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EUROFORUM

Financing higher education

Theory† and evidence‡

† Ooghe, E., The economics of tuition: who should pay? unpublished manuscript.
‡ Diris, R., Ooghe, E., Financing higher education in Europe, Euroforum WP 8.

Why this lecture?

The framework

An ‘ideal’ world

The ‘real’ world

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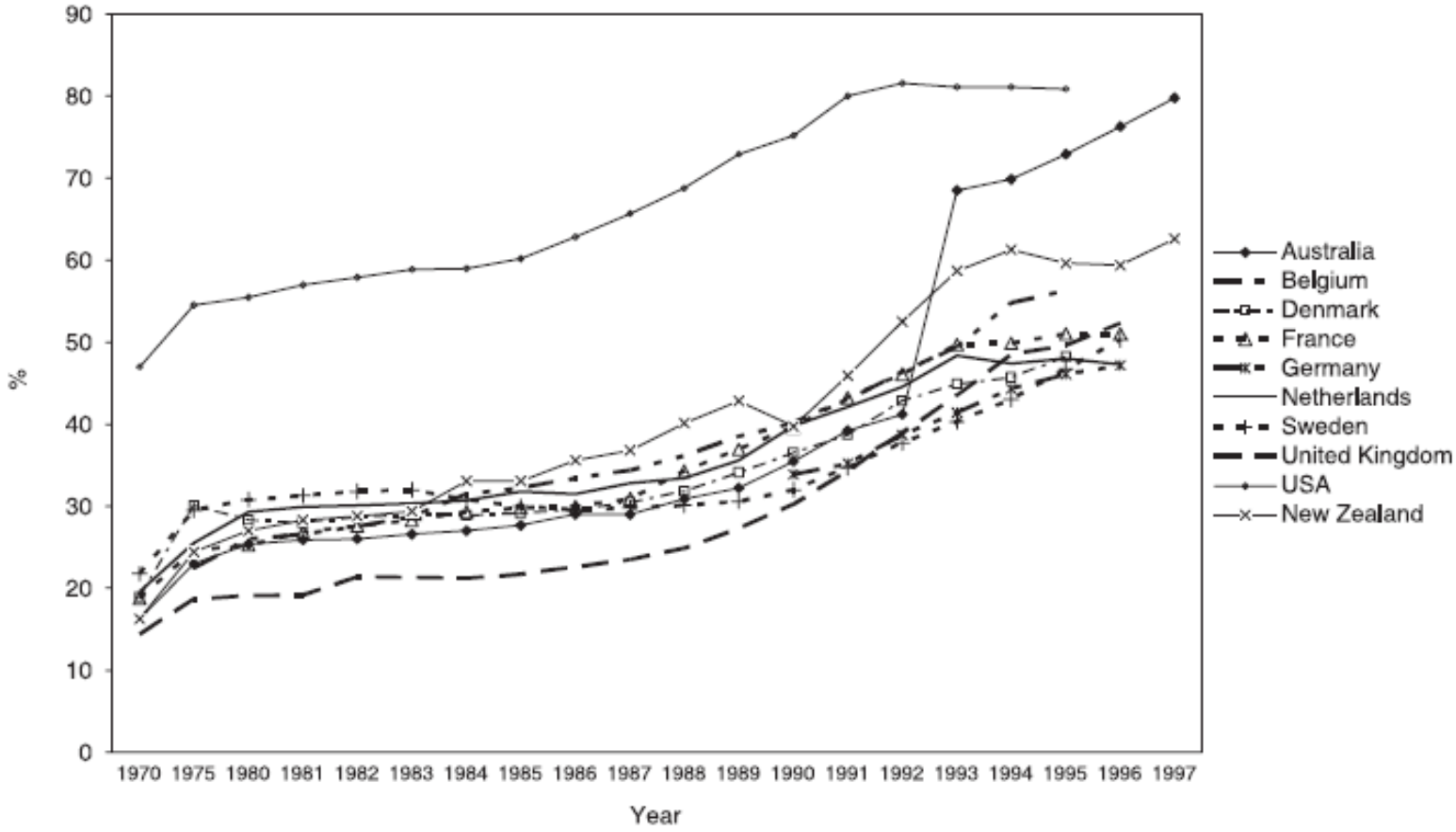
Higher education expands …



Enrolment in higher education (Jacobs & Van der Ploeg, 2006)

