INSURERS AND PENSION FUNDS

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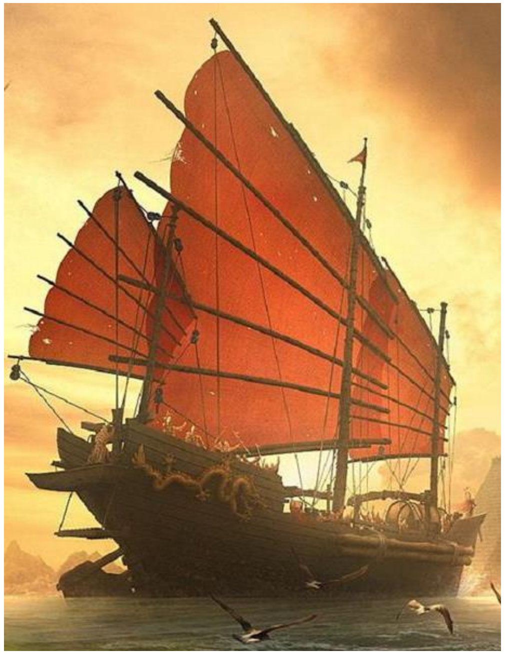
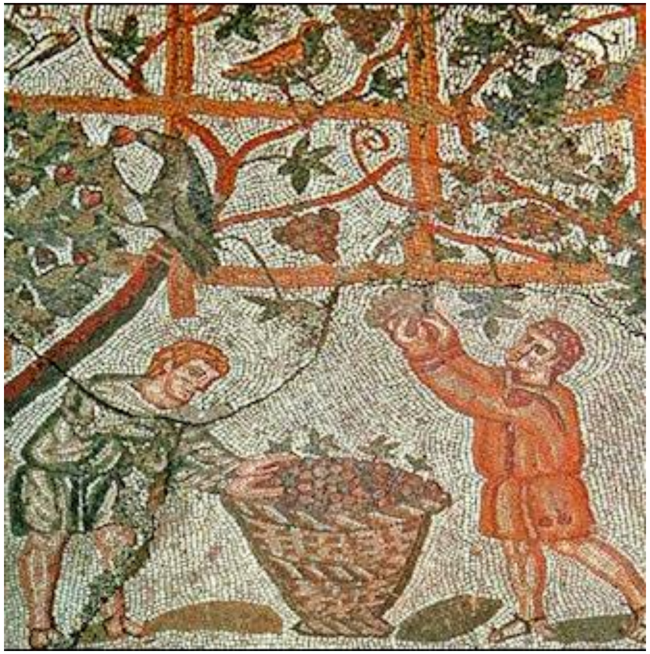
DEAMS
University of Trieste

AGENDA

- Why insurance? How does it work?
- Types of insurers and policies
- Why pensions? How does it work?
- Types of pensions and funds
- The Italian pension system

WHY INSURANCE?

Future «random» events with adverse financial consequences

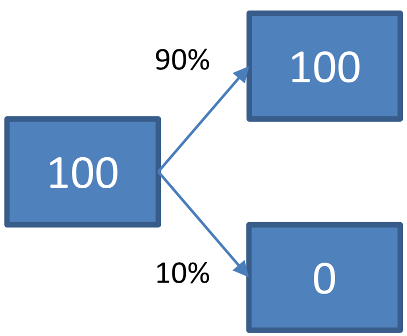




First solution: **mutuality** – the *uncertain individual risk* is transformed into a share in the *uncertain collective risk*…

WHY INSURANCE?

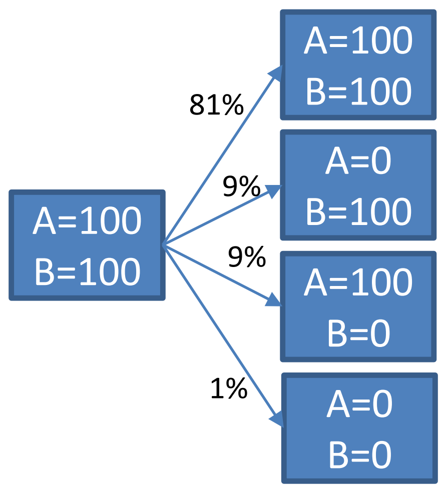
Example:

You own land worth 100. A flood can destroy it. You don't know that *p=10%*



$E(A) = 90$

$\sigma(A) = 30$



$E(A) = 90$

$\sigma(A) = 21$

With 100 exposures?

$E(A) = 90$

$\sigma(A) = 3$

With 1000 exposures?

$E(A) = 90$

$\sigma(A) = 0{,}95$

How insurance works

- How to reduce uncertainty? Through *experience* and *data*
- Result: “modern” **insurance**:
    - Individual risk turns into an up-front certain cost (**premium**): product of event expected frequency and severity (plus safety margins)
    - If/when the event occurs (**risk**) the consequences are indemnified (**claim**)
    - If timing/magnitude of claims are predicted correctly, **profits** are made
- Usual issues…
    - **Adverse selection** of “bad” risks
    - **Moral hazard**: incentive to misbehave (fraud)
    - **Conflicts of interests**

