iShares®

ETF Trading:
The Exceptions to the Rules

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Capital Markets - Execution Support Process

Product Excellence
Thorough understanding of all aspects of ETF products and their trading

Market Maker Flows and Inventory
Information sourced from running matching service statistics and broker conversations

Primary Market Insights
Monitoring creation/redemption activity and costs

Pre-Trade Analytics
Running reports and analysis to estimate trading costs, market impact and provide relevant spread and depth data

Post-Trade Analytics
Running reports and analysis for clients and internal teams

iShares Execution Support

- Tailored to client segment and individual requirements
- Helping to make best use of iShares multi dealer model

Buy-Side Client

Source: BlackRock

General execution options

	1. Intraday		2. Closing Price		3. NAV	
	On Exchange	OTC	On Exchange	OTC	OTC	OTC
Price	= Guaranteed Price = Price relative to the iNAV → Price directly known	= Guaranteed Price of Boker / AP = Price relative to the iNAV → Price directly known	**= Participation at the closing auction** → Price not known	= official closing price of Broker → equals the NAV at European Funds	= official NAV + fixed Cost → Price known after publication of NAV only	= effective cost + fixed Cost → End Price known after execution only
Risk	no Market- or Price-Risk	no Market- or Price-Risk	Market Risk	Market Risk	Market Risk	Market Risk and Execution Risk
Cost	→ Fixed Cost	→ Fixed Cost →higher costs if underlying market is closed	→ Fixed Cost	→ Fixed Cost	→ Market Maker charges premium for taking the risk of guaranteeing NAV	→ Fixed Cost
Credit Line	No credit line necessary	Credit lines required (Broker / AP) and Counterparty Risk	No credit line necessary	Credit lines required (Broker / AP) and Counterparty Risk	Credit lines required (Broker / AP) and Counterparty Risk	Credit lines required (Broker / AP) and Counterparty Risk
Trade	Trade via Broker or Direct Market Access: → Limited-Order		Trade via Broker or Direct Market Access: → Limited-Order		Broker decides on the best way to execute to hit closing NAV (often MOC)	Strategy defined with Broker (e.g. VWAP, TWAP)

Price is created based on the intraday fair value.
The broker acquires the risk to guarantee the price – no risk for the investor.

- ➡ Client knows the price at time of order placement
- ➡ after order placement no further risk for the investor (Execution, Market Risk)

Broker uses a pricing model if the underlying is not traded at the same time as the ETF. Broker is trying to charge a premium.

End price is unknown until the NAV has been published – no execution risk to the investor

Risk, that the closing price is distorted by other market participants– "hockey stick" effect.

It is possible to exceed the official published NAV.

