

Why zonal futures are more conducive to liquidity than regional virtual trading hubs

This paper explains why the zonal market model in combination with locational spread trading is more effective in attracting liquidity than regional virtual trading hubs. To demonstrate this, the Nordic power market is used as an example.

1. Zonal futures allowing for more efficient management of risk and collateral

Zonal futures, as listed on most European power market areas, have a number of inherent benefits.

First, they allow for trading the price of a specific bidding zone by means of one transaction only. Market participants only have to enter one transaction to hedge their exposure to local power prices¹. In comparison, trading the price of a specific bidding zone via a regional virtual trading hub requires at least two transactions: (1) a futures contract on the hub index and (2) a price differential contract between the hub index and the price of the bidding zone. It could also be five contracts if one wants to hedge across two different regional virtual trading hubs. All these markets must be sufficiently liquid for market participants to efficiently conclude the respective contracts.

Second, having to enter only one transaction also means lower transaction fees and more efficient management of collateral. Only one transaction will have to be collateralized instead of two. Although a futures contract on the hub and a differential contract may benefit from margin efficiencies, it does not outweigh the benefit of collateralizing only one transaction. Especially in times of increased volatility and rising margin requirements, an optimized usage of risk capital is key for market participants.

Third, zonal futures improve price transparency through the publication of daily settlement prices. Transparency on the prices in the specific bidding zone in which for example a new renewable energy project is located, provides investors with increased transparency on the prices they are directly exposed to. Such transparency promotes investments, which in turn leads to more trading. In comparison, in a regional virtual trading hub, there is limited transparency on bidding zone prices. Even though they can theoretically be simulated, from a risk management perspective, transparent settlement prices published by the exchange are preferable. Investment decisions are further stimulated by the increased transparency that zonal futures bring when it comes to long term price signals. This transparency risks being diluted should there for example be changes in the configuration of the bidding zones of which a regional virtual trading hub is composed.

Finally, zonal futures allow for trading hubs to arise naturally from market needs. Market participants do not always need a perfect hedge. Market participants typically balance price risk with liquidity risk. Depending on the structure of the physical market and the price correlation among neighbouring markets, some markets will transform themselves into liquidity pools. These liquidity pools then serve as a proxy hedge for market participants from less liquid markets. In continental Europe, the zonal market model led to the market-based development of strong liquidity pools such as Germany, Italy, Spain and Hungary.

¹ The importance of hedging zone-specific price risk has been clearly demonstrated when thirteen years ago, in 2010, EEX and EPEX created a system price for continental Europe. The hub index was called ELIX and was supposed to pool liquidity across all the different continental bidding zones. Unfortunately, ELIX did not get picked up by the market due to its limited potential to hedge zone-specific prices.

Market participants active in bidding zones with little liquidity may complement their proxy hedge with locational spread trading. See next section.

2. Spread trading allowing for true market integration

In the first section, we explained that zonal futures have a number of benefits on their own. However, for zonal futures to realise their full potential, locational spread trading is an essential part of the equation.

Locational spread trading allows market participants to trade the price difference between two markets. This facilitates cross-border trading, both directly and indirectly. Just like European Price Area Differentials (EPADs) and long-term transmission rights (LTTRs), EEX locational spread trading facilitates cross-border trading in a direct manner, as it enables market participants to trade in a neighbouring market while still obtaining a full hedge. This can improve liquidity on one or both sides of the border. On top of this, EEX locational spread trading increases liquidity on both sides of the border. Concretely, the automatic multiplication of explicit orders into implied orders truly generates liquidity by bridging liquidity from anchor market into less liquid markets. This does not only occur in Germany and adjacent markets, but also in Italy, Hungary and Spain and their adjacent markets. At EEX markets, at least half of the time one side of the best bid/ask spread in a normal order book is an implied order.

Annex I contains a detailed explanation of how the mechanism fosters liquidity.

