Emerging "South" and Ageing "North" – A Case for South-South Trade Diversification for Turkey

Patrick Georges and Aylin Seçkin

9th Meeting of the Working Group on Macroeconomic Aspects of Intergenerational Transfers

Barcelona, June 3-4, 2013

TUBITAK Research Grant # SOBAG 111K489

NTA Turkey – 3 studies

1. National Transfer Accounts (NTA) for Turkey: A First Step – The Life Cycle Deficit

2. Demographic shock in Turkey: Economic and fiscal impacts of UN medium and high fertility scenarios

- **Small open economy, OLG-CGE**
- **Calibration to some NTA Turkey features**

3. Emerging "South and Ageing "North" –A Case for South-South Trade Diversification for Turkey

- **Multi-country, OLG-CGE model with international trade**

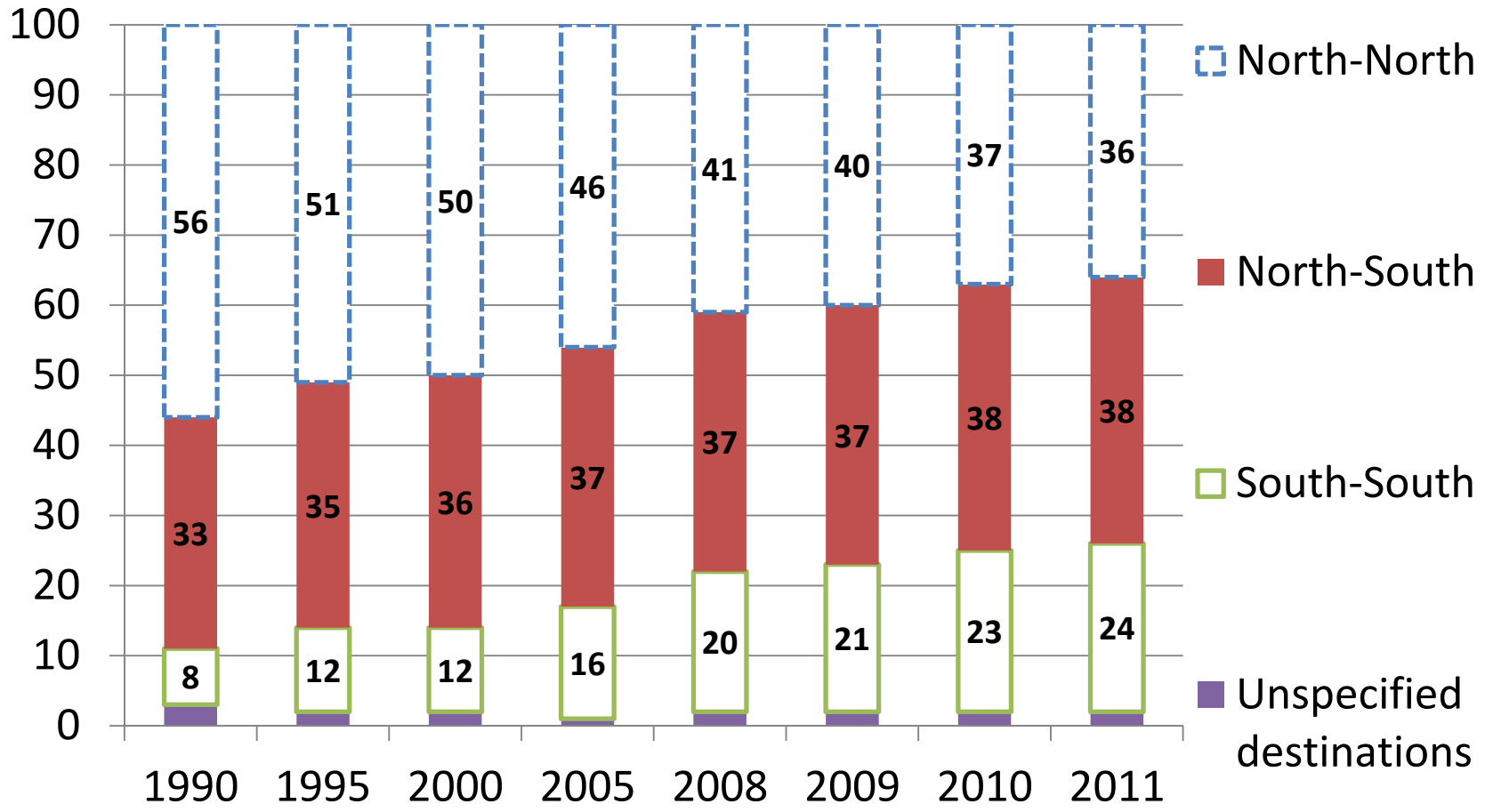
Outline

1. **Global Trade Flows and Policy Debate in Turkey**
2. Trade Diversification and Demographics / Results
3. Conclusion/Caveats

Trends in Global Trade Flows
(last 20 years)

- ***Share*** of ***North-North*** Trade: decreased
- Share of ***North-South*** Trade: slight increase
- Share of ***South-South*** Trade: Impressive increase

Fig. 1 Shares of North-North, North-South and South-South trade in world merchandise exports, 1990-2011
(% of world trade)



Trends in Global Trade Flows

- « ***Naïve*** » ***trend projection***:

  By 2050, ***South-South share =50%*** of global trade flows (compared to 24% today)

- ***Danger of extrapolating*** past trends, but:
  - South is benefitting from a ***demographic dividend***
    - Increasing ***number of workers*** and ***consumers***
  - ***South*** is a source of ***major trade & growth opportunity*** for the ***South***!

Trade Policy Debate in Turkey

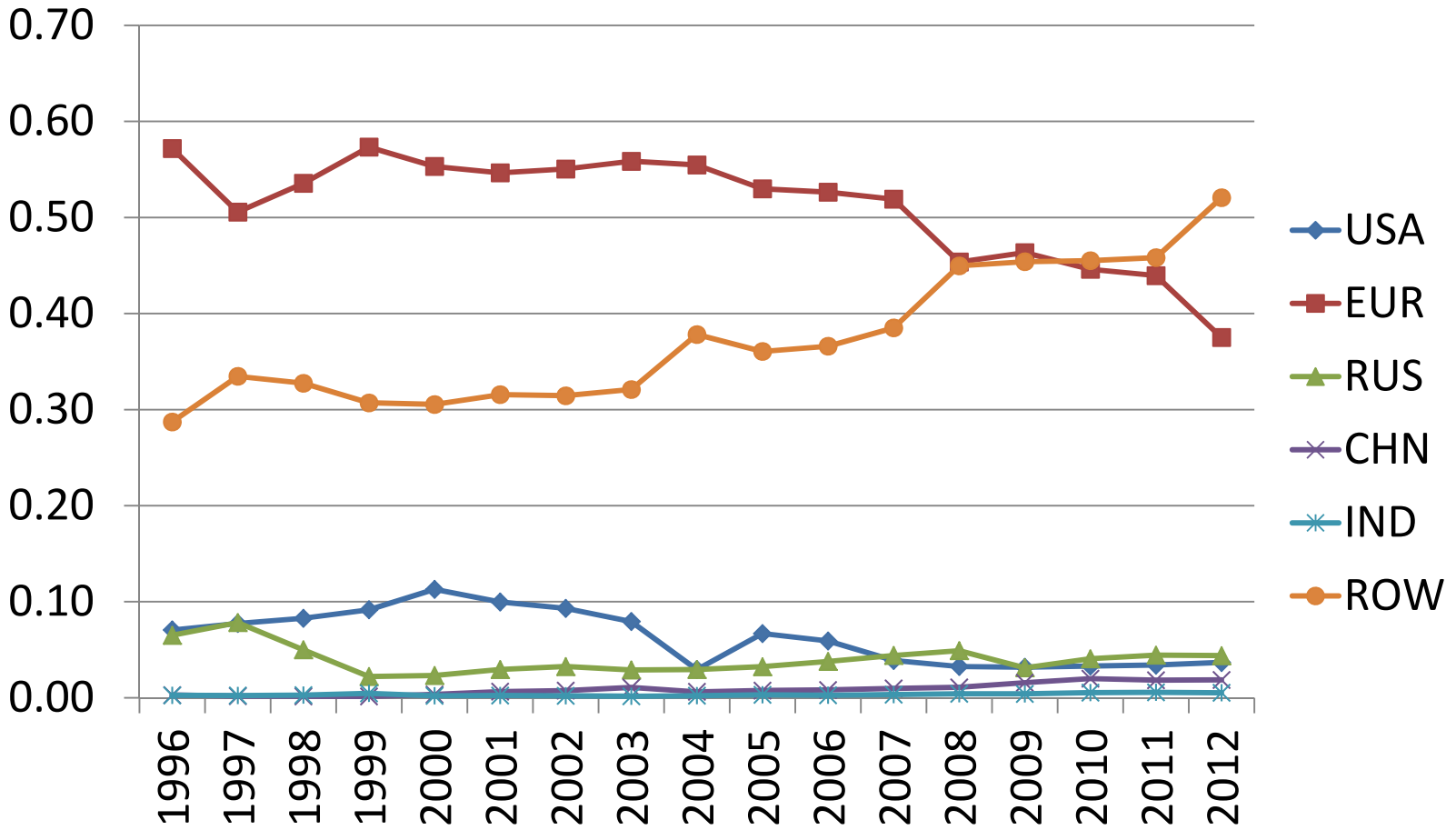
- ***Big question***:

  Benefits for Turkey of developing further trade links with
  - MENA (Midde East and North Africa)
  - Russia and CIS (Commonwealth of Indep't states)
  - Turkic countries (Azerbaïdjan, Turkmenistan, Kazakhstan…)
  - India, China?

