



ETF Market Overview

Deutsche Bank ETF Research

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March 2011

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Agenda



1. Deciphering the letters
2. ETP market overview
3. ETFs, benchmark indices valuation and data
4. ETFs & tracking error
5. ETF liquidity: Creation & measurement



Deciphering the letters

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ETP coverage universe



- Exchange-traded products (ETPs) are secure (funded or collateralized) open-ended delta-one exchange-traded equity or debt instruments with no embedded optionality and market-wide appeal to investors.
- ETPs = ETFs (90%) + US ETVs (8%) + European ETCs (2%)

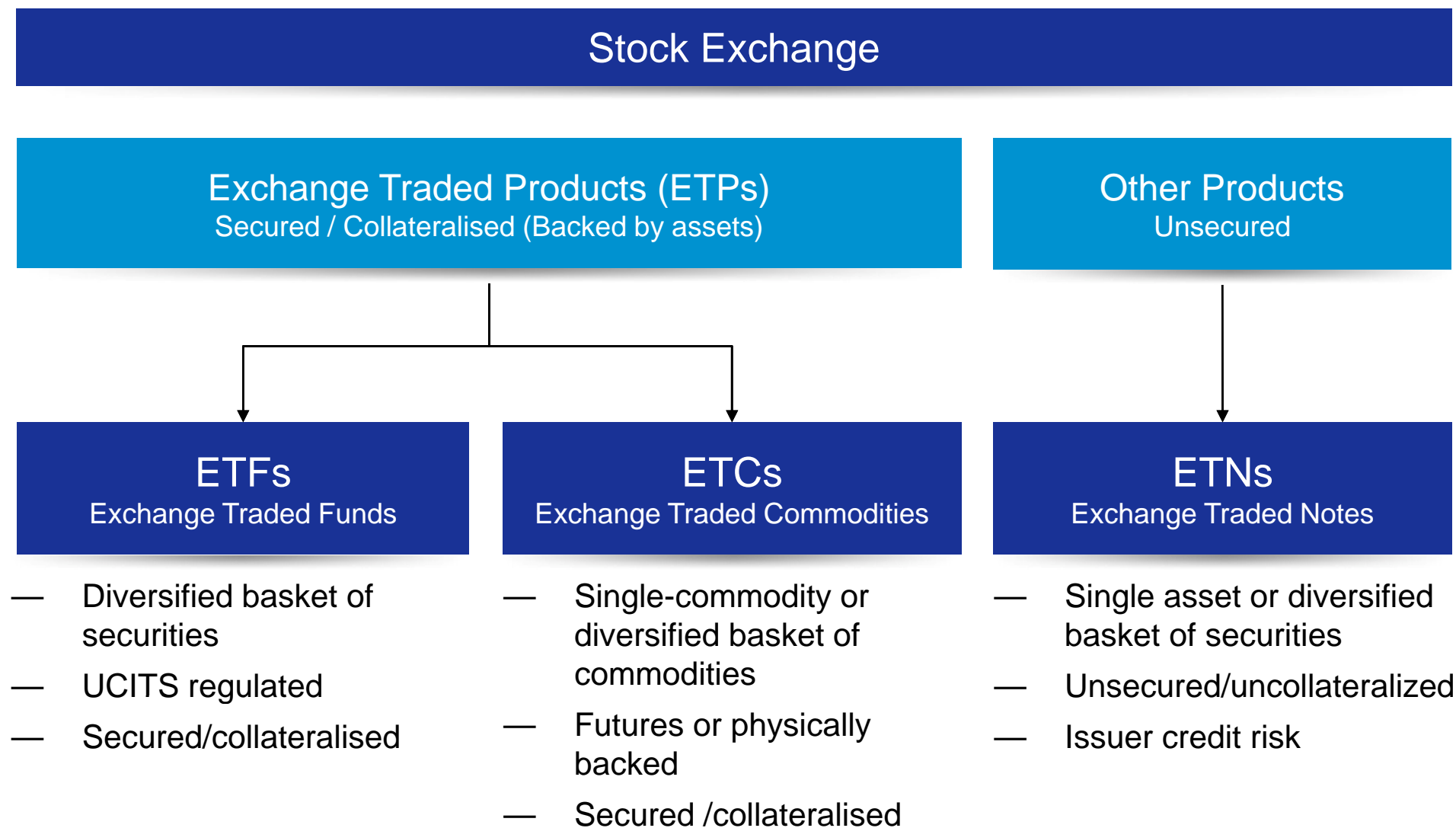
Region	ETPs			ETFs			ETCs (Europe), ETVs (US)		
	Products	US\$ Mil.	%	Products	US\$ Mil.	%	Products	US\$ Mil.	%
US	969	997,114	71.7%	896	889,367	63.9%	73	107,747	7.7%
Europe	1,368	308,651	22.2%	1,088	282,462	20.3%	280	26,189	1.9%
Asia	305	85,599	6.2%	303	85,584	6.2%	2	15	0.0%
Global	2,642	1,391,364	100.0%	2,287	1,257,414	90.4%	355	133,951	9.6%

- ETNs (exchange-traded notes) are senior unsecured delta-one debt instruments whose value is linked to a benchmark index's return stream. These primarily include include ETNs and exchange-traded certificates.

Region	Total			Equity			Fixed Income			Commodity & Alternatives		
	Products	US\$ Mil.	%	Products.	US\$ Mil.	%	Products	US\$ Mil.		Products	US\$ Mil.	
ETNs (30/6/10)												
US	81	9,879	5.2%	18	2,339	1.2%	0	-	0.0%	63	7,540	4.0%
Europe	192	68	0.0%	9	67	0.0%	0	-	0.0%	183	1	0.0%
Asia	-	-	0.0%	0	-	0.0%	0	-	0.0%	-	-	0.0%
Israel	404	69,716	36.7%	NA	NA	NA	NA	NA	NA	NA	NA	NA
	677	79,663	41.9%	27	2,406	1.3%	0	-	0.0%	246	7,541	4.0%
Exchange Traded Certificates (31/3/10)												
Germany	157,138	110,254	58.1%	153,972	56,688	29.8%	1,399	49,783	26.2%	1,767	3,783	2.0%
Total	157,815	189,917	100.0%	153,999	59,094	31.1%	1399	49,783.00	26.2%	2,013	11,324	6.0%

Source: Deutsche Bank AG, Bloomberg, Reuters, Deutscher Derivative Verband

Terminology: ETPs vs. ETFs vs. ETCs vs. ETNs





Exchange Traded Commodities (ETCs)

