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microWELT

Welfare Transfer Simulation

Martin Spielauer , Marian Fink

IMA Conference **June 2017**

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Organization

- Context
- Goals
- Specifications
- Longitudinal Transfer Accounting
- Where are we now..
- Outlook

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Project Context: WELTRANSIM

- **Joint Programming Initiative "More Years, Better Lives". Horizon 2020**
- **3 Years (2017-2019)**
- **University Barcelona (UB) – Coordinator**
  Austrian Institute of Economic Research (WIFO)
  Finish Institute for Economic Research (VATT),
  Finnish Centre for Pensions (FCP)

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Context: Research Questions

- Who pays for longer lives?
- Better understanding of welfare transfers in 4 welfare state regimes in the context of ageing
- 4 Regimes
  - Liberal: UK
  - Universalstic: FI
  - Mediterranean: ES
  - Conservative: AT
- Key Delivery: Dynamic microsimulation model

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Context: Welfare State Regimes

- **Liberal:** poverty prevention when family and market solutions fail; means-tested minimum income schemes.
- **Conservative:** focus on status preservation mainly through social insurance schemes (family coverage)
- **Universalistic:** focus on social and economic rights; state plays a large re-distributive role incl. for middle-class
- **Mediterranean:** fragmented, some highly protected insider; low level of social transfers; reliance on family networks.

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microWELT- Main Project Goals

- Development of a microsimulation tool for the analysis of welfare transfers in 4 welfare state regimes in the context of ageing:
  - Population ageing
  - Individual ageing, life expectancy differences
- Integration of research approaches (NTAs, NTTAs) into a longitudinal framework
- Development of a modular, refine-able & extendable simulation platform of use beyond the project

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Specifications

Technical

- Start from a micro-data file
- Continuous time, Interacting population model
- Implemented in Modgen (Statistics Canada)

Focus

- Young/next generation (limited reconstruction of past)
- Highly stylized (simple, understandable, ..but realistic)
- Modeling platform for step-wise refinement
- Welfare state and individual behaviors 'typical as today', but demographic change and composition effects
- Distributions; aggregated outcomes can be aligned
- Longitudinal transfer accounting

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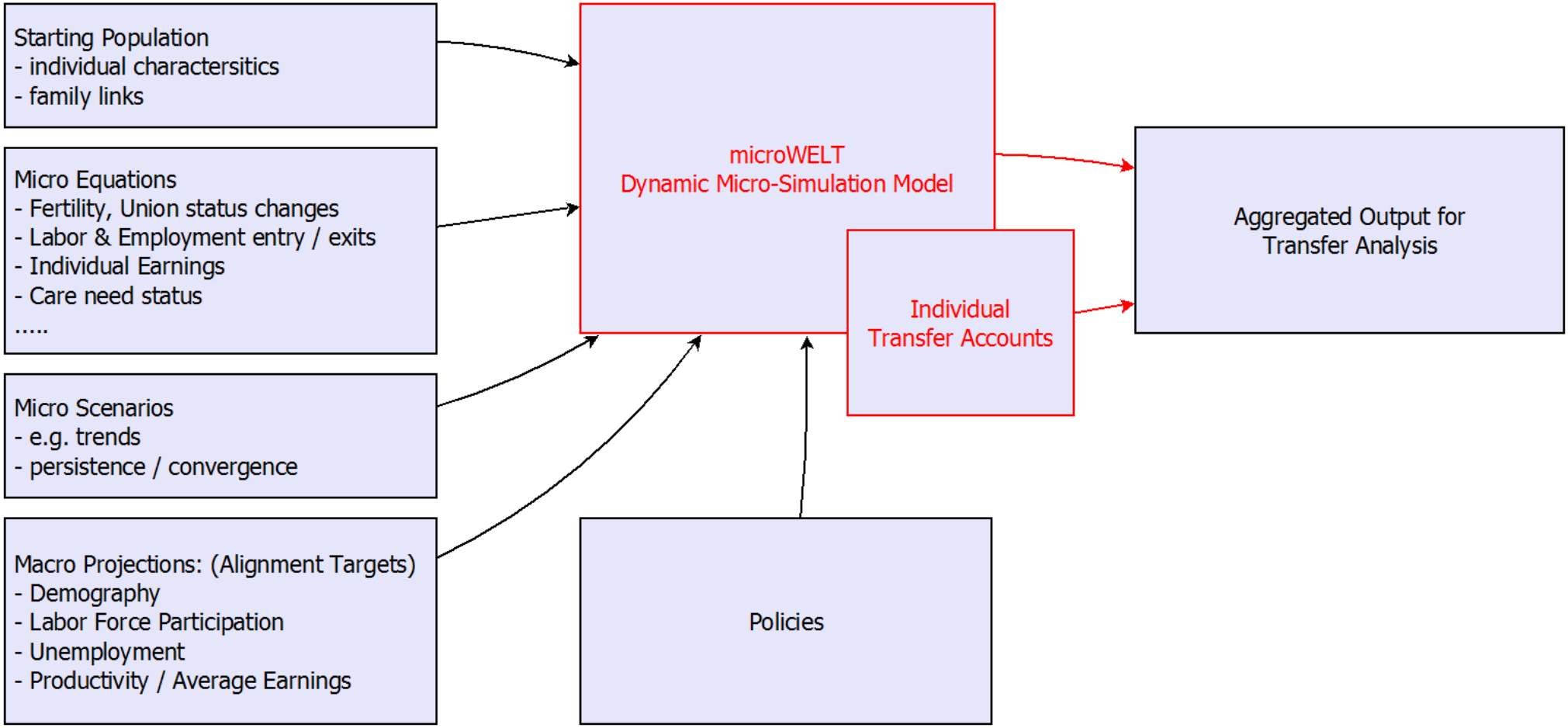
Modeling Regimes

