# NTA in Peru: the distribution of public transfers in old-age

**Javier Olivera Angulo**

Research Centre of Public Economics
Catholic University of Leuven

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# NTA in Peru

**Started in August 2010**

First stage completed:

Full NTA for 2007; Funded by UNFPA-Lima

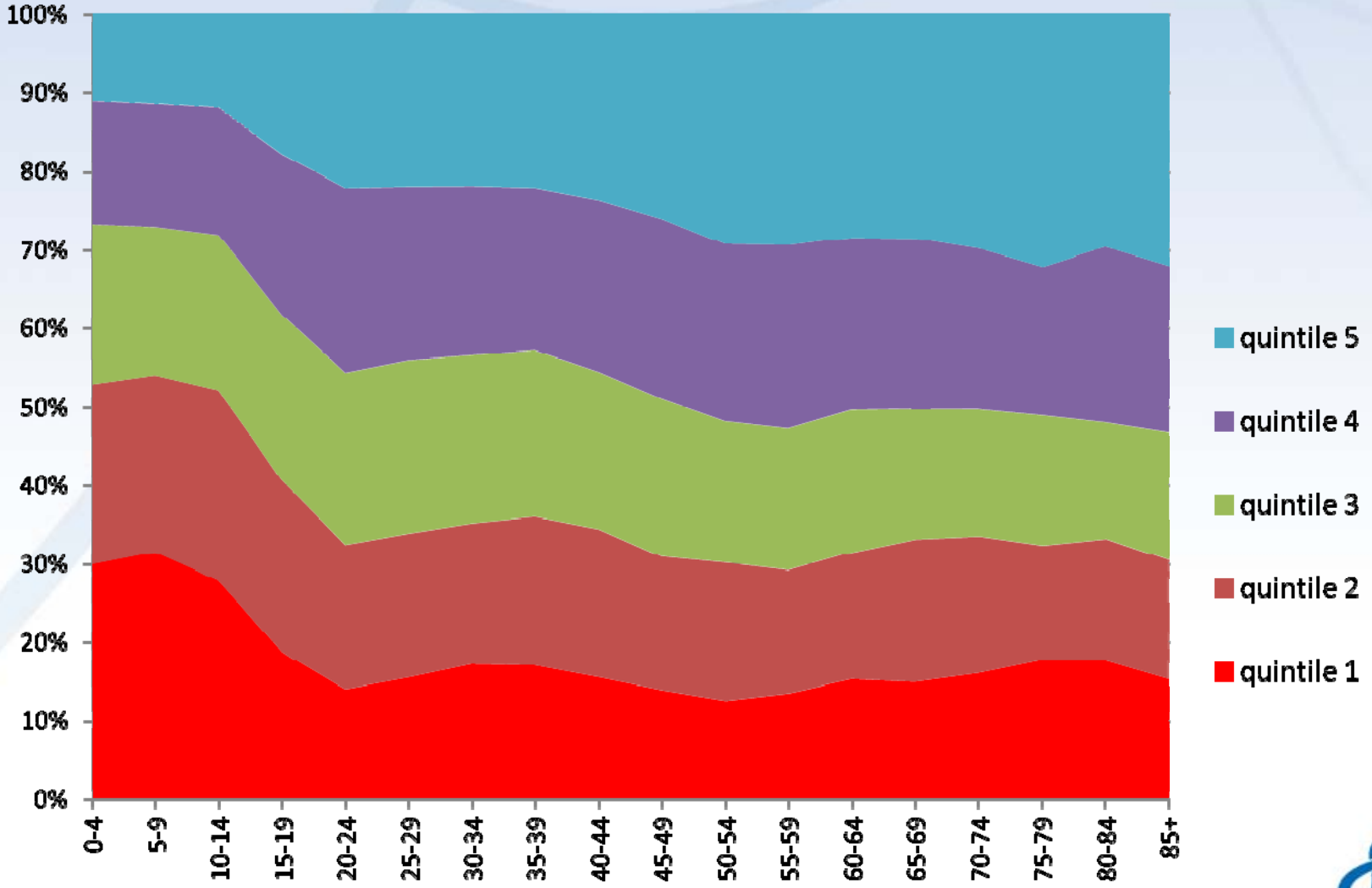
Second, third stage: Inequality? Time use? Funded?

**Here, we try**

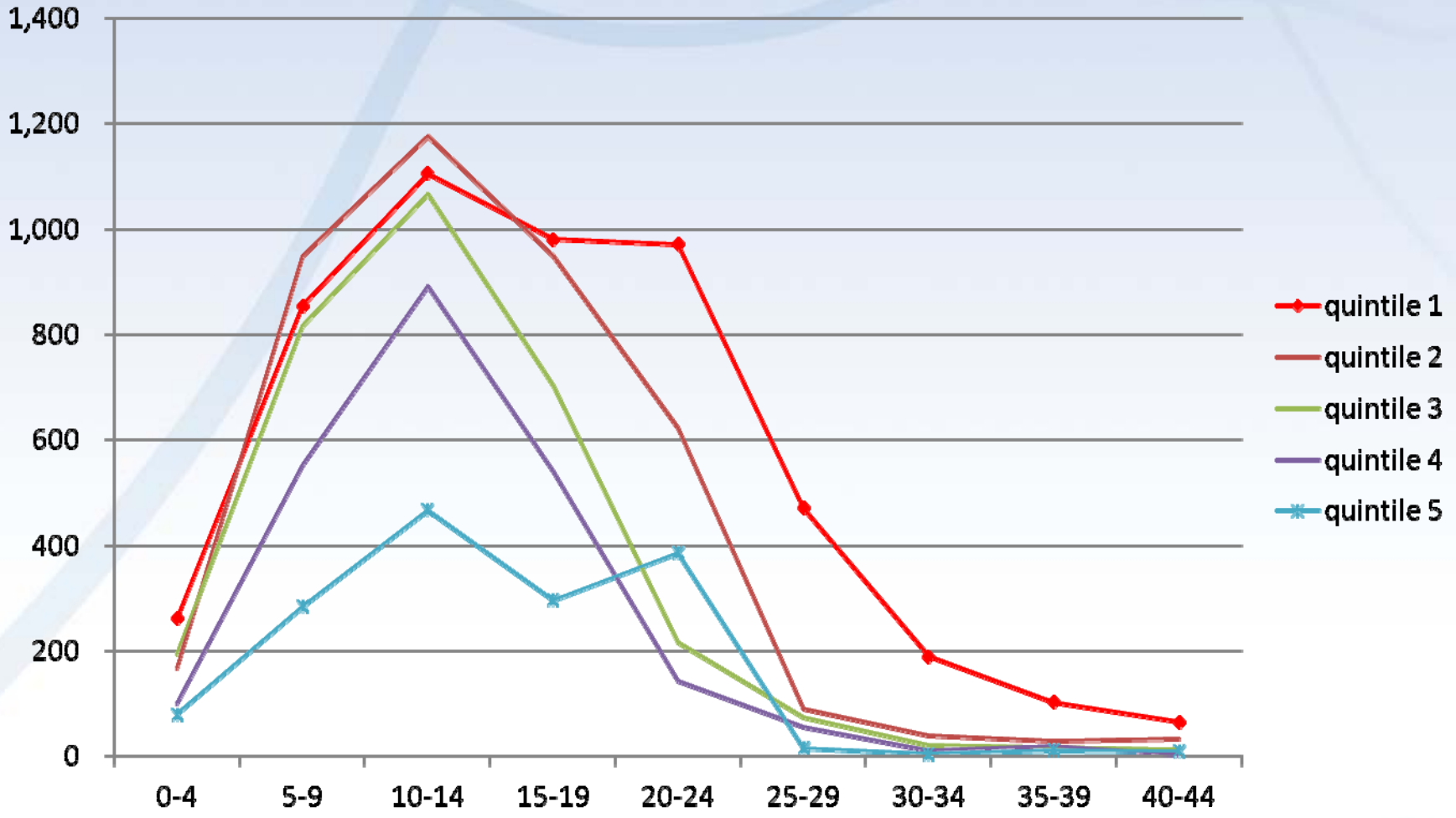
i) Some inequality statistics using NTA

ii) Inequality during elderly using simulated pensions

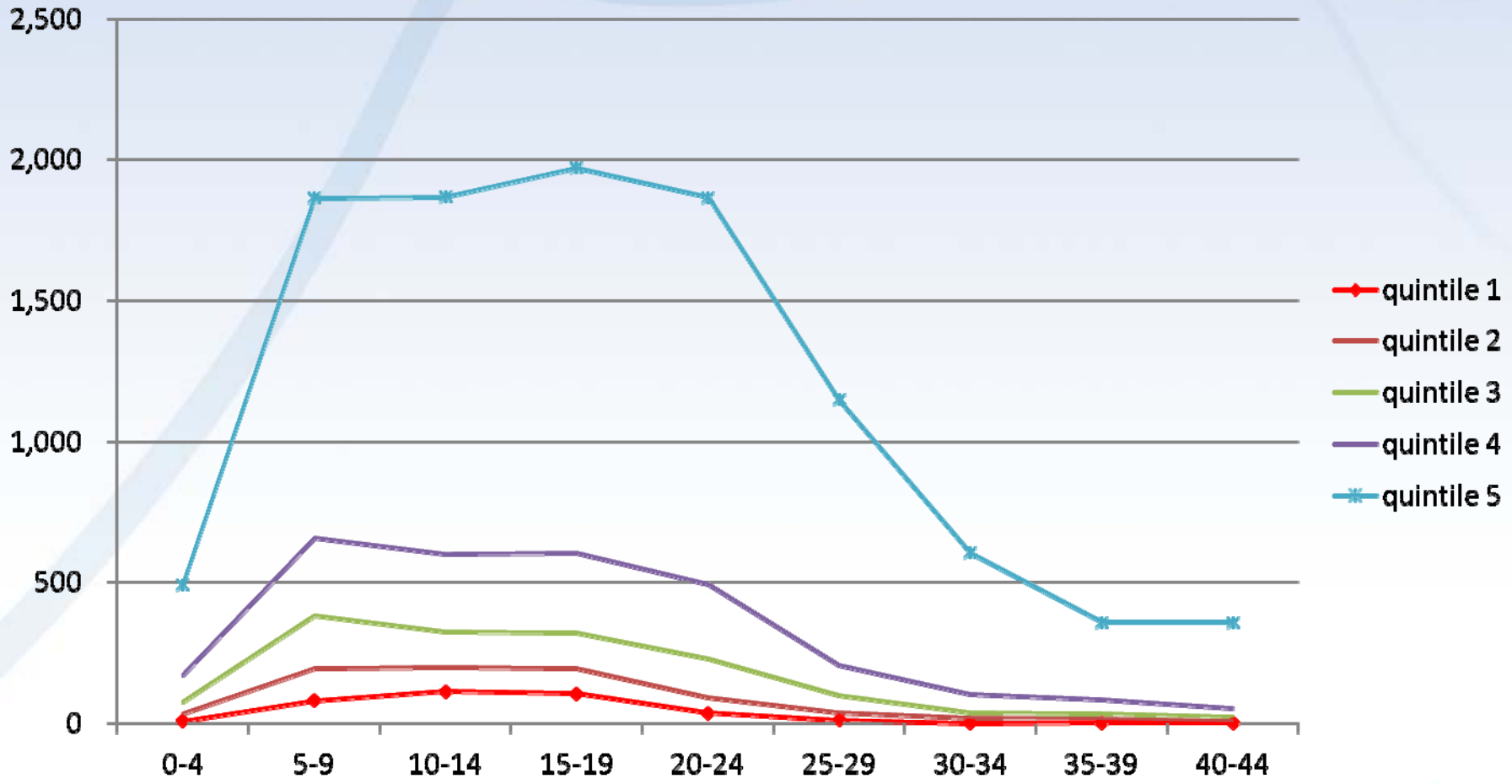
# Distribution of population by quintiles of consumption and age



