



# INVESTING IN FRONTIER MARKETS

---

Andrew Clark, Chief Index Strategist  
Thomson Reuters Indices

Webcast: June 24th, 2009 11am ET



THOMSON REUTERS

# Topics

---

- Definitions of Countries and Regions
- Liquidity
  - Problems w/measuring liquidity and liquidity risk by volume
  - Thomson Reuters Indices' liquidity measure
  - The liquidity of Frontier Markets
- Risk and “essentials”
  - Concentration
  - “essential” and “exposure” sets

# Definitions

---

## Frontier markets:

The smallest, less developed, less liquid countries that make up emerging markets

## Examples include:

- Bulgaria
- Croatia
- Kazakhstan
- Nigeria
- Sri Lanka
- Vietnam

## THE WALL STREET JOURNAL.

Frontier markets are  
“generally understood to be the less liquid, small ‘emerging’ emerging markets”

# Frontier Markets

---



- **Middle East**

- Saudi Arabia
- Oman
- Bahrain
- Jordan
- UAE
- Kuwait
- Qatar

- **Eastern Europe**

- Bulgaria
- Croatia
- Estonia
- Kazakhstan
- Lithuania
- Romania
- Serbia
- Slovenia
- Ukraine

- **Africa**

- Ghana
- Nigeria
- Kenya
- Mauritius
- Tunisia

- **Asia**

- Sri Lanka
- Vietnam

# Liquidity

---

- Major markets
  - Ability to trade large quantities quickly, at a low cost, and without moving the price
- Frontier markets
  - Define illiquidity first – that which arises when an asset or security cannot be converted to cash quickly – and liquidity is opposite



- What are the commonalities?
  - In both definitions, the concept of price, and in particular price discovery, plays a role
  - There is no liquidity if no price can be found and if there are problems in the price discovery process, e.g., a market-clearing price for a trade is difficult to find, volume will fall or cease to be

# Liquidity

---

- Issues w/using just volume to measure liquidity for indices:
  - The inconclusive nature (per academic studies) of using volume alone or as the primary liquidity tool to identify either the liquidity or the liquidity risk of a stock
- User Risks:
  - Beta-generating (benchmark) indices are created that are not representative of securities a manager would buy
  - Securities could pass the volume screen *and* not identify a good return versus liquidity risk trade-off

# Liquidity

---

- Academic Research

- Pastor and Stambaugh (2003)

- They could find no evidence of higher stock returns being tied to volume related liquidity effects of any kind

*"The pricing results ... seem distinct from any pure [volume related] liquidity effects"*

- Norwegian Central Bank – Norges Bank (2007)

- In a study using multi-factor models, Norges' researchers found:
      - There is a liquidity risk/return trade off, i.e., a liquidity premium exists
      - The factor with loadings on variables related to *price impact* seem to contain the most information about liquidity risk

# Liquidity

- Thomson Reuters Indices

- Use price related measures of liquidity

- Exploits the fact that stocks whose liquidities are the most sensitive to market liquidity are not necessarily those whose prices are the most sensitive to market liquidity.
    - Price movement of an illiquid security is sticky and not regularized. Also the response of the security to the market factor (or factors in a multi-factor model) is much more likely to be idiosyncratic.



