

# Smart grid and smart consumption

## A policy perspective

Guido Cervigni (\*)

IEFE-Università Bocconi

A2A S.p.A

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(\*) The opinions expressed are the author's only. All usual disclaimers apply.

# Agenda

- Regulatory issues on smart-grid & smart-consumption
- Benefits of smart-consumption
- Are smart-grids sufficient to induce smart consumption?

# Policy issues

## Regulatory issues

Topics for public decision-making on smart-grid/ smart consumption:

- Deploy smart meters?
- What type of smart meters?
- What else must change for expected benefits to materialize?

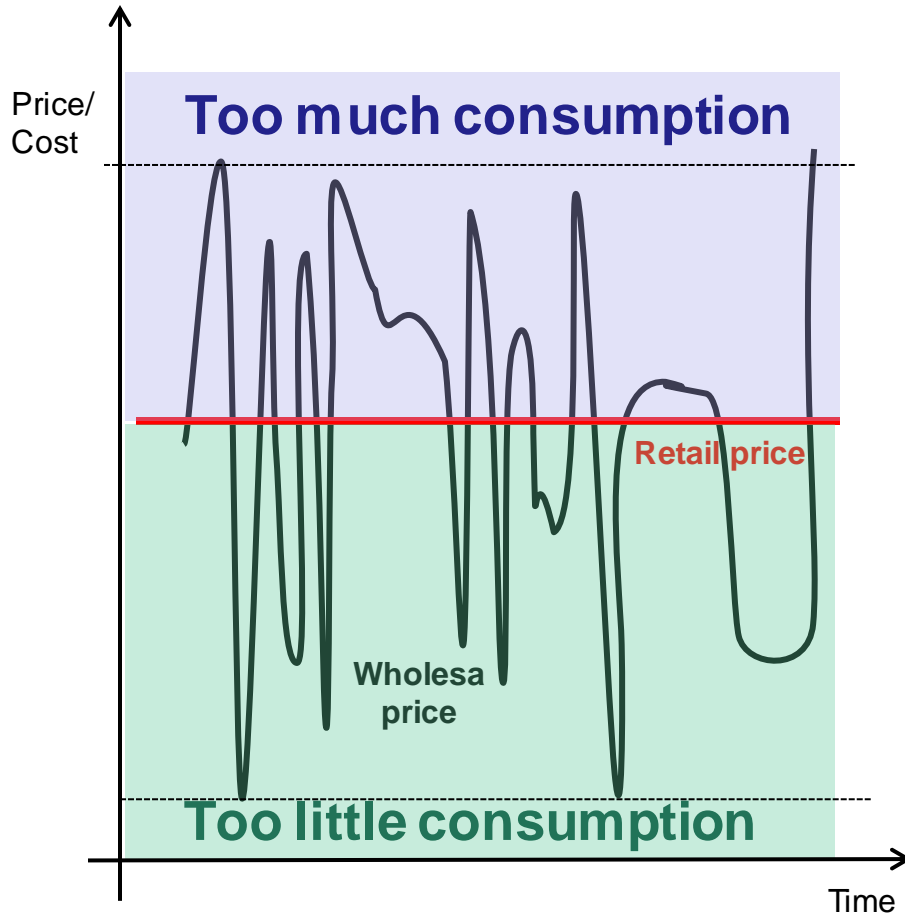
## **Matters to assess**

The main questions to address:

- Are the benefits (of smart consumption) worth the cost of smart metering?
- What are the economic mechanisms resulting in smart consumption?

