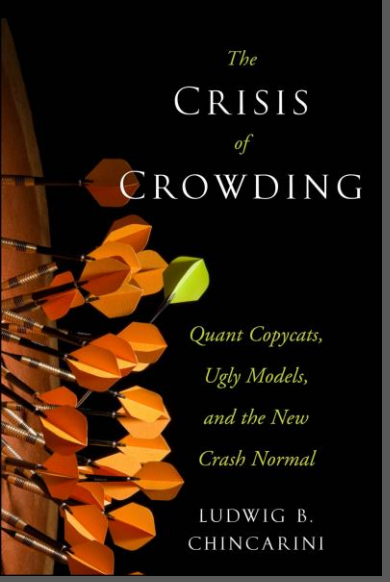
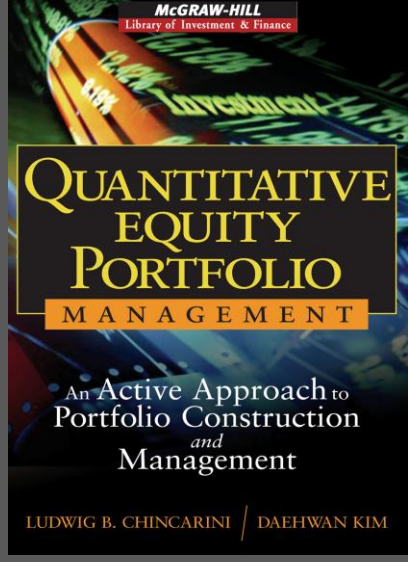


ETF Evolution: Active and Passive across the Asset Allocation Spectrum Trends in Index Development (Alternative Weighting and Equal Weighting, Factor Based Indices, and Anomalies)



Speaking Notes

October 22, 2015

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University of San Francisco

United States Commodity Funds

CANTOR FITZGERALD - ETF EVOLUTION: A COMPREHENSIVE INVESTMENT & RISK MANAGEMENT WORKSHOP
OCTOBER 24, 2015

- Thank you for coming. Thanks to Cantor Fitzgerald and Al Neubert and United States Commodity Funds.

1. Could you describe what is meant by the term market anomaly? Provide examples, e.g. reversion to the mean, return reversal, etc.

Notes

a. *Something that deviates from market efficiency (see QEPM book) on average, not always.*
b. *Momentum, SMB (size), HMB (value), Low Beta, pre-FOMC.*
c. *Past versus Future. Many of the anomalies that worked in the past haven't worked recently. Crowding.*
d. *Even anomalies that work on average, don't work all the time (e.g. Momentum 2009).*

2. Alternative weighting schemes have become much more popular in index development over the past ten years, notably with fundamentals weighted indexing.

a. What can an investor expect from an equally weighted approach to a popular market benchmark, like the S&P 500, over time, in terms of risk-adjusted, net-of-fees, returns?

Notes

a. *Although around a long time, really kicked off when we built a brokerage firm and then brought over to Rydex and launched EW index and ETF.*

b. *Key: Diversification of industries. However, performance has been higher on average.*
   - *Mean Reversion could be cause*
   - *Random MisPricing*
   - *More value and more small size (anomaly)*

c. *Fees. 40 bps versus 9 bps. Thus, on average needs a 31 bps outperformance.*

d. *Past versus Future ($9B versus $163B)*

	2015	2014	2013	2012	2011	2010	2003-2015	Flows	Sigma	Sharpe
RSP	-1.76%	14.06%	35.54%	17.16%	-0.66%	21.37%	10.10%	192%	16.5%	0.610
SPY	0.34%	13.46%	32.31%	15.99%	1.89%	15.06%	8.28%	811%	13.9%	0.598

2. b. What happens to portfolio turnover using an equal weighted scheme and what is the transaction cost comparison to the traditional, cap-weighted alternative?

Notes

a. *I'll let portfolio managers answer this*
b. *When we created the index, we estimated the historical turnover at 29% versus 5% from 1990 – 2002.*
c. *Don't remember measure, but probably number of shares traded to total shares owned.*
d. *Transaction costs/liquidity – limit on ownership of small stocks. Note: Chincarini is currently working on a paper entitled "Transaction Costs and Crowding"*
e. *Taxes – we figured out a brilliant way to handle this when we created RSP (for a full discussion:*

http://ludwigbc.com/pres/etf_04_05_11.pdf)

2. c. How do you determine the rebalancing frequency?

Notes

a. *When we created equal-weight index, we compared benefits of deviation from costs of trading, etc.*
b. *There is no correct answer, but we settled on quarterly.*
c. *In theory, it's that balance one is looking for. Costs versus representativeness, performance versus costs, etc.*

Notes:

Quarterly Rebalancing

Standard & Poor's has arrived at a quarterly rebalancing procedure for the S&P EWI. Apart from striking a balance between representation and investability, this procedure has several practical advantages:

- **Consistency with the S&P 500:** The S&P EWI's rebalancing date will coincide with the date when S&P 500 quarterly share changes are made.
- **Consistency with listed derivative cycle:** The usual quarterly share adjustment date for the S&P 500 is the third Friday on the quarter-ending month. This is the triple-witching date, when listed index options, index futures and stock options expire.
- **Creation of structured products and derivatives:** Between two quarterly rebalancing dates, the S&P EWI will give the arithmetic average return for all 500 stocks in the S&P 500. Given the conventional quarterly cycle for most index derivatives, a quarterly rebalancing procedure will also enable the creation of a rich market of structured products and derivatives around the S&P EWI.

