

*The use of cross-border capacity in the
Italian market:
results and perspectives*

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EMART - Geneva
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- Introduction
 - GME
 - IPEX
 - MGP

- Results from the use of cross-border capacity on the Italian Market

- Estimated value of unused cross-border capacity

- Efficiency gains from introducing DA implicit auctions

- Conclusions and final remarks

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Gestore del Mercato Elettrico (GME)

- Established in 2000
- Owned by the Minister of Economy
- Shareholder rights exercised by the Minister of Economy in conjunction with the Minister of Economic Development
- Regarding electricity, GME is the Italian scheduling coordinator, responsible for organizing and managing:
 - the Italian Power Exchange (IPEX)
 - the Platform for the registration of bilateral contracts (PCE)
- Regarding Environmental markets, GME is responsible for organizing and managing the markets for:
 - the Green Certificates (giving evidence of electricity generation from renewables)
 - the Energy Efficiency (so called "White Certificates", giving evidence of the implementation of energy-saving policies)
 - the Emissions Allowances (CO₂).



The Italian Power Exchange (IPEX):

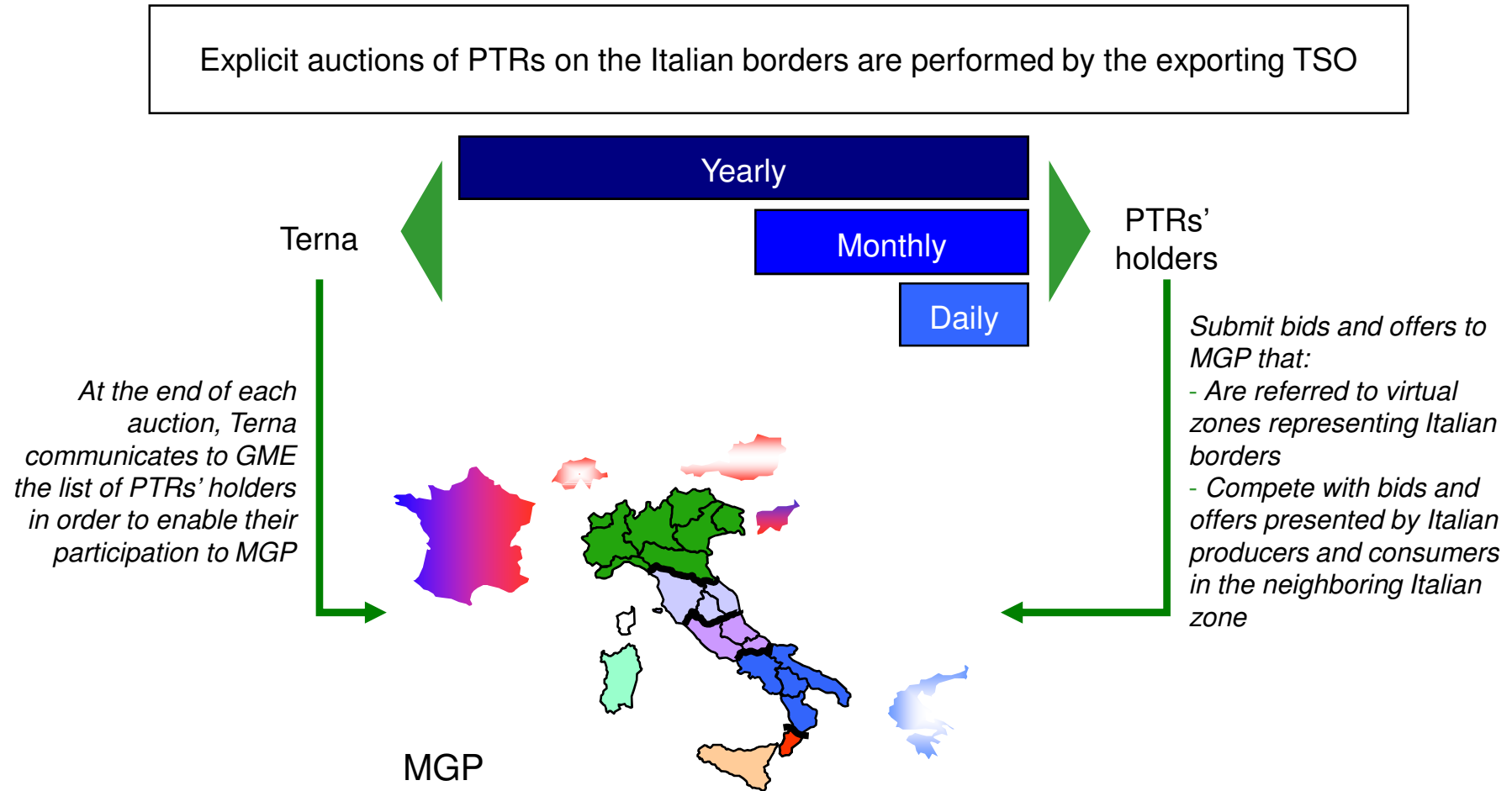
- Launched in April 2004
- Consisting of 3 “spot” electricity markets:
 - Day-Ahead Market (MGP) - GME counterpart
 - Adjustment Market (MA) - GME counterpart
 - Market for Dispatching Services (MSD) - Terna counterpart
- A fourth market, the Forward Electricity Market (MTE), will be launched on 3 November 2008
- 138 Market Participants (28 are not- Italian companies)



