Recent Advances in Modeling National Transfer Accounts (NTA)

Andrew Mason

AGENTA Project Meeting Budapest

Központi Statisztikai Hivatal

09 March 2017

Part I: Going Global

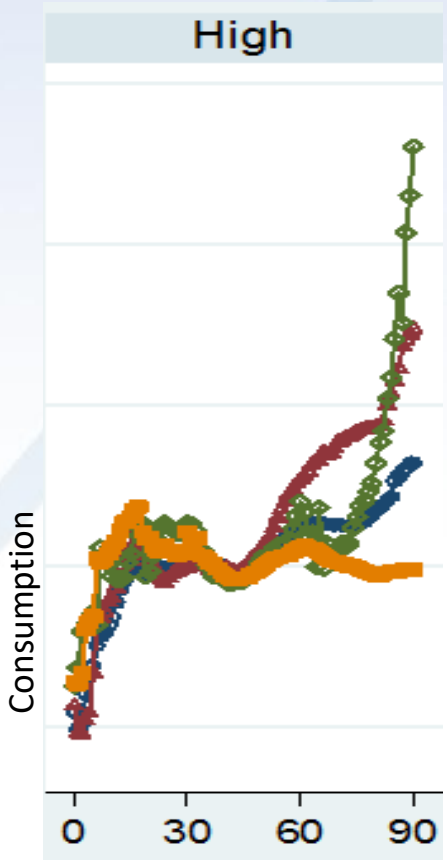
- Will aging and slowing population growth lead to economic stagnation and declining standards of living?
- Answer elaborates on: Mason, Lee, Abrigo, and Lee 2017 forthcoming "Support Ratios and Demographic Dividends: Estimates for the World" UN Population Division Technical Paper Series.

Approach

- For a country two important effects of age structure on economic growth
  - Share of population at working ages: ages of high productivity versus ages of high needs (or wants)
  - Saving incentives to meet pension needs
- Regional and global economic growth affected by regional shifts in population
- Model used to construct NTA profiles of labor income and consumption for 166 countries

Model profiles

I. For each income group, five types identified



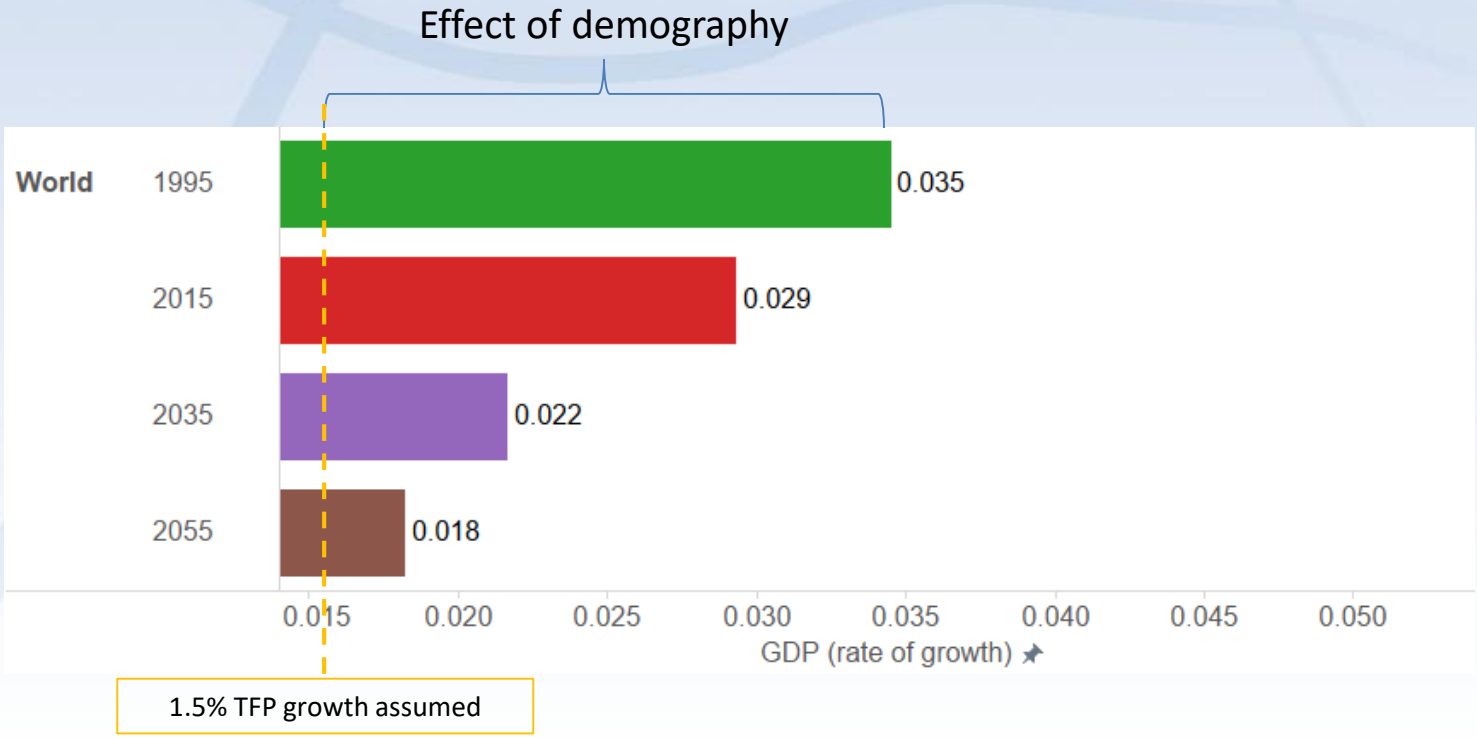
II. Country-specific profiles are modelled as a weighted average of the five types. Weights vary from zero to one and sum to one.