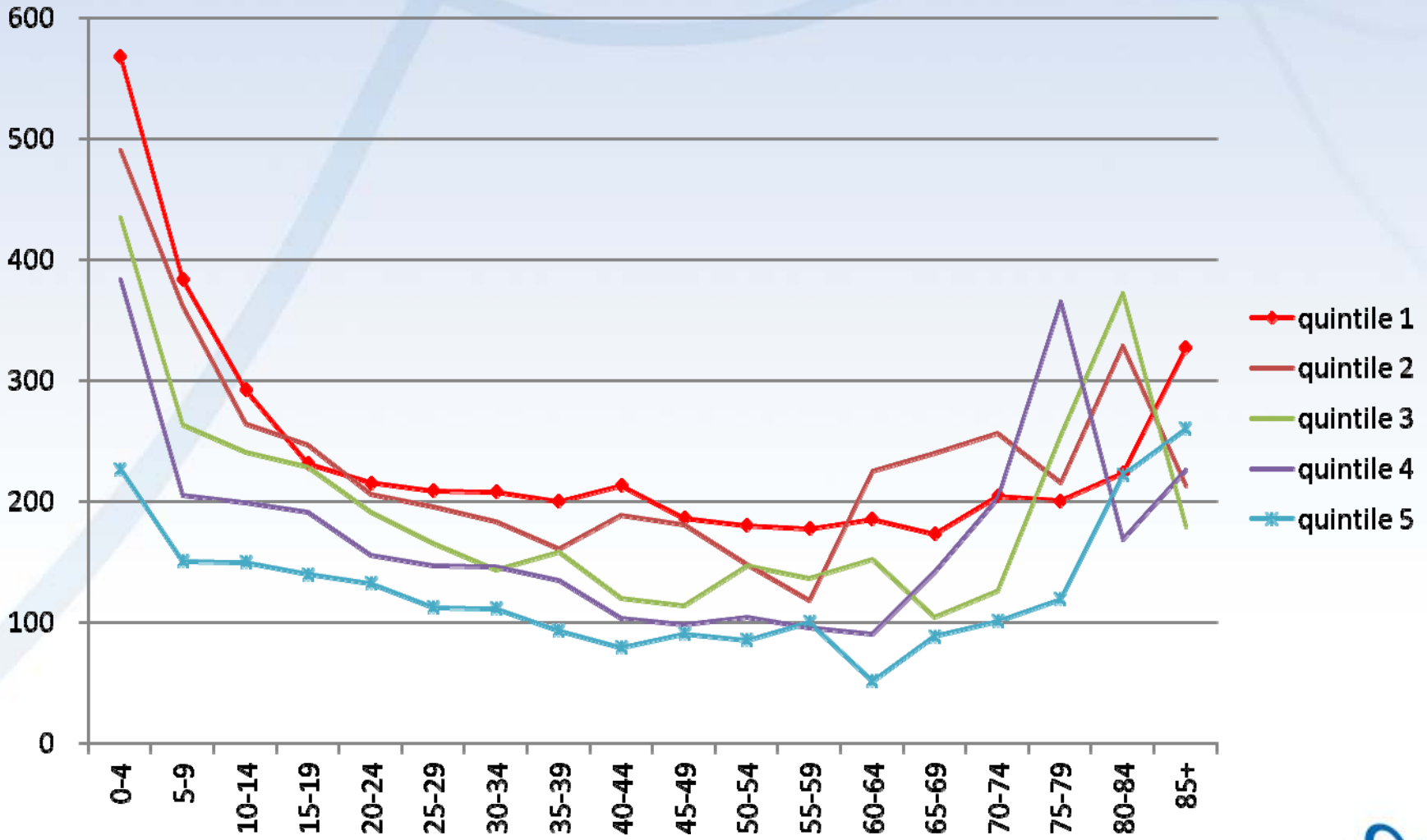
# Consumption p.c. of public education (Soles)



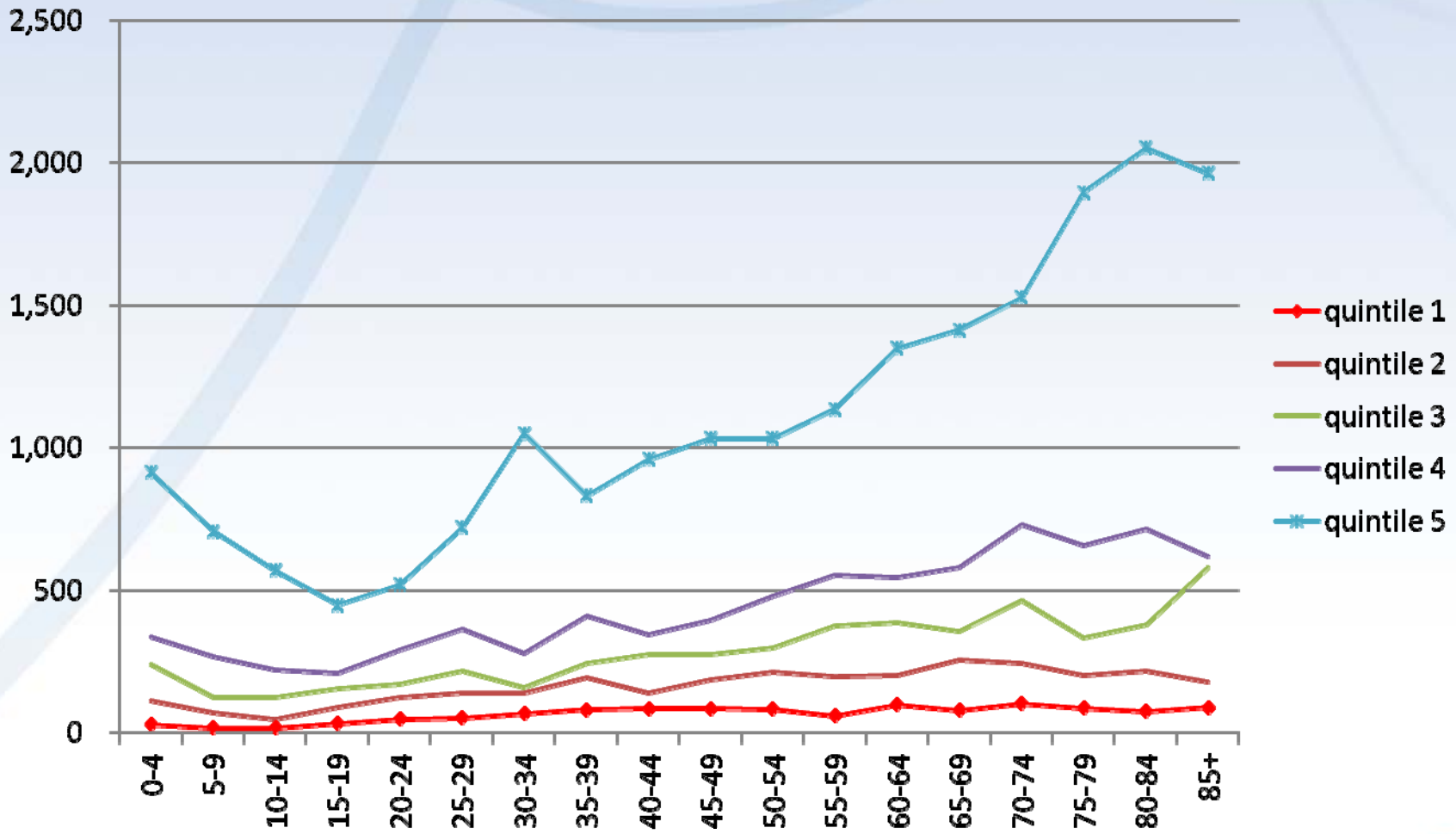
# Consumption p.c. of private education (Soles)



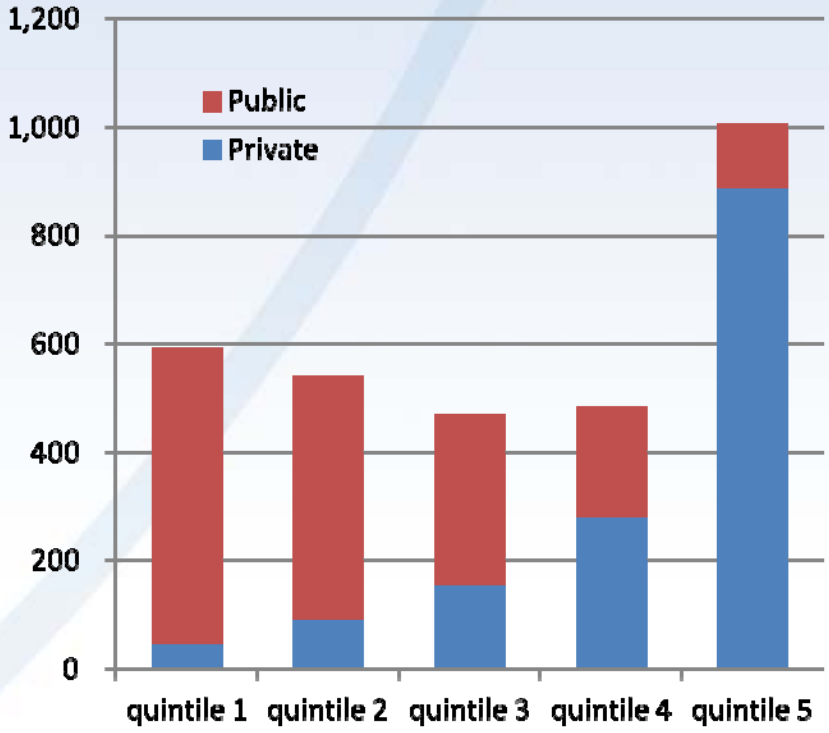
# Consumption p.c. of public health (Soles)



