

# Europe's ETF Primary Market

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How ETF prices reflect net asset value

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# Participants

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## Presenter



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# Content

- What is an ETF?
- The ETF Arbitrage Mechanism
- Europe's ETF Structures
- Creation/Redemption Models
- Fair Value, iNAV, Trading at NAV

# What Is An ETF?

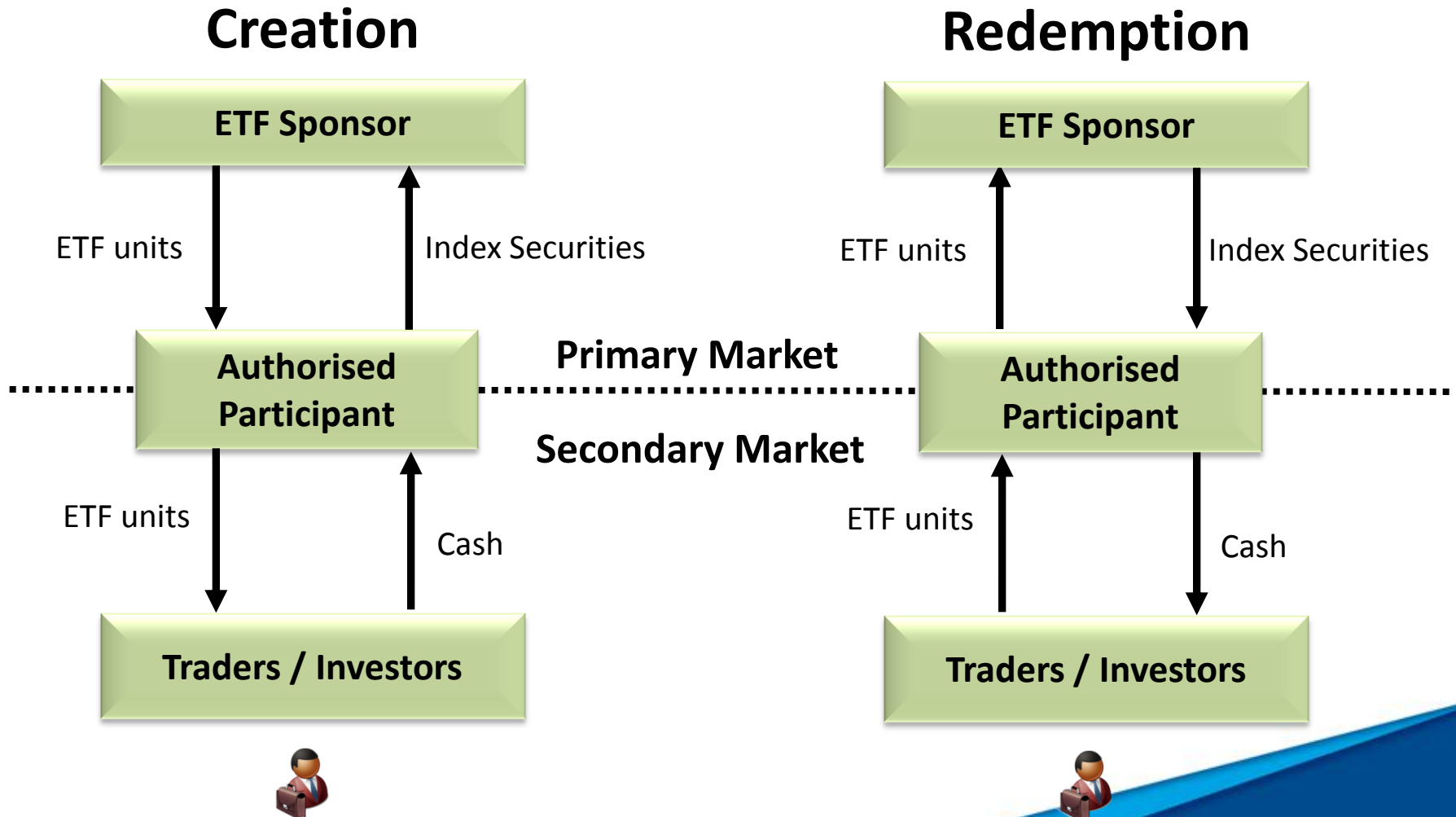
- Fund that tracks a benchmark (index)
- Represents a stake in the tracked benchmark
  - e.g. 1 unit (share) of a EuroStoxx 50 ETF represents 50 index shares: 0.0547 unit TOTAL, 0.0503 unit SIEMENS...
- A listed, open-ended collective investment vehicle
- Almost all European ETFs are UCITS
- Fundamental structural difference from ETC or ETN
  - ETC – Non-diversified holdings of currencies/commodities
  - ETN – Full exposure to counterparty (issuer) risk of default

# The ETF Arbitrage Mechanism

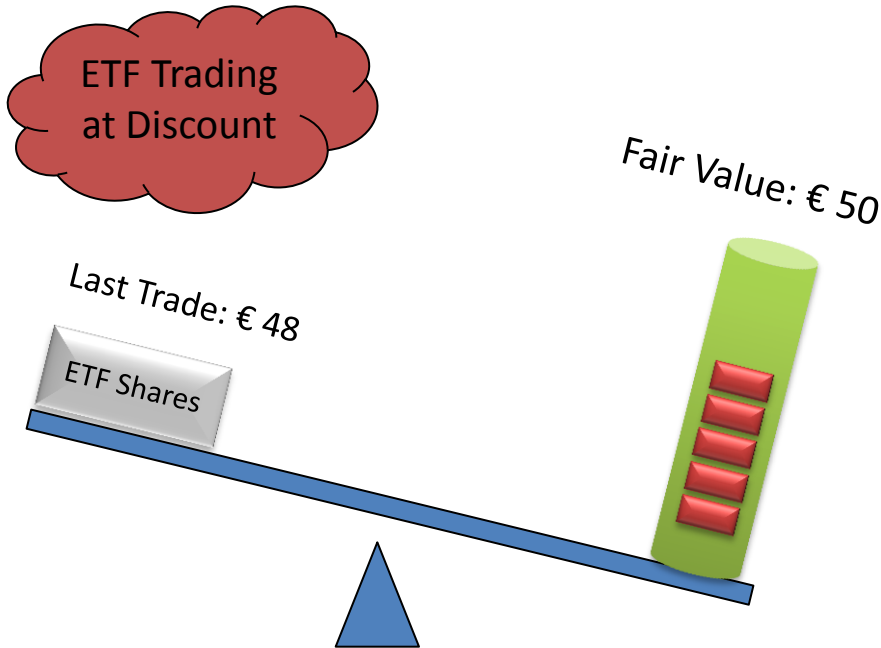
“Only authorised participants (specialists, market makers, institutions) transact directly with the ETF. Participants and the ETF engage in ‘in-kind’ transactions, trading baskets of securities for very large blocks of shares called ‘creation units’. These transactions, which result in the creation or redemption of ETF shares, occur at net asset value (NAV).”