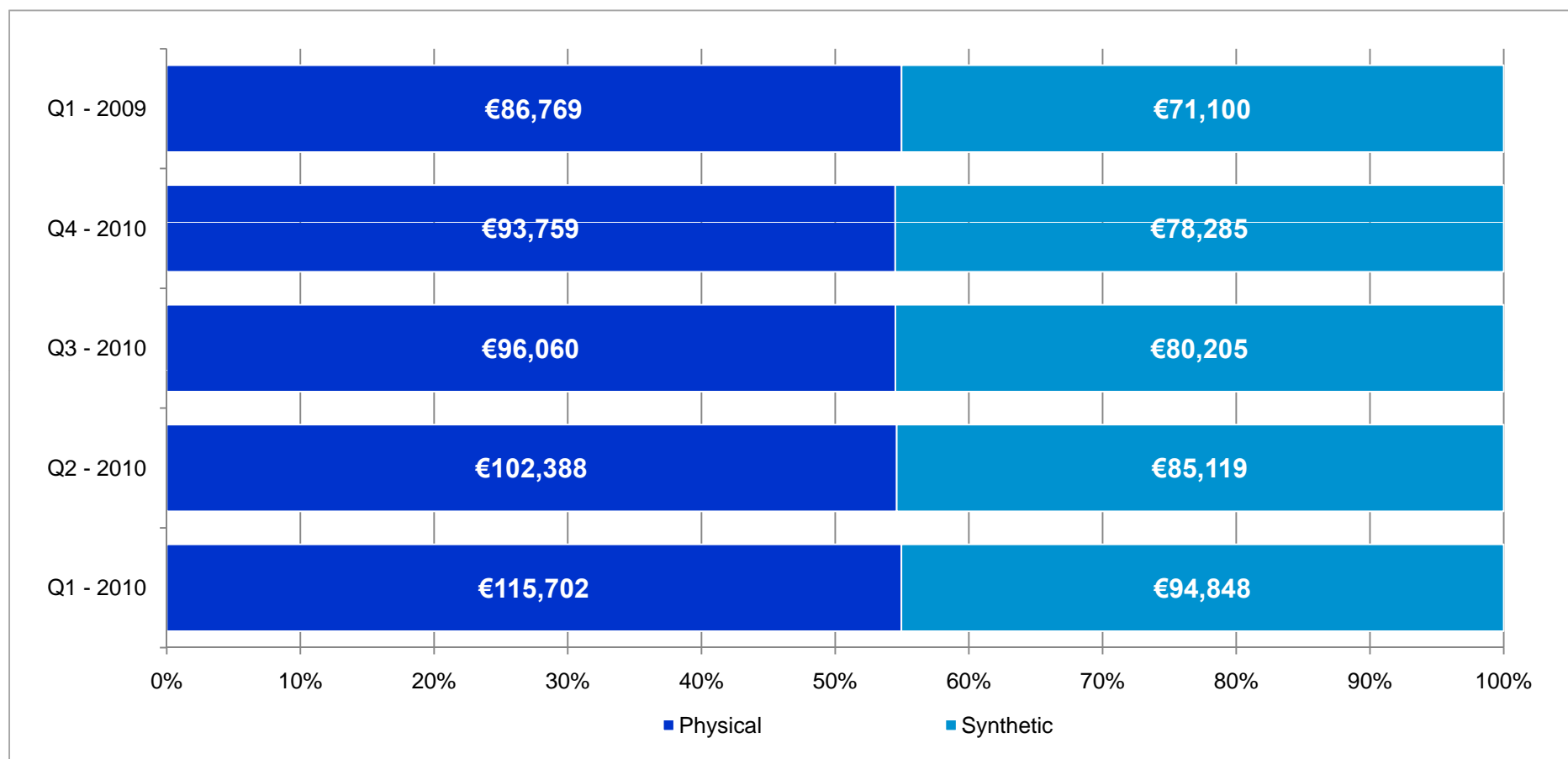
Physically backed (eg precious metals)

- Tracks the “spot” price
- For products that can be physically stored
- Secured by the underlying precious metal deposited with the custodian

Synthetic backed (agriculture, energy, metals)

- Tracks the “future” price
- For products that cannot be physically stored
- Typically secured by liquid assets (equities, bonds, gold) deposited with a custodian

European ETF AUM split - physical and synthetic



Source: Deutsche Bank AG as of 31 December 2010.



ETP market overview

2010/2011 ETP Market Review & Outlook:

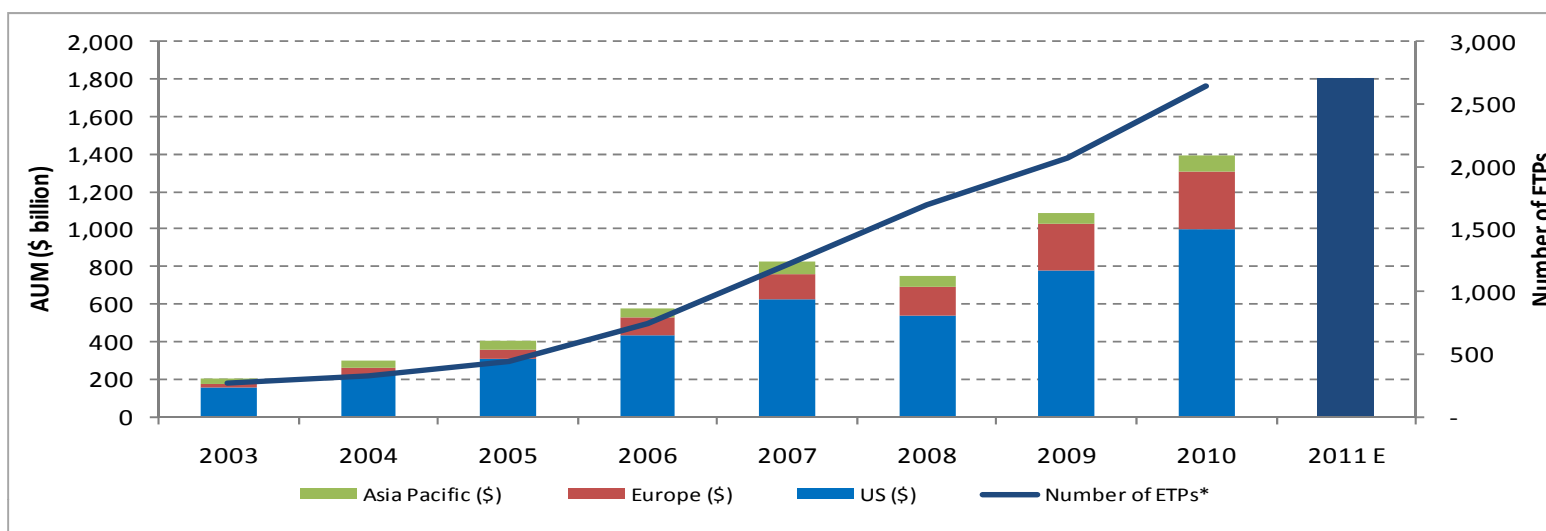
ETFs walk an equity-able path towards \$1.8 trillion in 2011

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Historical ETP AUM



ETP market review and outlook



AuM	2003	2004	2005	2006	2007	2008	2009	2010
US (\$)	149.9	225.9	306	431.4	625.9	539.2	781.3	997.1
		51%	35%	41%	45%	-14%	45%	28%
Number of ETPs*	134	169	220	376	647	760	836	969
Europe (€)	16.3	24.3	43.3	70	92.1	104.4	169.7	230.1
		49%	78%	62%	32%	13%	63%	36%
Number of ETPs*	100	115	166	300	476	741	997	1,368.00
Asia Pacific (\$)	34.8	39.9	42.8	52.6	62.7	52.5	65.5	85.6
		15%	7%	23%	19%	-16%	25%	31%
Number of ETPs*	35	40	47	64	99	186	229	305
US, Europe, Asia Pacific (\$)	205.3	298.8	400.1	576.3	823.1	744.7	1,090.10	1,391.40
		46%	34%	44%	43%	-10%	46%	28%
Number of ETPs*	269	324	433	740	12,222.00	1,687.00	2,062.00	2,642.00

Source: Deutsche Bank as of 31/12/2010

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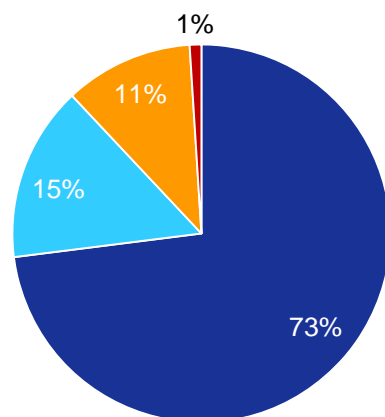
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ETP industry

