Indexes and ETFs

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Outline

• Understanding investor objectives

• Evolution of indices for ETFs

• Benchmarking has evolved from roots in academia

• ETF case studies

• How will indices change the landscape for ETFs in the future?
Understanding Investor Objectives
Exchange Traded Funds (ETFs) Benefits:

- Cost effective
  - Average fees of ETF’s in the US: 0.34%
  - Average fees of actively managed funds in the US: 1.46%

- Liquidity

- Transparent
Size of the Global ETF Market

- Total assets in excess of $1 trillion
- 2,252 ETF’s listed in 42 different exchanges worldwide
- 957 new ETF’s entering the market in 2010 alone
  - 20% - 30% expected growth in assets in 2010
- Popular amongst institutional and retail segments
Size of the Indian ETF Market

• Total of 14 ETF’s

• Total ETF assets of $0.3b

• Total assets of Indian Mutual Fund Industry is approx. $135b
Achieving Investor Objectives with ETFs

ETFs provide opportunities for investors in all areas of their strategy

### Core
Capturing market beta with ETFs based on developed large and mid cap equity and bond indices.

Examples: FTSE 100, FTSE 250, FTSE MIB, FTSE All-World, FTSE UK Gilts

### Satellite
Diversifying investments with uncorrelated sources of beta such as emerging markets and alternative investments.

Examples: FTSE/XINHUA 25, FTSE BRIC 50, FTSE Vietnam, FTSE EPRA/NAREIT series

### Investment Strategy
Achieving market returns more efficiently and capturing systematic sources of alpha with GAAP weighted, risk weighted and short/leveraged indices.

Examples: FTSE RAFI series, FTSE EDHEC-Risk Efficient series, FTSE 100 short & leveraged

### Investment Themes
Diversifying investment with investment themes such as responsible investment.

Examples: FTSE Environmental Opportunities, FTSE ET 50
ETFs by Segment

AUM of ETFs based on FTSE Indices 2009

- Core: 61.4%
- Satellite: 34.4%
- Investment Strategy: 3.9%
- Investment Themes: 0.3%

Mainly FTSE Xinhua licensed ETFs on NYSE Euronext and HKEx

Global ETFs AUM 2009

- North America Equity: 40.9%
- Emerging Markets Equity: 15.7%
- Europe Equity: 11.1%
- Asia Pacific Equity: 7.5%
- Global Equity: 6.4%
- Fixed Income: 2.1%
- Commodities: 0.1%
- Currency: 0.1%
- Mixed: 0.0%
- Alternative: 0.0%

Source: BlackRock Dec 09
Who Uses ETFs and How?

Who?

• **Active managers** use ETFs to gain broad exposure to a market or sector represented by an index – in the US, **hedge funds** are now the largest single category of ETF users.

• **401K and passive investors** use them as part of their core strategy.

• Mostly **institutional** but increasing retail interest in passive index investment.

• A growing interest from **European private banks** - attracted by low costs, and encouraged by the UCITS III directive.
Who uses ETFs and how?

**How?**

ETFs allow investors to achieve a range of objectives:

- Investing **strategically** or **tactically** in asset classes defined by indices
- To gain **fast exposure** to a market with tradable indices
- For going **long or short** with new indices for leveraged and short ETFs
- For implementing an **asset allocation** strategy using a variety of market indices
- For **short-term timing** of a particular market because of the tradability of ETFs
Evolution of Indices for ETFs
The Role of Indexing in ETF Creation

- ETFs are created to track an underlying index, allowing the ETF performance to mirror a broader stock universe.

- Often based on an accepted benchmark, the index contributes to the market acceptance and understanding of the investment opportunity.

- Independent rules-based index design provides the market with transparency and confidence.

- Index liquidity rules stipulating a minimum percentage turnover of constituents’ free-float adjusted shares in issue ensure ETF liquidity.
The Evolving Use of Indices...

