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## ETF Fundamentals: *Caveats*

- The term “ETF” includes a number of different legal structures
  - Investment Company Act of 1940
  - Securities Act of 1933
  - UCITS IV
  - Hong Kong Securities and Futures Ordinance and Code on Unit Trusts
  - Singapore Securities and Futures Act
- Market structure is not uniform across the globe
  - U.S. National Market System—mandatory printing of trades to a central tape within 90 seconds
  - Predominantly OTC across Europe with no consolidated, mandatory prints
  - Varying requirements for market making activity
  - Available order types vary by exchange

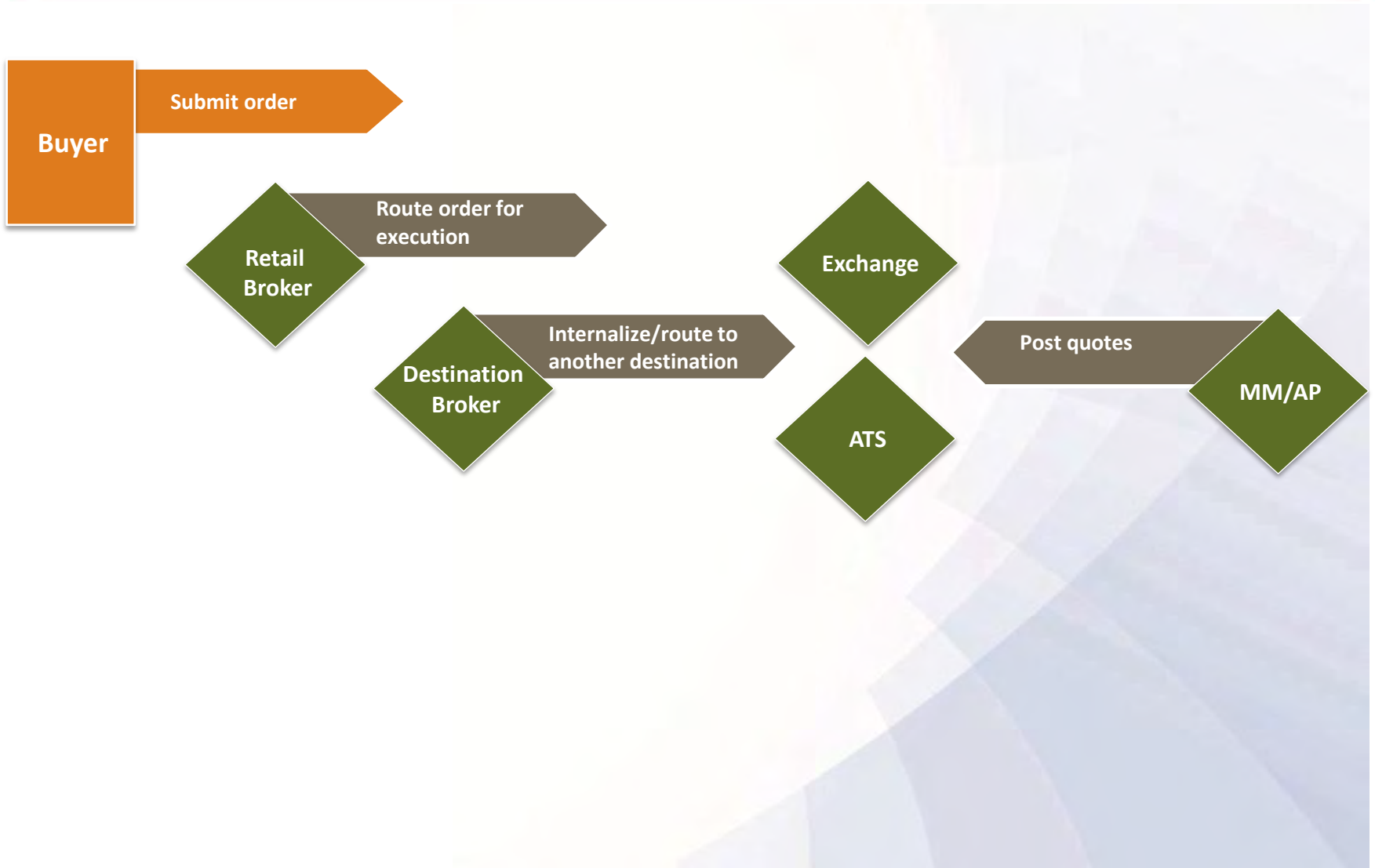
## ETF Fundamentals: *Drivers of Creations or Redemptions*