Agenda

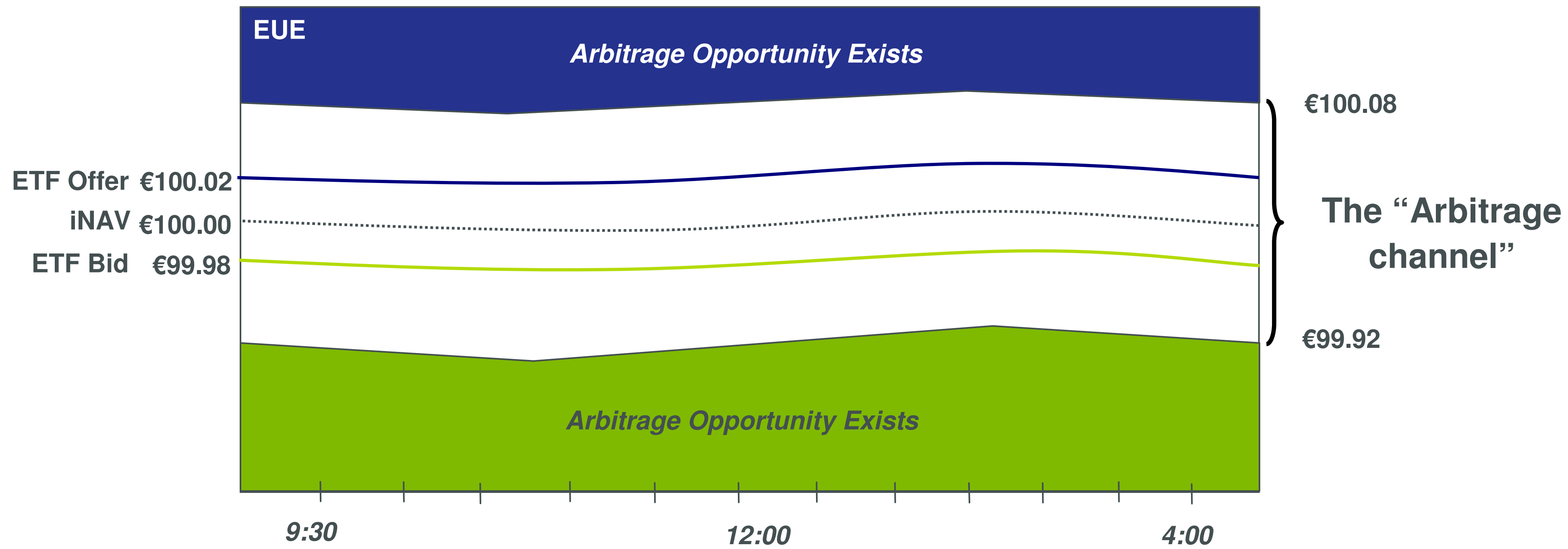
iShares

iShares Client Execution Service

Rule 1: ETFs always trade very close to their NAV

ETF Price Efficiency

"ETFs always trade very close to their iNAV"



ETFs tend to trade within a tight "arbitrage channel" around iNAV

BLACKROCK

ETFs always trade close to their iNAV

- **Open Ended Fund Structure** enables **arbitrage** between ETF and underlying portfolio
- Monitoring by market participants ensures tight “arbitrage channel”

- Buy underlying portfolio, sell ETF short
- Deliver underlying portfolio to create ETF at NAV
- The newly created ETF closes the short, locking in the profit

- Buy ETF, sell underlying portfolio short
- Redeem ETF at NAV receiving underlying portfolio
- The portfolio short is hence closed, locking-in the profit

Process ensures that the ETF trades close to its iNAV

The exceptions to the rules

Exception #1

- ETF investor calling iShares:
  - "I've just bought your EURO STOXX Small ETF on exchange at a 3% premium to NAV! And a few seconds later the price was back down, trading close to NAV…"

The exceptions to the rules

Exception #1: "I've just bought the iShares EURO STOXX Small ETF at 3% premium to iNAV!"

- During intraday trading, ETFs can temporarily trade at a premium or discount to iNAV, due to trades in the ETF secondary market
  - Necessary conditions:
    - The ETF order is executed on exchange
    - A "thin" ETF order book (or a big enough ETF order!)

Last Trade		100	Volume	10000		
Ord	**Size**	**Bid**	**Ask**	**Size**	**Ord**	**Total**
1	10000	99.9	100.1	10000	1	10000
2	10000	99.8	100.2	10000	2	20000
			101	50	3	20050
			104	80000	4	100050

- Client bought 100,000 shares at 103.22, while iNAV was 100!
- The same size would not affect the underlying basket so drastically
- If premium persist, the market makers will arbitrage and hence move the ETF price back down

Source: Blackrock, for information purporses only

Rule 2: ETF daily returns match the index return

The exceptions to the rules

Exception #2

- ETF investor calling iShares:
  - Help! Today the EURO STOXX Small index closed up 1% but your ETF closed up more than 4%!”

The exceptions to the rules

Exception #2: "EURO STOXX Small index closed up 1% but iShares ETF closed up more than 4%!"