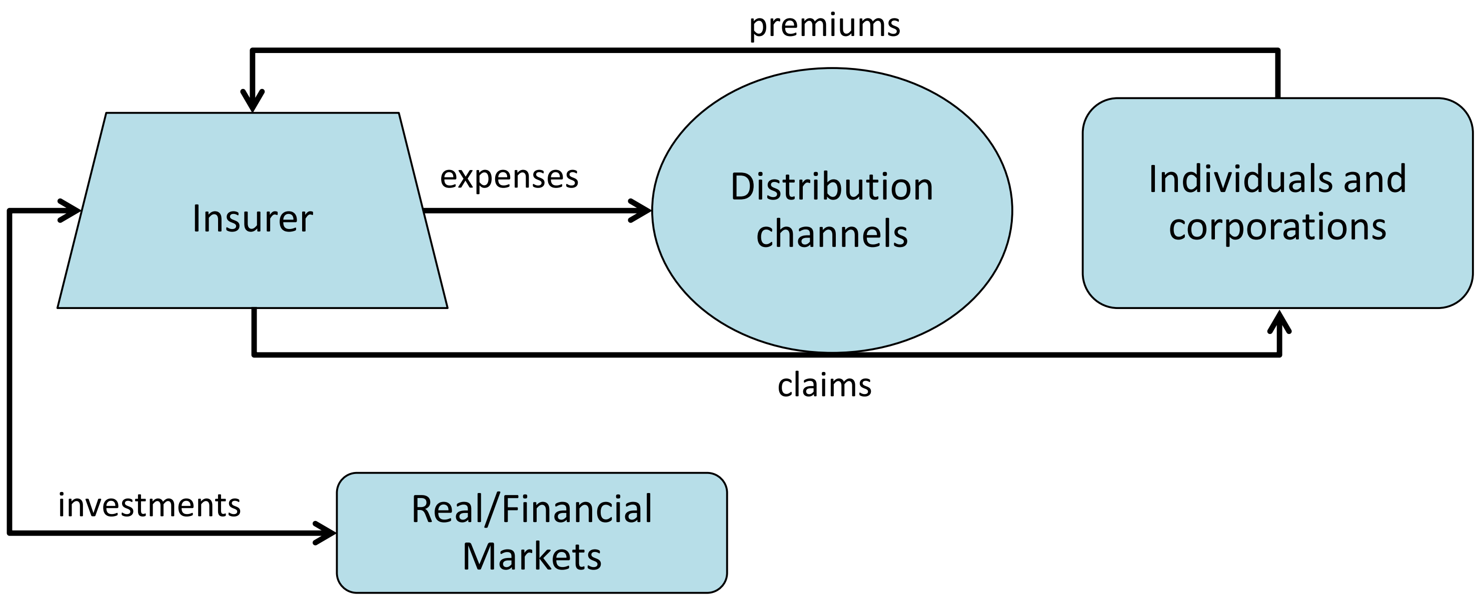
How insurance works

Usual solutions: principle-based contracts:

- **Qualified relationship** between insureds and risks/beneficiaries

- **Actuarial pricing** and **underwriting:**
  - High number of uncorrelated similar exposures
  - Quantifiable non-CAT losses
- **Utmost good faith and indemnity principle**
- **«Covenants»:** exclusions and limitations to indemnities
- **Fraud** prevention techniques
- **Self-insurance** and **risk-sharing**

How insurance works



Income statement

	+ Premiums - Claims - Expenses +/- Provisioning + Inv. returns
	Profit/loss

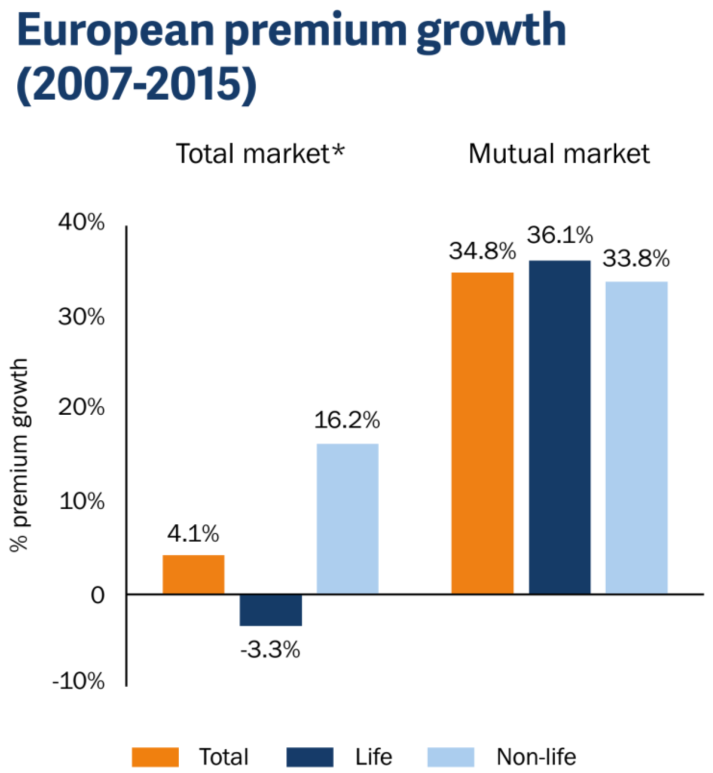
Balance sheet

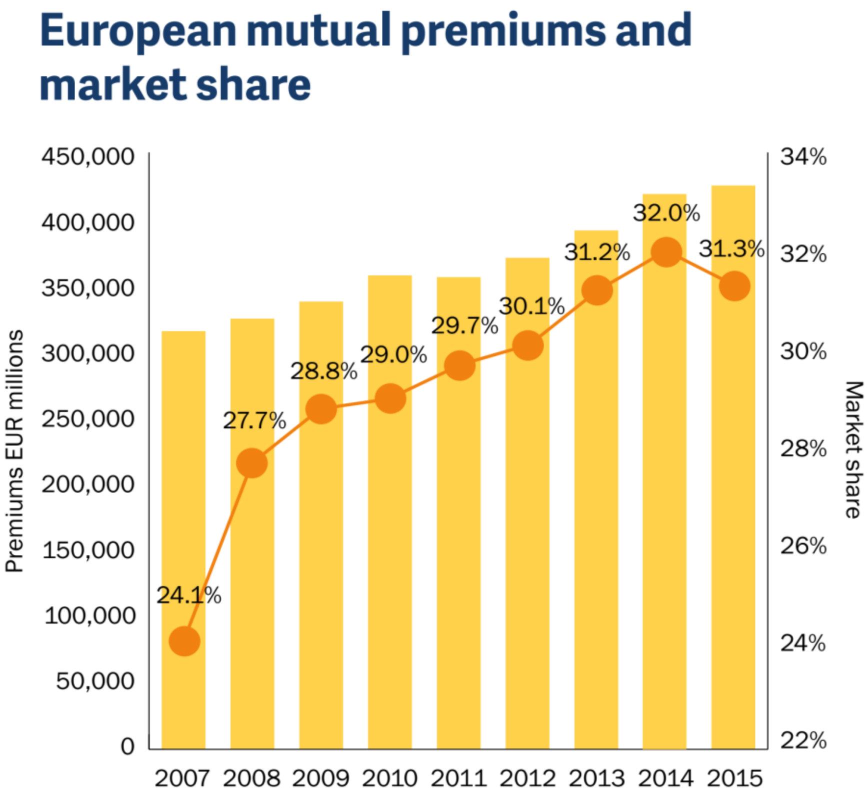
Assets Investments - Stocks - Bonds - Funds - …	*Equity* *Liabilities* Provisions on policies