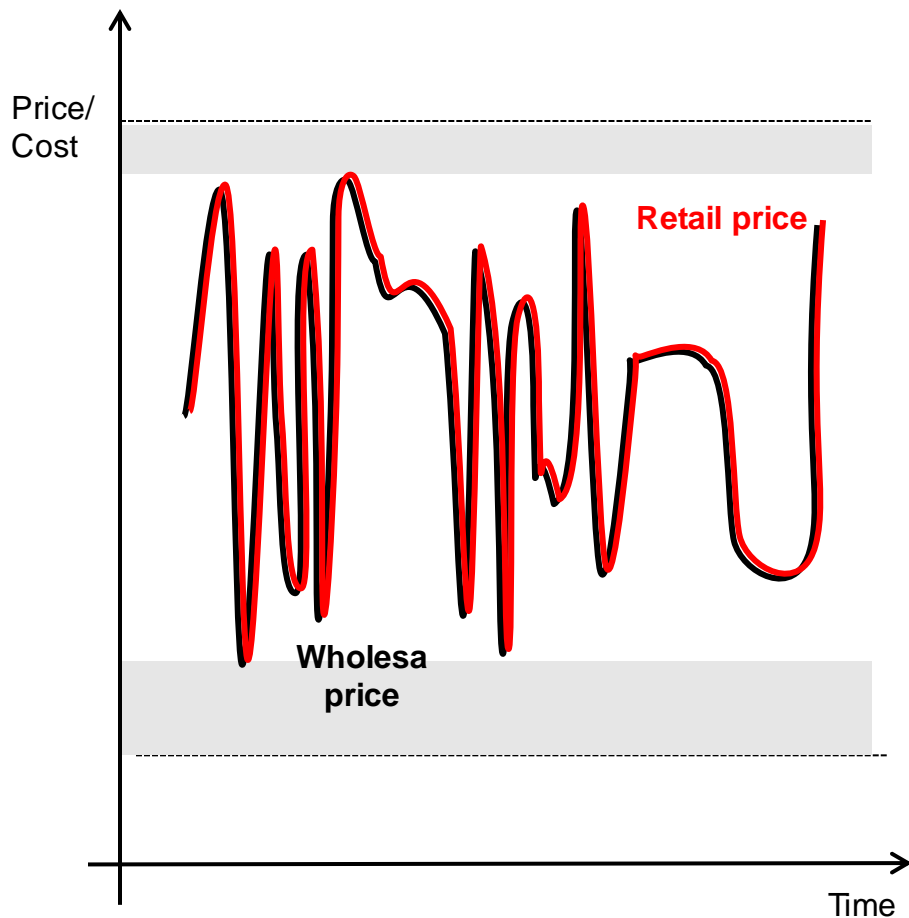
# **Benefits of smart-consumption**

# Dumb meters and dumb consumption



- Consumers cannot pay the cost they cause
- No incentives to reduce consumption when price is high and increase when low
- Supply cost is not minimised

# Smart meters and smart consumption



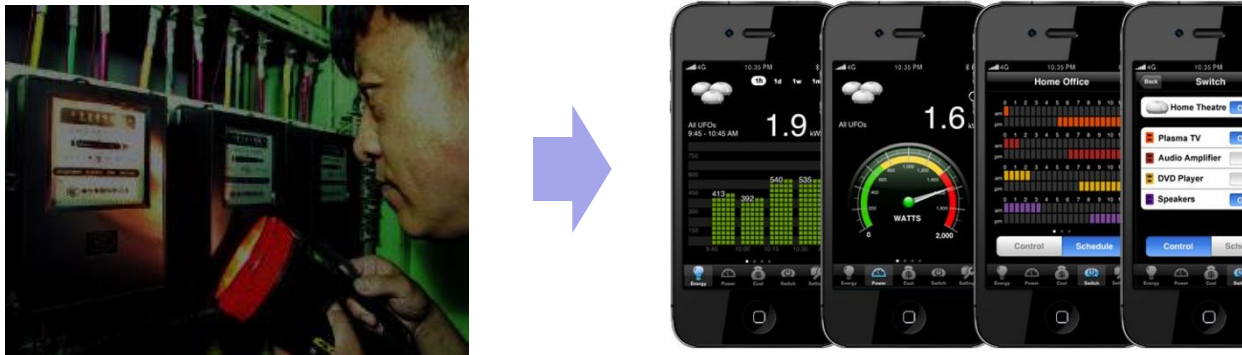
- Consumers can choose to pay the cost they cause
- Correct incentives to consume more (less) when price is low (high)
- Smaller (per unit) supply cost



# Necessary conditions for useful smart-meters

- High price-variability
  - Renewables move price-variability close to real time
    - Consumption decision pushed close to real time
    - Smart consumption to become «very» smart
  - Gas different from electricity (storability)
    - No intra-day variability in most countries: same wholesale price throughout the day
    - Variability is mainly seasonal
- Consumers care about prices
  - Still untested – EVs could make the difference
  - Gas different form electricity
  - Cost of intellingent appliances should enter the cost/benefit assessment



# The awareness argument



- Is awareness by itself sufficient to induce smart-consumption?
  - Large and lasting effect?
  - Gas might be different from electricity
- Smart-grids vs behavioral measures ...

# **Are smart-grids sufficient for smart-consumption**

## Smart-grids & smart prices → smart-consumption

- The cost of electricity varies:
    - In time
    - By location
  - Prices close to real-time are becoming the only ones representative of demand and supply conditions
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- Electricity prices must be cost reflective or consumers will do the wrong thing
  - Consumers must become suppliers of balancing services
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- So major market design changes might be necessary to extract the value of smart-consumption

## Conclusion

- Just on the regulation side, much is necessary to reap the benefits of smart consumption, including:
  - Assessment of net value of smart metering
  - Implementation of cost reflective wholesale pricing.
- Accurate cost benefit analyses are necessary.
- The assessment ultimately depends on the industry's ability to create value through innovation in energy related services.