- Similar scenario to the previous one, but the ETF order is executed on-exchange at the close (closing auction)
- The ETF Closing Price diverges from the performance of the underlying index and from its NAV
  - The premium/discount will not be corrected until the next trading day

- ETF Closing Price - the final price at which the ETF is traded on-exchange on a given trading day.
  - For a cross-listed ETF there might be a different closing price for each exchange

- Official NAV - is calculated once a day using the closing price of each underlying security

The exceptions to the rules

- Useful tips:
  - Trading ETFs can be different to trading normal stocks
  - ETF investors should always trade with a competent Market Maker, able to access the Creation/Redemption market
  - Avoid on-exchange “Market Orders” when possible, even on the close (MOC)
  - Even liquid ETFs (or stocks) can temporarily have a “thin” order book!
  - Be aware of the difference between the Closing Price and the official NAV
    - The ETF Closing Price can diverge from the official NAV
  - Always refer to the official NAV for valuations and performance analysis (www.iShares.com or Bloomberg)

The exceptions to the rules

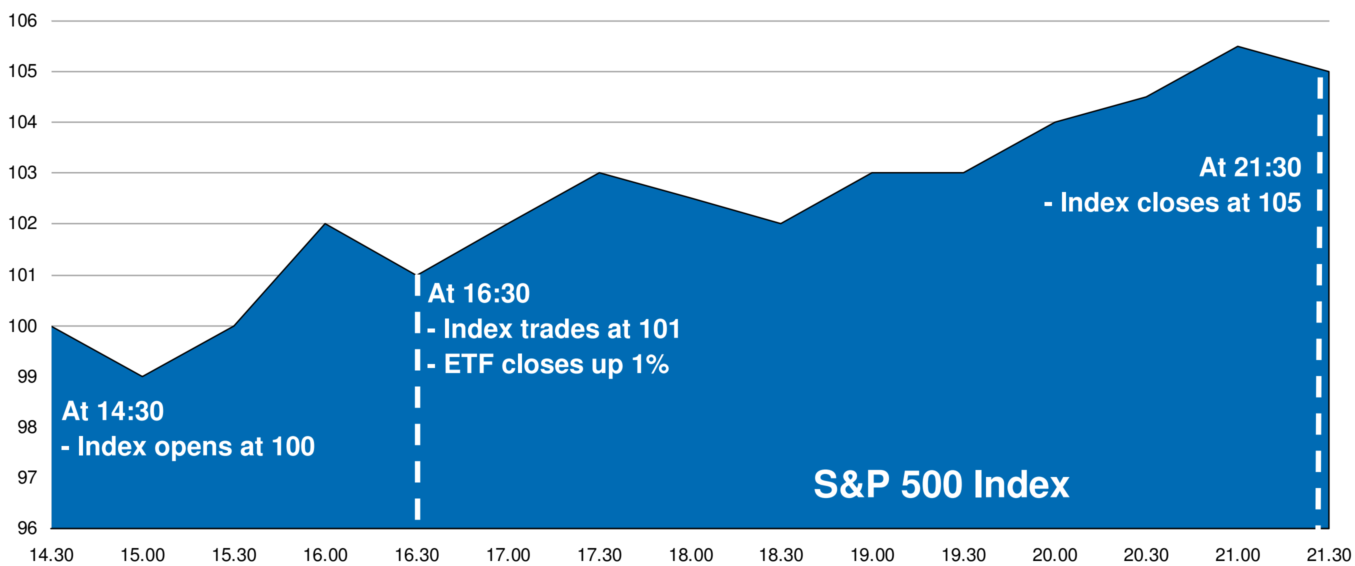
Exception #3 (a)

- ETF investor calling iShares:
  - “Help!! Today the S&P 500 index closed 5% up but the iShares S&P 500 ETF closed only 1% up!!”

The exceptions to the rules

Exception #3 (a): "S&P 500 index closed 5% up but the iShares S&P 500 ETF closed only 1% up"

- The difference is caused by the mismatch between the two closing times:
  - S&P500 index: closes at 21:30 GMT



- **S&P500 index opens at 100 at 14:30 GMT**
- At 16.30 the index trades at 101 (up 1%)
- At 16:30 the London traded **ETF closes up 1%**
- But the index continues to trade…
- **Index closes at 105 at 21:30 GMT (up 5%)**
  - ETF: +1%, Index: +5%

Official NAV is calculated after the US trading closes!