Weights depend on widely available predictor variables, e.g., per capita GDP, demographic support ratio, education and health expenditure, lfpr of 15-19 and 65+.

III. Labor income and consumption age profiles "predicted" for countries without NTA estimates, but with predictor variables.

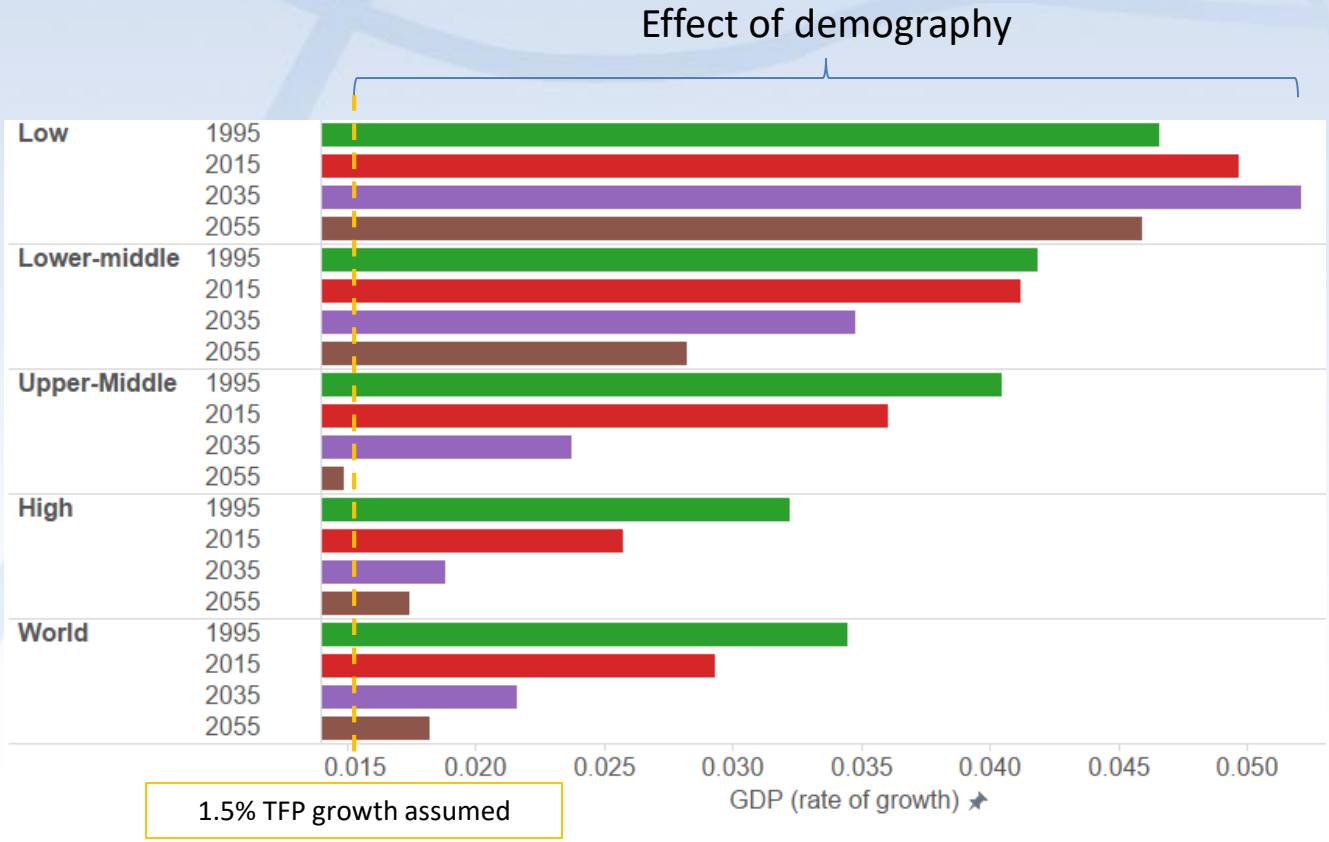
Estimates for up to an additional 106 countries bringing the total to 166 countries with more than 98% of World GDP in 2015.