- **Product seed**
  - Creates initial inventory available for trading
- **Index reconstitution**
  - PM can: (a) buy/sell securities in the portfolio, (b) request custom creations/redemptions from an AP, or (c) do a combination of both
- **Imbalances in the secondary market**
  - Significant flow in one direction trigger APs to cover short positions or unwind long positions
- **Large trades**
  - Often filled with a corresponding creation/redemption
- **Arbitrage**
  - Dislocation between an ETF's share price and fair value of the basket is an opportunity for profit

## ETF Fundamentals: *Participants and Their Roles*

- ETF provider/issuer/sponsor—manages the ETF portfolio
- Transfer agent and registrar—maintain records of ETF share issuance
- Authorized Participant—purchases/redeems shares from an ETF provider in the primary market
- Lead Market Maker—maintains orderly two-sided markets and provides liquidity in specific ETFs
- Investor—buys and sells ETF shares in the secondary market

# ETF Fundamentals: *Order Flow*



# Creation/Redemption: *In-Kind Create*

	T-1	T	T+1	T+2	T+3
ETF Sponsor	<p>Construct and price PCF plus estimated cash (after market close)</p>	<p>Publish PCF through NSCC / Email (using prior night's closing prices)</p>	<p>Publish NAV and actual cash</p> <p>Send/receive trade confirms (for ETF C/R activity and portfolio/basket trades)</p>		<p>Transfer ETF shares in return for basket and cash</p>
AP		<p>Trade basket/hedge for C/R activity</p> <p>Send C/R trades to ETF sponsor by 4pm</p>	<p>Receive trade confirms for ETF C/R activity</p>	<p>Execute F/X trades</p>	<p>Settle basket and F/X transactions</p> <p>Transfer basket and cash in return for ETF shares; settle ETF shares</p>

# Creation/Redemption: *Cash Create with T-1 Cut-Off*

	T-2	T-1	T	T+1	T+2
ETF Sponsor	<p>Construct and price PCF plus estimated cash (after market close)</p>	<p>Publish PCF through NSCC / Email (using prior night's closing prices)</p>	<p>Trade basket for prior day's C/R activity</p> <p>Publish NAV and actual cash</p>	<p>Execute F/X trades</p> <p>Send/receive trade confirms (for ETF C/R activity and portfolio/basket trades)</p>	<p>Transfer ETF shares in return for cash; settle basket and F/X transactions using incoming cash</p>
AP		<p>Conduct market making activity intraday</p> <p>Send C/R trades to ETF sponsor by 4pm</p>		<p>Receive trade confirms for ETF C/R activity</p>	<p>Transfer cash in return for ETF shares</p>

# Creation/Redemption: *Directed Cash Create (T-1 Cut-Off)*

	T-2	T-1	T	T+1	T+2
ETF Sponsor	Construct and price PCF plus estimated cash (after market close)	Publish PCF through NSCC / Email (using prior night's closing prices)	Instruct "designated broker" to trade basket for prior day's C/R activity  Publish NAV and actual cash	Send/receive trade confirms (for ETF C/R activity and portfolio/basket trades)	Transfer ETF shares in return for cash; settle basket and F/X transactions using incoming cash
AP		Conduct market making activity intraday  Send C/R trades to ETF sponsor by 4pm		Receive trade confirms for ETF C/R activity	Transfer cash in return for ETF shares  "True-up" delta between executed basket and PCF + actual cash*
DB			Trade basket as agent of ETF Sponsor	Execute F/X trades  Send trade confirms for basket to ETF Sponsor	

\*Delta typically covered by AP and may reflect difference of commission arrangement between AP and Designated Broker versus ETF Sponsor's standard brokerage arrangement.



