

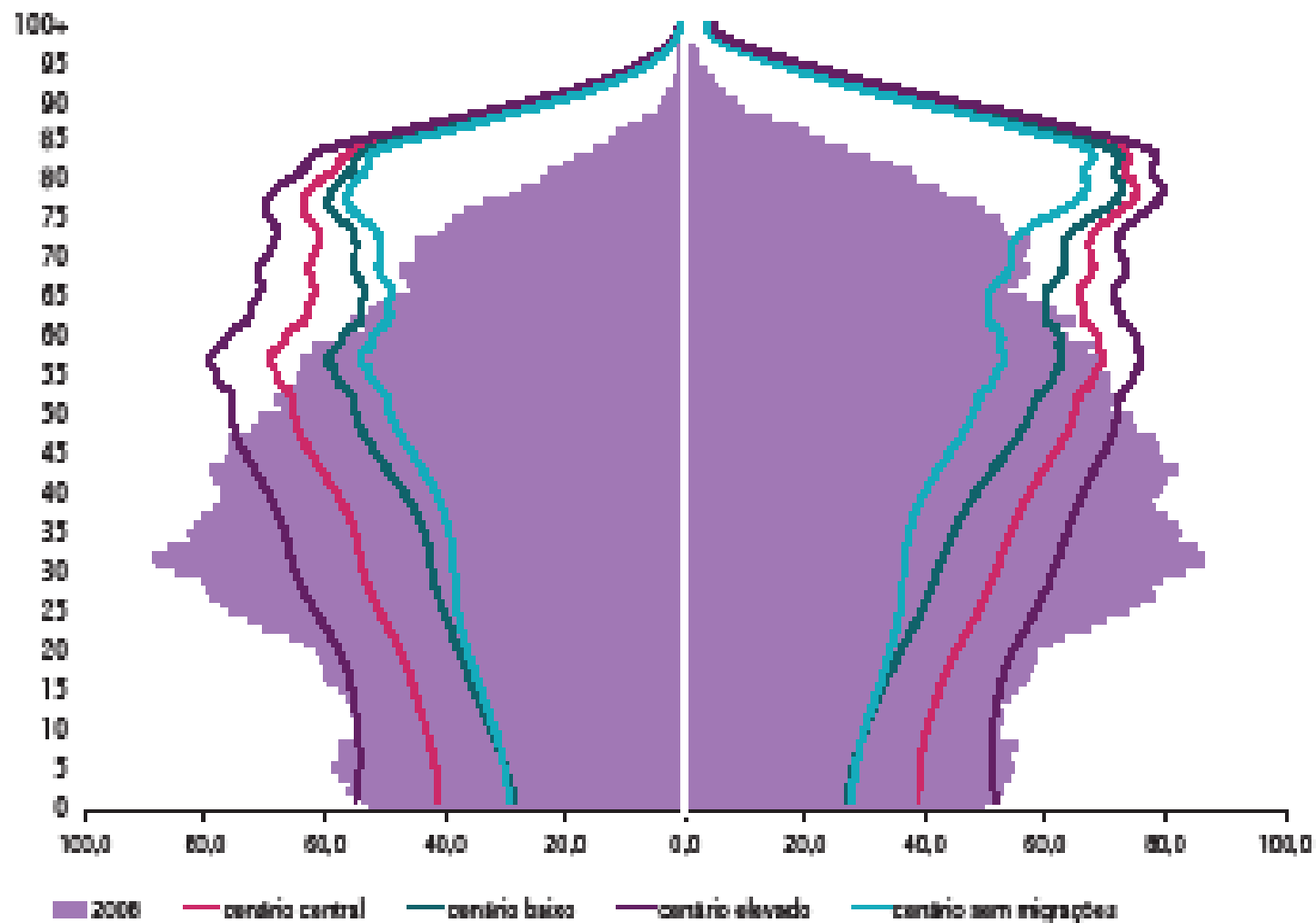
Population Ageing and the International Financial Markets

5th December 2017

Population Ageing

- Combination of
 - Increase in longevity
 - Decrease in fertility.
- Increase in the old-age dependency ratio (nr of people aged 65+ / working-age people [15-64])
- Increase in the proportion of older workers.

Pirâmide etária da população, 1 de Janeiro de 2008 e 2060, por cenários



Macroeconomic implications

- Direct effect on Labour Supply.
- More indirect effects on
 - Labour Demand,
 - Investment,
 - Productivity,
 - Consumption,
 - International Capital Flows
 - Savings ...