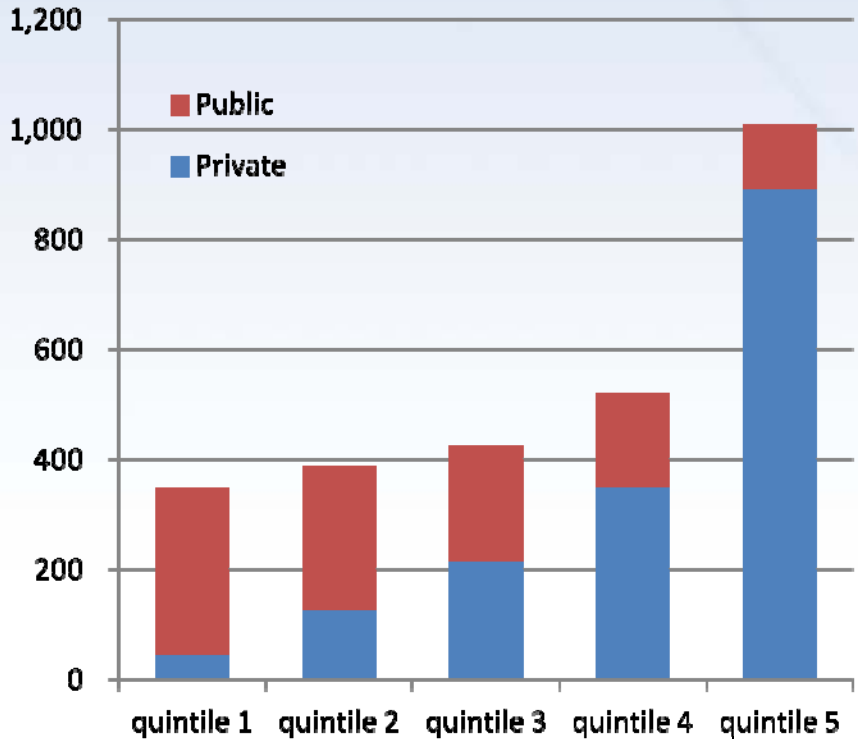
# Consumption p.c. of private health (Soles)