# Countries and The TRI Liquidity Test Outcome

| <i>C o u n t r y</i>  | <i>% D i s q u a l i f i e d</i> | <i>S e c u r i t i e s A v a i l a b l e</i> |
|-----------------------|----------------------------------|--|
| O m a n               | 96 %                             | 5  |
| U k r a i n e         | 95 %                             | 12   |
| B a h r a i n         | 94 %                             | 3  |
| B u l g a r i a       | 93 %                             | 25   |
| R o m a n i a         | 92 %                             | 39   |
| M a u r i t i u s     | 86 %                             | 10   |
| K u w a i t           | 80 %                             | 39   |
| <b>R u s s i a</b>    | <b>72 %</b>                      | <b>143</b>                                   |
| C r o a t i a         | 64 %                             | 78   |
| S l o v e n i a       | 61 %                             | 31   |
| U A E                 | 58 %                             | 47   |
| L e b a n o n         | 50 %                             | 9  |
| <b>B r a z i l</b>    | <b>48 %</b>                      | <b>253</b>                                   |
| S r i L a n k a       | 46 %                             | 136  |
| N i g e r i a         | 44 %                             | 125  |
| J o r d a n           | 44 %                             | 137  |
| L i t h u a n i a     | 42 %                             | 30   |
| S a u d i A r a b i a | 40 %                             | 72   |
| T u n i s i a         | 35 %                             | 36   |
| K e n y a             | 30 %                             | 37   |
| Q a t a r             | 23 %                             | 36   |
| <b>I t a l y</b>      | <b>22 %</b>                      | <b>355</b>                                   |
| <b>I n d i a</b>      | <b>17 %</b>                      | <b>3110</b>                                  |