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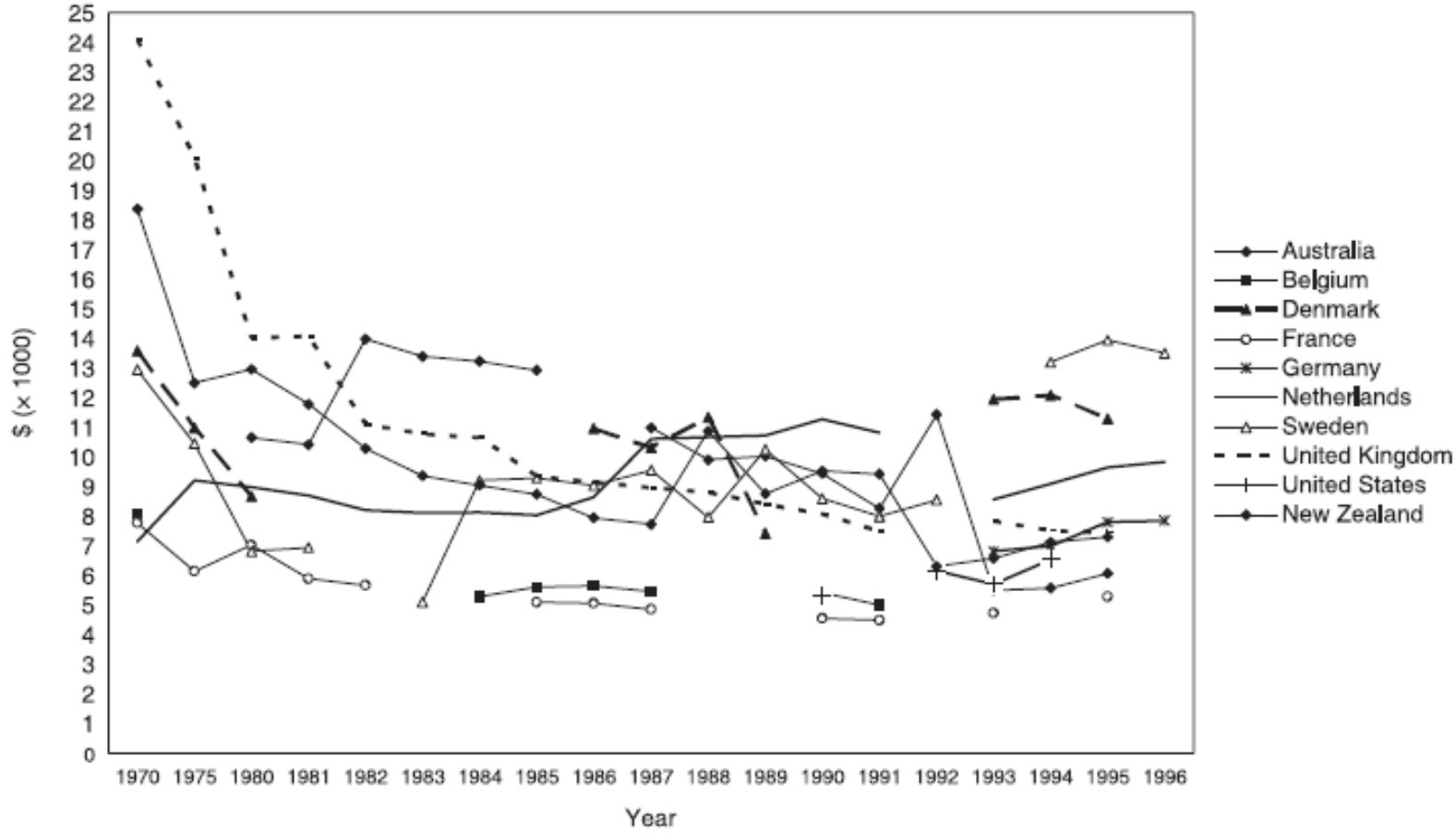
… puts pressure on public resources



Resources/student in higher education (Jacobs & Van der Ploeg, 2006)

… and pressure on private resources

- Higher tuition, but also ‘new’ forms of financing, e.g.:
  - tuition | study duration (AU, BE, DK, FI, FR, NL, NO, SE),
  - income-contingent loans (DE, NO, SE, UK).

