Comparison of Internal Rates of Return from Intergenerational Transfer Systems

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Background

- Labor income does not match consumption at every stage of the lifecycle

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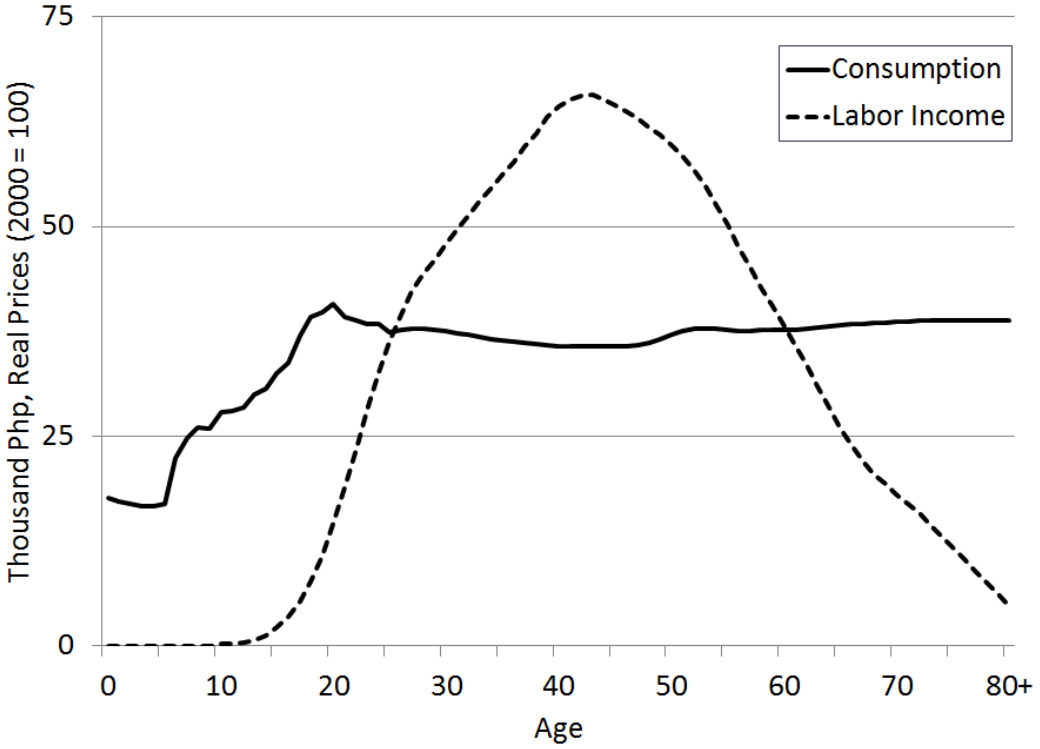

