



26th annual **INCOSE**
international symposium

Edinburgh, UK
July 18 - 21, 2016

Investigating Structural Gender Inequality in the Norwegian Pension System

An example of using MBSE in the
evaluation of social systems

Erika Palmer

PhD Fellow

University of Bergen

Extending SE's Reach

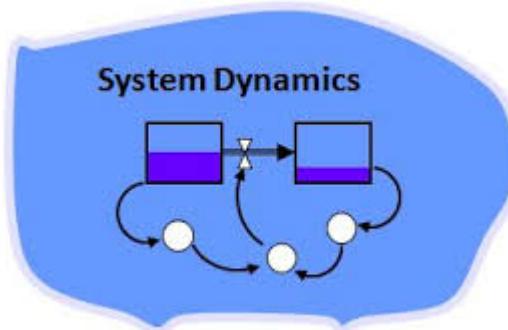
SE for social systems
Great potential



Ubiquitous Systems Engineering

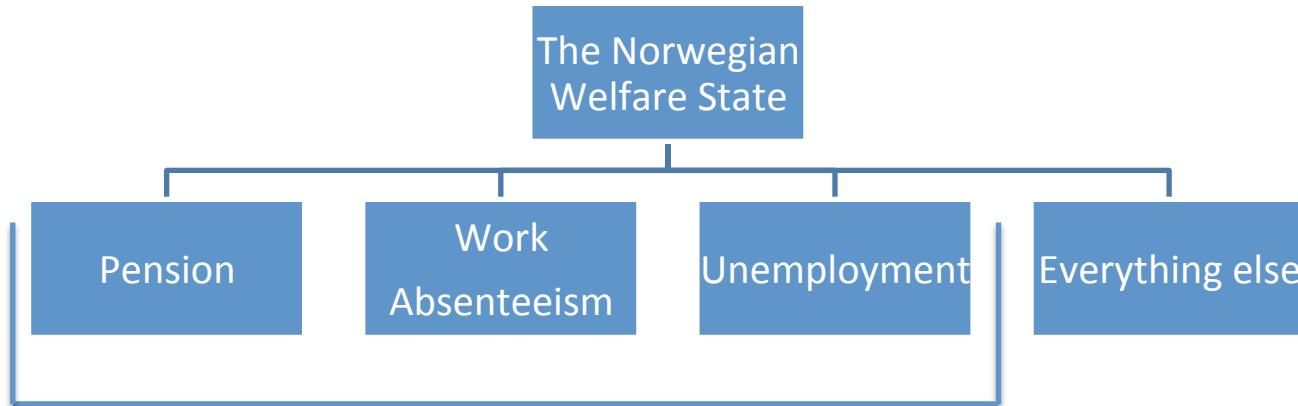


- A few mention social systems in the literature
- System Dynamics as a means to facilitate



