Last resort supplier and competition in the retail electricity market
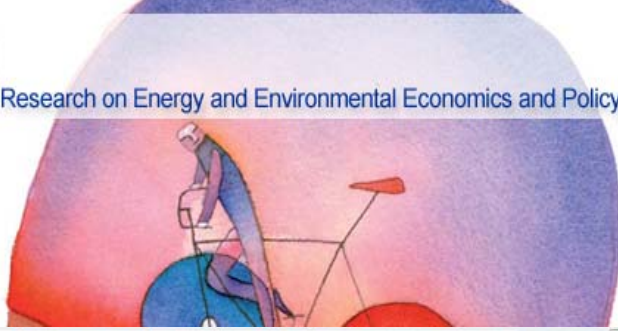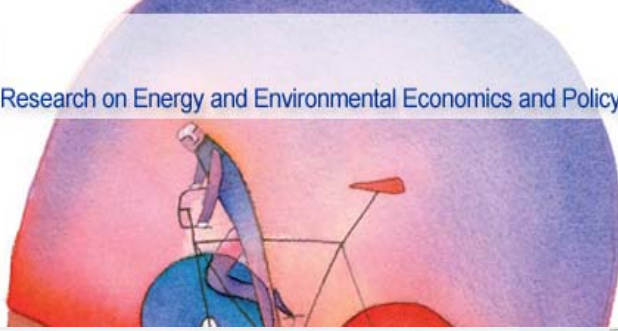
Milano

23 aprile 2009

Clara Poletti
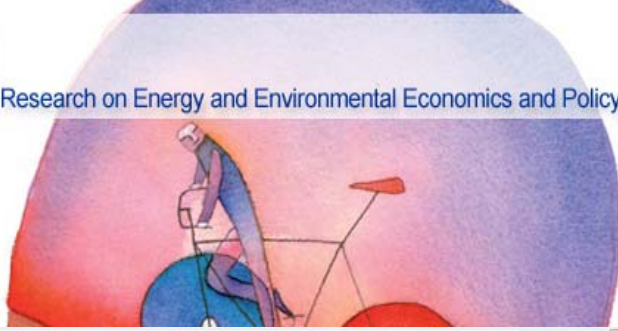
Iefe – Università Bocconi

Premise

- The paper focuses on the **design of liberalisation policies** in markets where:
  - competition is superior to a regulated monopolist,
  - but barriers to entry due to consumer ignorance can reduce the competitive pressure

- Idea: regulation designed to implement Universal Service Obligations can be used to **ease the entrance** of competitors in newly liberalized markets

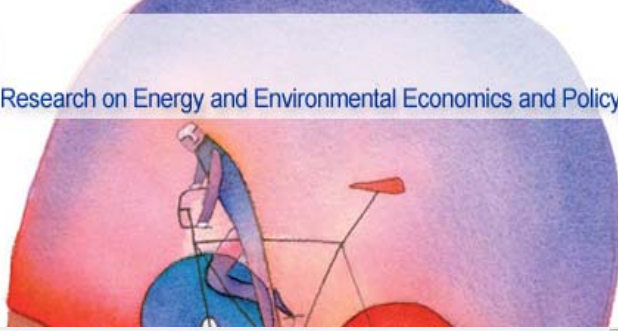- Example: **electricity retail** but results more general

Electricity retail (1)

- By 1st July 2007: full liberalization in the EU

- "Member States ensure that all households customers and, eventually, small firms enjoy **universal service**" (art. 3, point 3, EU Directive 2003/54/CE on the internal electricity market)

- Universal service is defined as the right:
  to be supplied with electricity of a specified quality;
  at **reasonable** and clearly comparable **prices**

- Each EU Country has implemented its own **mechanism to protect small customers**

- We study the following **customer protection mechanism**:

  ✓ When the market opens all customers are automatically switched from the incumbent to a "Last Resort Supplier - LRS"

  ✓ The LRS is selected through an auction

  ✓ Wins the auction the firm willing to serve the market at the lowest price (reasonable price)

  ✓ Once moved to the LRS customers can switch to a new supplier

Setting (1)

- **Two stages**: transition stage and market stage

- **Timing**:

  T_0: all (identical) consumers are served by an Incumbent firm

  T_1: transition to competition with potential USOs (<u>transition stage</u>)
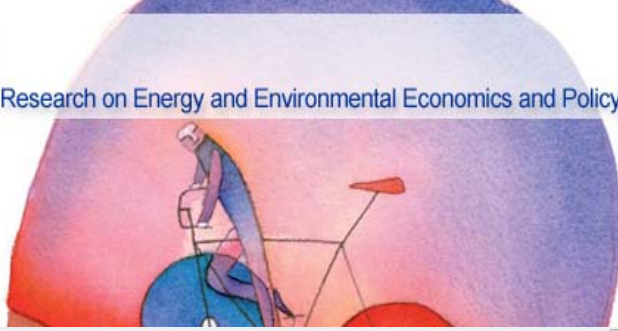
  T_2: market competition (<u>market stage</u>)

- **(Vertically) differentiated products**:

$$U_i = v_i - p_i \qquad i = I, E$$

- **Asymmetric firms**:

$$\Delta c = c_I - c_E > 0$$

- **Competition**: Bertrand with differentiated products and asymmetric firms: only 1 firm serves the market

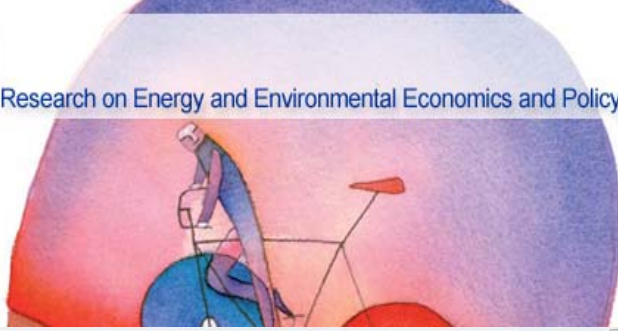- **Market coverage** (v_i sufficiently large)

Setting (3)

- **Information**:

  1. Complete information on the firms side

  2. Consumers know v_I and have expectation on v_E

$$v_E = E[v_E] + x$$

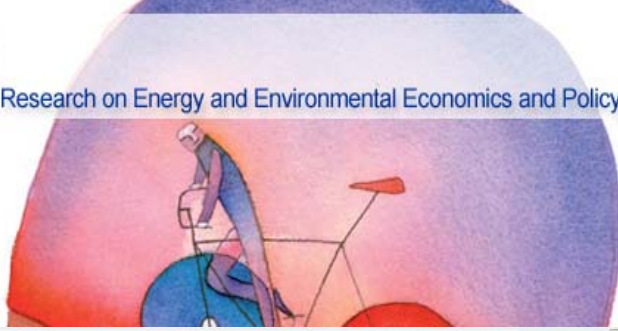 3. Consumers have a positive bias towards the incumbent

$$\Delta v = v_I - E[v_E] > 0$$

- **Information**:

  4. x becomes known at the market stage if entry occured at the transition stage

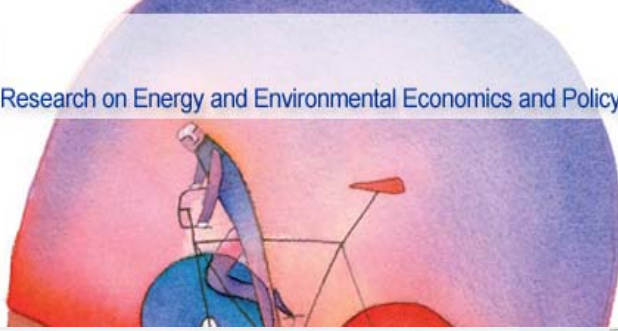 5. If $x > 0$ Good News Entrant

  6. If $x < 0$ Bad News Entrant

Market stage (1)

- **If entry occurred at the transition stage**

  E serves the market iff

  $$\underline{p}^M_E < \underline{p}^M_I - \Delta v + x$$

  where $\underline{p}^M_i = c_i$ is the minimum p of firm i at the market stage

Therefore (sub-games equilibria)

- E stays in the market iff $\Delta c > \Delta v - x$ [**EE**]
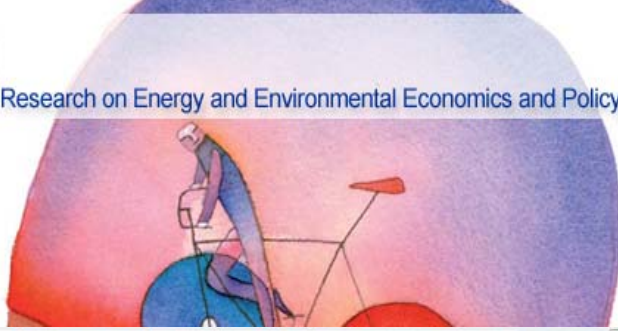- E exits the market iff $\Delta c < \Delta v - x$ [**EI**]
- Market prices:

$$p^E_{EE} = c_I - \Delta v + x \qquad \text{or}$$

$$p^I_{EI} = c_E + \Delta v - x$$

- Profits:

$$\prod{}^E_{EE} = \Delta c - \Delta v + x$$

$$\prod{}^I_{EE} = -\Delta c + \Delta v - x$$

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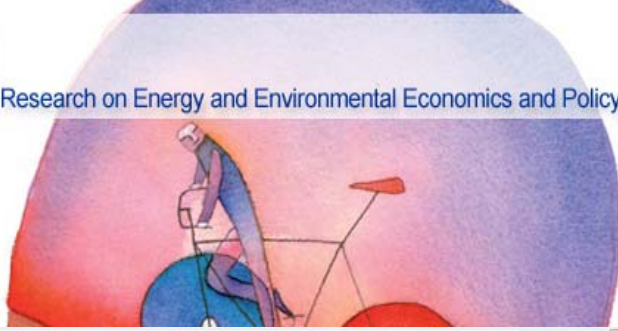
- **If entry didn't occur at the transition stage (**x is unknown)

  E serves the market iff

  $$\underline{p}^M_E < \underline{p}^M_I - \Delta v$$

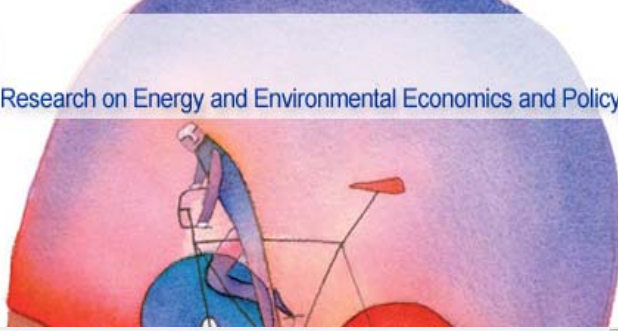 where $\underline{p}^M_i = c_i$ is the minimum p of firm i at the market stage

Therefore (sub-games equilibria)

- E enters the market iff $\triangle c > \triangle v$ [**IE**]

- I stays in the market iff $\triangle c < \triangle v$ [**II**]

- Market prices:

$$p^E_{IE} = c_I - \triangle v \quad \text{or}$$

$$p^I_{IE} = c_E + \triangle v$$

- Profits: $\Pi^E_{IE} = \triangle c - \triangle v$ or $\Pi^I_{II} = \triangle v - \triangle c$
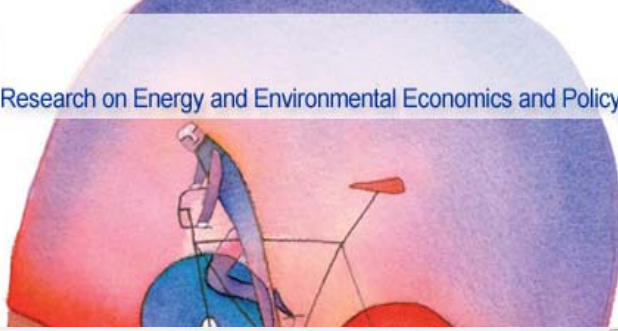
- **E enters the market iff**

$$\underline{p}^T_E < \underline{p}^T_I - \Delta v$$

where minimum prices $\underline{p}^T$ are

$$\underline{p}^T_E = c_E + \max\{\Pi^E_{IE}, 0\} - \max\{\Pi^E_{EE}, 0\}$$

$$\underline{p}^T_I = c_I + \max\{\Pi^I_{EI}, 0\} - \max\{\Pi^I_{II}, 0\}$$
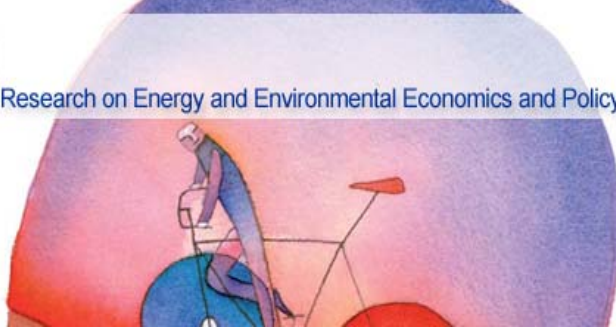
Note that:

- If $x > 0$ (Good News Entrant):