Impact of demography on GDP growth



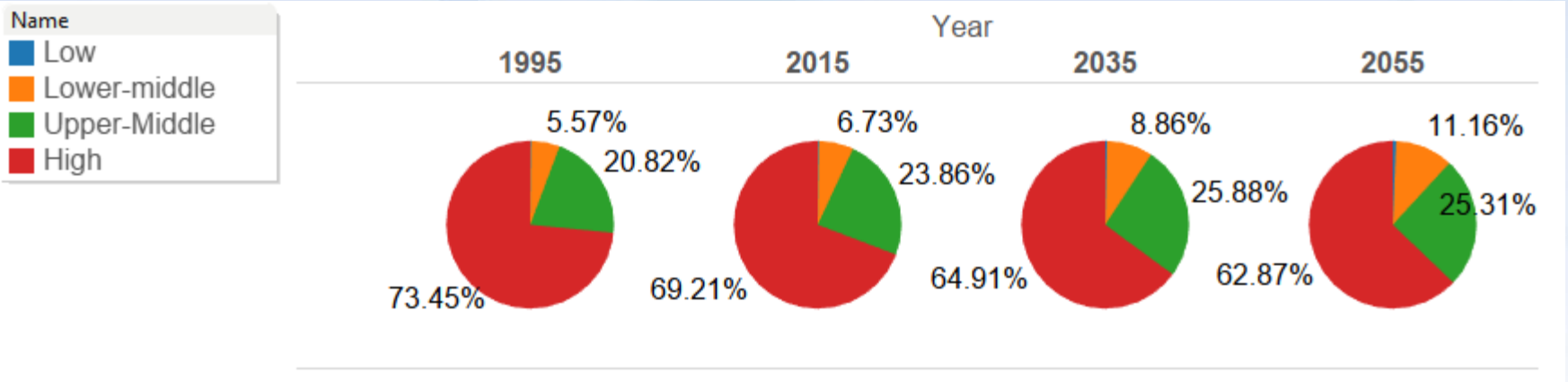
- Changes in population growth, population age structure, and geographic distribution across countries contributed 2.5 percentage points to economic growth in 1995.
- Changing demography is still favorable and will continue to be so in the future.
- By 2055, however, the favorable boost to global GDP growth from demography will be modest (0.3 additional percentage points).