(Vanguard’s US Website: “How ETFs Work”)

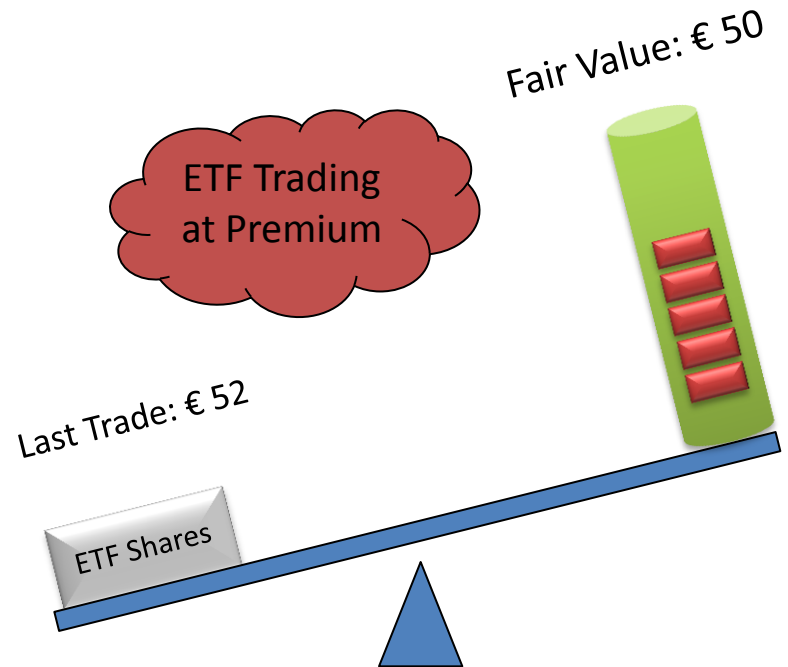
# From The Textbook



# Why Price $\approx$ NAV?



AP buys ETF units in the secondary market, pushing up ETF price, and redeems them in the primary market



AP creates ETF units in the primary market and sells in the secondary market, bringing ETF price down

# European ETF structures

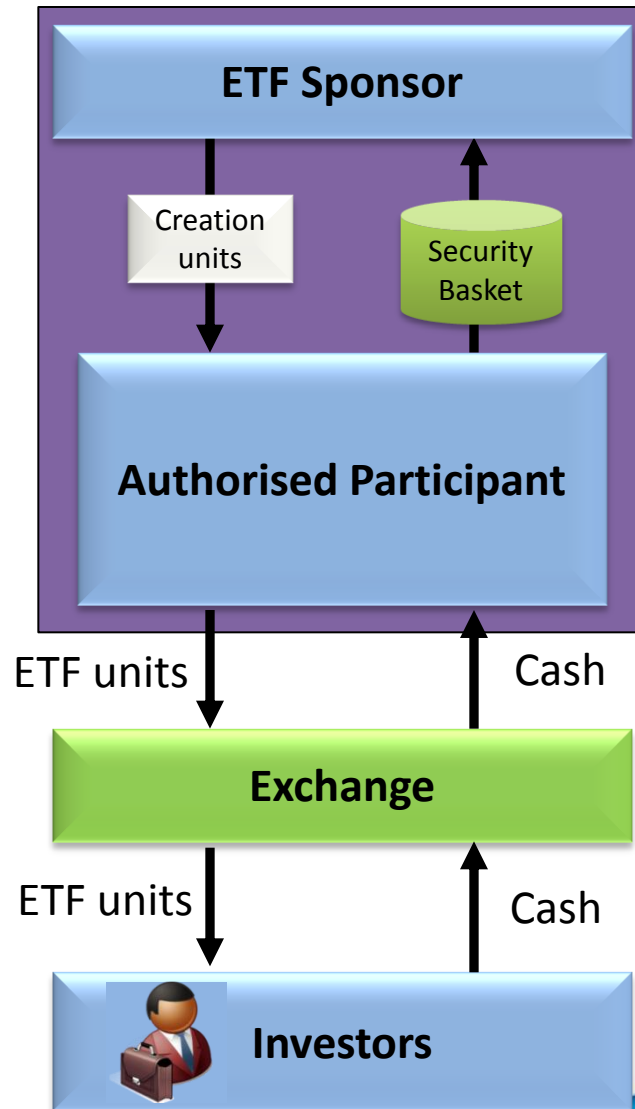
**Physically Replicated – Full or Optimised  
Sampling**

