BEAT Barcelona Economic Analysis Team

ub.edu/beat

WMW Torino, 01/02/2023

INTERGENERATIONAL TRANSFERS IN THE NTA/NTTA FRAMEWORK

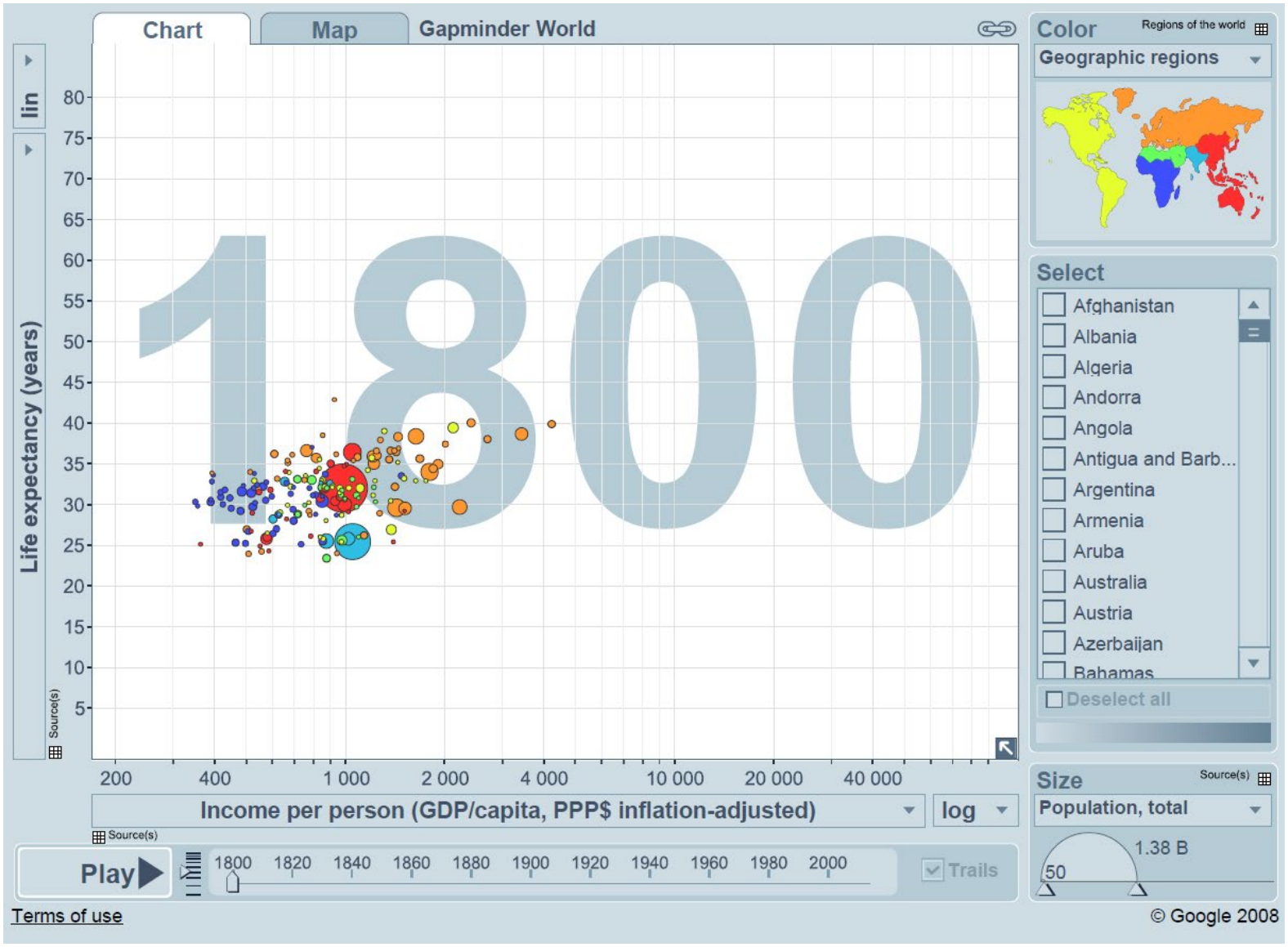
Ció Patxot (results presented are joint work with G. Abio and G. Souto and others authors)

WellCARE
Caring Over the Lifecycle

This project has received funding from the European Horizon 2020 program

JPI MORE YEARS BETTER LIVES

Demographic change and development: **Life expectancy** and **income** per capita



Source: www.gapminder.org

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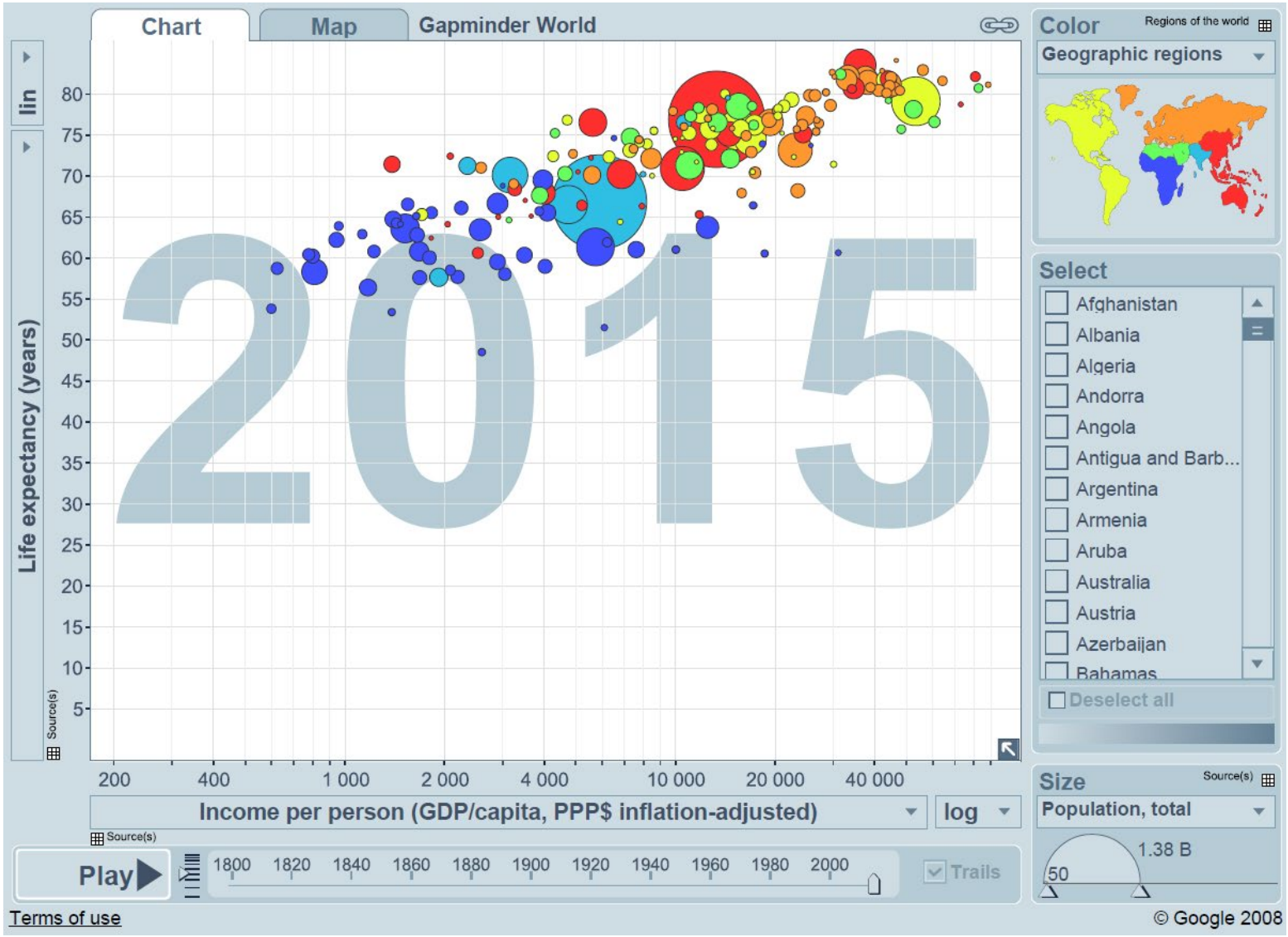

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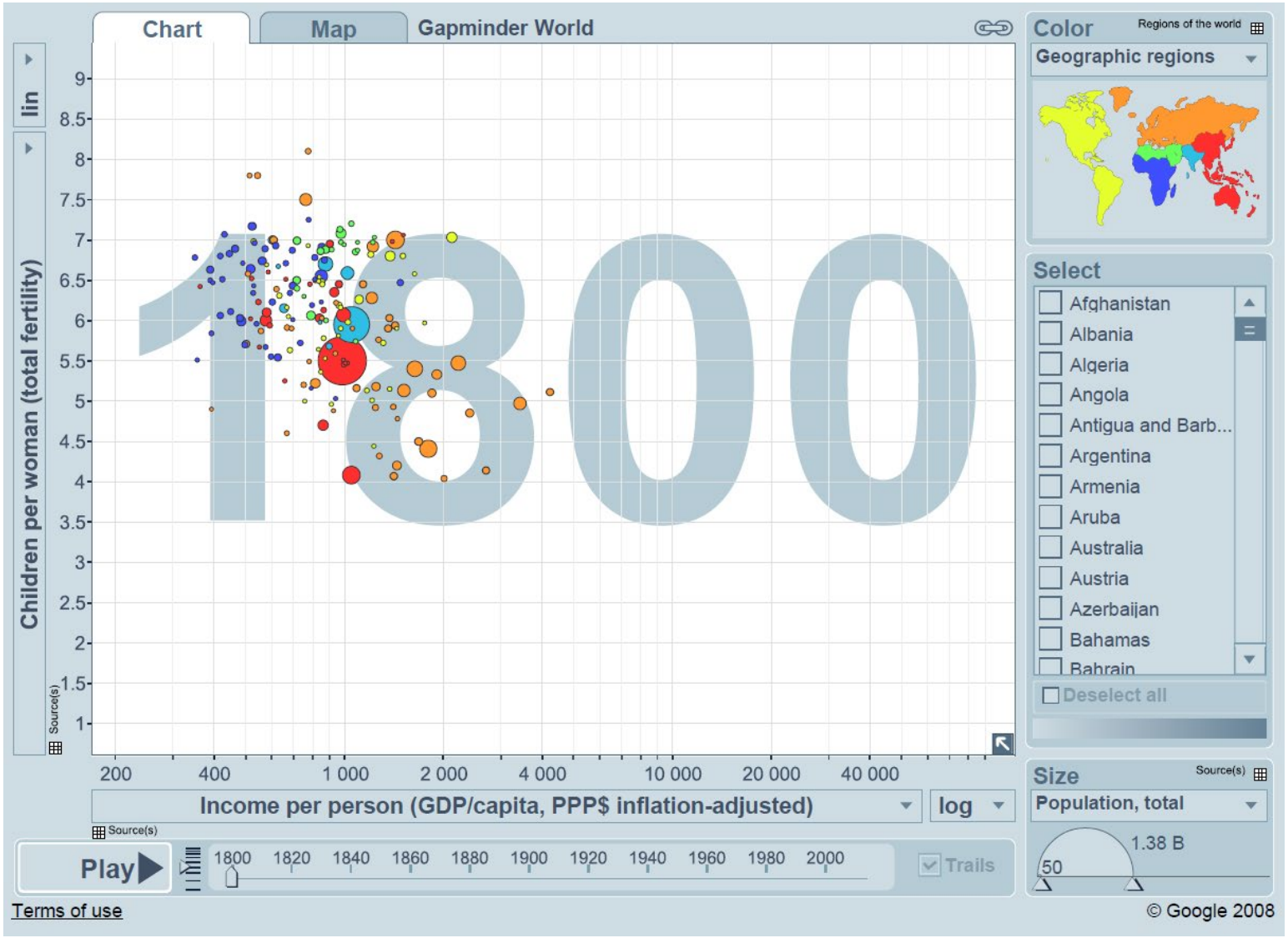
Demographic change and development: **Fertility** and **income** per capita



