



Ageing Europe – An Application of
National Transfer Accounts for Explaining
and Projecting Trends in Public Finances

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National (Time) Transfer Accounts Workshop

Quantifying Economic Dependency

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Economic Dependency Measures

Characteristic feature of the economic life course:

- **Periods of economic dependency:** childhood and old age (retirement).
- Population ageing leads to an **increase of the dependent population relative to the total population.**

Dependency ratios:

- Measure the **degree of economic dependency** and their expected change due to population ageing.
- Provide information about **economic consequences of population ageing** and are used to guide and legitimate policy.
- Results depend strongly on the **exact definition of dependency.**

Definition and Calculation of Dependency Ratios

$$DepRatio = \frac{\sum_{i=1}^N Dep(X_i)}{\sum_{i=1}^N Sup(X_i)}$$

$Dep(X_i)$... measure of dependency, function of the characteristics X_i of individual i

$Sup(X_i)$... measure of the ability to support others

Examples:

	Dep(.)	Sup(.)	
Demographic dependency	1 if age<15 or age>=65,	1 if age>=15 and age<65	Number of children and elderly per person in working age.
	0 otherwise	0 otherwise	
Employment based dep.	1 if non-employed,	1 if employed	Non-employed persons per employed person.
	0 otherwise	0 otherwise	

Comparison of 4 different economic dependency ratios:

1. Based on **labour activity status**
2. Based on **consumption and labour income**
3. Based on **consumption, savings and labour income**
4. Based on **public net transfers**