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Overview

- Pressure on resources for higher education—public and private—is not likely to decrease in the future:
  - student numbers (& international students);
  - other societal needs (health and pensions).

- Budgetary pressure is a practical, not an economic argument to reform the financing of higher education.

- This lecture wants to
  - provide *theoretical arguments* that may justify intervention/reform,
  - summarize the corresponding *empirical evidence.*

Why this lecture?

The framework

An ‘ideal’ world

The ‘real’ world

The framework – preview

- In the ‘ideal’ world
  - market failures are absent,
  - ‘homo economicus’ takes decisions, and
  - lump-sum transfers are feasible.

- If these assumptions are true, then
  - no (distortive) intervention in HE is needed;
  - students simply pay the full cost of HE up-front.

- Each assumption may fail however in the ‘real’ world …

The invisible hand: a ‘false’ belief?

CORPORATE LEADERS GATHER IN A FIELD OUTSIDE DARIEN, CONNECTICUT, WHERE ONE OF THEM CLAIMS TO HAVE SEEN THE INVISIBLE HAND OF THE MARKETPLACE.

‘homo psychologicus’ ↔ ‘homo economicus’?

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Government = deus ex machina?

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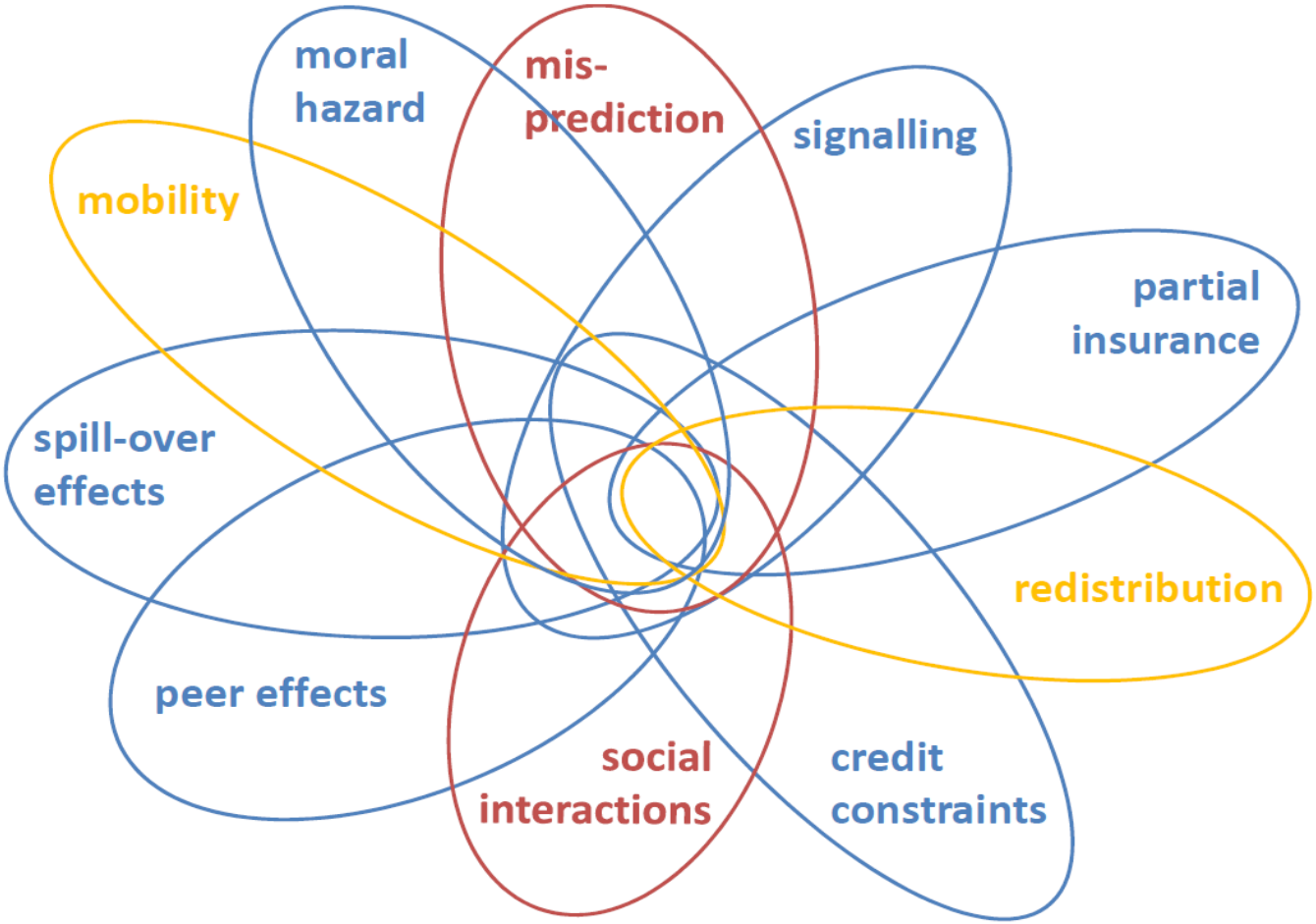
In the ‘real’ world, financing HE is complex …