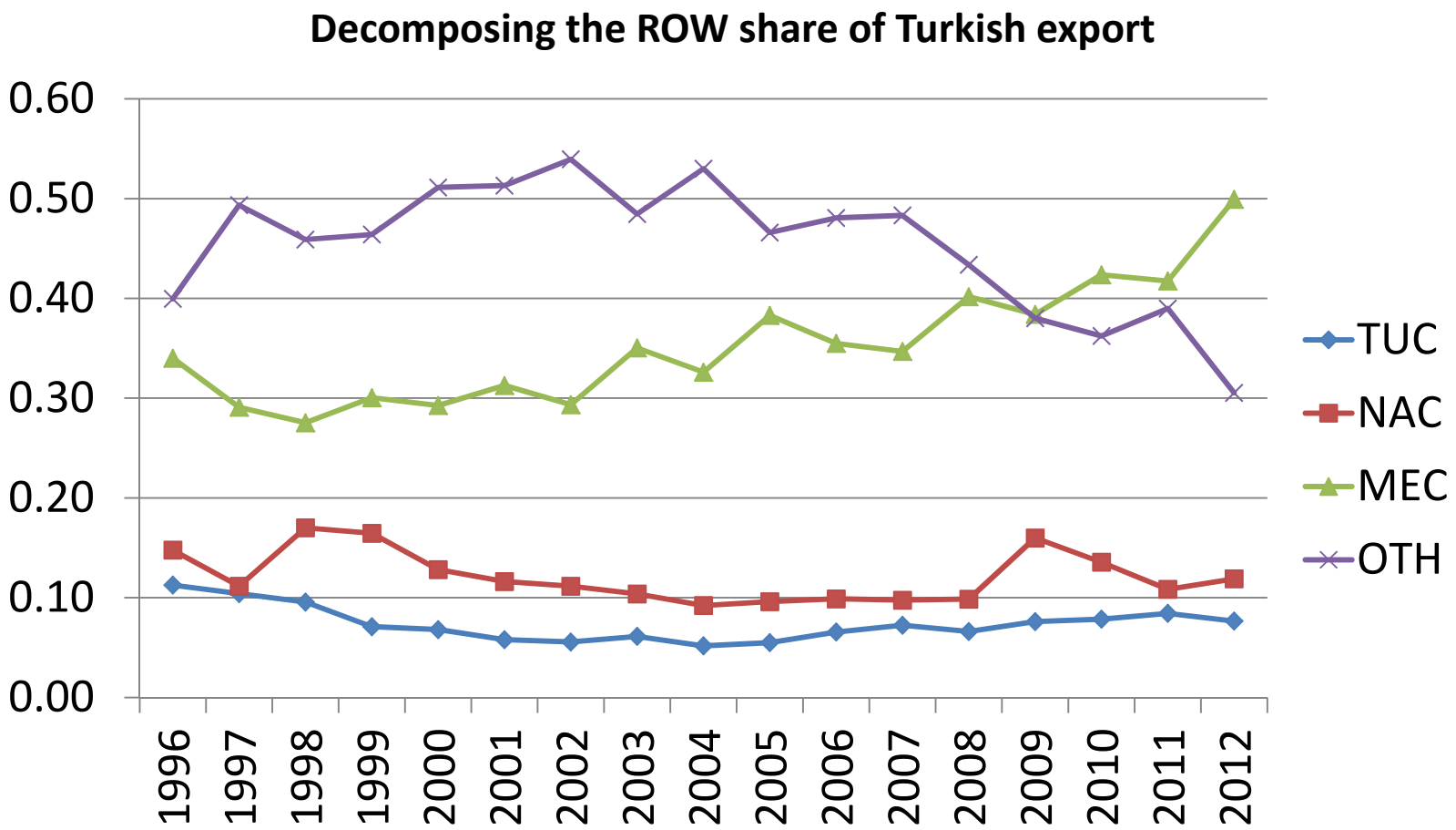
- ***One obvious fact***:

  Share of Europe in ***Turkish overall trade*** flows has ***fallen since the 1996*** Customs Union EU-Turkey

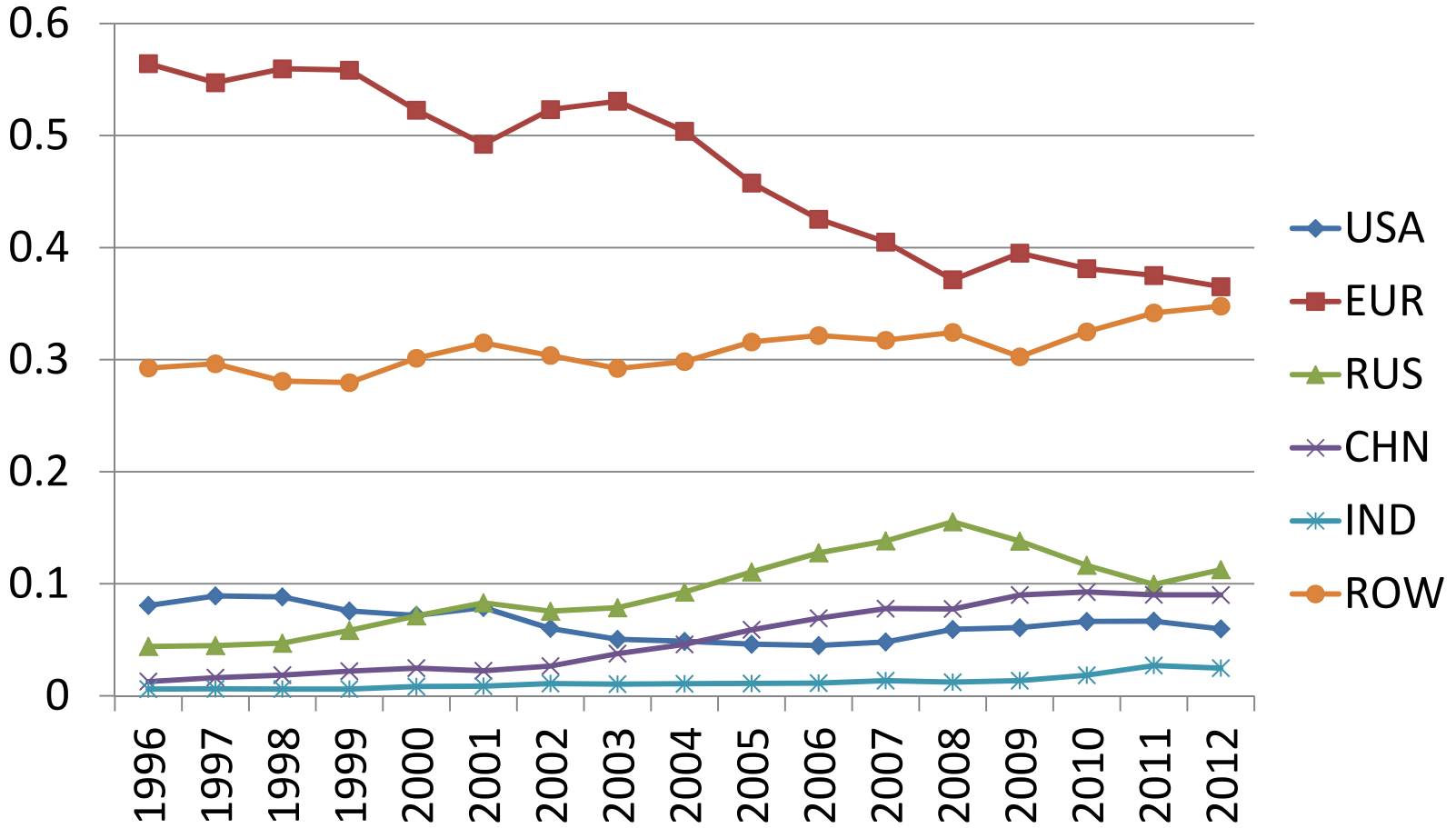
Where does Turkey export?