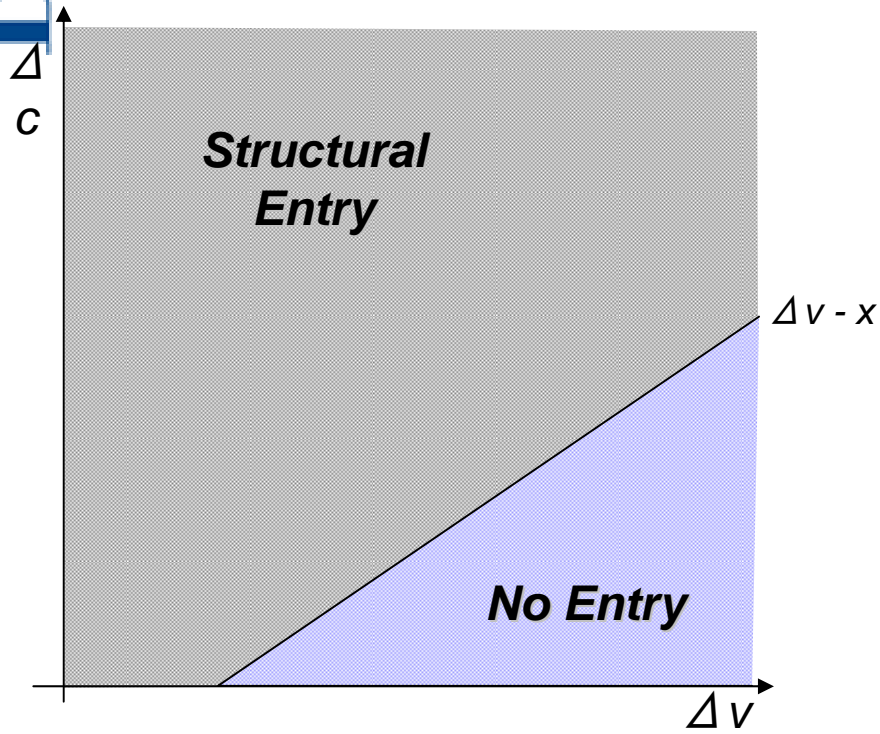$$\Pi^I_{II} > \Pi^I_{EI} \text{ and } \Pi^E_{EE} > \Pi^E_{IE}$$

- $\underline{p}^T_I < c_I$ iff GNE and $\Pi^I_{II} > 0$

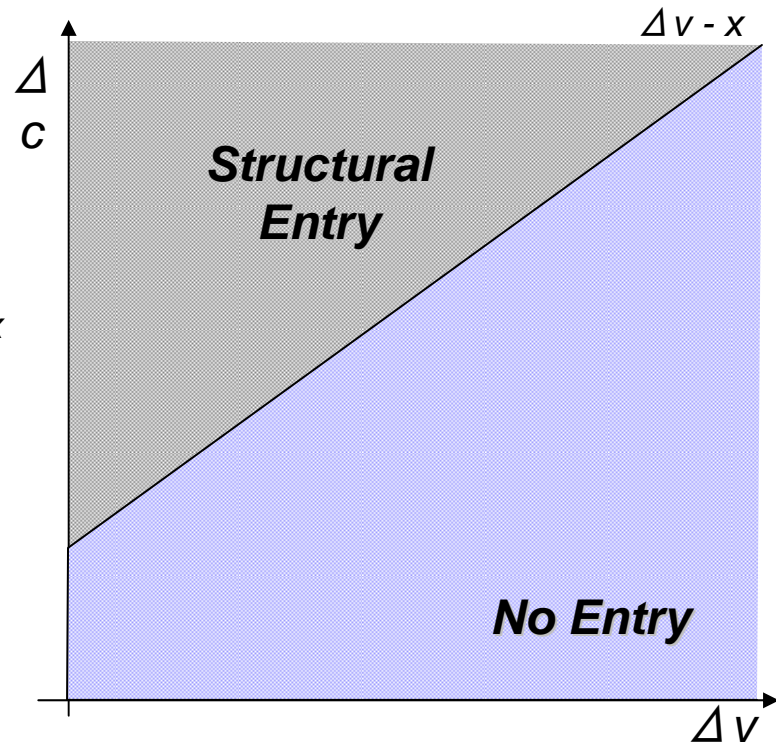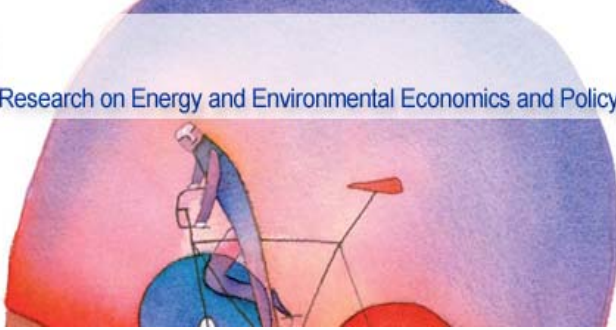- $\underline{p}^T_I > c_I$ iff BNE and $\Pi^I_{EI} > 0$

W max solution

$x > 0$

$x < 0$

Δc

Structural Entry

$\Delta v - x$

No Entry

Δv

Δc

$\Delta v - x$

Structural Entry

No Entry

Δv

$x > 0$

$x < 0$

Δc

Structural Entry

$\Delta v - 1/3 *x$

$\Delta v - x$

No Entry

Δv

Δc

$\Delta v - x$

Structural Entry

$\Delta v + x$

One-shot Entry

No Entry

Δv

No auction (2)

