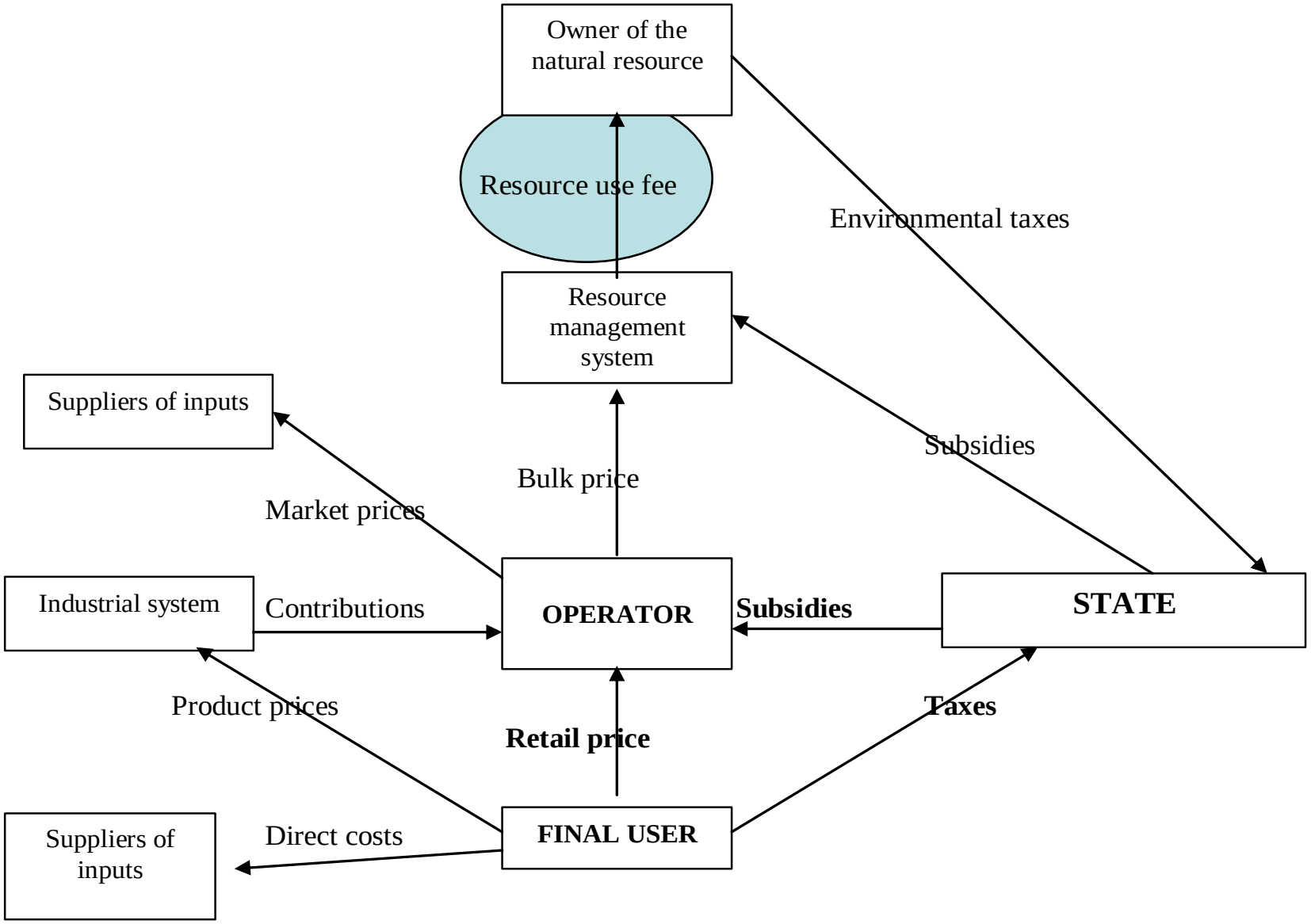
Abstraction charges: how can the theory guide us ?