Source: Blackrock, for information purposes only

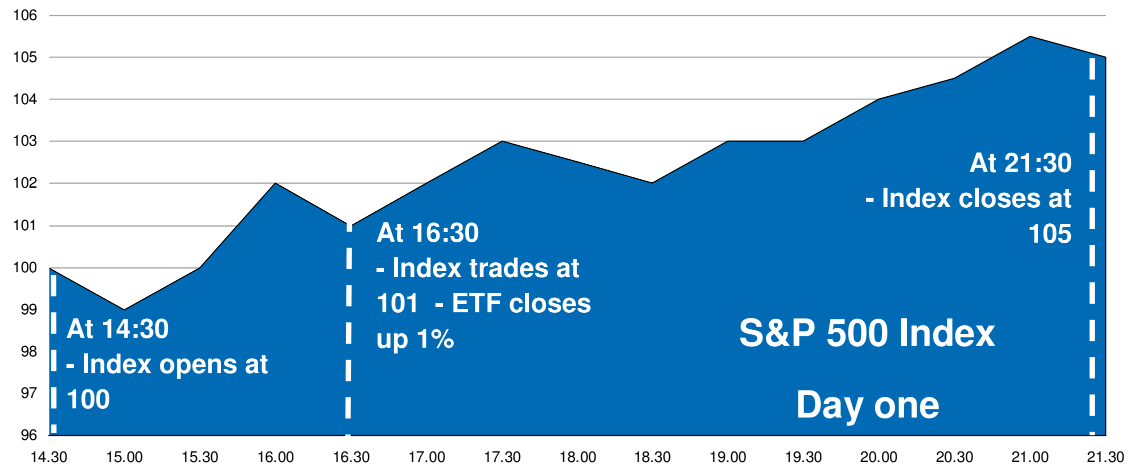
The exceptions to the rules

Exception #3 (b)

- ETF investor calling iShares:
  - “Help!! Today the S&P500 index closed 4% down but the iShares S&P 500 ETF closed 4% up!”

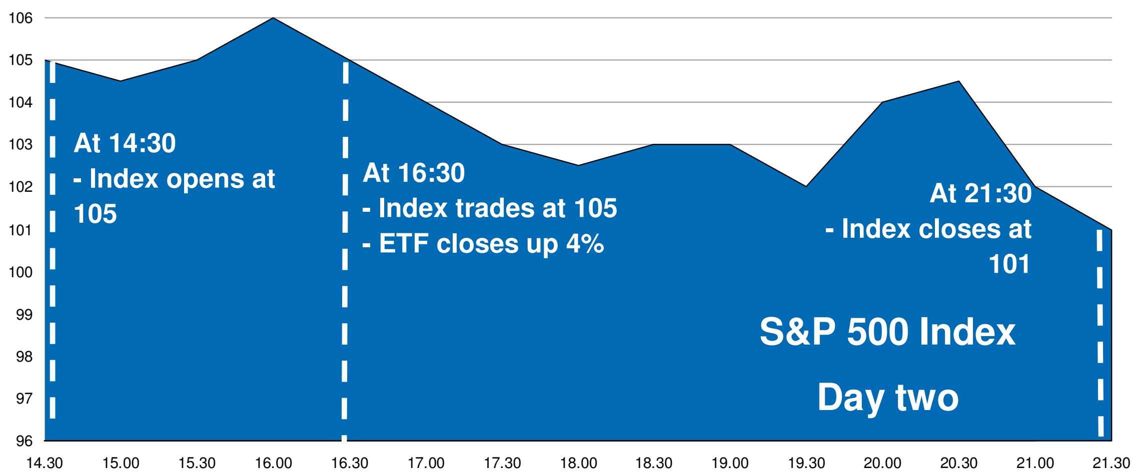
The exceptions to the rules

Exception #3 (b): "S&P500 index closed 4% down but the iShares S&P 500 ETF closed 4% up"