GDP growth by income group



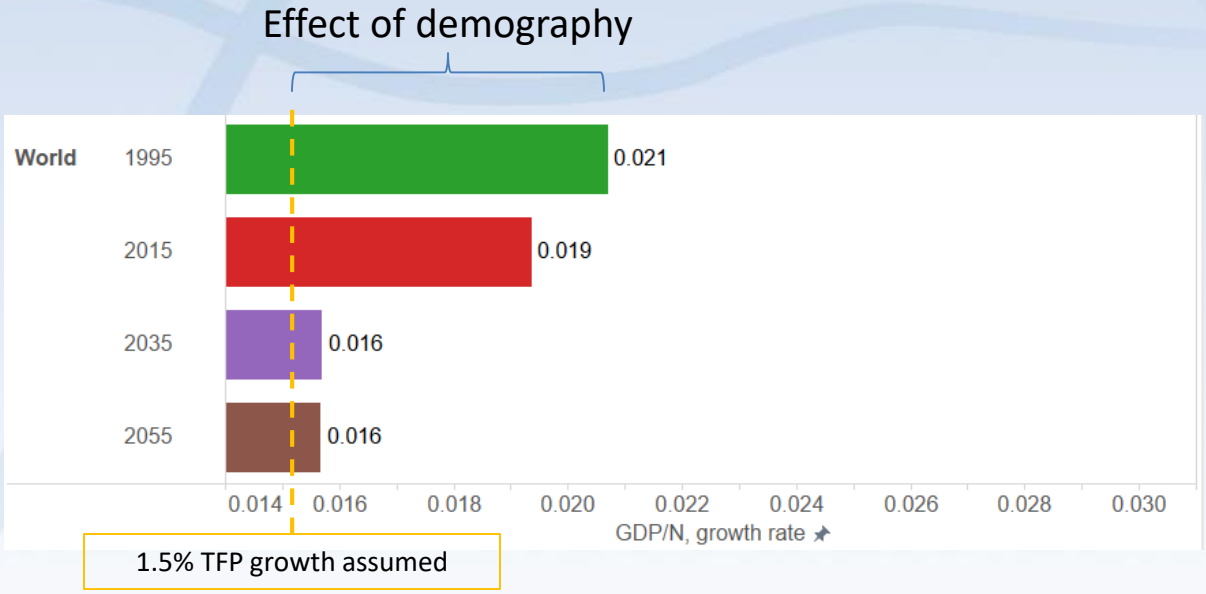
- In low income countries demography supports high GDP growth (additional 3% per year or more)
- In high income countries demography supports the lowest GDP growth, but still a positive effect in 2035.
- Greatest decline in GDP growth in upper-middle-income countries.
  - Decline by more than one percentage point over the next two decades
  - An additional one percentage point over the subsequent two decades.