The Day-Ahead Market (MGP)

- relies on a market splitting algorithm
- 7 geographical zones representing the Italian grid
- virtual zones representing the Italian borders with neighboring countries
- zonal prices applied to producers and imports/exports
- Uniform Purchase Price (PUN) - calculated as weighted average of zonal prices - applied to Italian consumers
- 221 TWh traded in 2007 (67% of Italian consumption)
- 174 TWh traded from Jan-08 to Sep -08 (71% of Italian consumption)

MGP and cross-border congestion management



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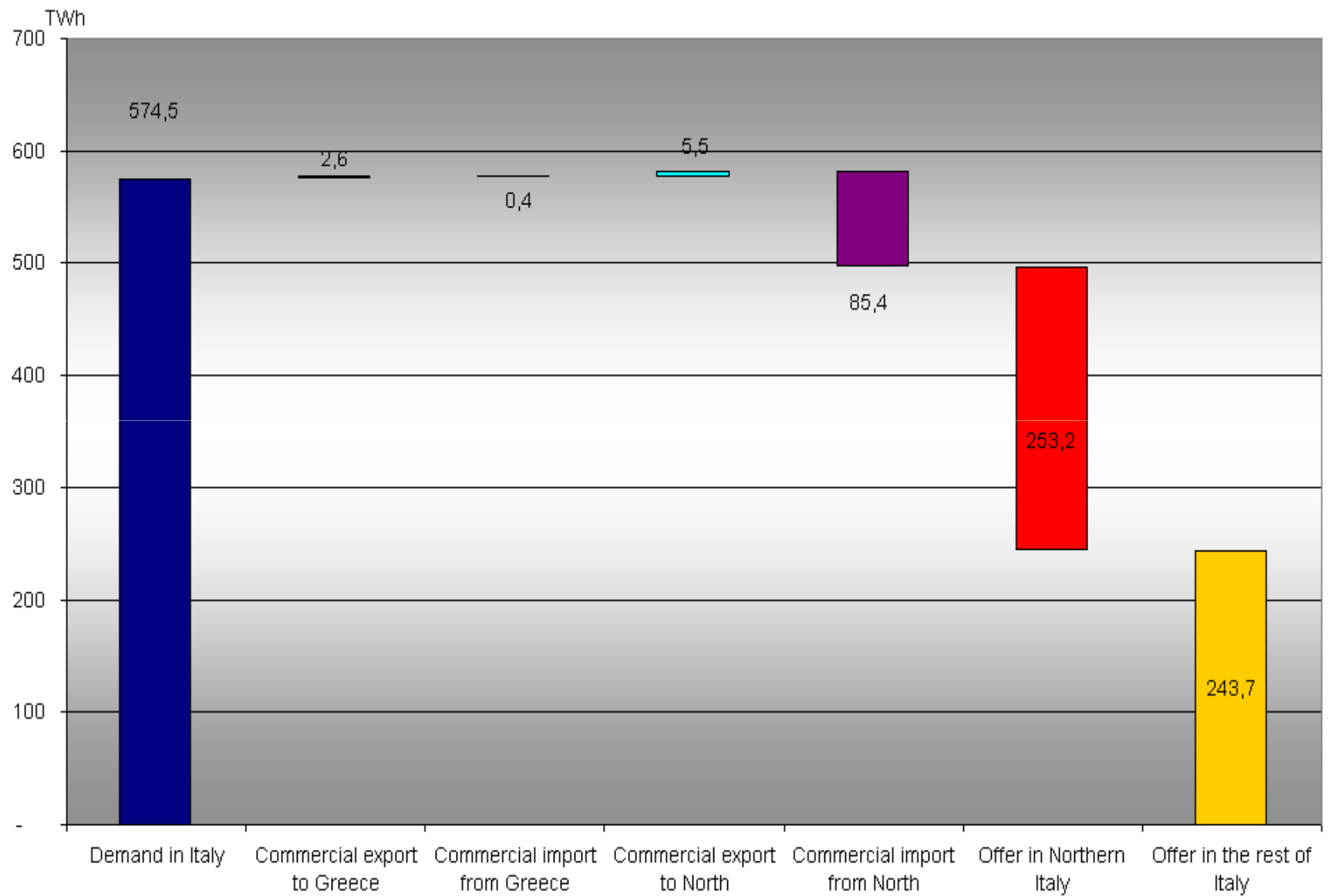
➤ **Results from the use of cross-border capacity on the Italian Market**