S&P 500: Day 1

- **S&P500 index opens at 14:30 GMT at 100**
- At 16:30 the index trades at 101 (up 1%) and the London traded ETF closes up 1%
- But the index continues to trade…
- **Index closes at 21:30 GMT at 105 (up 5%)**
  - ETF: +1%, Index: +5%



Source: Blackrock, for information purposes only

S&P 500: Day 2

- **Index opens unchanged at 14:30 GMT at 105.** The ETF is now up 4%!
- At 16:30 the index is still unchanged at 105 and the London-traded ETF closes up 4%
- But the index continues to trade…
- **Index closes at 21:30 GMT at 101 (down 4%)**
  - ETF: +4%, Index: -4%

The exceptions to the rules

Exception #3 (a) & (b)

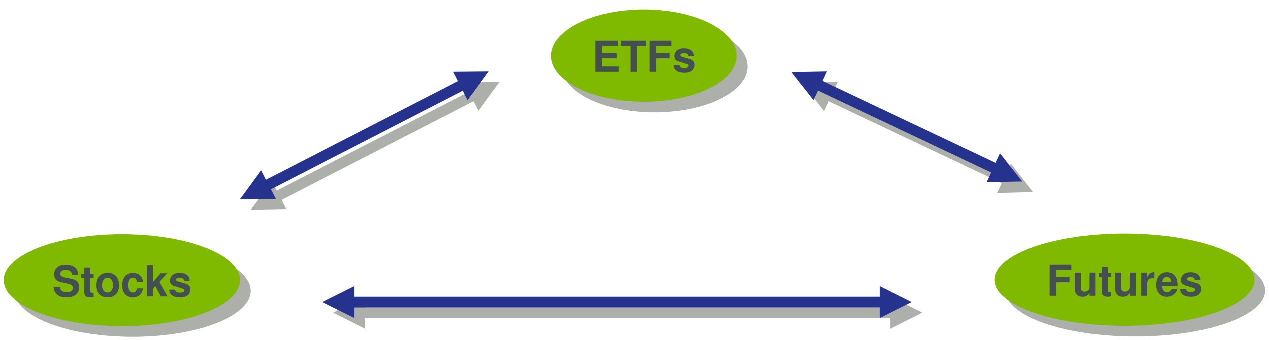
- Useful tips:
  - Always be aware of the ETF's underlying basket and its trading hours!
  - Time mismatch can cause apparent performance problems, sometimes cumulating over various trading days
    - S&P 500 index - Closes at 21:30 GMT
    - S&P 500 ETF – Closes at 16:30 GMT
  - The best time to trade an ETF is when (most of) its underlying basket is open
    - Are there any futures tracking the underlying when it is closed?
    - Are there any other hedging instruments?
  - Always use the official NAV for valuations and to monitor performance
  - Official NAV performance will be almost exactly in line with the underlying index performance

Rule 3: The Liquidity of an ETF equals the Liquidity of the underlying basket

The true liquidity of an ETF

The role of the market makers

- Market makers and arbitrageurs effectively transfer the liquidity of underlying stocks or futures to the ETFs
- An ETF trade is essentially a program trade



The liquidity of an ETF is equal to the liquidity of the underlying basket

The exceptions to the rules

Exception #4: "The liquidity of an ETF can be lower than the liquidity of its underlying basket"

- The general liquidity rule only applies to Authorised Participants (i.e. brokers capable of instructing ETF Creations/Redemptions with iShares)
- Minimum size applies (one basket, normally $ 2-15mm)

- On-exchange liquidity of an ETF is generally much lower than the liquidity of the underlying
- Some Market Makers are less aggressive on small sizes (below one creation basket) to avoid residual positions
- But good/active Market Makers will be able to address that (iShares can help you with this)

Exceptions to the rules

Exception #5: "The liquidity of an ETF can be higher than the liquidity of its underlying basket"

1. An ETF whose underlying is (partially) closed during the ETF trading hours is more liquid than its underlying
   - Example: iShares FTSE China 25 (FXC LN)
     - Chinese market is shut during London hours
     - No open futures on China
   - How do traders price an ETF on China during European trading hours?
     - No absolute answer!
     - Traders typically use the % change of other open markets as a reference to price closed markets
     - Pricing an ETF whose underlying is shut typically means taking market risk. Expect wider spreads/higher commissions.