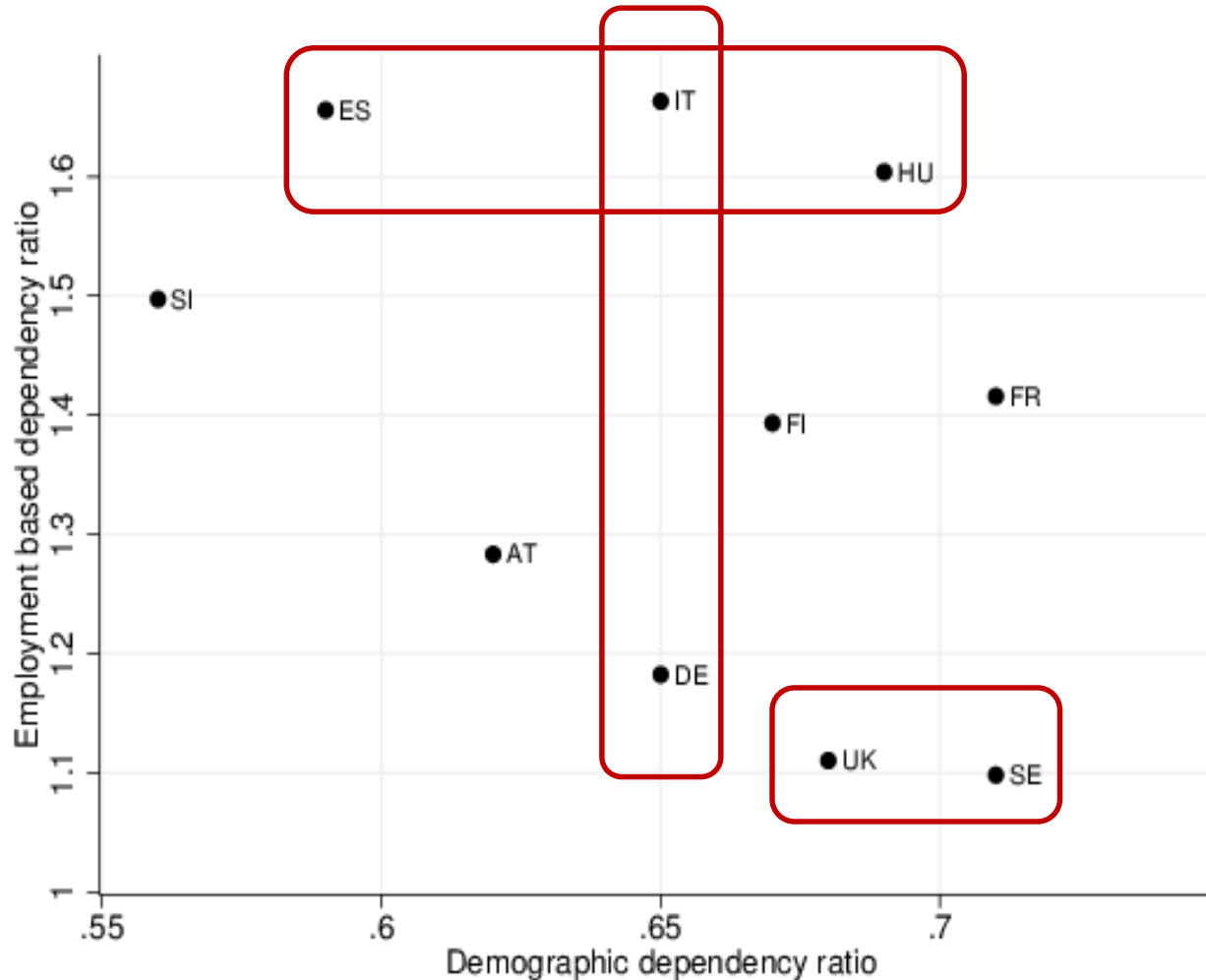
Employment Based Dependency Ratio

$$DR_{empl} = \frac{\text{Child.} + \text{Unempl.} + \text{Domestic} + \text{Retirees} + \text{Other inact.}}{\text{Employed persons}}$$

Country	Demographic DR	Employment based DR	
AT	0.62	1.28	
DE	0.65	1.18	
ES	0.59	1.66	high unemployment
FI	0.67	1.39	
FR	0.71	1.42	
HU	0.69	1.60	unemployment, retirees
IT	0.65	1.66	unemployment, low female LFP, retirees
SE	0.71	1.10	
SI	0.56	1.50	retirees
UK	0.68	1.11	

Employment Based vs. Demographic Dependency Ratio

$$\frac{\text{Age} < 15 \text{ or Age} > 65}{\text{Age } 16 - 64} \neq \frac{\text{non - employed}}{\text{employed}}$$



Economic Dependency from a Life Cycle Perspective: NTA dependency ratio

Need to consider also

- **degree of dependency** within dependent population
- **degree of economic ability** of those who support others



age-specific **difference of average consumption and income** based on NTA

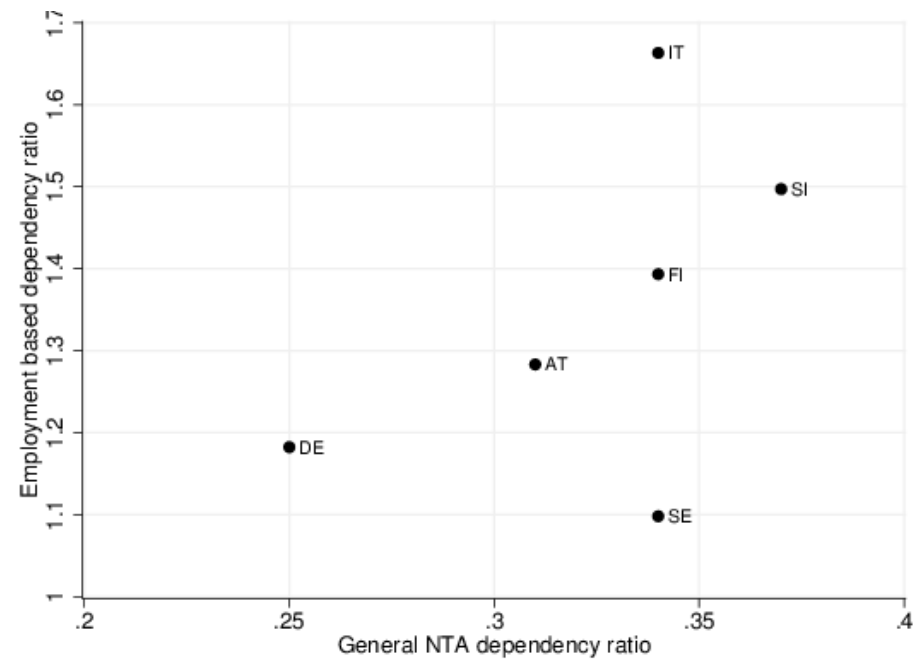
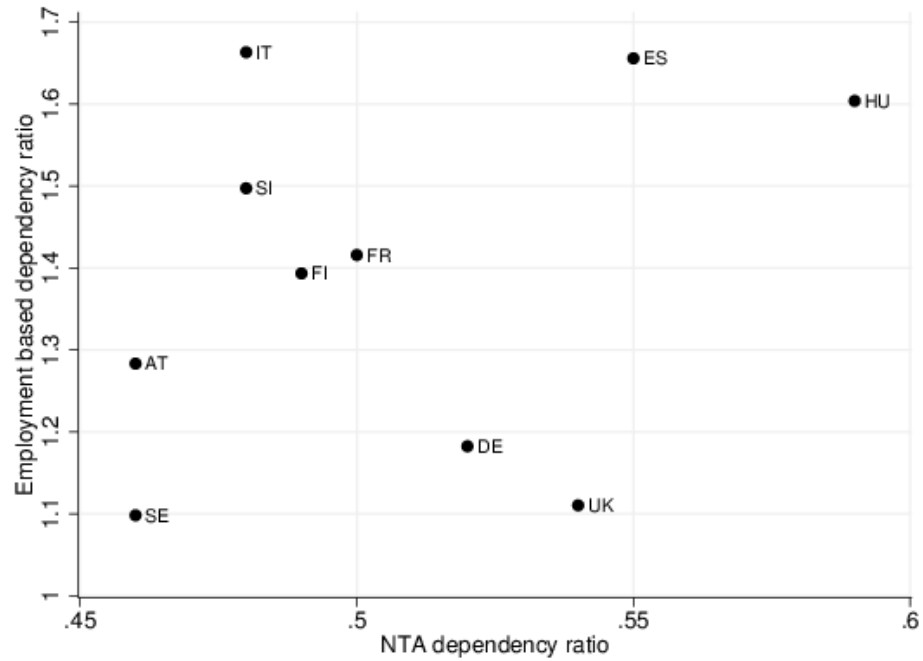
Dependency Ratios Based on NTA