➤ Estimated value of unused cross-border capacity

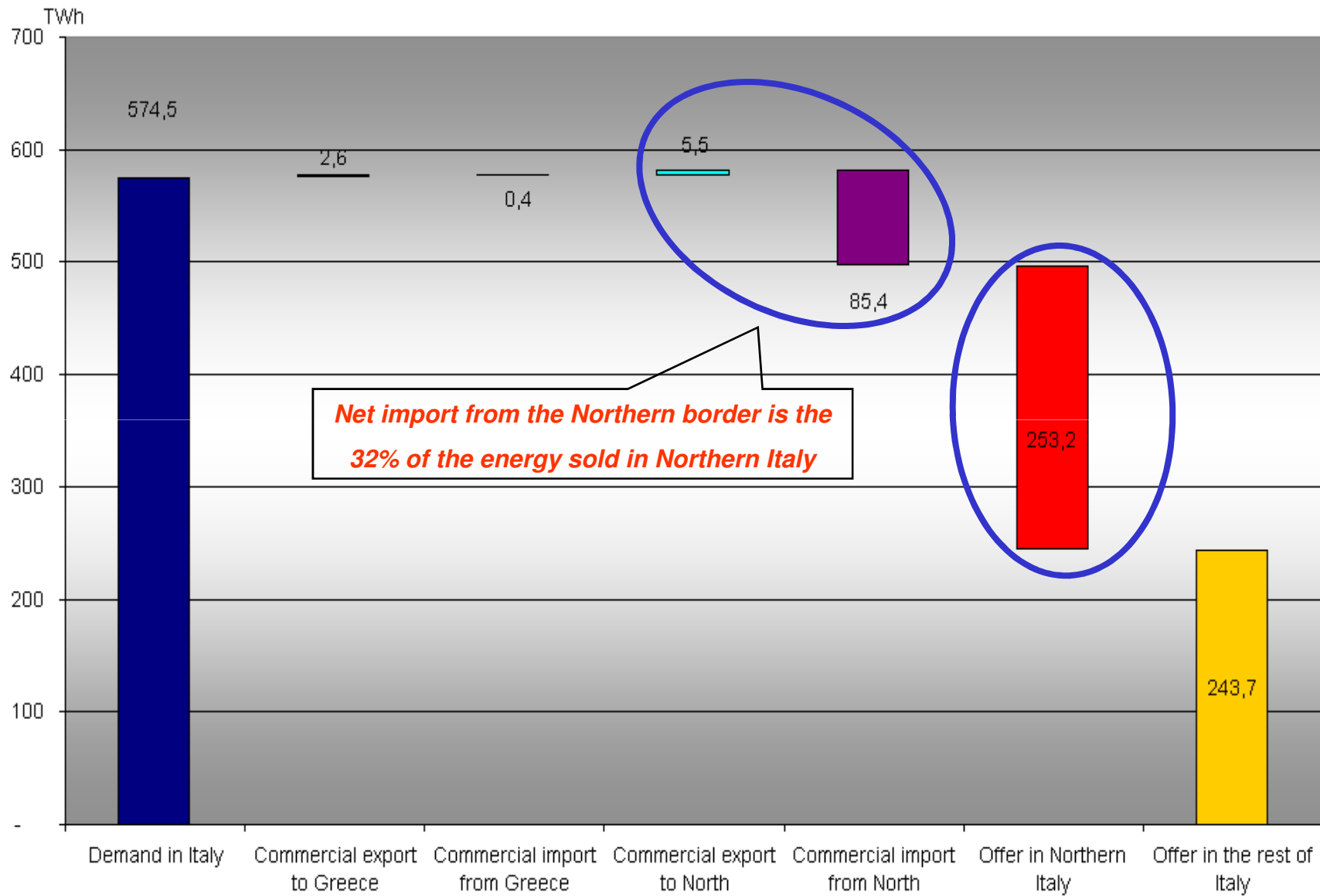
➤ Efficiency gains from introducing DA implicit auctions

