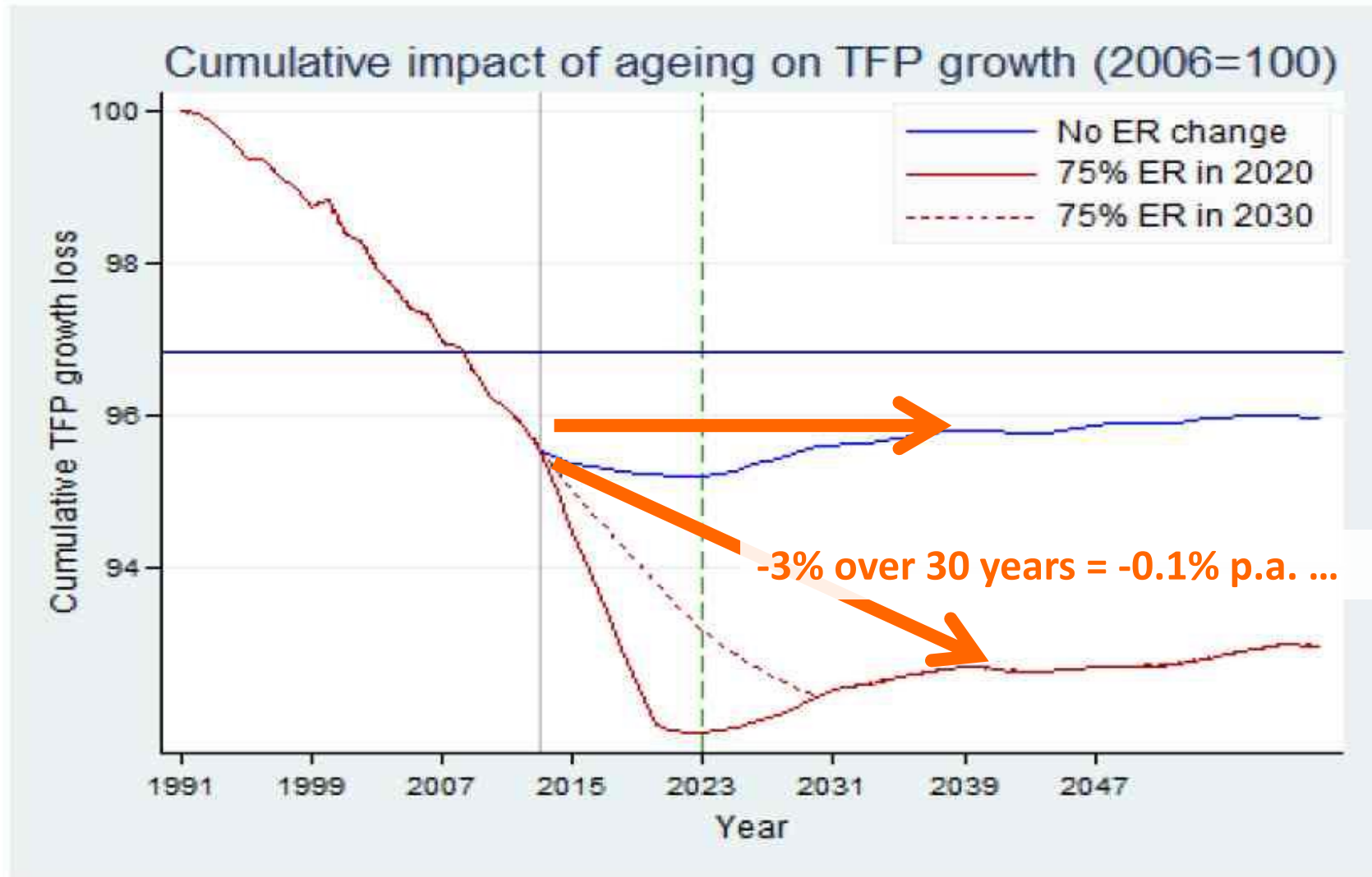
- ▶ **Better educated workers not being significantly more productive is worrisome.**
- ▶ **blue/white collar not a good measure for education over time if the education composition within blue/white collar changes over time**

Many blue vs. many white collar workers: What's more productive?



“Productivity loss would be much smaller if labor market participation rates of older workers stayed low.”