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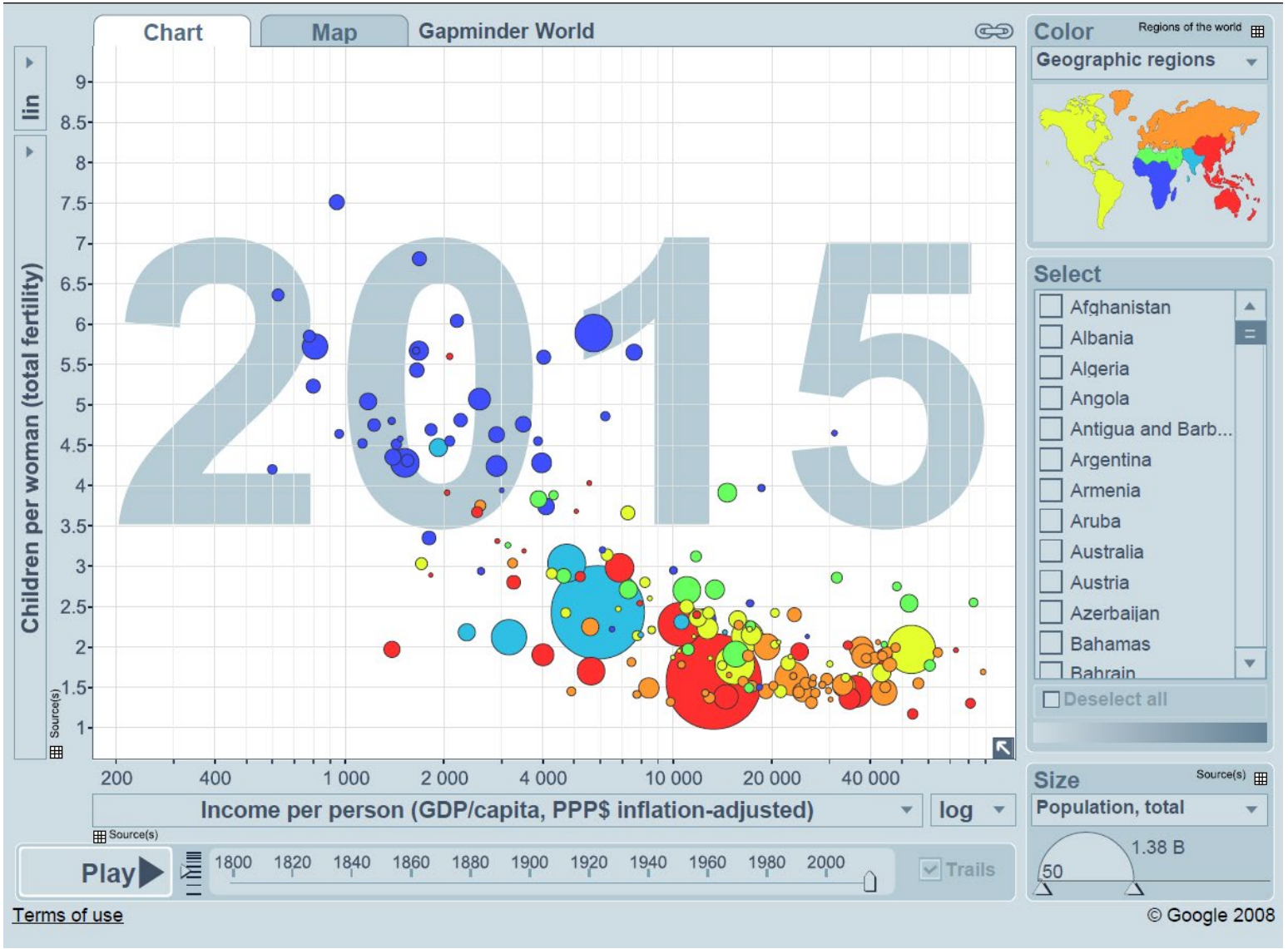

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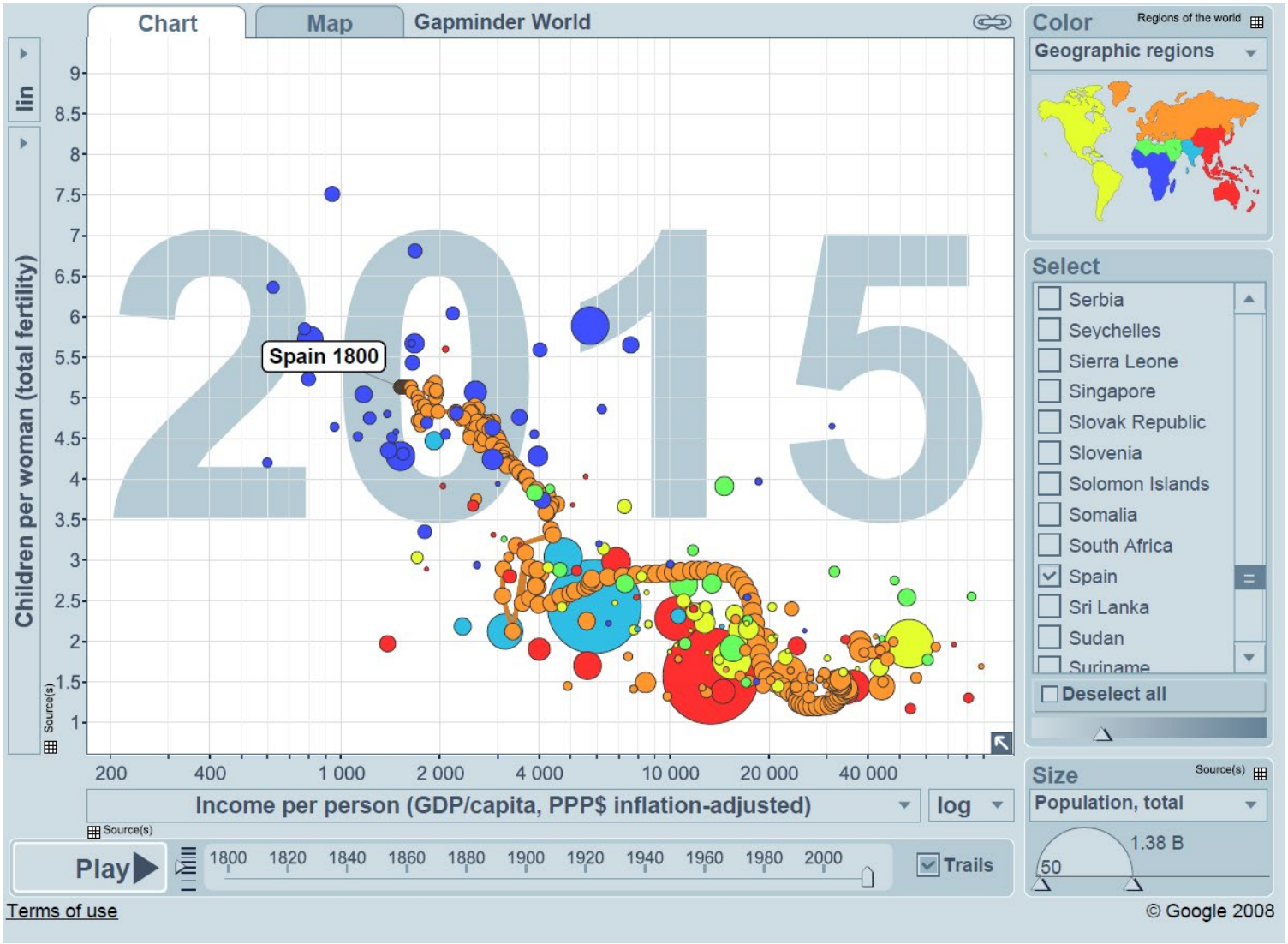

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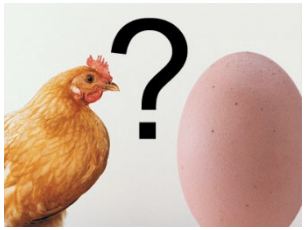
What happened?:
A strong social transformation process with three axis



Economic development
- Technological change
- Marketization

Demographic change
- Mortality decrease
- Fertility decrease
(+/- migration)

Political change
- Democratization
- Social policies development (Education, pensions, welfare state)

OUTLINE

1. The conceptual framework of the research program: The three axis of development
2. **Ageing and the reform of the pensions system**
    1. Quantifying the need for pension's reform in face of ageing
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3. Is that all? What about the rest of the welfare state?
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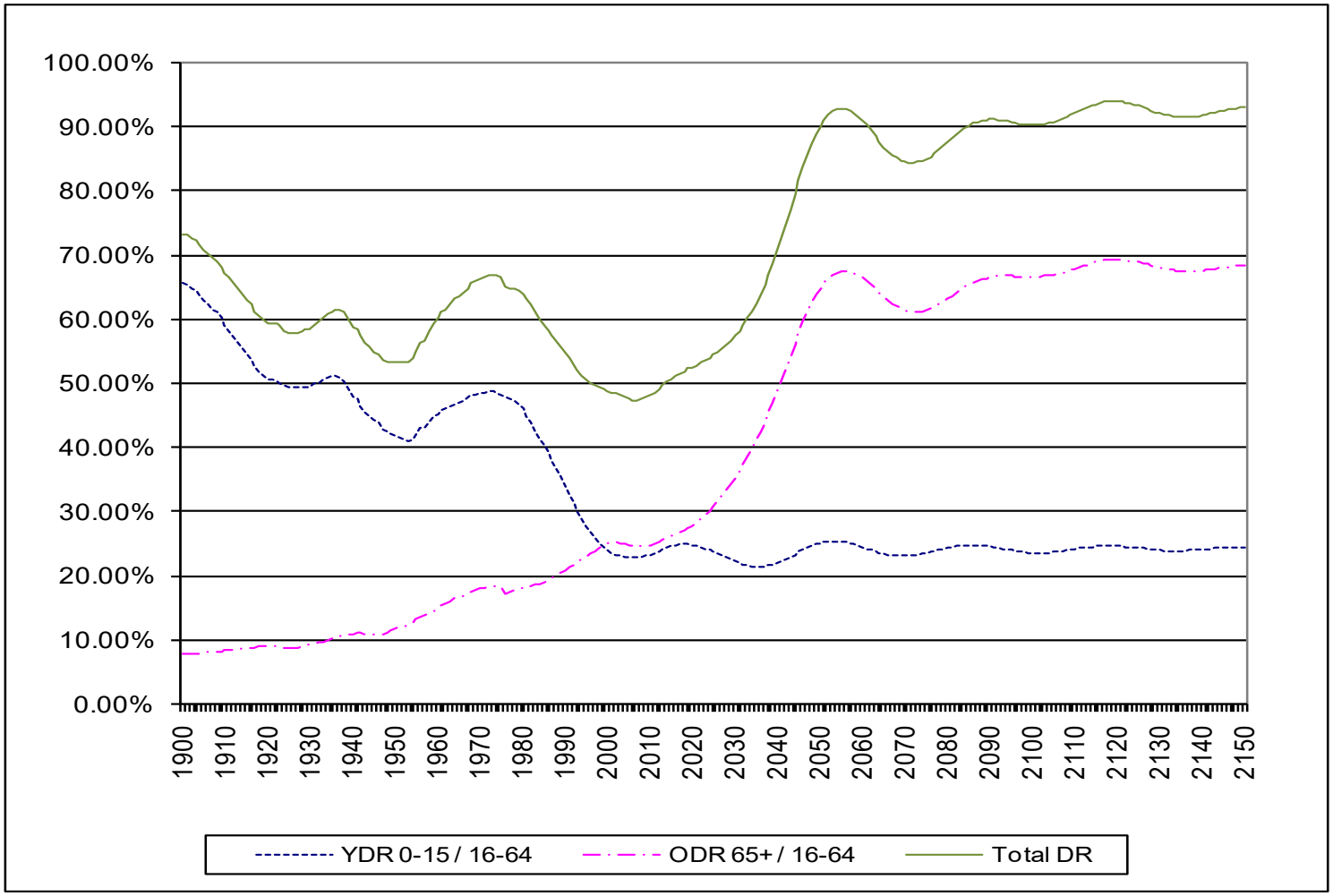
4. NTA applications

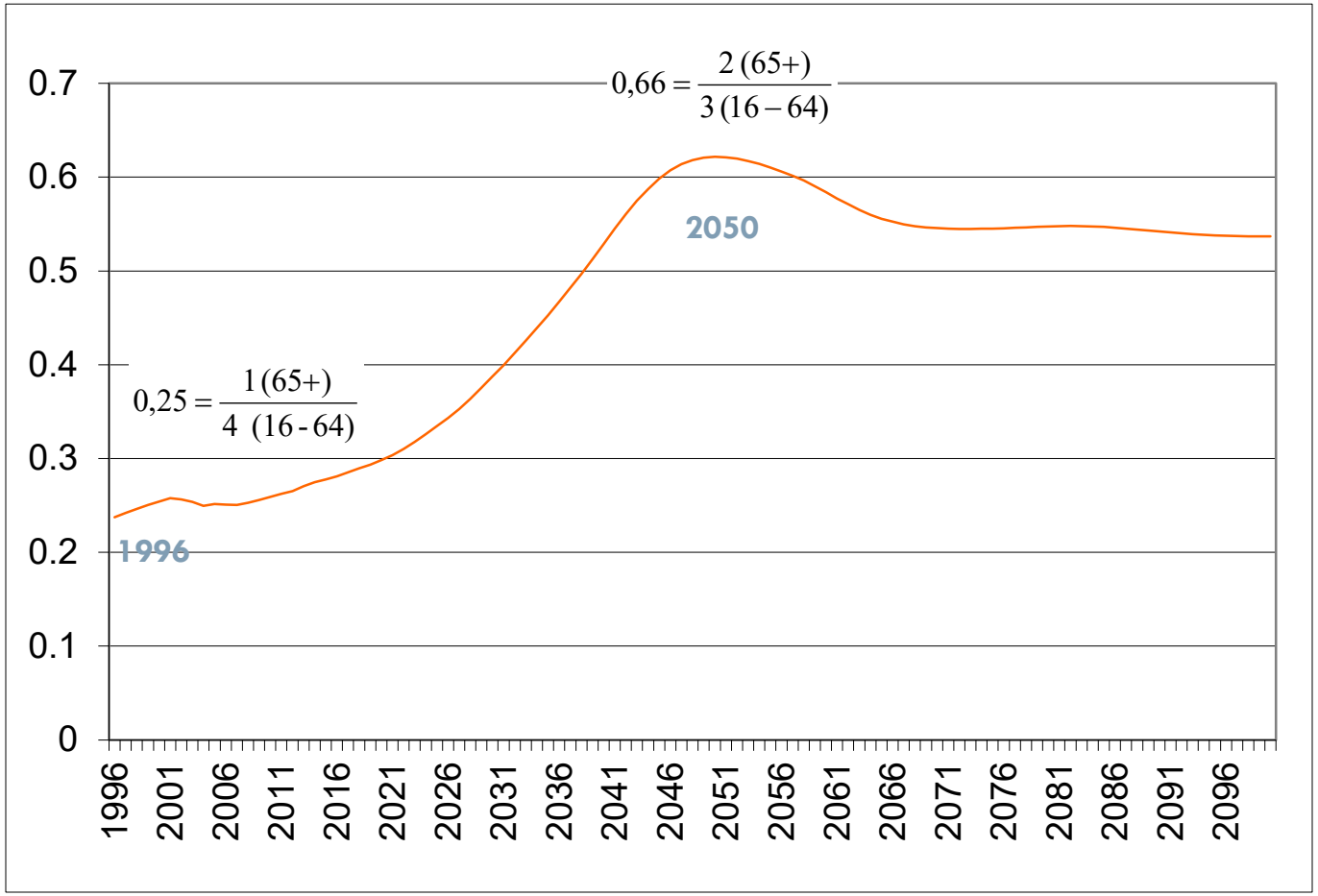
    .....
5. Final remarks

THE DEMOGRAPHIC TRANSITION IN SPAIN



Young and **O**ld **D**ependecy **R**atio

ZOOM IT: A HUGE INCREASE IN THE OLD DEPENDENCY RATIO (THE BABY BOOMERS RETIREMENT)