➤ Conclusions and final remarks

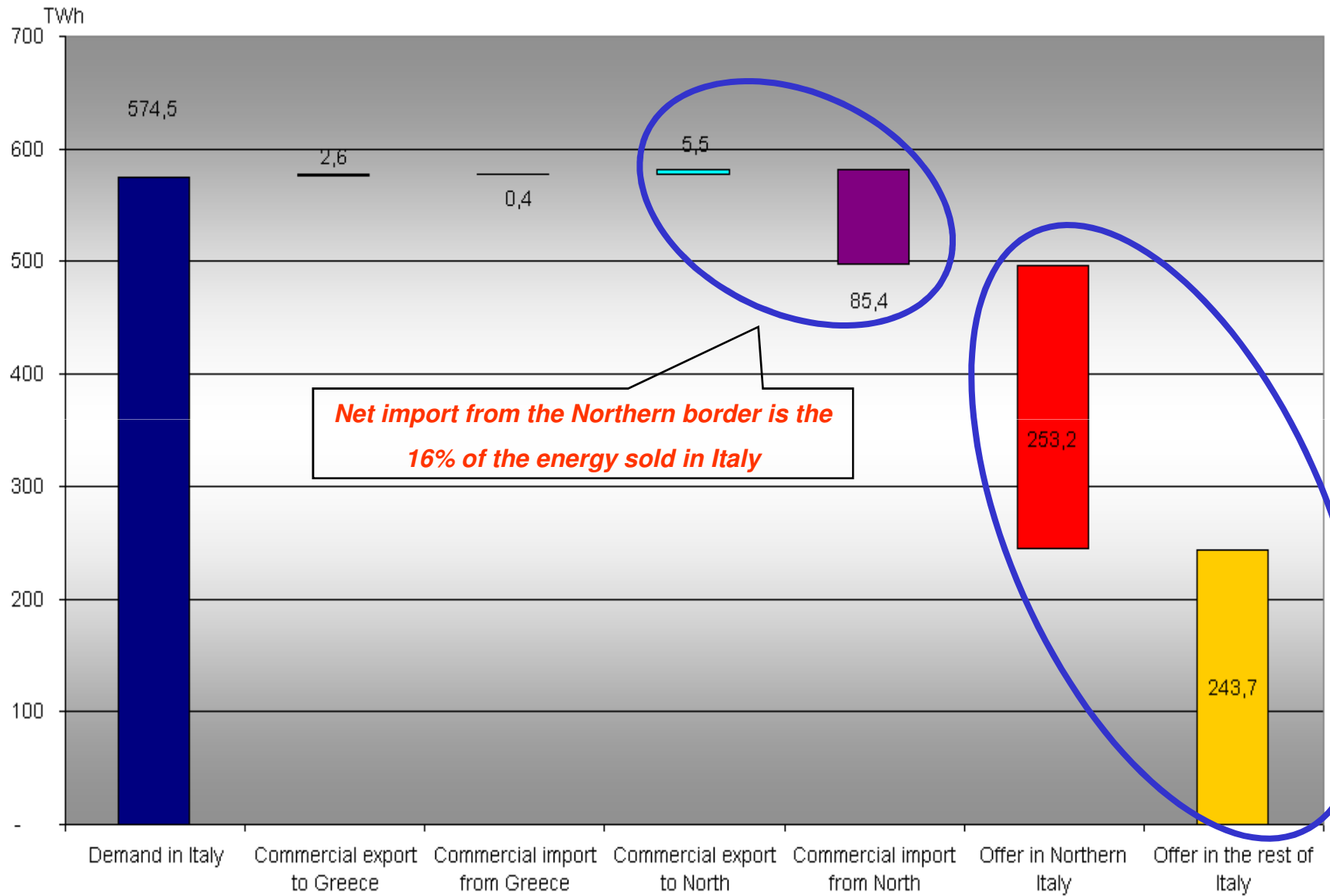
Overall traded quantity (MGP + OTC): jan 2007 - sep 2008



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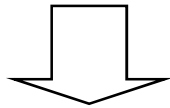
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- Efficiency gains from introducing DA implicit auctions

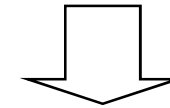
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Price differences vs cross-border schedules

| 2007: prices in Northern zone of IPEX | 2007: net cross-border schedules |
|--|---|
| ➤ 91% of the hours: higher than PowerNext prices | ➤ 99.6% of the hours: import from France |
| ➤ 82% of the hours: higher than EEX-CH prices | ➤ 99.6% of the hours: import from Switzerland |
| ➤ 93% of the hours: higher than EXAA prices | ➤ 100% of the hours: import from Austria |

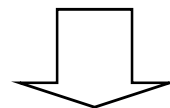


Northern Italian prices are higher **most of the times**, but....