Consumption and Labor Income Per Capita Age Profile: Philippines, 1999

Background

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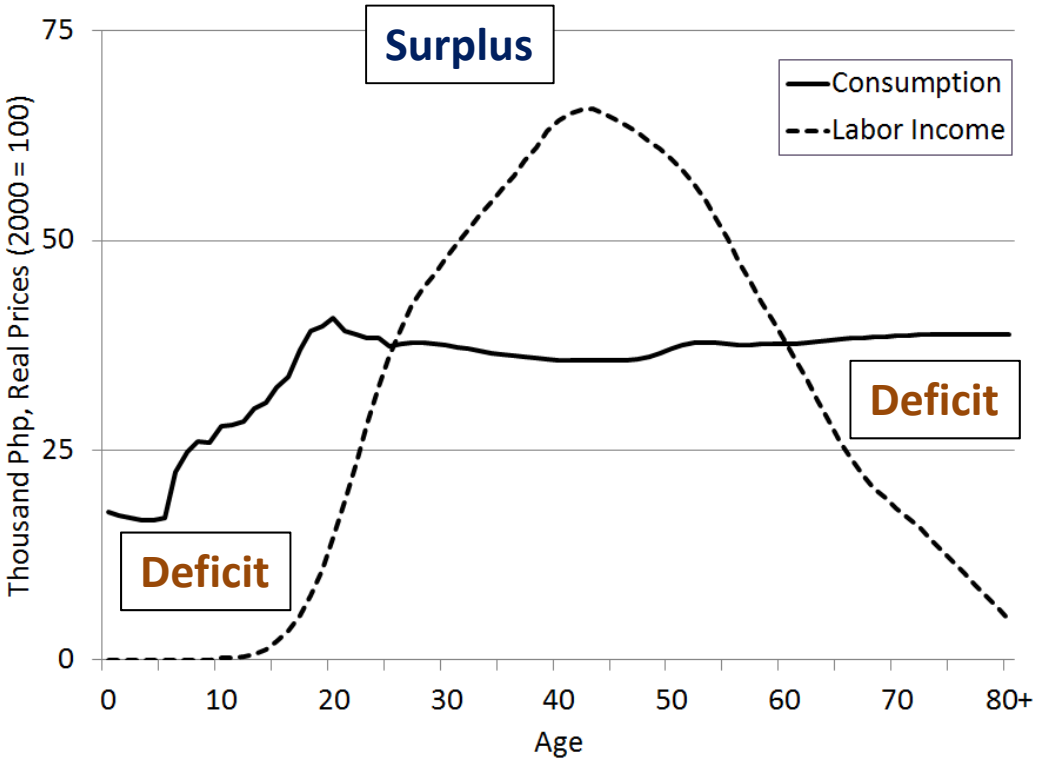
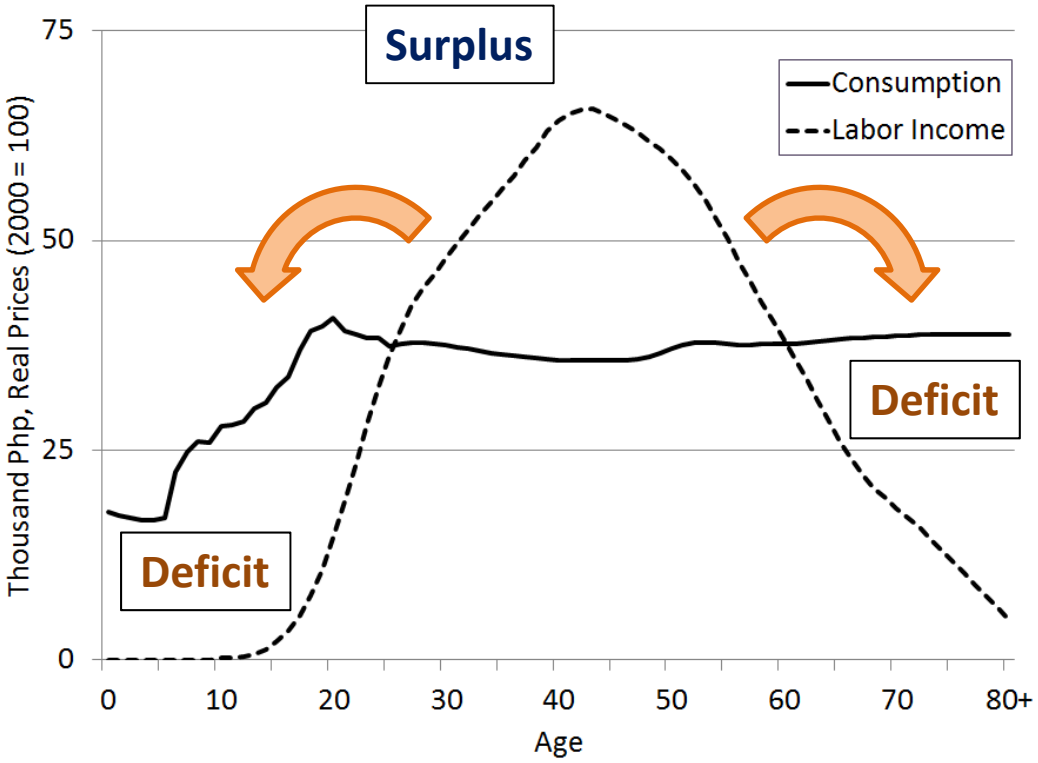