Source: INE (2005) Central scenario

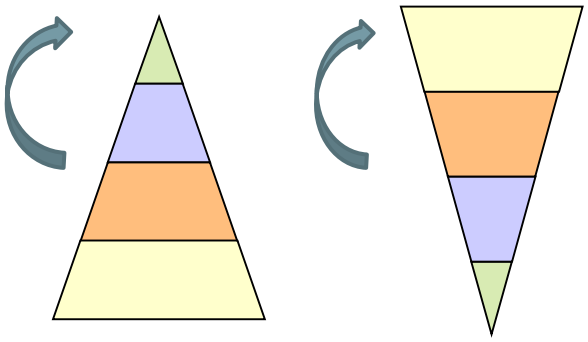
The sustainability of the pensions system: [Financing system: Pay-as-you-go versus capitalization]

Return of the Pay-as-you-go System

Depends on : population growth and productivity

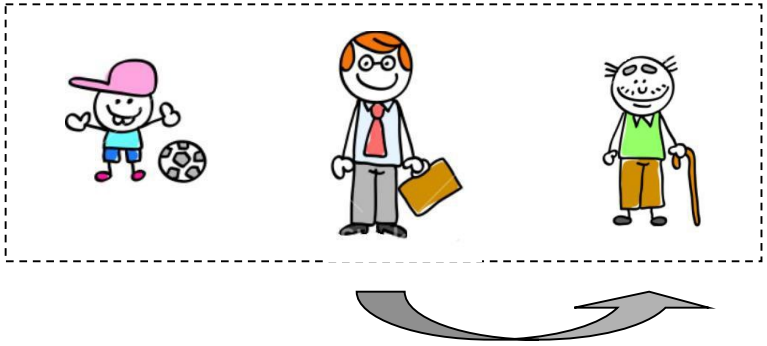
Necessary contributions/possible retirement pensions depending on the population structure:

Low High



Return of the capitalization system:

Depends on real interest rate (nominal – inflation)



Investment in financial assets

Demographic change:

Pyramid reversal → Pay-as-you-go System crisis

Solution?: Go for a capitalization system, but... "The **transition problem**"

- Workers bear 2 burdens: Keep the PAYG system and create funds. Unfeasible! But if it's not public and explicit, it will be implicit.
- Financial Crisis worsens returns

2.1. QUANTIFYING THE NEED FOR PENSION'S REFORM IN FACE OF AGEING

a) An illustrative calculation : From the budget constraint of the System

(PAYG) Revenue = Expenditure

$$w_t \cdot \tau_t \cdot L_t = N.Pens_t \cdot p_t$$

/ GDP = L*h

*/ Pop 16-64, Pop 65+

$$\frac{w \cdot \tau \cdot L}{h \cdot L} = \frac{65+}{16-64} \frac{1}{\frac{L}{16-64}} \frac{N^{o}Pens}{65+} \frac{p}{h}$$

- Contribution rate
- Dependency rate
- Invers Employment rate
- Coverage rate (pension entitlements)
- Replacement rate (System's "generosity")

p_t Average pension benefit (N=number)

w_t Wage

τ_t Contribution rate

L_t Employed population

Need for "parametric" reforms: Simplifying adjustment needed $2 * \tau$, or $\frac{1}{2} * \frac{p}{h}$

Unless other factors: delay in retirement age a sensible option with strong effect

2.2. Main decisions in the design of a pension system

Financing principle	Pay-as-you-go / fully funded
Financing sources	Wage-related contributions / general taxation
Inter-generational redistribution	Strong / nil
Universality	Universal / restricted coverage
Intra-generational redistribution	Flat benefit (Beveridge) / actuarial fairness (Bismark)
Organization	Public, private / involving unions and managers
Accounts	Collective / individualized
Efficiency	Strong / week distortions
What is defined	Defined benefit / contribution (or Musgrave law)
Trust	from nil to strong

Source: Belan and Pestiau (1999) with minor modifications

The main characteristics of social security systems in two polar cases

		Financing principle	
		Capitalization	**Pay-as-you-go**
		Return: Depends on the capital market	**Return:** Depends on demographics and productivity growth
Income redistibution	NO	Private: - Individual savings accounts - No intra/intergenerational redistribution (fully contributory), - More efficient	
	YES		Public universal system: - Collective accounts => - Some intergenerational redistribution (depending on DC, DB or Musgrave law) - Some distortion

Source: Own elaboration starting from Belan and Pestiau (1999)

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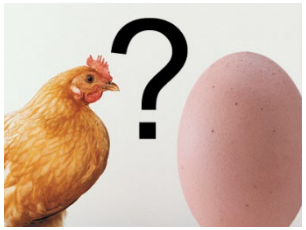
3. Is that all: What about the rest of the welfare State?

3.1. Rethinking the role of the welfare State:

- Income redistribution (initially only intragenerational)
- Merit or basic goods provision (Health, Education,..)
- Income substitution: unemployment, pensions (=>intertemporal resource assignment and insurance),...
- So that it gradually substitutes family transfers (forward and backward) Is that optimal? Is it improving welfare?...

What happened?:
A strong social transformation process with three axis



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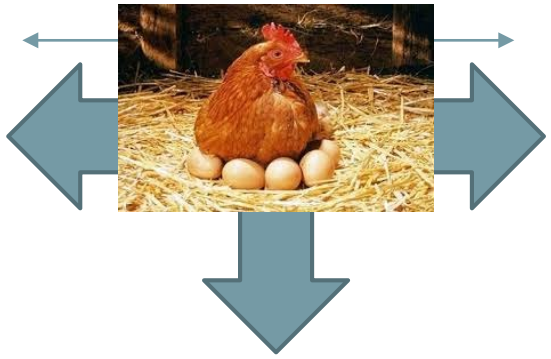
A strong social transformation process with three axis

Changes in family structure:
- Child labor
- Household labor division
- Fertility
- Women empowerment

Structure change
Rural exodus to cities



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Rethinking the role of the Welfare State (WS)

Changes in family structure:
- Child labor
- Household labor division
- Fertility
- Women empowerment

Economic development
- Technological change
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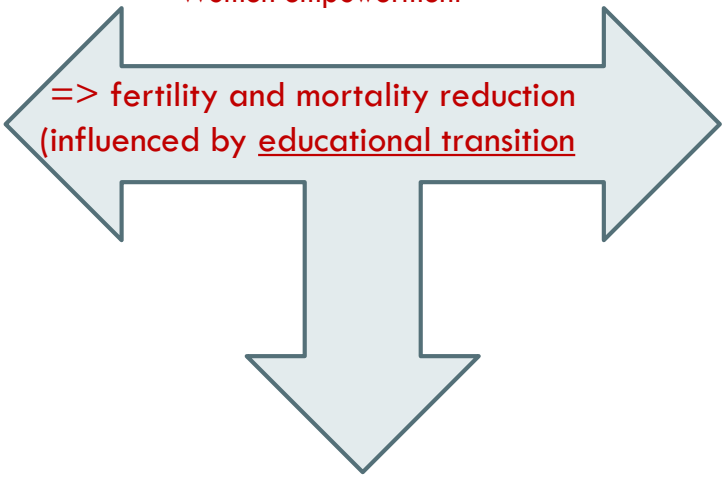


Demographic change
- Mortality decrease
- Fertility decrease
(+/- migration)

INTRA generational income redistribution +:
- Merit or basic gods provision
- Income substitution, insurance….

Political change
- Democratization
- Social policies development
(Education, pensions, welfare state)

WS: Substitutes family transfers =>
- INTER generational redistribution (more if PAYGO)
- It implies intertemporal shift of resources (government saving?)

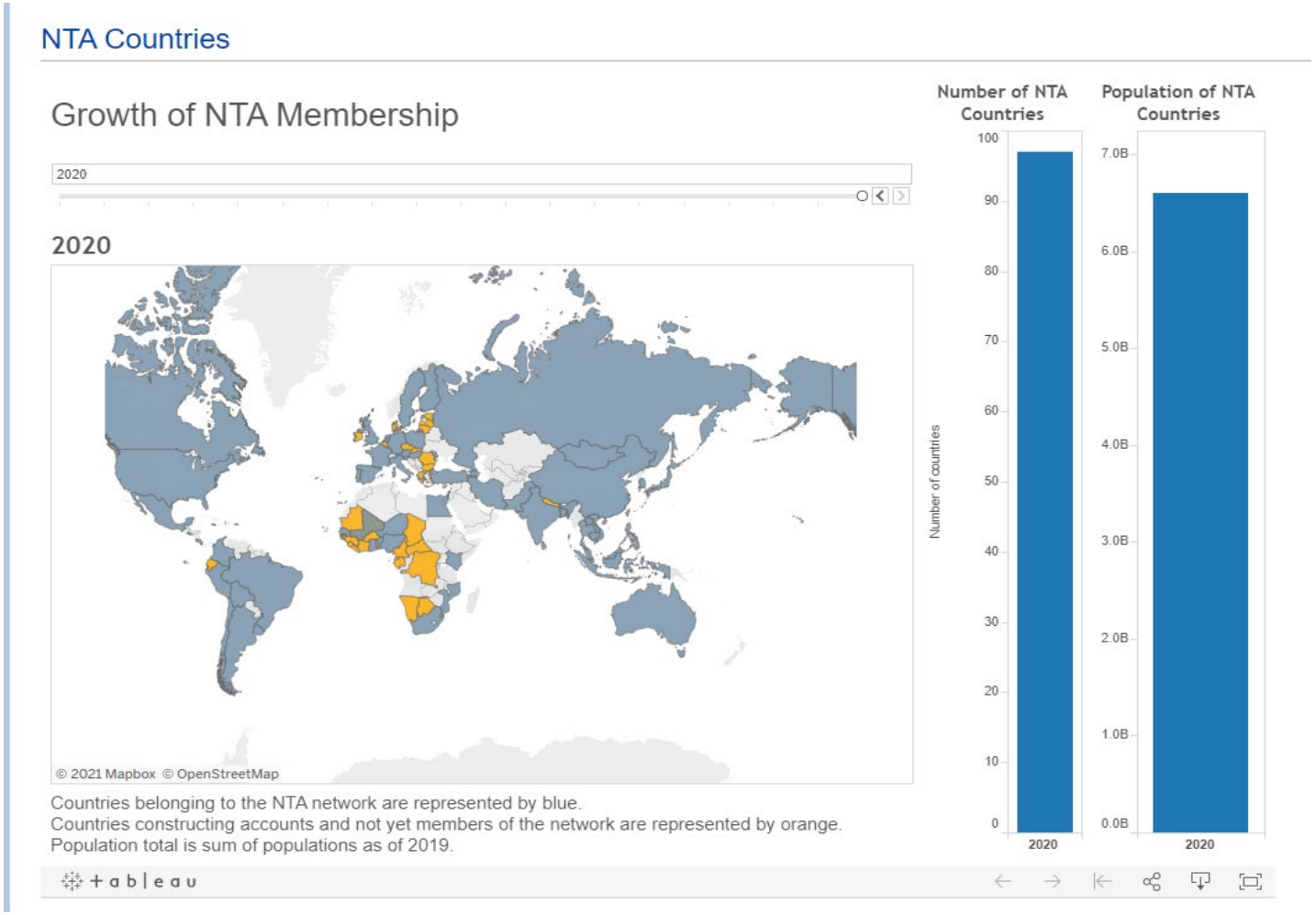
Reasons for private (and hence public) transfers?