| <b>J a p a n</b>      | <b>16 %</b>                      | <b>3142</b>                                  |
| V i e t n a m         | 15 %                             | 302  |
| K a z a k h s t a n   | 14 %                             | 6  |
| <b>U S</b>            | <b>13 %</b>                      | <b>3610</b>                                  |
| E s t o n i a         | 12 %                             | 22   |



# Liquidity

---

- Most Frontier Market countries
  - High drop-out rate
  - Enough liquid securities around to make investments of interest

# Concentration & “Essentials”

---

- Appetite may exist for funds, separate accounts and other investment vehicles that invest solely in Sri Lanka for example
- Investors seek *some* representation of a country or region w/o having to buy every single security in an index
  - Typical splits along capitalization and/or sector lines are ways of doing this
  - But do not take away “rotation risk”
- A trade-off is needed between “essential” and “exposure” purchases so they represent the whole universe of investable stocks *and* their weighted volatility

Increased volatility is to be avoided unless the “essential” or “exposure” index has offsetting higher returns

# Concentration and “Essentials”

---

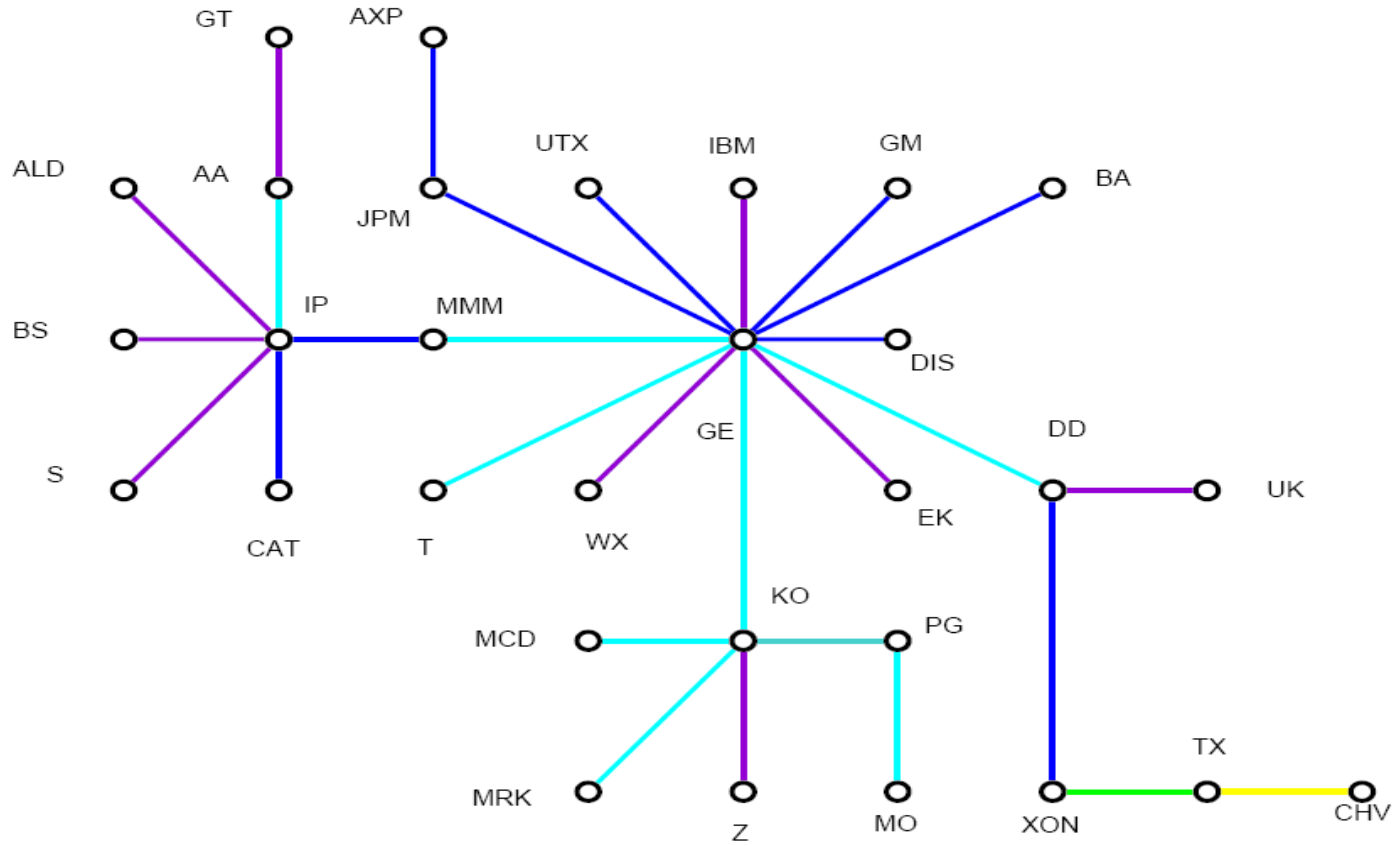
- “Essential” means:
  - 5% - 10% of all available liquidity stocks
  - Stocks that tend to have a small tracking error (1bp – 5 bp) to the market cap or equally weighted index of a country or region
  - “Enhanced” indices should typically have std deviations very close to if not the same as the country or region index
- “Exposure” means:
  - ~1% of all available liquid stocks
  - Set of stocks that tend to have a slightly larger tracking error (6bp – 12bp) to the market or equally weighted index of a country or region
  - “Enhanced” indices should typically have std deviation close to the country or region index