Consumption and Labor Income Per Capita Age Profile: Philippines, 1999

Background

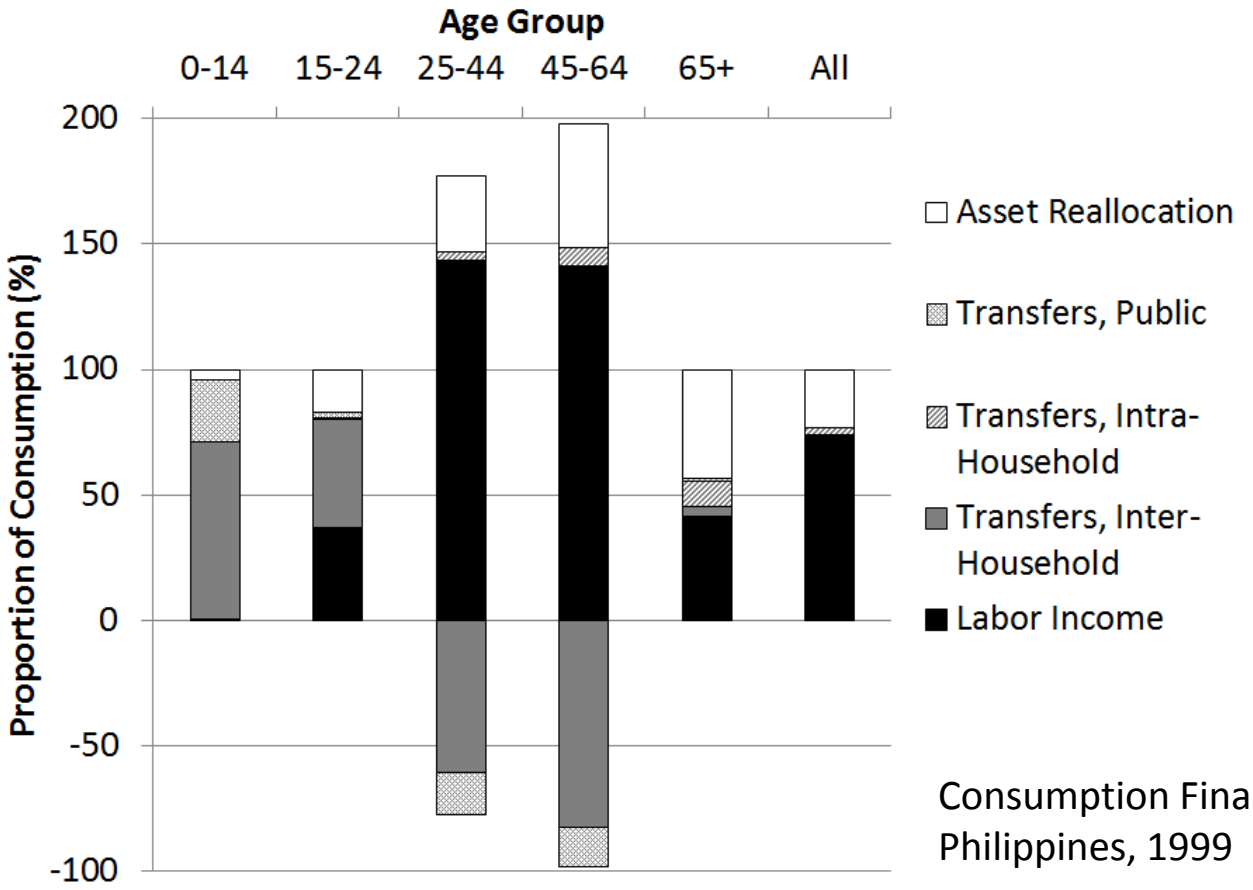
- Deficit should be financed somehow: transfers from surplus ages, draw from savings, etc.