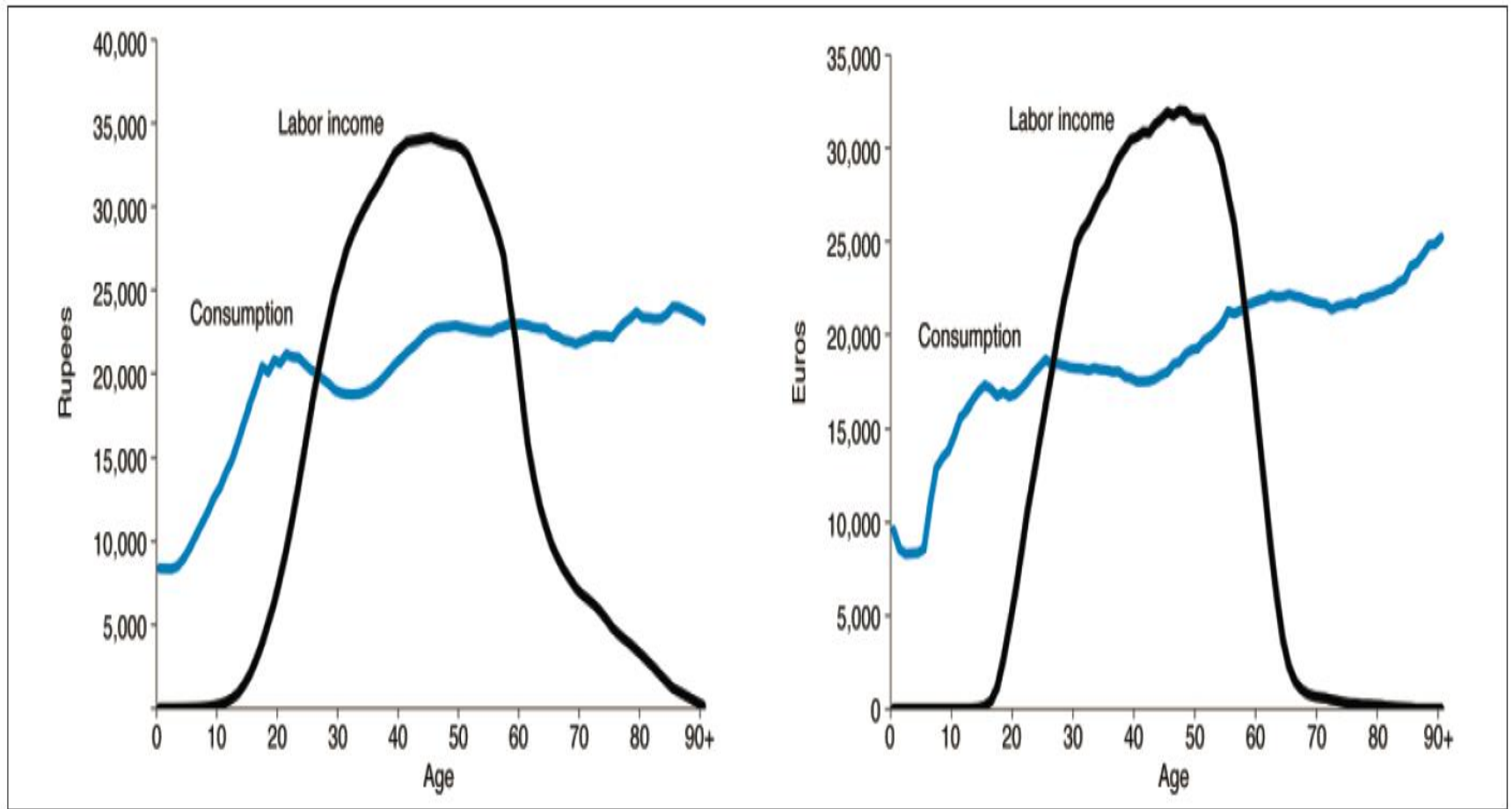


Figure 1. Per-capita labor income and consumption by age in India (left) in 2004 and in Germany (right) in 2003. Source: Lee and Mason forthcoming, Figure 1.3.

Source: Fürnkranz-Prskawetz 2017 Presentation at the 5th IWSEA, ISEG.