- **Economic Indicator**
  - Performance measurement and analysis for active managers

- **Performance Benchmark**
  - Performance measurement and analysis for active managers

- **Investment Vehicles**
  - Underlying component of financial products

- **Asset Allocation**
  - New asset class indices facilitate asset allocation and analysis

- **Generating Alpha**
  - Investment strategies contained in an index

- **ETFs based on structured products and derivatives on ETFs**

- ** Tradable indices for lower costs and easier trading**

- **Replacing market cap portfolios with non price and quant weightings**
Benchmarking has Evolved from Roots in Academia
Modern Asset Management

- Based on progressive academic advancement
  - Markowitz
    - Modern Portfolio Theory
  - Sharpe
    - CAPM & Systemic Risk
  - Fama/Malkiel
    - Efficient market & random walk
  - Morris/Arnott
    - Non price portfolios
  - Martinelli / EDHEC
    - Efficient portfolio
Modern Asset Management

- Sophisticated investors build portfolios combining
  - Indexing
  - Enhanced Indexing
  - Risk controlled active
  - Traditional active

Indexing and enhanced indexing enable investors to precisely determine risk exposure.
  - Rigorous attention to asset class definition and benchmarks
  - Aim for small but consistent out performance
  - Control risk to minimize tracking error
Why Benchmarks are Important

• Benchmarks are used at each step of the asset allocation and management assignment process
  • Asset allocation is based on index weightings
  • Manage risk of the manager structure against index risk profile
  • Provide managers with tracking error objectives for each benchmark
  • Evaluating the managers based on actual performance versus the assigned benchmark
Benchmark Choice

• Benchmarks are chosen to represent each asset class
  • Equities – domestic and foreign
  • Bonds – domestic and international
  • Alternative Asset Classes – international

• Allocations are based on risk return profiles of each asset class

• Benchmarks should
  • Be representative and comprehensive of the securities in each asset class
  • Index rules should be consistent and transparent
  • Have long back histories to assess long term risk
Index Methodology Improves

• First indexes were based on price
  • Dow Jones Industrial Index
  • Nikkei 225

• Market capitalization weighting became the next major development
  • S&P 500
  • TOPIX

• Free float methodology created an accurate index of what investors can buy and sell
  • FTSE All-World Series – 2000

• Liquidity screening adds another layer of investability comfort
  • FTSE Global Equity Index Series – 2003/2007
Headline FTSE Benchmarks

- **FTSE All-World**
  - Large and Mid Cap stocks
  - Developed and Emerging Markets
  - Key institutional benchmark
  - > 2,000 Stocks

- **FTSE Global All-Cap**
  - Large, Mid and Small and Cap stocks
  - Developed and Emerging Markets
  - over 7,000 stocks of a possible 75,000+ globally

- **FTSE Emerging**
  - Large and Mid Cap stocks
  - Advanced Emerging and Secondary Emerging markets

- **FTSE Frontier**
  - 50 stocks
  - Most liquid stocks
  - Launched 2008

- **FTSE Global Small Cap**
  - Small Cap stocks
  - Developed and Emerging Markets
  - Around 4,300 stocks
Benchmarks for All Markets

Developed:
- Australia, Austria, Belgium/Luxembourg, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, South Korea, Spain, Sweden, Switzerland, UK, USA

Advanced Emerging:
- Brazil, Hungary, Mexico, Poland, South Africa, Taiwan

Secondary Emerging:
- Chile, China, Colombia, Czech Republic, Egypt, India, Indonesia, Malaysia, Morocco, Pakistan, Peru, Philippines, Russia, Thailand, Turkey, UAE

Frontier:
- Argentina, Bahrain, Bangladesh, Botswana, Bulgaria, Côte d’Ivoire, Croatia, Cyprus, Estonia, Jordan, Kenya, Lithuania, Macedonia, Malta, Mauritius, Nigeria, Oman, Qatar, Romania, Serbia, Slovakia, Slovenia, Sri Lanka, Tunisia, Vietnam
Investment Strategy Indices

- **Academic and quantitative developments in funds management** have been sources of new indices embedded with investment strategies.