2. When AUM reaches a critical mass, certain ETFs can "create their own liquidity", exceeding that of their underlying
   - Similar to what happens to certain futures (i.e. EuroStoxx 50 Future trades tighter than its underlying)
   - Example: iShares MSCI Emerging Markets ETF (EEM) is the Emerging Markets trading benchmark in the US!

The exceptions to the rules

Exception #4-5: "The liquidity of an ETF can differ from the liquidity of its underlying"

- Useful tips:
  - Always trade with an AP who is active in that particular ETF!
  - Ask iShares Capital Markets for real-time help

  - Be aware of the risks a market maker is taking when pricing your ETF
  - A high risk for the Market Maker always translate in a higher price (spread) on your ETF
  - If the underlying is shut, and you can wait, better to ask for a NAV creation (agency order)

Rule 1: (reprise)
ETFs always trade very close to NAV

The exceptions to the rules

Exception #6

- ETF investor calling iShares:
  - "Help! The iNAV on Bloomberg for your FTSE China ETF is at 100 but the ETF is trading in the market at 105!"

The exceptions to the rules

Exception #6: "The iNAV on BBG for FTSE China ETF is at 100 but the ETF is trading at 105!"

- The arbitrage mechanism relies on an open and liquid market on the underlying basket
  - When the underlying basket is partially or completely closed the arbitrage mechanism simply cannot operate
- There is no "absolute" way of calculating iNAV when the underlying is closed, just an educated guess
  - Examples: MSCI World or FTSE China (underlying is shut)
  - Example: Corporate Bond ETFs (underlying can be illiquid) – More on this later

The exceptions to the rules

Exception #7

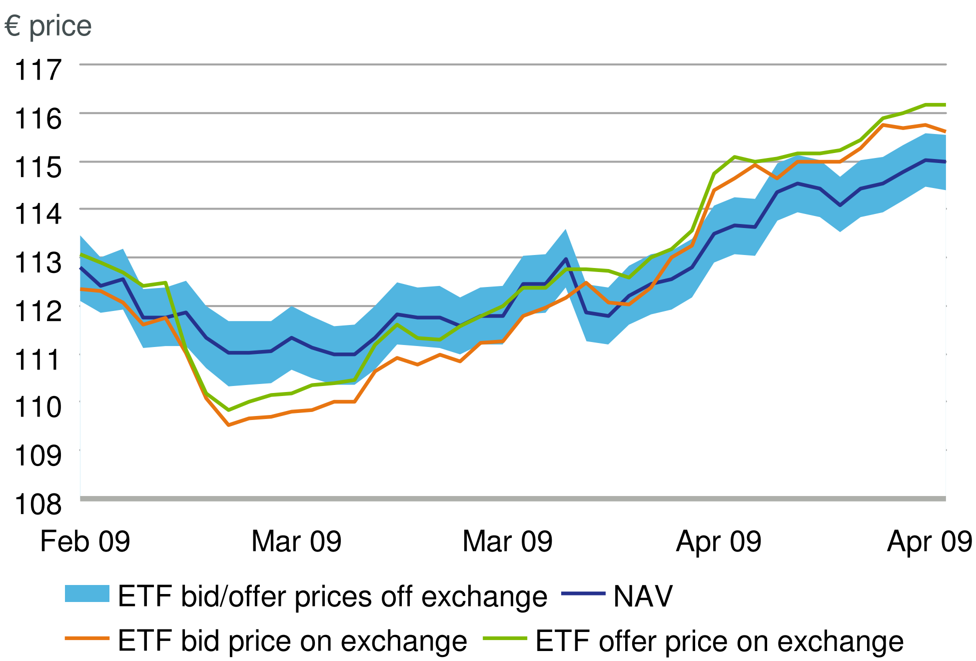
- ETF investor calling iShares:
  - "Help! The iShares Markit iBoxx Euro Corporate Bond ETF is consistently trading away from its NAV"