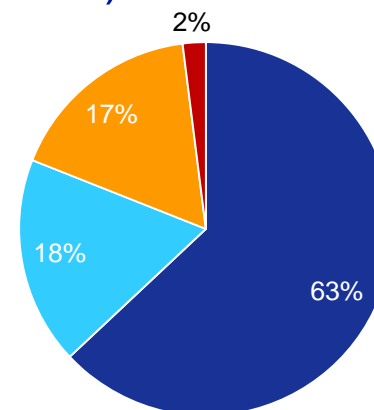


Asset class analysis

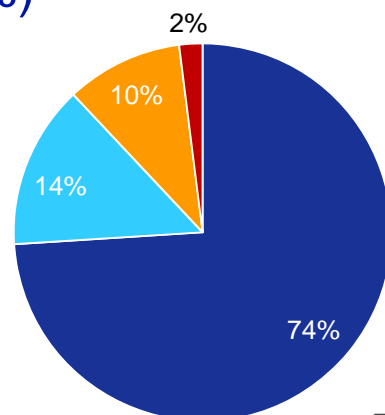
Global



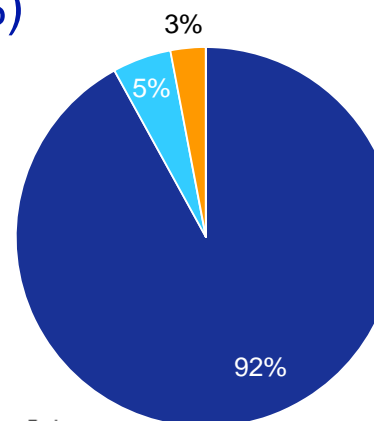
Europe (22%)



USA (72%)



Asia (6%)



■ Equity ■ Fixed Income ■ Commodity ■ Other

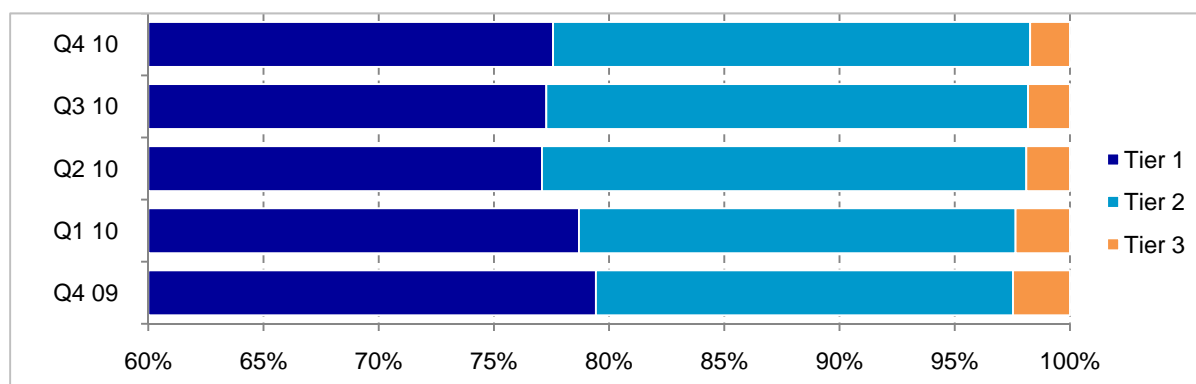
Source: Deutsche Bank as of 31/12/2010

Top 5 ETP Providers in Europe – 31/12/10



AUM Rank	10-Q4 AUM (\$ million)	Equity	Fixed Income	Comm.	Other	Q4-10 Total	Market Share	2009	10-Q1	10-Q2	10-Q3
1	BlackRock	73,076	26,895	615	158	100,744	32.60%	85,093	85,254	77,173	91,675
2	Lyxor	39,954	9,546	1,900	65	51,465	16.70%	45,023	45,780	40,831	46,294
3	Deutsche Bank AG	34,015	10,588	2,746	2,026	49,375	16.00%	37,831	38,733	35,388	44,629
4	ETF Securities Ltd	694	0	21,195	284	22,174	7.20%	15,667	15,146	17,906	19,375
5	Credit Suisse AM	12,033	1,802	1,815	0	15,650	5.10%	9,593	11,332	10,762	13,275
Total Top 5		159,772	48,831	28,272	2,533	239,408	77.60%	193,207	196,245	182,060	215,249
Other		37,290	7,943	23,593	416	69,243	22.40%	50,029	53,143	54,119	63,297
Total		197,062	56,774	51,865	2,950	308,651	100.00%	243,236	249,388	236,180	278,546

Tier	Tier 1	Tier 2	Tier 3
Providers	8	7	20
Q4 09	79.4%	18.1%	2.5%
Q1 10	78.7%	19.0%	2.4%
Q2 10	77.1%	21.0%	1.9%
Q3 10	77.3%	20.9%	1.8%
Q4 10	77.6%	20.7%	1.7%



Source: Deutsche Bank AG as of 31 December 2010.

ETF Providers



Product RankingTable -ETF												
All figures in million € except Products			AUM		Cash Flow			Products			Market Share	
Product	Issuer	Current Week	End of 2010	Diff.	Current Week	Prev. Week	YTD	Current Week	End of 2009	Diff.	AUM	Products
iShares	BlackRock	76,245	75,096	2%	341	530	913	181	181	0%	35.60%	16.50%
Lyxor ETF	Lyxor	39,241	38,363	2%	2	-33	-129	166	164	1%	18.30%	15.20%
db X-trackers	Deutsche Bank AG	36,420	35,963	1%	425	81	427	173	173	0%	17.00%	15.80%
CS ETF	Credit Suisse AM	11,378	11,666	-2%	-36	77	-25	54	54	0%	5.30%	4.90%
ZKB	Zuercher Kantonalbank	8,296	8,869	-6%	17	20	68	4	4	0%	3.90%	0.40%
Comstage ETF	ComStage	6,471	6,342	2%	8	-	59	89	89	0%	3.00%	8.10%
Amundi ETF	Amundi	5,865	5,330	10%	148	237	385	95	95	0%	2.70%	8.70%
ETFlab	ETFlab Investment GmbH	5,245	5,031	4%	364	-239	120	35	35	0%	2.50%	3.20%
UBS ETF	UBS	4,987	4,896	2%	84	16	121	31	29	7%	2.30%	2.80%
EasyETF	BNP Paribas	4,361	4,182	4%	93	-6	112	65	65	0%	2.00%	5.90%
Source ETF	Source	4,275	3,682	16%	418	138	527	57	56	2%	2.00%	5.20%
Julius Baer	Julius Baer Inv	3,036	3,168	-4%	29	42	75	4	4	0%	1.40%	0.40%
XACT	Xact Fonder AB	2,399	2,373	1%	-6	32	35	20	20	0%	1.10%	1.80%
RBS	Royal Bank of Scotland plc	987	1,020	-3%	-	-	-	10	10	0%	0.50%	0.90%
PowerShares	PowerShares	956	923	4%	22	2	25	19	19	0%	0.40%	1.70%
BBVA	BBVA Gestion SA SGIIC	859	828	4%	8	-	8	8	6	33%	0.40%	0.70%
SPDR	State Street GA	789	787	0%	-7	-5	-12	13	13	0%	0.40%	1.20%
HSBC	HSBC	671	584	15%	67	49	116	13	13	0%	0.30%	1.20%
ETFX	ETF Securities Ltd	591	593	0%	10	15	11	26	26	0%	0.30%	2.40%
Marshall Wace ETF	Marshall Wace LLP	251	247	2%	0	-	0	1	1	0%	0.10%	0.10%
Other		661	608	9%	-	2	-2	31	31	0%	0.30%	2.80%
Total		213,983	210,550	2%	1,988	960	2,838	1,095	1,088	1%	100.00%	100.00%

Source: Deutsche Bank AG as of 21 January 2011.

