

# Toward a new electricity market model: is decoupling the right approach?

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# **Electricity Markets in Transition: A proposal for reforming European electricity markets**

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Industrial Organization**

# A new electricity market architecture is needed

## Which objectives?

- 1 Short-run efficiency:** production and consumption
  - The least cost production units must be dispatched at all times
  - The price signal should reflect the system short-run marginal cost
- 2 Long-run efficiency:** investments
  - Investments at the scale necessary
  - Investments of the “right” technology at the “right” locations
  - Investment risks allocated to the least risk-averse party
- 3 Equity**
  - Electricity prices should be cost-reflective

# Key economic principles

- 1 Non-linear pricing** allows to:
  - Preserve the short-run price signal
  - Adjust the *level* of prices/payments
- 2 Risks** are costly:
  - Allocating them efficiently allows to reduce costs and prices.
- 3 Trade-off** between **exposing technologies to short-run prices** and **de-risking** the investments:
  - This trade-off must be assessed technology-by-technology.
- 4 Whether to rely on technology-neutrality** should be assessed on a case-by-case basis: **rent-efficiency trade-off**
- 5 Competition**, a powerful tool whenever the market is competitive:
  - Otherwise, **regulation** might be a preferable option.

# Which electricity market architecture?

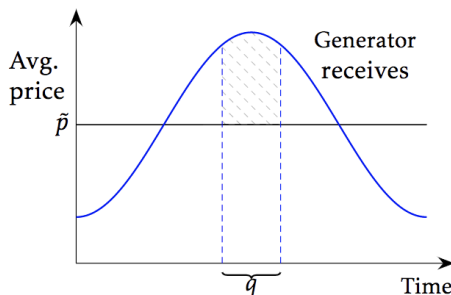
Market/Regulation & Horizon	Contract type	Technologies
Short-term market	Spot pay-as-clear	All plants
Auctions for long-term contracts	Contracts for Differences	Intermittent Renewables
	Reliability Contracts	CCGTs Peakers
Regulated long-term contracts	Capacity Payments	Demand response Energy Storage
	Flexibility Contracts	Dispatchable RES Hydro power Nuclear power

# Designing long-term contracts

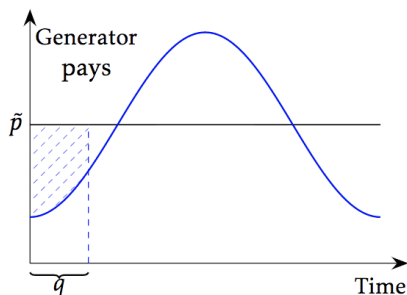
## Flexibility contracts for hydro and nuclear power plants

Payments are (where  $\tilde{p}$  is annual average):

$$\pi = pq + (f - \tilde{p})q \text{ or equivalently, } \pi = fq + (p - \tilde{p})q$$



**(a)** Flexibility bonus



**(b)** Flexibility penalty

Strong incentives to dispatch at peak times

# Conclusions

- There is an urgent need to reform electricity markets:
  - 1 Tackle the energy crisis
  - 2 Support the energy transition
- New electricity market architecture: aim at efficiency & equity
  - 1 Liquid short-run markets
  - 2 Auctions for long-run contracts
  - 3 Contracts should respond to the characteristics of the technologies
    - Balance costs/benefits of de-risking vs price exposure

**Power markets can be a powerful source of efficiency for our economies...as long as we design them right!**

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## Thank You!

Questions? Comments?

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