

Tight Volume Coupling Phenomena

European Market Coupling Company

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Characteristics of volume market coupling

Volume market coupling may inherently yield implausible market results such as adverse flows and suboptimal utilisation.

This is partially caused by a lack of ideal harmonisation of rules at participating power exchanges (e.g. regarding price determination, block selection, price caps).

Further, deviations are caused by the fact that the EMCC system has a “global view” as the whole system is optimised at once, while in the subsequent optimisation performed by the participating power exchanges a limited “local view” on the individual market areas is given.

It is, however, important to note that **the original volume market coupling calculation delivers correct flows**. The fact that the exact price determination at each single PX cannot be systematically anticipated in every detail leads to the mentioned adverse effect of flows and prices, caused by different prices keeping the originally calculated flows.

Even though the implemented algorithm cannot systematically restrain occurrence or magnitude of adverse flows, the performed tests give robust empirical evidence of a **very low likelihood for adverse flows** of higher magnitudes.

Volume market coupling is a major improvement of the currently applied congestion management methods. It increases the efficiency of the capacity allocation and leads to a higher social welfare for the concerned markets.

Matrix of possible tight volume coupling phenomena

Risks	Reason	Chance	Impact	Consequence	Mitigation action
seemingly adverse flow	block bid selection	low	high	risk of adverse flow	increased accuracy of algorithm modelling
	rounding procedure	high	low	minor flow deviations	increased accuracy of algorithm modelling
	currency conversion	high	low	minor flow deviations	none
	different PX price caps	low	medium	risk of adverse flow	harmonisation of algorithm modelling res. PX price caps

Explanations of phenomena causing adverse flows

Block bid selection:

Differences in block bid selection, which may result in adverse flows, are considered as inherent to volume coupling. They cannot be eliminated systematically unless market participants agree to establish price coupling.

Rounding:

The different algorithms of EMCC and the involved power exchanges accept prices with different decimal places. Analyses indicate that this may lead to a high number of adverse flows of smaller magnitude. EMCC has already implemented an “intelligent” rounding which respects the flow direction and which reduces adverse flows significantly.

Currency conversion:

Adverse flows may occur due to non-aligned currency conversion rates for the EMCC and the NPS calculation. This only lead to small differences, comparable to rounding problems.

Non-harmonised price caps:

Non-harmonised price caps may lead to adverse flows as EMCC calculates within the lowest common price caps of the involved power exchanges. As a consequence, adverse flows up to the absolute value of the negative market prices multiplied with the ATC value are possible. Currently the risk of negative prices appears manageable.

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