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… in fact, even more complex (caveat)

- education (versus research);
- higher education (versus (pre-)primary and secondary);
- demand for higher education (versus supply/governance);
- who should pay (versus who pays and why);
- efficiency and equity (versus quality);
- causal evidence (if available).

Why this lecture?
The framework
An ‘ideal’ world
The ‘real’ world

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The ‘ideal’ world

- Recall the assumptions:
  - market failures are absent,
  - ‘homo economicus’ takes decisions, and
  - lump-sum transfers are feasible.

- These assumptions imply, among other things, that
  - private and social pay-offs coincide,
  - pay-offs are ‘life-time’ & ‘for sure’, and
  - efficiency and equity can be separated.

The participation decision – a simple model

- Each agent has a type $\theta \in \Theta$ (density f). If an agent
  - does not participate, then (s)he gets a pay-off $a(\theta)$
  - does participate, then (s)he
    - gets a benefit $b(\theta)$ on top of $a(\theta)$, but
    - must also pay a participation cost $c(\theta)$.

- A 'rational' agent will participate, if it leads to a higher pay-off, i.e., if $a(\theta) + b(\theta) - c(\theta) \geq a(\theta) \;\; or \;\; b(\theta) \geq c(\theta)$.

- (Huge literature on the 'returns to education'; see §2.)

Actual and optimal participation

- In the laisser-faire, the *actual* set of participants is equal to $P^{\circ} = \{\theta \in \Theta | b(\theta) - c(\theta) \geq 0\}$, but is this optimal for society?

- Efficiency and equity can be separated; the *optimal* set of participants P^* must maximize the average pay-off, being

$$\int_{\Theta \setminus P} a(\theta) f(\theta) d\theta + \int_{P} [a(\theta) + b(\theta) - c(\theta)] f(\theta) d\theta \,,$$

for an arbitrary set of participants $P \subseteq \mathbb{R}$,

or, equivalently, $E[a(\theta)] + \int_{P} [b(\theta) - c(\theta)] f(\theta) d\theta \,.$

- So, $P^* = P^{\circ}$: the laisser-faire is optimal in the 'ideal' world.

$P^\circ = \{\theta | d^\circ(\theta) \geq 0\}$ and $P^\star = \{\theta | d^\star(\theta) \geq 0\}$, with

$$\begin{aligned} d^\circ(\theta) &= b(\theta) - c(\theta), \\ d^\star(\theta) &= b(\theta) - c(\theta). \end{aligned}$$