Deutsche Bank

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ETF cash flow analysis by Provider and by asset class



AUM Rank	10-Q4 Net Cashflow (\$ million)	Equity	Fixed Income	Comm.	Other	Q4-10 Total	2009	10-Q1	10-Q2	10-Q3	2010	Y to Y Difference
1	BlackRock	5,510	207	95	7	5,819	3,179	1,634	2,364	3,087	12,904	9,726
3	Deutsche Bank AG	2,436	112	334	126	3,007	3,197	1,890	898	4,073	9,869	6,672
2	Lyxor	5,530	- 471	44	-	5,103	2,143	1,794	1,137	- 695	7,339	5,196
5	Credit Suisse AM	1,161	103	102	-	1,365	1,803	1,501	434	1,101	4,401	2,598
4	ETF Securities Ltd	95	-	474	142	710	198	- 24	1,976	279	2,941	2,743
Total Top 5		14,731	- 49	1,048	16,279	16,005	10,519	6,795	6,809	7,846	37,454	26,934
Other		- 280	553	1,129	1,429	1,416	4,073	4,085	5,708	1,472	12,680	8,607
Total		14,451	504	2,178	288	17,421	14,593	10,879	12,516	9,318	50,134	35,542

Source: Deutsche Bank AG as of 31 December 2010.

European on-exchange ETF turnover



All Exchange-Traded Products (All figures in million)											
Summary	Q409	Market Share %	Q110	Market Share %	Q210	Market Share %	Q310	Market Share %	Q410	Market Share %	YoY growth
Deutsche Borse	560.8	34.0%	622.6	33.5%	787.6	32.4%	530.4	30.7%	564.9	28.7%	4
London SE	272.1	16.5%	329.3	17.7%	393.4	16.2%	343.8	19.9%	407.2	20.7%	135
NYSE Euronext Paris	261.5	15.9%	297.8	16.0%	430.8	17.7%	274.9	15.9%	329.0	16.7%	67
Borsa Italiana	242.4	14.7%	272.9	14.7%	366.4	15.1%	269.7	15.6%	305.7	15.5%	63
Swiss SE	149.2	9.1%	168.9	9.1%	211.9	8.7%	159.0	9.2%	208.6	10.6%	59
Stockholmborsen	49.4	3.0%	45.2	2.4%	85.7	3.5%	57.3	3.3%	60.4	3.1%	11
NYSE Euronext Amsterdam	42.1	2.6%	53.1	2.9%	72.2	3.0%	42.4	2.5%	49.0	2.5%	7
Oslo Bors	58.3	3.5%	52.7	2.8%	57.5	2.4%	40.2	2.3%	38.0	1.9%	-20
BME	8.8	0.5%	13.8	0.7%	20.8	0.9%	8.2	0.5%	6.9	0.4%	-2
Helsinki SE	1.3	0.1%	1.0	0.1%	1.3	0.1%	1.1	0.1%	0.8	0.0%	-1
Vienna SE	0.1	0.0%	0.3	0.0%	0.2	0.0%	0.1	0.0%	0.2	0.0%	0
Athens SE	0.4	0.0%	0.3	0.0%	0.3	0.0%	0.0	0.0%	0.2	0.0%	0
NYSE Euronext Brussels	0.4	0.0%	0.2	0.0%	0.2	0.0%	0.1	0.0%	0.1	0.0%	0
Irish SE	0	0.0%	0.1	0.0%	0.4	0.0%	0.1	0.0%	0.1	0.0%	0
Luxemburg SE	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0
SWX Europe	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0
Total	1,647	100.0%	1,858	100.0%	2,429	100.0%	1,727	100.0%	1,971	100.0%	

Source: Deutsche Bank AG as of 31 December 2010.

On exchange vs. OTC ETF turnover



Month	OTC -Traded Products (All figures in million)								
	Deutsche Borse Turnover (€m)			SIX Swiss Exchange Turnover (€m)			London Stock Exchange (€m)		
	On Exchange	OTC	OTC % of Total	On Exchange	OTC	OTC % of Total	On Exchange	OTC	OTC % of Total
Jan-10	13,053	19,407	60%	2,752	974	26%	4,062	5,128	56%
Feb-10	13,037	24,186	65%	2,923	901	24%	3,775	5,980	61%
Mar-10	11,659	21,151	64%	2,877	1,009	26%	3,925	4,136	51%
Apr-10	13,594	46,446	77%	2,907	657	18%	4,134	4,429	52%
May-10	20,345	84,822	81%	5,266	797	13%	6,030	7,837	57%
Jun-10	13,368	36,951	73%	3,614	1,301	26%	4,756	6,454	58%
Jul-10	11,872	26,980	69%	2,661	1,219	31%	4,245	5,333	56%
Aug-10	11,047	25,697	70%	2,694	737	21%	3,996	4,736	54%
Sep-10	10,603	24,627	70%	2,992	927	24%	4,497	4,497	50%
Oct-10	10,884	29,540	73%	3,394	1,150	25%	5,067	5,695	53%
Nov-10	13,431	29,021	68%	4,041	1,069	21%	5,787	9,600	62%
Dec-10	NA	NA	NA	3,648	1,411	28%	4,494	5,668	56%
Total	273,118	564,894	67%	64,691	20,110	24%	97,832	108,282	53%

Source: Deutsche Bank AG 31 December 2010.



ETFs, benchmark indices valuation and data

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Index and ETF Pricing



Index pricing

- Priced once a day
- A number of generic assumptions taken into consideration (for example: dividend tax rate, dividend reinvestment timelines etc)

ETF Pricing: NAV and intra-day price, not the same

- NAV pricing – once a day by the fund's accountant
- On exchange pricing – continuous throughout the day, determined by supply and demand
- Arbitrageurs ensure that end of day share price and NAV are very close
- ETF end of day price and NAV often slightly diverge

Key ETF replication techniques



Physical

The fund holds a basket of physical securities that closely mirrors the benchmark index composition:

- 100% - Very close to index composition
- Sampling - Sample which historically generated fairly closely the benchmark index's performance

Synthetic

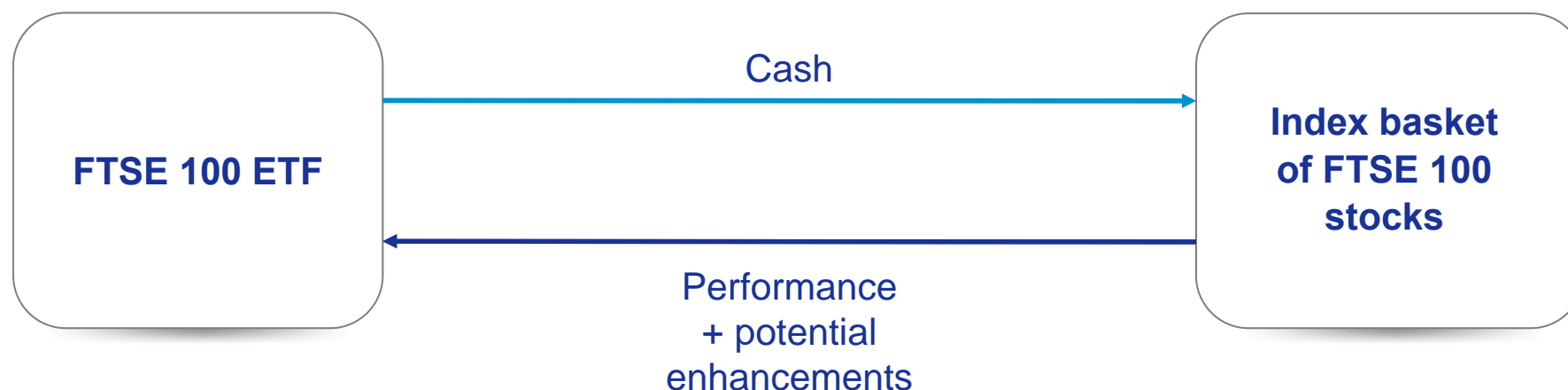
The fund may invest:

- In a basket of physical securities that may resemble its benchmark index composition, and in addition it will enter into a total return swap (TRS)
- In a fully funded TRS which is collateralized by the swap counterparty



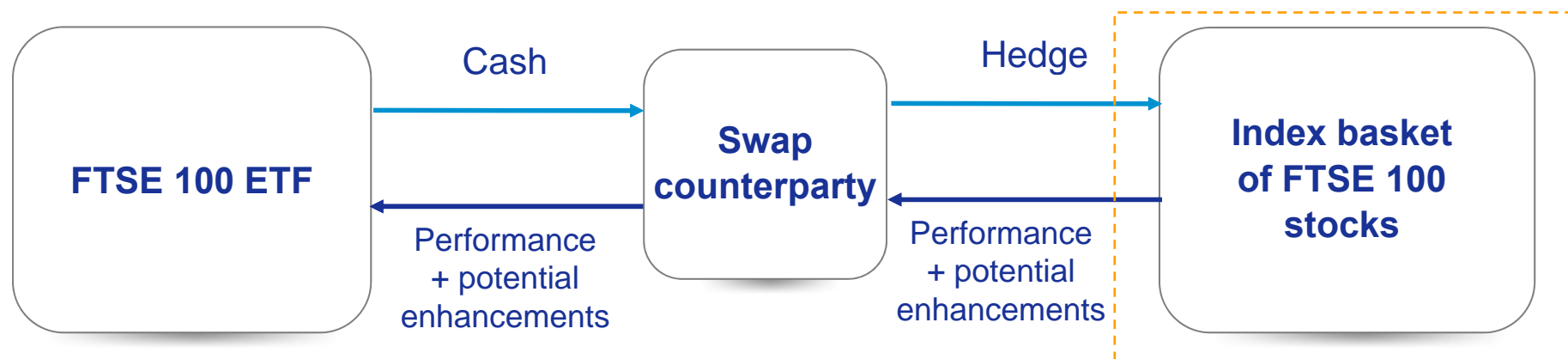
UCITS limits the TRS to a max 10% of a fund's NAV

Physical replication with enhancements – FTSE 100



—NAV pricing = Index mirror portfolio of securities

Synthetic replication with enhancements – FTSE 100

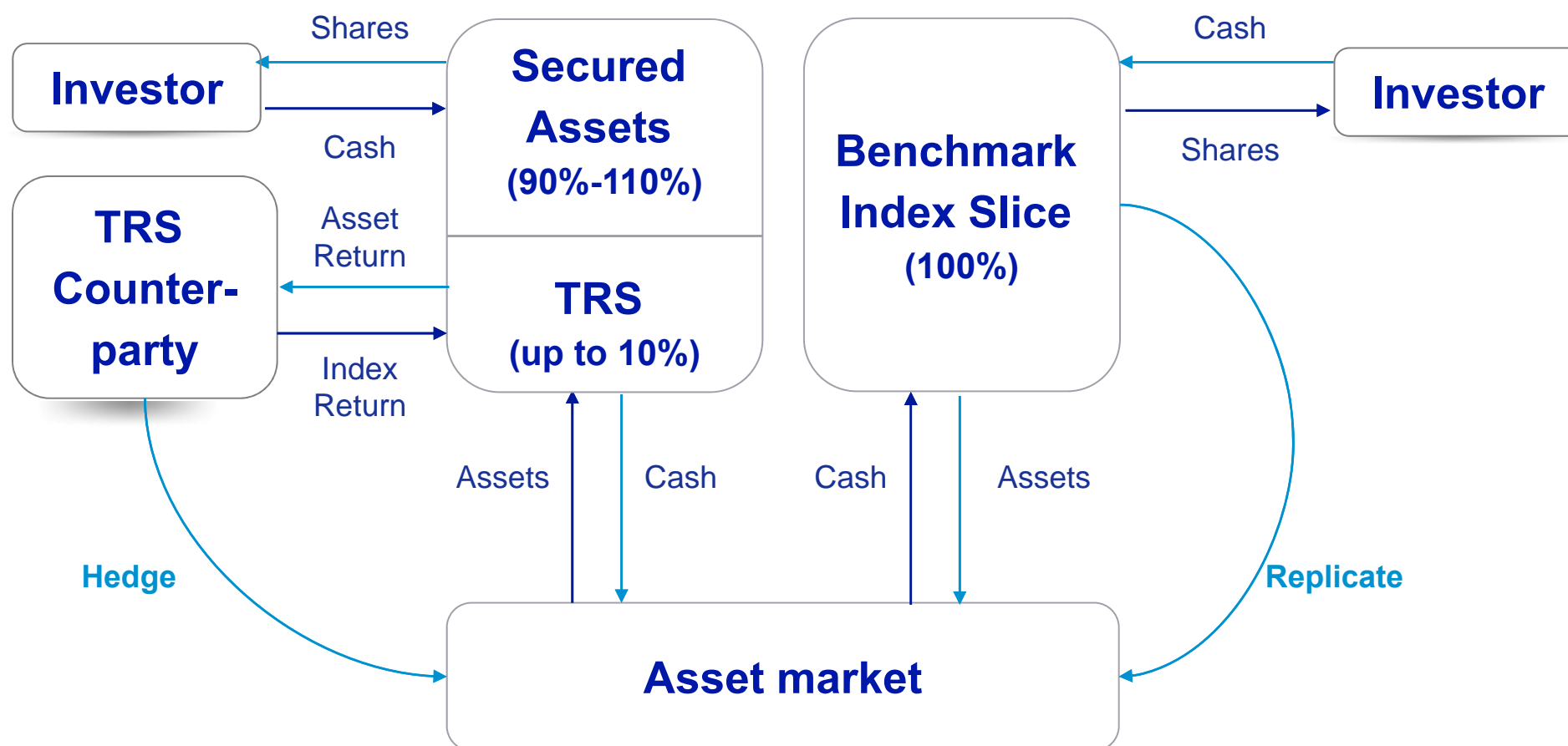


$\geq 90\%$ of
prevailing NAV

$\leq 10\%$ of
prevailing NAV

—NAV pricing = Collateral + TRS (marked to market)

ETF liquidity construction: physical vs. synthetic replication



Source: Deutsche Bank AG



ETFs and tracking error

Do ETF trackers track? European equity ETF tracking error under the microscope

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Tracking Error & ETFs



What is tracking error?

- It is the divergence between the price behaviour of an ETF (or other portfolio) and the price behaviour of its benchmark, reported as an annualized standard deviation percentage.

What did our study look at?

- 59 European equity ETFs.
- Developed Market benchmarked ETFs: 47.
- Emerging market benchmarked ETFs: 12.
- Major DM benchmarks: Euro Stoxx 50, DAX, FTSE 100, CAC40, SMI, S&P500, MSCI Europe, MSCI World.
- Major EM benchmarks: MSCI Emerging Markets, MSCI Brazil, FTSE BRIC 50, FTSE/Xinhua China 25, S&P CNX Nifty India, MSCI Korea, MSCI LATAM, MSCI EM Asia.
- Physically replicated ETFs: 33.
- Synthetically replicated ETFs: 26.
- ETFs issued by 12 different European providers.
- Period from 2008 to 30/7/2010, using daily data points.
- Our study covered approximately 40% of European equity ETF assets (as of 30/7/10).