Where does Turkey export?



From where does Turkey import?



Trade Policy Debate in Turkey

- ***EU membership*** candidacy? — Disillusion
- ***Customs Union*** with EU? – Scrap it(?)
  - Falling trade shares with EU
  - Turkey lose the ability to negotiate FTAs with new partners (separately from EU)
  - "EU-USA" Transatlantic FTA negotiations:
    - Turkish tariffs on US goods must be eliminated
    - US tariffs on Turkish goods must be negotiated separately
- ***Look "East"*** (MENA, CIS, Turkic countries)

Trade Policy Debate in Turkey

- ***Demographic trends*** emphasized:
  - In Turkey:

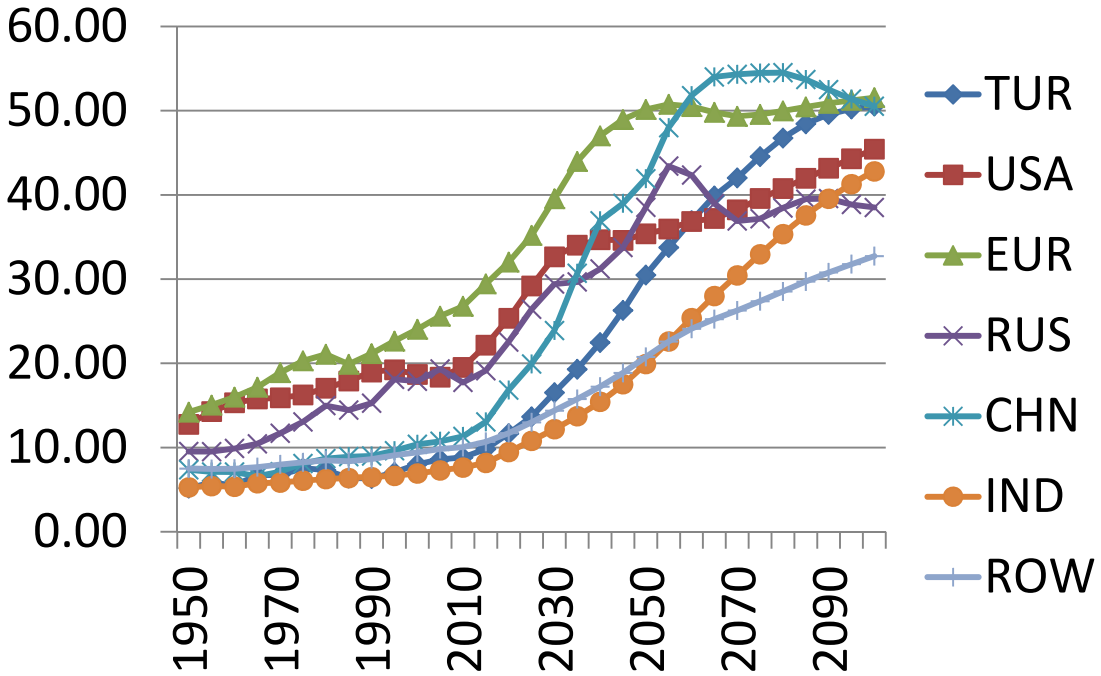
    Working age population/total population is growing
  - EU is ageing, (this is the opposite)

Outline

1. Global Trade Flows and Policy Debate in Turkey
2. **Trade Diversification and Demographics /results**
3. Conclusion/Caveats

Population ageing will be a ***defining feature*** of ***most countries*** during the 21st century

Old-Age Dependency Ratio (%) [65+/(15 – 64)]



- ***Economic/fiscal impact of ageing?***

- ***Use of a Dynamic global OLG CGE model***
  - ***Georges and Mérette (2010),***
  - ***Mérette and Georges (2010)***

  - ***Dynamic***: demographic transition:1930 – 2100
    - Forward looking agents
  - ***Global***: Turkey, USA, EU, Russia, China, India, ROW
    - All 7 countries/regions are fully modeled

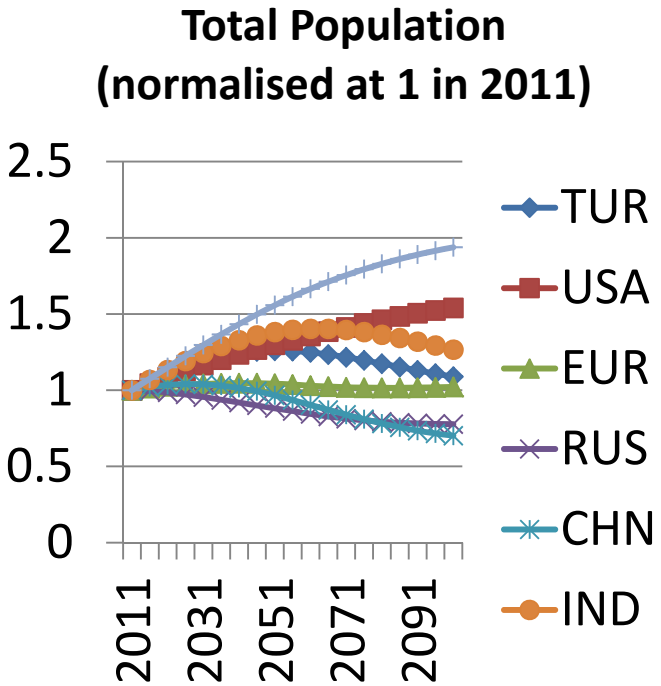
  - ***OLG***: 7 generations (age groups) alive at each point in time
    - 15-24 // 25-34 // 35-44 // 45-54 // 55-64 // 65-74 // 75-84

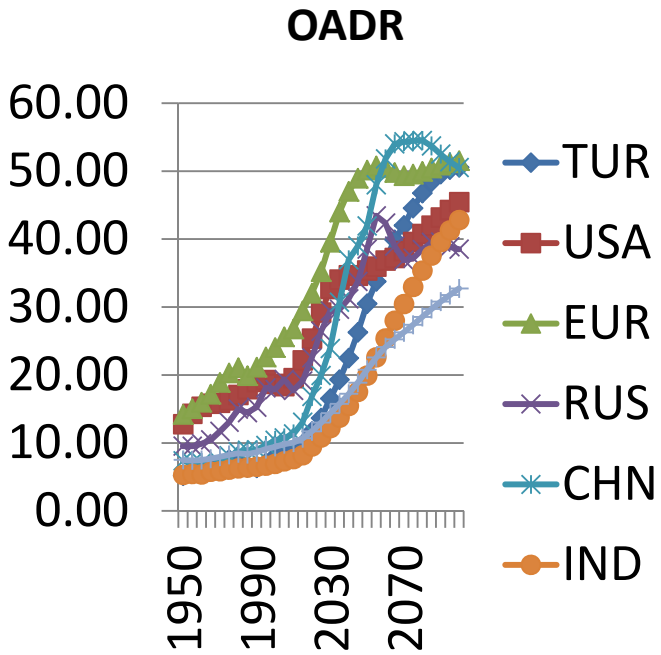
      5 working-age generations — 2 retired generations

    - ***One representative agent per age group*** who maximizes lifetime utility (7 representative households in each region)

Calibration, Shock

- ***Calibration (in part) to GTAP-8 trade data, OECD pension benefit rates***
- ***For the Future: use of NTA data as well***
- ***Shock: demographic projections*** of the UN (medium variant) (***exogenous*** to the model)