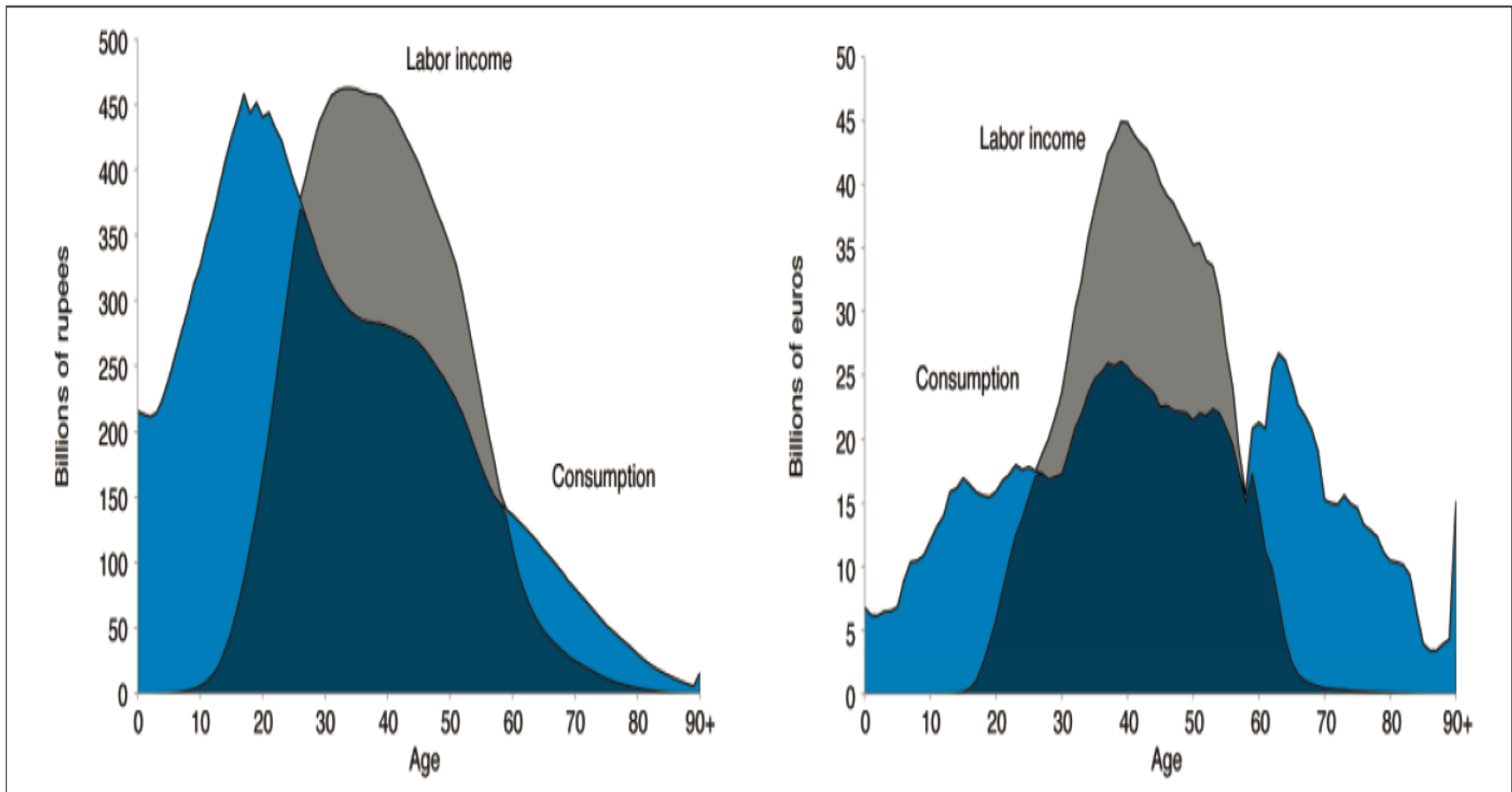


Figure 2. Aggregate labor income and consumption by age in India (left) in 2004 and in Germany (right) in 2003. Source: Lee and Mason forthcoming, Figure 1.3.

Source: Fürnkranz-Prskawetz 2017 Presentation at the 5th IWSEA, ISEG.

Savings

- National Saving = Private Saving + Public Saving
- Private Saving = business saving + personal saving,
 - “Personal”: households and nonprofit entities.
- Personal saving = personal income - personal spending.

Private Savings

- Life Cycle Hypothesis – people smooth their consumption over the lifecycle
- Saving rates are expected to increase with the ageing of workers in order to support consumption in the retirement period.
- Entering the retirement period, private savings are expected to decrease, with a use of savings built before retirement.
- The aggregate saving depends on the proportion of different age cohorts in the population.
- *These two results assume a life-cycle pattern in savings that is still open to empirical discussion.*

- Expansion of the Life-cycle model
 - uncertainty with respect to future income
 - Bequests

Public savings

- Decrease in public savings because of the growth of expenditures with pensions and with health and care (although there is a decrease in the expenditure with education).