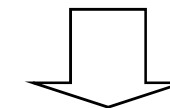


...commercial schedules are **always** an import to Italy!

| 2008 (Jan-Sep): prices in Northern zone of IPEX | 2008 (Jan-Sep): net cross-border schedules |
|--|---|
| ➤ 76% of the hours: higher than PowerNext prices | ➤ 98.4% of the hours: import from France |
| ➤ 68% of the hours: higher than EEX-CH prices | ➤ 99.7% of the hours: import from Switzerland |
| ➤ 82% of the hours: higher than EXAA prices | ➤ 98.1% of the hours: import from Austria |



prices are slightly **converging**, but....



...commercial schedules are **always** an import to Italy!

Estimated value of the unused cross-border capacity

We analyzed the borders between Italy and those countries with a liquid index of hourly day-ahead energy prices:

- France (PowerNext)
- Austria (EXAA)
- Switzerland (EEX-CH)

For Italy, the price of northern zone of IPEX was considered.

From January 2007 to September 2008, we calculated the inefficiencies in cross border schedules as the “**estimated value of the unused cross-border capacity**”¹:

$(NTC_{L \rightarrow H} - FLOW_{L \rightarrow H}) * (Pr_H - Pr_L)$, where:

$NTC_{L \rightarrow H}$ is the hourly NTC:

- for 2007 published by TSOs in the Auction Rules, in the direction from the lower area price to the higher area price and reduced accordingly to the notices of curtailment published on Terna web-site
- for 2008 published by ETSOVista

$FLOW_{L \rightarrow H}$ is the hourly day-ahead net commercial schedule published by ETSOVista.

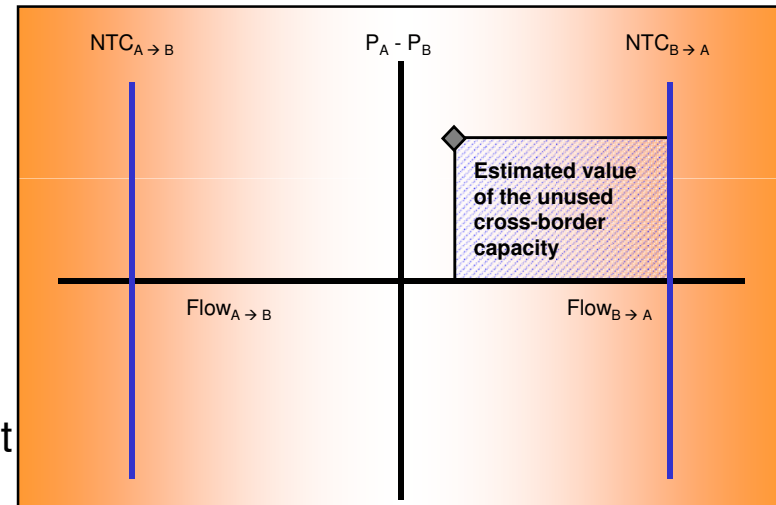
Pr_H and Pr_L are, respectively, the hourly prices, respectively, in the higher and lower area price.

¹The concept of “estimated value of unused cross-border capacity” was adopted in the Energy sector inquiry (January 2007), by the DG for competition for calculating the inefficiency on the Dutch-German, French-UK and French-Spanish borders (see DG Competition Energy Sector Inquiry, par. II.3.5.3, January 2007)