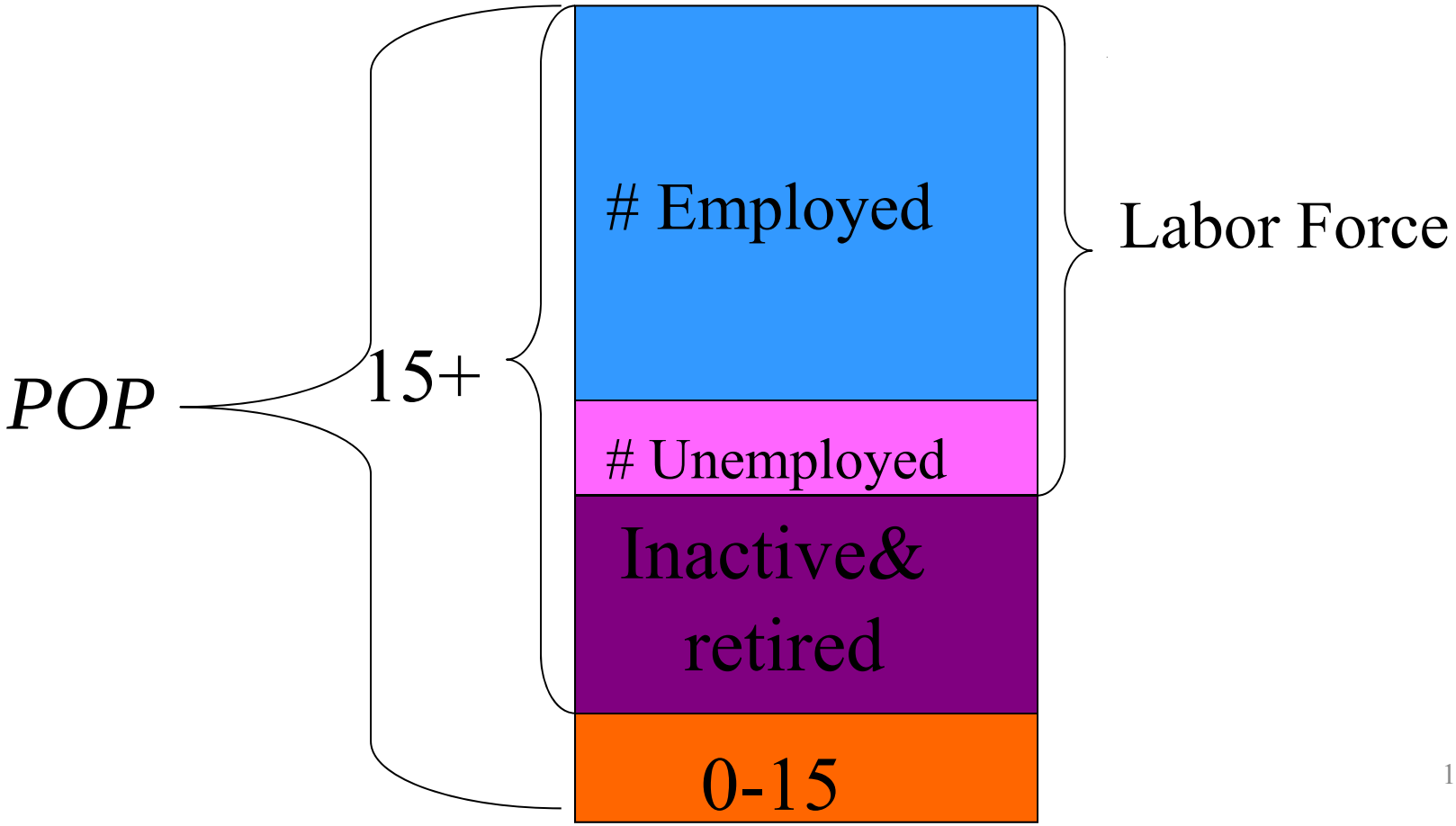




Impact of Pop ageing on **GDP/Capita**

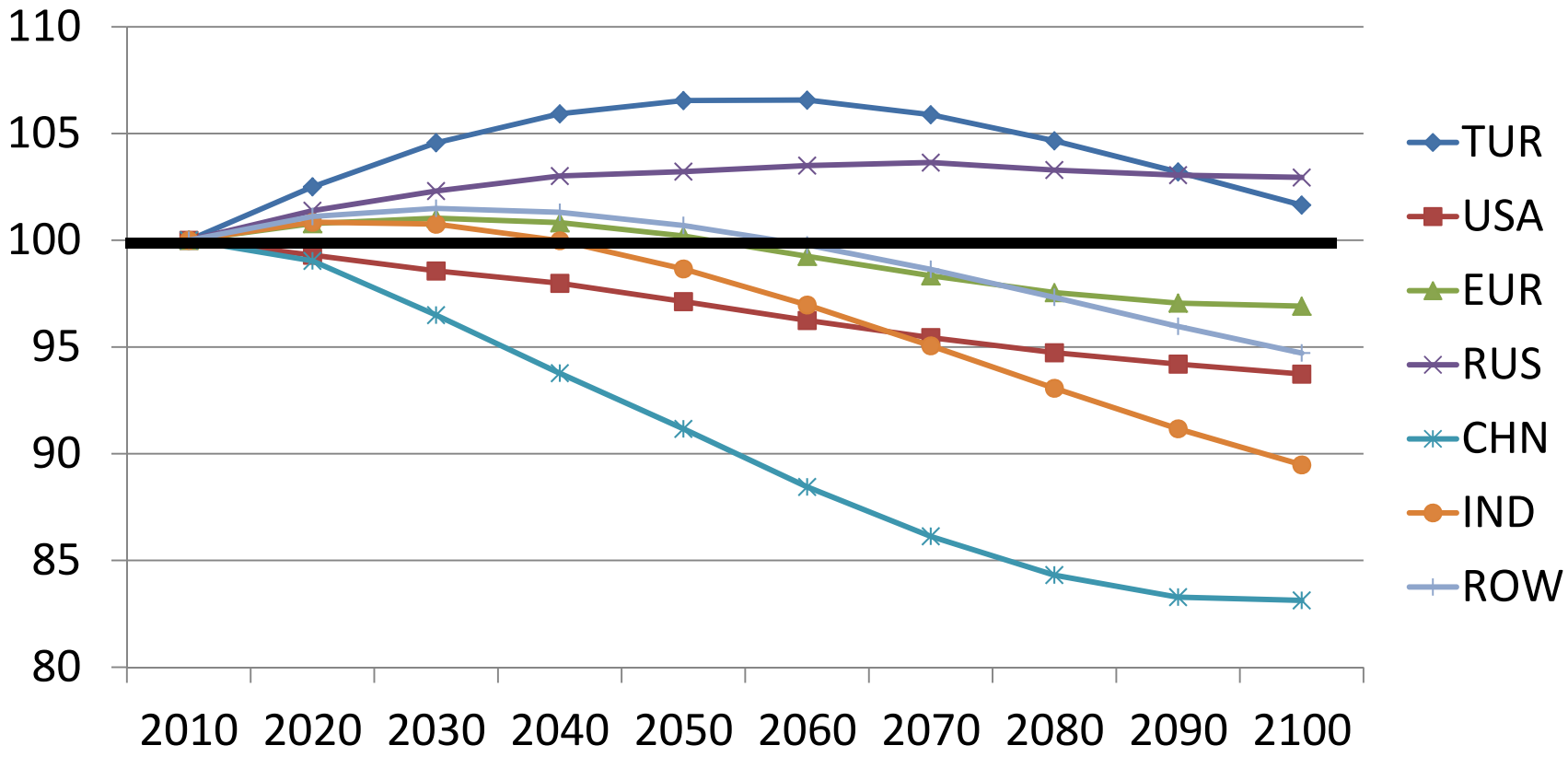
↓ ↓ Less productive ↓ Part time ↓ Discrimination against older ↓ Retirement ↑ Less young (smalle Pop size)

$$\frac{GDP}{POP} = \underbrace{\frac{GDP}{Hours}}_{\text{Productivity}} \times \underbrace{\frac{Hours}{\#Employed}}_{\text{Effort}} \times \underbrace{\frac{\#Employed}{Labor\ Force}}_{\text{Employment Rate}} \times \underbrace{\frac{Labor\ Force}{15+}}_{\text{Labor Force Participation}} \times \underbrace{\frac{15+}{POP}}_{\text{Adult over Total Pop}}$$



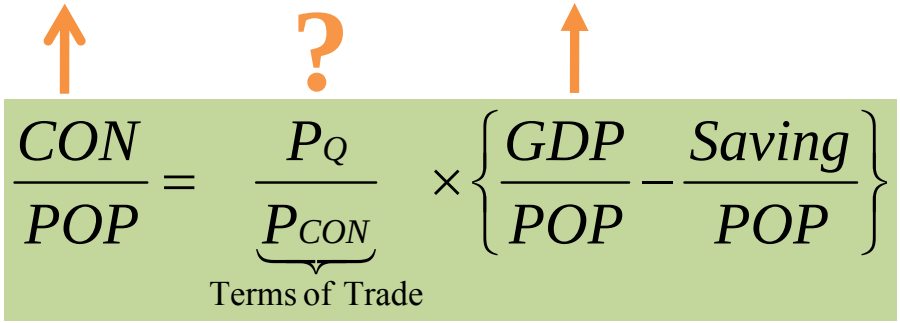
(PRELIMINARY!) Demographically-driven **real GDP/POP**

(abstracting from technical progress)



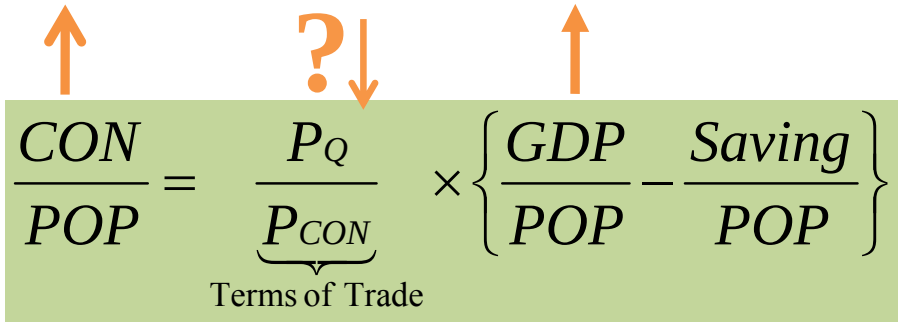
Real Consumption per Capita

- ***Real Consumption*** is the difference between ***real Production*** (GDP) and ***Saving***