**Synthetic/Swap – Unfunded**

**Synthetic/Swap – Funded**

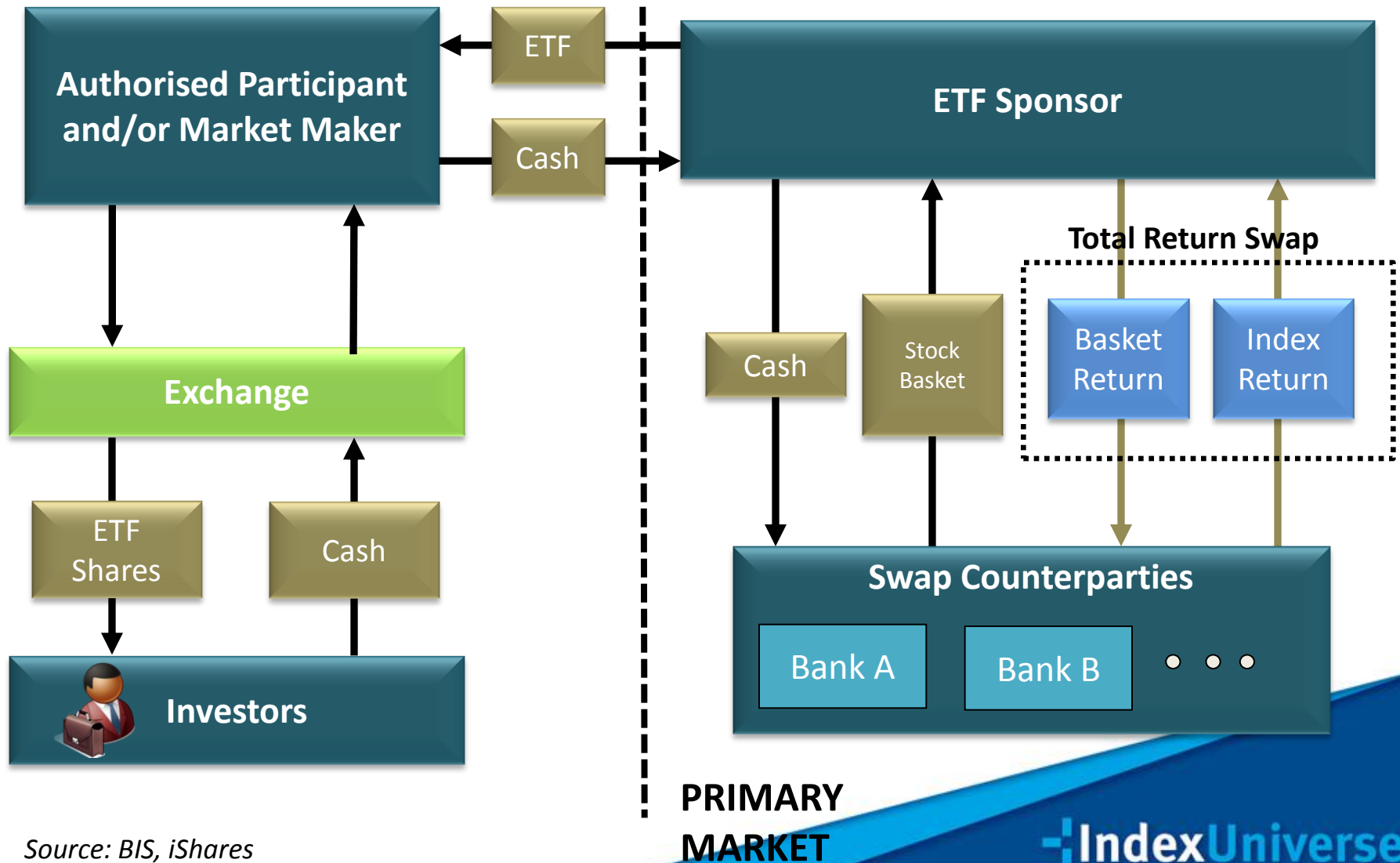


# Physically Replicated Fund Structure



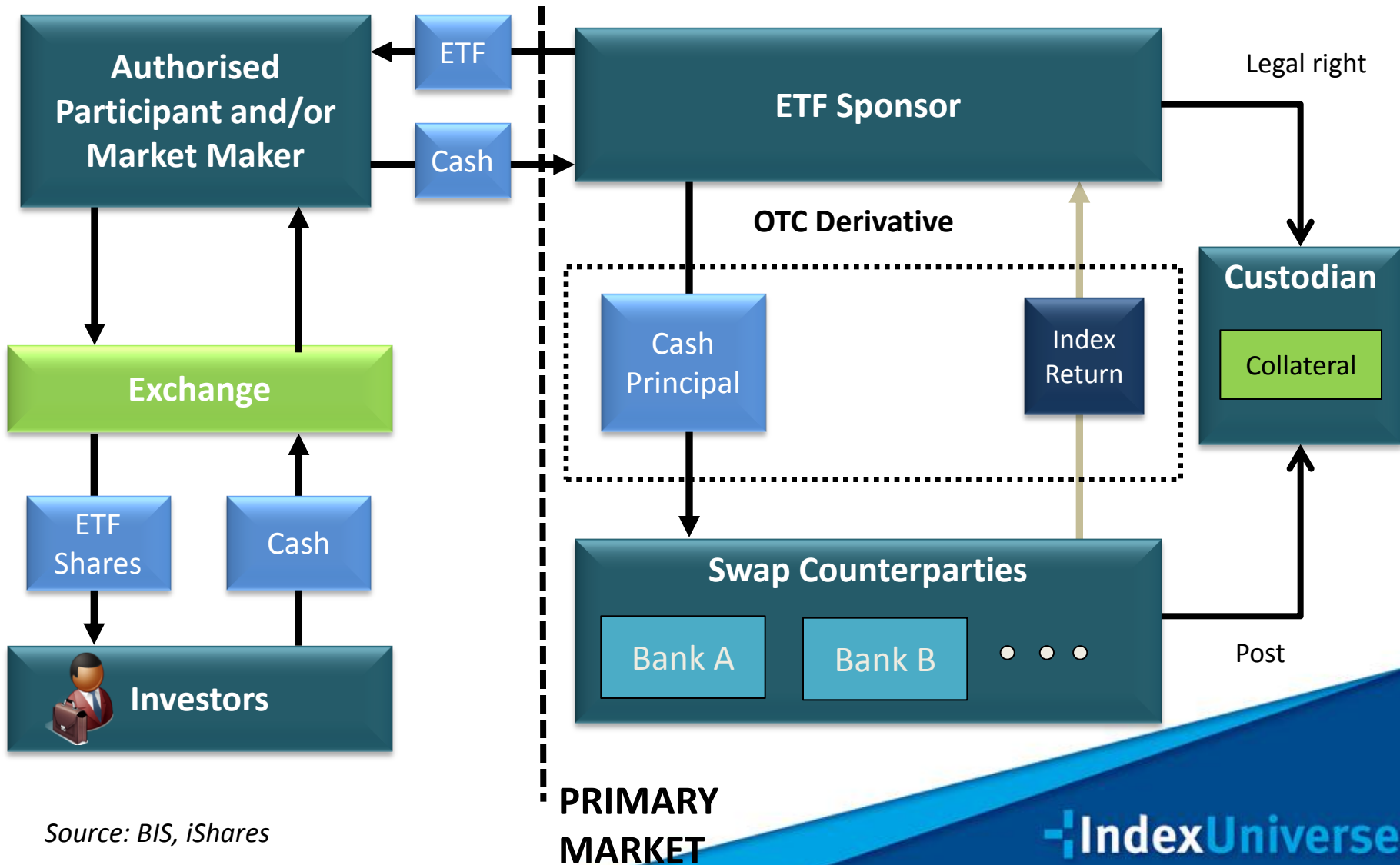
PRIMARY MARKET

# Unfunded Swap Structure



Source: BIS, iShares

# Funded Swap Structure



Source: BIS, iShares

# Comparison of Swap structures

Attribute	Unfunded Swap	Funded Swap
Type of transaction	Total return swap	Equity- or Credit-Linked Note
Overcollateralisation	Typically small, if any	Typically up to 120% of the ETF's net asset value
Counterparty risk	Mitigated through effective ownership of collateral basket through true sale	Mitigated through the pledge of collateral assets held by a third party
Haircuts on collateral assets	Usually none, but under UCITS some jurisdictions can impose haircuts for certain assets	Usually none, but under UCITS some jurisdictions can impose haircuts for certain assets
Composition of collateral assets	Can change daily	Can change daily
Balance sheet implication for swap counterparty	Legal sale of collateral assets can influence risk-weighted capital charge	Pledge of collateral assets usually does not affect risk-weighted capital