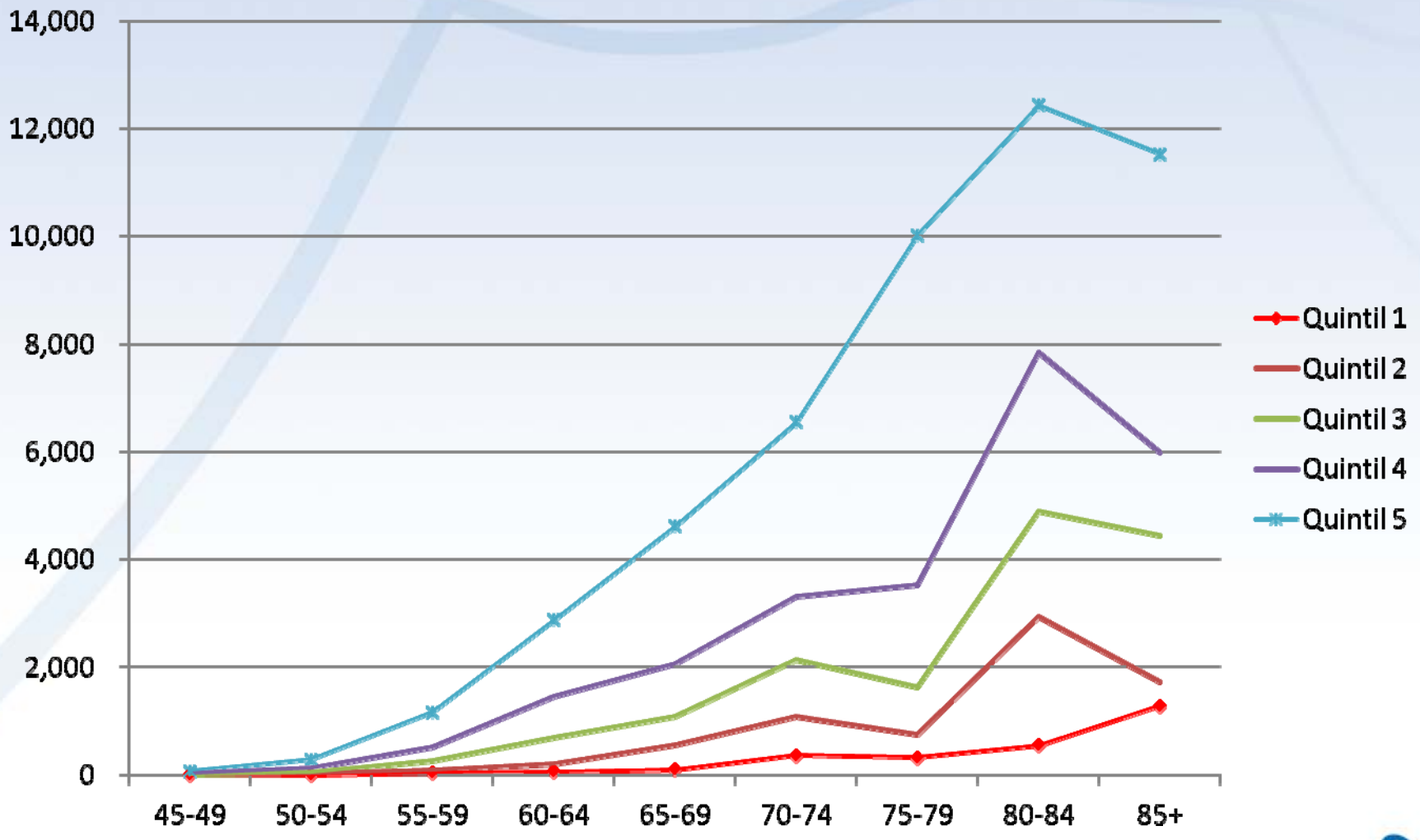
## Consumption p.c. of education



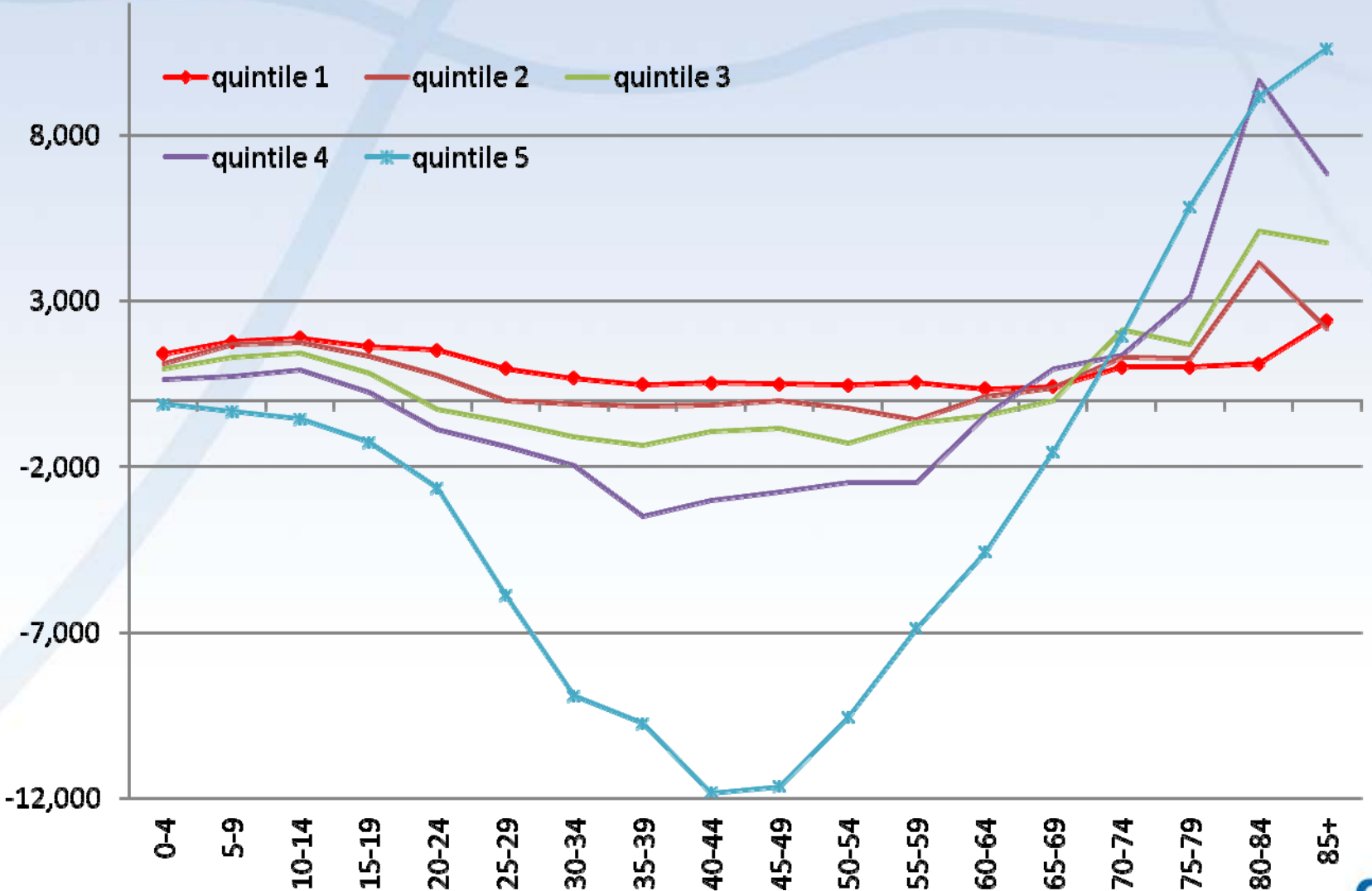

## Consumption p.c. of health



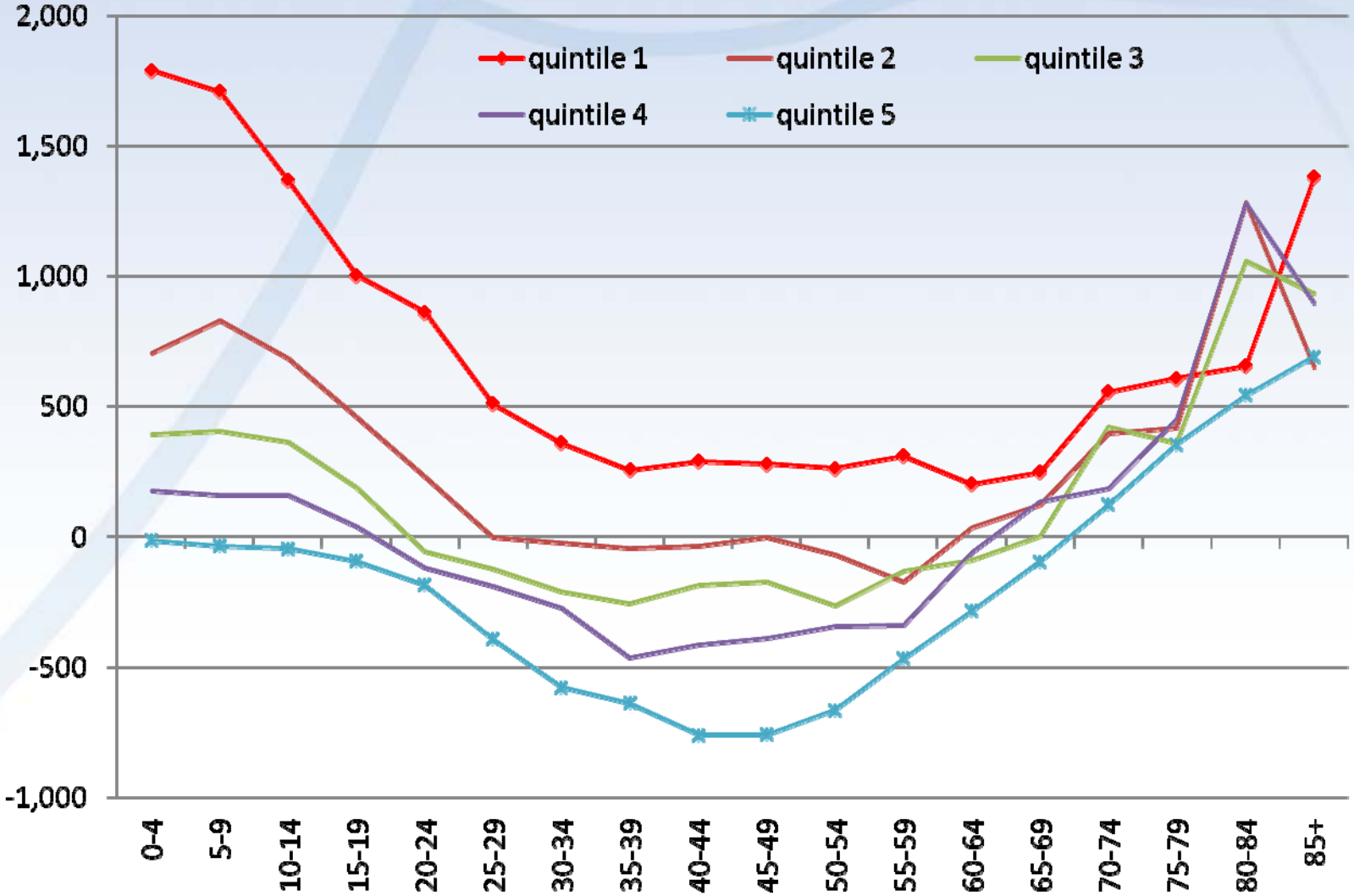
# Public pension expenditure p.c. (Soles)



# Net public transfers p.c. (Soles)



# Net public transfers over private consumption (Soles)



If NTA are broken by quintiles, it is straightforward to compute Gini coefficients for each age or group of age:

$$G=1-0.2x[C_1x5+C_2x4+C_3x3+C_4x2+C_5]/sumC_i$$

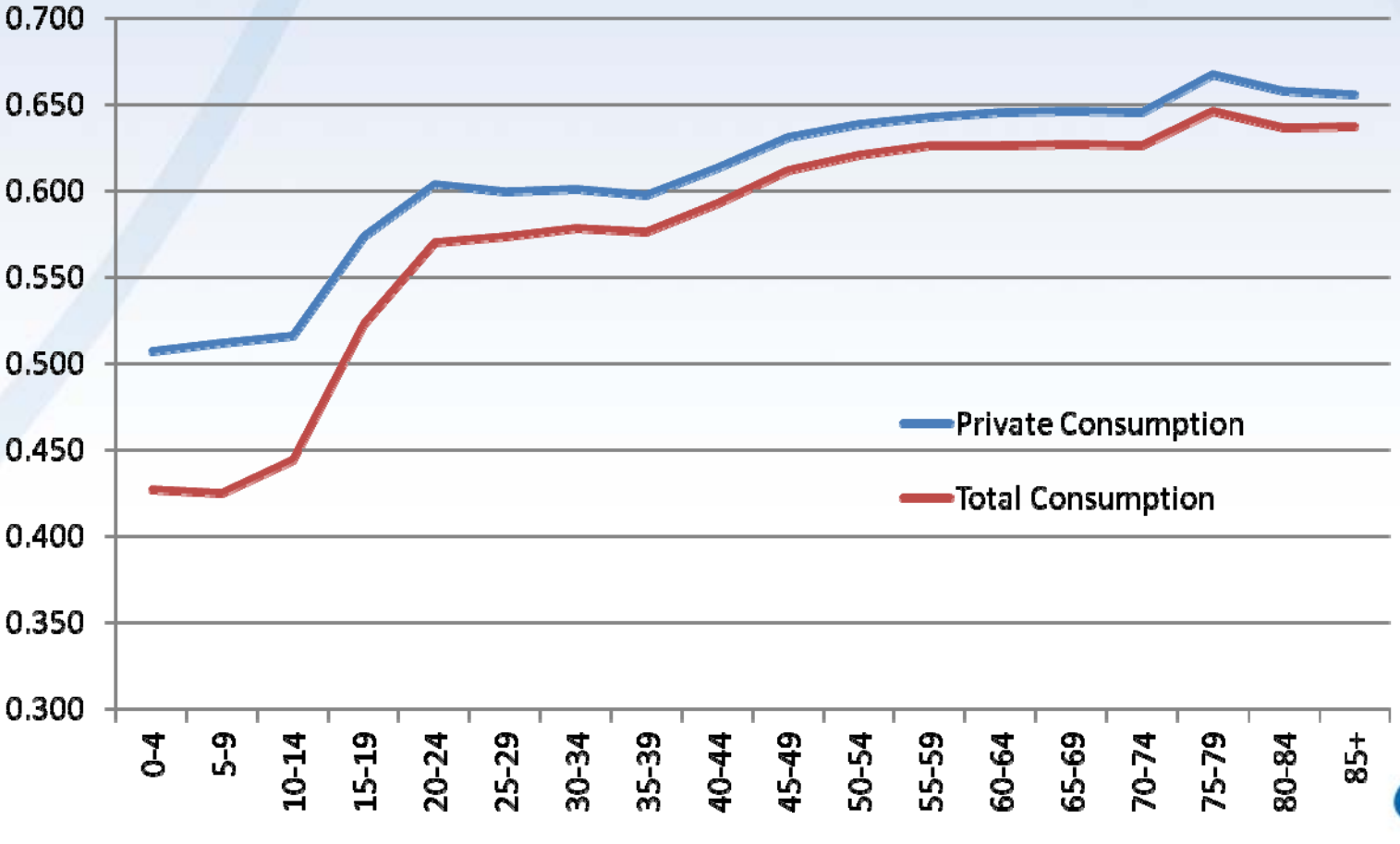
$C_i$ : consumption of quintile i.

We do so

# Gini coefficient for consumption by age

Government intervention reduces slightly inequality in consumption but keeps the ascending profile.

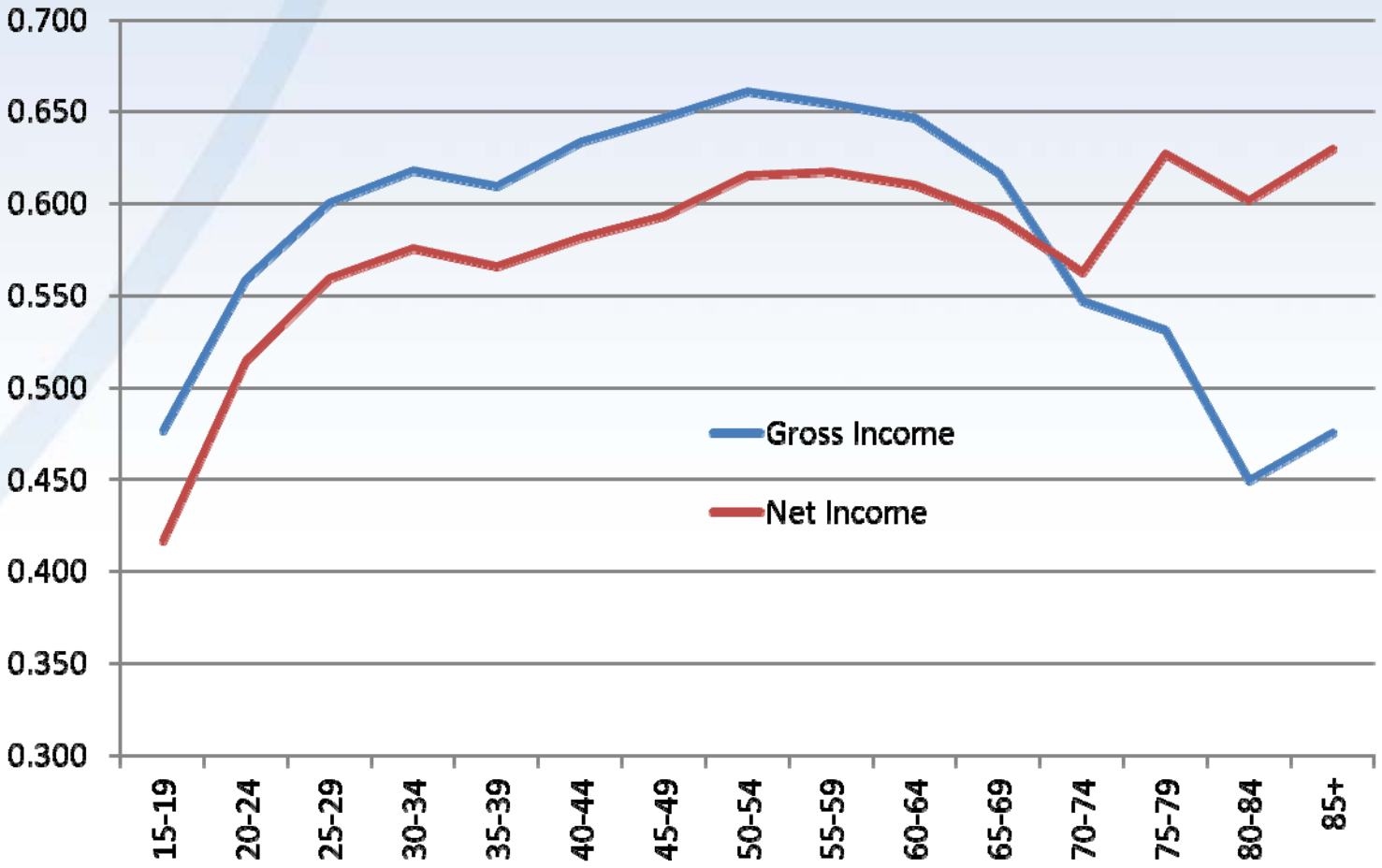
As individuals get older, they face more inequality which enlarges uncertainty on living standards during elderly.