3. The Nordic power market

The Nordic market model, which is based on system area price futures and EPADs, can be seen as a regional virtual trading hub.² Although there are several factors which contributed to the decline of exchange liquidity of the Nordic market over the last years, the design of the market is one of them. To reverse this declining liquidity trend and allow trades to move back from the bilateral space to the exchange environment, EEX plans to launch outright futures for every single bidding zone in the Nordic market. These zonal futures will be accompanied by a comprehensive offering of locational spread trading to help increase the zonal futures' liquidity.

As described above, the launch of zonal futures will provide for more efficient management of risk, as only one transaction is required to hedge a zone-specific price. This in turn means lower transaction fees and more efficient management of collateral as explained above. It is expected that also in the Nordic power market, a number of liquidity pools will arise following the launch of zonal futures. Differently from regional virtual trading hubs, these natural trading hubs will provide choice to the market. Furthermore, listing zonal futures will help increase price transparency. For example, PPA contracts are generally market to the bidding zone prices in the Nordics. The publication of settlement prices for every bidding zone will bring efficiency to pricing renewable assets. Finally, it is noteworthy that Nordic zonal futures are already commonly traded in the bilateral space, outside of the exchange environment. EEX' offering will allow for them to be traded in a safer and more transparent environment.

In addition to the launch of zonal futures, locational spread trading will unlock the full potential of the Nordic market. First, it will allow Nordic market participants to trade much more easily with each other, as well as

² Please note that the regional virtual trading hub proposed by ACER/the European Commission is different from the current Nordic market model, as it is the TSOs that are envisaged to issue locational spread contracts. However, the differences are irrelevant for the explanation why a zonal market model provides better risk management than regional virtual trading hubs.

with market participants outside the Nordic region. We observe particular interest from market participants active in those markets that are physically connected to the Nordic power market through the construction of interconnectors. As a reminder, with regional virtual trading hubs comprised of several bidding zones, trading from outside the hub into the hub could become as complicated as having to acquire five different contracts.

Second, EEX offering of locational spread trading will allow Nordic market participants to benefit from greater diversification of market participants. Pan-European commodity traders as well as financial firms are accustomed to trading outright futures in combination with spread trading and by doing so, will further increase liquidity as well as price transparency. While Pan-European power traders typically take a multi-market portfolio perspective and hence have a deep understanding of the relationship between the different bidding zone prices, local hedgers trading outright futures generally have a better understanding of one particular bidding zone. The integration of both perspectives will improve price transparency.

In sum, the combination of listing zonal futures providing for more efficient management of risks and collateral, and offering locational spread trading, attracting more as well as new types of market participants, has the potential to reverse the current declining liquidity trend in the Nordic market.

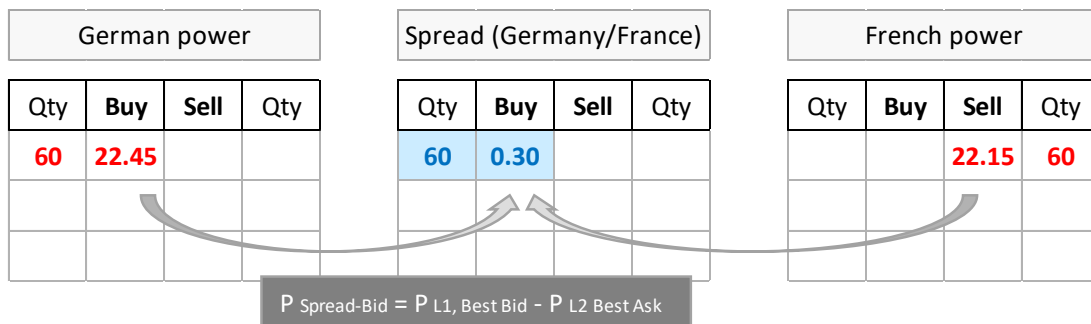
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ANNEX: Spread Trading