The Project

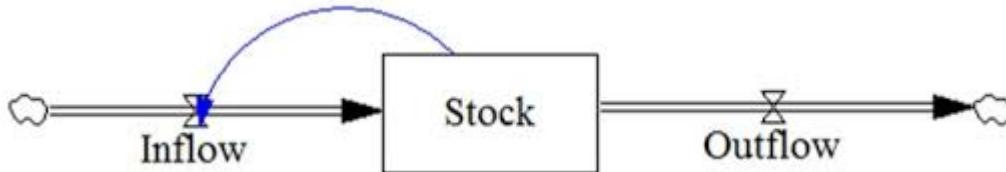
UNIVERSITY OF BERGEN



60% of social spending

System dynamics modeling of social systems

- Stock and flow models and feedback



- A field of its own and as part of MBSE



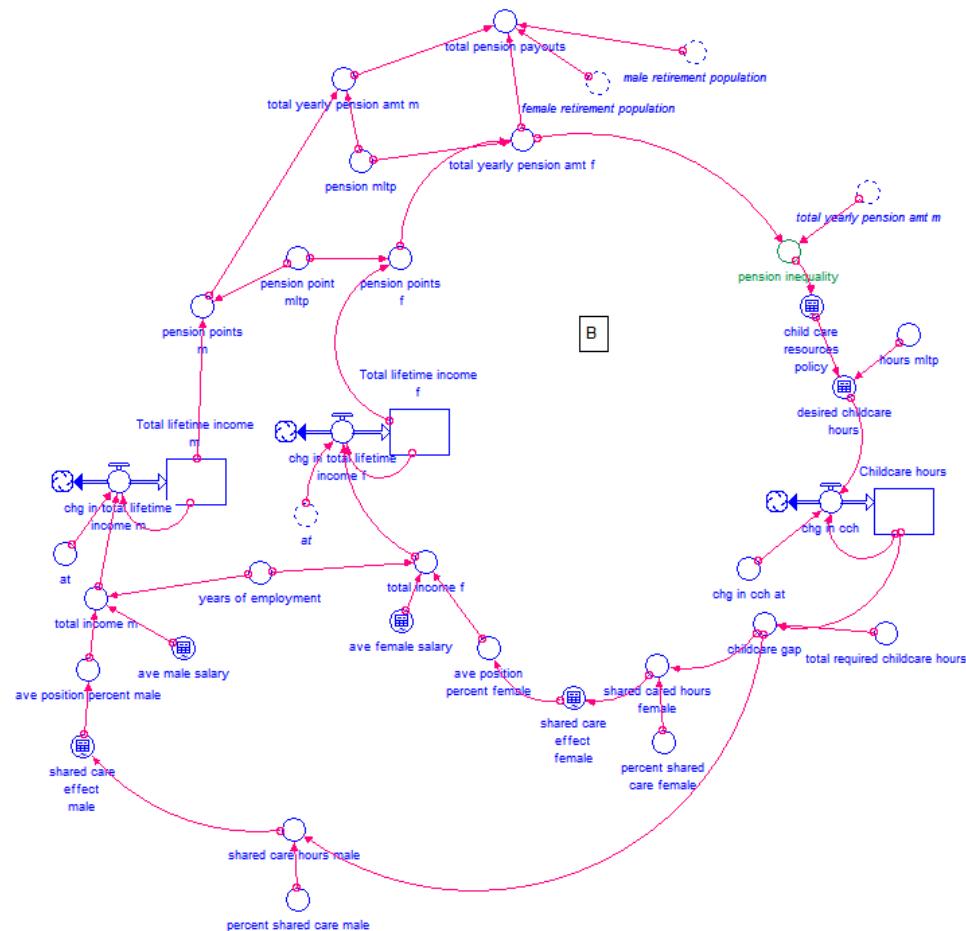
Gender inequality in social systems

- Social system: pensions
- Demographic challenge:
gender inequality
- Three forces at work
- Research question:
are there structural
disadvantages for women
in the Norwegian pension
system?



The Model

- Build an SD model to explain:
 - How accumulated lifetime income leads to pension inequality