Consumption and Labor Income Per Capita Age Profile: Philippines, 1999

Background

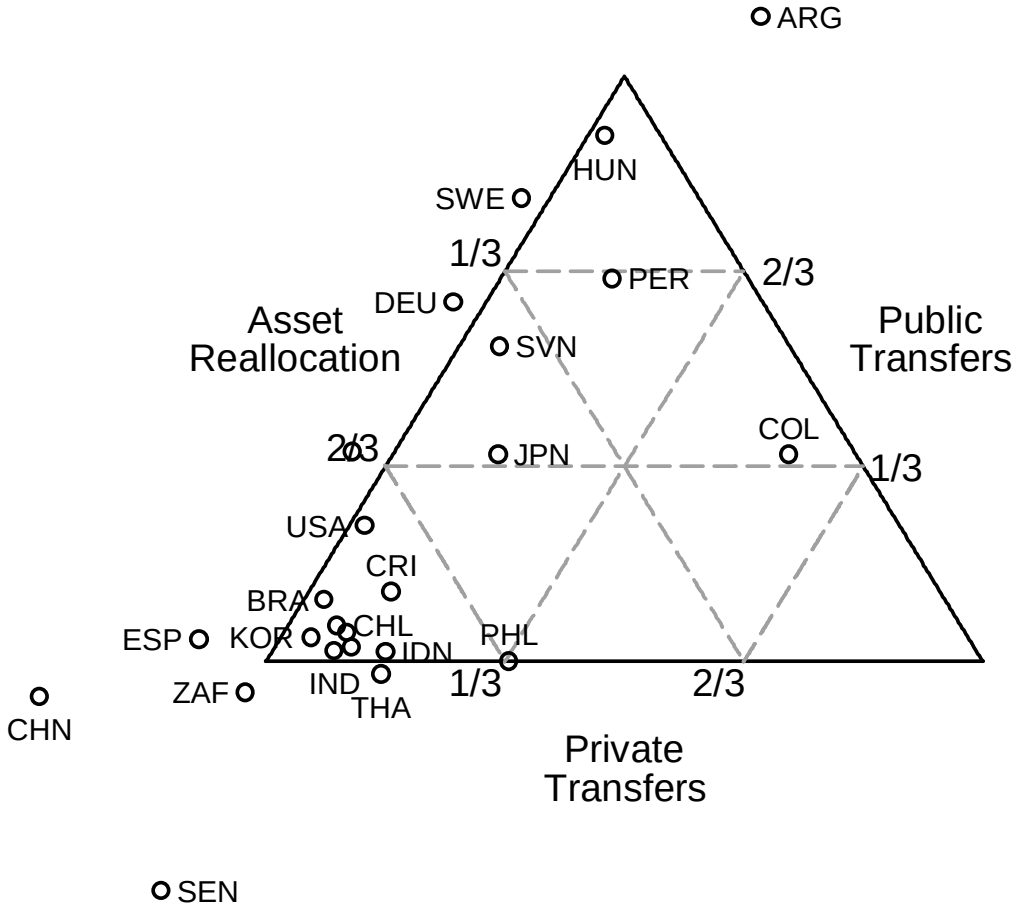
- Bottom line: Consumption is financed



Consumption Financing: Philippines, 1999

Background

- Economies finance lifecycle deficit differently



Question

- How do people from different economies choose how to finance the lifecycle deficit?

Objectives

- Describe intergenerational transfer systems
- Relate measure to theory

Literature

- Describe intergenerational transfer systems
  - Lee Arrows: Lee (1994), Patxot, et. al. (2012)
  - Transfer Wealth: Kotlikoff and Summers (1981) Bommier and Lee (2003), Lee and Mason (2011)
  - Rate of Return: Auerbach and Lee (2011)

Literature

- Relate measure to theoretic predictions
  - Test of motives: Lillard and Willis (1997)
  - Private transfers: Lee and Donehower (2011)

Measuring Rate of Return

- Usual internal rate of return (IRR) not unique if net flows change sign more than once
  - Limits application for characterizing intergenerational transfer systems
- Modified IRR does not share this weakness

Modified IRR

- Compares future value of inflows against present value of outflows

$$mIRR = \sqrt[T]{\frac{\sum_t Y^+(1+r_r)}{\sum_t \frac{Y^-}{(1+r_f)}}} - 1$$

- In steady state, interest rates are equal
  - Assumed r_r and r_f equal 10-year bond rate

Data and Assumptions

- Lee, R., A. Mason and members of the NTA network (2014). Is low fertility really a problem? Population aging, dependency and consumption. *Science*, 346, 229-234.

- Assumptions
  - Age profiles represent expected lifecycle flows
  - Returns to intergenerational transfers are uncorrelated with returns to assets

Are Transfer Systems Profitable?

- Yes: Computed mIRRs > 0

Excess return computed as survival-weighted modified internal rate of return less 10-year bond rate

Are We Close to Steady State?

- No?