$x > 0$

$x < 0$

Structural Entry

$\Delta v - 1/3 \cdot x$

$\Delta v - x$

No Entry

Δv

Δc

Structural Entry

$\Delta v - x$

$\Delta v + x$

One-shot Entry

No Entry

Δv

Δc
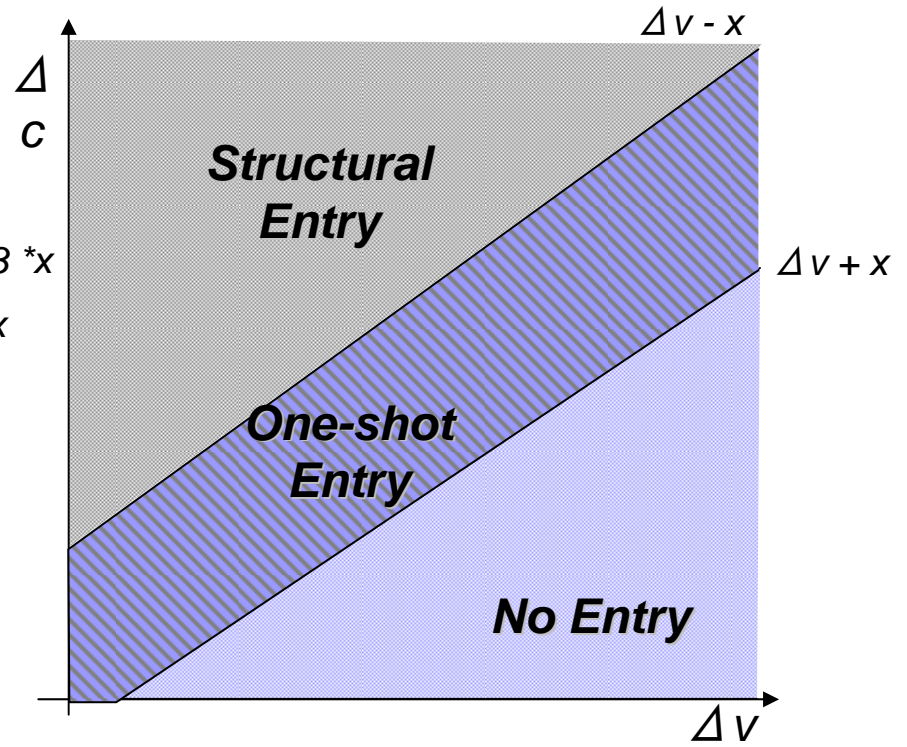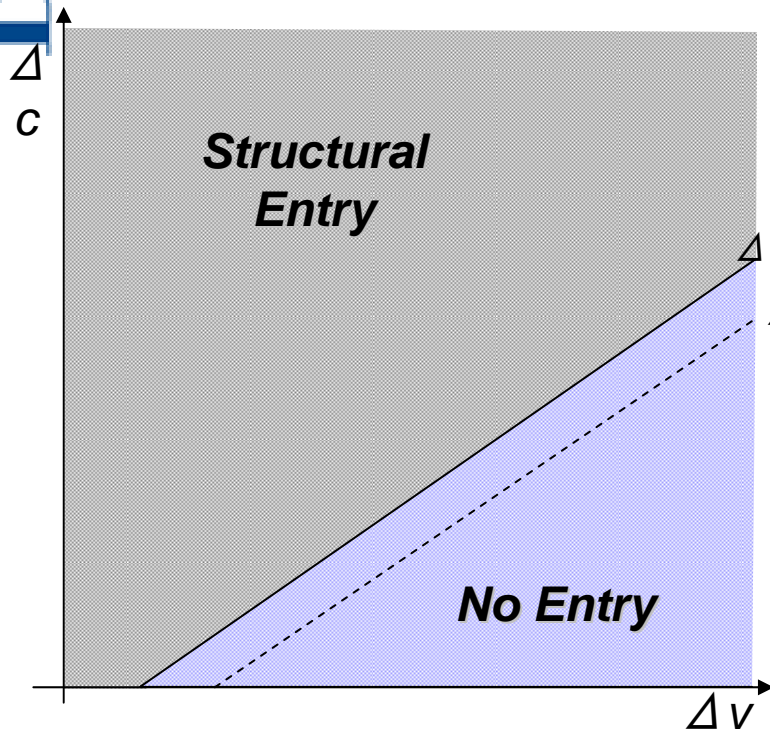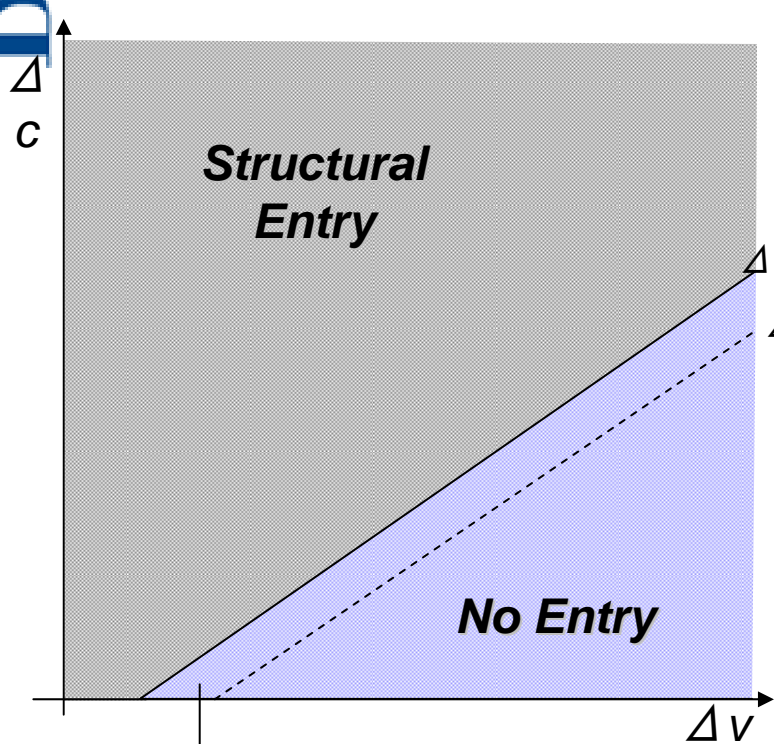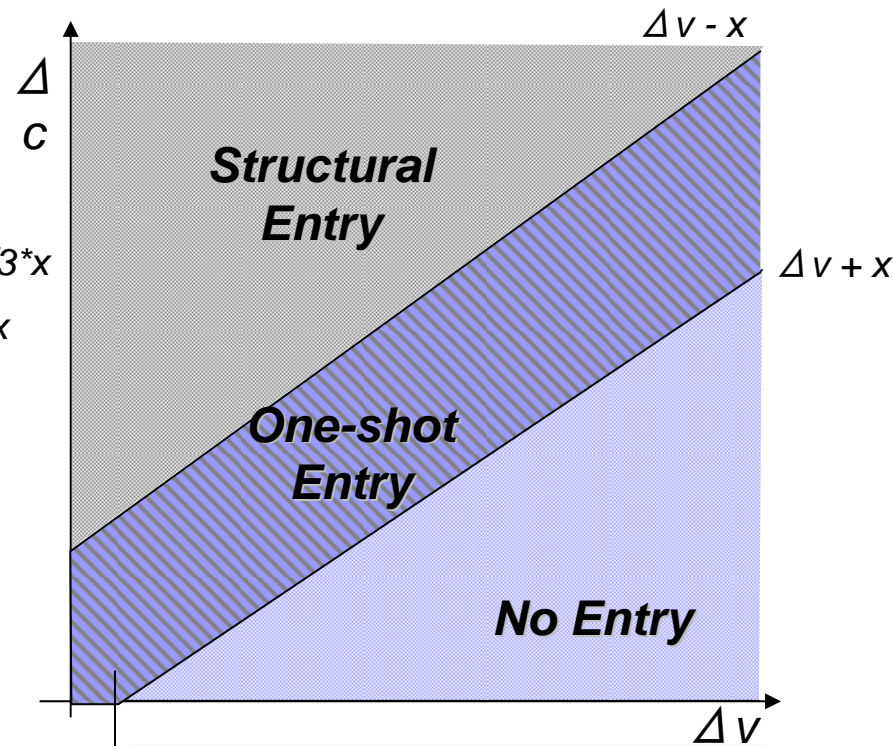
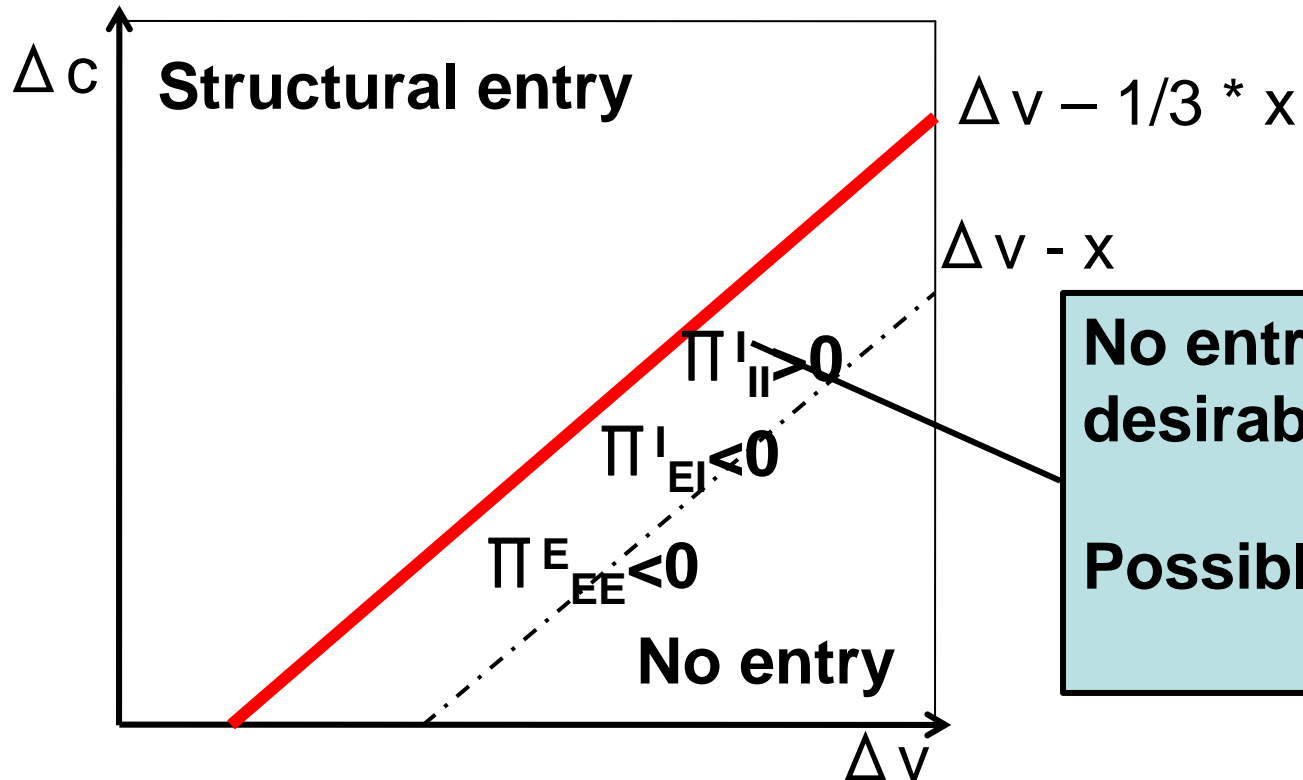In this region entry would be optimal from a social point of view, but it does not occur in the free market solution