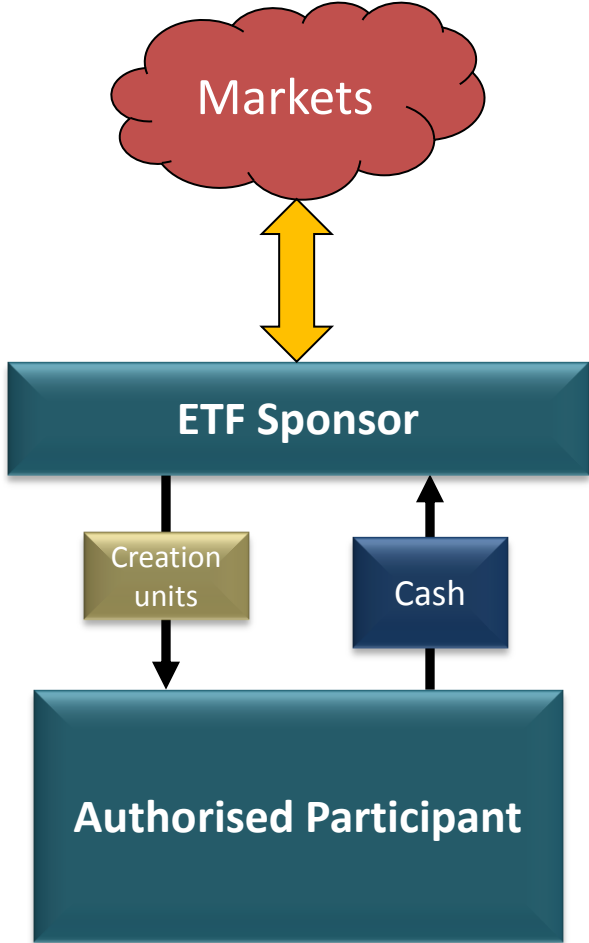
Source: BIS paper 343, Apr 11, Market structures and systemic risks of exchange-traded funds

# In-Kind vs. Cash Creation

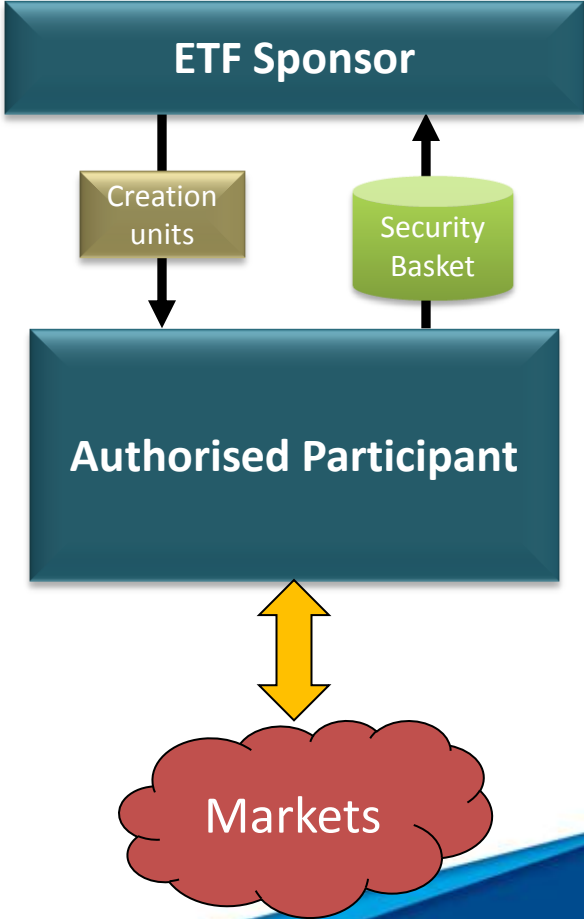
- Traditional ETF model uses in-kind creation
- In-kind creation still standard in US market
- Cash creation model associated with (Europe's) synthetic ETFs
- Increasing use of dual model (cash or in-kind)
- Creation models still evolving
- New in-kind models (custom, negotiated basket, hybrid)
- New cash models (NAV spread, cash estimate, cash actual)

# Creation Models

### Cash Model



### In-kind model



# Creation models

Cash Creation	In-Kind creation
Used for synthetic and physical ETFs	Used primarily for physical ETFs
More common in Europe	More common in US
Usually DvP	Often FoP
Higher cost (programme trade costs are inbuilt)	Lower cost (programme trade costs are excluded)
Smaller minimum creation size, i.e. lower barrier to entry	Larger minimum creation size, i.e. greater barrier to entry
Greater probability of premiums/discounts in stressed markets?	The “true” ETF arbitrage mechanism?

# Creation Limits/Costs

- No theoretical cap on ETF size (issuers can impose temporary creation limits)
- Prospectus creation costs are maximums: actual costs vary and are typically only disclosed to APs
- Be aware of “hidden costs” – e.g. swap fees, fx charges, taxes on underlying
- NAV pricing basis may vary (closing price auction, bid/mid/offer price of underlying)
- Overall, secondary market ETF bid-offer spreads should reflect primary market costs



# Redemption Limits/Costs

- Redemption costs are also specified in fund prospectus
- Many European ETF issuers impose “gate” on daily redemptions at 10% of NAV
- Gates ensure orderly liquidation of fund assets but could cause discounts to NAV
- “Could an ETF collapse?”