- **Managing beta** and seeking systematic returns from equity portfolios are the main themes in recent index development.
Country Classification

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>Australia</th>
<th>Hong Kong</th>
<th>Japan</th>
<th>New Zealand</th>
<th>Singapore</th>
<th>South Korea</th>
<th>Taiwan</th>
<th>ASEAN</th>
<th>China A</th>
<th>China B</th>
<th>India</th>
<th>Indonesia</th>
<th>Malaysia</th>
<th>Philippines</th>
<th>Thailand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Country Score</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
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<td>100</td>
</tr>
</tbody>
</table>

FTSE QUALITY OF MARKETS CRITERIA (ASIA PACIFIC) as at March 2010.
Industry Classification

<table>
<thead>
<tr>
<th>INDUSTRY</th>
<th>SUPERSECTOR</th>
<th>SECTOR</th>
<th>SUBSECTOR</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy &amp; Gas</td>
<td>1000 Oil &amp; Gas</td>
<td>1101 Oil &amp; Gas Producers</td>
<td>9621 Exploration &amp; Production</td>
<td>Companies engaged in the exploration for and drilling, production, refining and supply of oil and gas products.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1101 Oil &amp; Gas Producers</td>
<td>9627 Integrated Oil &amp; Gas</td>
<td>Integrated oil and gas companies engaged in the exploration for and drilling, production, refining, distribution and retail sales of oil and gas products.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1102 Oil &amp; Gas Equipment &amp; Services</td>
<td>9622 Oil &amp; Gas Equipment &amp; Services</td>
<td>Suppliers of equipment and services to oil fields and offshore platforms, such as drilling, exploration, services, installation services and platform construction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1102 Oil &amp; Gas Equipment &amp; Services</td>
<td>9614 Pipelines</td>
<td>Operators of pipelines conveying oil, gas or other forms of fuel.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1103 Renewable Energy</td>
<td>9613 Renewable Energy Equipment</td>
<td>Companies that develop or manufacturer renewable energy equipment such as wind, solar, hydro, and nuclear.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1104 Alternative Energy</td>
<td>9612 Alternative Fuels</td>
<td>Companies that produce alternative fuels such as ethanol, biodiesel, hydrogen, and other fuels that are derived from biomass.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1105 Basic Materials</td>
<td>1102 Chemicals</td>
<td>Producers and distributors of simple chemical products that are primarily used to formulate more complex chemical or physical products, including paints and coatings or raw petrochemicals.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1105 Basic Materials</td>
<td>1103 Specialty Chemicals</td>
<td>Producers and distributors of specialized chemicals for industries and end users, including pharmaceuticals, coatings, paints, and other end products.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1105 Basic Materials</td>
<td>1104 Industrial Minerals &amp; Mining</td>
<td>Companies that refine or process base, specialty, and other minerals and distribute them to other industries.</td>
</tr>
</tbody>
</table>

65,000+ Securities

114 SUBSECTORS
41 SECTORS
19 SUPER SECTORS
10 INDUSTRIES
ETF Case Studies
Core Case Study: Giving Investors Access to the London Stock Exchange

**Example: Accessing the FTSE 100**

| The Objective | • To give investors of all classes access to one of the world’s best known benchmarks – the FTSE 100 |
| Challenges    | • Reduce the cost of investing in 100 individual stocks |
| The Solution  | • The FTSE 100 index comprises the 100 most highly capitalised blue chip companies listed on the London Stock Exchange, representing approximately 81% of the UK market. It is used extensively as a basis for investment products, such as derivatives on LIFFE, OTC notes and exchange-traded funds. |
Satellite Case Study: Giving International Investors Access to Fast Growing Markets

Example: Accessing Brazil, Russia, India and China

The Objective
- To meet growing international investor demand for access to the largest emerging markets with the potential to transform the global economy

Challenges
- Investors can face difficulties accessing these markets due to liquidity issues
- Each country has a specific set of guidelines on investment in foreign funds

The Solution
- ETFs based on indices such as FTSE BRI C 50 represents the performance of the 50 biggest BRIC companies by full market capitalisation, that trade as either depositary receipts (for Brazilian, Indian or Russian companies), or H shares (for Chinese companies). Constituents are capped at 15% to avoid over-concentration on one stock. Where more than one DR or H share trades on an underlying FTSE GEIS constituent, only the most liquid is eligible.
Investment Strategy Case Study: Enabling Institutional Investors to Escape Market Cap Problems