Name	Dep(.)	Sup(.)	Interpretation
NTA dependency	Consumption less labor income of children and elderly	Labor income	Amount of consumption of children and elderly relative to labor income
General NTA dependency	Consumption <u>plus saving</u> less <u>total</u> income of children and elderly	<u>Total</u> income	Amount of cons. & sav. of children and elderly relative to total income
Public dependency	Net public benefits of children and elderly	Taxes and social contributions	Extent of public net redistribution b/w age groups

Dependency Ratios Based on NTA

NTA DR	Value	Explanation
Austria	0.46	high saving, favorable age-structure
Spain	0.46	favorable age-structure
Italy	0.59	low saving (= high cons. relative to income)
General NTA DR		
Germany	0.25	reliance on assets in old age
Slovenia	0.37	early retirement, reliance on public transfers
Public DR		
UK	0.28	lower role of public transfers in old age
Italy	0.45	old population, public dissaving
Slovenia	0.45	early retirement, importance of public transfers in old age

NTA Dependency vs. Employment Based DR



Summary

Economic dependency determined by:

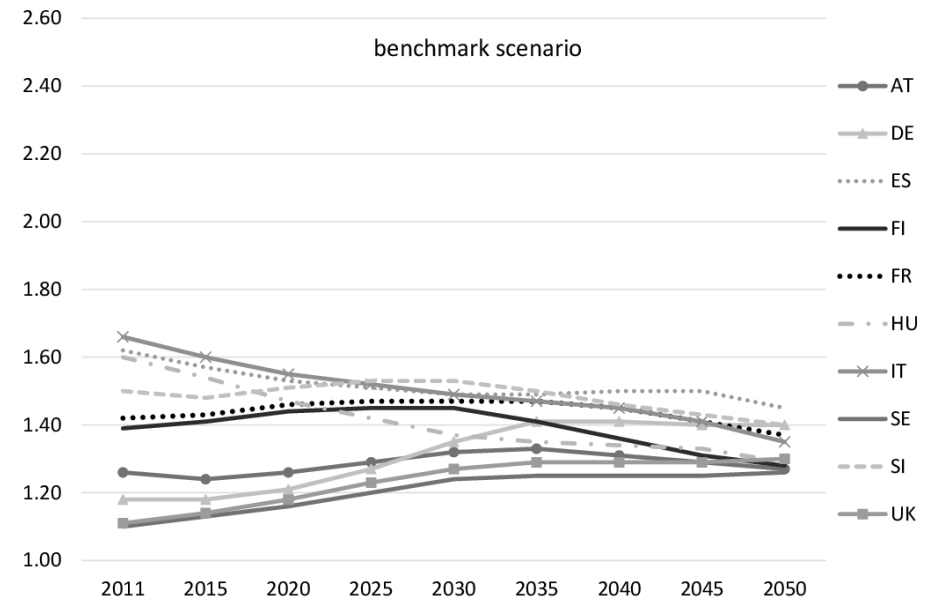
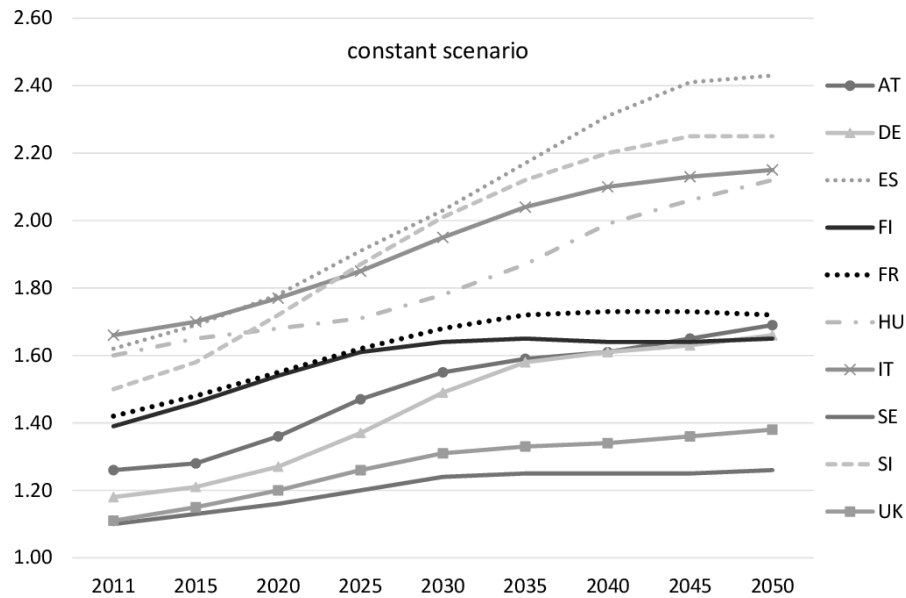
- demography
- age-specific type and intensity of economic activity
- definition of dependency