Antonio Massarutto
University of Udine and IEFE-Bocconi
antonio.massarutto@uniud.it

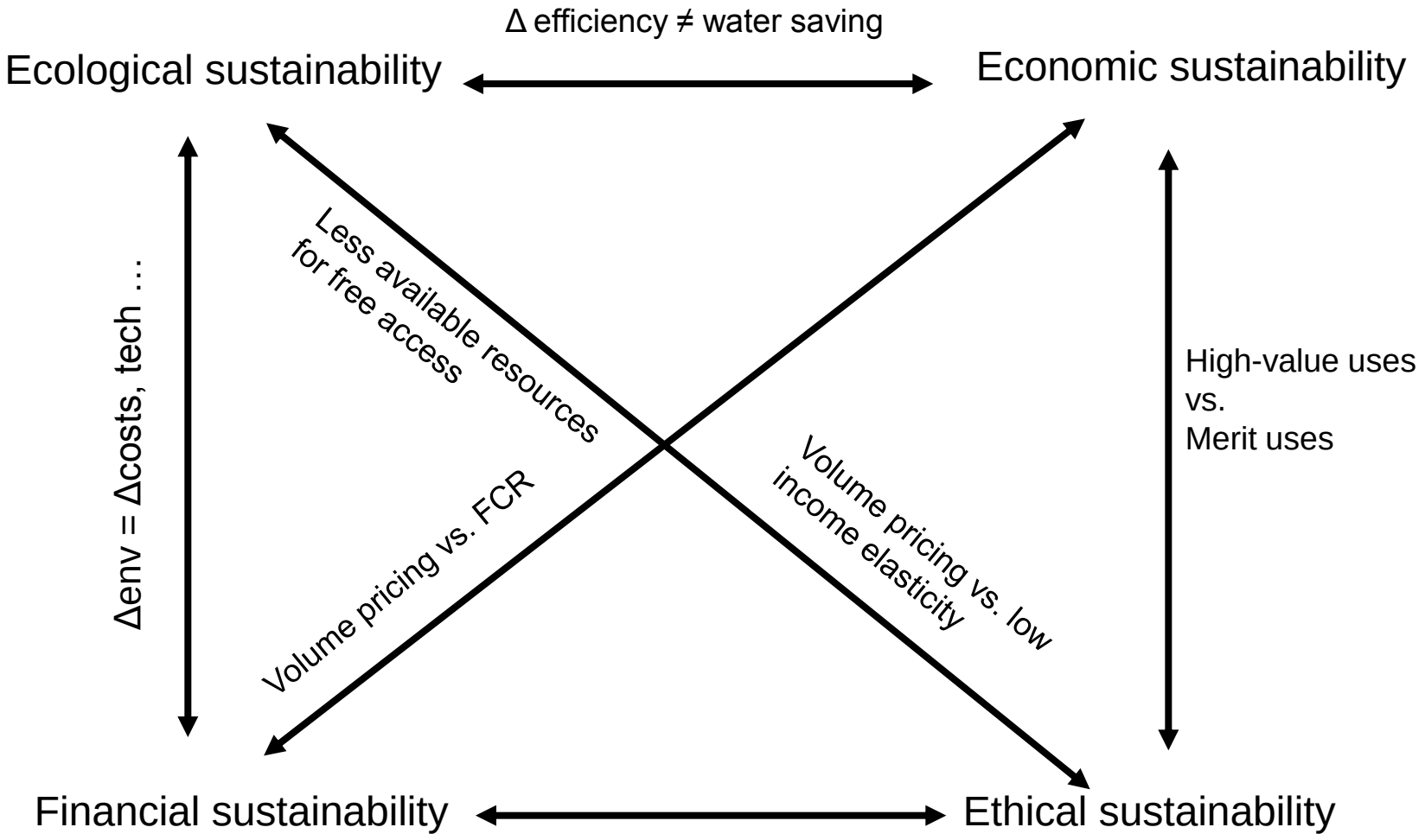
Oecd Expert Meeting on “Sustainable financing for water services: from theory to practice”
Paris, November 14-15, 2007