Impact on GDP shares



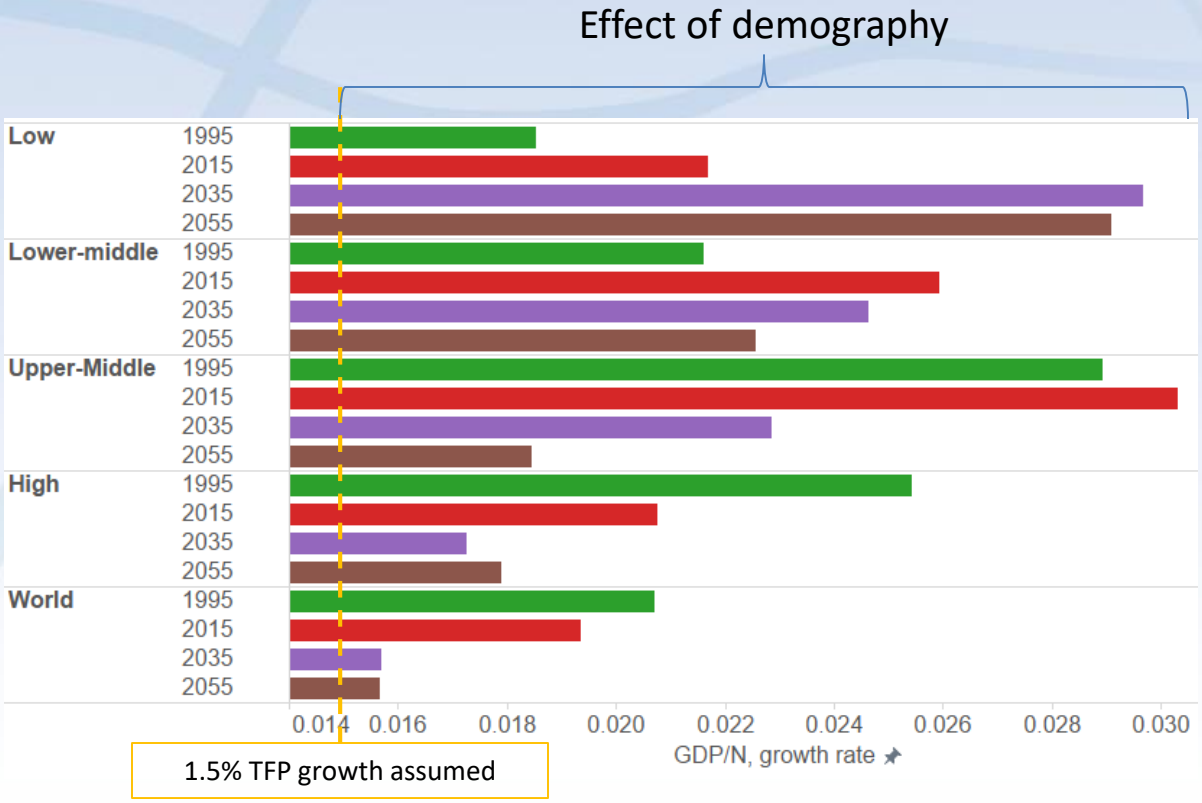
- Between 2015 and 2055
  - High-income share declines by 6.3 ppt
  - Upper-middle-income share increases by 1.4 ppt
  - Low- and lower-middle-income share increases by 4.9 ppt
- Redistribution of global GDP toward lower income countries
- Differences across income groups in total factor productivity growth would lead to very different outcomes.

Impact of demography on GDP/N growth



- For World, demography has been adding about 0.5 percentage points to per capita GDP growth.
- Drops to ~0.1 ppt for 2035 and 2055.
- Large compositional effect - global growth is slower than growth for any of the income groups.

Impact of demography on GDP/N growth



- Demography is highly favorable now for all groups (in excess of 0.5 ppt).
- Highly favorable effects persist for low- and lower-middle income countries.
- For upper-middle income countries benefit drops to 0.3 ppt by 2055.
- For high income countries, gain is between 0.2 and 0.3 ppt for 2035 and 2055.

Going Global

- A Soft Landing: demographic change is leading to slower economic growth, but not decline.
- End of favorable demographics is coming quickly in upper-middle and high income countries.
- More favorable perspective than conventional view
- Sound public policy is critical

Part II: The Generational Problem

- Maintaining standards of living depend heavily on public and private intergenerational transfers.
- Changes in age structure may lead to large imbalances
- Addressed in recent NTA/World Bank project:

Mason, Lee, Stojanovic, Abrigo, Ahmed, 2016 "Aging and the changing nature of intergenerational flows: Policy Challenges and responses", *NTA Working Paper WP16-05.* *http://ntaccounts.org/web/nta/show/Working%20Papers*

Sketch of the model

- Exogenous public flows w/ policy scenarios
  - Status quo: maintain current tax and spending age patterns
  - Parametric reform: Raise taxes/reduce spending in response to high public spending and/or public debt
  - Lifecycle reform: Delayed retirement with shifts in taxes, public spending, and labor income
- Endogenous private sector flows
  - Changing public policy and age structure, through private transfer inflows, affect resources of each age group.
  - Changes in resources lead to changes in private consumption, saving, and transfer outflows.
  - Allocation of resources among consumption, saving, and transfer outflows to each age group also influenced by changes in age structure.