Investment

- ◎ Slower labour force growth → lower economic growth potential → lower need for Investment, for the same capital to labour ratio.
 - If technical progress is independent of population growth, the decrease in labour force growth reduces the growth of potential output and, correspondingly, the demand for investment.
 - Scarcity of labour may stimulate innovation and progress.
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- Empirical research
 - Higgins 1998: humped-shaped pattern of the effects of the age structure on the share of investment on GDP, with the peak at 15-24.

What will reduce more: the demand for investment or savings?

At present, the empirical evidence is mixed, very dependent on the samples and on the methodology that are used.

- Suppose savings **decline more** than investment needs:

The investment is not enough to maintain the capital to labour ratio – Per-capita output declines & \searrow MPLabour and \nearrow MPKapital (\nearrow i)

- Suppose savings **decline less** than investment needs

The capital to labour ratio increases (K deepening) – Per-capita output may still decline & \nearrow MPLabour (\nearrow real wages) and \searrow MPKapital (\searrow i)

International capital flows

- ◎ In a phase when the savings in the ageing countries $<$ investment needed in those economies:
 - There will be an inflow of capital from abroad (increase in the Net Foreign Asset position).
- ◎ In a phase when the savings in the the ageing countries $>$ investment needed in those economies:
 - Capitals will flow abroad (increase in the Net Foreign Asset position).

Note: assuming that the financial markets are sufficiently developed and that there is security for contracts.
- ◎ The capital flows will not continue indefinitely because they will lead to adjustments in interest rates.

International capital flows

- Liberalization of financial markets – large increase in international capital flows – increased sensitivity to foreign prices and rates of return – correlation between domestic investment and national saving may be weakened.
- Necessary to take into account cross-border and cross-currency adjustments to demography and not just domestic adjustments.

- **If the impact of ageing on savings is larger than the impact on the demand for investment in a certain country**
- This cannot be true for all the countries in the world at the same time, even if all were experiencing population ageing with the same type of effects. Globally, the changes in flows have to cancel.
- Historically, during the last 50 years - downward trends in savings and investment around the world.

⦿ Financial Integration

- Higher substitutability between assets issued in different countries and between assets denominated in different currencies.
- Higher proportion of macroeconomic adjustments based on international transactions and international markets.
- Perfect integration – savings in one economy could be invested anywhere in the world. Therefore, in open economies, the correlation between investment and savings is not necessarily high.

⦿ However:

- ⦿ Evidence of “home bias”.
- ⦿ The present high level of international capital mobility is more driven by hedging and by risk-sharing among developed countries than by flows of savings from capital-rich to less developed countries.

Financial market asset prices and returns

- ❖ “Asset meltdown hypothesis” [Poterba (2001)]: as members of the baby boom generation start to enter retirement, they will most likely become net sellers of at least some of the financial assets they have accumulated over their working lives, to support consumption in retirement. They would sell their assets to a smaller generation of investors → downward pressure on financial asset prices

- Given increasing longevity and life time uncertainty, decumulation of assets may be slow.
- Bequest motive for saving.
- ◉ Poterba (2004): investors *forward-looking* → possible future change in prices caused by demography should be incorporated in prices in advance (if expectations are that the price will decrease one should sell now, which decreases the price immediately).
 - Assessment of the effects of future demographic developments on prices needs the evaluation of the extent to which investors are *forward-looking*.

- ◎ The preference for certain types of assets changes as people age. If these age-related preferences remain constant over time, ageing will affect the asset prices and relative returns of different asset classes.
- ◎ Demographic ageing → possible change in the relative demand for assets → effect on prices
- ◎ In principle, middle-age corresponds to the life-cycle period with
 - Higher saving rate
 - Lower risk aversion

because, while working, people are better able to make up for any bad equity returns – With a longer time horizon, it is easier to accept risk in exchange for a higher expected return.

⊙ Larger proportion of middle-aged workers →
Increase in the demand for stocks in comparison with bonds
→ Increase in the relative price of stocks → Decrease in the
return for stocks comparing with that for bonds.

⊙ Higher proportion of retired population

- Lower saving rate

- Higher risk aversion

→ Increase in the relative demand for bonds comparing with
stocks → Increase in the relative price of bonds →
Decrease in the return for bonds comparing with that for
stocks.

- Poterba (2001): USA- separating cohort from age effects, he finds that stocks are an increasing fraction of net financial holdings through age 40-44. Then it starts decreasing. If analysing stocks as the fraction of net worth, it increases through ages 55-59 and shows a small decline after that.
- Mixed evidence about the relation between the demographic structure and the prices of different financial assets.

- Poterba, J. (2001) Demographic structure and asset returns, *Review of Economics and Statistics*, 83, pp. 565-584.
- Poterba J. (2004) The impact of population aging on financial markets, **NBER Working Paper No. W10851**