**Example: Non-market cap weighted indices**

**The Objective**
- To meet growing investor demand for alternative ways to escape market cap’s drag on performance

**Challenges**
- Criticism of the performance extremes of market cap weighted indices

**The Solution**
- ETFs based on fundamental indices such as the **FTSE RAFI Index Series**. They were developed with Research Affiliates to reflect a company’s economic footprint using four fundamental factors, including total cash dividends, free cash flow, total sales and book equity value. By using GAAP data rather than prices to weight stocks, indices take advantage of price movements by reducing the index’s holdings in constituents whose prices have risen relative to other constituents, and increasing holdings in companies whose prices have fallen behind.
Satellite Case Study: Enabling Investors to Capture Uncorrelated Returns

Example: Accessing real estate markets

The Objective

- To meet increasing demand for diversification across asset classes, geographies, and now country classification (emerging/developed), which is difficult to achieve with direct investing.

Challenges

- To provide a practical and useful tool to access the real estate market which is typically illiquid and not transparent.
- To provide investors the opportunity to invest in listed real estate across the full spectrum of geographic regions and property types to achieve diversification.

The Solution

- ETFs based on Real Estate indices such as the FTSE EPRA/NAREIT Global Real Estate Index Series which was developed for investors who want to invest in listed real estate, including developers and REITs. Specialty indices were developed to cater for more tailored, style specific real estate investors including REIT/Non-REIT, Investment Focused and Global Sectors/Property Types. In 2009 emerging markets were added to the index series, making it a truly global series.
Satellite Case Study: Giving International Investors Access to Regulated Markets

**Example: Accessing China**

**The Objective**
- To satisfy growing international investor demand for access to the China market, one of the world’s largest and most exciting economies

**Challenges**
- Foreign investment into China’s capital markets is regulated with foreign investors requiring authorisation under the Qualified Foreign Institutional Investor (QFII) system to trade in China-incorporated companies on the Shanghai or Shenzhen exchanges
- To create an index that meets regulatory requirements worldwide

**The Solution**
- ETFs based on indices such as:
  - **FTSE/Xinhua China 25 Index** was developed for all international investors. It encompasses the largest 25 Chinese companies comprising H Shares and Red Chip Shares listed on the Hong Kong stock exchange
  - **FTSE/Xinhua China A50 Index** was developed to cater for Qualified Foreign Institutional Investors (QFIIs). It encompasses the largest 50 A Share listed on the Shanghai and Shenzhen stock exchanges
Satellite Case Study: Giving International Investors Access to Regulated Markets

**Example: Accessing China’s value premium**

<table>
<thead>
<tr>
<th>The Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>• To evolve the coverage of Hong Kong listed Chinese companies with value investment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Provide a rules driven methodology derived from an active managers’s in-house investment process</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>• A FTSE index based on published ground rules which passed the Hong Kong FSC ETF application process to enable listing of the FTSE China Value Stocks ETF in 2009. The methodology screens using traditional value factors and adds a contrarian screening for further risk control.</td>
</tr>
</tbody>
</table>
Investment Theme Case Study: Enabling Investors to Capture Uncorrelated Returns

Example: Accessing environmental markets

The Objective

- To meet increasing demand for responsible investment in international market including access to new energy, energy saving, water resources and waste disposal industries
- To provide a channel for investors to widely invest in renewable & alternative energy, energy efficiency, water technology and waste & pollution control industries
- To provide investors opportunities to invest in environmental technology sector and invest in companies that are best placed to succeed in a future low carbon environment
- ETFs based on environmental indices such as the **FTSE Environmental Opportunities Index Series** which was developed for investors who want to invest in responsible investment industries. It comprises companies that have at least 20% of their business derived from environmental markets and technologies
- The FTSE Environmental Opportunities 100 is used as the underlying for an ETF listed Euronext Paris

Challenges

The Solution
How Will Indices Change the Landscape for ETFs in the Future?
FTSE Short or Inverse Indices

• What are they?
  • New End-of-Day index series based on an investment strategy of running a short position based on the FTSE 100 and FTSE 250 Indices and investing the proceeds of the sales into a risk-free deposit.