Transfers in money and time in household production	Types	Private motives	Substitution by Market or Government	+/- Reasons for public intervention
To young dependents (Forward)	- Birth?! - Subsistence - Health care - Personal care - Education - Gifts, bequests, intervivos transfers	- Altruism (Forward) - Social contract - Exchange or reciprocity	Liquidity constraints prevent market substitution! Personal care difficult to substitute (Need to consider bargaining between parents)	+ Redistribution, equal opportunities and intergenerational mobility + External + effect on growth - External - effect on fertility affecting in turn future sustainability
Old dependents (Backward)	- Subsistence - Health care - Personal care - Gifts	- Altruism (Backward) - Social contract Exchange or reciprocity (Demonstration effect)	Personal and health care more substitutable for old dependents	- Redistribution - Myopia - Uninsurable risk (Long-term care)

Source: Patxot et al (2012) International Tax and Public Finance. DOI 10.1007/s10797-012-9220-5

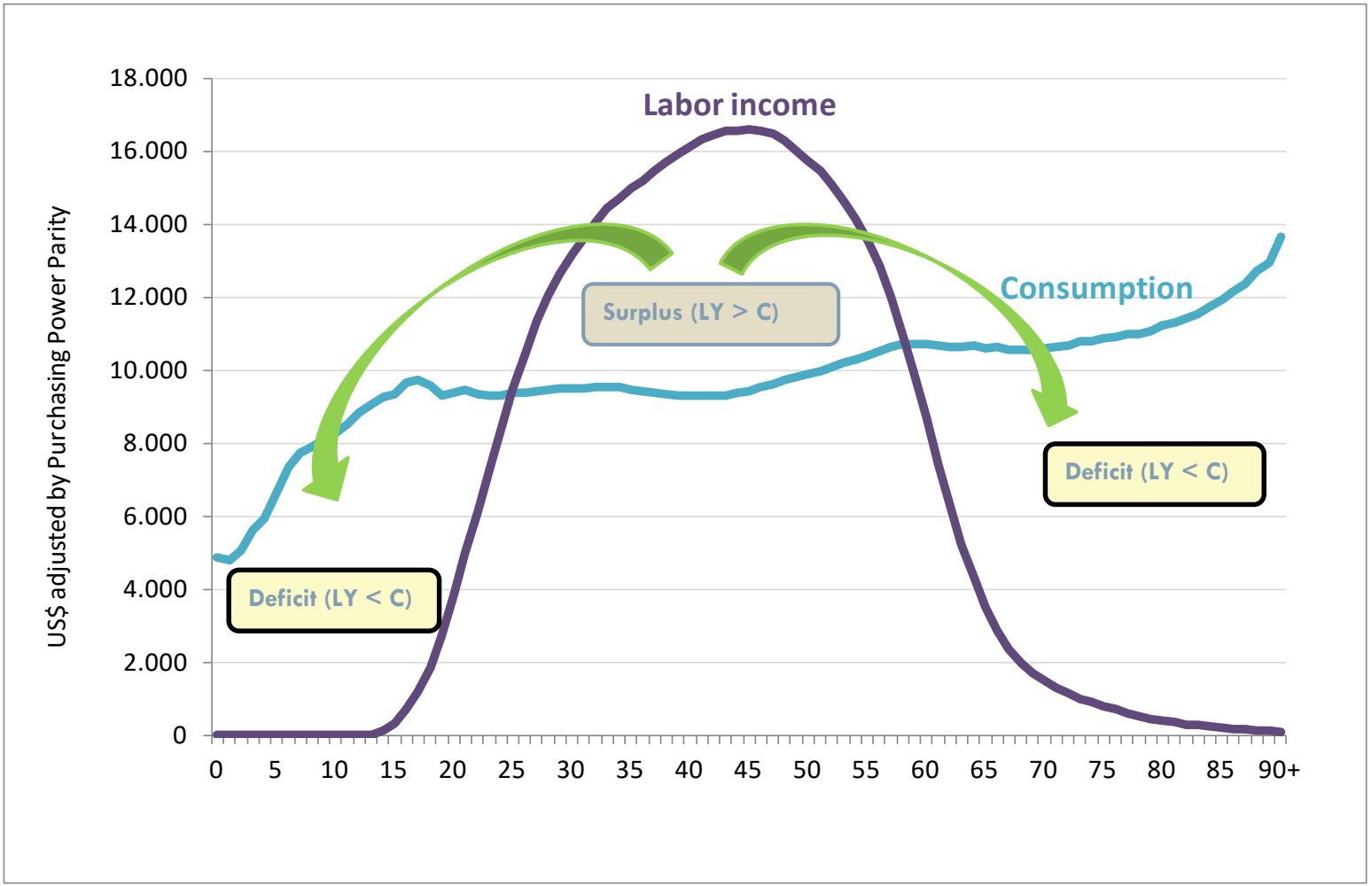
3.2. Quantifying forward and backward intergenerational transfers: the National Transfers Accounts (NTA) project

www.ntaccounts.org



NTA imputes SNA by age + estimation of family transfers

Quantifying forward and backward intergenerational transfers: the National Transfers Accounts (NTA) project: SNA by age



Surpluses finance deficits by: Asset based reallocations and transfers (public and private)

THE NTA IDENTITY

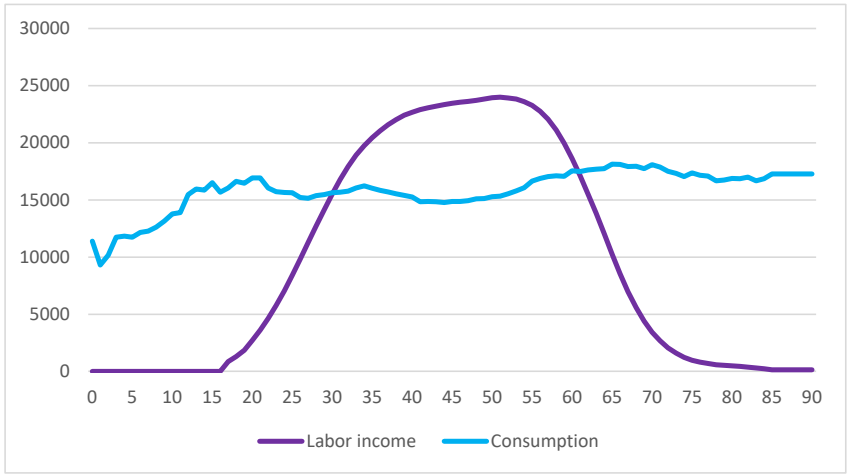
- The NTA project estimates the flow of resources among age groups.
- Starting from the SNA identity and rearranging:

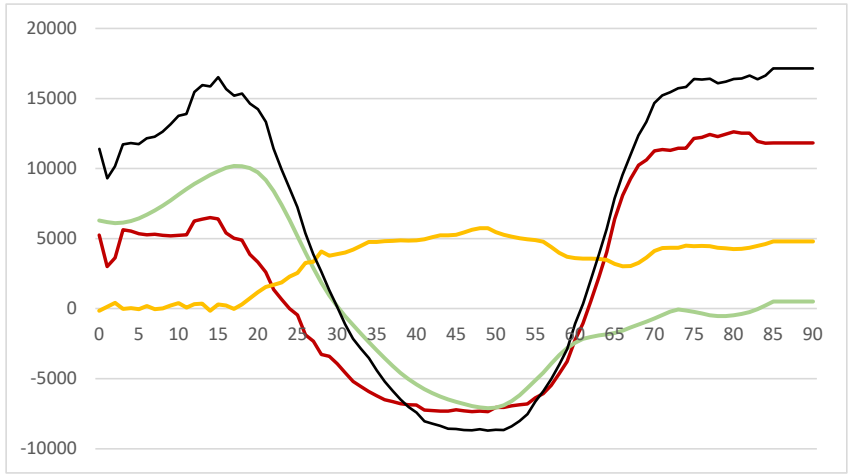
$$\underbrace{C_{x,s} - Y^{l}_{x,s}}_{LifeCicleDeficit} = \underbrace{TG^{+}_{x,s} - TG^{-}_{x,s}}_{PublicTransfers} + \underbrace{TF^{+}_{x,s} - TF^{-}_{x,s}}_{\mathrm{Pr}ivateTransfers} + \underbrace{Y^{a}_{x,s} - S_{x,s}}_{AssetBased\,\mathrm{Re}allocations}$$

- The equation holds at each age (x) and gender (s) and also at the aggregate level (uprate to NA aggregates)
- The household head (main earner) owns the assets, gives transfers and saves
- SNA by age + estimation of private transfers YF

THE NTA AGE PROFILES

Lifecycle Deficit (**LCD**) is financed using public (TG) or private transfers (TF) or Asset based reallocations (ABR)



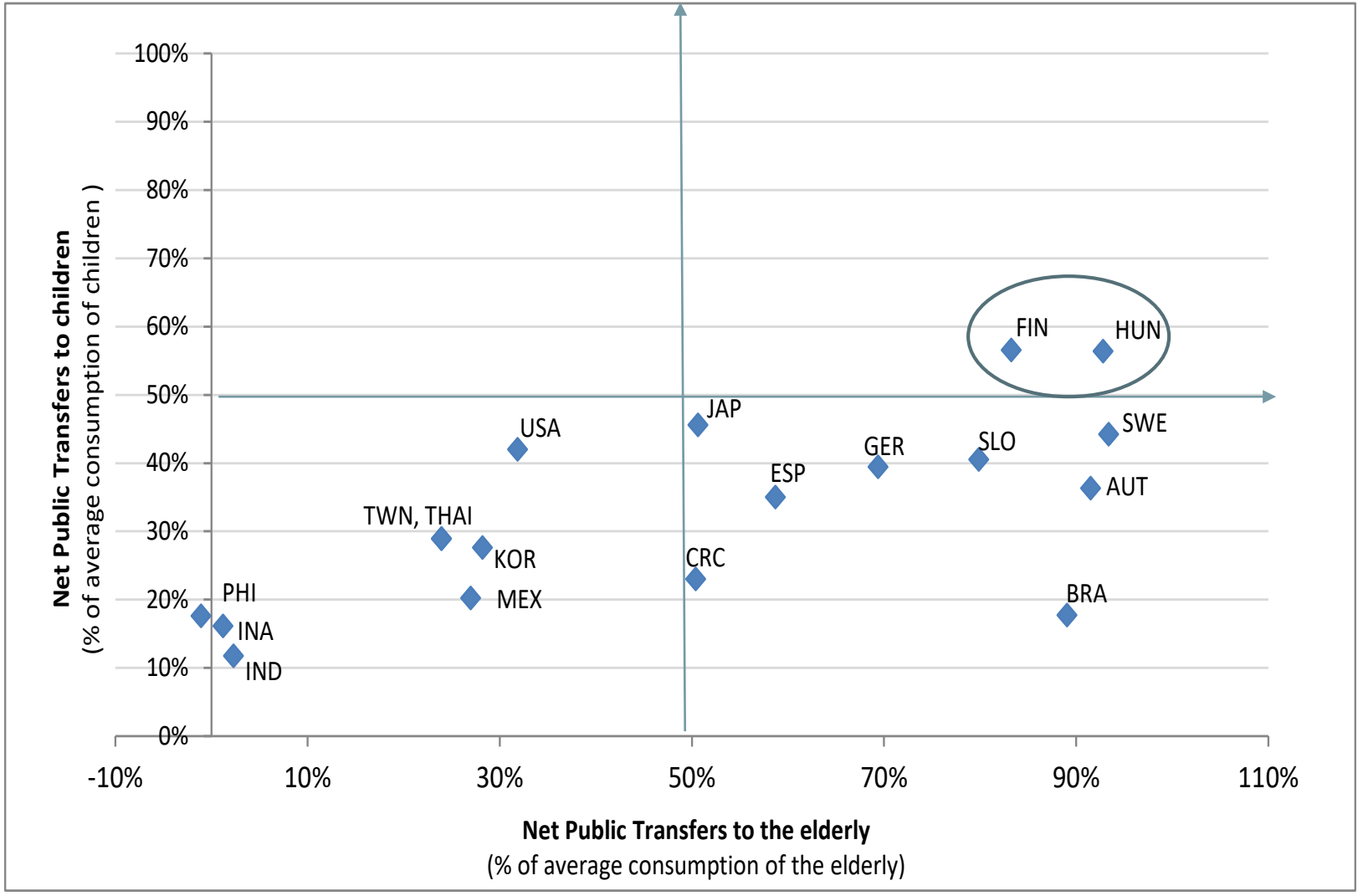


Spain 2012

A key result of the NTA project:

% consumption financed by net public transfers (children vss elderly)