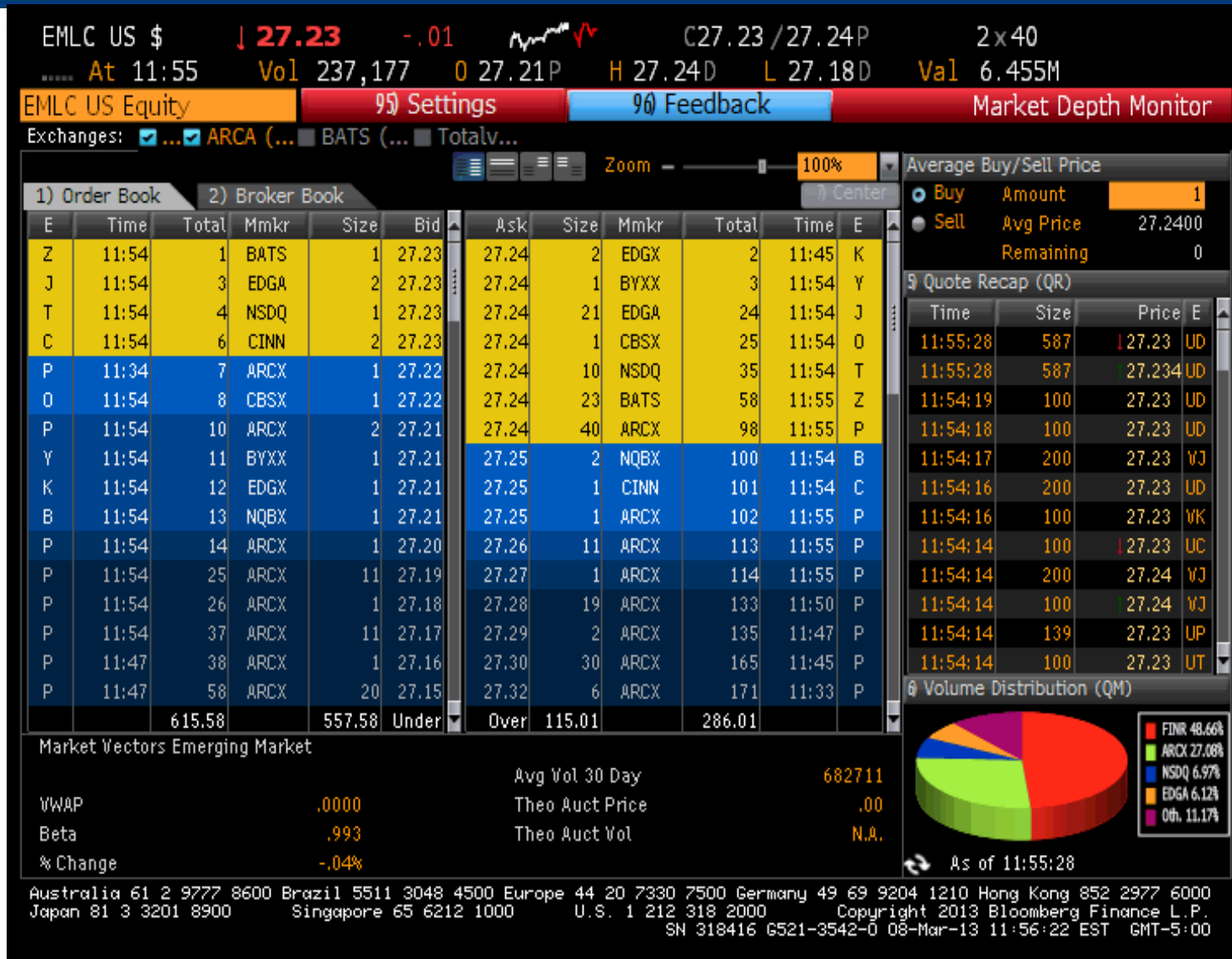
## Assessing an ETF's Liquidity

1. Objective for the trade
2. Timing relative to trading hours for the ETF and its basket constituents
3. Size of trade relative to ETF's volume traded (historical and current)
  - Informs path of execution and cost/impact expectations
4. Current size and depth of national limit order book
5. Potential impact of your trade on ETF's basket constituents (most relevant for large trades)
  - Market impact and other costs of trading the basket

# Volume Traded



# Order Book



# The Basket

**Bond baskets introduce additional nuances into assessing impact and other trading costs**

- 1 CU of EMLC = 200,000 shares (\$5.4m)
- Basket composed of approximately 224 lines in 18 different currencies
- Sourcing challenges

ISIN	Quantity	Face (Local)	USD Equiv	Security Name	Name	Industry Sector	Country	Currency	Last Price	Adj Last Crncy	Amount Outstanding	% of Outstanding
US05964TAE91	211	211,000	108,233	BANSAF 10 1/4 08/08/16	BANCO SAFRA SA	Financial	BRAZIL	BRL	1.9495	0.5130	800,000,000	0.026%
US168863AU21	68689	68,689,000	145,666	CHILE 5 1/2 08/05/20	REPUBLIC OF CHILE	Government	CHILE	CLP	471.5500	0.0021	434,345,000,000	0.016%
XS0213272122	128130	128,130,000	71,140	COLOM 12 10/22/15	REPUBLIC OF COLOMBIA	Government	COLOMBIA	COP	1801.1000	0.0006	2,580,037,040,000	0.005%
XS0244595863	251	251,000	19,812	RENTEN 8 1/2 02/22/16	LANDWIRTSCH. RENTENBANK	Financial	GERMANY	MXN	12.6691	0.0789	1,265,000,000	0.020%
HU0000402524	7727	7,727,000	33,521	HGB 7 06/24/22	HUNGARY GOVERNMENT BOND	Government	HUNGARY	HUF	230.5100	0.0043	534,107,040,000	0.001%
IDG000007204	398954	398,954,000	41,193	INDOGB 11 09/15/25	INDONESIA GOVERNMENT	Government	INDONESIA	IDR	9685.0000	0.0001	26,474,000,000,000	0.002%
XS0553072611	4233	4,233,000	137,503	HYDRRM 7 7/8 10/28/15	RUSHYDRO (RUSHYDRO FIN L	Utilities	IRELAND	RUB	30.7848	0.0325	20,000,000,000	0.021%