The exceptions to the rules

Exception #7: "The iShares Markit iBoxx Euro Corporate Bond ETF is consistently trading away from its NAV"

- Trading in fixed income securities is OTC only
  - No "Last" or "Closing Price" is available for the underlying basket
  - Index calculation methodology generally relies on an average of subjective, non-binding, non-traded quotes obtained from various market makers
  - Real trading prices can be very different from the non-binding quotes provided for index calculation purposes

iShares Markit iBoxx Euro Corporate Bond trading prices



Source: BlackRock. Data as at end of April 2009.

The ETF on-exchange price may be a better representation of the market than the Index price…

…but there are other variables at play too (slide 28).

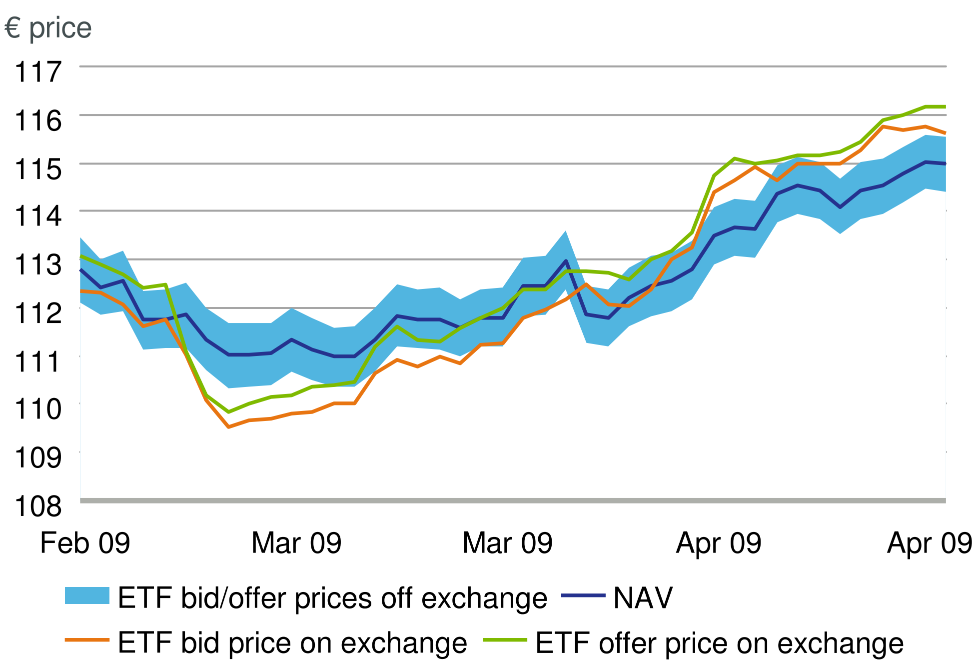
Rule 4: It’s better to trade at tighter bid-offer spreads

The exceptions to the rules

Exception #8: "Sometimes it's better to trade at wider bid-offer spreads"

- Bid/offer spreads of underlying bonds determine ETF spread
- However, on-exchange bid/offer spread can be smaller than the spread of the underlying basket of bonds
- …but this typically applies to small trades (smaller than one basket)
- Observed with iShares Markit iBoxx Euro Corporate Bond ETF
- Wider and generally tradable Creation/Redemption spreads (blue band) can be better than tighter on-exchange spreads

iShares Markit iBoxx Euro Corporate Bond trading prices



Source: BlackRock. Data as at end of April 2009.