Children



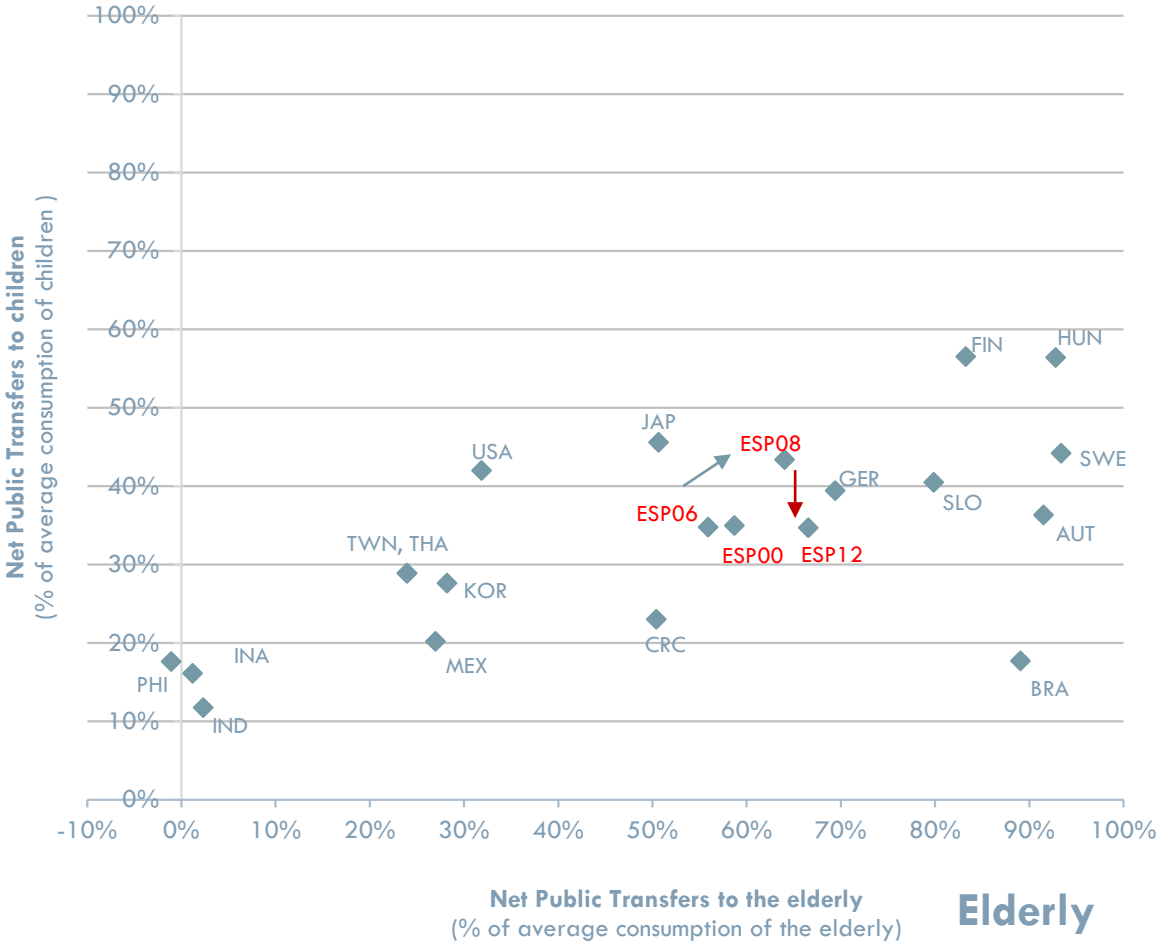
Why is this happening? We will see…

Elderly

And still missing **TIME** transfers

A key result of the NTA project: % consumption financed by net public transfers (children vss elderly)

Children

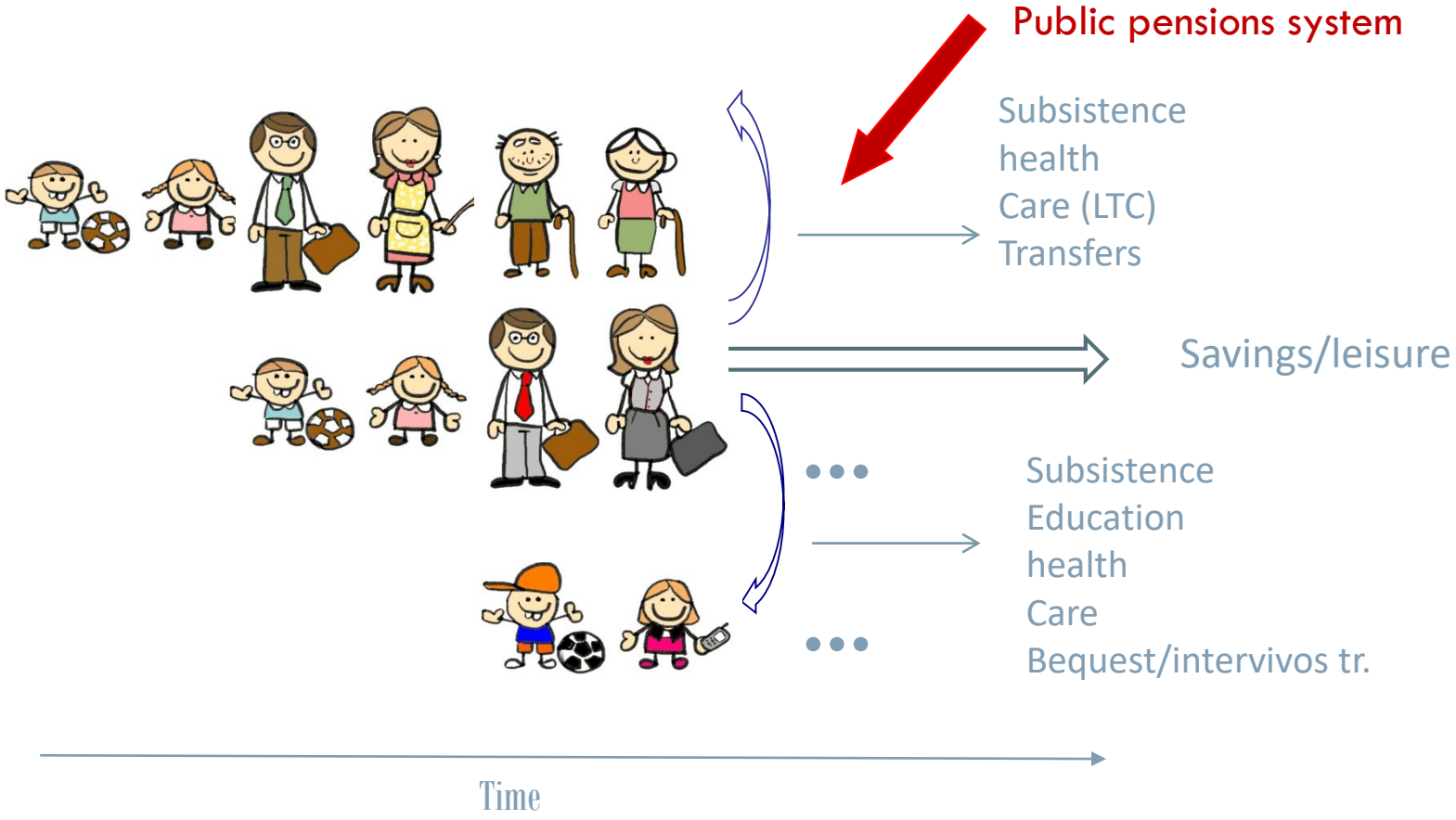


Elderly

In Spain the crises worsens the imbalance

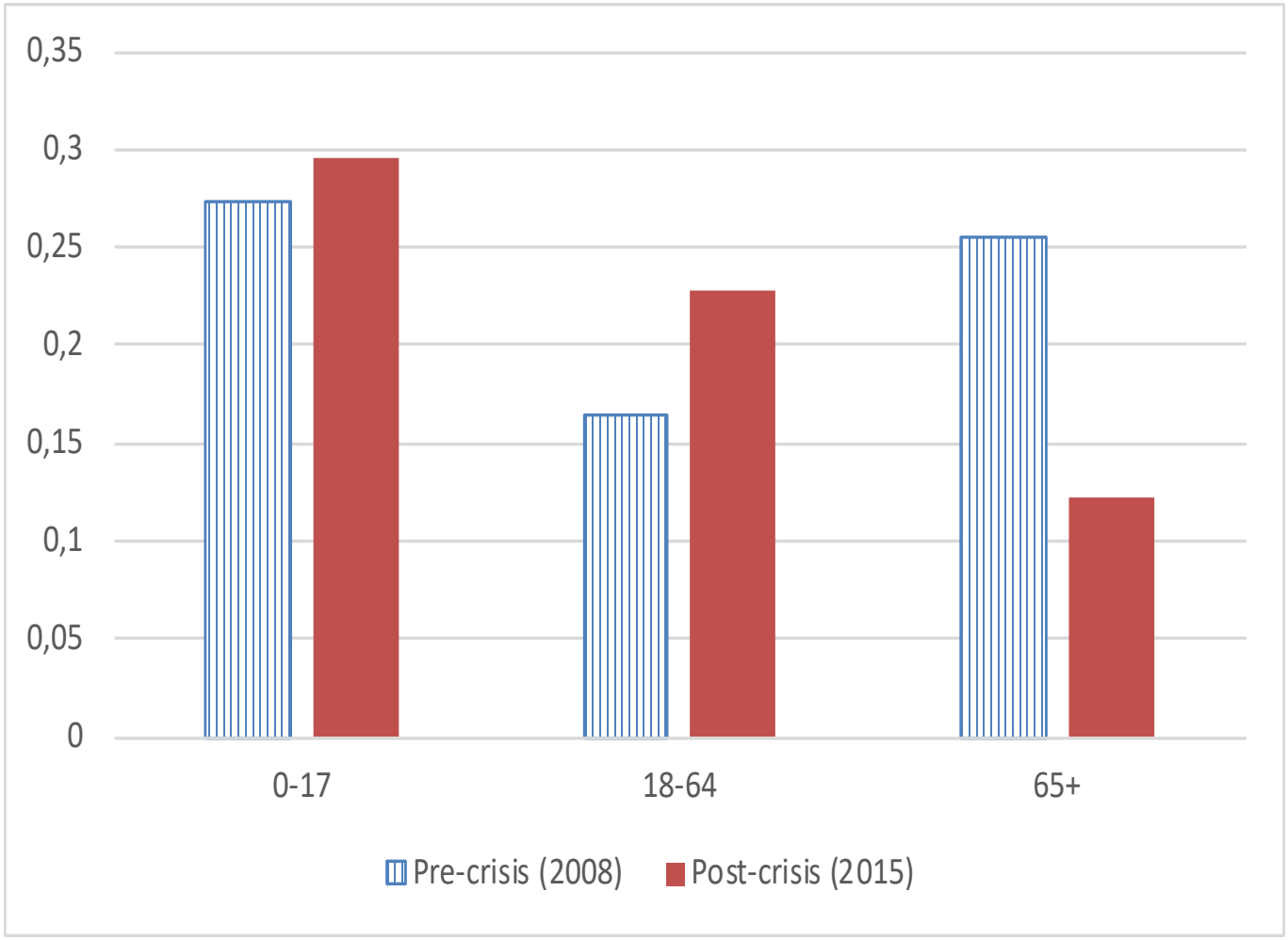
Source: Sole et al., (2020) JEOA

RETHINKING THE ROLE OF THE WELFARE STATE: SUBSTITUTION OF FAMILY TRANSFERS



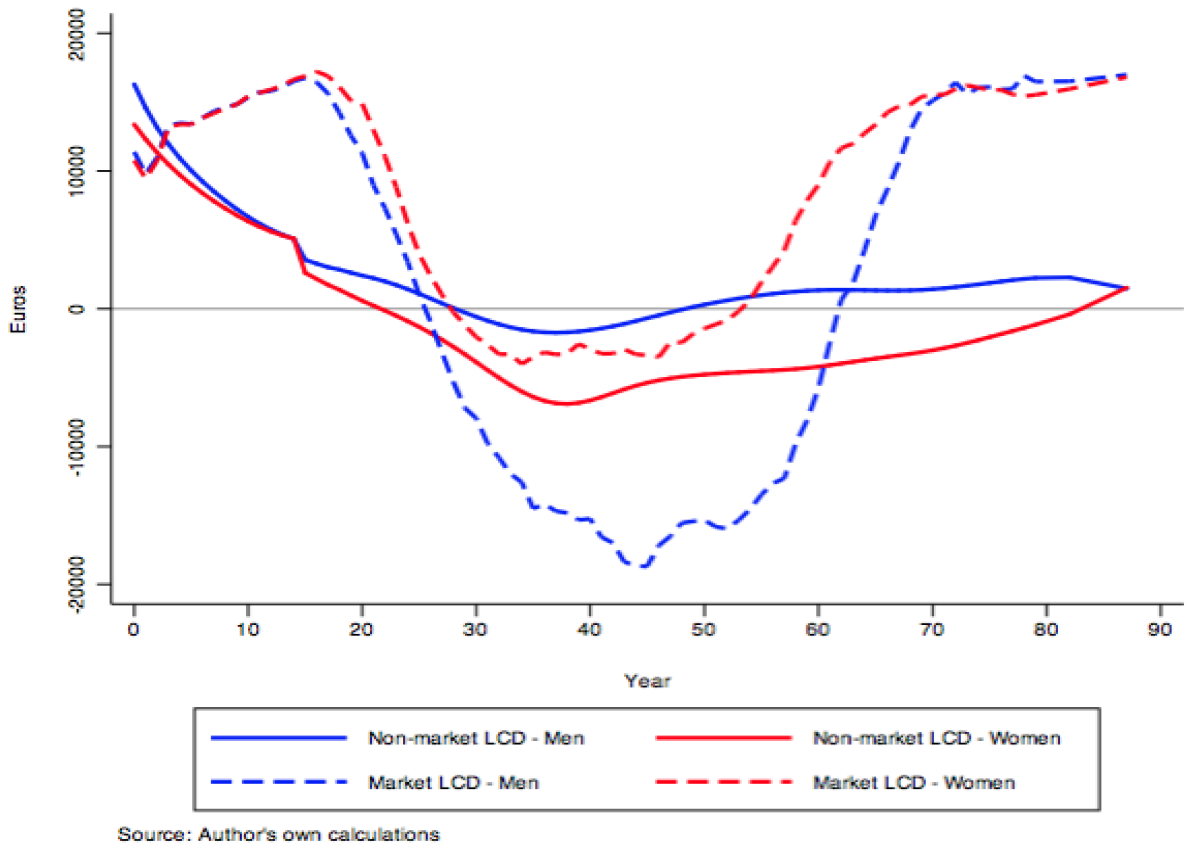
- Seems to be pending to socialize the cost of children (surprising given more difficult access to the market)
- Government intervention here has a additional problem: Government in charge of saving…?