How **dependency rates are** defined plays a crucial role in how we think about the dependency.

Simulations of Employment Based Dependency Ratio

Various scenarios for employment based dependency:

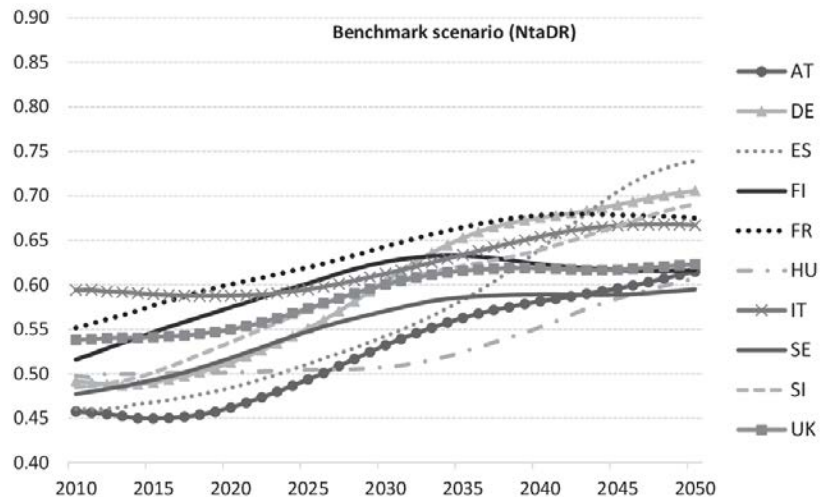
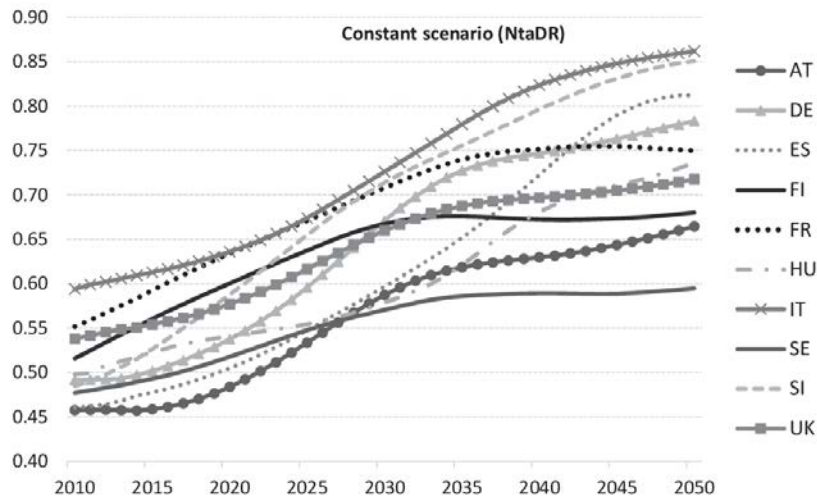
- **Constant scenario** – keep employment rates constant
- **Benchmark scenario** - gradually achieve Swedish employment



Simulations of NTA Dependency Ratio

Various scenarios for NTA based dependency:

- **Constant scenario** – keep age specific consumption and labor
- **Benchmark scenario** - gradually achieve Swedish patterns



NTA Dependency – Age Borders

Age Borders	NTA DR		General NTA DR		Public DR	
	pos. until	pos. from	pos. until	pos. from	pos. until	pos. from
Austria	24	59	22	60	19	60
Finland	26	59	22	60	21	59
France	23	59			21	60
Germany	26	60	25	65	22	61
Hungary	24	58				
Italy	27	60	25	62	21	60
Slovenia	25	58	25	59	21	56
Spain	27	61				
Sweden	25	64	24	64	22	64
United Kingdom	27	59			21	63