# Concentration and “Essentials/Exposure” Ways of Construction

---

- In Frontier Markets, correlations between stocks typically lasts for a short while:
  - 3 to 6 months
- “Short” correlation can be exploited
- Techniques
  - Random Matrix Theory (RMT)
  - Minimum Spanning Trees (MST)
  - Multiresolution Clustering via Bootstrapping
- Can identify the “mother” stocks in a index or exchange that are then used as the building blocks for “essential” and “exposure” indices

# Minimum Spanning Tree for DJI (Oct 1995)



# MST Results for Frontier Markets

---

## Eastern Europe

Total Liquid Securities available: 215

- 20 - 25 stocks in the “essential” set
- 10 stocks in the “exposure” set

## Africa

Total Liquid Securities available: 208

- 20 - 30 stocks in the “essential” set
- 10 stocks in the “exposure” set

## Gulf States

Total Liquid Securities available: 339

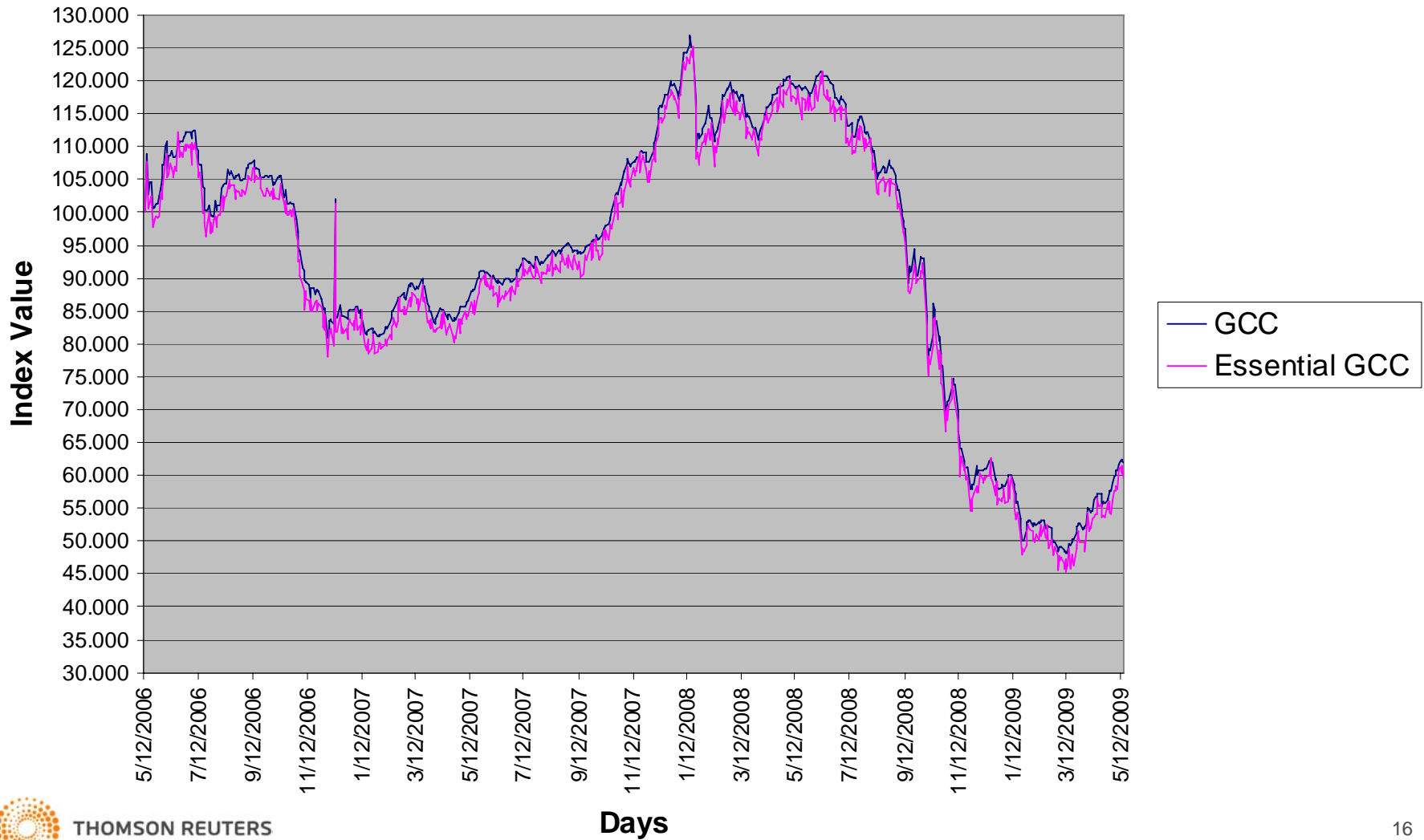
- 40 - 45 stocks in the “essential” set
- 10 - 16 stocks in the “exposure” set