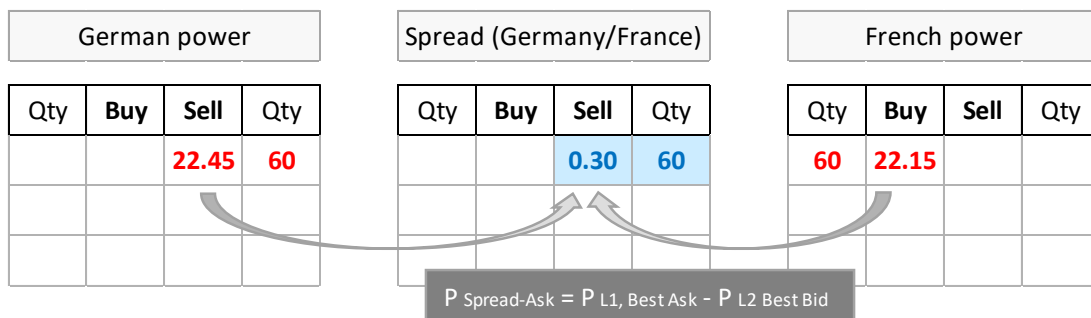
Different from Nasdaq EPADs, EEX locational spread trading, as introduced in 2014, does not involve outright contracts. At EEX, locational spread trading reflects a technical functionality that allows for the simultaneous execution of two combined orders in at least two different contracts. For example, execution of a German-French power spread order leads to a long position in the German power future contract and a short position in the French power future contract.

How does it work? **An explicit buy order in an outright future order book and an explicit sell order in another normal order book, will be automatically mirrored in the respective spread order book.** Below we provide two such basic scenarios.

1. An **explicit buy order** in the German power order book and an **explicit sell order** in the French power order book leading to an **implied buy order** in the German/French spread order book.

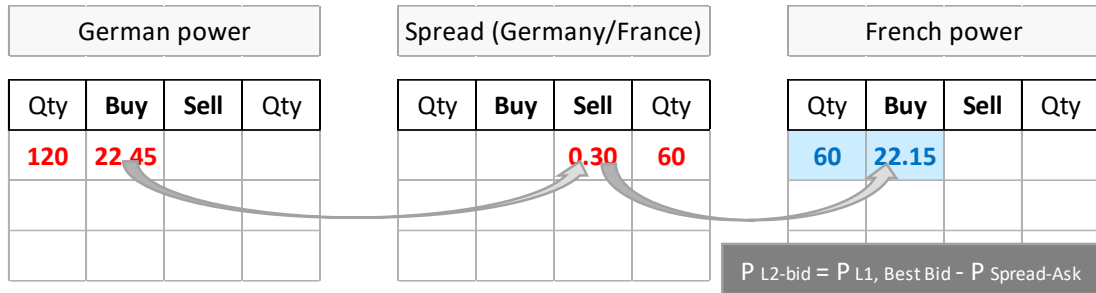


2. An **explicit sell order** in the German power order book and an **explicit buy order** in the French power order book leading to an **implied sell order** in the German/French spread order book.

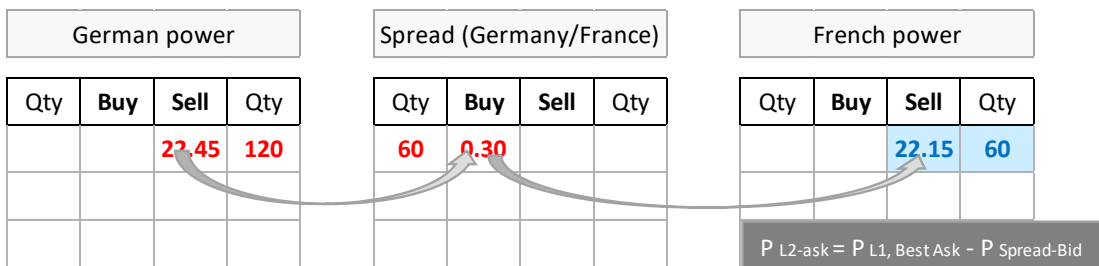


However, this also means that an explicit buy order in an outright future order book and an explicit sell order in a spread order book between this market and a second one, will lead to an implied buy order in the outright futures order book of the second market, thereby creating liquidity in the latter. There are at least four different combinations in which spread trading can create liquidity in outright future order books. Below we provide two examples.

3. An **explicit buy order** in the German power order book and an **explicit sell order** in the German-French spread order book will lead to an **implied buy order** in the French power order book.