Figure 7b – Ageing and Cumulative TFP growth: 1991-2040, three scenari

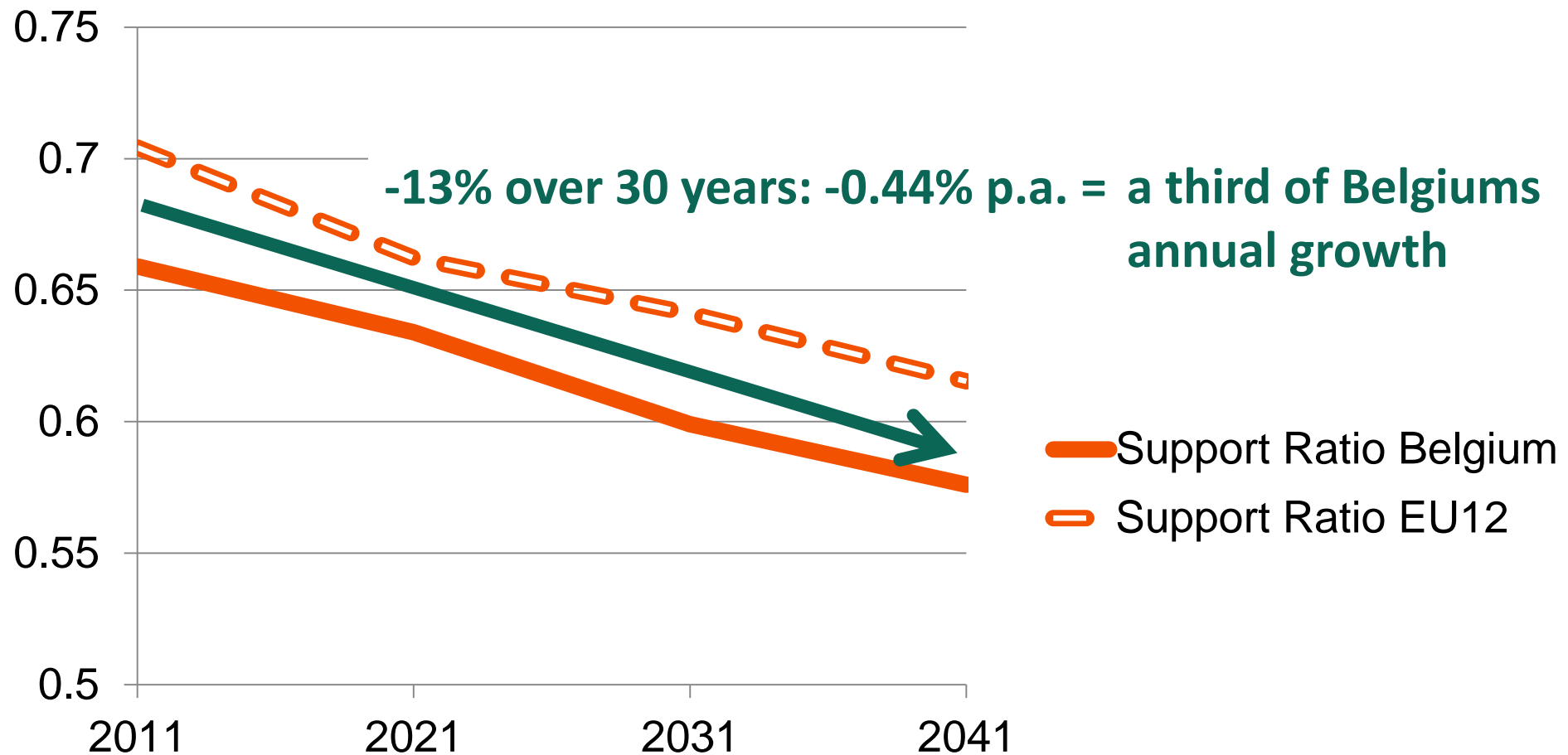




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Why increase older people's labor participation rates?