Transactions along the value chain of the water sector



Conflicting sustainability targets

- Ecological ⇔ water as a scarce environmental resource
  - Guarantee that water use < carrying capacity
  - Maintain water-associated ecosystem services
- Economic ⇔ water as a scarce resource having an economic value
  - Guarantee that available resources are allocated efficiently
  - High-value uses should have priority
- Financial ⇔ water services as economic activities
  - maintain and develop artificial assets
  - achieve financial viability
  - Cost recovery
  - Attract adequate €, technologies, skills etc into the water service
- Ethical ⇔ water as a social right
  - Satisfy basic water demands in an affordable way
  - share resources and financial costs equitably
  - decide in a democratic, transparent and accountable way

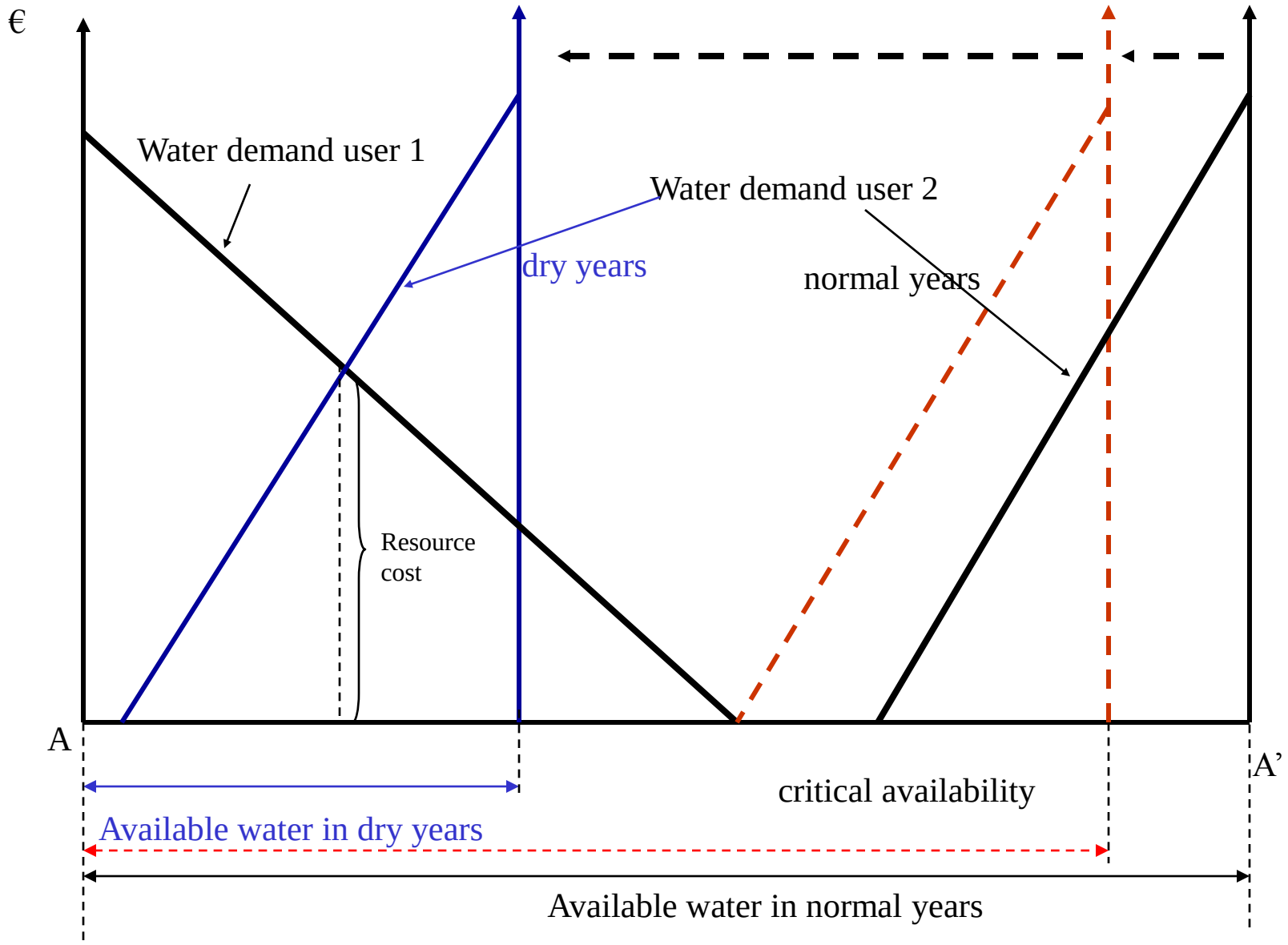


Δ costs + FCR = Δp
Δtech = Δpriv
Need for equalization

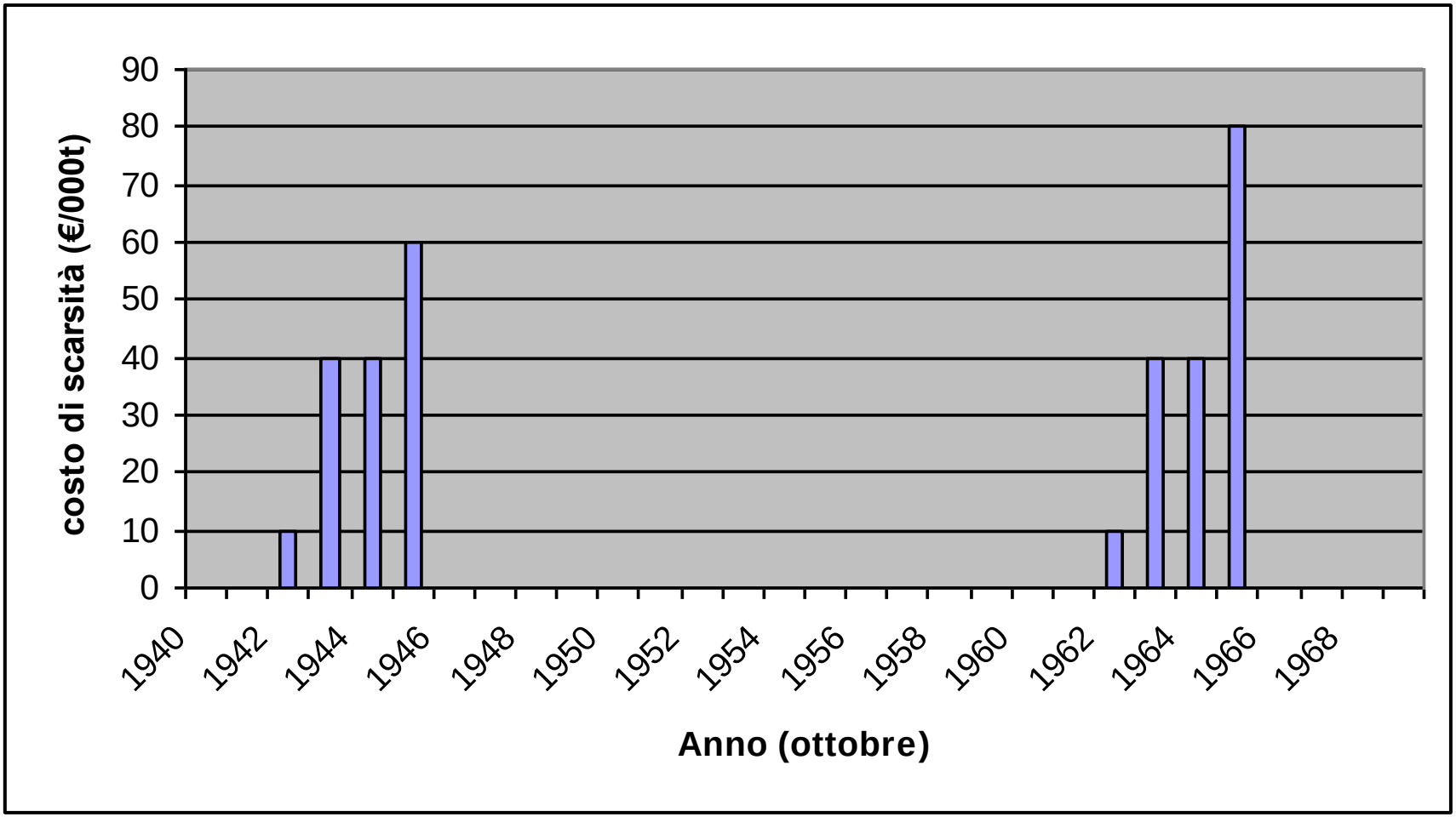
Financial cost vs. resource cost

- Financial cost
  - opportunity cost of L and K used for providing water services