# The Role of the PCF

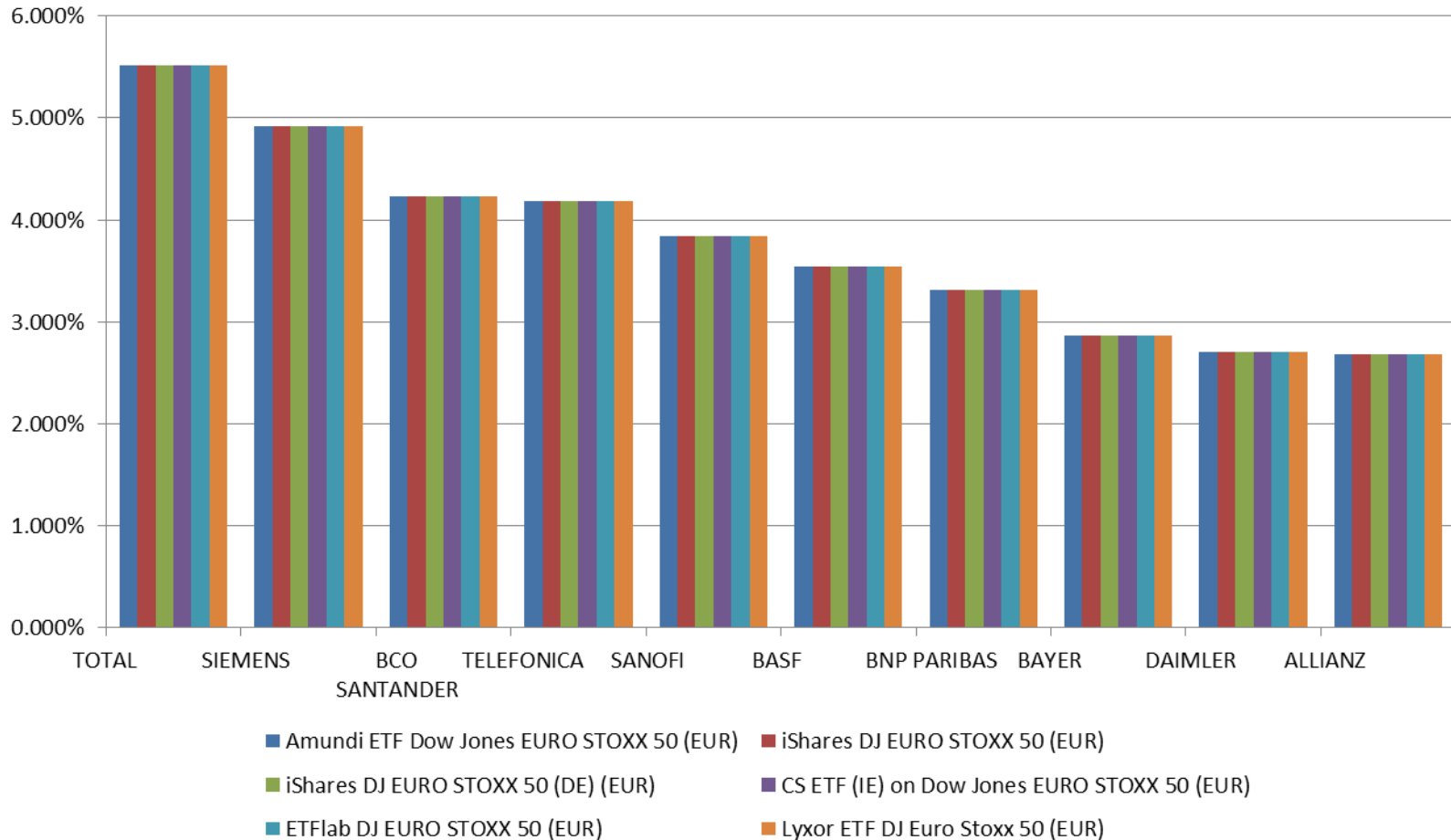
- Portfolio Composition File (PCF) sent by ETF issuer/fund custodian to APs/market makers daily
- Limited/no real-time public disclosure of PCFs
- PCF holdings may not equal fund holdings. PCF has two primary purposes:
  - to specify to APs how the fund will create/redeem
  - to enable APs to price the fund intraday
- Some physical ETFs have both “creation” and “calculation” PCFs
- PCF constituents can vary widely for funds tracking the same index

# Selected Euro Stoxx 50 ETFs

Characteristics	Amundi ETF Dow Jones EURO STOXX 50	iShares DJ EURO STOXX 50	iShares DJ EURO STOXX 50 (DE)	CS ETF (IE) on Dow Jones EURO STOXX 50 (EUR)	ETFlab DJ EURO STOXX 50 (EUR)	Lyxor ETF DJ Euro Stoxx 50 (EUR)
ETF Primary Ticker	C50	EUE	EXW1	CSSX5E	EL4B	MSE
ETF type	Swap based	Physically replicated	Physically replicated	Physically replicated	Physically replicated	Swap based
Creation unit size (number of shares)	60000	100000	50000	50000	50000	50000
NAV per share on 27-May-2011	47.19	28.72	28.81	67.95	28.85	28.88
Creation unit value (unit size*value of one share)	€ 2,831,682.00	€ 2,872,124.40	€ 1,440,500.00	€ 3,397,275.00	€ 1,442,660.00	€ 1,443,945.85
Creation type (cash, in-kind or both)	Cash or In-Kind	Cash or In-Kind	In-Kind	Cash or In-Kind	Cash or In-Kind	Cash or In-Kind
Maximum Creation/Redemption fee (prospectus)	3% of value/ 3% of value	NA/NA	2% of value/1% of value	6% of value/3% of value	€1000 per order + 2% of value/€1000 per order + 1% of value	€10000 + 2.5% of value/€10000 + 2.5% of value
Creation/Redemption fee for €10million transaction on 11-July-2011	+/-7bp	+/-7bp	+/-7bp	+/-7bp	+/-7bp	+/-7bp
Number of authorised participants	11	34	34	12	1	1
Fund valuation point	09:00 CET, DD+1	19:45 CET, DD	17:30 CET, DD	00:30 CET, DD+1	17:30 CET, DD	17:35 CET, DD

Source: Markit ETF Encyclopedia, ETF prospectuses, Market makers

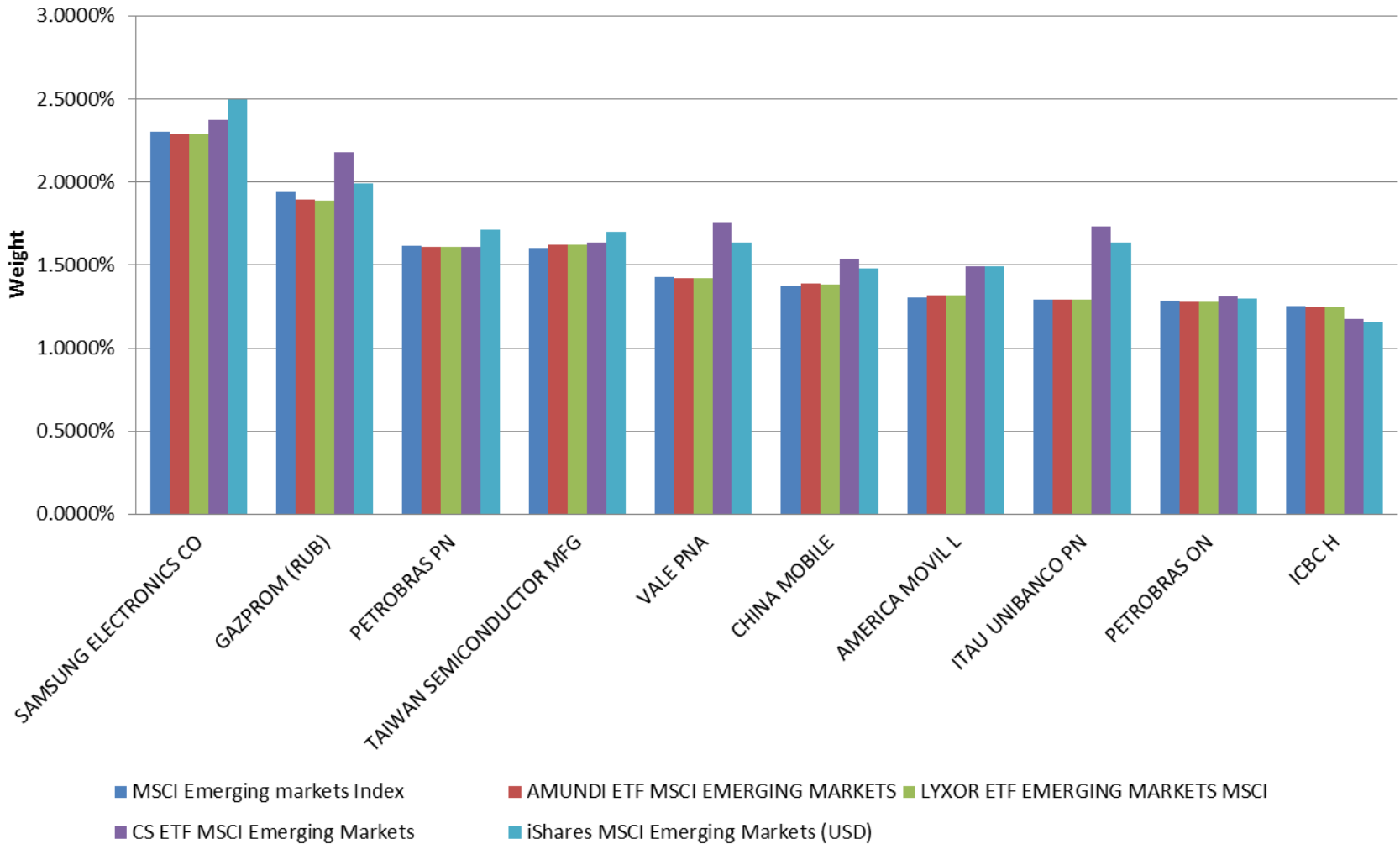
## Top 10 Euro Stoxx50 Index Holdings vs. PCF Weightings