- Behaviors: e.g. Demographic, LFP
- Risks: e.g. Unemployment
- Policies
- Transfer mechanisms

Components


Starting Population
- individual charactersitics
- family links
Micro Equations
- Fertility, Union status changes
- Labor & Employment entry / exits
- Individual Earnings
- Care need status
.....
Micro Scenarios
- e.g. trends
- persistence / convergence
Macro Projections: (Alignment Targets)
- Demography
- Labor Force Participation
- Unemployment
- Productivity / Average Earnings
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Dynamic Micro-Simulation Model
Individual
Transfer Accounts
Policies
Aggregated Output for
Transfer Analysis

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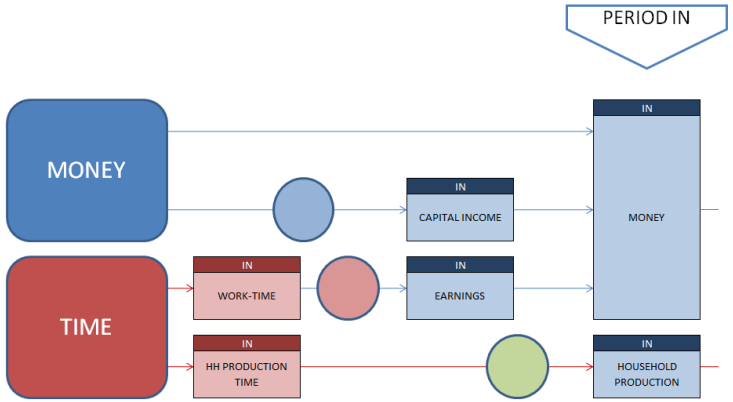
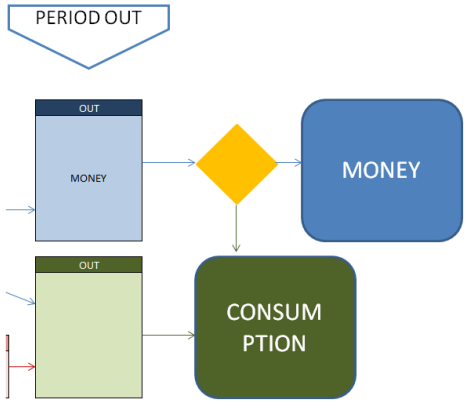
Components