  - occurs necessarily any time a water service is needed
  - water infrastructure as imperfect public goods ⇔ no (or little) rival; high costs of exclusion
- Resource cost
  - (eventual) opportunity cost of water resource
  - depends on resource scarcity and contemporary rival demand for THE SAME water resource AT THE SAME TIME
  - = value of alternative uses that have to give up OR cost of the cheapest available resource that can substitute
  - In Europe, = 0 most of the time
- Environmental cost
  - opportunity cost of other environmental resources (eventually) affected
  - no relation with water quantity but rather on the way water is supplied and used

Optimal allocation of water, water scarcity and resource costs



Scarcity cost in the Jucar basin (Spain)



Source: Brouwer, 2004

Summing FC, RC, EC ?

- The approach of the WFD
  - Full-cost recovery (FC+RC+EC)
  - Assumption that internalization of the full cost is a prerequisite of sustainable and efficient use of water
  - Assumption that under-pricing is the main cause of excess demand
- Is this the right approach ?
  - Sustainability targets are conflicting and require different approaches to pricing
  - Most part of the cost is financial and regards L/K, not water ⇔ achieving WFD targets requires investment
  - The problem with water is not its scarcity, but the fact that it is heavy and costly to mobilize

Pricing aims and approaches

Sustainability principle	Aim of water pricing	Marginal cost	Full cost	Volumetric price	Perequation Admitted
Ecology	Reduce pressure on natural resources	No	No	Yes (incr)	No
	Encourage water-saving	No	No	Yes (incr)	No
	Improve water quality	Yes (weak)	No	No	No
Economic efficiency	Allocate water to the most beneficial uses	Yes	No	Yes	No
	Avoid over-investment in facilities	No	Yes	Sometimes	No
	Efficient use of existing facilities	Yes	No	Yes (decr)	No
	Ensure x-efficiency and avoid monopoly rents	Yes	No	No	No
Cost recovery	Ensure viability of water management systems	No	Yes	No	Yes
	Maintain asset value over time	No	Yes	No	Yes
	Guarantee remuneration of inputs	Yes	Yes	No	Yes
	Sustainable investment	No	Yes	No	Yes
Ethical / social	Share costs in a fair way	No	Yes	Yes	Yes
	Ensure affordability for merit uses	No	No	No	Yes

