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**TRANSMISSION RIGHTS ALLOCATION IN  
THE ELECTRICITY INDUSTRY**

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ref.

**RICERCHE E CONSULENZE  
PER L'ECONOMIA E LA FINANZA**

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## Abstract\*

This paper investigates transmission capacity allocation and congestion management in restructured electricity industries. Physical characteristics of electricity transmission and the high volatility of demand cause strong and unavoidable network externalities, which impose real time central coordination in grid operations. Even though the role of the transmission system operator as a key institution in the emerging competitive markets is widely recognized, the extent of the central control and market management that is needed to assure system reliability and no discriminatory access to the grid is still debated. Two organisational forms have been widely discussed by scholars and implemented in real electricity markets: the first one is an unbundled solution based on separate markets for energy and for physical transmission rights; the second one is an integrated transmission/dispatch model based on locational marginal cost pricing and financial transmission rights. This paper considers the main theoretical features of the two models as a solution to the externalities market failure and compares their possible advantages and drawbacks in implementation.

Assuming perfect competition and no transaction costs the two models are theoretically equivalent, even though the centralized solution offers better guarantees in implementation for lower transaction costs and efficient transmission capacity allocation. Removing the perfect competition assumption the equivalence between the two approaches from both an efficiency and welfare perspective is restored only with the introduction of a *use it or lose it* rule.

The analysis includes also, as a case study, an original appraisal of the approach recently proposed by the Market Operator for the Italian restructured electricity market. The proposal is a variation of the integrated energy/transmission model whose crucial elements are a non compulsory centralized wholesale spot market, *market splitting* and *counter trading*.

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