The Swedish Pension System in the Light of the Logical Sustainability Theory

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Our study aims to analyse critical aspects of the Swedish pension system, which are to be carefully examined by possible users of the model. Our analysis is constructed under the perspective of the Logical Sustainability Theory (LST) for defined contribution pension scheme, introduced in (Angrisani, 2006, Angrisani, 2008). This Theory was successively developed for systems with constant contribution rate in a stabilisation phase in (Angrisani and Di Palo, 2011, Angrisani and Di Palo, 2012), and hence it was extended to control a demographic wave in (Angrisani and Di Palo, 2014, Angrisani and Di Palo, 2018). Recently, this Theory has been developed in the discrete and stochastic framework (Angrisani, Di Nella, Di Palo, and Pianese, 2018, Angrisani and Di Palo, submitted). By means of this Theory, some “weak aspects” of the Swedish pension system come up. In particular, they are related to the system’s sustainability indicator, referred to as Balance Ratio, which does not ensure the system’s sustainability in a logical-mathematical key and can provide misleading claims in case of demographic disturbances, like the well-known baby boom phenomenon. The Balance Ratio finds a related indicator in the LST in the Logical Sustainability Indicator. Differently from the Balance Ratio, this latter provides a sufficient condition of system’s sustainability. This condition derives from a general necessary and sufficient condition of the LST. In relation to the Balance Ratio, our conclusion is that this indicator provides information about sustainability as more significant the closer the system is in a steady state, and hence the less the sustainability indicator is needed.

Furthermore, by means of the LST, other aspects of weakness of the Swedish pension scheme are analysed: the role of the Buffer Fund and the adopted indexation of the pension liability. Note that in the Swedish pension system the Buffer Fund is used only to “…stabilise pension disbursements and/or pension contributions in relation to economic and demographic variations…”, Orange Report 2010, p. 75, and the pension liability indexation is linked only to the change in the average income and not also to the Buffer Fund returns. Differently, in the LST the Fund can be used also to cover a demographic and/or economic wave, in this case the Separation theorem of this Theory is applied, or, similarly to the Swedish pension system, the Fund can be used to cover the demographic and/or economic variations, without the Separation theorem application. However, in both cases in the LST the Fund returns are used in the pension liability indexation in an efficient way. Such efficiency is related to the control of the so-defined beta indicator, that is the level of the unfunded pension liability in relation to wages, which is linked, in this Theory, to the minimum contribution rate to the system’s sustainability.

Preliminarily, in this work the main features of the Swedish pension system are presented.

**Keywords:** Swedish pension system, logical sustainability theory, sustainability indicators
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