- Demography: Births, Unions, Mortality
- Labor Force Participation, Employment and Earnings
- Unemployment and Unemployment benefits
- Child-Care
- Education
- Health
- Long-term Care
- Pensions
- Social Assistance
- Transfer Accounting

Individual Periodic Accounting

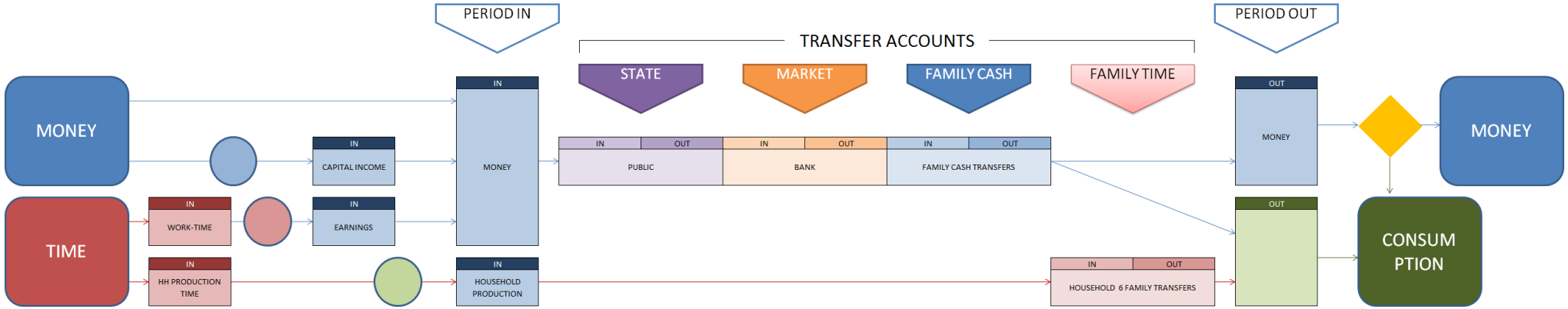


IN ≠ OUT



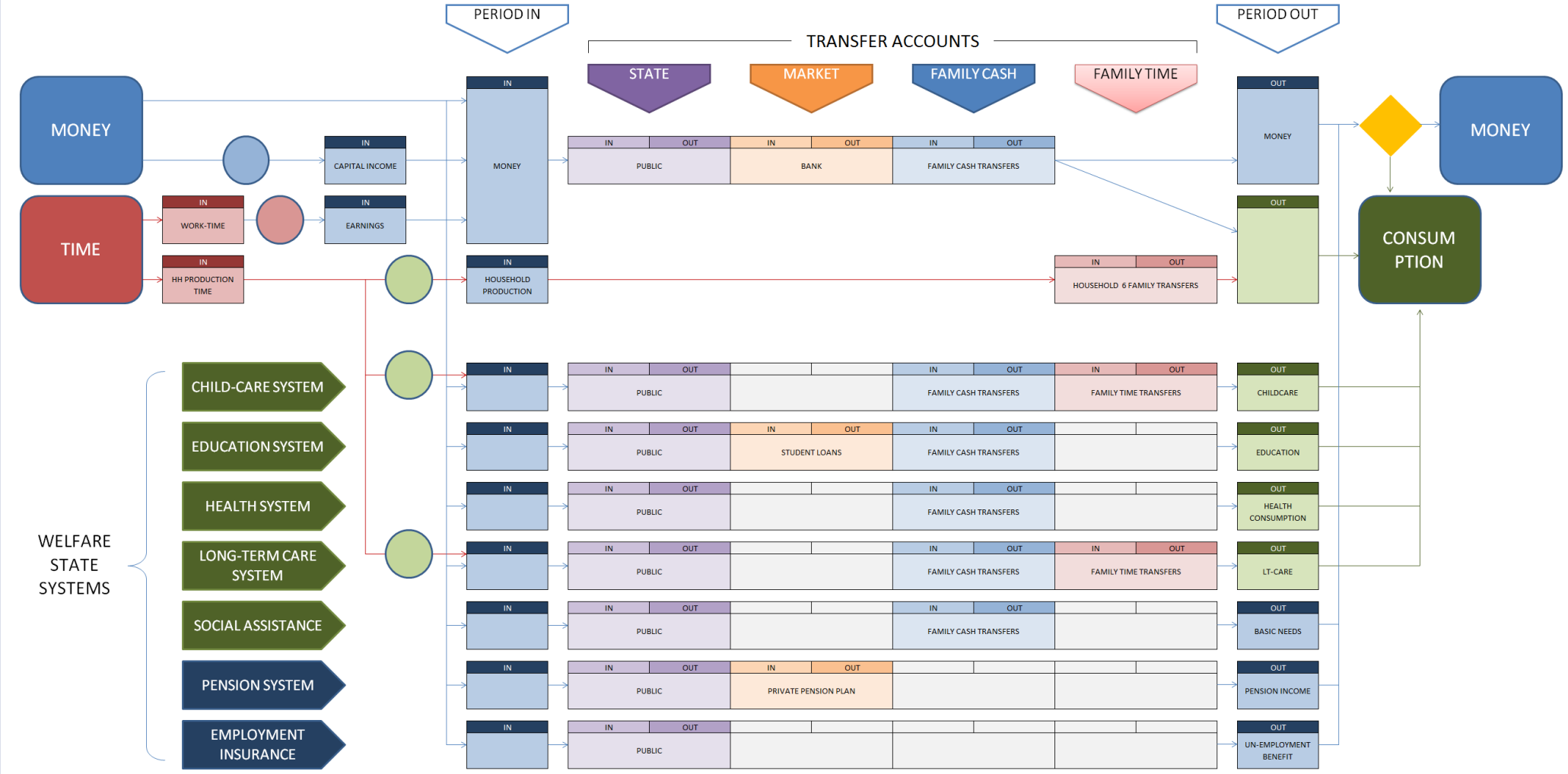
- **Periodic IN ≠ OUT**
  - **Transfers within family**
  - **Taxes, social insurance contributions, benefits**
  - **Savings, loans, insurances**