MYBMS04003H7	217	217,000	69,865	MGS 5.734 07/30/19	MALAYSIAN GOVERNMENT	Government	MALAYSIA	MYR	3.1060	0.3220	6,500,000,000	0.003%
MX0MGO0000B2	630	630,000	49,727	MBONO 10 11/20/36	MEX BONOS DESARR FIX RT	Government	MEXICO	MXN	12.6691	0.0789	62,448,698,900	0.001%
NGFG6B2019S3	7898	7,898,000	50,067	NIGB 7 10/23/19	NIGERIA TREASURY BOND	Government	NIGERIA	NGN	157.7500	0.0063	188,900,000,000	0.004%
PEP01000CY33	117	117,000	44,943	PERUGB 7.84 08/12/20	PERU BONO SOBERANO	Government	PERU	PEN	2.6033	0.3841	8,830,637,000	0.001%
US718286BM88	2473	2,473,000	60,799	PHILIP 6 1/4 01/14/36	REPUBLIC OF PHILIPPINES	Government	PHILIPPINES	PHP	40.6750	0.0246	54,770,000,000	0.005%
PL0000106670	230	230,000	72,313	POLGB 5 3/4 10/25/21	POLAND GOVERNMENT BOND	Government	POLAND	PLN	3.1806	0.3144	21,848,426,000	0.001%
RO1215DBN073	65	65,000	19,389	ROMGB 5.8 10/26/15	ROMANIA GOVERNMENT BOND	Government	ROMANIA	RON	3.3524	0.2983	6,544,300,000	0.001%
RU000A0JS4M5	1427	1,427,000	46,354	RFLB 7 1/2 02/27/19	RUSSIA GOVT BOND - OFZ	Government	RUSSIA	RUB	30.7848	0.0325	143,779,276,000	0.001%
XS0207459594	5037	5,037,000	21,852	EIB 6 1/2 01/05/15	EUROPEAN INVESTMENT BANK	Government	SUPRANATIONAL	HUF	230.5100	0.0043	59,500,000,000	0.008%
ZAG000066697	796	796,000	87,303	ESKOM 9 1/4 04/20/18	ESKOM HOLDINGS LIMITED	Utilities	SOUTH AFRICA	ZAR	9.1177	0.1097	10,000,000,000	0.008%
XS0304158255	160	160,000	12,629	KOMINS 7.2 07/07/14	KOMMUNINVEST I SVERIGE	Government	SWEDEN	MXN	12.6691	0.0789	300,000,000	0.053%
TH0623A3S305	1004	1,004,000	33,748	THAIGB 5 1/8 03/13/18	THAILAND GOVERNMENT BOND	Government	THAILAND	THB	29.7500	0.0336	86,632,000,000	0.001%
TH062303T609	997	997,000	33,513	THAIGB 3 7/8 06/13/19	THAILAND GOVERNMENT BOND	Government	THAILAND	THB	29.7500	0.0336	126,994,000,000	0.001%
TRT150120T16	129	129,000	71,452	TURKGB 10 1/2 01/15/20	TURKEY GOVERNMENT BOND	Government	TURKEY	TRY	1.8054	0.5539	11,547,000,000	0.001%