Resulting evolution of the poverty risk by age (pre and post crisis)



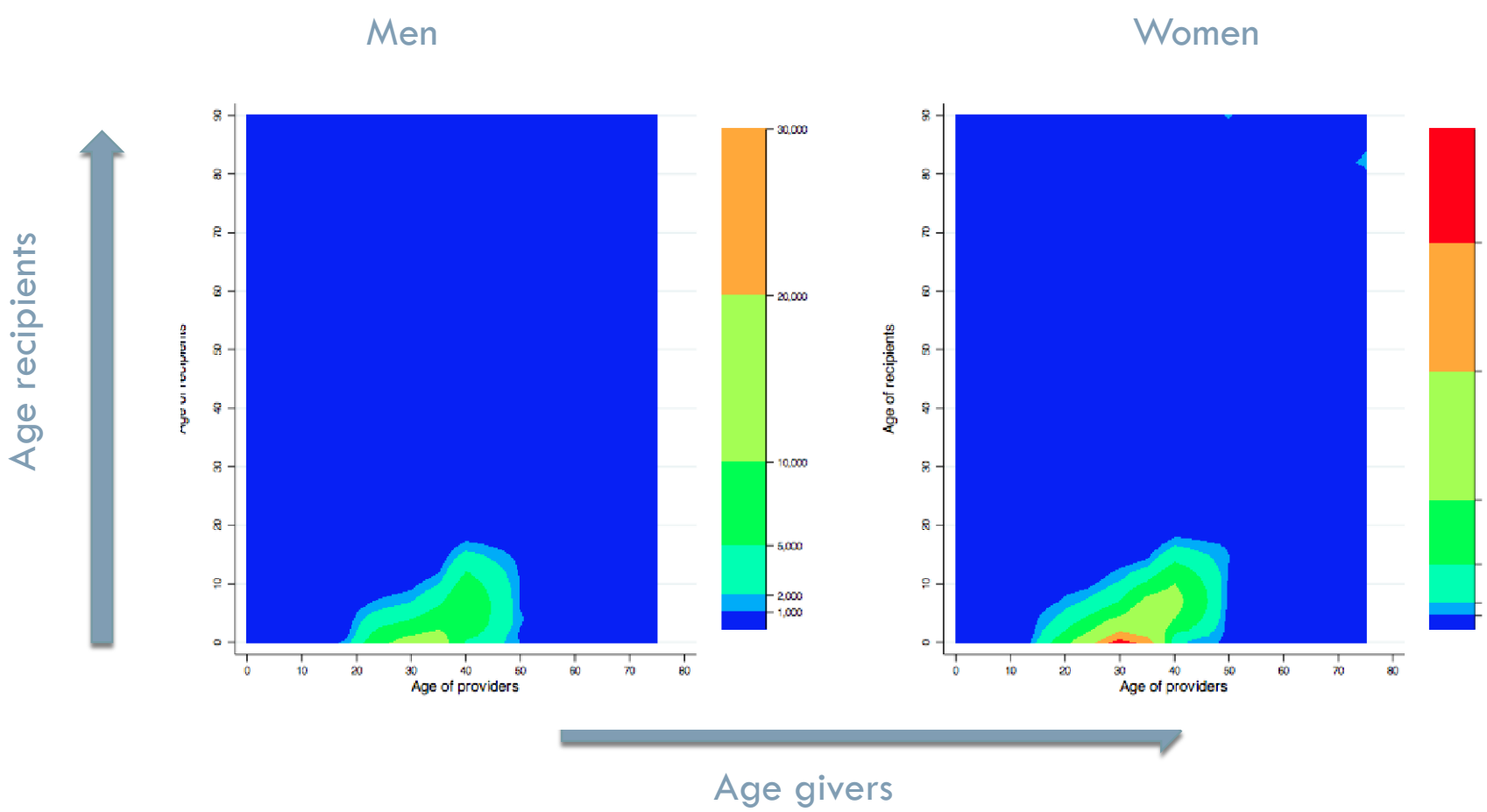
Source: Own elaboration from Eurostat, EU-SILC data

WHAT IF WE ADD TIME?
THE TIME LCD (C-YL=TRANSFERS)



Source: Renteria et al., (2016) DR.

TIME TRANSFERS: WHO GIVES/RECEIVES CARE

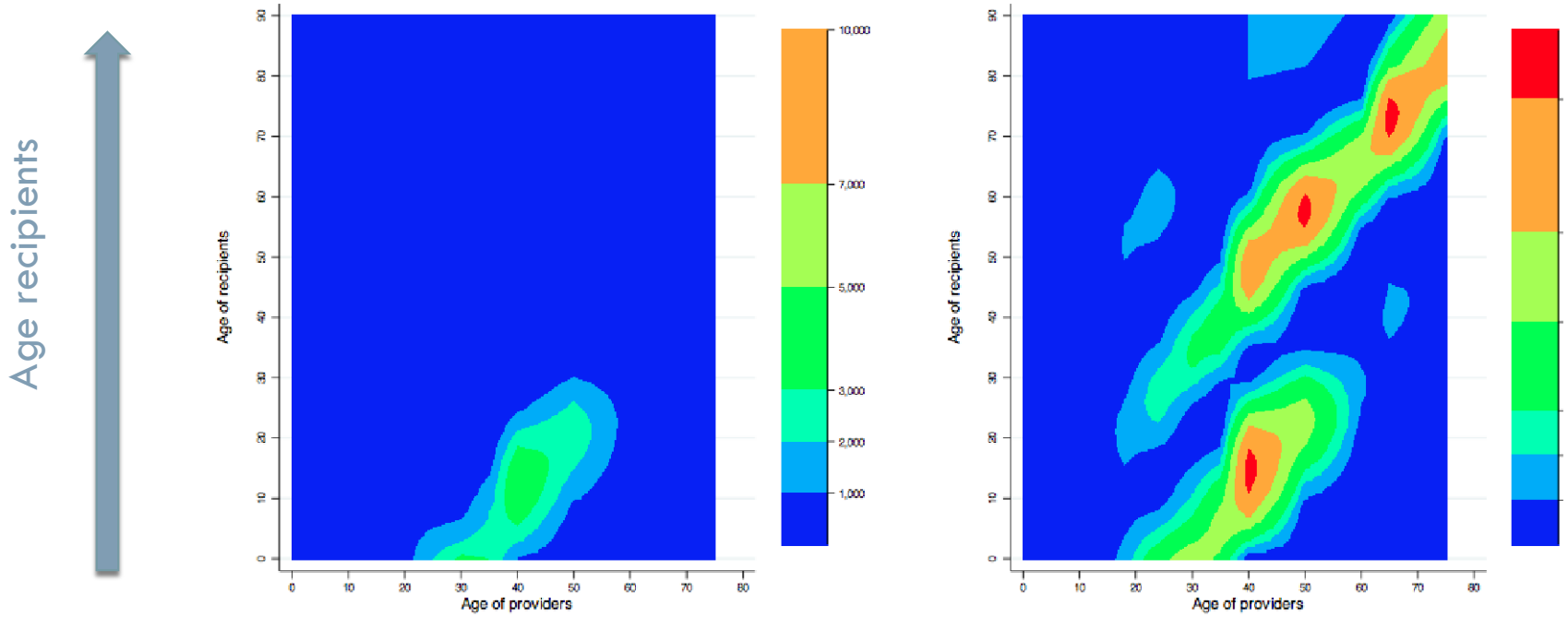


Source: Renteria et al., (2016) Dem. Research

TIME TRANSFERS: WHO GIVES/RECEIVES
HOME PRODUCTION

Men

Women



Source: Renteria et al., (2016) DR.

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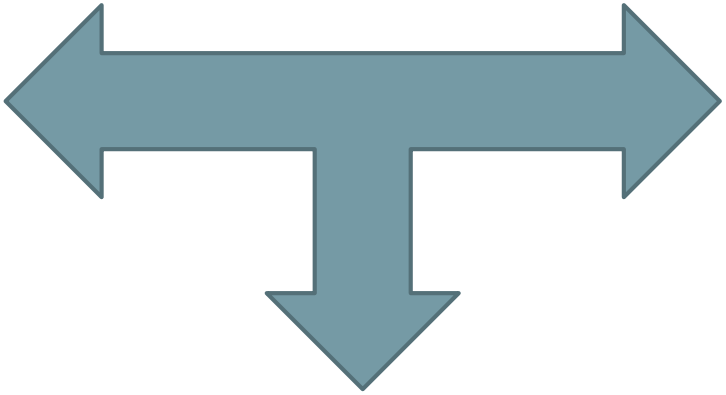
4. **NTA applications**
    1. Measuring the size of F&B intergenerational transfers
    2. Political feasibility: measure willingness to vote as lifetime net transfers received
    3. Projection models
        a) Backward projection: Measuring the demographic dividend
        b) OLG models: Measuring the second demographic dividend
    4. Going deeper at micro level
5. Final remarks

4.3. NTA applications to projection models

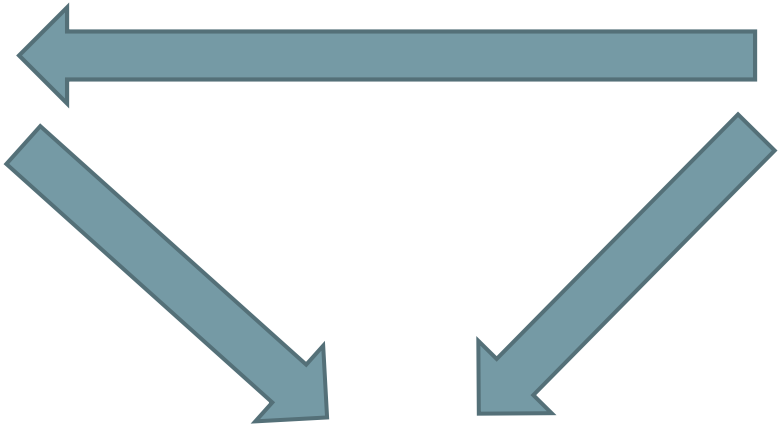
Economic development



Demographic change

Political change

Economics
(micro/macro?)



Demographic changes
(take as "given" official projections)

Sustainability of the welfare state

4. NTA applications to projection models: Macro / Micro approach

- Macroeconomic approach:

  + It takes into account the "general equilibrium (GE)" effects. Main one: as population ages capital more abundant with respect to labor=> wages increase/interest rates decrease.