Typically only applies to small trades

Large trades would open arbitrage opportunities

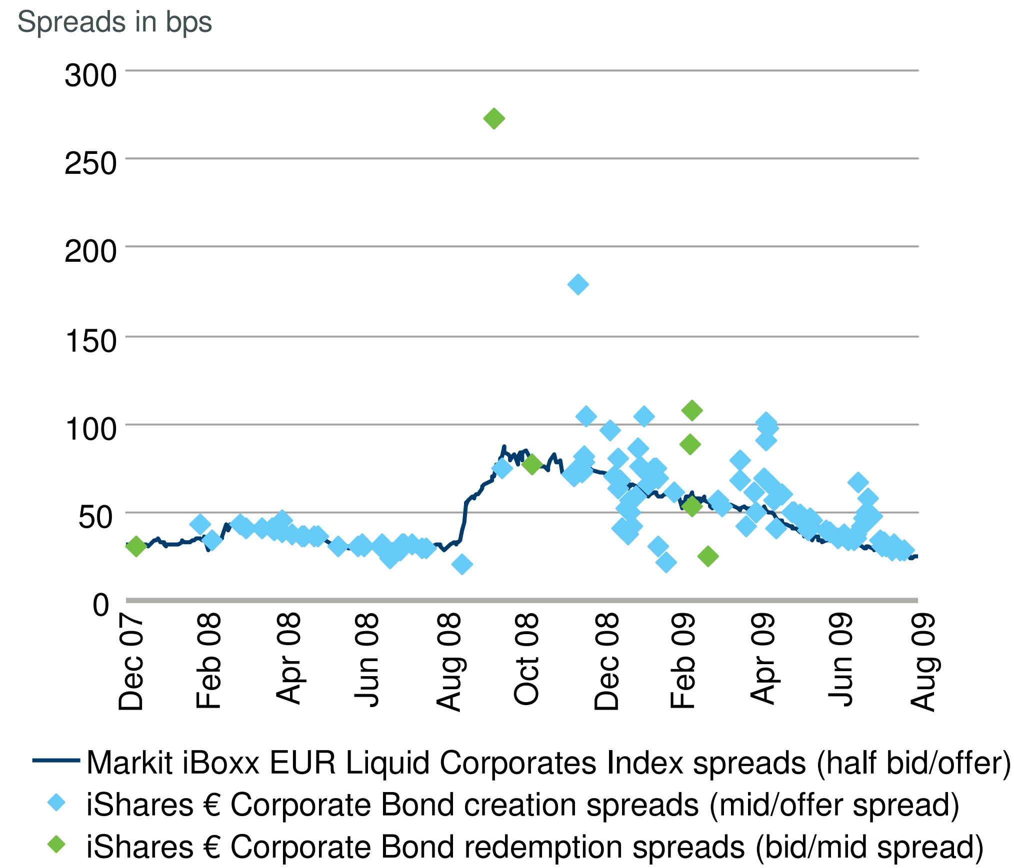
Always look at volume behind on-exchange quotes

Large trades in fixed income ETFs usually happen OTC

Index spreads (half spread) versus creation/redemption spreads in the EUR Corporate Bond ETF

- The index spreads typically serve as a good proxy for the ETF spreads
- However the index does not require a minimum executable size for bond prices
- In very volatile and illiquid markets the creation/redemption can therefore vary from the weighted spread of the index bonds
- For example this happened to an extreme event on 9 October 2008 when a redemption had a large market impact on bond prices
- Generally since the peak of the crisis C/R spreads varied more from the indicative bid/offer spreads of the underlying bonds than before

Comparing index with creation/ redemption spreads
€ Corporates



Source: Bloomberg, Markit iBoxx, BlackRock, as at 31 August 2009
The funds mentioned on this slide are for illustrative purposes only and not a recommendation to buy or sell a particular security

Summary

The exceptions to the rules

Summary

- An ETF does not always trade close to its iNAV
- There can be a difference between the ETF’s Closing Price and the official NAV
- An ETF and its underlying can show different intraday performance
- The iNAV of an ETF can differ from its current market price
- The liquidity of an ETF can be different than the liquidity of the underlying basket
- A fixed income ETF can appear to consistently trade away from its NAV

- Some of these exceptions can operate simultaneously on the same ETF!

But these are just exceptions. The rules are followed in the vast majority of cases!

Q&A

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