Contingent, or band-based, rebalancing was considered, but was not incorporated because of the following reasons:

- Full rebalance gives a pure arithmetic average of the returns of S&P 500 stocks.
- Indices should be simple to understand, with fund managers and traders having the flexibility to make their own decisions for specific situations.
- Bands would leave index funds open to gaming by traders. For example, suppose a 1 basis point band was established. If a stock were shorted down from .1905% to .1895%, a $10 billion fund family would end up with an unanticipated $1 million purchase of stock.

Source:
http://ludwigbc.com/pubs/SPEWIWhitePaper010703.pdf

2. **d. Factor-based and fundamental based approaches to designing indexes are all the "rage" They tend to get lumped into the popular "smart beta" terminology. What is the difference between factor-based and fundamental based approached to portfolio development?**

Notes

a. *Don't understand question. I think they are the same thing.*
b. *Is "smart beta" really smart? It depends, if indeed an anomaly has been discovered that is mispriced, then if too many people follow (crowding), it will disappear.*
c. *Market cap is wisdom of market, thus for it to work, needs theoretical justification, small assets following (no crowding), and usually constraints to following (e.g. behavioral biases or institutional constraints).*

2. e. How do you weight securities in a portfolio based on factors or fundamentals and how does the rebalancing decision affect transaction costs versus the cap-weighted alternatives?

Notes

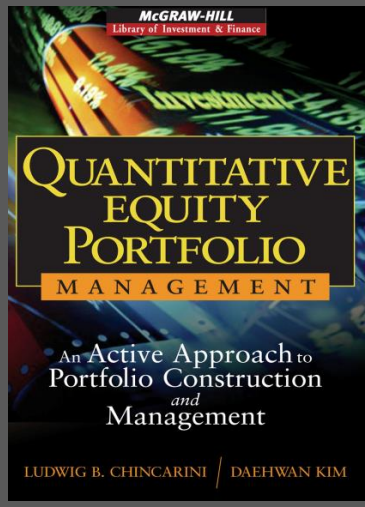
a. *There are many ways to weight – no golden rule.*

b. *Use Z-score or rank in factor category (or multiple factor categories) – See QEPM by Chincarini & Kim*

(http://www.amazon.com/Quantitative-Equity-Portfolio-Management-Construction/dp/0071459391/ref=sr_1_1?ie=UTF8&qid=1343182510&sr=8-1&keywords=quantitative+equity+portfolio+management)

c. *Weight by ranking or Z-score or by decile (equal-weighted) – various ways.*

d. *Rebalance – costs and gains. Some quarterly, some annual.*



3. Are there too many alternative weighted indices? Could there be crowding in this space to where the "anomaly" or the "factor" might be driven out of performance?

Notes

a. Certainly could be possible. Might be why past anomalies are disappearing (e.g. value and size effect).

***b. Crowding** is a real concern in all investment spaces and we need to measure better.*

(More Info: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2616579)

Table. Performance of "Anomalies" for Different Periods								
	Mkt-RF	SMB	HML	MOM	Mkt-RF	SMB	HML	MOM
1964-2000	6.72%	3.47%	5.47%	12.05%	5.80%	2.38%	3.33%	11.38%
2000-2014	4.77%	5.13%	5.66%	0.20%	2.62%	4.70%	5.00%	-6.65%
2010-2014	16.20%	1.65%	-1.00%	4.75%	15.66%	1.33%	-1.12%	4.72%
1990-2014	8.41%	2.27%	3.07%	6.39%	6.64%	1.60%	2.02%	1.58%

4. **How are investors supposed to sort out through all the fundamental indices? How are they supposed to know what matters and what doesn't?**

Notes

a. Difficult question.

b. Maybe a study on the overlap of the new indices?

c. Maybe a better sorting tool on the brokerage websites?

5. How does one deal with the fact that the alternative weighting indices do not have any theory backing them, but the market cap weighting does to a certain extent?

Notes

a. *This is always a potential problem when investing based on past empirical evidence.*
b. *It's related to data mining and data snooping and now the data analytic armies scavenging for relationships.*
c. *Some of the alternative weighting schemes are based on sound ideas and also suit certain types of investor preferences (e.g. equal weight and diversification).*

Open Discussion

1. What is an anomaly? Is it persistence in outperformance?
2. Transaction costs have declined removing many of the barriers to entry in trading “anomalies”.
3. What are some factors that are currently interesting?
4. One needs to think about what is the capacity for a strategy.
5. How do you know whether a factor doesn’t work or its simply a crowded space?
6. Fischer Black used to call Fama a “data miner”. And Gene Fama used his fundamental factor model because it performed better out-of-sample.

Thank you

- Dr. Ludwig Chincarini , CFA
- University of San Francisco
- United States Commodity Funds

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Please buy the books for yourself or as a gift.