# Selected MSCI Emerging Markets ETFs

Characteristics	iShares MSCI Emerging Markets (USD)	LYXOR ETF EMERGING MARKETS MSCI	CS ETF MSCI Emerging Markets	AMUNDI ETF MSCI EMERGING MARKETS
ETF Primary Ticker	IEEM	LEM	CSEM	AEEM
ETF type	Optimised Replication	Swap based	Optimised Replication	Swap based
Creation unit size (number of shares)	200,000	NA	NA	310,000
Currency	USD	EUR	USD	EUR
NAV per share on 27-May-2011	\$44.49	€ 8.10	\$115.06	€ 3.07
Creation unit value	\$8,897,466.80	€ 100,000.00	\$5,000,000.00	€ 951,700.00
Creation type	Cash	Cash	Cash or In-Kind	Cash or In-Kind
Maximum Creation/Redemption fee (prospectus)	NA/NA	€40,000 or 5%/€40,000 or 2%	5% of value/ 3% of value	10% of value/ 10% of value
Creation/Redemption fee for €10million transaction on 11-July-2011	+0.6%/-0.3%	+0.55%/-0.25%	+0.55%/-0.2%	+0.55%/-0.25%
Number of authorised participants	34	1	12	8
Fund valuation point	23:15:00 CET, DD + 1	NA	23:30:00 CET, DD + 1	09:00:00 CET, DD + 1