Source: VanEck, Knight.  
Data was compiled on March 8, 2013.

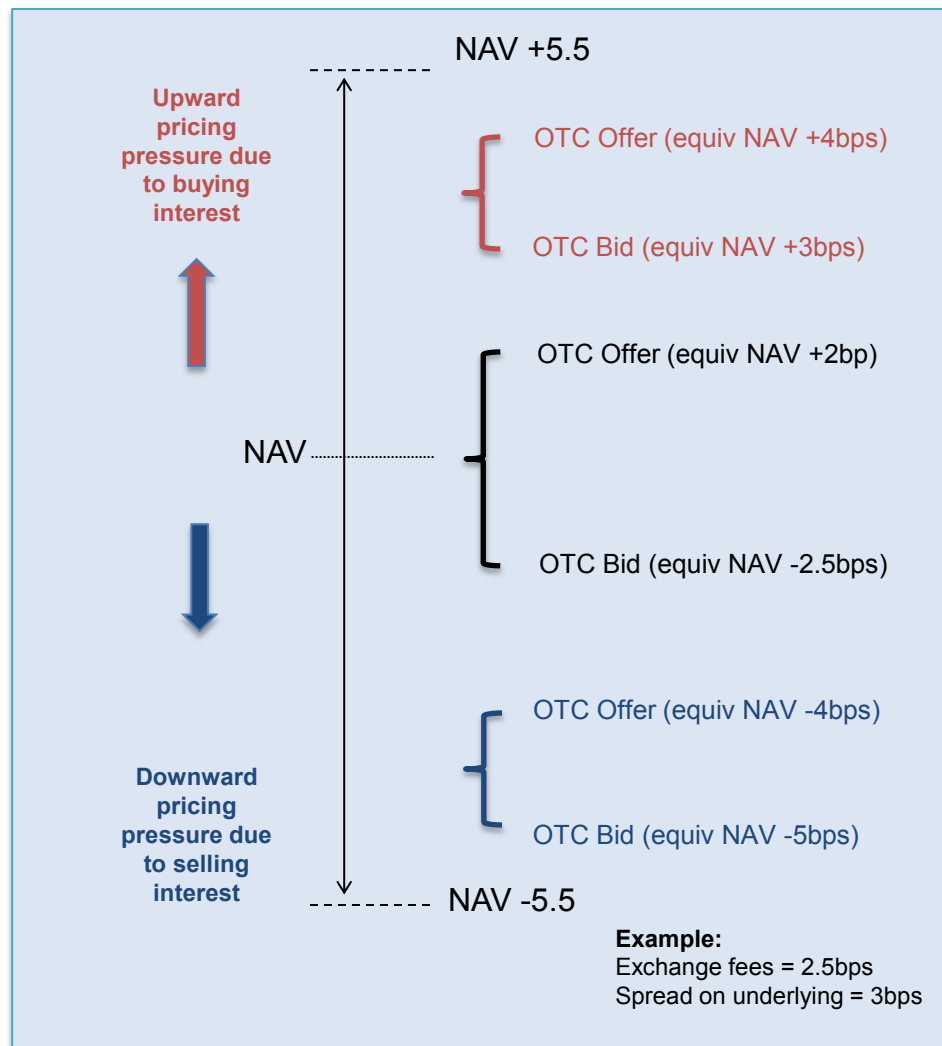
# How an ETF Trades Relative to NAV

*ETFs tend not to trade at NAV but rather within or around a “Fair Value Band”*

The “Fair Value Band” sits around the intraday NAV of a fund and is affected by the following factors:

- Spread of underlying assets
- Commission charges on underlying assets