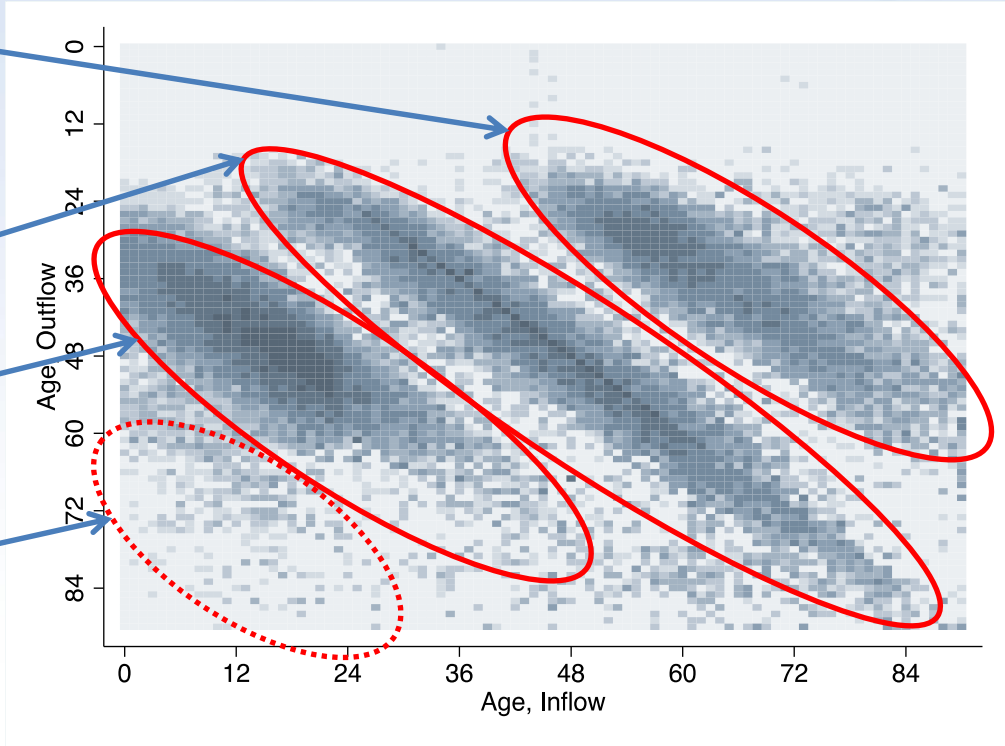
Within household transfers, Taiwan, 2010