In this region entry is not optimal from a social point of view, but it occurs (even if only in the short run) in the free market solution
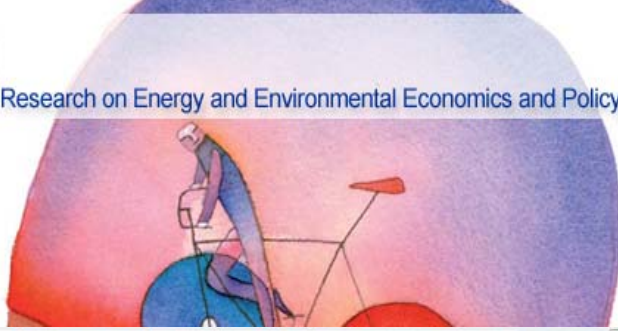
Good News Entrant

Δc

Structural entry

$\Delta v - 1/3 * x$

$\Delta v - x$

$\Pi^I_{II} > 0$

$\Pi^I_{EI} < 0$

$\Pi^E_{EE} < 0$

No entry

Δv

No entry even if desirable

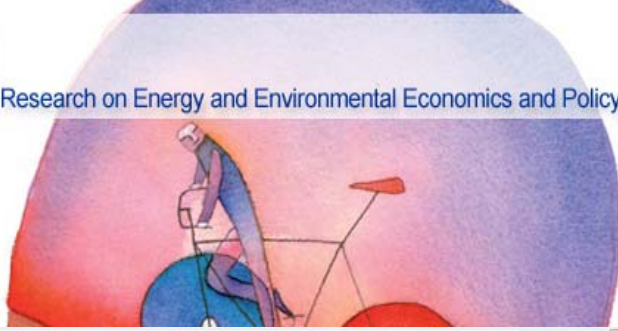**Possibly $p^{T*}_I < c_I$**

Auction (1)

- **Market stage**:

  - doesn't change

  - $\underline{p}^M$ again equal to c_i

- **Transition stage**:
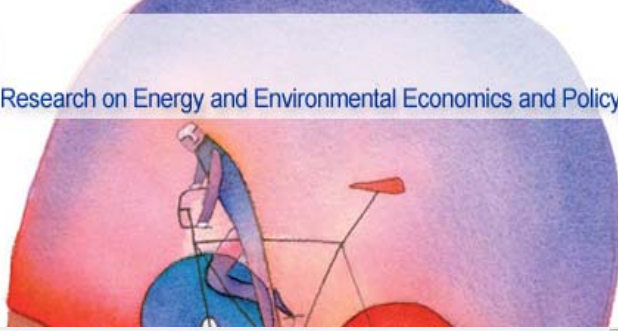
  - competition only on prices (not quality)

  $$E \text{ wins iff } \underline{b}_E < \underline{b}_I$$

  - Minimum prices $\underline{p}^T$ don't change

- **Main results**

  - The auction increases entry

  - Incremental entry is not necessarily W improving

  - However, welfare decreasing incremental entry doesn't last in the market stage (one shot entry)