Assumption: $\Theta = \mathbb{R}, a > 0, a' > 0, b = ra > 0, and\ c' < 0$

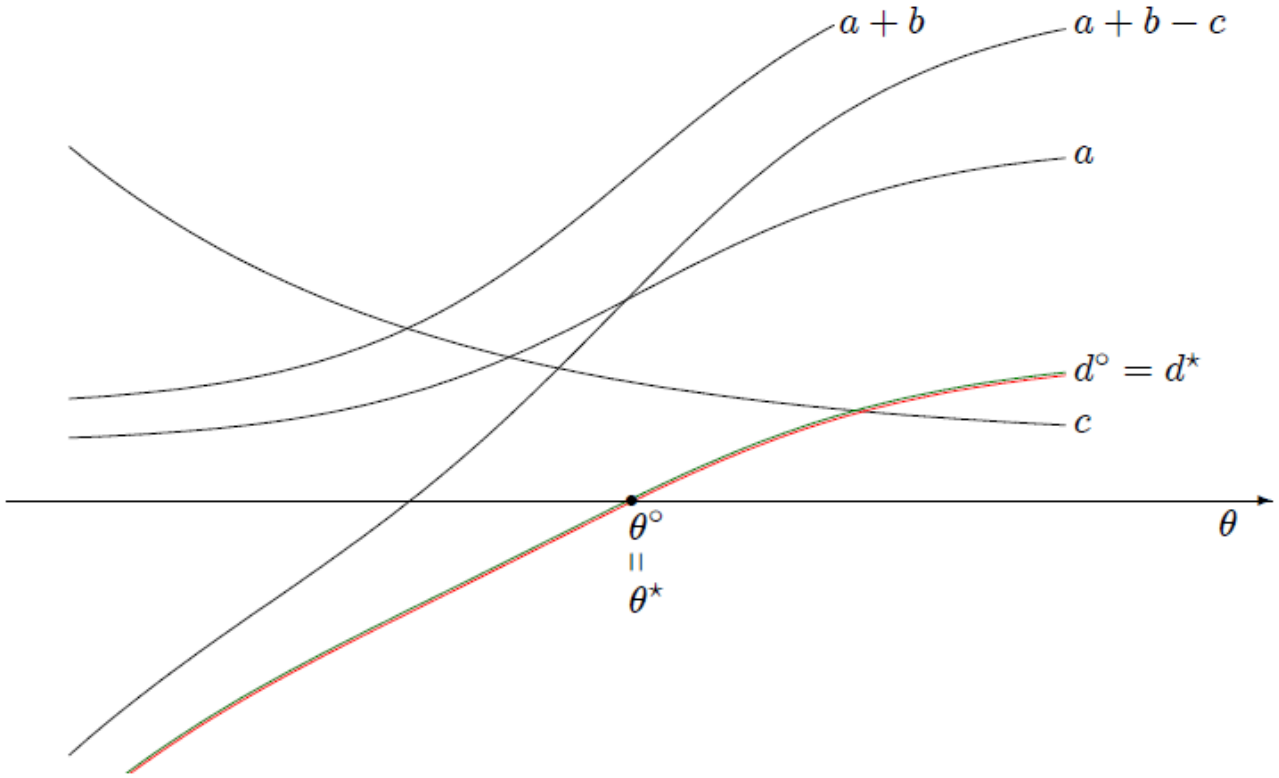

Figure 1. The participation decision.

The ‘ideal’ world

- To sum up: in the ‘ideal’ world
  - there is no justification for intervention, so,
  - students simply pay the full cost of HE up-front.

- Assumptions can be wrong; we focus in the remainder on ‘real’ markets, ‘real’ behaviour, and ‘real’ policies.

- informal discussion (no ‘model & figures’ … lack of time)

Why this lecture?
The framework
An ‘ideal’ world
‘Real’ markets

Markets in the ‘real’ world

- In the laisser-faire, participation in HE will depend on
  - sufficient credit to finance higher education,
  - insurance against education-related risks, and
  - the value of higher education in later life.

- So, participation will depend on the well-functioning of
  - credit markets,
  - insurance markets, and
  - education and labour markets.

- Each of these markets may fail …

Credit and insurance market failures

- Education is a risky investment; participation may lead to
  - default risk = the risk of not being able to repay a loan
  - income risk = a higher variability of E[earnings] in life

- These risks can be difficult to insure, e.g., because
  - students have no collateral; parents are often reluctant,
  - adverse selection and moral hazard,
  - the presence of a collective component.

- If true, then ‘credit constraints’ and ‘uninsured income risk’ imply too little participation in higher education …

Evidence on credit constraints

- Large correlation between participation & income, but it becomes low (US) to negligible (UK), once we correct for
  - maternal ability (in the US),
  - secondary school achievement (in the UK).

- However, there is also evidence that credit constraints (the conditional correlation between participation and income)
  - become more important over time (x2),
  - are higher if we also include wealth (x2).

Evidence on uncertainty

- Little evidence …

- A large part of the heterogeneity in the rate of return is not predictable at the time of the participation decision.
- HE implies “higher returns, but also higher earnings risk.”

- (Completely) eliminating uncertainty would imply that
  - 12% (of those with high school only) would participate,
  - 2% (of college students) would not attend anymore.

Education and labour market failures (1)

- Externalities occur when individual decisions
  - affect other individuals
  - in a direct way (not mediated via the market).