  [Those GE effects omitted in "Aggregate Accounting models" –example UE AWG. An ad-hoc procedure to project combining:

  - Population projections
  - Observed age profiles of the relevant magnitudes]

  - Can measure intergenerational redistribution but more difficult intra (agents heterogeneity complicates implementation)

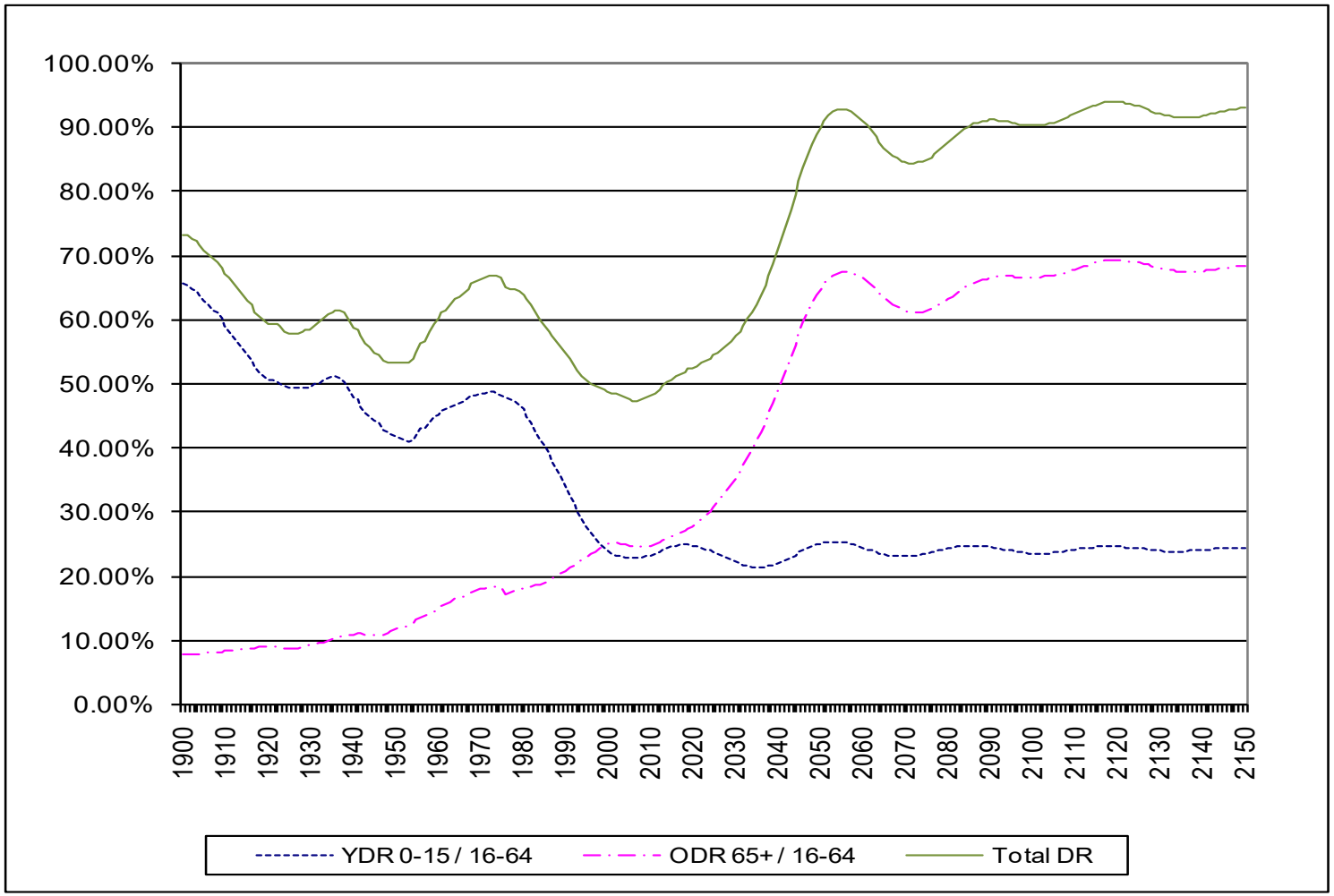
  Generational Accounting can be implemented both in GE or in partial equilibrium

- Microeconomic approach:

  + Usually based on one or more data sets = > it considers intra generational redistribution

  - Does not consider GE effects in the necessary macro module

4.3. NTA APPLICATIONS:
Backward projection: Measuring the demographic dividend



4.3.a) NTA APPLICATIONS:
Capturing the Demographic Dividend in Projection Models

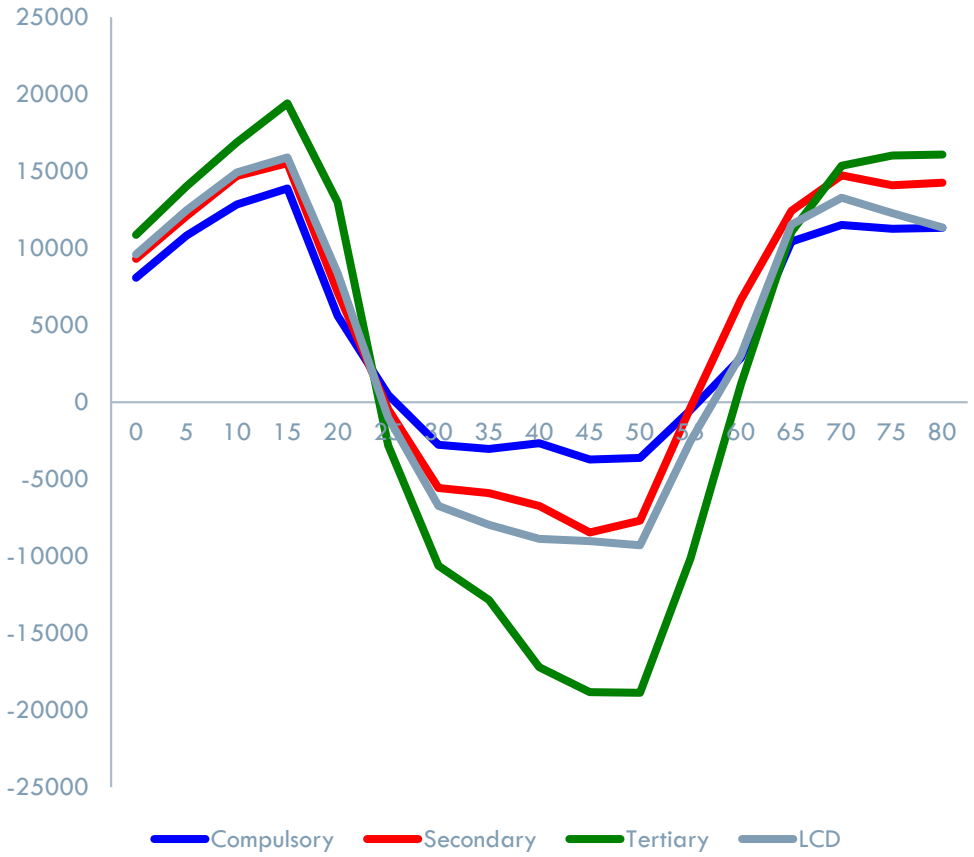
- Starting from Mason et al (2006)
- EI growth rate of income can be decomposed in:

$$\underbrace{\frac{Y(t)}{N(t)}}_{\text{per capita output}} = \underbrace{\frac{W(t)}{N(t)}}_{\textbf{Support ratio}} \cdot \underbrace{\frac{Y(t)}{W(t)}}_{\text{Per capita income}}$$

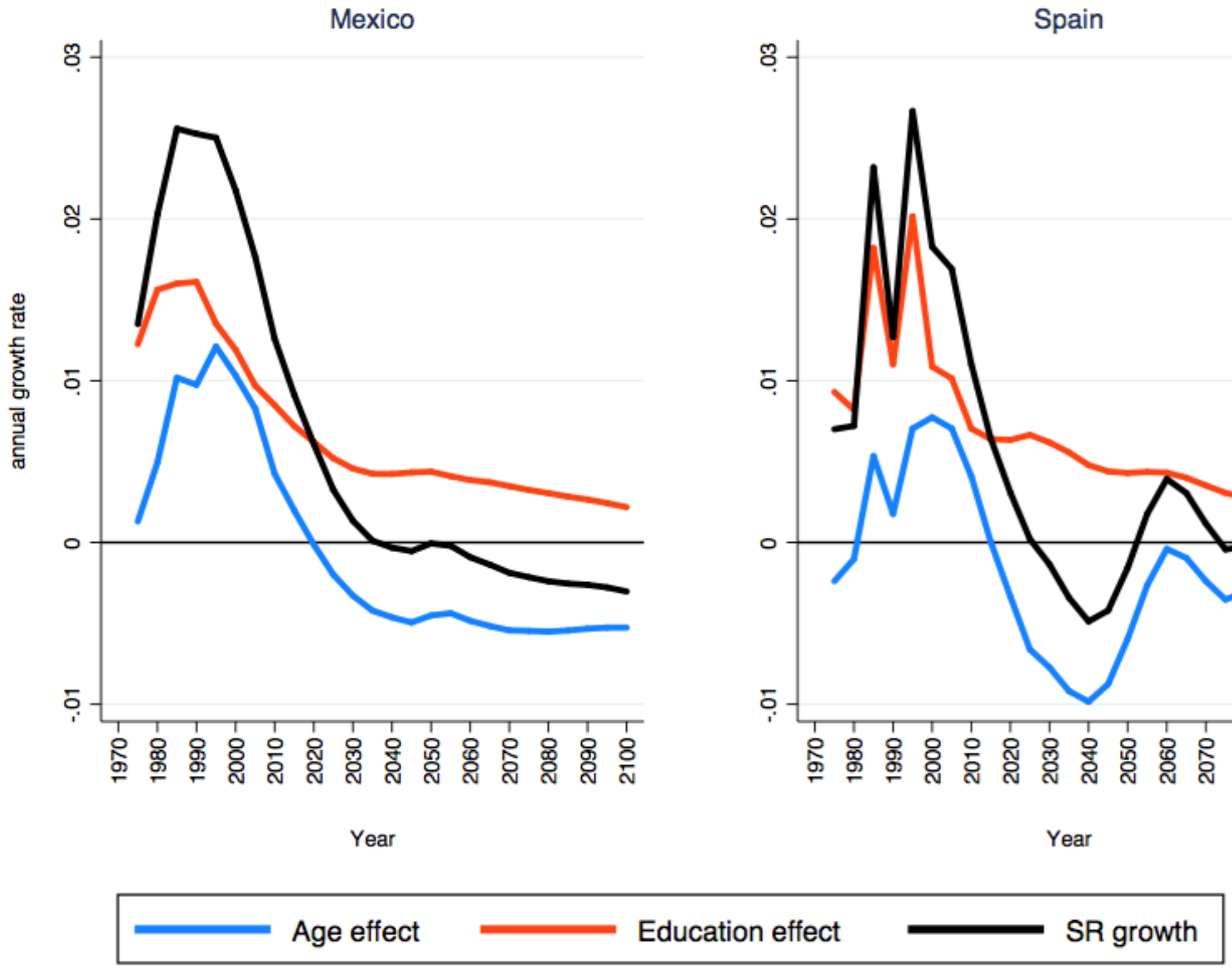
- Support ratio measured with NTA C and YI profiles includes some economic effects (increase in SR = 1st demographic dividend)
- It might include effects of the education transition
- Witch is also in the last term together with capital intensity (different timing)

Pop&Development Review 2015 (With Mejia-Guevara, Renteria and Souto)

Starting from the NTA profiles (C and YI) disaggregated by education level (see LCD in the Figure)

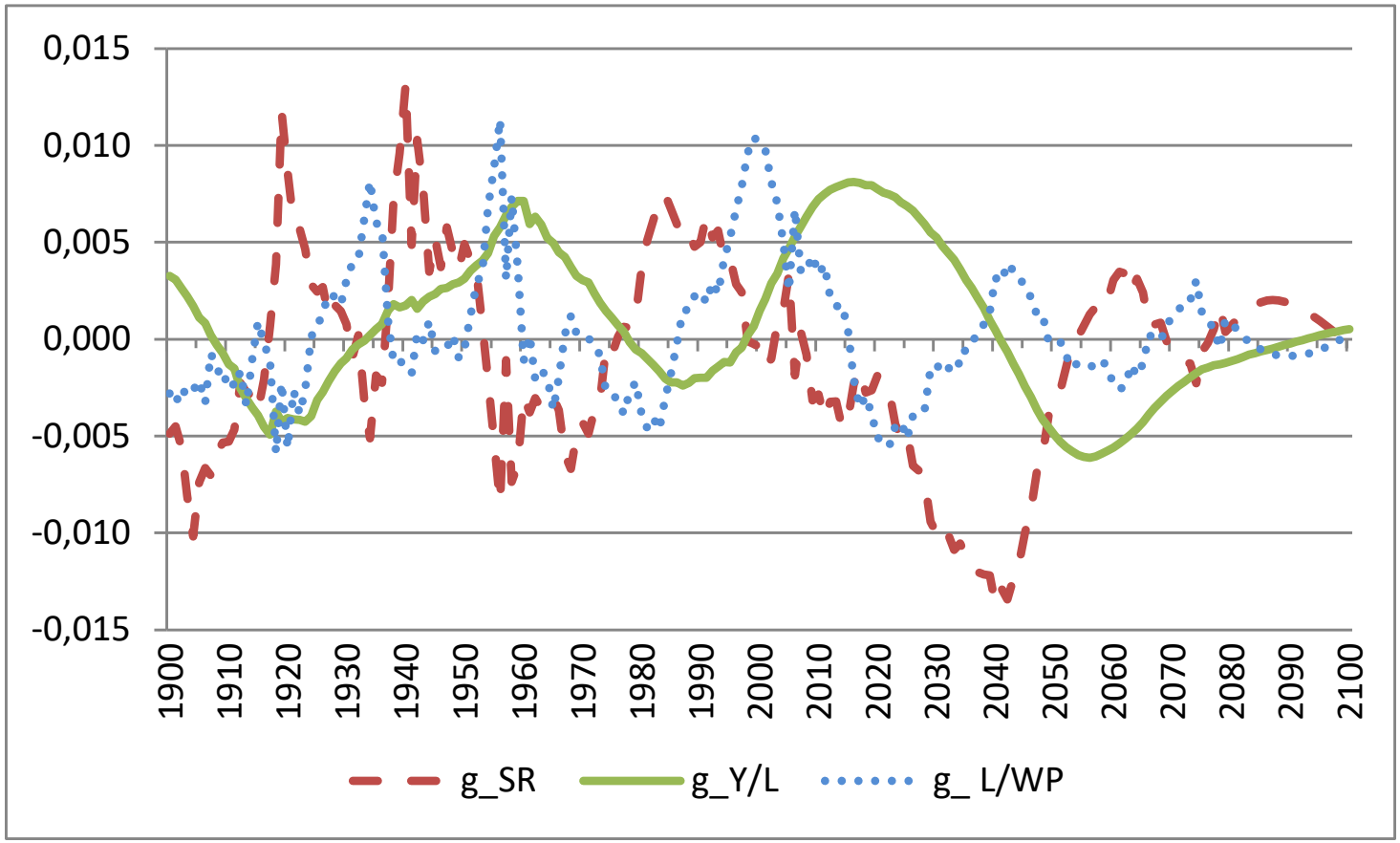


DD Decomposition: Age and education effect



Measuring the DD in General Equilibrium (GE)
(with Sánchez-Romero, Abio and G. Souto)