  - Predatory pricing in the transition period is possible if GNE ($p_I^{T*} = c_E < c_I$ iff Δc suff low with respect to Δv)
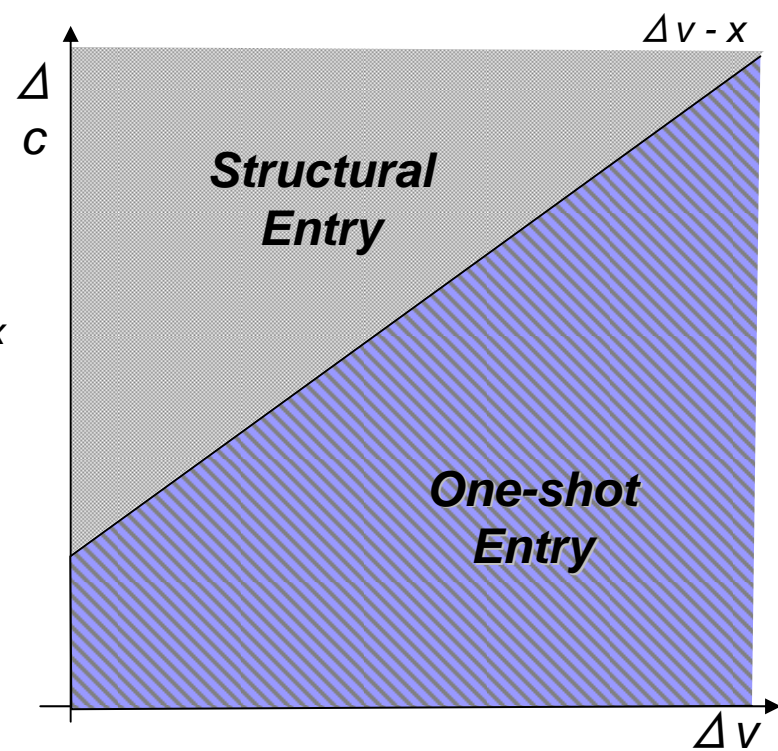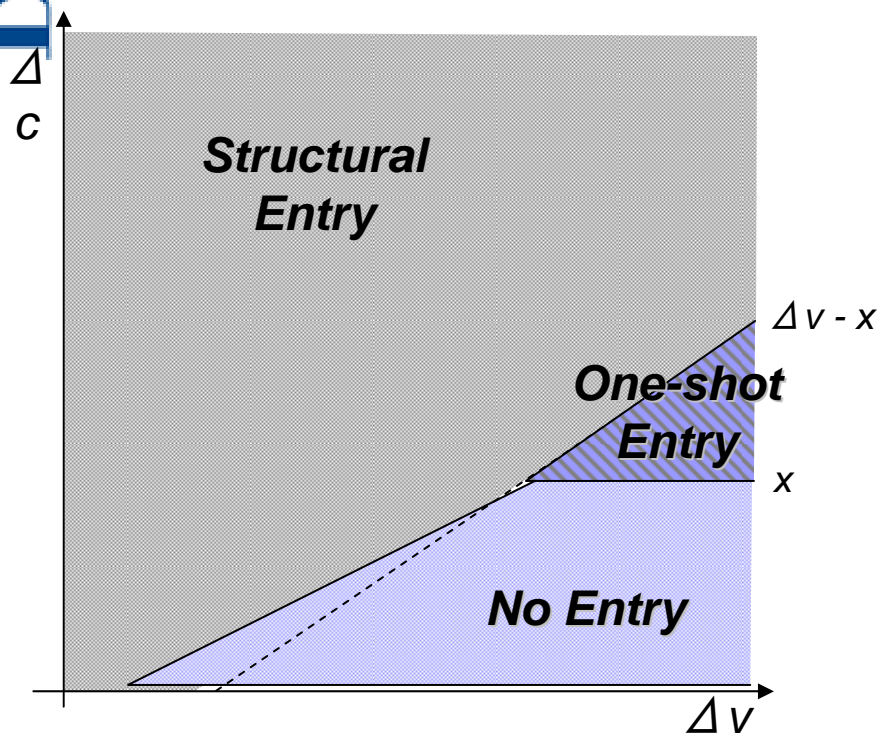
- **Main results**

  - E is aggressive at the transition stage only if GNE and in the new EE area

  - In that case p_E^{T*} can be $< c_E$

$x > 0$
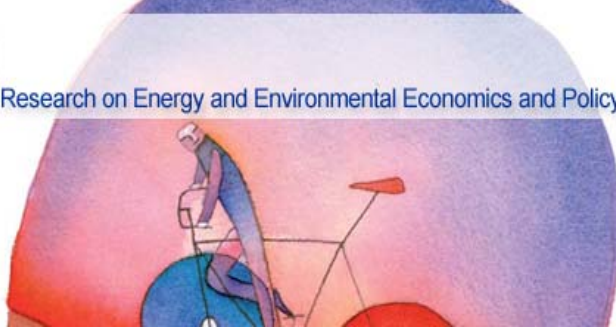
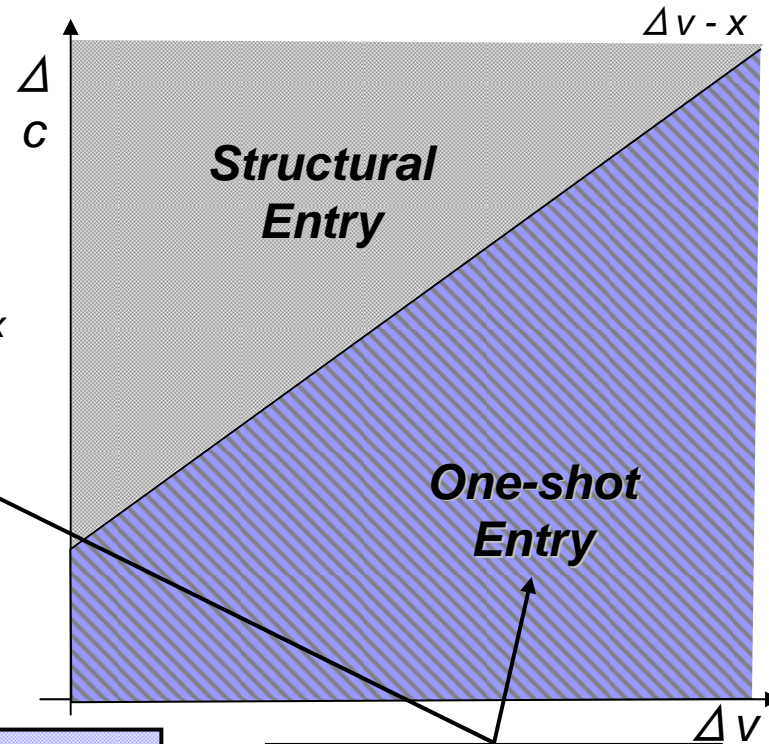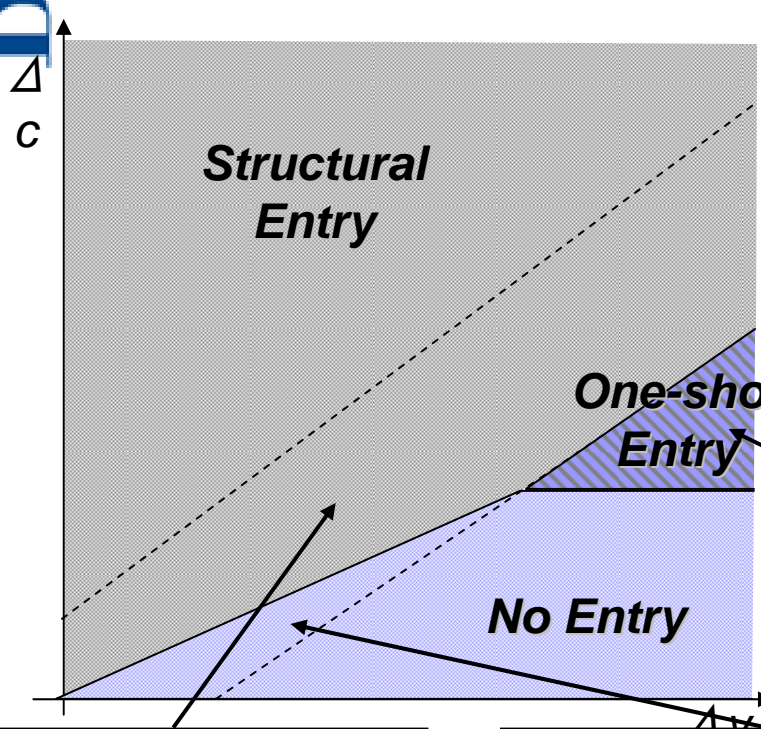Δc (vertical axis)