- positive spill-over effects in HE
  - could occur if, e.g., graduates improve the productivity of others in the labour market,
  - imply too little participation in HE.

Education and labour market failures (2)

- HE can also signal productivity, besides enhancing it

- Two 'signalling' hypotheses:
  - strong: HE only signals productivity,
  - weak: HE both enhances and signals productivity.

- Consider w.l.o.g. strong version & 2 productivity types (h/ℓ)
  - asymmetric information → wage = average productivity
  - h-type can earn more if he can 'credibly' signal his type
  - education may be credible, if *cost* h-type $\ll$ *cost* ℓ-type

too much participation results in equilibrium

Evidence on spill-over effects

- Huge macro-economic literature confirms that education
  - has a positive effect on macro-economic performance,
  - over and above the effects on individual productivity.

- Thus, social > private return, but … much debated, and little ‘causal’ micro-evidence (identification is difficult)

- Education has causal non-pecuniary spill-over effects on
  - e.g., voting, divorce, trust, and child schooling …
  - but often small, e.g., +0.1 child year/parental year.

Evidence on signalling

- Substantial causal evidence indicates that education improves individual productivity, so ‘strong’ version is false

- Large literature on ‘sheepskin’ effects: has a degree an effect over and above the # of years?
  - early ‘Mincer-type’ literature: mixed evidence …
  - natural experiment literature: ‘OK’ for US, rej. for UK.

Why this lecture?
The framework
An ‘ideal’ world
‘Real’ behaviour

Behaviour in the ‘real’ world

- Insights from ‘economics & psychology’ show that the so-called ‘homo psychologicus’,
  - a boundedly rational decision-maker,
  - with limited will-power, and
  - subject to social interactions,

  provides often a ‘better’ description of human behaviour.

- Students turn out to be no exception …

Caveat …

- Caution is needed, however, for at least three reasons:
  - behavioural economics is still in its infancy, esp., for HE;
  - individuals may identify with behavioural ‘mistakes’;
  - behavioural mistakes are far from universal.

- We discuss:
  - misprediction (of the costs, benefits, and risks in HE);
  - social interactions (status, peer effects, and conformity).

Evidence on misprediction

- Participation decision is based on costs, benefits, and risks
  - costs of higher education are overestimated (low SES have a similar bias, but higher variance),
  - benefits (returns to education & financial aid) are underestimated (esp., eligible students, in case of aid),
  - probability of success *may* be overestimated as a consequence of overconfidence (esp., low performers).

- Misprediction implies probably too little participation

- If a matter of misinformation only, then the policy is clear, but the problem is often deeper …

Framing?

- Framing, the presentation of options, matters in HE:
  - ‘tuition’ versus ‘grant’;
  - ‘loan’ versus ‘human capital contract’;
  - ‘scholarship’ versus ‘grant’.

- Evidence shows that enrolment is more sensitive to tuition than to grants, but only true in the US, not in Europe.
  - ‘complex & uncertain’ versus ‘universal’ aid?
  - information versus application assistance.

Non-standard preferences (speculative)?

- Time preferences:
  - a preference for immediate over delayed utility,
  - HE has immediate costs and delayed benefits …

- Risk preferences:
  - risk averse/loving for gains/losses wrt. reference point
  - if reference is parental education …

- Self-enhancing preferences:
  - a preference for positive over negative self-views
  - overestimation of success probabilities

Social interactions

- Participation decisions can be influenced by the decisions made by others, so-called social interactions

- These ‘interactions’ may be caused by
  - utility interactions:
    - social status, e.g., if the relative ‘position’ matters to people,
    - conformity/identity, e.g., if students exert ‘pressure’ on peers.
  - production interactions:
    - peer effects, e.g., if students affect each others’ learning process,
    - ‘tournaments’, e.g., if job offers depend on degree ranking.

Position

- The relative position of individuals may matter for
  - status reasons (e.g., via degrees or income ranking)
  - employment (e.g., if job offers depend on degree ranking)

- Position implies that status/employment is a zero-sum game, and therefore, too much participation in HE may result.

- Brief summary of the evidence:
  - education is a positional good (limited and debated)
  - income is a positional good; see, e.g., happiness literature
  - mixed evidence for employment (crowding-out hypothesis)

Peer effects

- Students may affect each others' learning, e.g., the avg. quality of your peers may have a positive effect.