• Why do it?
  • An investor has a pessimistic outlook on the market but still wants exposure to it. He doesn’t understand derivatives and their risk profile but does understand and can buy ETFs.
  • Gives a geared play on downward market movement.
FTSE Short or Inverse Indices

• **Possible outcomes**

  • If underlying market goes down short index goes up because of the inverse gearing and you get a better than 1 times return because of return on money on deposit

  • If underlying market goes up, you suffer a fall in the short index offset by the return on your deposit
FTSE 100 Short Index - Initial Investment

Daily-adjusted investment in short index (index rebased to previous day’s EoD value)

A - Cash inventory

(1) Capital expenditure – original long only position on FTSE 100 Index TR

(2) Short sale

Capital assets – cash from selling both long holding & then shorting the index (4)

B - Short investment

Exposure to FTSE 100 Short Index as a result of selling the index (3)
FTSE 100 Short Index - Performance Components

- **A - Cash inventory**
- **B - Short investment**

Interest - accruing as a result of selling both the initial index holding (1) + short selling the index (2)

-Fall in the FTSE 100 Index (TR)

-Rise in the FTSE 100 Short Index

Negative index performance - A fall in the FTSE 100 Index (TR) is matched by an inverse rise for the FTSE 100 Short Index
FTSE 100 Short Index - Performance

A
Interest accrued from selling original long position and then short selling the FTSE 100 Index (TR)

B
Positive performance gained from fall in FTSE 100 Index (TR)

C
Stock borrowing cost

$t_0$
Daily starting value for FTSE 100 Short Index

$B + A$
New value for FTSE 100 Short Index

$B + A + C$
New value for FTSE 100 Short Strategy Index
FTSE Short Indices – The Maths

\[ sIndex_t = \text{InversePerformanceTerm} + \text{InterestIncomeTerm} \]

\[ sIndex_t = sIndex_{t_0} \cdot \left[ -1 \cdot \frac{TRI_t}{TRI_{t_0}} + 2 \right] + sIndex_{t_0} \cdot \left[ \frac{SONIA_{t_0}}{365} \cdot d \cdot 2 \right] \]
FTSE Short Index - Performance

[Graph showing the performance of the FTSE 100 Index (TR) and the FTSE 100 Short Index from December 1999 to April 2008. The index level is rebased (30 Dec 99 = 100).]
FTSE Leveraged Indices

• What are they?
  • Index that replicates the performance of an investor leveraging the performance of the underlying index

• How does it work?
  • Borrow $n$ times money at the risk free rate to gear up $n$ times into the index portfolio
  • Investor is bullish but can’t use futures but would buy ETFs
  • Leverage factors of 2, 3 or 4 times
  • Large potential returns but higher downside risk because of gearing
FTSE Leveraged Indices

• Outcomes
  • If the market goes up your leveraged index rises geared times the change from your leveraged position less the cost of financing those leveraged positions
  • If the market goes down your leveraged index falls geared times the change from your leveraged position plus the cost of financing those leveraged positions
Leveraged Index – The Maths

\[ l\text{Index}_t = \text{LeverageTerm} - \text{InterestExpenseTerm} \]

\[ l\text{Index}_t = l\text{Index}_{t_0} \cdot \left[ 2 \cdot \frac{TRI_t}{TRI_{t_0}} - 1 \right] - l\text{Index}_{t_0} \cdot \left[ \frac{SONIA_{t_0}}{365} \cdot d \right] \]
FTSE 250 Leverage - Performance

Index level rebased (30 Dec 99 = 100)

- FTSE 250 Index (PI)
- FTSE 250 Leverage Index (PI)
The Best Way to Invest in Equities...

“Most investors, both institutional and individual, will find that the best way to own common stocks ... is through an index fund that charges minimal fees. Those following this path are sure to beat the net results (after fees and expenses) of the great majority of investment professionals.”

*Warren Buffet – Berkshire Hathaway Annual Report, 1996*
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