Individual Periodic Accounting



- Various transfer mechanisms
  - Markets - family – state
  - Mix of mechanisms depends on welfare state regime
  - Some sub-systems in core of welfare state regimes

Individual Periodic Accounting



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Where are we now?

- **Population I/O:**
  - **Starting population of observations, supporting weights, households (nuclear families)**
  - **Actors created from observations by sampling/cloning (size is parameter; output scaled; links to HH head).**
  - **Output (single moment or panel) of selected variables**

- **Related/Template: DYNAMIS-POP**

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Where are we now?

- **Mortality**
  - **Standard life table by sex**
  - **Period life expectancy at specific ages by education and sex**
  - **Standard life table automatically calibrated to meet period goals by sex and education**

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Where are we now?

- **Fertility**
  - **Model 1: Period age-specific fertility. Can be used for aligning output**
  - **Model 2: Micro models by birth order, education, school attendance, time since past birth, partnership status**

- **Related/Template: DYNAMIS-POP, DyPenSi**

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Where are we now?

- **Education**
  - **Cohort fate model: outcome (5 levels) and study pattern decided at first school entry**
  - **Outcome dependent on parents education and sex. Can be aligned to overall distribution by birth cohort**
  - **Collection of typical study patterns: by level, type, fulltime/part-time attendance**
  - **Imputation of study careers matching observations of highest attainment and current enrolment in start population**

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Where are we now?

- Labor Force Participation
  - Micro-Modes for first entrance and i/o transitions based on age, sex, education, state durations, family; retirement policies
  - Optional Macro Targets: LFP by age, sex and period
- Employment
  - Micro-Modes for employment/unemployment transitions based on age, sex, education, state durations, family
  - Optional Macro Targets: Unemployment rates by age, sex and period
- **Template/Related Models: DyPenSi**

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Outlook

- **Step 1:** Base model for Austria based on internationally available data early 2018
- Platform idea taken serious: developed in parallel with:
  - Austria: Economic Integration of Immigrants
  - World Bank: (Mauretania/Nepal) Population, education
  - Slovenia: Extensions of DyPenSi next 5 years
- **Step 2:** refinement & international replication / extensions of collection of policies..
- **Step 3**: validation and … Use for analysis
- More at the next IMA ☺