INSURANCE PRODUCTS AND COMPANIES

Two types of insurers:

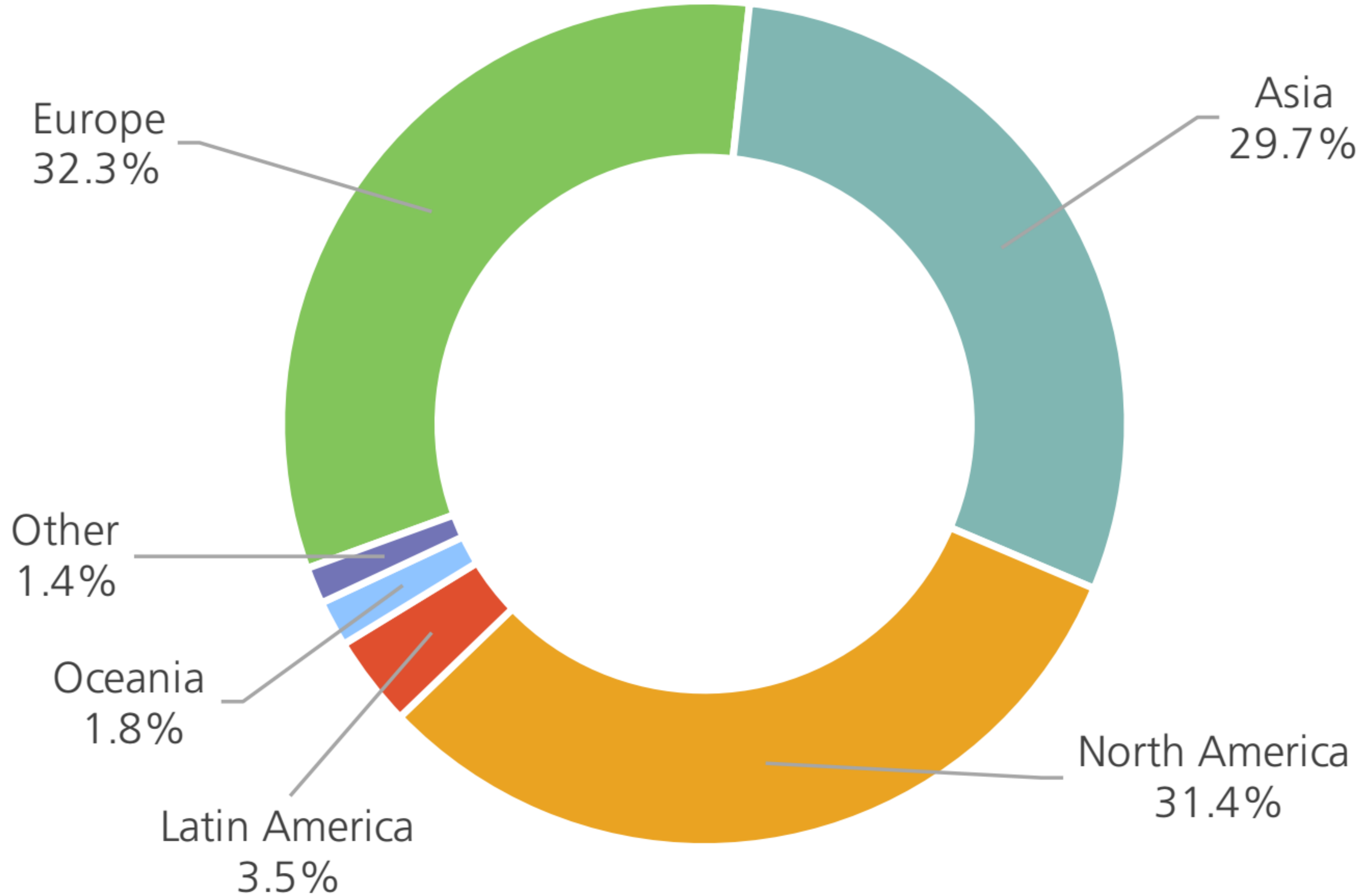
- Stock companies
- Mutuals: owned by policyholders, profits as refunds or discounts