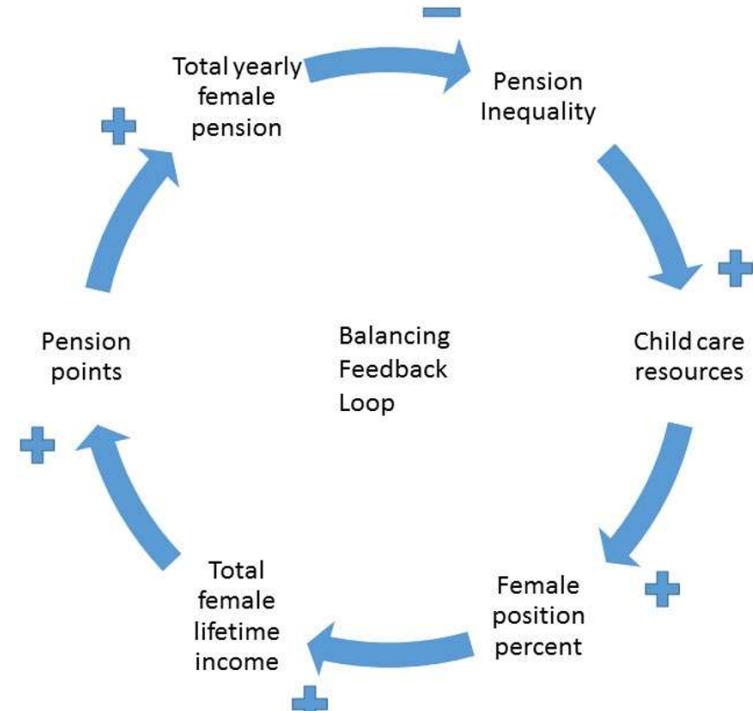


The Results

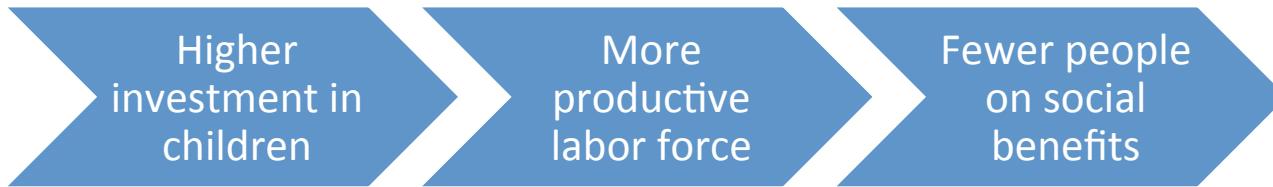
- Average annual pension per female & male pensioner in mill. NOK/yr
- And as a ratio, (pension inequality): F pension/M pension



