

The intergenerational welfare effect of the design of solidarity buffers

Rens van der Sande

NETSPAR ACADEMIC SERIES



MSc 11/2020-007



WillisTowersWatson 

THE INTERGENERATIONAL WELFARE EFFECT OF THE
DESIGN OF SOLIDARITY BUFFERS

BY
RENS VAN DER SANDE (ANR 814922)
B.Sc. TILBURG UNIVERSITY 2019

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF SCIENCE IN QUANTITATIVE FINANCE AND ACTUARIAL SCIENCE

TILBURG SCHOOL OF ECONOMICS AND MANAGEMENT
TILBURG UNIVERSITY

Supervisors:

DR. A.G. BALTER (TILBURG UNIVERSITY)
M. JONK MSc AAG (WILLIS TOWERS WATSON)

Second reader:

PROF. DR. B.J.M. WERKER (TILBURG UNIVERSITY)

Date:

13 NOVEMBER 2020

Abstract

This thesis investigates the intergenerational welfare effect of the design of solidarity buffers as proposed in the new pension agreement in the Netherlands. Using the assumptions of the seminal work of Merton (1969), where participants invest in a Black-Scholes market and participants derive utility from the CRRA-utility function, we created four different models with different rules to fill and distribute the solidarity buffer. Using the principle of certainty equivalents, we compare the models with a solidarity buffer to a model with variable annuities without a solidarity buffer. A solidarity buffer can create significant welfare gains for future participants, however, this is at the expense of the current participants as they have to fill the solidarity buffer. Using smart rules to fill and distribute the solidarity buffer, the welfare loss of current participants can be decreased and the welfare gain of future participants can be increased. Most of our models are also promising when participants have habit preferences. Moreover, implementing smoothing of shocks on an individual level in our model leads to a small welfare gain when participants have habit preferences. Facilitating smoothing of shocks using the solidarity buffer, such that young participants can take over the risk exposure of the retirees, can potentially lead to a higher welfare gain than smoothing of shocks on an individual level. However, this also has many downsides.