- If true, then too much participation *may* result
  - because 'marginal' participant has 'low' ability,
  - (implicitly assuming no college sorting ≈ Europe.)

- Limited evidence, at least for higher education:
  - 'quality' of college roommates has a positive, but modest effect on academic achievement,
  - intensity of the interaction plays a role, however,
  - larger effects for 'social' outcomes (see next).

Conformity

- Conformity arises, e.g., if the willingness to participate increases with participation in the (exo. def.) social group
  - Util-gain if your choice conforms with majority behaviour
  - Util-loss if your choice deviates from majority behaviour.

- Conformity/identity leads to too little/much participation if median quality of social group is low/high.

- Some limited (suggestive) evidence:
  - ‘acting white’ undesirable in minority youth cultures
  - peer effects larger for social outcomes, including, e.g., the choice of major in college

Why this lecture?
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‘Real’ policies

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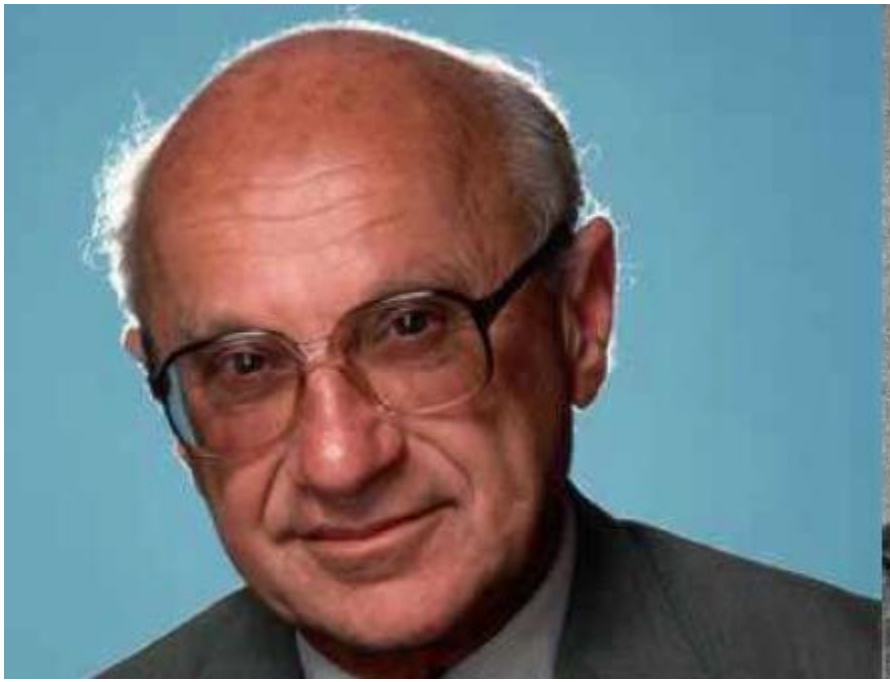
Policies in the ‘real’ world

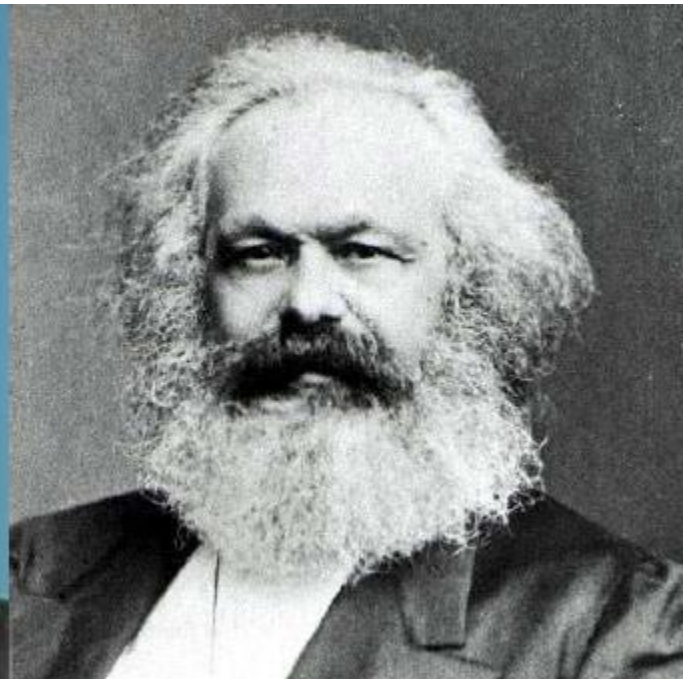
- Market and behavioural failures are ‘inefficiencies’, so,
  - a subsidy (or tax) can restore optimal participation, and
  - lump-sum transfers take care of (re)distribution.