Children to parents

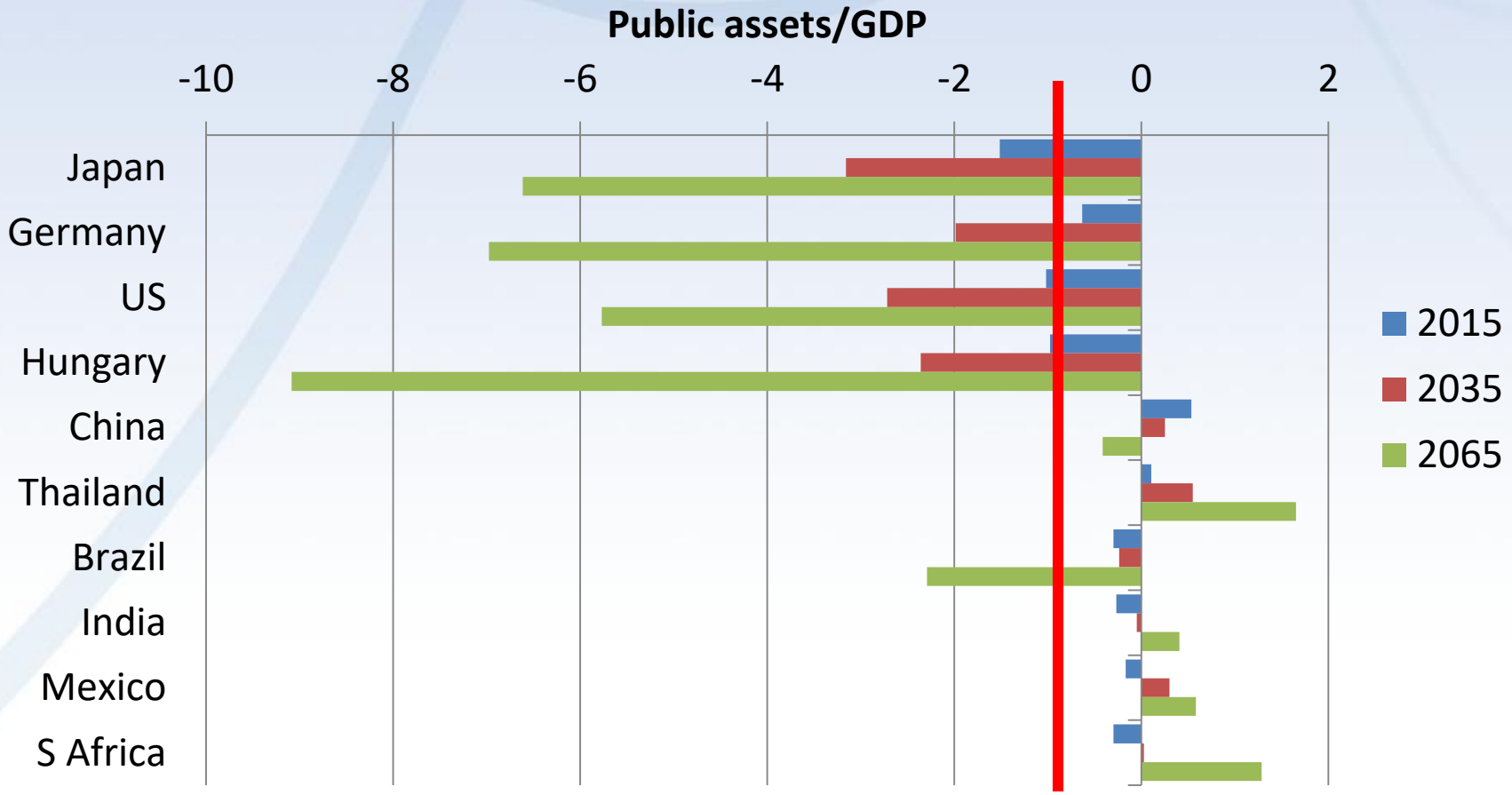
Within generation

Parents to children

Grandparents to children



Public Finances: Status Quo is not Sustainable in Aging Countries



Disagreement about the level of public debt that is sustainable, but Reinhart and Rogoff conclude that public debt in excess of 90% of GDP is likely to lead to financial crisis.