# Gini coefficient for labour income by age

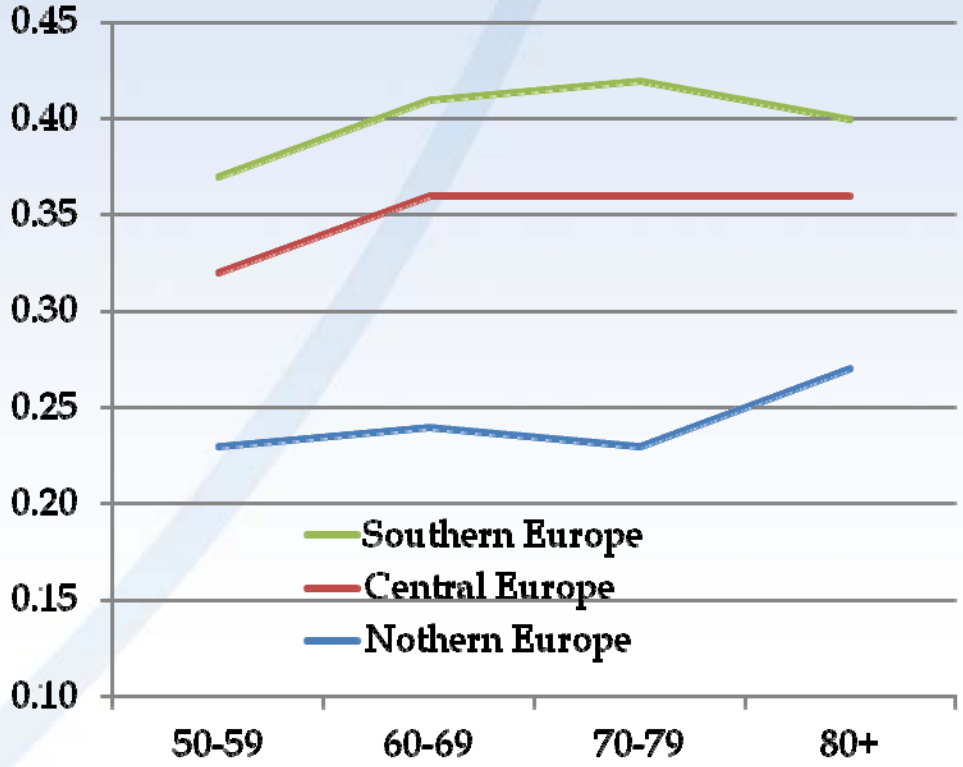
(Net income = Gross labour income – net public transfers)

Government intervention reduces inequality before retirement; but after retirement, inequality increases

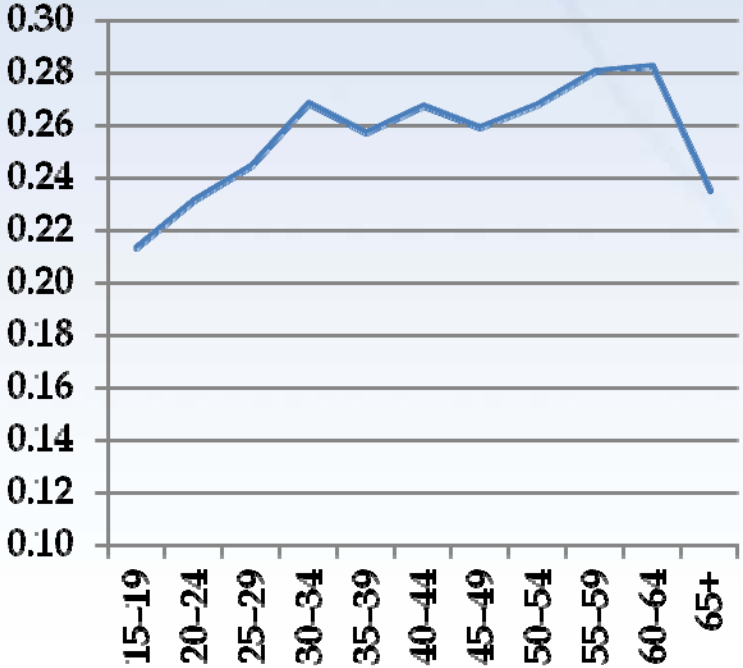


# In other places….

## Europe 2004: Gini coefficient with consumption




## Australia 2003: gini coefficient with incomes



# The role of pension design on the inequality during old-age

Pension reform of 1993 created an individual account pension system, without dismantling the PAYG system

We don't know yet the consequences on inequality in old-age

So, we simulate pensions up to 2029 on the base of the most recent micro-data: National Household Survey (ENAHO 2010)

In addition, a non contributory pension scheme (*pension 65*) was created this year. We will incorporate this in the simulations

# Distribution of pensioners +65, year 2010

| | | |
|---|---|---|
| Private Pension System (SPP) | 35,449 | 2.2% |
| National Pension System (SNP) | 300,842 | 18.8% |
| Law 20530 (closed) and others | 187,780 | 11.7% |
| No pension | 1,075,708 | 67.2% |
| Total | 1,599,779 | 100.0% |

# Pension in SPP

$$P_{spp} = \left[ \alpha_{spp} \sum_{x=25}^{65} (\alpha_x w_x)(1+r)^{65-x} + BR(1+r)^{65-25} + c \right] / a_{65}$$

$$a_{65} = a(z, q_{65}, q_{65+1}, \ldots)$$

$\alpha_{spp}$ : contribution rate (% of wage)
c : administrative fee (% of wage)
$\alpha_x$ : probability of being employed at age x
$w_x$ : wage at age x
r : pension fund return rate
z annuity interest rate
BR: recognition bond
$B_x$ : balance in the individual account at age x
$a_{65}$ : annuity price at retirement age (65)
q : mortality profile

→ Heckman equations

# Pension in SNP

According to pension rules: 20 years of contribution, $P_{snp} \in [484,1000]$, etc.
Use of Heckman equations as well

# Parameters

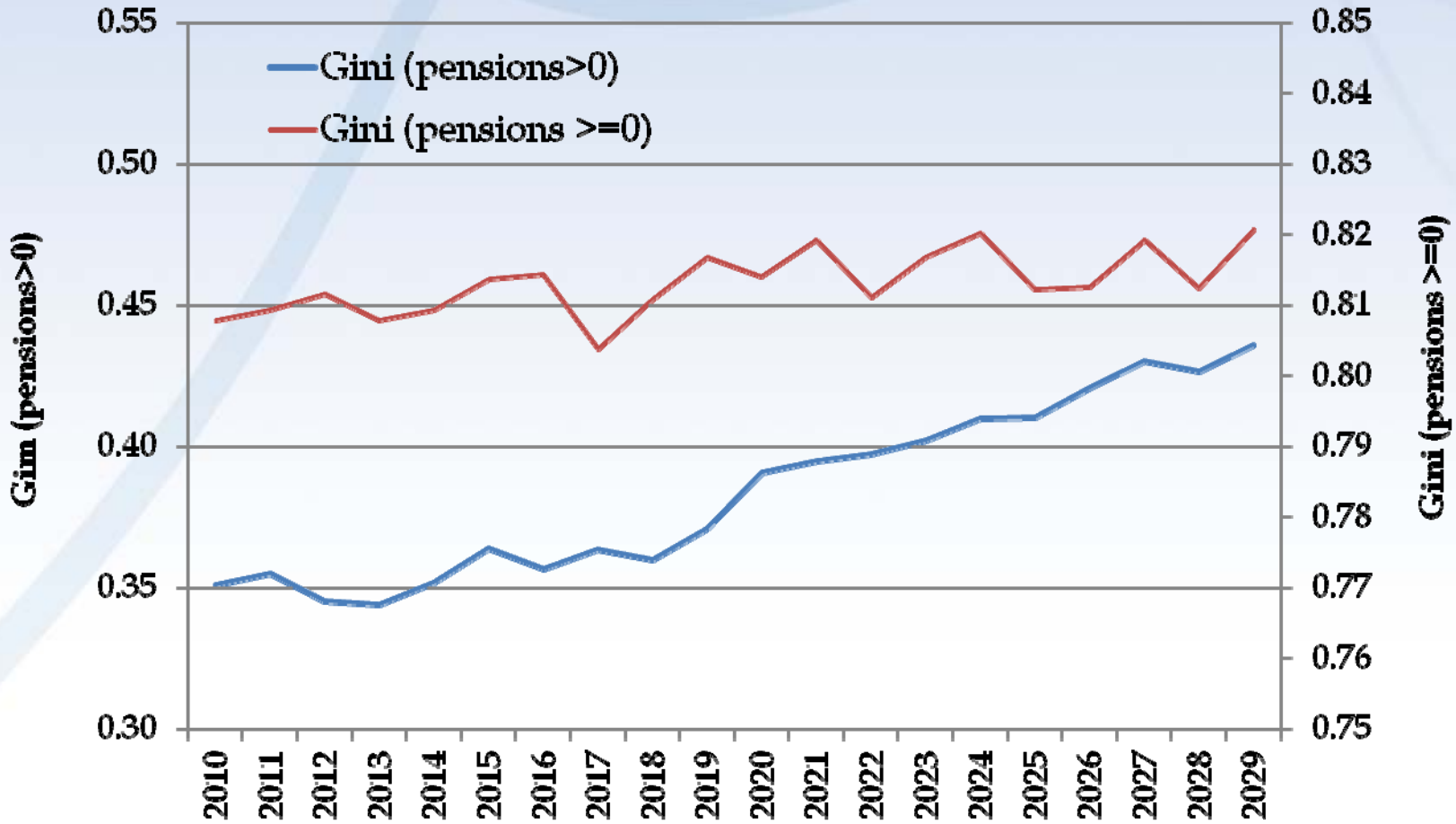
| | |
|---|---|
| Contribution rate to SPP | 10% |
| Administrative fee | 3.07% |
| **Pension fund return rate** | **6%** |
| Annuity interest rate | 4.6% |
| Contribution rate to SNP | 13% |
| Minimum wage | S/. 7,200 |
| Minimum pension in SNP | S/. 5,810 |
| Maximum pension in SNP | S/. 12,003 |