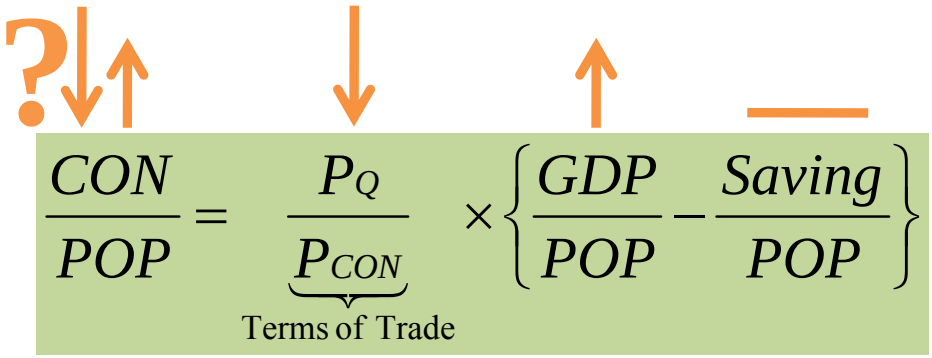


- ***Increase in*** *GDP/POP* ***increases*** *CON/POP*
- In a close economy with a single good, $\boldsymbol{P_{con} = P_Q}$
- In an open economy, $\boldsymbol{P_{con} \neq P_Q}$

Real Consumption per Capita (Turkey)



- If Europe ***ages faster***, the ***goods*** produced by EU would become ***relatively "rare"*** in world markets.
- And the ***price of EU goods*** would ***increase*** relative to those produced in younger countries.
- When Turkey imports from EU, P_{CON} ↑
- **Deterioration in the "*Terms of trade" (TOT) for Turkey***

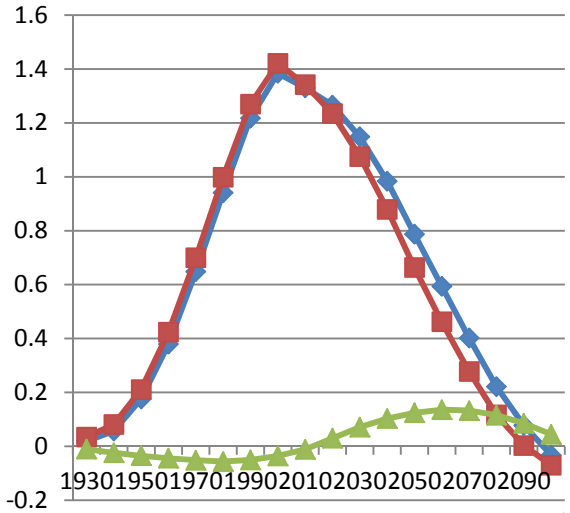


- ***If the TOT effect*** is sufficiently ***strong:***
  ageing North could lead to
  "Immiserizing growth" in the South
- Bhagwati, 1958
- Acemoglu and Ventura (2002) (TFP shock)
- Here: Demographic variant:
  cost of ageing North is ***diffused throughout the South***
  through TOT adjustments
- ***???Demographic Dividends*** in the South?

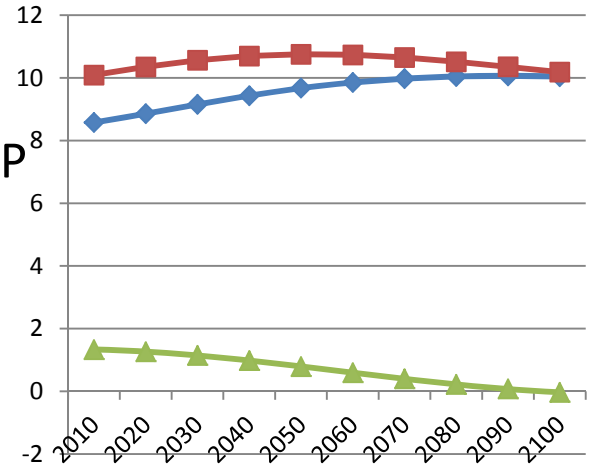
- ***But what will happen to savings?***

$$\frac{CON}{POP} = \underbrace{\frac{P_Q}{P_{CON}}}_{\text{Terms of Trade}} \times \left\{ \frac{GDP}{POP} - \frac{Saving}{POP} \right\}$$

?



Saving/POP
INV/POP
CA/POP

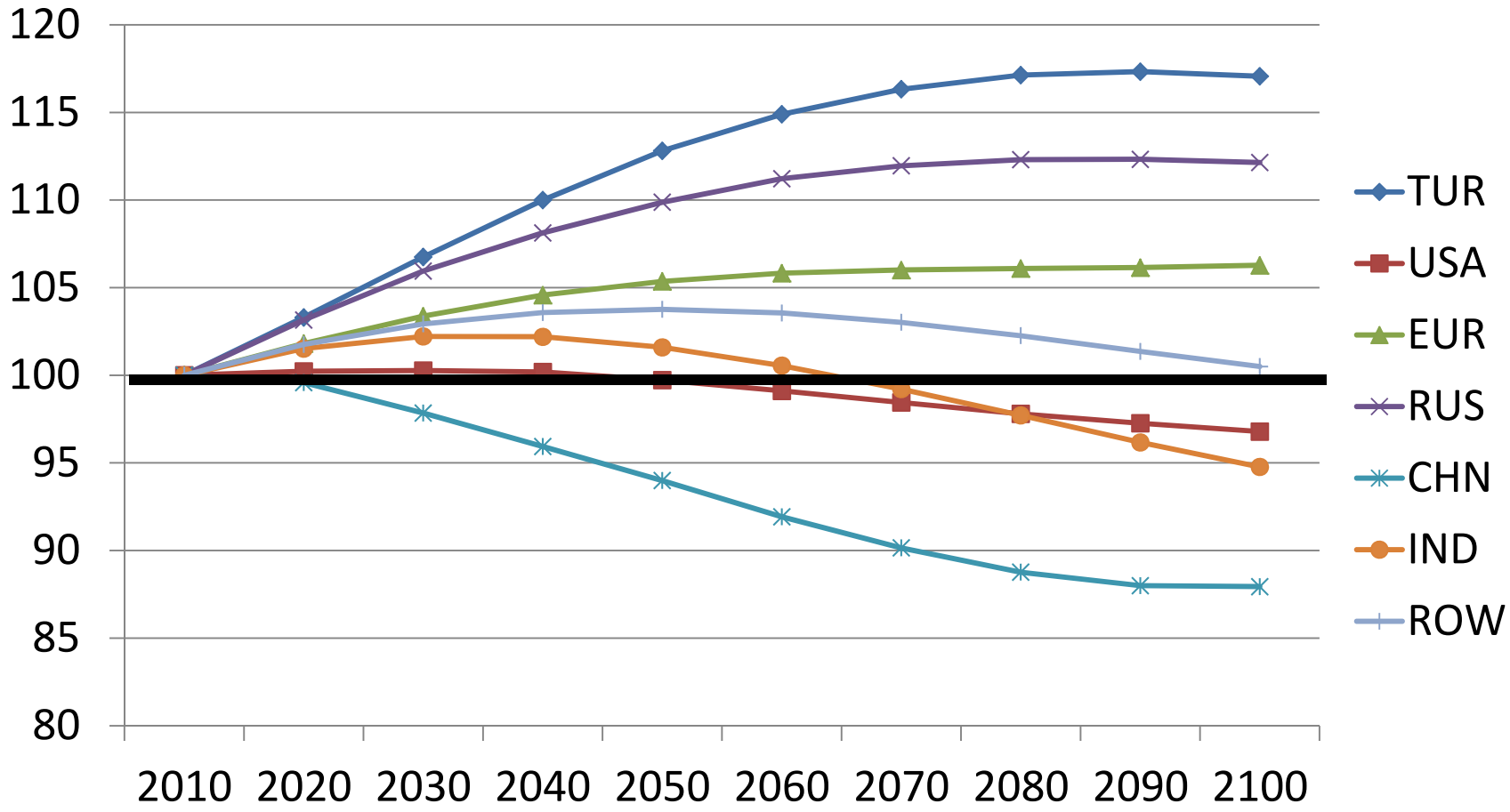


C/POP
Q/POP
Saving/POP

After 2050

$$\frac{CON}{POP} = \underbrace{\frac{P_Q}{P_{CON}}}_{\text{Terms of Trade}} \times \left\{ \frac{GDP}{POP} - \frac{Saving}{POP} \right\}$$