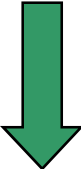
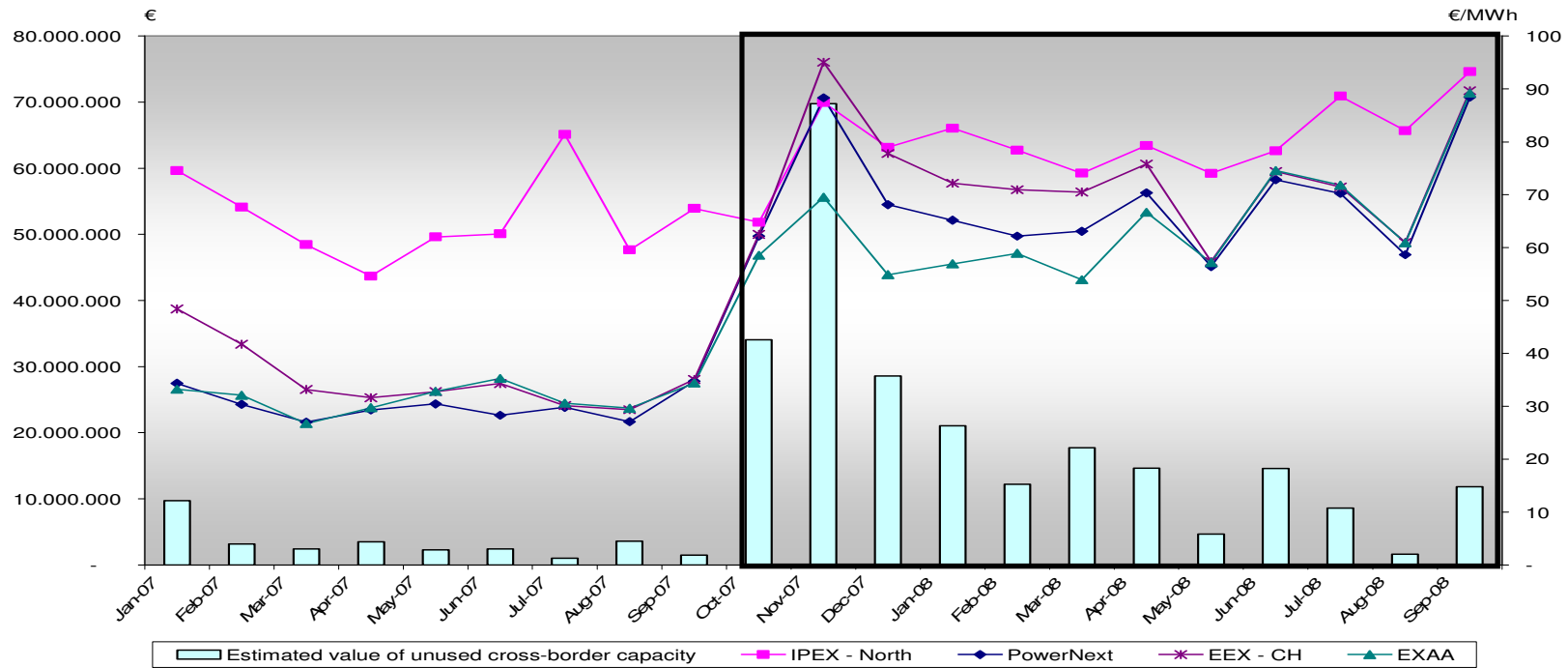
Estimated value of the unused cross-border capacity

The “**estimated value of the unused cross-border capacity**” represents only a proxy of the inefficient use of the cross-border capacity that could be eliminated by adopting DA implicit auction. It relies on the following assumptions:

- demand and supply curves in the neighboring markets are, respectively, flat and rigid, i.e. prices would not change if cross-border schedules change
- liquidity of neighboring markets would not change (increase) in case of coupling
- bidding behavior of the operators would not change in case of coupling