- Taxation of the underlying
  - Effects of tax on shares
  - Effects of tax on currency
- Creation / Redemption charges
- Size of Creation / Redemption unit
- Variability of hedging results in process

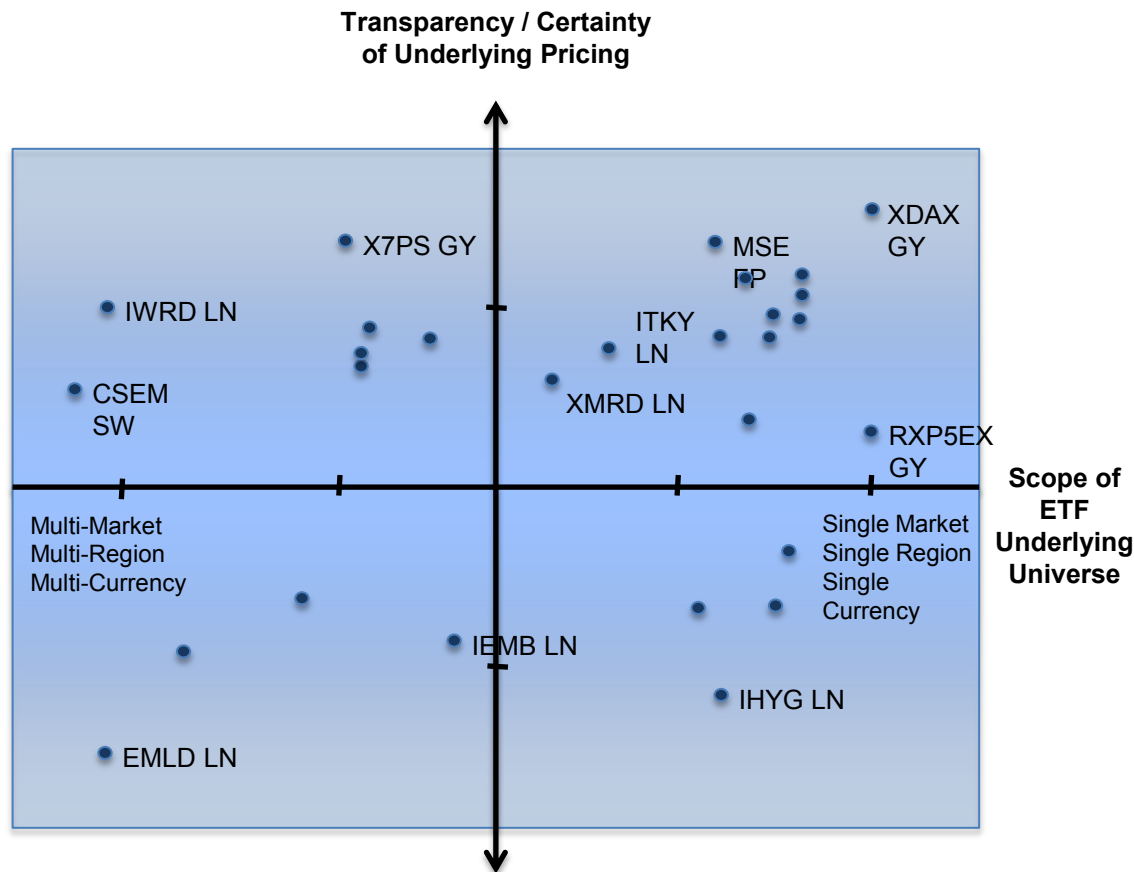
Propensity for trades to occur inside the fair value band dependent on many factors; ETF share turnover and competitive market making forces are most significant factors