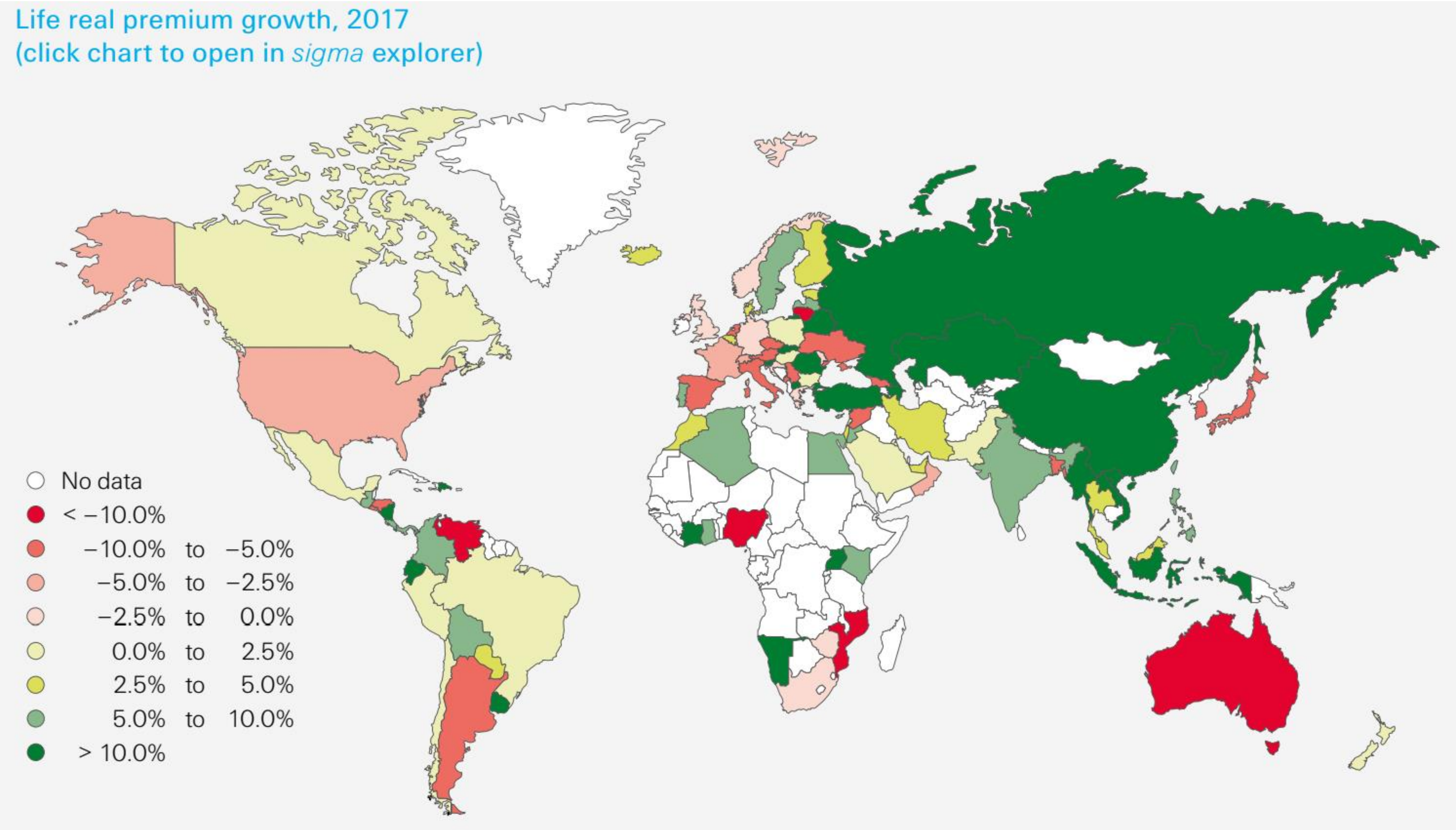


Insurance products and companies

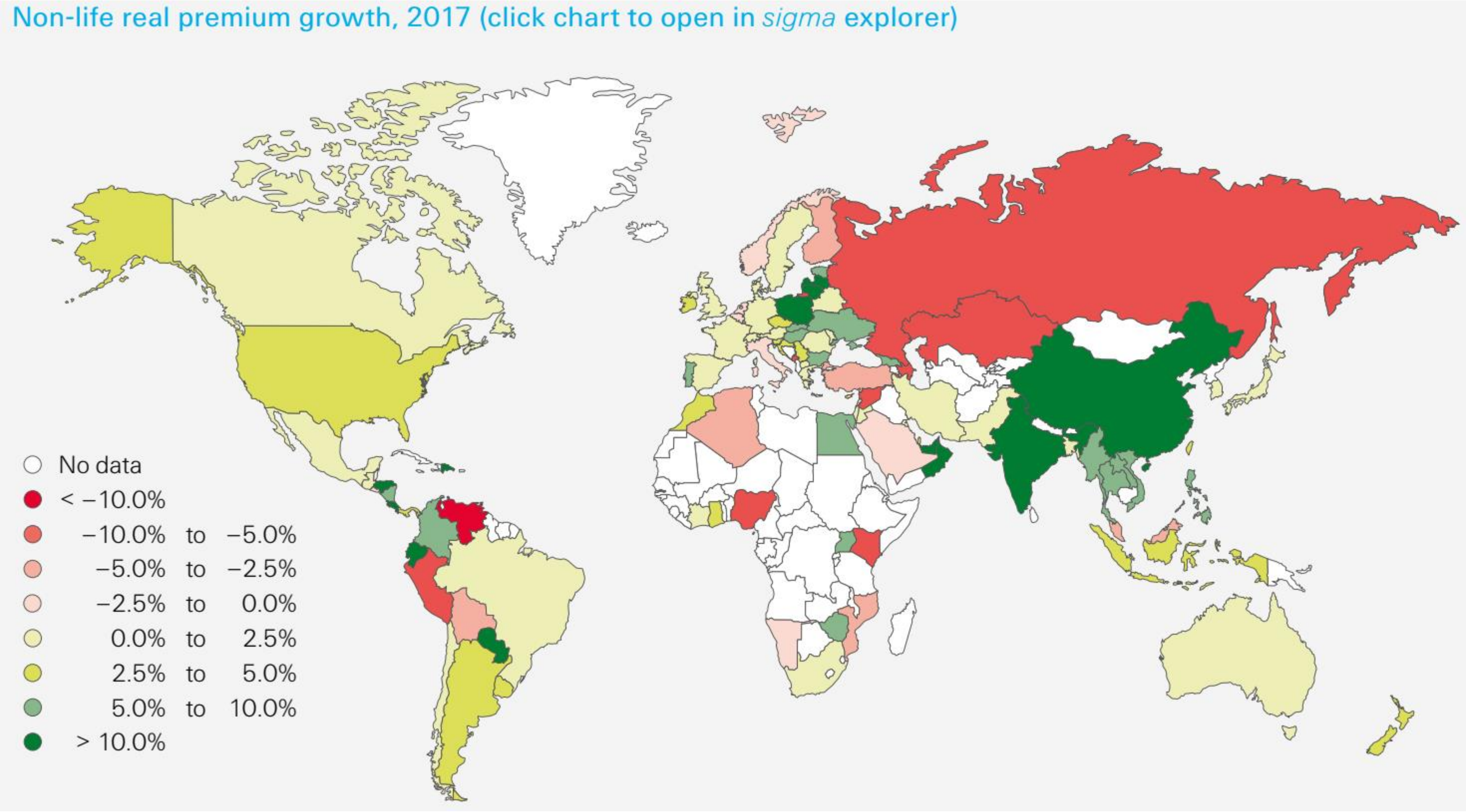
Distribution of worldwide premiums — 2015



INSURANCE PRODUCTS AND COMPANIES



INSURANCE PRODUCTS AND COMPANIES



INSURANCE PRODUCTS AND COMPANIES

Life insurance: **death**, **superannuation, long-term health**

- Offering term/whole life, LTC, annuities and products with **financial features** (unit/index linked, …)
- **Long-term investor**

Non-life insurance:

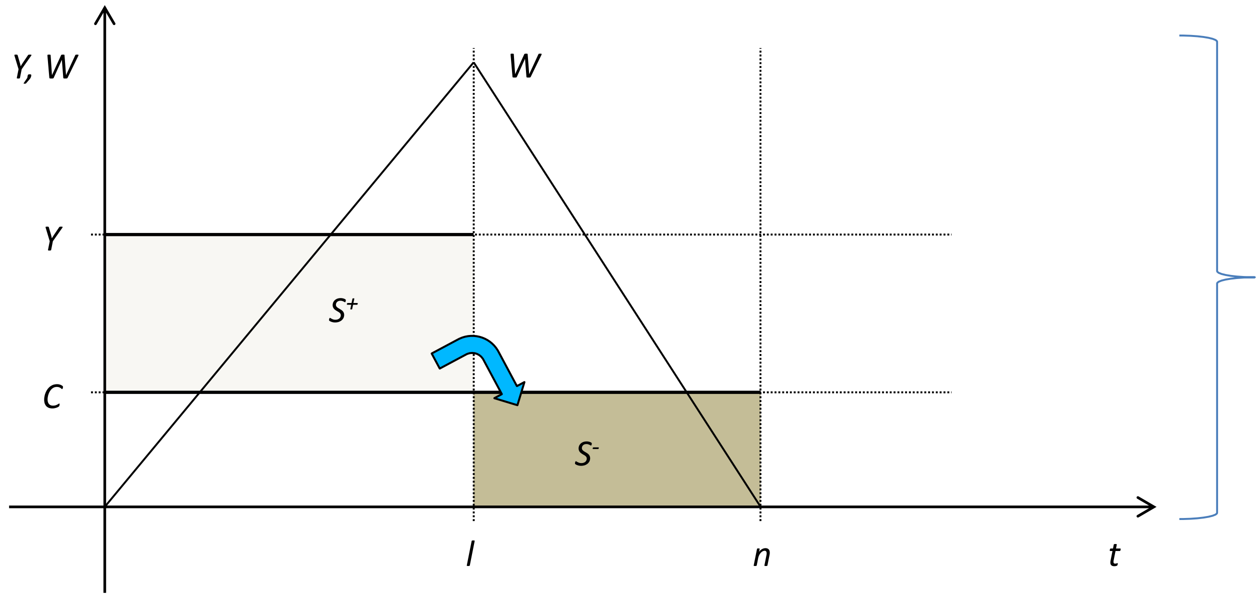
- Protecting **wealth** (assets) and **liability** (f.i. TPML)
- **Events are recurring** and **difficult to estimate**
- Offering frequently multiple guarantees (property, liability) but also credit insurance, protection from lawsuit's costs and assistance
- **Short-term liquid investor**

Reinsurance: insurance bought by insurers

- Complex B2B contracts and treaties
- Purposes: capacity and protection from CAT, expertise and entry/exit from markets, loss stabilisation

WHY PENSIONS?

Income and consumption are not stable: demographic and financial risks



• "life cycle"
• savings higher at mid-age
• people consume flat annuities of their wealth
• several behavioural constraints in planning for own life cycles

- Need for income after retirement as well as protection from uncertainties (health, inflation, unemployment, …)
- Due to long cumulation phases, pension funds are the largest institutional investors

PENSIONS PRODUCTS AND FUNDS

Two main regimes:

- **Defined-benefit** (DB):
  - participants decide the future benefit
  - contributions are changed accordingly
  - risky for sponsors and participants
- **Defined-contribution** (DC):
  - participants decide the level of contributions
  - benefit will depend on cumulated contributions
  - financial and demographic risks passed on participants

Public funds are often **PAYG**, **many provide defined benefits** and usually **mandatory**

Private funds are funded, mostly DC and often **voluntary**

THE ITALIAN PENSION SYSTEM (BRIEFLY)

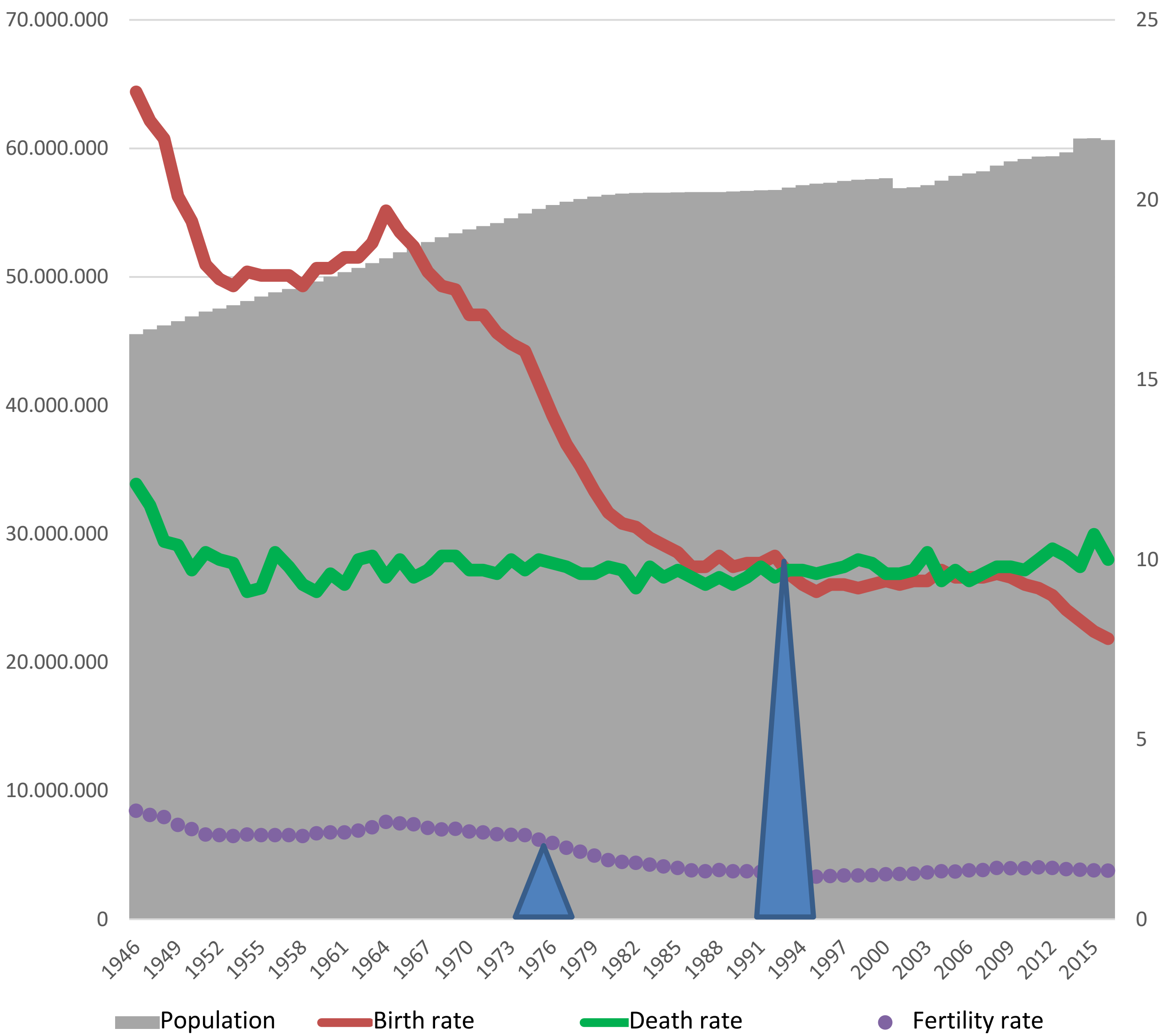
Long series of reforms, after emergence of «difficulties» since late 1980s:

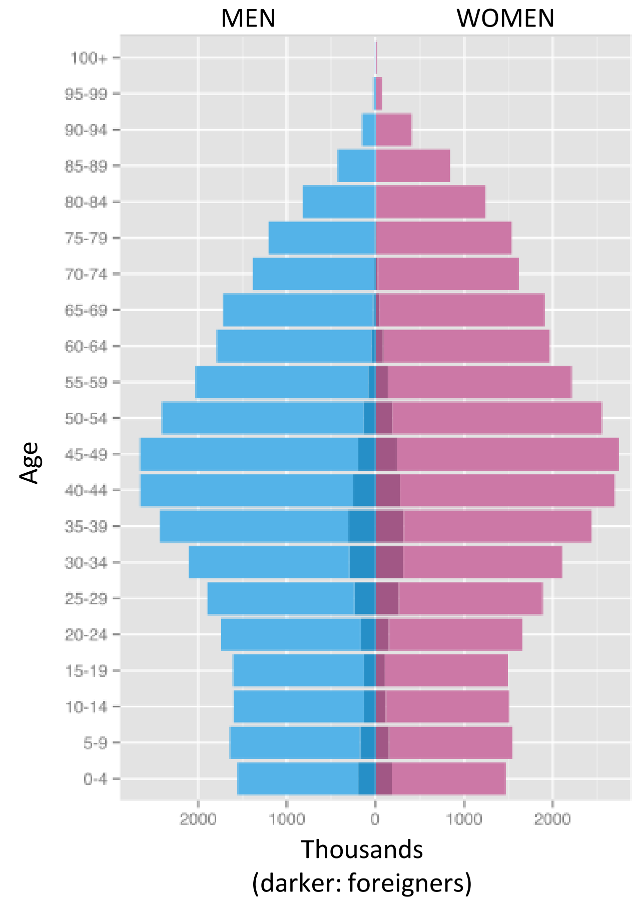
- **PAYG**
- now entirely **contribution-based** (with transition)
- Progressively **aligning requirements** between genders, public/private sector, employees and self-employed (not between/within generations)
- Progressively **removing «full» early retirement**: advance of old-age benefits with penalties on conversion rates

- **Retirement age** linked to life expectancy (67+, but effective age is much lower)
- Contributions **compounded as nominal average GDP growth**
- **Replacement rates vary** between 40-80%: huge impact of salary/careers/age

The Italian Pension System (briefly)

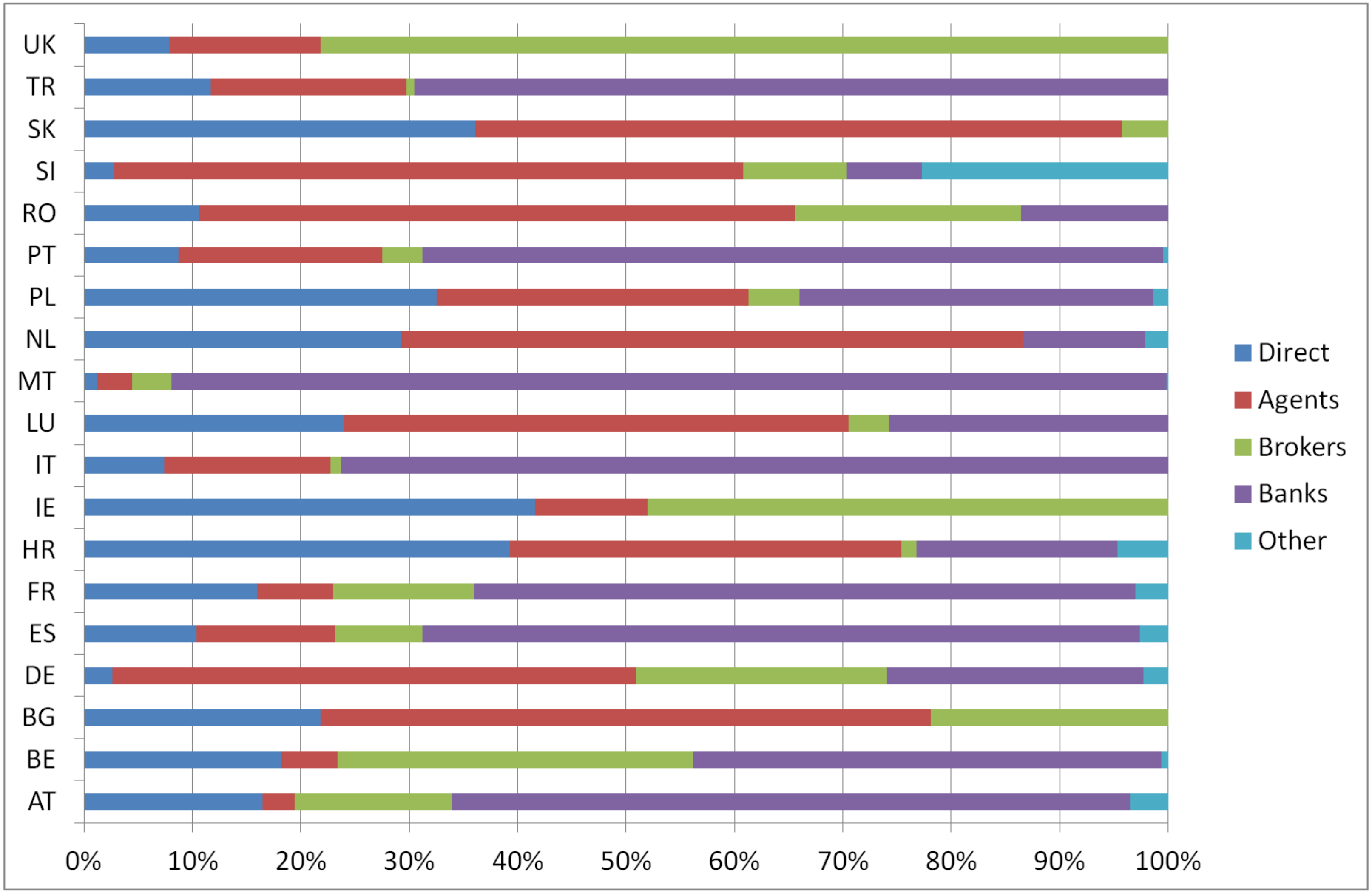
Why?