## Asia

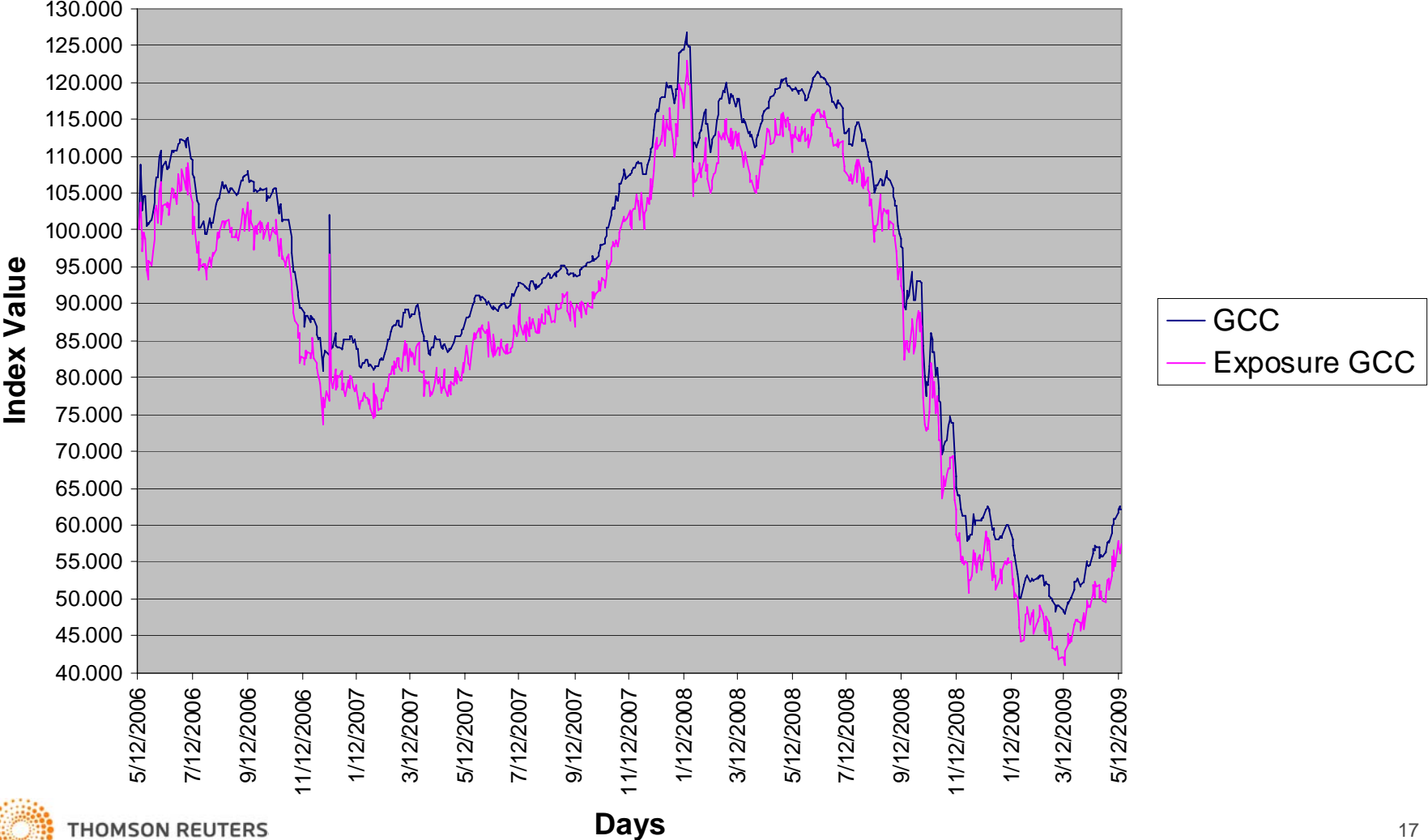
Total Liquid Securities available: 438

- 30 - 40 stocks in the “essential” set
- 15 stocks in the “exposure” set

## GCC & Essential: May '06 - May '09



# GCC & Exposure: May '06 - May '09



# Conclusions

---

- Make sure good liquidity exists for the stock(s) you are buying
  - Don't trust volume entirely
  - And don't use it as your sole tool
  - Price impacts have been shown to be better measures of gaining insight into liquidity and liquidity risk
- Know that you have a choice between a standard passive or beta-generating indices and “enhanced” or enhanced beta-generating indices
  - “Essentials” gives you the country or region index in the small
  - While the “exposure” index gives you just that, eg, exposure to GCC, exposure to Eastern Europe, in the generic sense of the word “exposure”

# References

---

- L. Pastor and R.F. Stambaugh, “Liquidity Risk and Expected Stock Returns,” *Journal of Political Economy*, Vol.111, No. 3., 2003
- L. Chollete, R. Naes, and J. Skjeltorp, “What Capture Liquidity Risk: Order Based versus Trade Based Liquidity Measures.” [http://www.norges-bank.no/upload/14403/presentasjoner/liquidity\\_risk\\_presentation.pdf](http://www.norges-bank.no/upload/14403/presentasjoner/liquidity_risk_presentation.pdf)
- M. Labovitz “Using Return Level As A Dependence Function In A Statistical Model for the Joint Distribution of the Extreme Values of Equities,” PhD Thesis (in progress), Department of Mathematical Sciences, University of Colorado Denver.
- R.N. Mantegna and H.E. Stanley, *Introduction to Econophysics*,” Cambridge, 2000.

**THANK YOU**



THOMSON REUTERS™