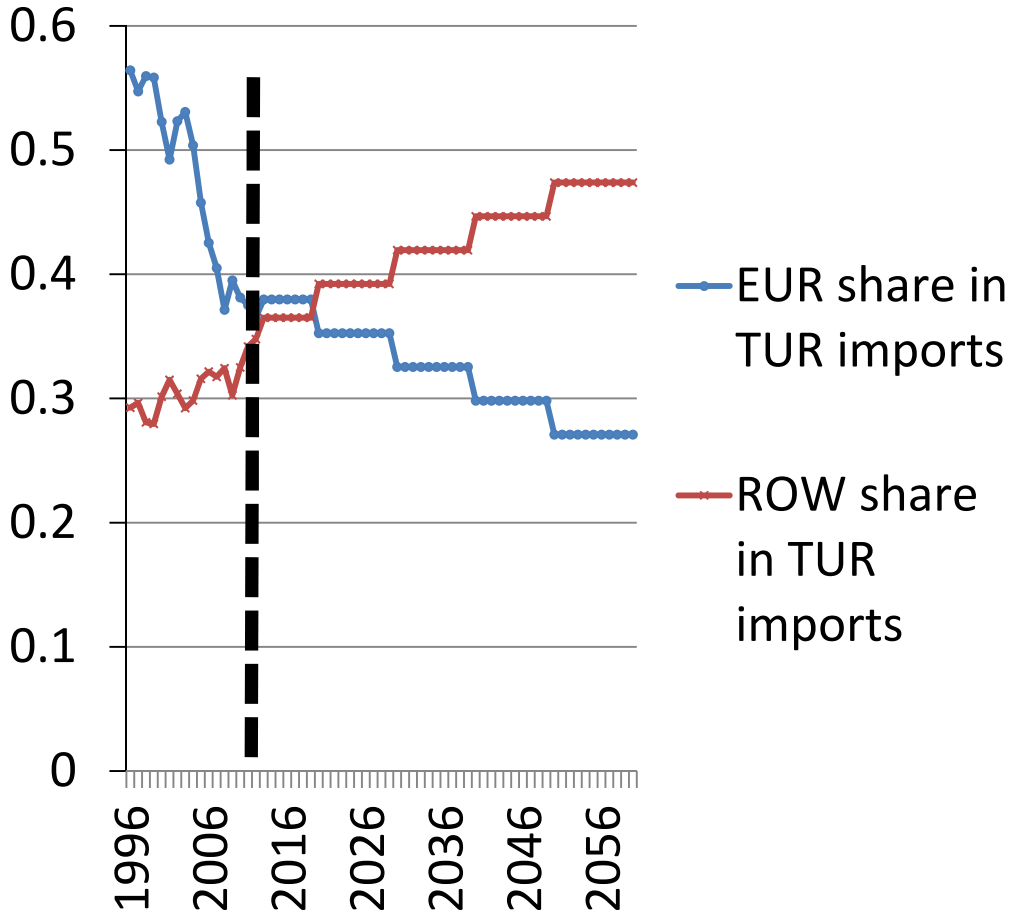
Demographically-driven **CON/POP**



Trade Diversification

- ***impact on Turkey's CON/POP*** if we ***diversify away from the EU*** in favor of specific trade partners (***MENA***/CIS)?

Trade diversification



Change in shares is

—***incremental***

(roughly 2.5% points every 10 year (2010-2050))

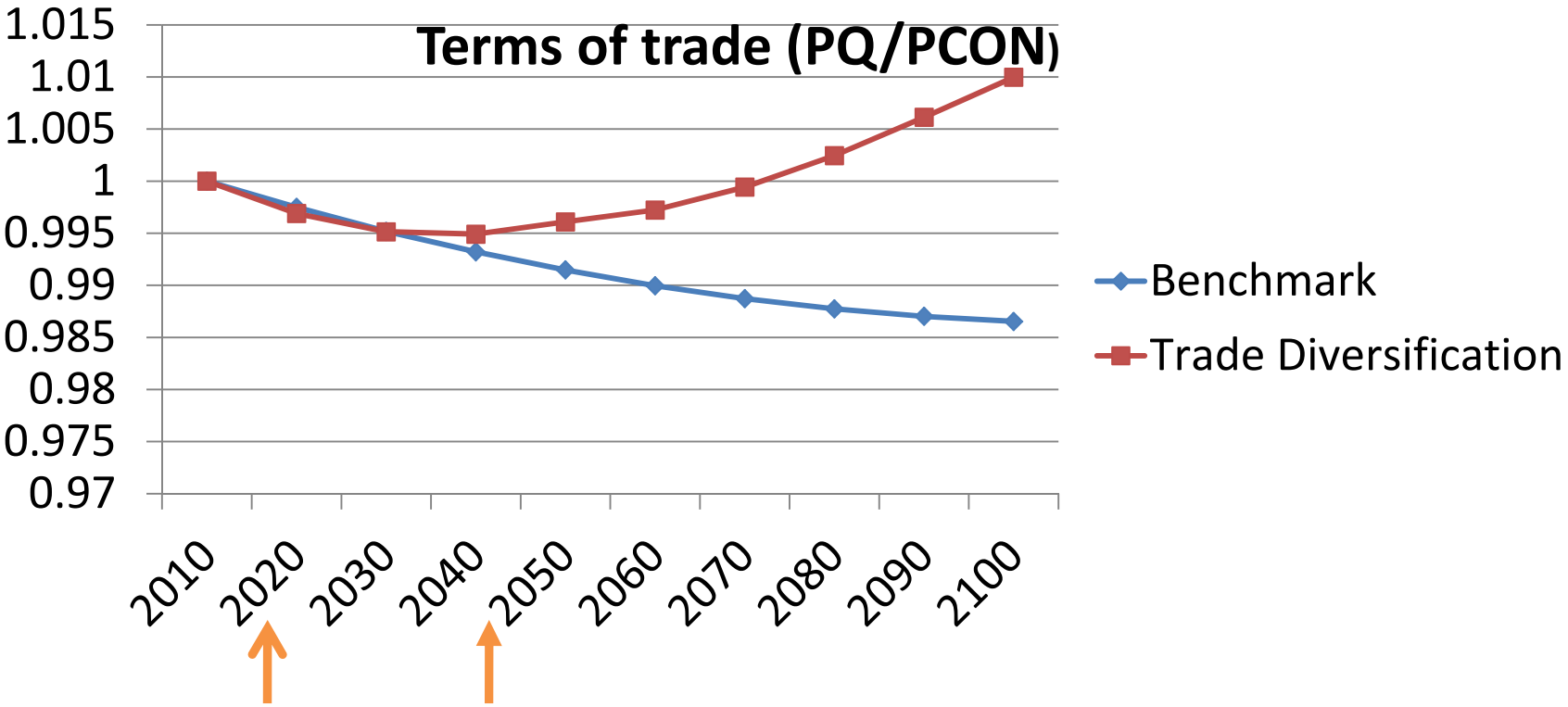
—***Permanent***

Current and counterfactual country shares in Turkey's import

↓	Benchmark import shares	Diversification to ROW
USA	5.4	5.4
EU	40.7	27.1
RUS	11.4	11.4
CHN	7.4	7.4
IND	1.3	1.3
ROW	33.8	47.4
Total	100.0	100.0

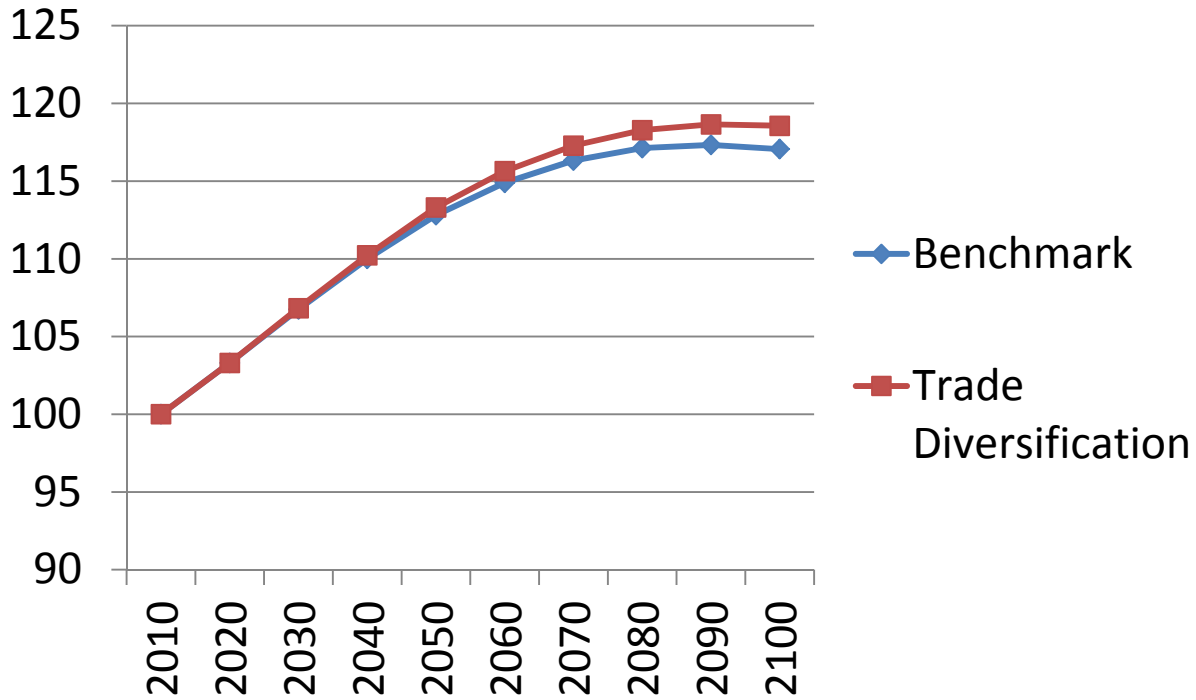
Source: GTAP 8 and Authors' computations