ETF tracking error sources



- Both underperformance and outperformance can cause tracking error.
- Outperformance is as problematic as underperformance when it comes to tracking error.
- We have identified seven tracking error sources, which could have a positive (+) or negative (-) impact on an ETF's performance:
 - Cash drag (+/-)
 - Securities lending (+)
 - Dividend tax enhancements (+/-)
 - Dividend reinvested assumptions (+/-)
 - ETF portfolio holdings variations (+/-)
 - Sampling (physical replication)
 - Swap payout calculation (synthetic replication)
 - Regulator constraints
 - Transaction costs (-), for example TER
 - Operations/pricing risk (+/-)

Key tracking error study findings - 1



1. European equity ETFs track their respective indices very closely, in the large majority of cases.
2. There is a positive relationship between ETF tracking error and underlying benchmark volatility.

Average metrics	2008			2009			2010 - Q210		
	Average ^{1,2} ETF Tracking Error	Bmk ³ Volatility	ETFs Nu.	Average ^{1,2} ETF Tracking Error	Bmk ³ Volatility	ETFs Nu.	Average ^{1,2} ETF Tracking Error	Bmk ³ Volatility	ETFs Nu.
All benchmarks	0.57%	47.13%	41	0.39%	30.18%	53	0.30%	23.48%	59
DM benchmarks - All	0.41%	37.00%	29	0.23%	24.88%	41	0.21%	21.11%	47
EM benchmarks - All	0.98%	56.13%	12	0.95%	34.89%	12	0.67%	25.57%	12
DM benchmarks - Physical	0.55%	37.00%	18	0.31%	24.88%	21	0.26%	21.11%	26
DM benchmarks - Synthetic	0.18%	37.00%	11	0.14%	24.88%	20	0.13%	21.11%	21
EM benchmarks - Physical	1.60%	56.13%	7	1.57%	34.89%	7	1.09%	25.57%	7
EM benchmarks - Synthetic	0.11%	56.13%	5	0.07%	34.89%	5	0.09%	25.57%	5
DM benchmarks - All - Min	0.01%	32.34%	NA	0.01%	19.79%	NA	0.01%	15.88%	NA
DM benchmarks - All - Max	3.89%	40.05%	NA	1.30%	28.13%	NA	0.76%	27.89%	NA
EM benchmarks - All - Min	0.03%	40.46%	NA	0.04%	26.39%	NA	0.03%	17.81%	NA
EM benchmarks - All - Max	5.76%	69.52%	NA	3.19%	40.63%	NA	2.72%	31.97%	NA

1 Average tracking error based on number of ETFs, not AUM-weighted.

2 Due to varying launch dates not all ETFs will have comparable performance history.

3 Annualized benchmark volatility, based on full calendar year daily data points.

Source: Deutsche Bank AG.

Key tracking error study findings - 2



3. Volatility drivers are the key to evaluating tracking error:
 - a) Benchmark constituent illiquidity
 - b) Multi-country or multi-currency index constituents
 - c) Large number of benchmark constituents
 - d) Changing correlations
4. There is no free lunch, capturing benchmark returns inevitably carries costs; the question is what are those relevant costs and their mitigants
5. Synthetic ETFs, especially when tracking benchmarks with higher volatility – such as emerging markets – offer better tracking.

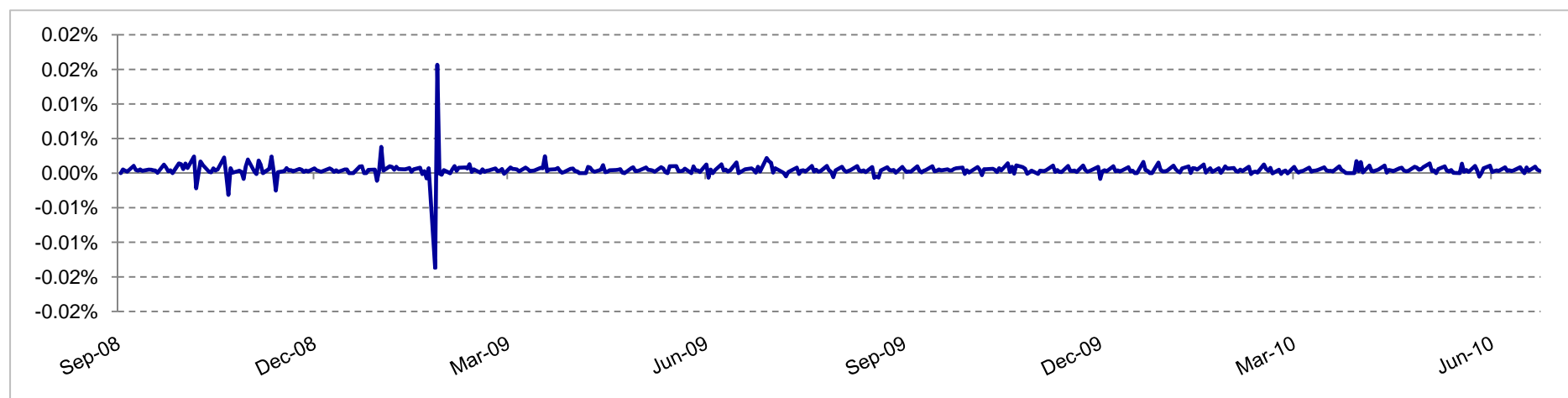
	Annualized period average TE	Replication technique	Benchmark type
Lowest	0.09%	Synthetic	EM
	0.15%	Synthetic	DM
	0.37%	Physical	DM
Highest	1.42%	Physical	EM

Source: Deutsche Bank AG.

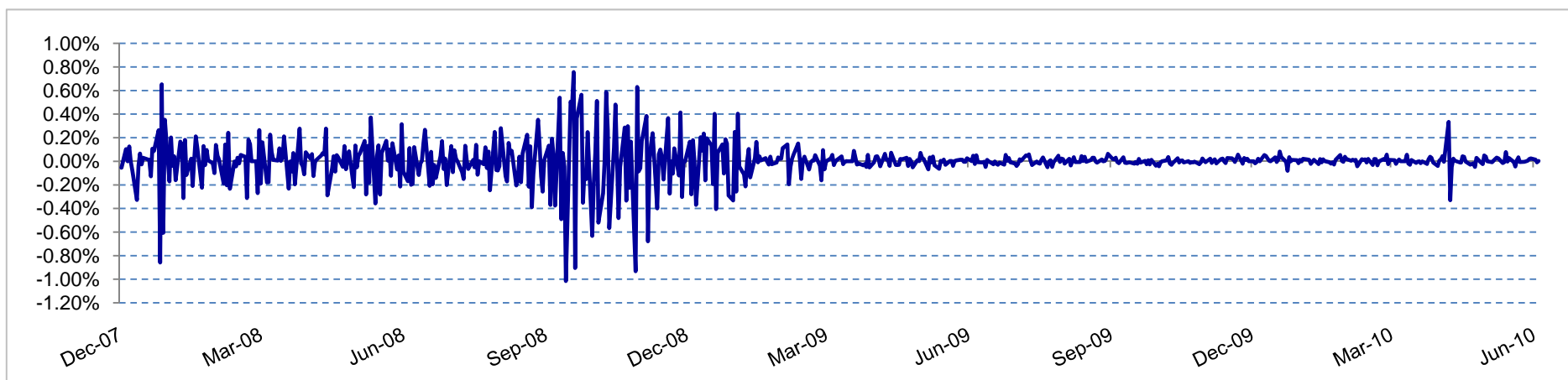
Typical daily ETF/Index return differential patterns



Low tracking error pattern



High tracking error pattern



Source: Deutsche Bank AG, Bloomberg Finance LP.