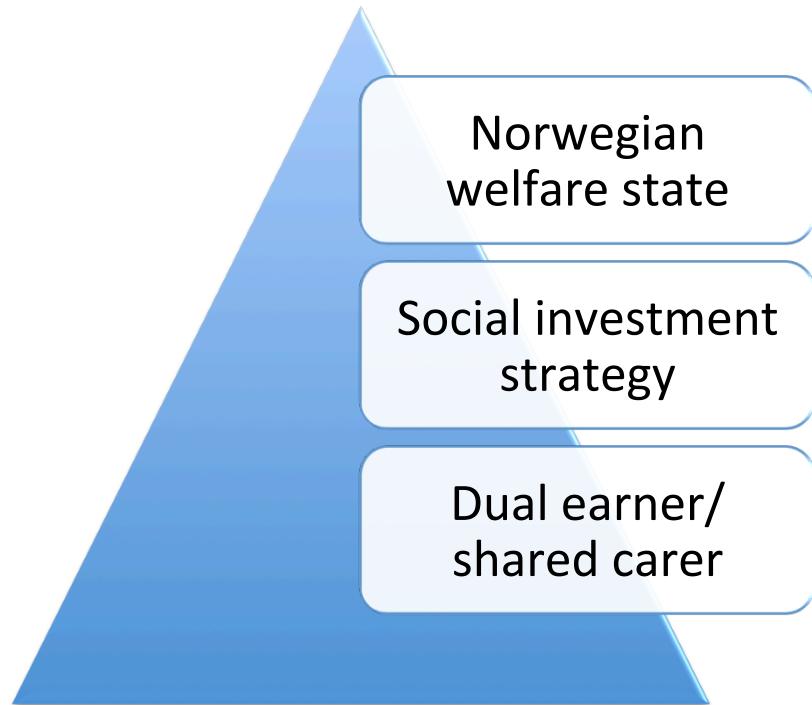
Causal Loop Diagram

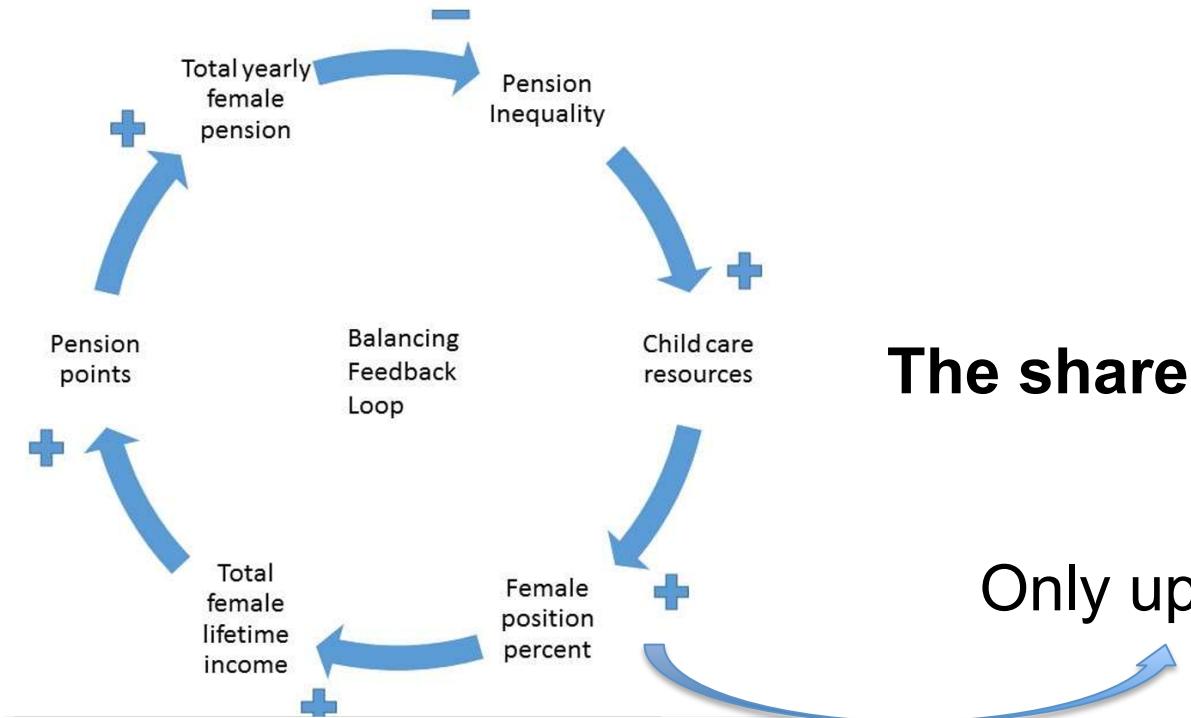


Social Investment Strategy



Dual earner/shared carer





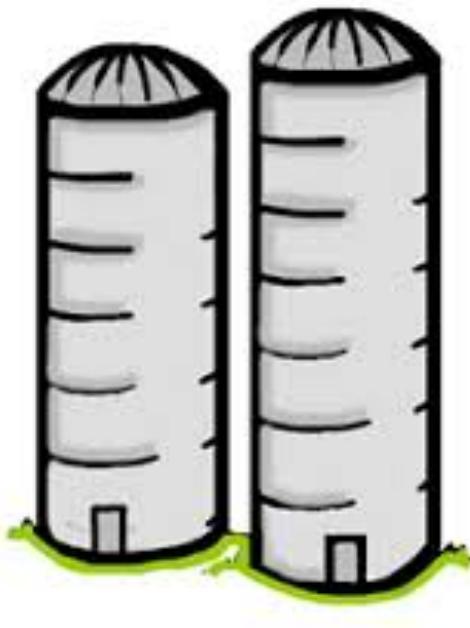
The shared carer gap

Only up to 80%

The issue of policy



Engaging with Social Scientists



From Academic Silos
to Cooperation



Thank You!



I look forward to your comments and
questions!