Trade Diversification and Terms of Trade effect



$$\frac{CON}{POP} = \underbrace{\frac{P_Q}{P_{CON}}}_{\text{Terms of Trade}} \times \left\{ \frac{GDP}{POP} - \frac{Saving}{POP} \right\}$$

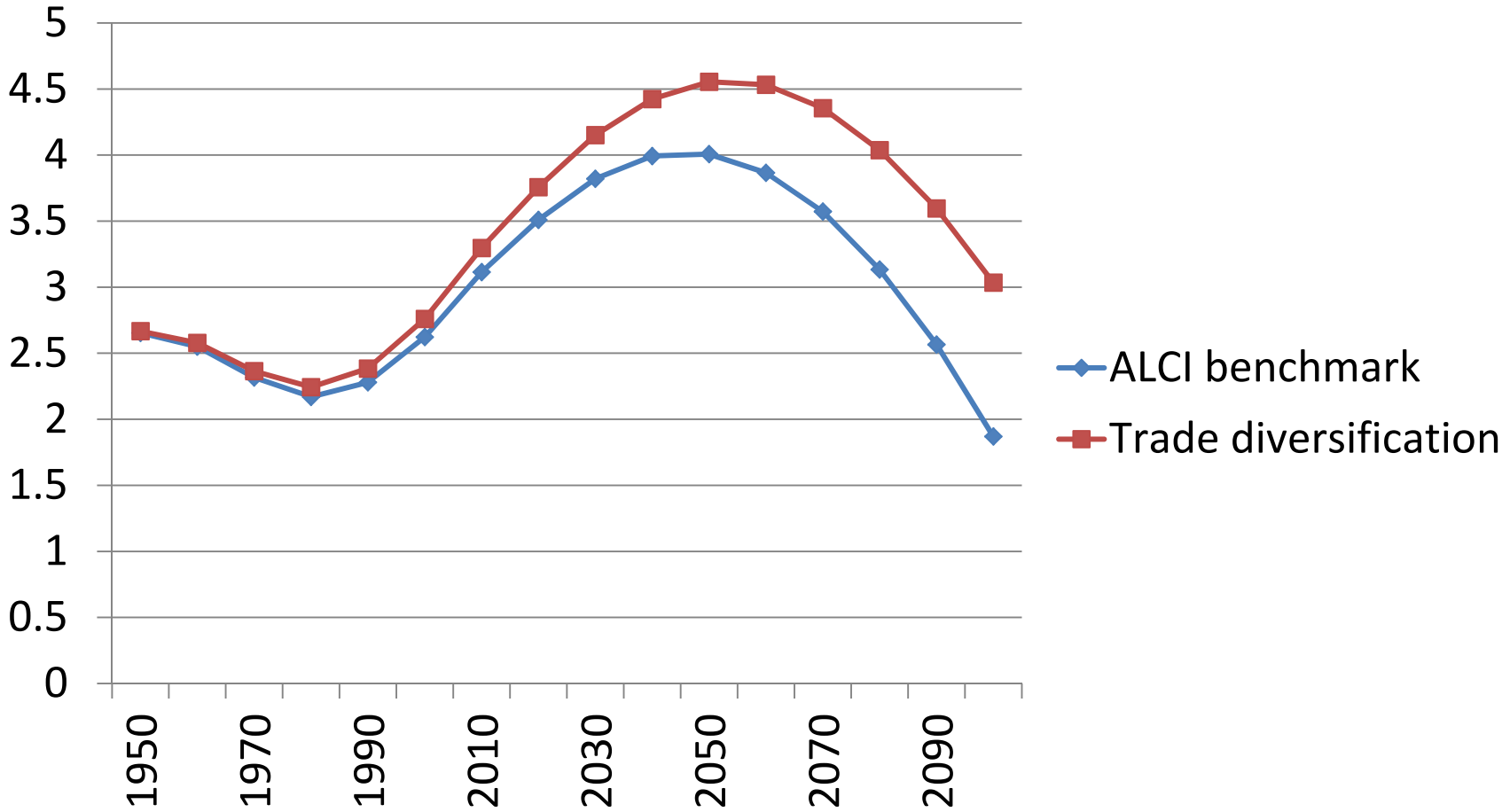
Diversification scenario: CON/POP (Turkey)



But, in an OLG model, …different age groups
So, who gains, who loses?

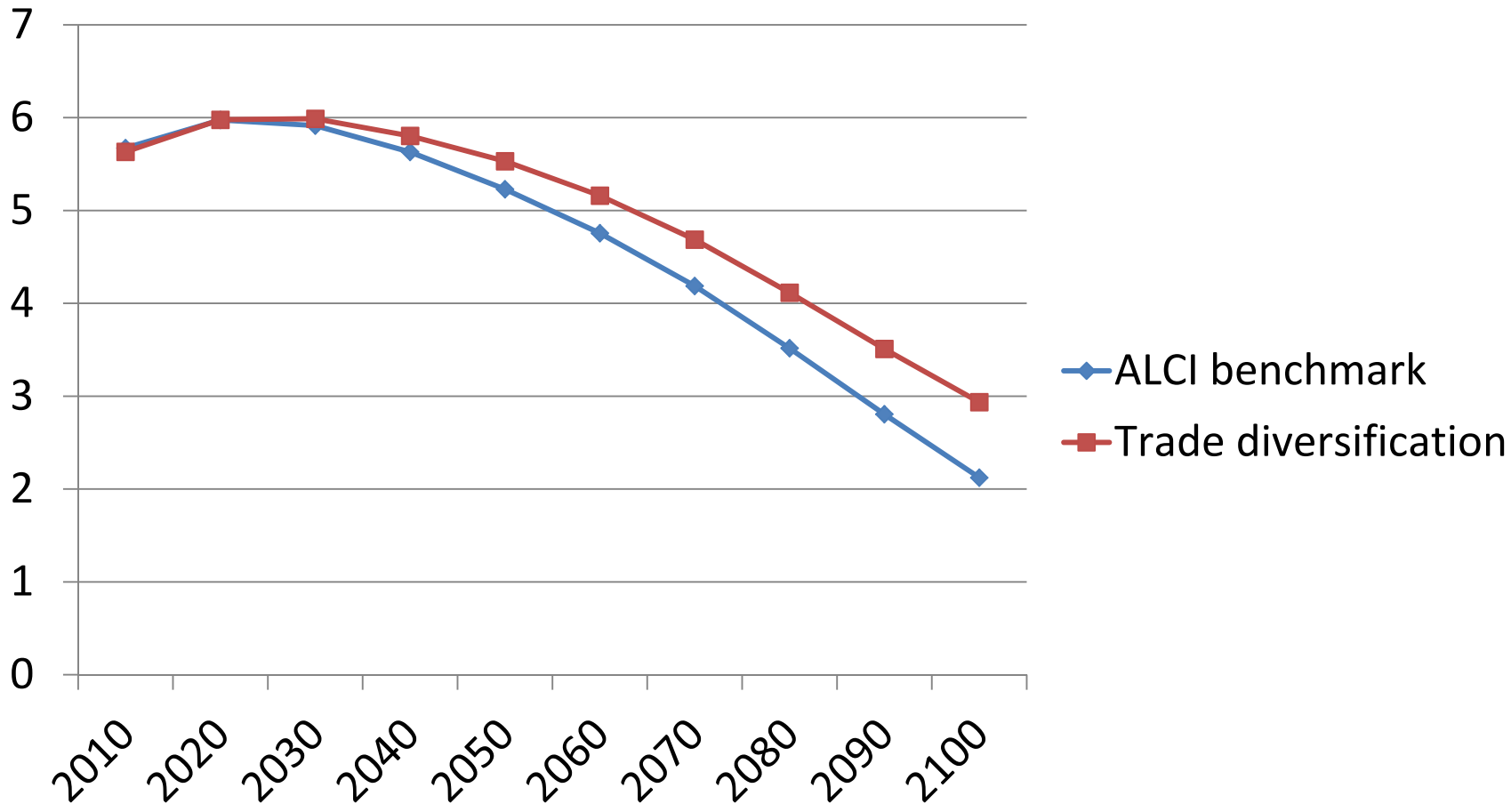
Welfare of individual cohorts

PV of current and future consumption of cohorts (as of their first active working period)