Conclusions & high level results summary



Low	Medium	High
0–100bps	100–200 bps	Over 200 bps
Mild, usually arises from calculation nuances (TE below 50bps) or minor distinct mistracking events .	Significant, active management characteristics likely to be present.	Excessive, TE not compatible to a tracker' s investment mandate.
1. TER impact	5. Items 1 to 4 plus	8. Items 1 to 7 plus
2. Dividend tax enhancements	6. Cash drag	9. ETF portfolio holding variations sampling or swap cash flow calculation variants)
3. Calculation nuances (for example different treatment of holidays between ETF and benchmark)	7. Securities lending	10. ETF NAV misspricing (large NAV fluctuations, over 50 bps)
4. ETF NAV miss-pricing risk (delayed booking of trades resulting in less than 5bps deviations per day)		11. Illiquidity of benchmark constituents
DM synthetic ETFs*:	11, 20, 21	None
DM physical ETFs*:	18, 21, 26	None
EM synthetic ETFs*:	5, 5, 5	None
EM physical ETFs*:	3, 4, 4	2, 2, 2

* Numbers represent ETF counts per category for each year (2008, 2009, 2010).

Source: Deutsche Bank AG.



ETFs liquidity: Creation & Measurement

Part fund, part stock: ETFs in a path to unlocking global asset liquidity

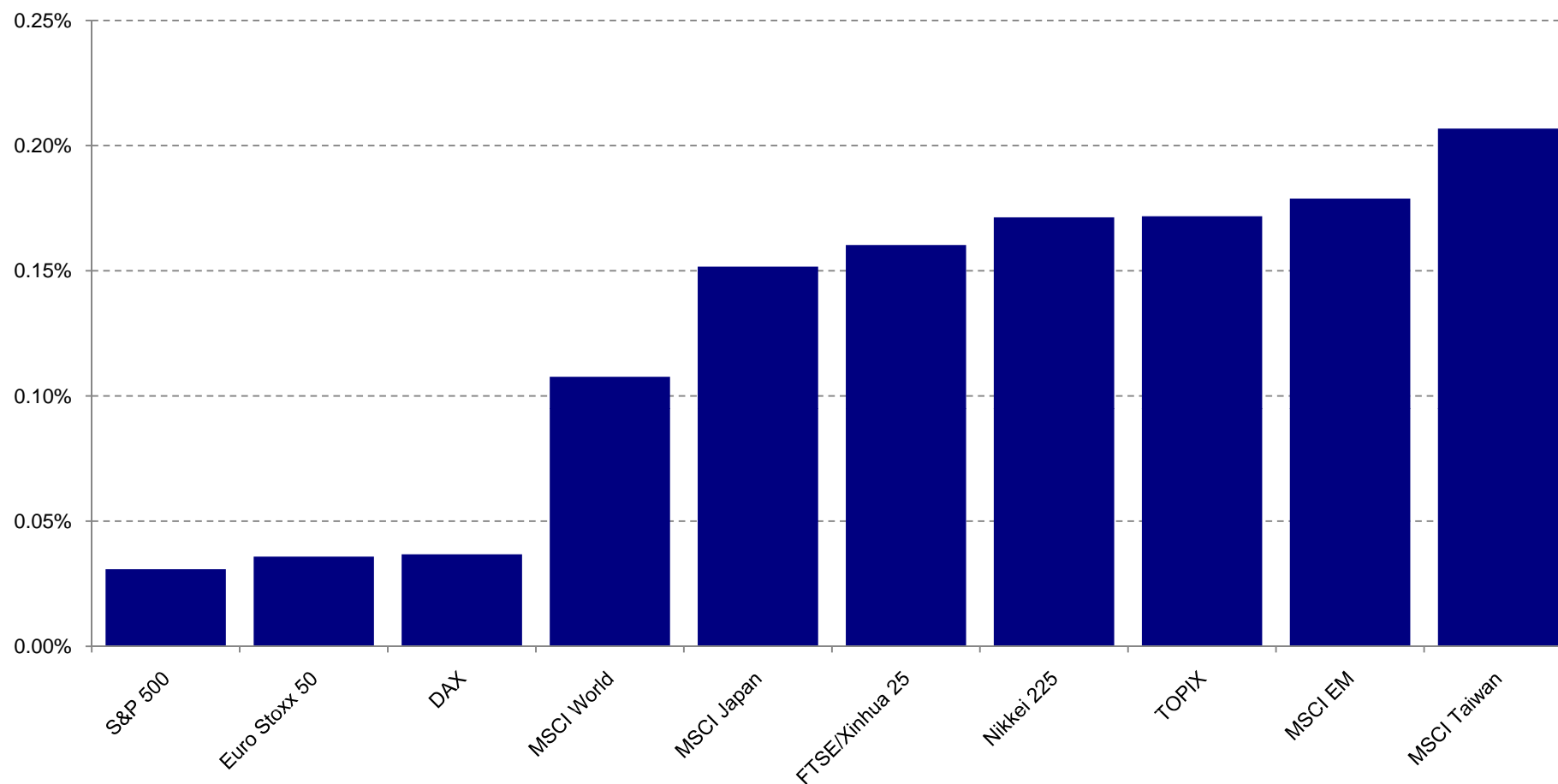
Passion to Perform

ETF liquidity & bid-ask spreads



- ETFs are mutual funds that trade on an exchange and whose shares can be bought or sold intra-day, much the same way as stocks do. As a result, ETF pricing dynamics carry stock –like price trading characteristics, even though ETFs are funds.
- Since ETFs are asset wrappers, their liquidity is determined by the liquidity of their underlying benchmark's market. However, their underlying benchmark market's liquidity can be further enhanced or hampered by an ETF's stock-like trading characteristics.
- **Fund component:** Asset/benchmark liquidity. This relates to the benchmark asset's underlying market and will reflect its risk return profile. This could be compared to a 'fixed cost' when making an investment decision.
- **Stock component:** trading bid ask wrapper spread. To trade intra-day, an Authorized Participant (AP) will generally need to incorporate hedging costs in the quoted ETF pricing – which to a large extent should relate to the asset/benchmark's market liquidity - together with AP costs and a profit margin on the transaction. This could be compared to the 'variable cost' when making an investment decision.

Index bid ask spreads



Source: Deutsche Bank AG as of 07 January 2011.

Index and ETF bid ask spreads



	Index					ETFs							
	Weighted Average Daily Volume*	Index spread**	Const. Nu.	Index const. above index spread	%	Global avge spread***	List.	Europe avge spread***	List.	Asia avge spread***	List.	US avge spread***	List.
S&P 500	0.18%	0.03%	500	234	46.8%	0.23%	50	0.21%	44	0.33%	3	0.09%	3
Euro Stoxx 50	0.96%	0.04%	50	24	48.0%	0.26%	77	0.26%	77	NA	-	NA	-
DAX	3.44%	0.04%	30	17	56.7%	0.49%	20	0.49%	20	NA	-	NA	-
MSCI World	0.13%	0.11%	1,656	794	47.9%	0.42%	46	0.30%	43	1.01%	2	NA	-
MSCI Japan	1.16%	0.15%	339	150	44.2%	0.47%	45	0.39%	41	0.83%	2	0.37%	2
FTSE/Xinhua 25	9.02%	0.16%	25	14	56.0%	0.37%	18	0.34%	14	0.44%	4	NA	-
Nikkei 225	2.51%	0.17%	225	110	48.9%	0.25%	10	0.27%	8	0.15%	2	NA	-
TOPIX	1.09%	0.17%	1,664	1,058	63.6%	0.36%	15	0.37%	9	0.34%	6	NA	-
MSCI EM	0.87%	0.18%	803	426	53.1%	0.39%	42	0.40%	35	0.45%	4	0.24%	2
MSCI Taiwan	7.83%	0.21%	122	44	36.1%	0.44%	30	0.48%	24	0.39%	5	0.35%	1
Average	2.72%	0.13%	541	287	50.1%	0.37%	353	0.35%	315	0.49%	28	0.26%	8