- Lump-sum transfers are usually not feasible; subsidizing HE then reduces inefficiencies, but may lead to
  - perverse redistribution, as it redistributes from the (un-educated) poor to the (educated) rich over the life-time
  - inefficiencies, caused by policy interactions (a.k.a. fiscal externalities) if students are sufficiently mobile.

Perverse redistribution

- Old argument …





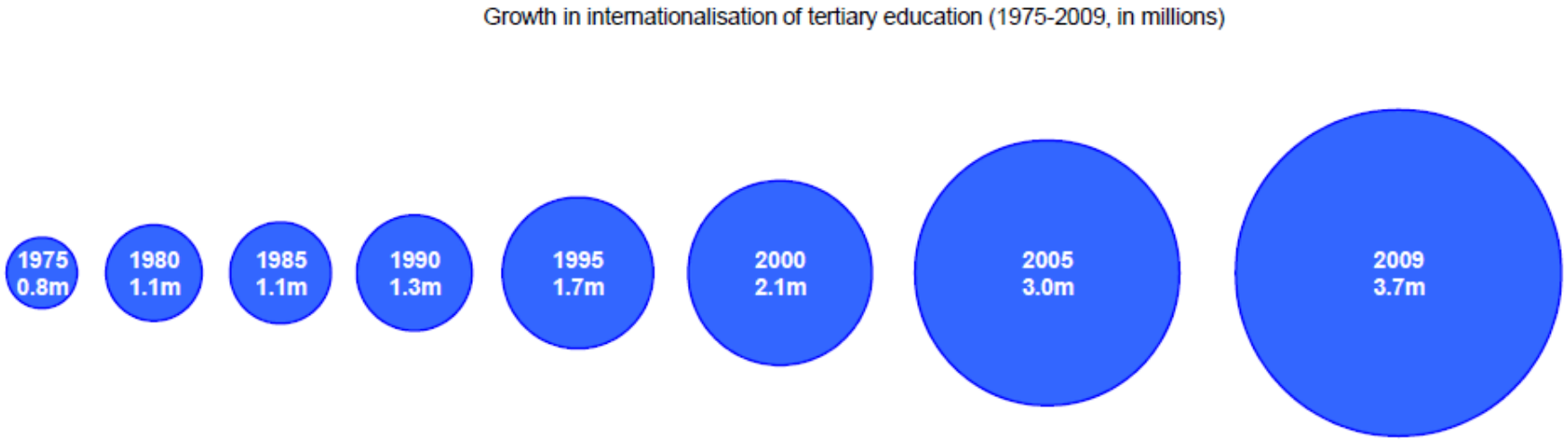
Perverse redistribution

- Subsidies may be regressive, but effect counteracted by
  - general equilibrium effects on wages
  - non-linear spillover effects (if higher for non-graduates)

- Evidence of perverse redistribution is ambiguous, both
  - cross-sectional: Hansen-Weisbrod-Pechman debate
  - longitudinal: regressive in DE, while +/- neutral in US

- Some evidence of GE effects and higher spill-overs for high school drop-outs/graduates may explain ambiguity

Mobility: # of international students (OECD)



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Student mobility and coordination

- if
  - students are sufficiently mobile, and
  - tuition cannot be discriminatory (e.g., within EU),

  then HE subsidies lead to policy interaction.

- Consequences depend on
  - whether host countries gain or loose
  - which instruments are used (subsidy versus quality),

  but, in any case, interaction likely to be inefficient without sufficient coordination between countries …

Student mobility and coordination

- Only anecdotal evidence of policy interaction

- Non-cooperative ‘war on talent’, e.g.,
  - Uganda & return declaration;
  - Algeria & scholarship restrictions;
  - Netherlands & SEC-advice to ‘keep’ internat. students.

- Cooperative, e.g.,
  - US & tuition reciprocity agreements between states
  - WFPHA resolution to restrict recruitment of health professionals from developing countries

Questions/comments?

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