# Sample

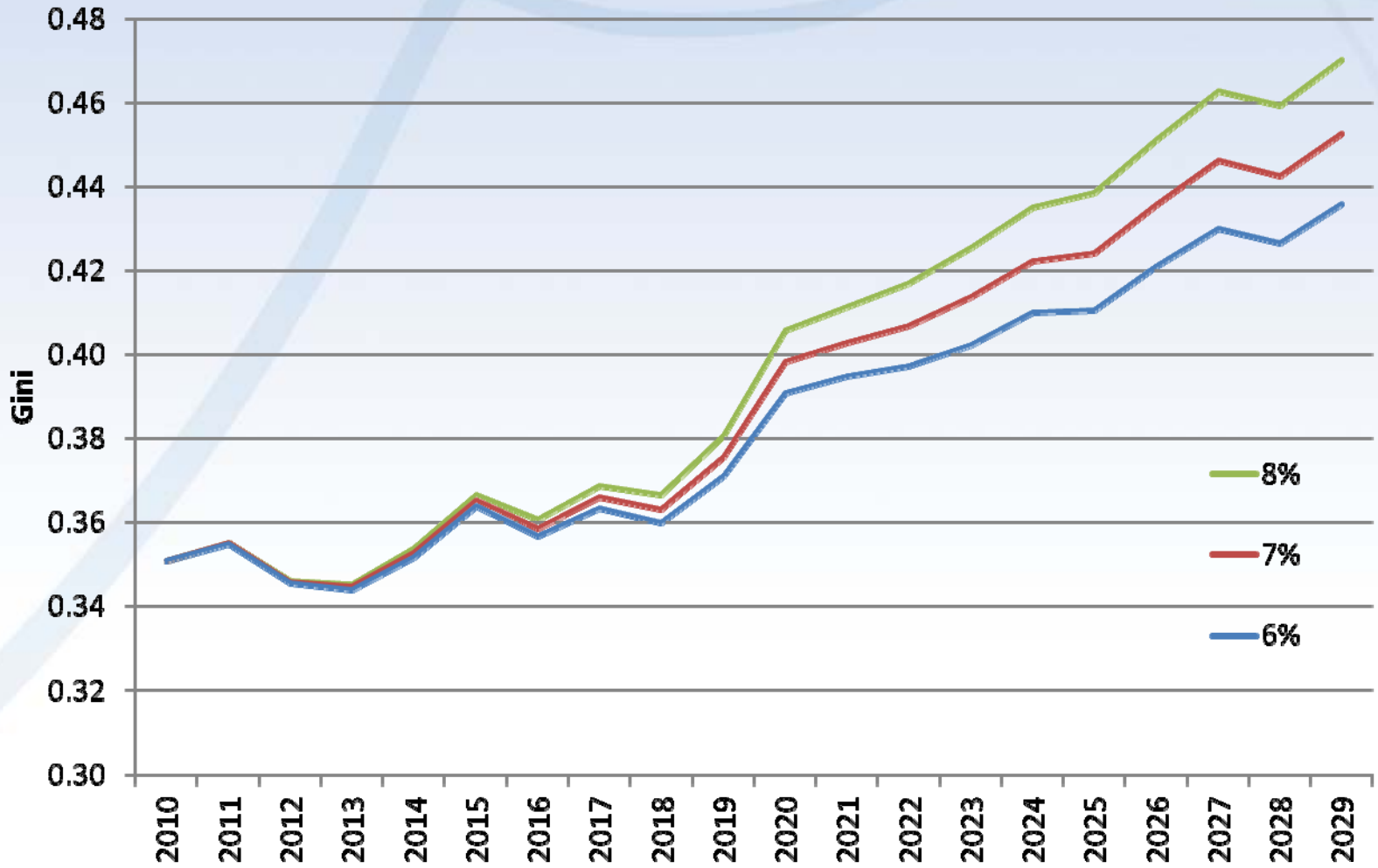
ENAHO 2010
Employed 25-65 years old
Excluding:
- Pensioners
- Insured to other pension systems different from SPP and SNP
- Army and police force
- Full time students
- Disable individuals