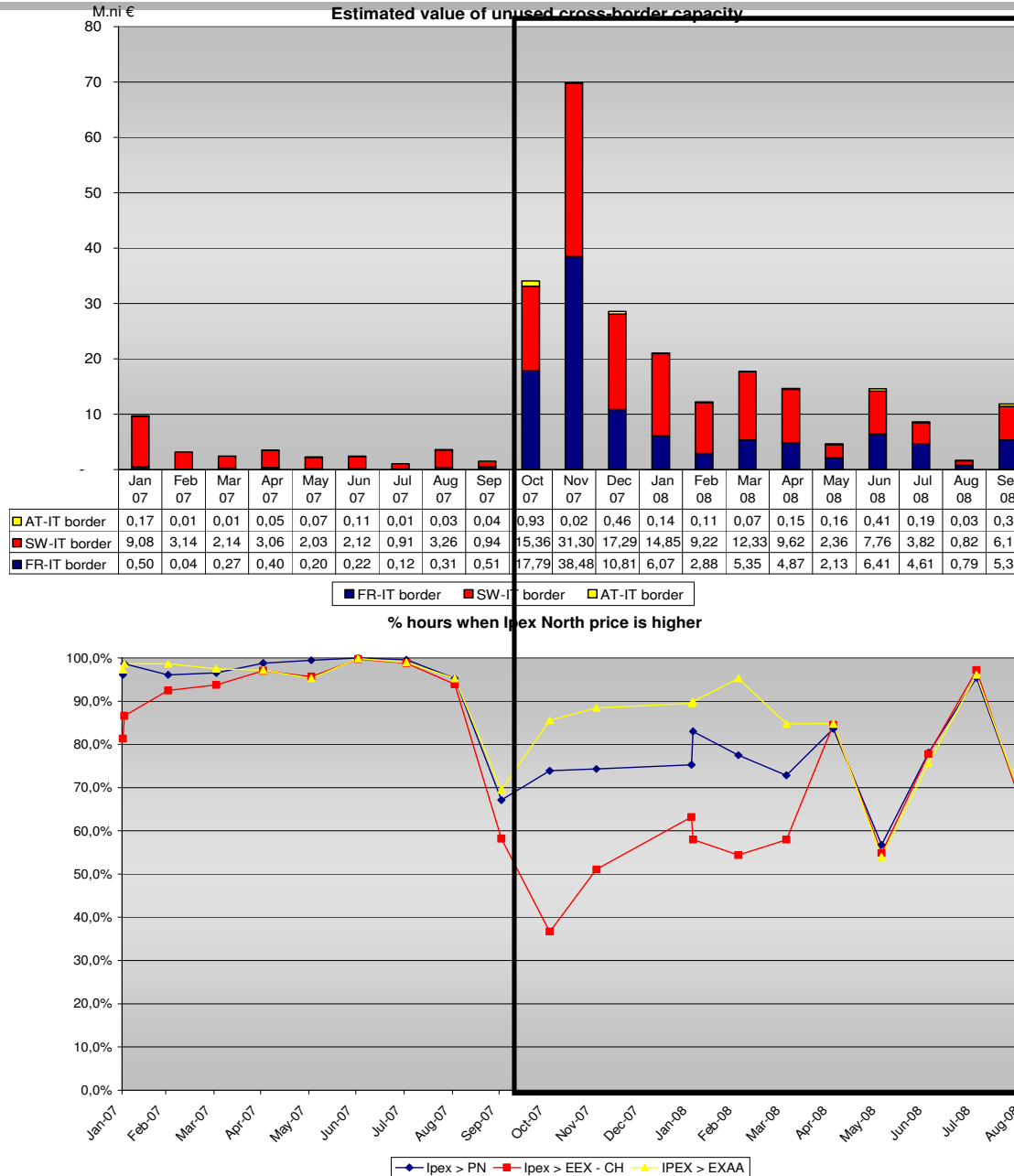


Estimated value of the unused cross-border capacity and average monthly prices



Inefficiency increases when prices converge

Estimated value of the unused cross-border capacity and prices



Inefficiency increases when price difference changes sign more frequently (volatility of price differences increases)

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Potential for efficiencies gains

We have identified 4 areas in which potential for efficiencies gains may arise from the adoption of DA implicit auction

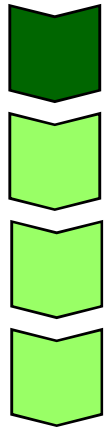


- netting of the flows and more efficient use of the capacity
- lower operational risks
- lower trading risks/costs
- impulse to the growth of the liquidity in local energy markets

Netting of the flows and more efficient use of the capacity

The outcomes of a DA implicit auction ensure that

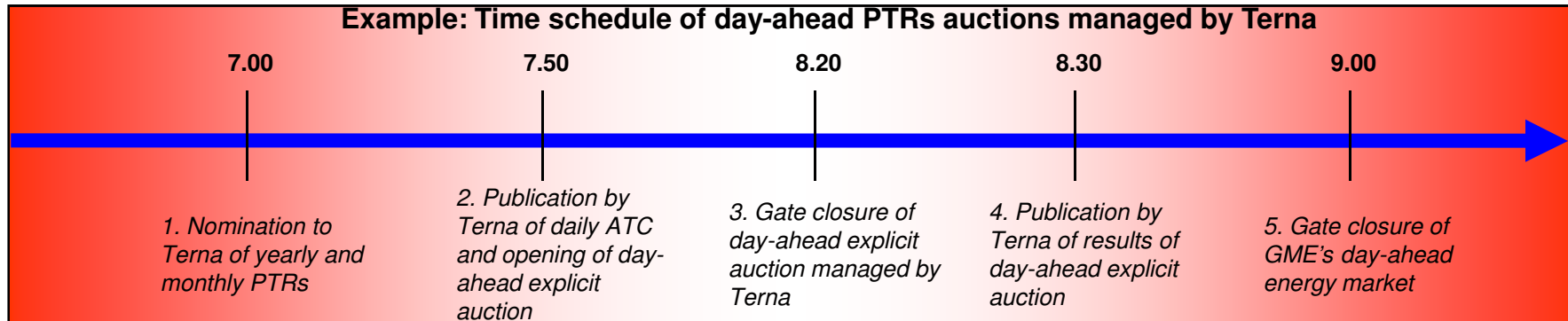
- efficiency in the use of cross border capacity is maximized (net cross-border schedule between two neighboring areas is a function of the area prices)
- congestion revenues, calculated on the basis of area price differential, arise only when congestion occurs