Red lines are sample averages

Implications

- If actual r_r and r_f rates are higher than 10-year bond rates, then mIRR are lower bounds

- Non-altruistic motives are possible since expected rates of return are positive

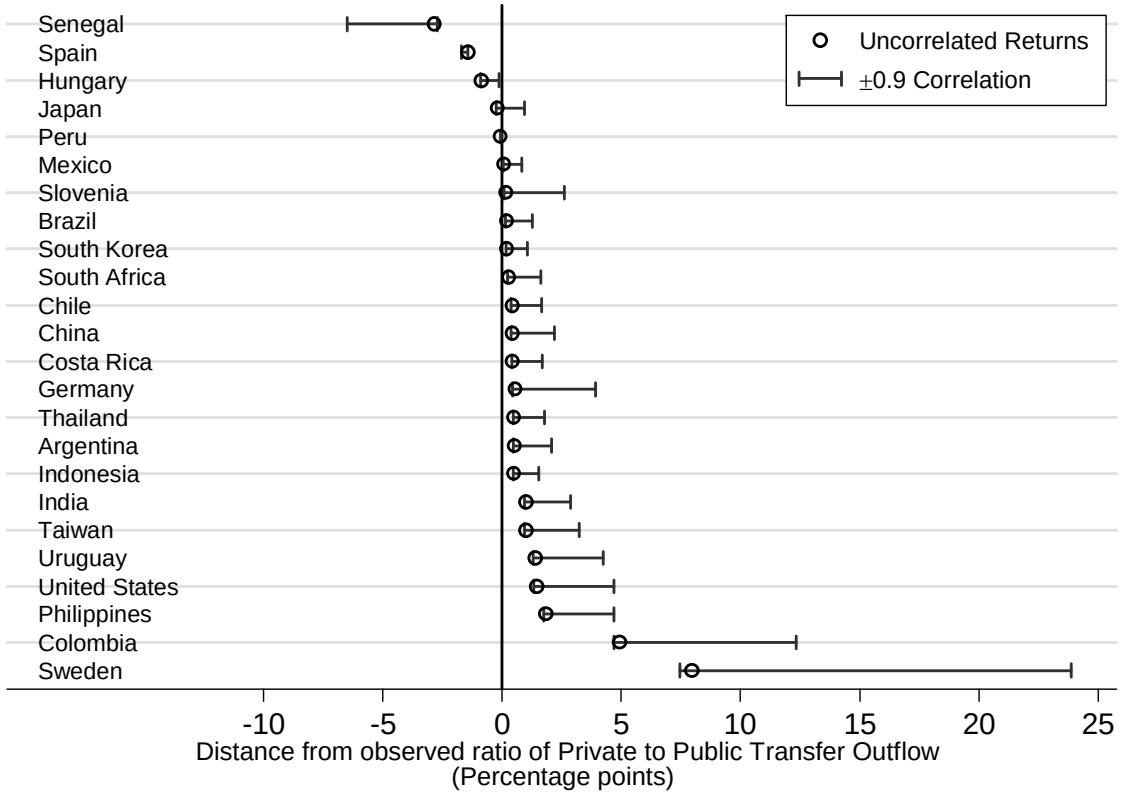
Do We Live in a Markowitz World?

- Non-altruistic agents mix investment options to maximize expected returns subject to risks (Markowitz, 1952)

- Predicts that relationship between investment shares depends on rates of return and risks
  - Assumed returns of intergenerational transfer systems are uncorrelated with asset returns

Do We Live in a Markowitz World?

- Maybe, probably not



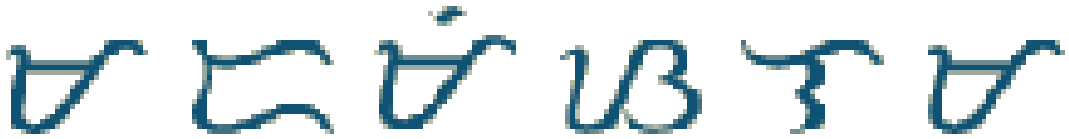
Plot compares Markowitz-theoretical predicted ratio of private to public transfer outflows against observed ratio

Implications

- People are not perfectly self-interested
- Altruism and institutional design can be accommodated to explain distribution of intergenerational transfers, although profit-motive cannot be entirely ruled out

Summary

- Data rejects Markowitz problem
  - Supports Fama and French (1992)
- People are not one dimensional
  - Supports Lillard and Willis (1997)



(Thank you very much!)

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