Structural Entry

$\Delta v - x$

One-shot Entry

x

No Entry

Δv (horizontal axis)

$x < 0$

Δc (vertical axis)

$\Delta v - x$

Structural Entry

One-shot Entry

Δv (horizontal axis)

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$x > 0$

$x < 0$

Δc

Δc

$\Delta v - x$

Structural Entry

Structural Entry

$\Delta v - x$

One-shot Entry

x

One-shot Entry

No Entry

Δv

In this region entry is optimal from a social point of view, it does not occur in the free market solution, but it occurs in case of auction
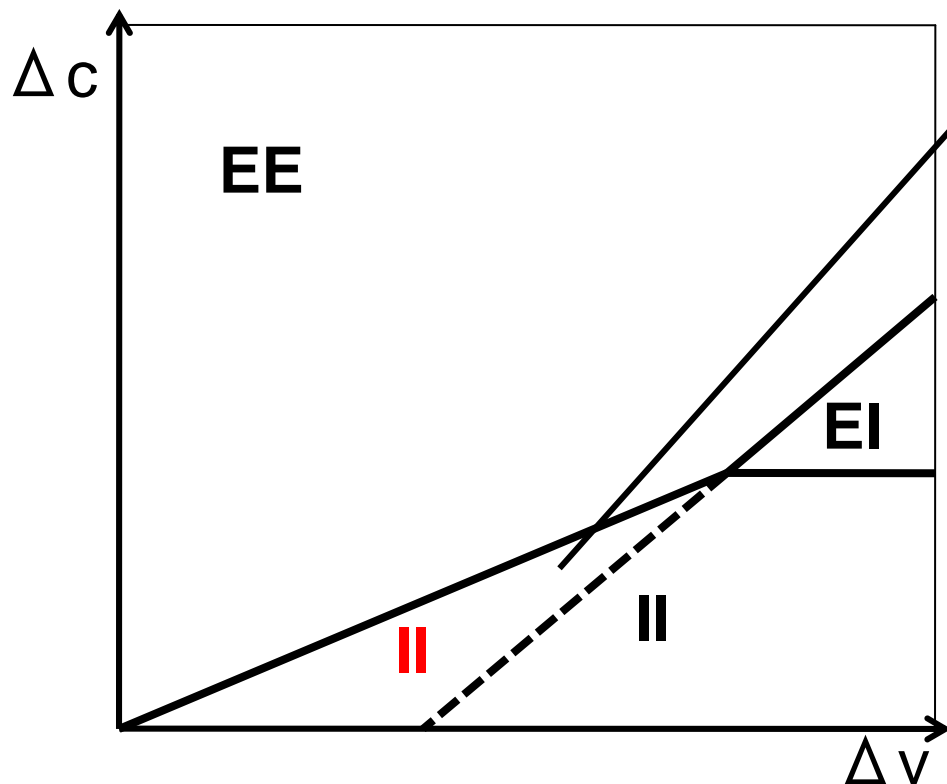
In this region entry would be optimal, it does not occur in the free market solution, and it does not occur in case of auction as well

In these two regions undesired entry is induced by the auction process, but it lasts one period only

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Wonderful News Entrant

No entry even if desirable

$p^{T*}_I < c_I$

Δc

EE

$\Delta v - x$

EI

$d\,x$

If x goes up, the area **II** gets bigger

II

II

Δv

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The Italian retail market for electricity: an example

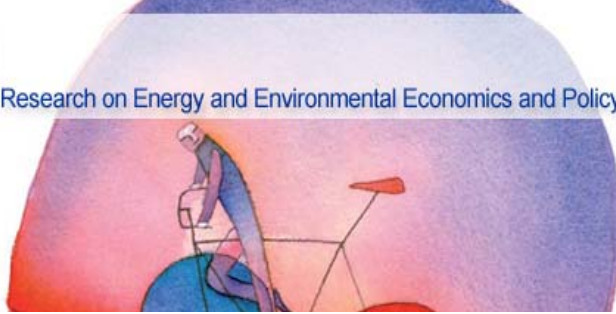# What happend

- Feb. 2008: 1° auction (13 regions)

- 1° auction a new entrant (Exergia) wins in 5 regions with very aggressive bids

- However, the "commercial quality" of its service has been critised by many customers

- The regulator opened an inquiry

- Exergia says that it is Enel's fault

		Bid €/MWh
Piemonte, Valle d'Aosta e Liguria	Exergia	-0,01
Lombardia	Exergia	0,8
Veneto, Friuli-Venezia-Giulia	Exergia	-0,15
Trentino-Alto-Adige,	Exergia	0,8
Emilia Romagna	Exergia	-0,15
Toscana	Enel	4,96
Umbria, Marche	Enel	4,96
Sardegna	Enel	4,96
Lazio, Abruzzo e Molise	Enel	4,96
Puglia, Basilicata	Enel	4,96
Calabria	Enel	4,96
Campania,	Enel	4,96
Sicilia	Enel	4,96

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Tabella 1: prezzi del servizio di salvaguardia di Enel Energia - confronto con esiti dell'asta