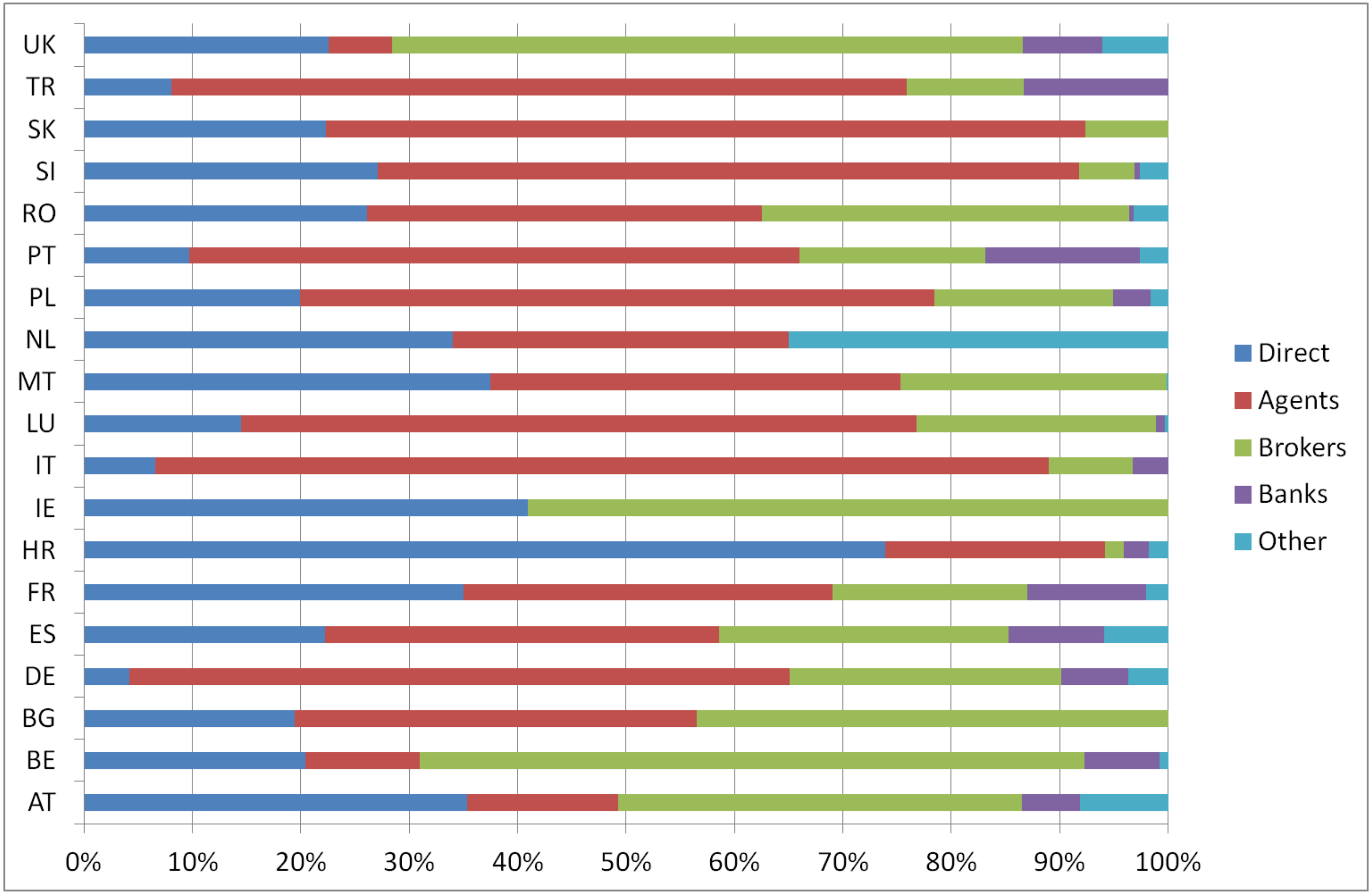
EXAMPLES

1. How do insurers distribute their products in the life sector?



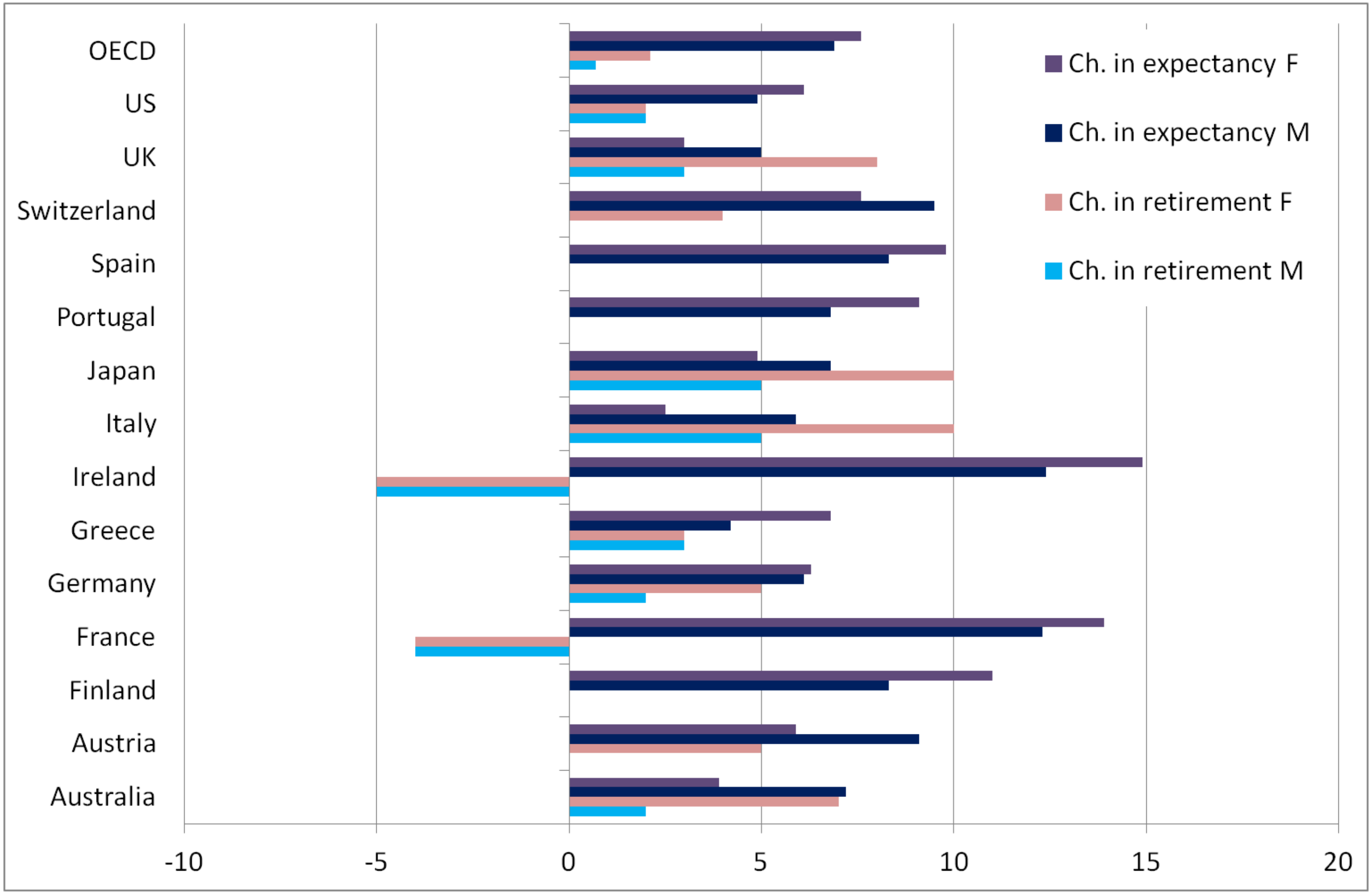
EXAMPLES

2. How do insurers distribute their products in the non-life sector?