Parametric Reform in Japan, a country with severe aging

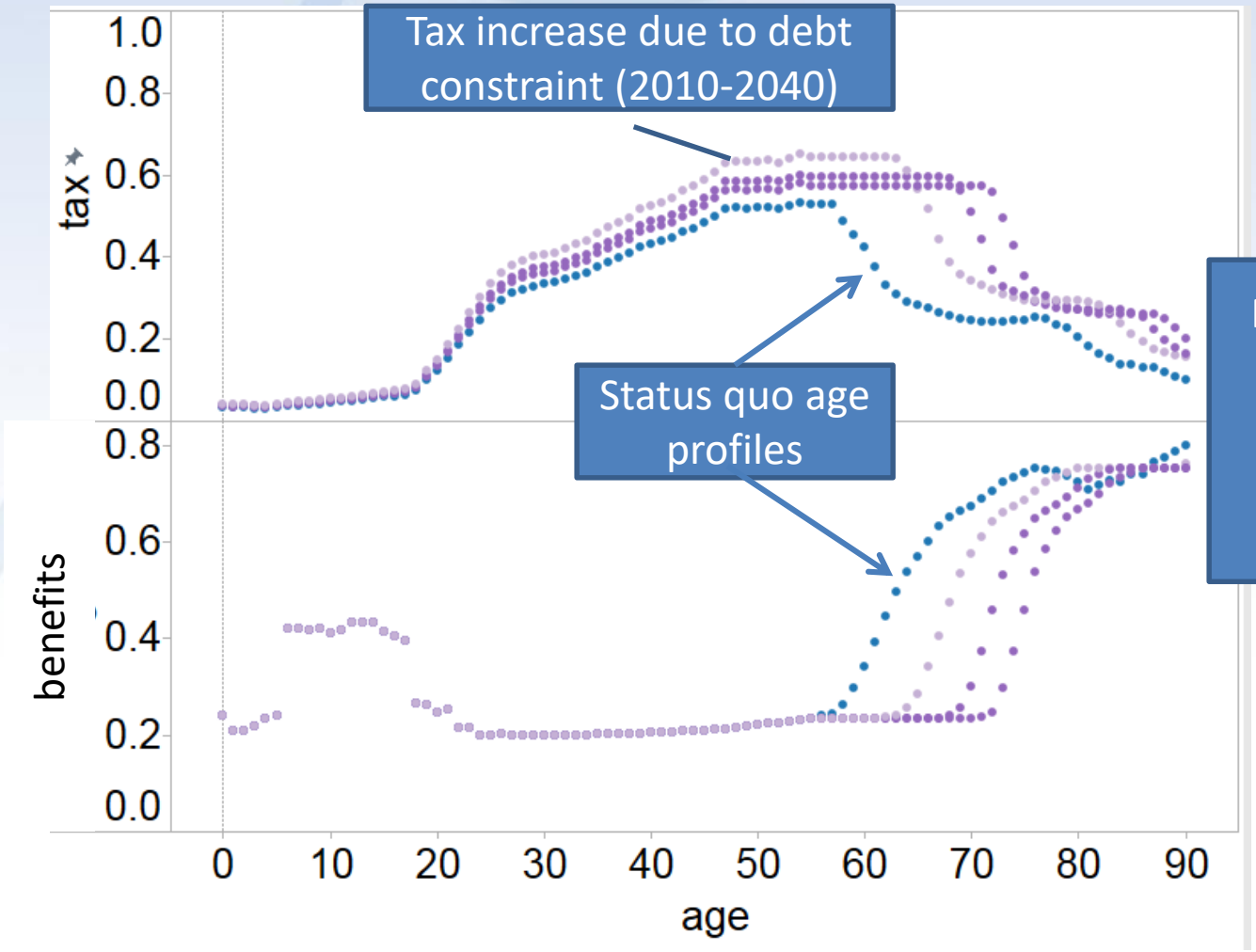
Policy: Rescale taxes and benefits to insure that government spending doesn't exceed 35% of GDP and public debt is reduced to 90% of GDP within 40 years.

Percentage decline in consumption (relative to labor productivity) compared with 2010

	2040		2070	
	Parametric reform		Parametric reform	
Age 20	-21.1		-25.9	
Age 45	-17.5		-21.3	
Age 70	-28.6		-34.5	

Note: In both scenarios size of government is constrained to 35% of GDP and public debt to 90% of GDP.

Parametric and life cycle reform Japan, 2010, 2040, 2070, and 2100.



Lifecycle reform in Japan

Percentage decline in consumption relative to productivity as compared with 2010

	2040		2070	
	Parametric reform	Lifecycle reform	Parametric reform	Lifecycle reform
Age 20	-21.1	-9.1	-25.9	-5.7
Age 45	-17.5	-12.0	-21.3	-8.0
Age 70	-28.6	-11.0	-34.5	-0.5

Note: In both scenarios size of government is constrained to 35% of GDP and public debt to 90% of GDP.

- Lifecycle reform moderates decline in consumption for all and especially the elderly.
- Retirement is postponed by about 1 year per decade.

Conclusions

- For aging countries
  - Economic growth will slow
  - Major public sector reform is essential
  - Parametric reform will lead to
    - Downward pressure on standards of living, particularly for the elderly
    - If productivity growth can be sustained, standards of living should continue to increase but very slowly
  - Life cycle reform has great potential
    - Standards of living can rise with productivity gains
    - People must revise work habits.