Social Welfare Function

Sum of welfare indices over cohorts alive during a specific period



Outline

1. Global Trade Flows and Policy Debate in Turkey
2. Trade Diversification and Demographics / Results
3. **Conclusion/Caveats**

- **Objective of paper**
  - Scenarios of **trade diversification** ***in the perspective of an ageing world***
    - Georges and Mérette (2010);
    - Mérette and Georges (2010);
- **Results**
  - ***South-South trade diversification*** *could be beneficial to Turkey*

Caveats/Next Steps

1. ***only one good*** per country
   - Multisectoral analysis
2. Assumption of ***imperfect substitution*** (some market power)
   - Important feature of international trade theory
3. ***Exogenous change in trade shares***
   - What might cause ***endogenous changes in shares***
     - FTA with MENA/CIS?
     - Building networks and establishing trust
4. Multi-country calibration to NTA – NEXT

Emerging "South" and Ageing "North" – A Case for South-South Trade Diversification for Turkey

Patrick Georges and Aylin Seçkin

9th Meeting of the Working Group on Macroeconomic Aspects of Intergenerational Transfers

Barcelona, June 3-4, 2013

TUBITAK Research Grant # SOBAG 111K489

Laursen-Metzler debate:

- If TOT deterioration is ***transitory***: (Laursen-Metzler effect)
  - Saving ↓ (CA ↓) and CON constant

$$\frac{\overline{CON}}{POP} = \underbrace{\frac{P_Q}{P_{CON}}}_{\text{Terms of Trade}} \times \left\{ \frac{GDP}{POP} - \frac{Saving}{POP} \right\}$$

- If TOT deterioration is ***permanent***: (Obstfeld, 1982)
  - CON decreases. ***Demographic shock*** (long-lasting)

$$\frac{CON}{POP} = \underbrace{\frac{P_Q}{P_{CON}}}_{\text{Terms of Trade}} \times \left\{ \frac{GDP}{POP} - \frac{\overline{Saving}}{POP} \right\}$$

Household inter-temporal problem

			Generations g ∈ G; gj ∈ GJ; gm ∈ GM						
			---------- GJ----------					-----GM-----	
ORD (TTP)	TTP		g1 (GI)	g2	g3	g4	g5	g6	g7 (GN)
1	1870	TP							
2	1880								
3	1890								
4	1900								
5	1910								
6	1920								
7	1930(TI)	T	$Pop_{t,g}$	$Pop_{t,g+1}$	$Pop_{t,g+2}$	$Pop_{t,g+3}$	$Pop_{t,g+4}$	$Pop_{t,g+5}$	$Pop_{t,g+6}$
8	1940		$Pop_{t+1,g}$	$Pop_{t+1,g+1}$					
9	1950		$Pop_{t+2,g}$		$Pop_{t+2,g+2}$				
10	1960		$Pop_{t+3,g}$			$Pop_{t+3,g+3}$			
11	1970		$Pop_{t+4,g}$				$Pop_{t+4,g+4}$		
12	1980							$Pop_{t+5,g+5}$	
13	1990								$Pop_{t+6,g+6}$
14	2000								
15	2010								
…	…								
…	…								
35	2210								
36 = CARD (TTP)	2220								

Generations alive at time *t*

Population growth over time

Life-time profile of cohort (generation) born at time *t*

Household inter-temporal problem

- Household chooses a ***profile of consumption over its life-cycle*** in order to maximize its ***lifetime utility*** under a ***dynamic budget constraint***

$$U_j = \frac{U(Con_{j,t,g})}{1+\psi_j} + \frac{U(Con_{j,t+1,g+1})}{(1+\psi_j)^2} + \frac{U(Con_{j,t+2,g+2})}{(1+\psi_j)^3} + \ldots \frac{U(Con_{j,t+6,g+6})}{(1+\psi_j)^7}$$

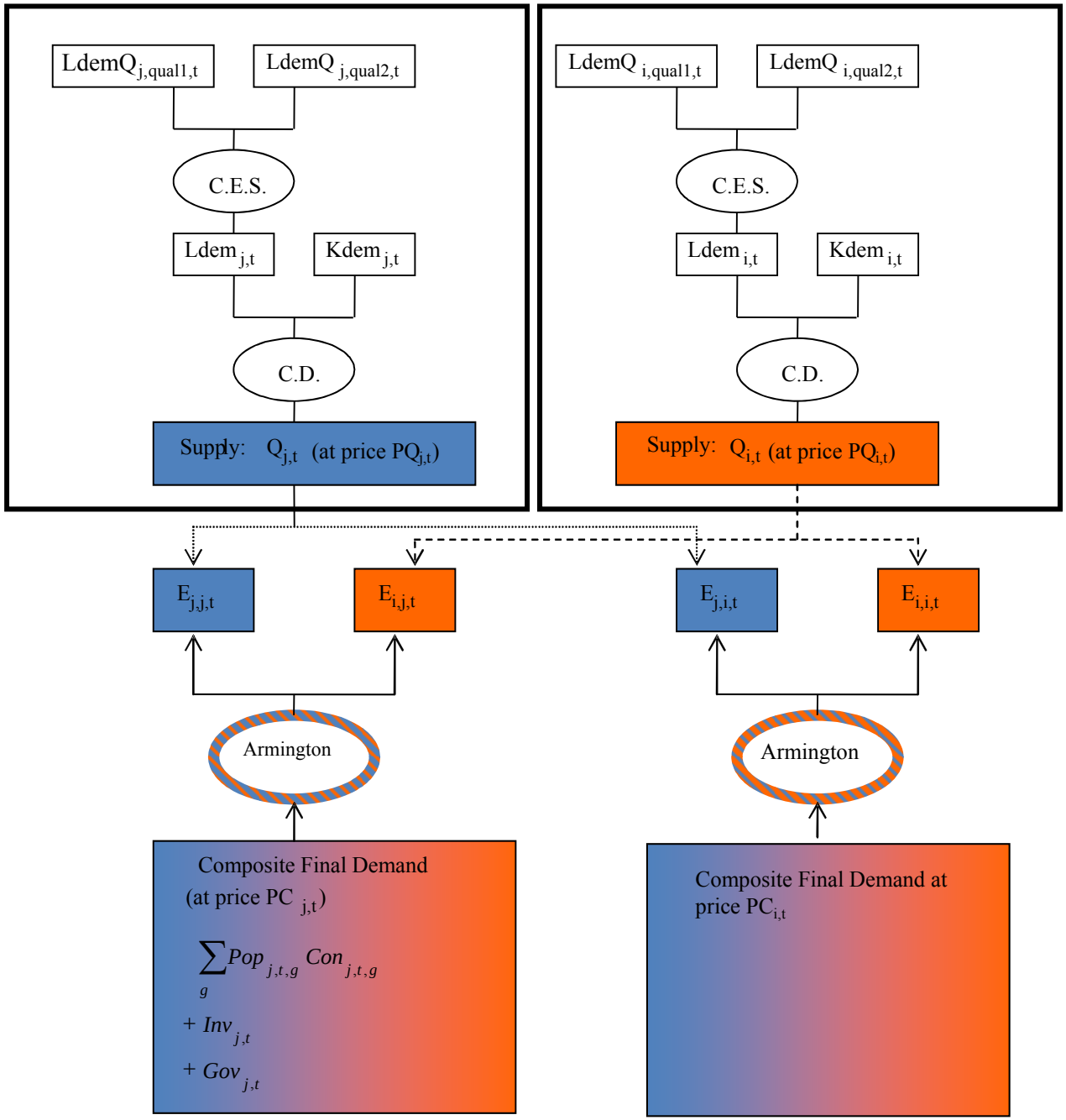
$$U_j = \sum_{k=0}^{6} \frac{U(Con_{j,t+k,g+k})}{\left[1+\psi_j\right]^{k+1}}$$

U_j *is a weighted sum of* ***periodic*** utility function $U(.)$

ψ_j = ***subjective rate of time preference*** (the higher ψ and the higher the ***bias for present consumption***)

k indexes the increment in the period and the generation

Intratemporal problem of household and firms



Pension System -- Pay as You Go