DA Implicit auctions:

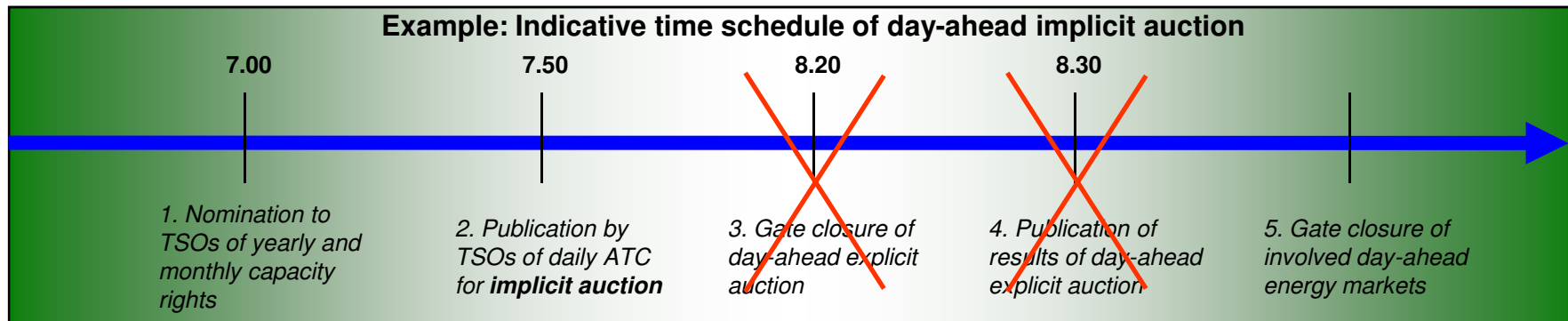
- are compatible with explicit auction for the allocation of longer term capacity rights (weekly, monthly, yearly products)
- are compatible both with a “flow-based” capacity model (PTDF/BC) and with ATC/NTC framework as well

Lower operational risks

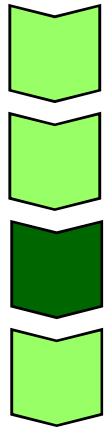


Operational risks may arise because explicit auctions at day ahead stage require **in a very tight timeframe (from 8.30 to 9.00):**

- TSOs and PXs to coordinate the functioning of the capacity market (managed by TSOs) and the energy market (managed by PXs)
- Operators to set up and send their bids/offers to the energy markets on the basis of the results of the capacity auctions



By integrating capacity and energy markets, DA implicit auctions reduce those risks



With DA explicit auctions, since there are two different markets for the capacity and the energy:

- Operators have to coordinate their capacity and energy positions. Therefore, their bidding strategy must take into account the trading risk due to the separate trading of capacity and energy
- Problem of asymmetry of information may be relevant, especially in presence of immature energy markets that do not have a clear price signal
- Operators have to bear the costs of participating to two different markets/platforms (guarantees, IT,...)

By integrating capacity and energy markets, DA implicit auctions reduce, *ceteris paribus*, trading risks and trading costs

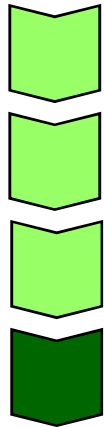
Impulse to the growth of the liquidity in local energy markets

Experiences show that implicit auctions for the management of cross-border capacity can be successfully launched even in presence of illiquid local energy markets if at least one of the coupled market has an adequate level of liquidity.

The ratio is that by coupling, via an implicit auction mechanism, two local energy markets, the liquidity of the immature market is going to increase since its participants may access to the liquidity of the more mature market:

- in 1998, Nord Pool, already operating in Norway and Sweden, was extended to Finland
- in 2006, the Trilateral Market Coupling (TLC) between France, Belgium and Netherlands was launched by launching, at the same time, the Belgian energy market

The development of local energy markets brings, indeed, benefits in terms of competition and transparency



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Conclusions and final remarks

Which could be the drivers to detect the Italian borders where implicit auctions should be firstly implemented?

Many aspects should be evaluated in implementing DA implicit auctions:

- immature markets → greater benefits could be gained by implementing DA implicit auctions with less mature markets
- presence of overlapping countries → coordination issues with coupling project in other relevant region
- evolution of prices → if prices in Italy and in the neighboring Countries continue to converge it will increase benefits of an efficient interconnection capacity allocation mechanism

Thank You for Your attention!

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