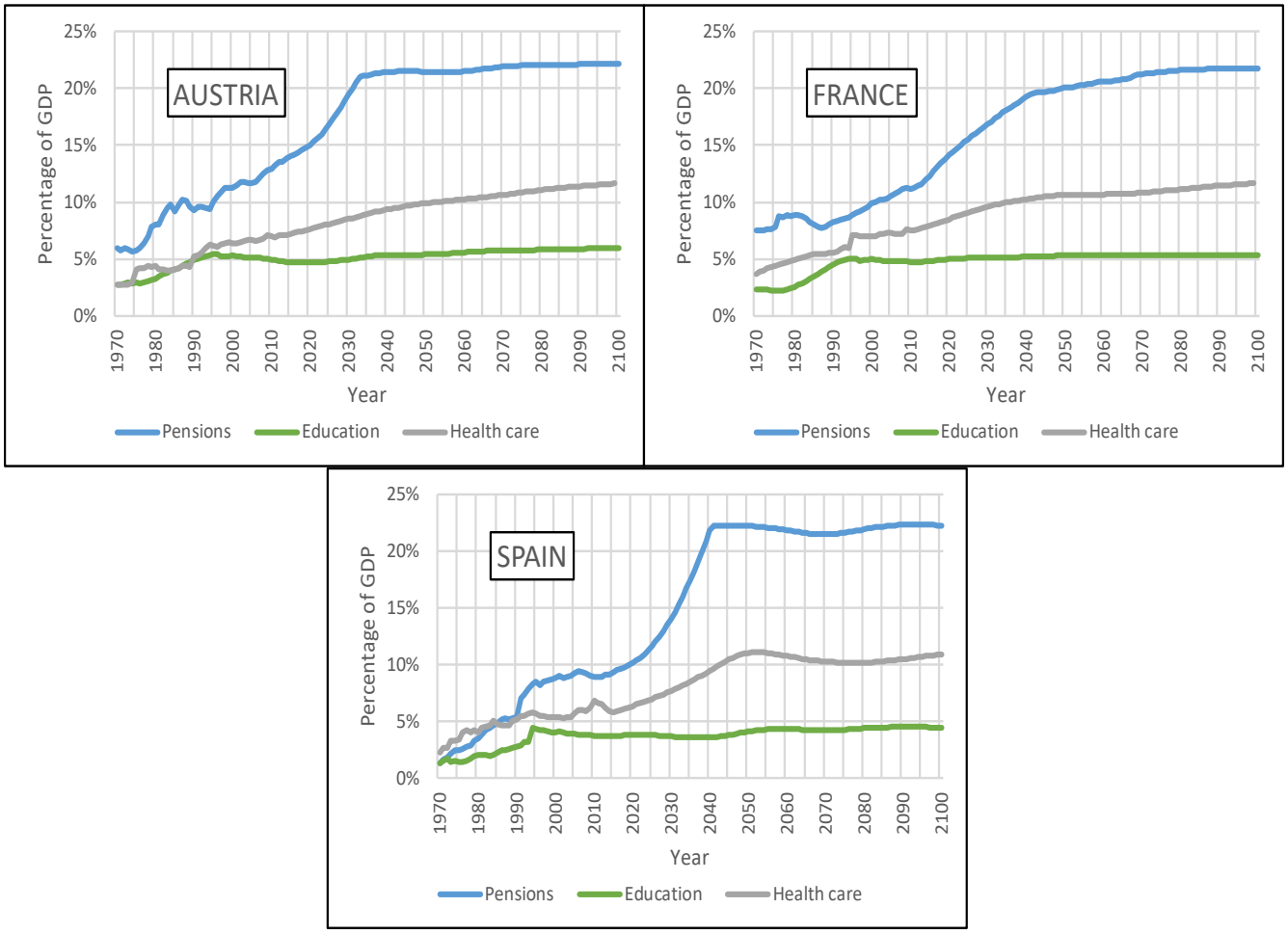
GE allows capturing the so-called 2nd DD (g_Y/L): Effects of capital intensification when baby boomers are in "saving" age



Note: "g_L/WP" changes in the age structure of workers

Cohort contributions to public coffers (GA spirit)
(with Sánchez-Romero, Abio, Souto et al… Vienna Yearbook of PR (2019)

Historical evolution o public expenditure (%GDP) AT, FR and ES



4.4. GOING DEEPER AT MICRO LEVEL: DISAGGREGATING NTA AND LIFETIME SIMULATION

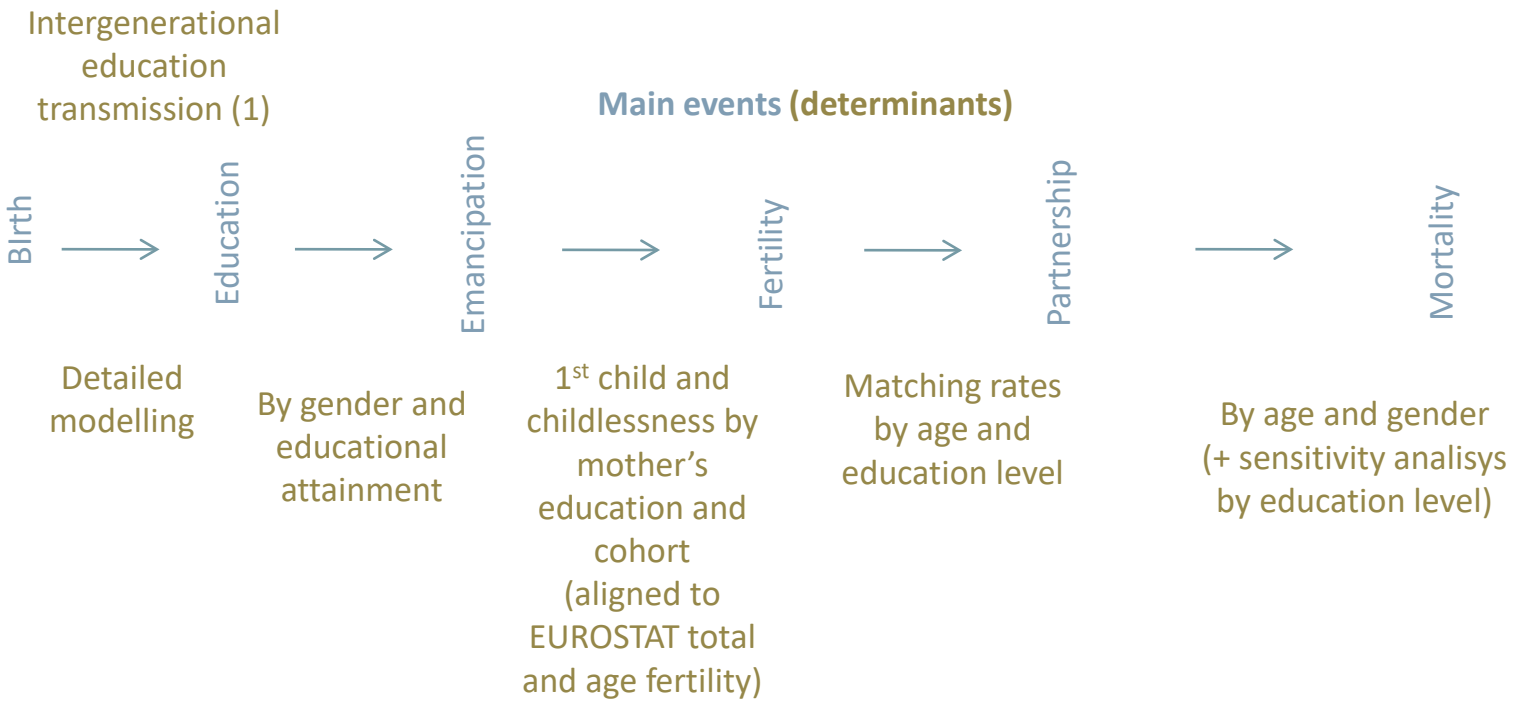
Disaggregated NTA profiles: Combine usual EU data sets (as in AGENTA) adding SHARE

- Previous attempts to add socioeconomic status: income quintiles, education
- Family type: Intergenerational redistribution by family type, being the most relevant parents/childless (JEOA 2021)

Going deeper at micro level: The WELTRANSIM-WELLCARE projects:

- The dynamic microsimulation model microWELT: measure the impact of the Welfare State policies along the lifecycle

MicroWELT model structure: dynamic microsimulation of population dynamics



Combining microsimulation techniques with different EU data sets to measure the whole lifecycle

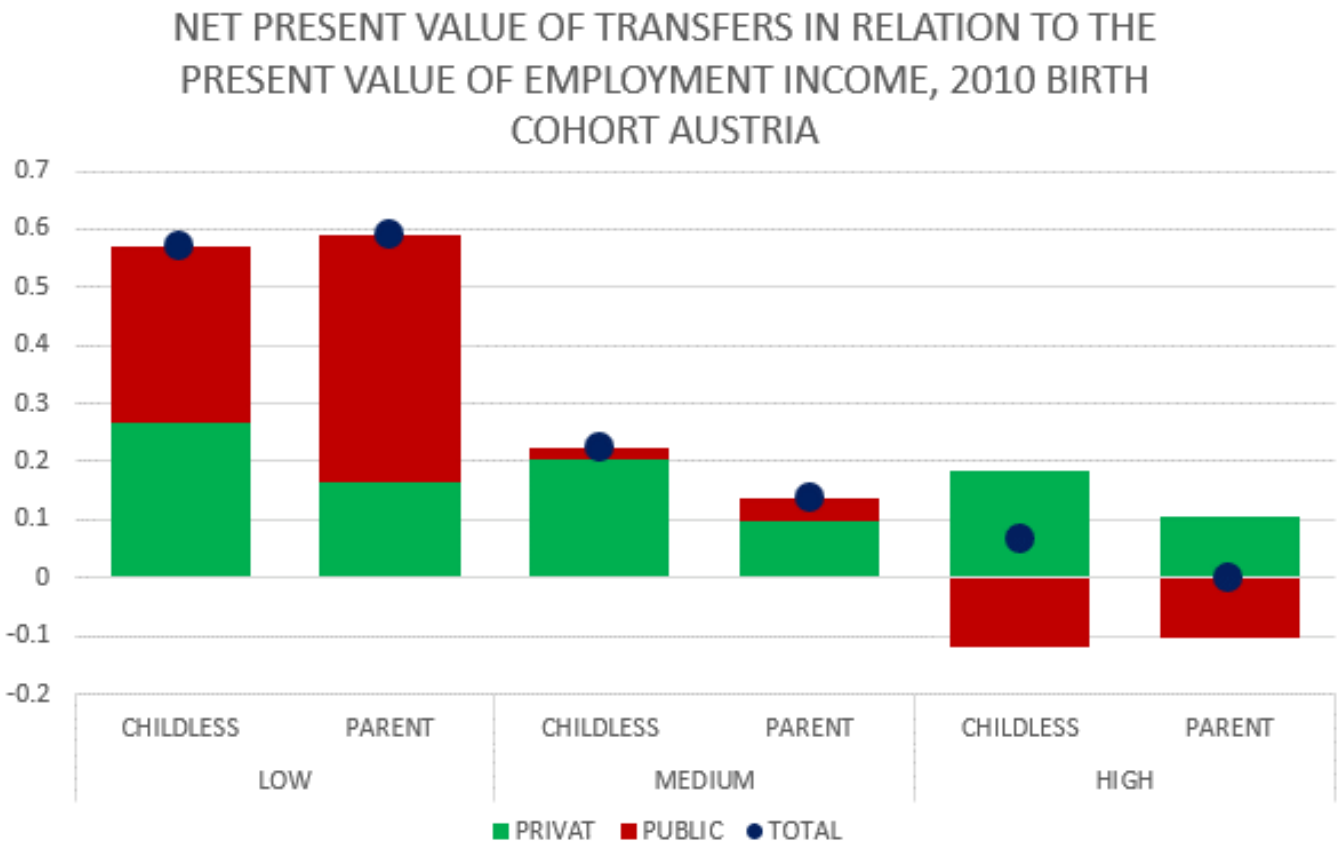
- Data: EU-SILC + HBS + SHARE+ other National and Eurostat data =>
- =>NTA disaggregated profiles by education level and family type
- Macro module as in Lee et al., 2016. PDR 2016 approach to measure age and education effect on Demo Dividend

- + (1) from the 2009 ad-hoc module of the European Labour force survey

Going deeper: disaggregating NTA and lifetime simulation

Present value (PV) of lifetime Privat, Public & Total transfers (net of taxes) / PV of lifetime income (parents versus childless individuals by level of education)

Austria



Source: **Weltransim Project** (https://www.microwelt.eu/Report/08_LongitudinalWFS/LongitudinalWFS-Index.html)

Main conclusion: Need for policies protecting the "Sandwich" generation in face of the ageing process

Thank you!

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