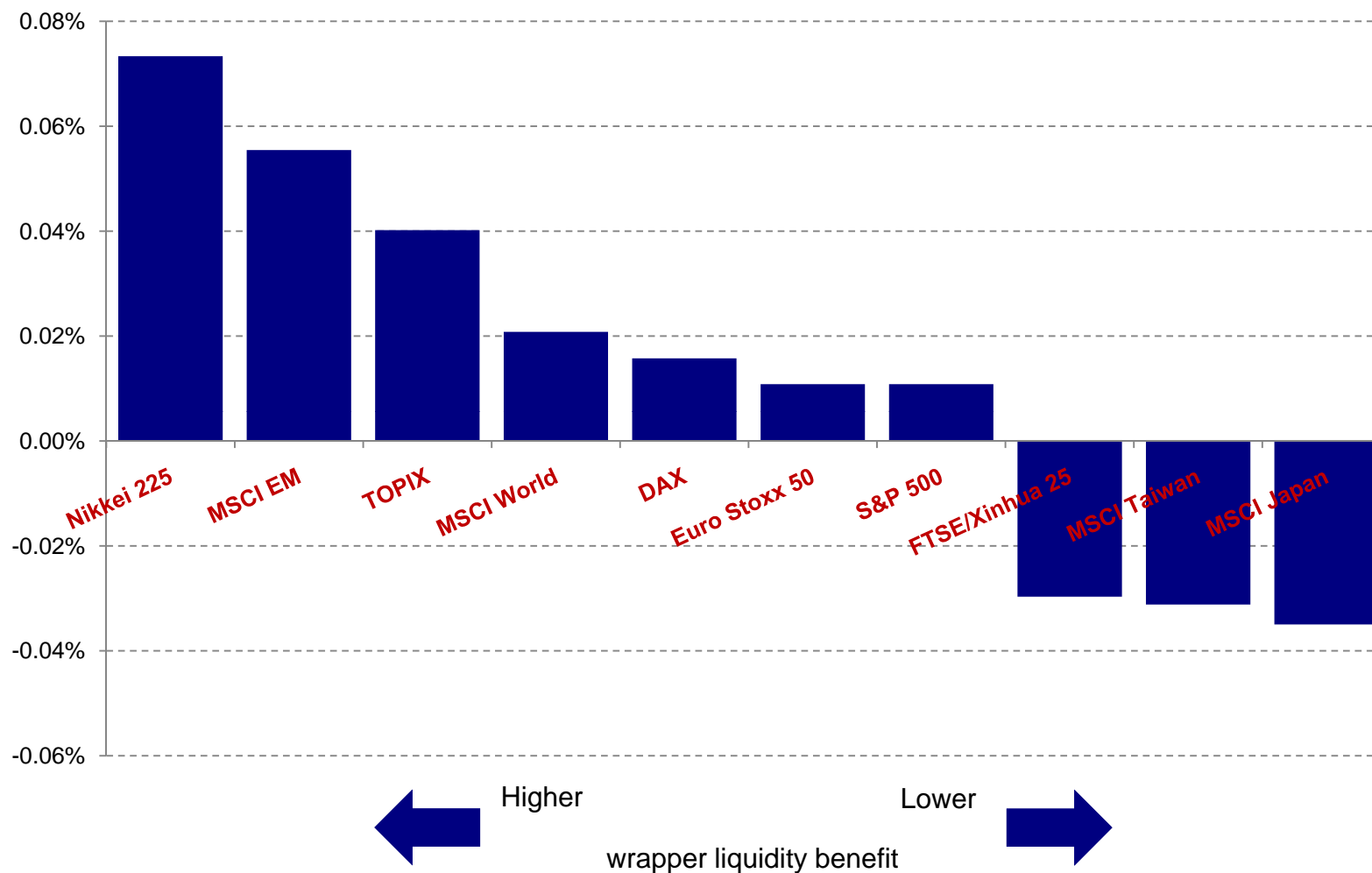
*Percentage of weighted average daily volume to create €100 mil. ETF shares

** Based on weighted individual index constituent bid offer spreads as of 07/01/11 mid trading session

*** For the week ending 07/01/11, at five minute intervals throughout each business day

Source: Deutsche Bank AG.

ETF spreads can be lower than index spreads



Source: Deutsche Bank AG as of 07 January 2011.

Is turnover an ETF liquidity measure?



- Purchasing floating shares will generally decrease the likelihood of a hedging intermediary being involved and will thus automatically eliminate hedging costs that are associated with the intra-day ETF share creation or dissolution. Higher ETF turnover volumes contribute to higher levels of available floating shares.
- Undoubtedly, the question is to what extent does increased turnover can be linked to lower ETF bid ask trading spreads. Extending this logic, the larger question therefore becomes, is turnover an accurate measure of ETF liquidity?

MSCI EM	German average ETF spreads*	German 30 day average volume	US average ETF spreads*	US 30 day average volume	Spread differential	Volume differential
11/06/2010	0.38%	23,118	0.33%	129,279,359	-0.05%	-129,256,240
09/07/2010	0.37%	30,354	0.33%	95,279,392	-0.04%	-95,249,039
13/08/2010	0.38%	13,858	0.32%	73,606,852	-0.06%	-73,592,994
10/09/2010	0.39%	14,654	0.43%	65,273,884	0.04%	-65,259,230
08/10/2010	0.37%	17,780	0.40%	65,902,319	0.03%	-65,884,539
12/11/2010	0.43%	26,476	0.40%	77,951,387	-0.03%	-77,924,911
10/12/2010	0.36%	28,675	0.32%	84,869,492	-0.04%	-84,840,817
07/01/2011	0.41%	32,338	0.24%	59,754,533	-0.17%	-59,722,195
Average	0.39%	23,406	0.35%	81,489,652	-0.04%	-81,466,246
07/01/2011	7	NA	2	NA	NA	NA

* Weekly spreads, at five minute intervals throughout each business day

- Beyond a base turnover level, higher turnover has a marginally decreasing impact on ETF bid ask spreads. ETF turnover spread reduction impact appears to be disproportionate to the turnover allocation among exchanges.

Appendix 1



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[Christos Costandinides]



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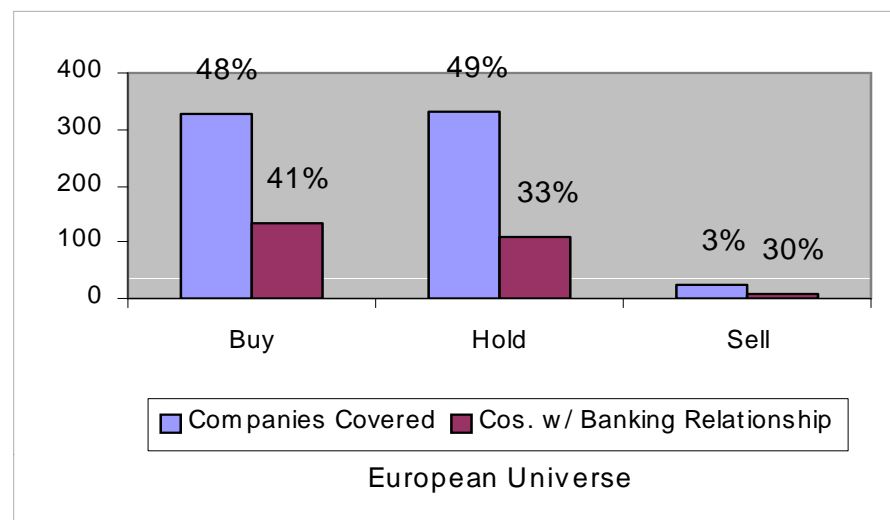
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