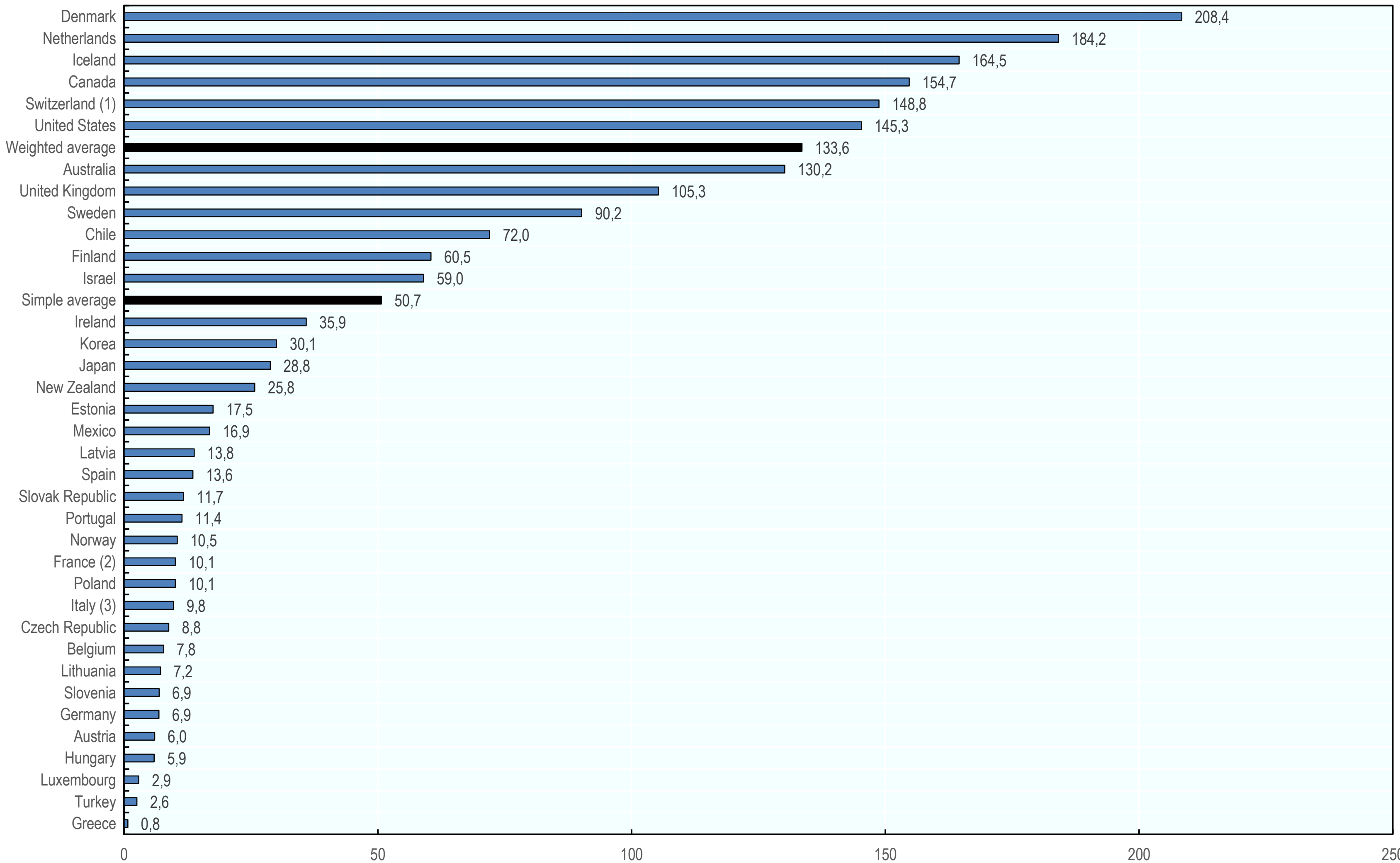
EXAMPLES

3. Life expectancy and retirement age: 1960-2050 differences (OECD)



EXAMPLES

4. Pensions assets (funded) as % of GDP (2017)



EXAMPLES

5. Pension funds asset allocation (2017)