Quantifying economic dependency: European National Transfer Accounts and its applications

5th International Workshop on the Socio-Economics of Ageing 27 October 2017, Lisbon, Portugal

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FOR DEMOGRAPHY AND GLOBAL HUMAN CAPITAL

Motivation



Figure 1. Per-capita labor income and consumption by age in India (left) in 2004 and in Germany right) in 2003. *Source:* Lee and Mason forthcoming, Figure 1.3.

Motivation



Figure 2. Aggregate labor income and consumption by age in India (left) in 2004 and in Germany (right) in 2003. *Source:* Lee and Mason forthcoming, Figure 1.3.

Motivation

Need to understand reallocation of resources across age, i.e. the whole system of intergenerational transfers private, public, market, non-market

National Transfer Accounts (NTA):

SNA: flows between institutions (households, government, etc.) **NTA**: including age into SNA \rightarrow flows among **cohorts** in a given year

Global NTA



Global NTA

http://www.ntaccounts.org/web/nta/show

European NTA/NTTA

http://dataexplorer.wittgensteincentre.org/shiny/nta/

European NTA



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

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 613247.

http://www.agenta-project.eu

NTA Methodology

Flow Account identity





Financing of life cycle deficit

life cycle deficit can be financed through:

a) public transfers (health, pensions, unemployment, ...)

b) private transfers (e.g. parents financing consumption of children)

c) asset-based reallocation (savings, interests on bonds, dis-saving, selling house)

These flows are mediated by

public and private institutions

"The mechanisms by which assets are shifted across age groups is important because it determines whether population ageing leads to accumulation of assets or to the expansion of public and private transfer programs." (Mason and Lee 2006)



Quelle: Bernhard Hammer (2014) The Economic Life Course: An Examination Using National Transfer Accounts. PhD thesis, TU Wien

Labour income and consumption in the EU countries, 2010



Life Cycle Deficit – comparative European setting



Financing the Life Cycle - Austria



Life Cycle Deficit financing for ages 0-19



Life Cycle Deficit financing for ages 65+



Financing the life-cycle deficit – Europe vs. World



Figure 1: Financing the life cycle deficit in the EU (10 countries, 70% of people living in the EU) and around the world (29 countries, 67% of mankind), per capita figures, 2000 Source: Gál (2015), data from www.ntaccounts.org

Quantifying economic dependency

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

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

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

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



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

Name	Dep(.)	Sup(.)	Interpretation
NTA dependency	Consumption less labour income of children and elderly	Labour income	Amount of consumption of children and elderly relative to labour 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, favourable age-structure
Spain	0.46	favourable 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 – Age Borders

Age Borders	NTA	DR	General	NTA DR	Publi	c 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

NTA Dependency vs. Employment Based DR



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



Summary

Economic dependency determined by:

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

Effective ways to decrease economic dependency

- use of labour force potential in working age
- later retirement
- use of assets for old age provision

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

Adding time transfer accounts to NTA = NTTA

Gender specific NTA

Females generate a lower life cycle surplus compared to males



Are males supporting the life cycle deficit of females ?

Adding non market work- time transfer accounts

Females produce more than they consume of unpaid work (with the exception of the young age groups)



The life cycle deficit for **males** is higher and it is always positive in case of Italy.

NTTA by gender

Gender differences are lower compared to NTA



NTA by education

Labour income & consumption by education - Austria







Quelle: Bernhard Hammer (2015) National Transfer Accounts by Education: Austria 2010, AGENTA Working paper 2/2015

Discussion

- Consequence of population ageing not just determined by demographic change but to large extend by design of economic life cycle
- LCD as a new measure of dependency that takes into account agespecific levels of production and consumption
- To maintain the fiscal sustainability of the current public transfer system in many European countries requires changes in the design of the average economic life cycle
- Reforms of the transfer system need to take into account not only public transfers but also private transfers, particularly those in form of services to other household members through unpaid work

Time transfers (from parents to children) constitute a fundamental part of the welfare system – **investment in human capital of children is the source of future benefits!**

However household labour is not recognized by society & creates no eligibility to public services.



"Over coming decades, changes in population age structure will have profound implications for the macroeconomy, influencing economic growth, generational equity, human capital, saving and investment, and the sustainability of public and private transfer systems. How the future unfolds will depend on key actors in the generational economy: governments, families, financial institutions, and others. This pathbreaking book provides a comprehensive analysis of the macroeconomic effects of changes in population age structure across the globe."

European National Transfer Accounts Data Explorer

The European National Transfer Accounts data can be downloaded using the data explorer at <u>http://www.wittgensteincentre.org/ntadata</u>

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About NTA 2010 Data NTA Data NTA Var	riables	O O agent
European Nation	al Transfer Accounts 2010	Asset Lines - Ar Architecture Asset Lines - Ar Architecture Article Lines - Ar Architecture Architecture - Ar Architecture Architecture - Ar Architecture Architecture - Ar Architecture Architecture - Ar Architecture - Architecture - Ar Architecture - Architecture - Architecture - Ar Architecture - Archite
Countries	Central NTA Variables	Non-central NTA Variables
EU25 Population Avg. refers to the average individual in the 25 included countries. EU25 Country Avg. to the average over all countries not weighted by population size	Labour income (YL) Consumption, private (CF) 4 Consumption, public (CG)	For a description of the variables and their abbreviation check the list of NTA variables.
Belgium Bulgaria		
Select/deselect all	Units	Seise Sex
	Norm	i⊋ Total ⊋ Men
		Women
his plot displays the selected variables for each country. Belglum	Age-Profiles of Selected Variables by Countries	Bulgarin
Belgium	Age-Profiles of Selected Variables by Countries	Bulgaria
Potential plot displays the selected variables for each country.	Age-Profiles of Selected Variables by Countries	Bulgaria Variatives - 1, VL - 3, CP - 4, OO Bes
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This plot displays the selected variables for each country.	Age-Profiles of Selected Variables by Countries	Bulgaria Uarables 1. YL 3. CP 4. OD 8. CP 4. DO 8. DO 8. CP 4. DO 8.

Feedback and Questions: If you encounter problems, have questions or feedback, please send an e-mail to: bemhard.hammer@oeaw.ac.at

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 813247.

Thank You