# Is INAV a True Indication of Fair Value?

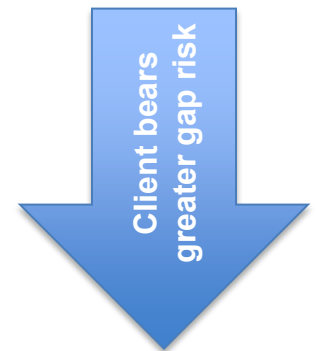
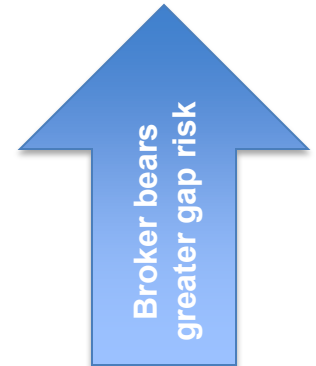
## Key questions with respect to INAV calculations:

- Do the underlying assets price transparently?
  - Equities have transparency while markets are open
  - Bonds have very little public transparency
- Are the assets part of a single market, a single currency?
  - Single currency and single market has less room for error
  - Multiple currencies, regions and markets are prone to error and timing complexity
- Is the INAV independently calculated by an exchange or an index provider?
- Does the calculation involve proxy settings for markets that are not open?



# Interdependencies of Execution Path, Risk, and Cost

<i>Implementation Strategy</i>	<i>Points of Consideration</i>
<b>Risk markets</b>	<ul style="list-style-type: none"> <li>- Certainty of execution price (lowest gap risk for investor)</li> <li>- Broker bears the risk of hedging the position (risk premium for this)</li> <li>- Tighter spreads during certain liquidity peaks in trading day</li> </ul>
<b>Standard order types / hybrid</b>	<ul style="list-style-type: none"> <li>- Some control over either time or price, not both</li> <li>- Alternative trading strategies via underlying basket may be available</li> </ul>
<b>NAV-based</b>	<ul style="list-style-type: none"> <li>- Highest gap risk for investor</li> <li>- Final price not known until NAV is disclosed – normally T+1 at earliest, sometimes 2-3 days</li> <li>- Client usually pays full creation / redemption costs</li> </ul>



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