## Top 10 MSCI EM Index Holdings vs. PCF Weightings

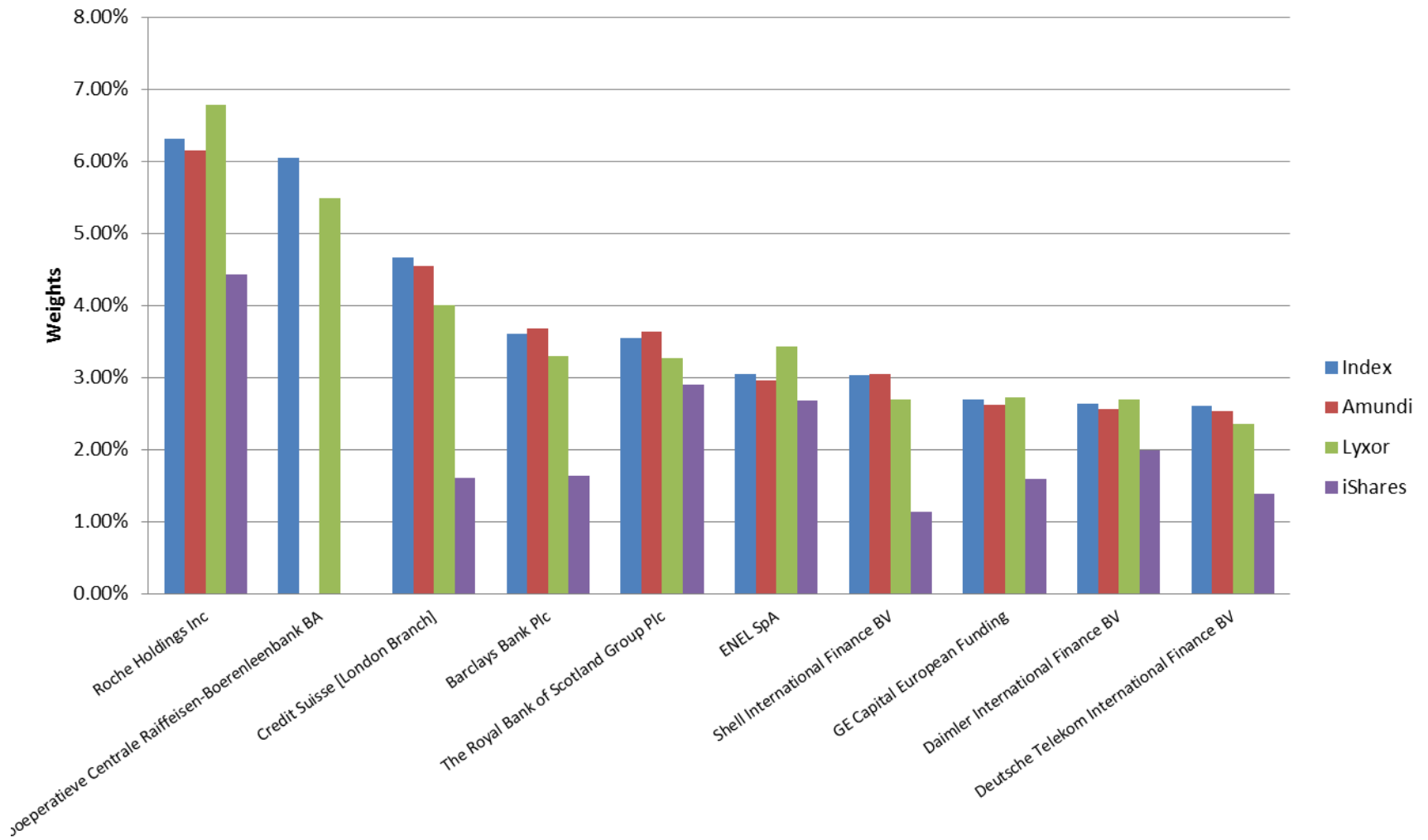


# Selected Markit iBoxx Euro Corporate Bond ETFs

Characteristics	Amundi ETF Euro Corporates (C)	iShares Markit iBoxx Euro Corporate Bond	Lyxor ETF Euro Corporate Bond
ETF Primary Ticker	CC4	IBCX	CRP
ETF type	Swap Based	Optimised Replication	Swap Based
Creation unit size (number of shares)	13,000	90,000	50,000
NAV per share on 27-May-2011	100.13	119.24	116.12
Creation unit value (unit size*value of one share)	€ 1,301,690.00	€ 10,731,437.91	€ 5,806,000.00
Creation type (cash, in-kind or both)	Cash or In-Kind	Cash or In-Kind	Cash or In-Kind
Maximum Creation/Redemption fee (prospectus)	3% of value/3% of value	NA/NA	€40,000 or 2%/€40,000 or 2%
Creation/Redemption fee for €10million transaction on 11-July-2011	NAV+30bp/NAV flat	NAV+10 bp/NAV-35bp	NAV+30bp/NAV flat
Number of authorised participants	10	34	1
Fund valuation point	17:15 CET, DD	17:15 CET, DD	NA