N=31,440

# Pension inequality for population +65



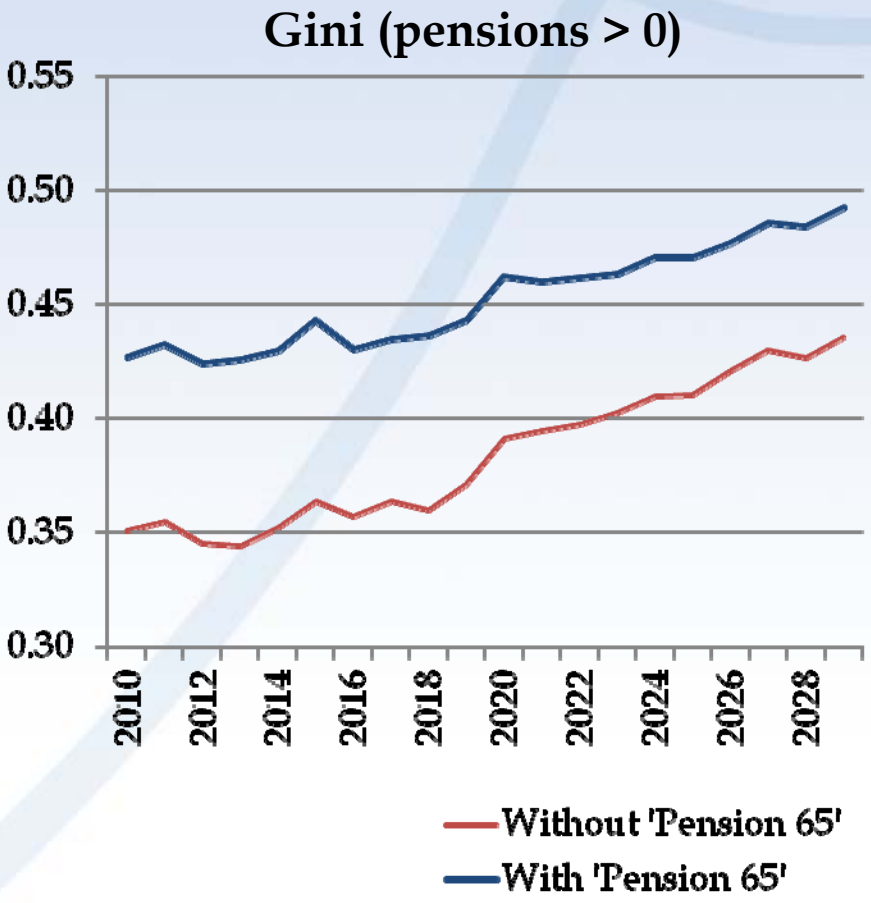
# Gini +65 by pension fund return rate

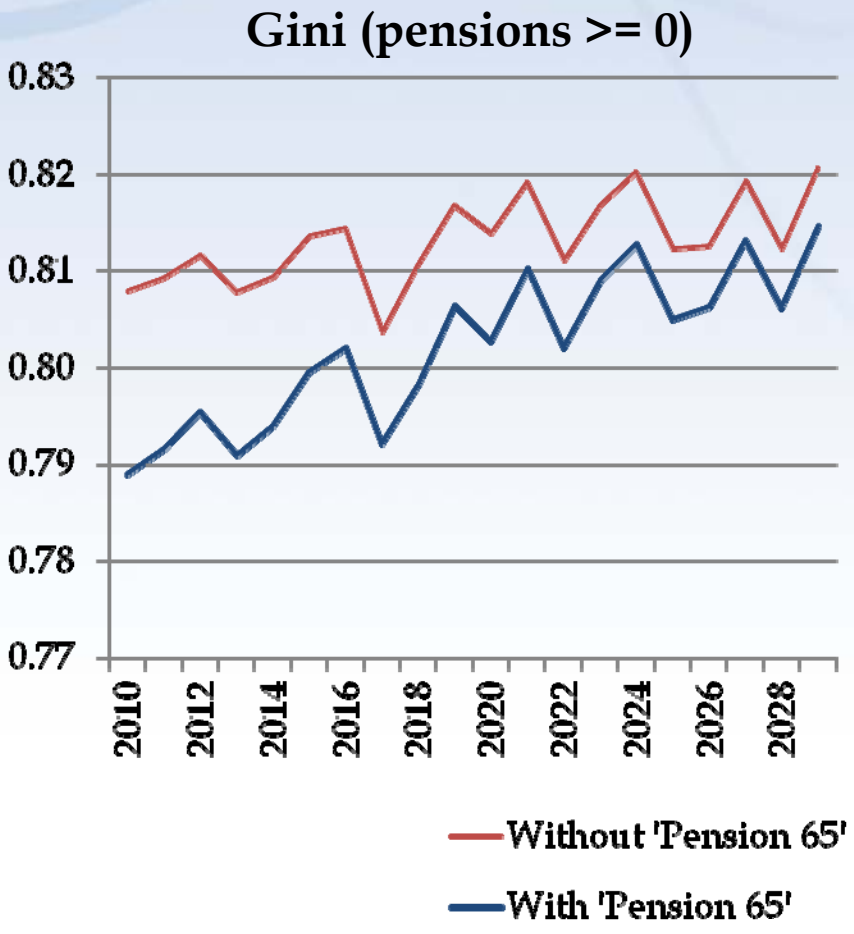


# Non-contributory pensions in LA, 2010

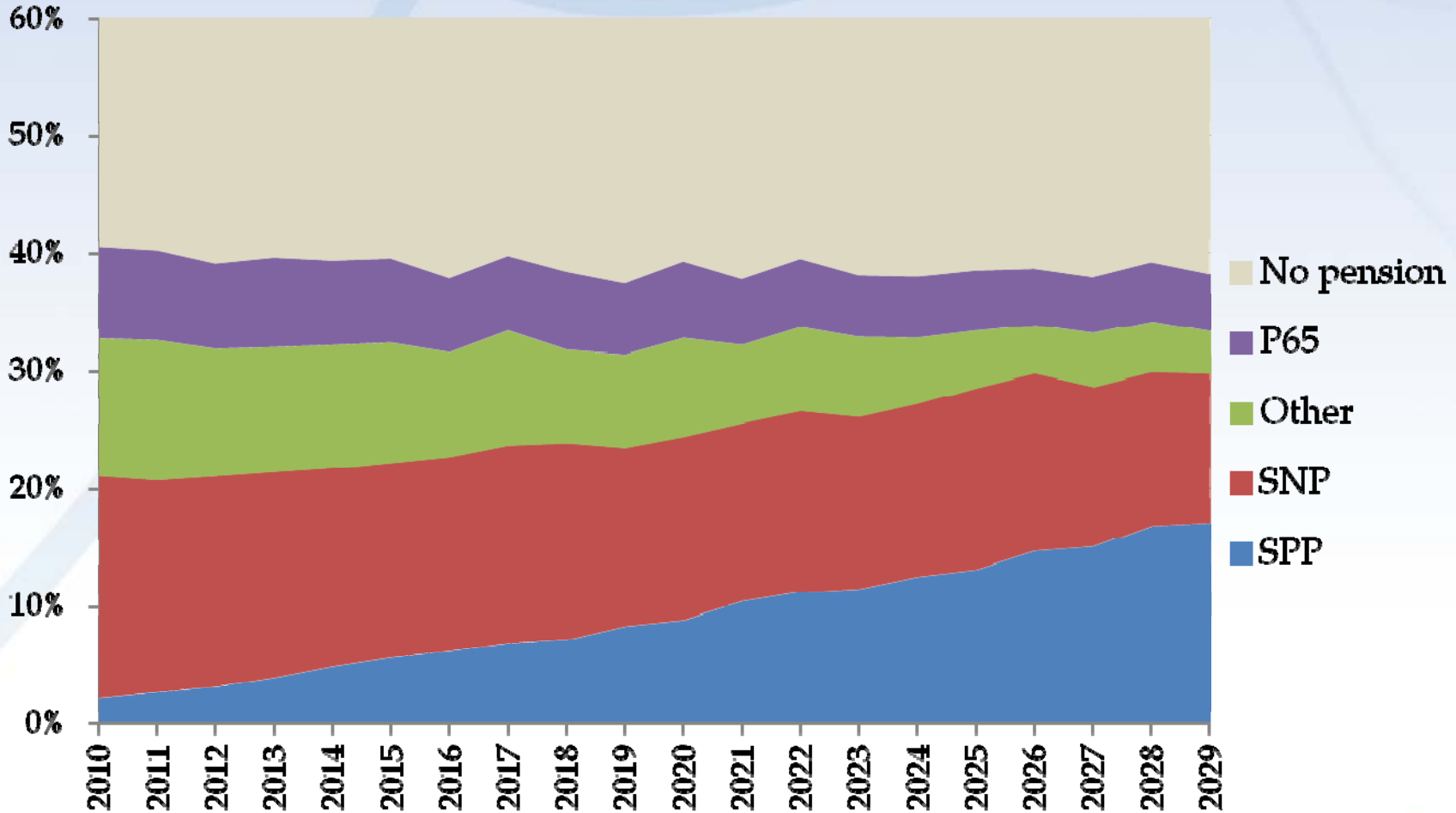
| | Conditions | Amount | in US$ | %GDP pc |
|---|---|---|---|---|
| Peru | +65, no pensioner, extreme poor | 125 soles (2011) | 46,2 | 9% |
| Colombia | +52 (F) +57(M), Level 1 and 2 of SISBEN in 53 districts (over 1103) | 60 mil pesos | 31,4 | 5% |
| Brazil | +67, income < 0.25 minimum wage | 545 reales | 312 | 31% |
| Bolivia | Universal, +60 | 200 Bolivianos | 28,5 | 16% |
| Chile | +65, no rights to have a pension, 60% of the poorest | 75,000 pesos | 150 | 14% |
| Costa Rica | Universal, | 35mil colones (2006) | 68 | 16% |
| Uruguay | +70 , income lower than pension. The benefit is equal to the difference between the pension and the income | 4676,17 pesos | 245,7 | 21% |