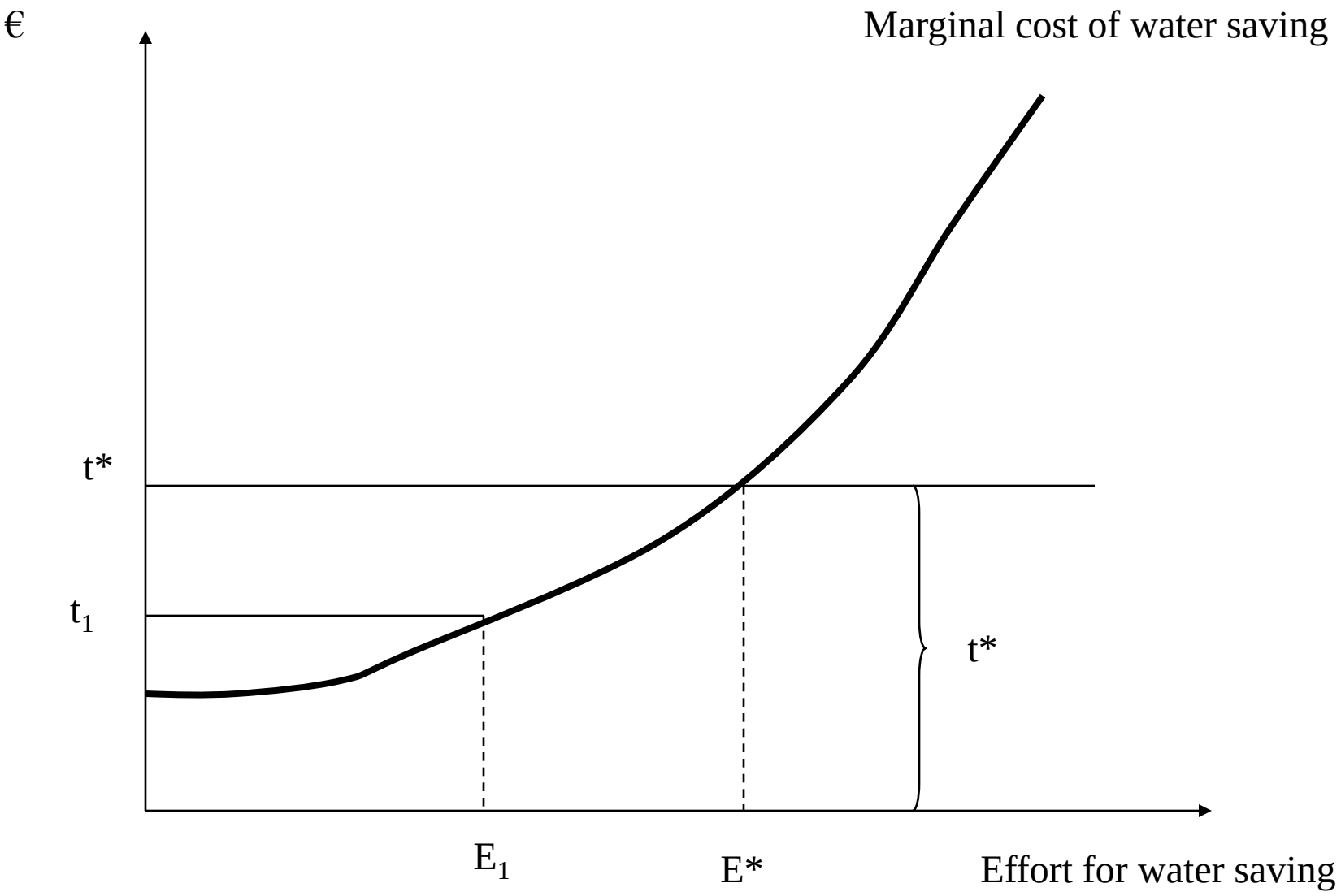
Abstraction charges

- Source of revenue:
  - for the government and the general budget (eg Germany)
  - for supplying ear-marked budgets (eg France)
  - for recovering administrative cost (eg Italy, E&W)
- Environmental incentive
  - aimed at water saving
  - aimed at reducing leakage and incentivate investment for better management systems
  - aimed at addressing users to alternative sources
- Other possibilities
  - p = RC as a way to compensate low-value uses that have to be phased out
  - economic instruments as a way to foster Coase-like bargaining among users / stakeholders
  - p as a way to segregate high-value and low-value uses addressing them to separate systems

Evidence of double dividends is scarce

- Difficult implementation
  - resource costs depend on rival demand on the same water resource, therefore p should vary accordingly
- The response of water demand / final users
  - elasticity depends on readily available alternatives
  - uses that are already established have a very high WTP and very low elasticity
  - incentive to water saving is scarce unless the value of the AC is very high (FC is the dominant cost)
  - depends on the structure and not on the level of tariffs
- The response of water service operators
  - depends on the possibility of pass-through on tariffs
  - trade-off between collective systems (high FC, low MC) and individual systems (high MC)
- The response of agriculture
  - very low effects until p < “exit threshold”
  - if p > exit threshold, low value uses are phased out, but water demand becomes more inelastic and can even grow

Water prices as environmental taxes



Some suggestions

- Abstraction charges ≠ magic stick
  - no invisible hand doing the job for us
  - recovering RC+EC is fascinating but not very useful
  - no guarantee that internalization of RC is strong enough for reducing demand below carrying capacity
  - pricing useful for allocating available resources in an efficient way, provided that enforcement of abstraction rights is guaranteed by other means
- Abstraction charges, as all economic incentives, have different effects according to the point of the value chain that is addressed and its incidence
- Abstraction charges (and discharge taxes) as useful ways to create ear-market budgets and gear low-cost finance of water investment