4. An **explicit sell order** in the German power order book and an **explicit buy order** in the German-French spread order book will lead to an **implied sell order** in the French power order book.



Below you can find all possible simple scenarios.

Matrix order origins	Leg_1		Leg_2		Spread	
	Bid order	Ask order	Bid order	Ask order	Bid order	Ask order
x - explicit						
(x) - implied						
Case 1	x			x	(x)	
Case 2		x	x			(x)
Case 3	x		(x)			x
Case 4		(x)		x		x
Case 5		x		(x)	x	
Case 6	(x)		x		x	

However, there are also more complex scenarios involving more than two spread order books. Theoretically all markets with linked spreads could influence each other. In practice, the combinations are always of such a nature.

In sum, the automatic multiplication of explicit orders into implied orders truly generates liquidity by bridging liquidity from anchor market into less liquid markets. This is not only true for German power, but also for Italian power, Spanish power, Hungarian power and to some extent also French power. At EEX markets, at least half of the time one side of the best bid/ask spread in a normal order book is an implied price. Locational spread trading as offered by EEX facilitates cross-border trading, thereby increasing liquidity on both sides of the border.

The locational spread trading EEX plans to offer for the Nordic power market.

EEX Nordic Location Spreads*													
System Price		Denmark		Norway				Sweden				Finland	
SYS	DE	DK1	DE	NO1	DE	NO3	NO4	SE1	SE2	SE3	NO1	FI	DE
SYS	DK1	DK1	NL	NO1	NO2	NO3	NO5	SE1	SE3	SE3	NO2	FI	DK1
SYS	DK2	DK1	DK2	NO1	NO3	NO3	DK1	SE1	SE4	SE3	NO3	FI	DK2
SYS	NO1	DK1	NO1	NO1	NO4	NO3	DK2	SE1	DK1	SE3	NO4	FI	NO1
SYS	NO2	DK1	NO2	NO1	NO5	NO3	SE1	SE1	DK2	SE3	NO5	FI	NO2
SYS	NO3	DK1	NO3	NO1	DK1	NO3	SE2	SE1	NO1	SE3	FI	FI	NO3
SYS	NO4	DK1	NO4	NO1	DK2	NO3	SE3	SE1	NO2	SE4	DE	FI	NO4
SYS	NO5	DK1	NO5	NO1	SE1	NO3	SE4	SE1	NO3	SE4	PL	FI	NO5
SYS	SE1	DK1	SE1	NO1	SE2	NO3	FI	SE1	NO4	SE4	DK1	FI	SE1
SYS	SE2	DK1	SE2	NO1	SE3	NO4	NO5	SE1	NO5	SE4	DK2	FI	SE2
SYS	SE3	DK1	SE3	NO1	SE4	NO4	DK1	SE1	FI	SE4	NO1	FI	SE3
SYS	SE4	DK1	SE4	NO1	FI	NO4	DK2	SE2	SE3	SE4	NO2	FI	SE4
SYS	FI	DK1	FI	NO2	DE	NO4	SE1	SE2	SE4	SE4	NO3		
		DK2	DE	NO2	NL	NO4	SE2	SE2	DK1	SE4	NO4		
		DK2	NO1	NO2	NO3	NO4	SE3	SE2	DK2	SE4	NO5		
		DK2	NO2	NO2	NO4	NO4	SE4	SE2	NO1	SE4	FI		
		DK2	NO3	NO2	NO5	NO4	FI	SE2	NO2				
		DK2	NO4	NO2	DK1	NO5	DK1	SE2	NO3				
		DK2	NO5	NO2	DK2	NO5	DK2	SE2	NO4				
		DK2	SE1	NO2	SE1	NO5	SE1	SE2	NO5				
		DK2	SE2	NO2	SE2	NO5	SE2	SE2	FI				
		DK2	SE3	NO2	SE3	NO5	SE3	SE3	SE4				
		DK2	SE4	NO2	SE4	NO5	SE4	SE3	DK1				
		DK2	FI	NO2	FI	NO5	FI	SE3	DK2				

EEX current offering can be found on the website³.

³ <https://www.eex.com/en/markets/power/power-futures>