# Pension inequality +65

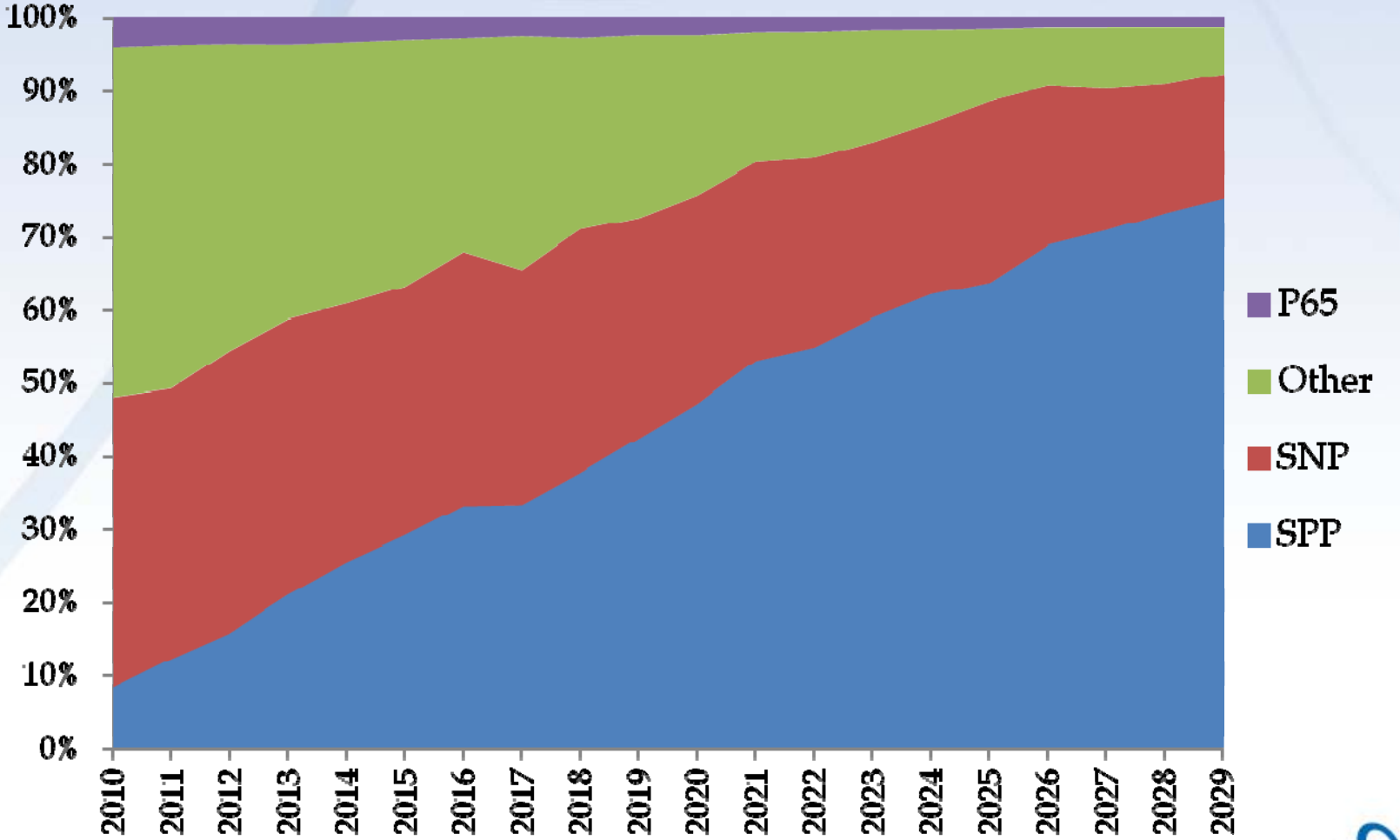


# Distribution of pensioners +65

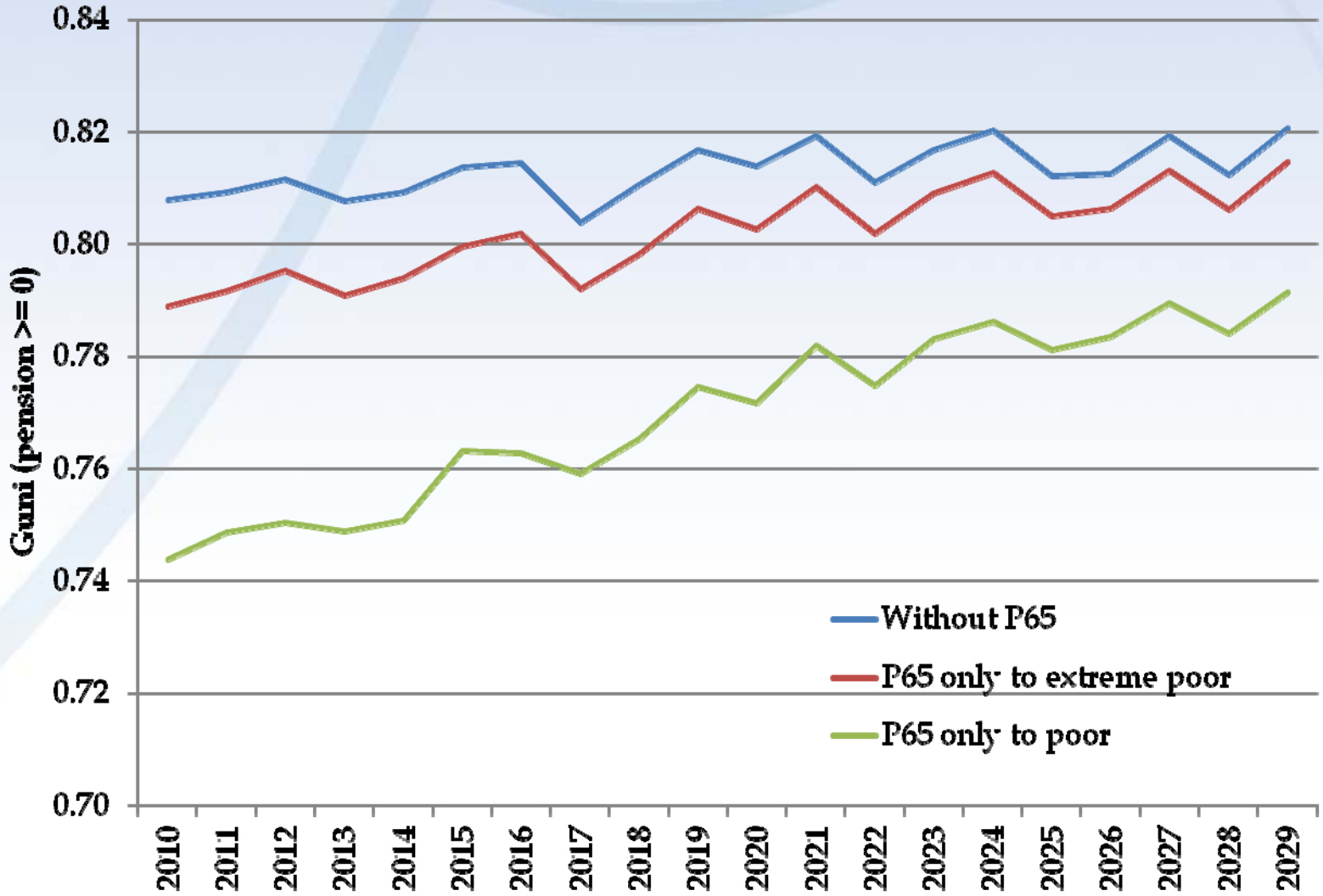


# Distribution of pension amounts +65



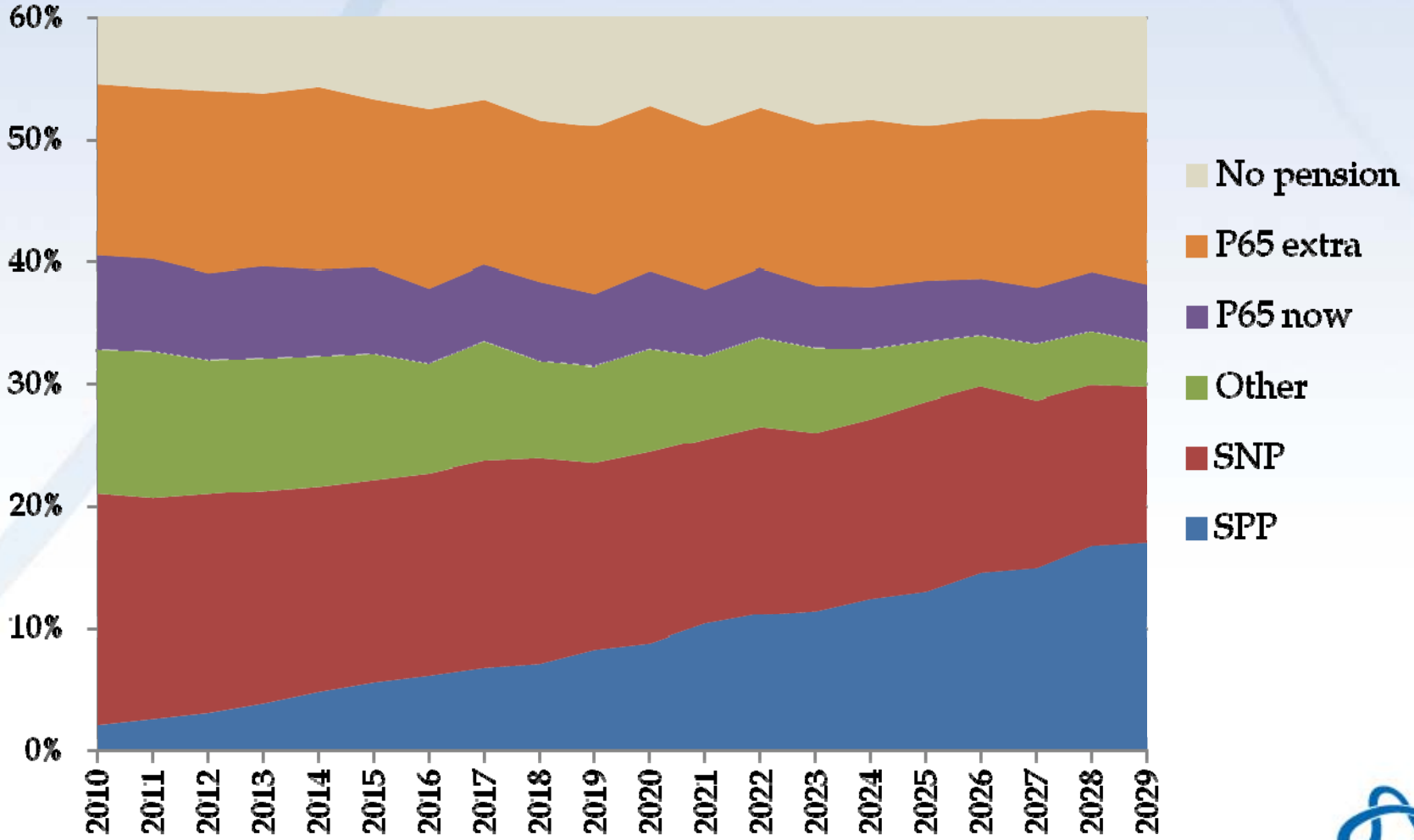
# If we are more generous with the *Pension 65*?

## Gini coefficient



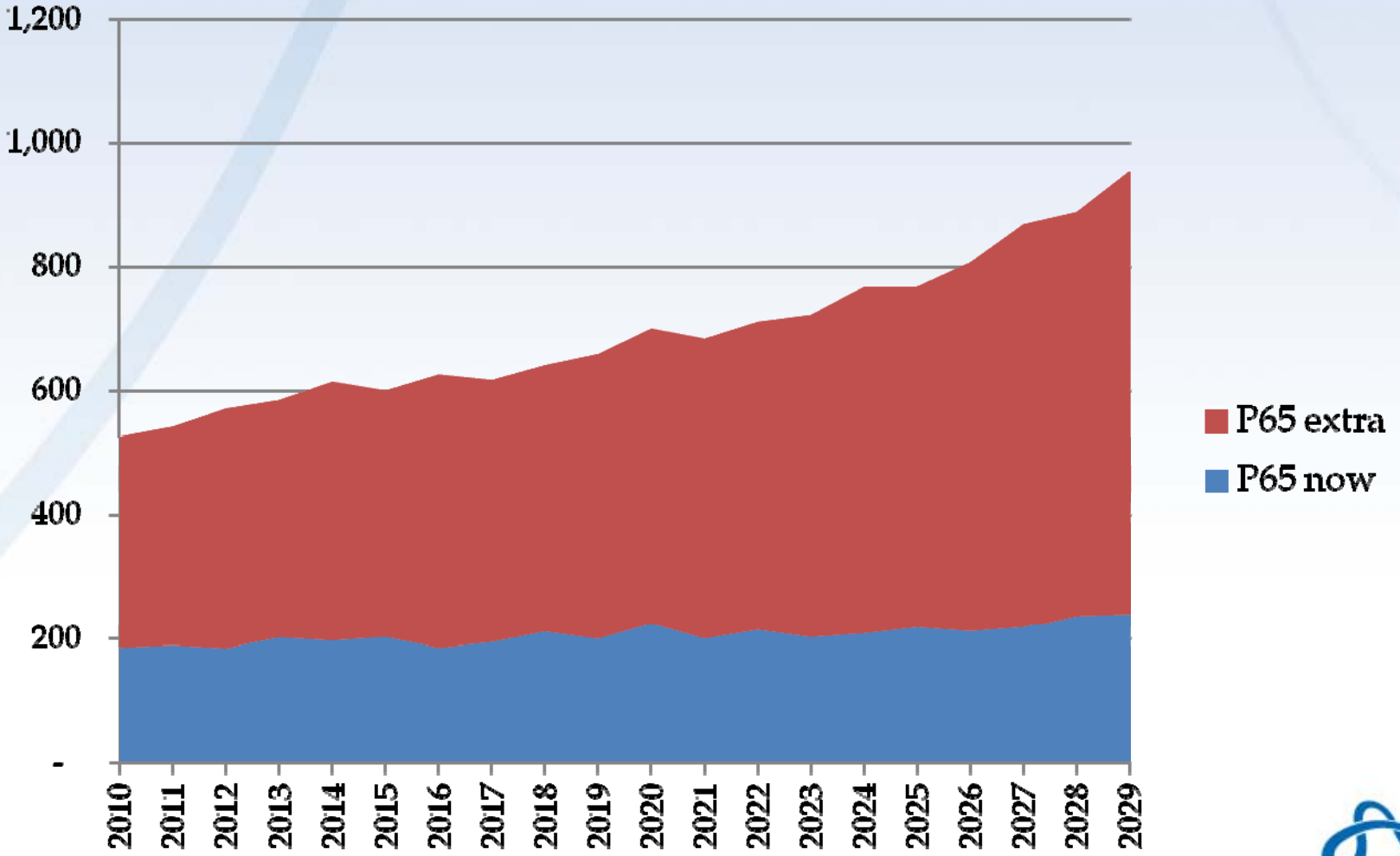
# If we are more generous with the *Pension 65*?

## Distribution of pensioners



# Cost of the *Pension 65* (millions of Soles)

1,000 millions of Soles = 0.23%GDP



# Gross actuarial liability (% GDP)

| | | |
|---|---|---|
| National Pension System | 8.9% | 8.9% |
| Other public systems | 6.8% | 6.8% |
| Pension 65, now | 0.7% | |
| Pension 65 reloaded | | 2.2% |
| Total | 16.3% | 17.9% |

Discount rate = 4%
Time horizon = 2010-2029

# Remarks

People face increasing inequality in old-age, what is the role of the Government if any?

Increasing inequality means more uncertainty on living standards, so a government intervention to reduce inequality may be justified

Non contributory pensions ease this uncertainty, they are becoming popular around the world, in particular in LA, let's study them with NTA!!!