Support ratio (share of working age population in total population) = $\frac{\text{potential workers}}{\text{consumers}}$ = potential *gpd p.c.*

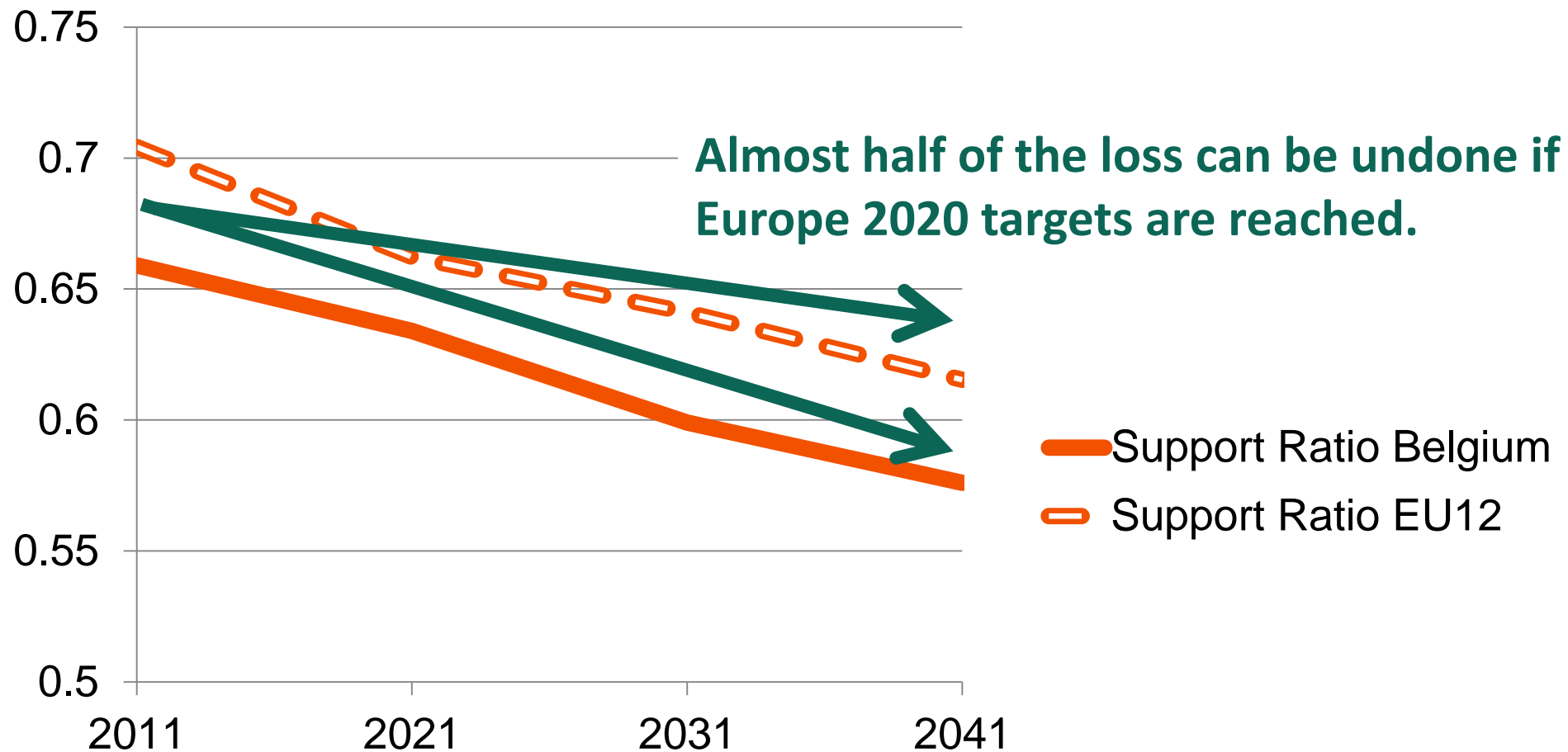




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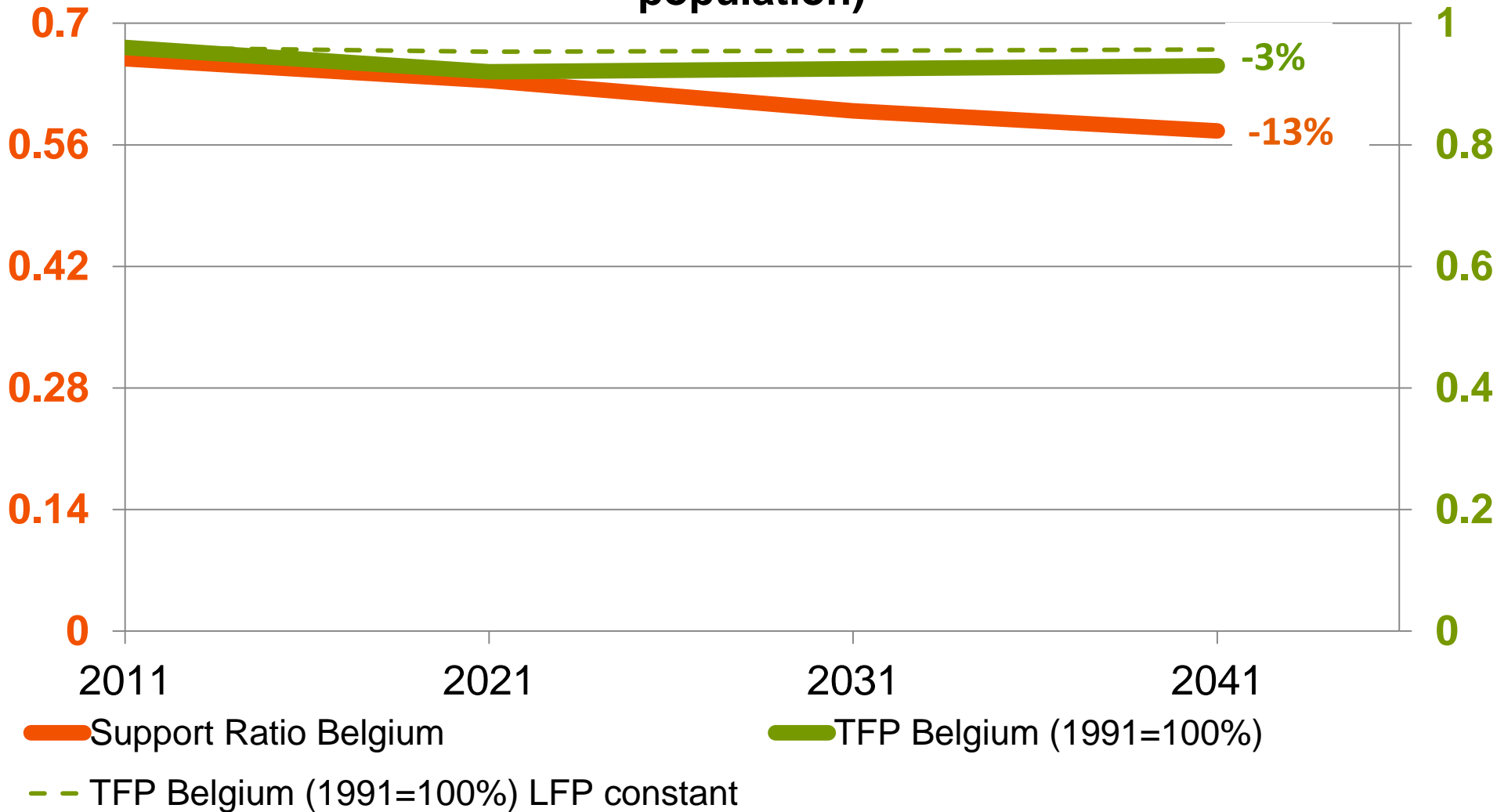
Support ratio (share of working age population in total population) = $\frac{\text{potential workers}}{\text{consumers}}$ = potential *gpd p.c.*





“Productivity loss would be much smaller if labor market participation rates of older workers stayed low.”

Support Ratio (share of working age population in total population)



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growth vs. levels

- ▶ **The share of older workers, female workers and better educated workers in the workforce will affect TFP *levels* if their relative productivity is different from unity.**
- ▶ **TFP *growth* will be affected if women are more innovative, better educated workers have brighter ideas, older workers are better at adopting new technologies, etc.**
- ▶ **Both channels are in principle plausible but the paper analyses only the first.**

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Remarks

- ▶ **Very interesting paper, suprising results!**
- ▶ **Definition of TFP**
- ▶ **There's something wrong with education...**
- ▶ **Looking at TFP is important and interesting but the effects of aging on the support ratio are probably more important for the evolution of gdp p.c.**
- ▶ **aging effects on TFP growth vs. on TFP levels**