Source: Markit ETF Encyclopedia, ETF prospectuses, Market Makers

## Top 10 Markit Eur Corp Bond Index Holdings vs. PCF Weightings

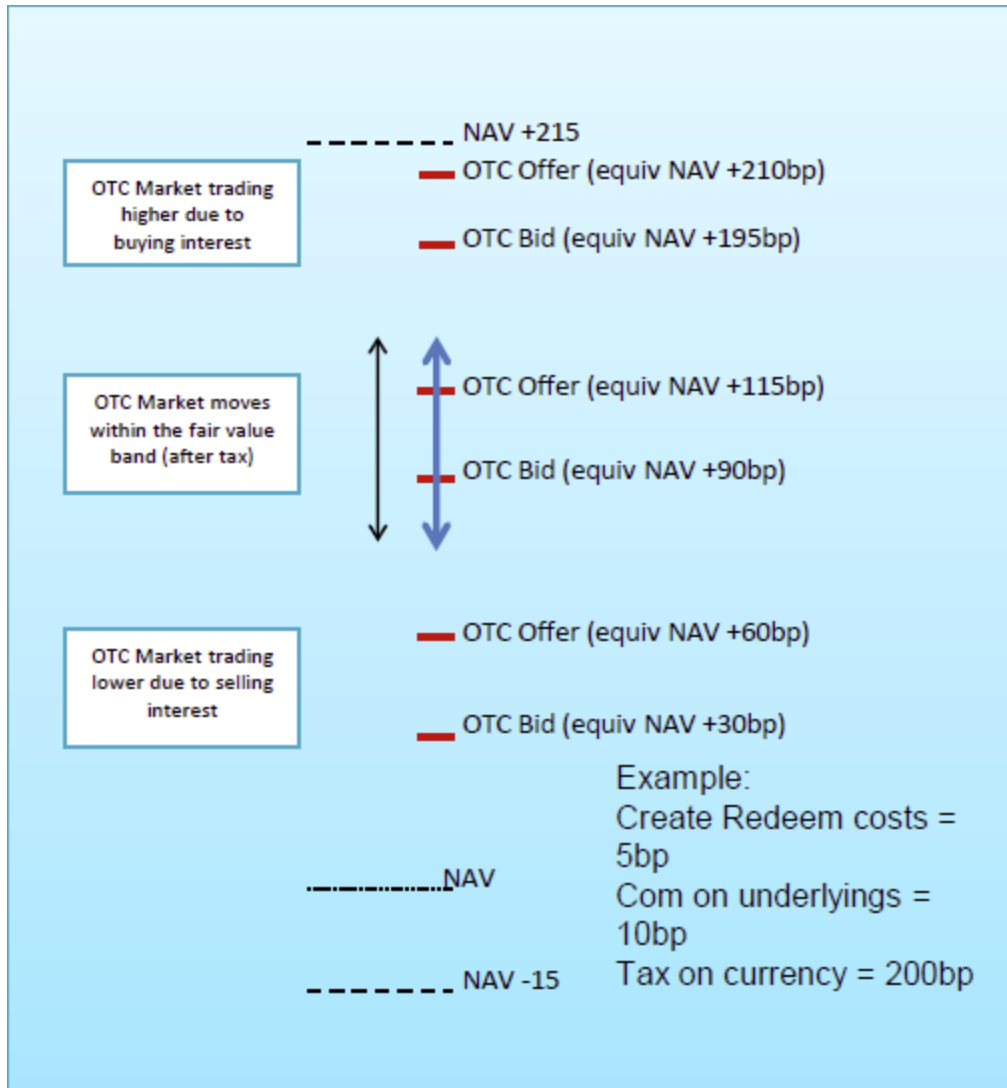




# iNAV And Fair Value

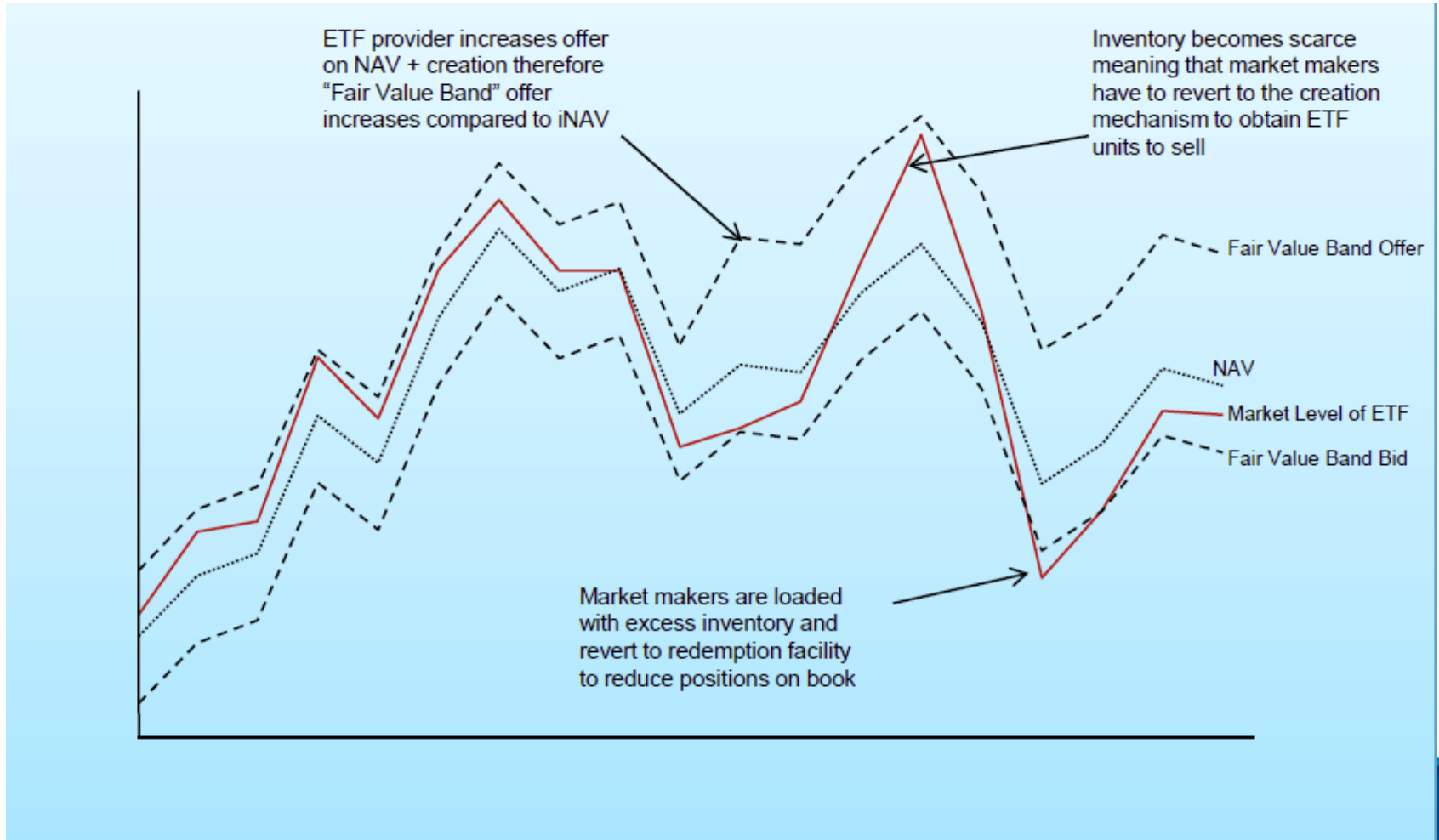
- Indicative Net Asset Value (iNAV) is used to determine the “fair value” of ETF
- Computed/published by exchanges/independent data providers (Deutsche Boerse/NYSE Euronext/Bloomberg)
- iNAV is NOT an official value produced by the ETF issuer
- iNAV works best in liquid, transparent markets

# Fair Value Band



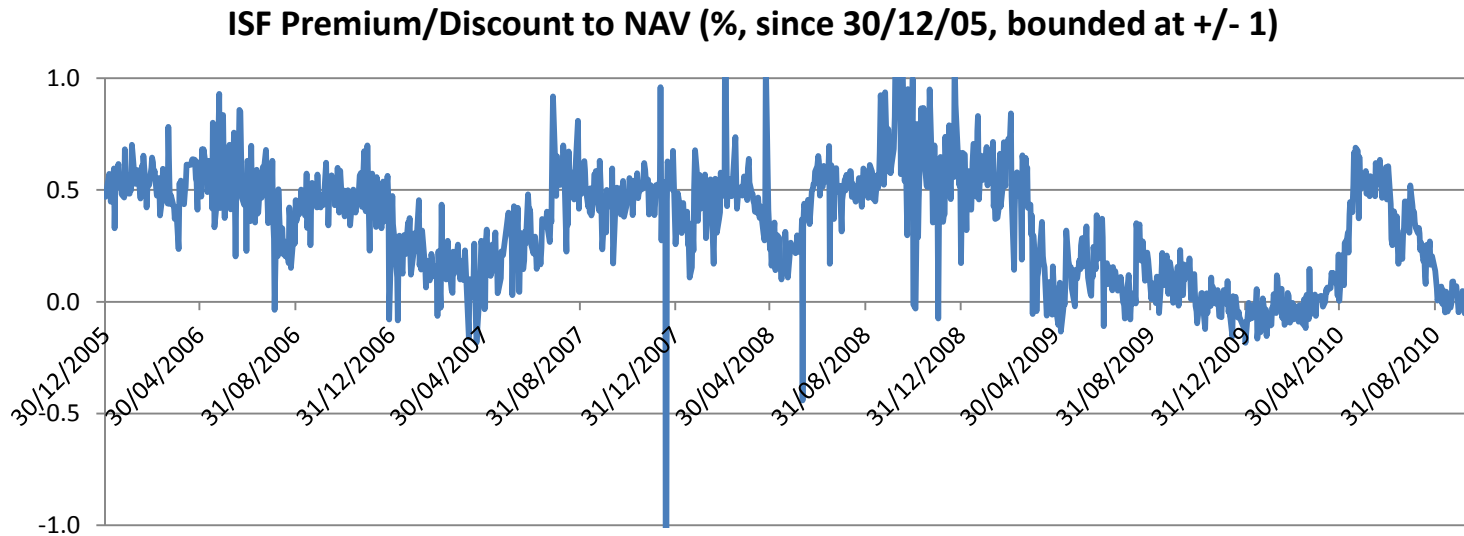
- ETFs trade in a Fair Value band that sits around the NAV
- The spread of the band is affected by:
  - Spread of underlying
  - Commission charges on underlying
  - Taxation of the underlying: i.e. tax on shares, tax on currency
  - Minimum imposed size of creation/redemption
  - Hedging costs

# ETF Price vs. Fair Value Band



Source: Knight

# Fair Value Band In Practice: iShares FTSE 100 ETF (ISF LN)



- Creations of iShares FTSE 100 ETF (ISF) incur 50bp stamp duty on underlying shares
- Arbitrage possible when  $\text{price} < \text{NAV}$  or when  $\text{price} > \text{NAV} + 0.5\%$ , but not in between
- ISF trades on average at a slight premium to NAV
- Buyers of ISF should be aware of this level of premium/discount

# Trading At NAV

- Popular in Europe for larger ETF orders
- NAV trading eliminates  $\frac{1}{2}$  dealing spread in ETF
- Downside is payment of full creation/redemption fees
- And delayed execution
- Is the fund priced at T0 or T+1? If T+1, execution details may only be known on T+2
- Heightened impact cost of trade?
- Possibility of slippage in underlying market

# What Should Investors Know?

- Great variety of creation/redemption models
- Broadly speaking, secondary market ETF spreads reflect primary market costs
- Secondary market spreads can be tighter than the primary market “fair value” band
- The more APs the better?
- Determining fair value can be tricky (iNAV is imprecise)
- When fair value band is wide, be aware where you’re buying
- Trading at NAV has pros – and cons
- Know your fund’s pricing points

# Thank You

ETF Securities, Invesco Powershares, Knight, Unicredit, Nyenburgh, State Street Global Services, iShares, Source, Markit, Comstage, db x-trackers and BNP Paribas all helped in the preparation of this webinar

# Time For Questions

## Panellists

**Marc Knowles**, Managing Director, iShares Capital Markets, BlackRock

**Matt Holden**, Head of European ETF Trading, Knight

**Robert Rushe**, Head of Exchange-Traded Product, State Street Global Services