Dati febbraio 2008

| TIPOLOGIE	attuale distribuzione clienti	pzi salva transitorio €/MWh	pzi offerti asta €/MWh	Differenza €/MWh	%
Bassa tensione altri usi	16%	128,92	113,41	-15,51	-12,0%
Media tensione altri usi	47%	116,36	103,71	-12,64	-10,9%
Alta tensione	37%	108,60	99,79	-8,81	-8,1%
Media		**115,53**	**103,83**	**-11,70**	**-10,0%**
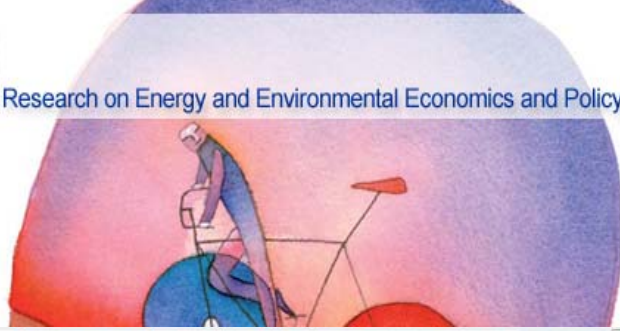
What happend
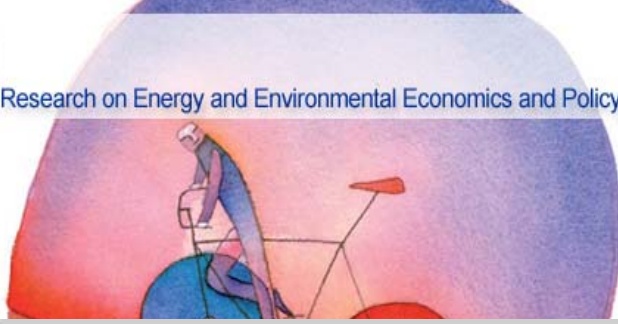
- **Exergia is a BNE and Enel is accomodating entry?**

- However 2° auction for the period 2009/10: Exergia wins again with an aggressive bid.
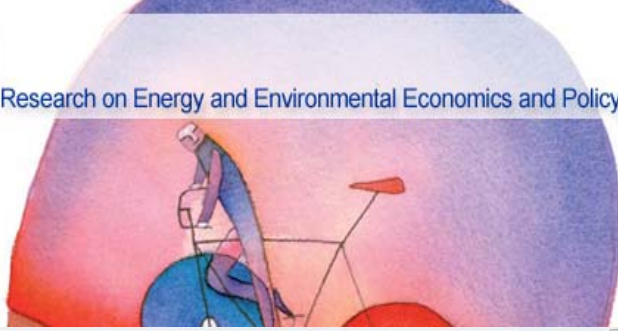
?
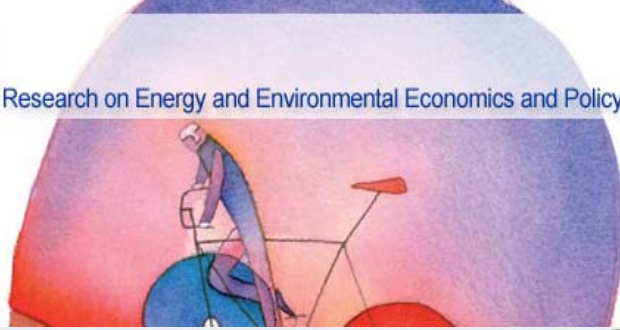
		omega €/MWh
Piemonte, Valle d'Aosta e Liguria	Enel	16,12
Lombardia	Enel	17,1
Veneto, Friuli-Venezia-Giulia	Exergia	2,46
Trentino-Alto-Adige,	Exergia	2,46
Emilia Romagna	Exergia	1,96
Toscana	Hera	3,97
Umbria, Marche	Hera	2,47
Sardegna	Enel	16,65
Lazio, Abruzzo e Molise	Enel	23,09
Puglia, Basilicata	Enel	19,93
Calabria	Enel	26,64
Campania,	Enel	24,84
Sicilia	Enel	26,76

N. Customers (.000)

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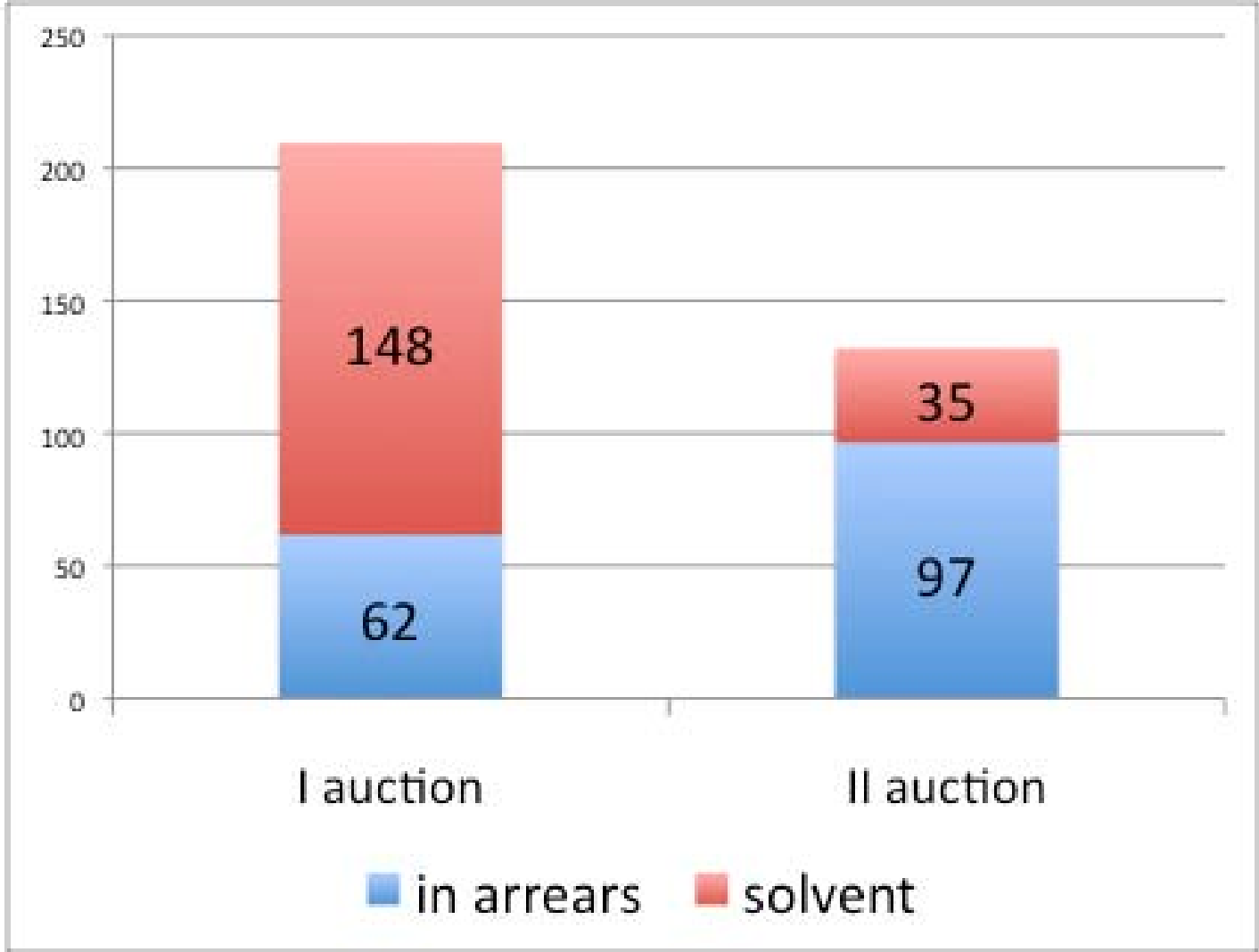
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