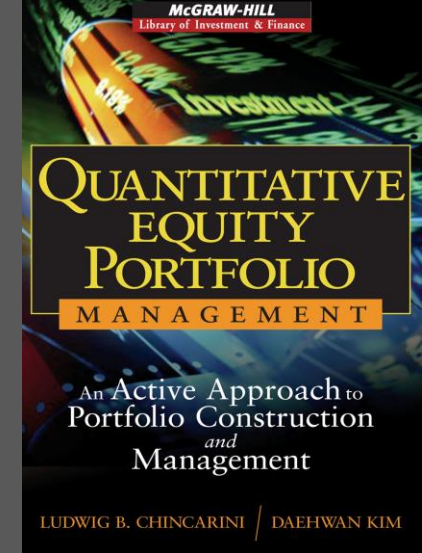


## Alternative Weighted Indices

*Speaking Notes*  
**April 5, 2016**



**Ludwig B. Chincarini, Ph.D., CFA**  
**University of San Francisco**  
**United States Commodity Funds**

**CANTOR FITZGERALD - INVESTMENT REVOLUTION: THE FUTURE OF  
INVESTING AND RISK MANAGEMENT  
APRIL 5, 2016**

- Thank you for coming. Thanks to Cantor Fitzgerald, David Smith, and United States Commodity Funds.



# I. Equal-Weighted Indices – The Beginning of Alternative

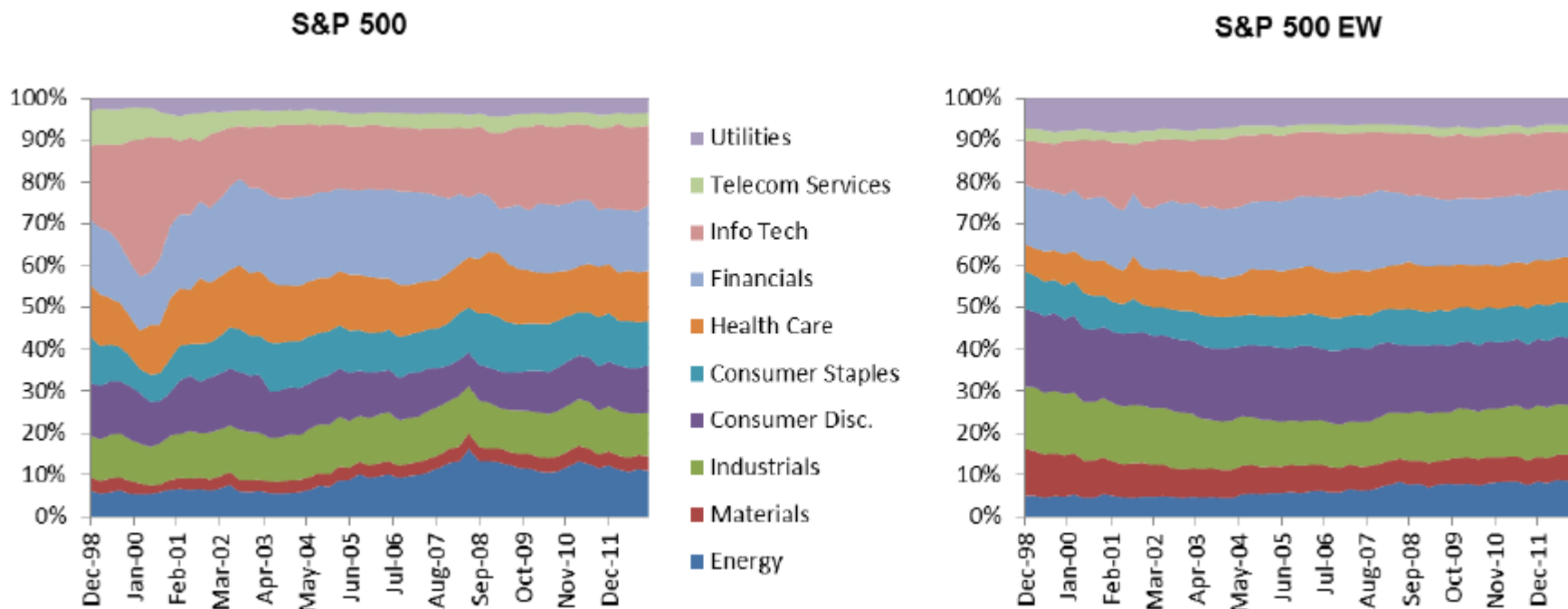
## Notes

- 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

# I. Equal-Weighted Indices – The Beginning of Alternative

## Notes



## II. Rebalancing

### 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.*

## II. Rebalancing

### Notes:

### Quarterly Rebalancing

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

- **Consistency with the S&P 500:** The S&P EWJ'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 EWJ 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 EWJ.

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>

### III. Cap-Weighted has Theory, but Alternative Doesn't

#### Notes

- a. *Market cap is wisdom of market and according to CAPM is what everyone should hold.*
- b. *No "real" theory for alternative weighting. However:*
  - *CAPM has many flawed assumptions.*
  - *Beta has problems empirically*
  - *Buying just because more people buy?*
- 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). Some might be based on data mining.*

### III. Cap-Weighted has Theory, but Alternative Doesn't

#### *Research on Equal-Weighting*

- **DeMiguel, Garlappi, and Uppal (2009)** show that the return of the equal-weighted portfolio is almost always higher than that of portfolios based on mean-variance optimization (there is a response paper).
- **Jacobs, Muller, and Weber (2013)** extend this finding to other datasets and asset classes and suggest easy-to-implement allocation guidelines for individual investors.
- **Bloomfield, Leftwich, and Long (1977)** show that sample-based mean-variance optimal portfolios do not outperform an equally-weighted portfolio.
- **Plyakha, Uppal and Vilkov (2014)** find that the equal-weighted portfolio outperforms the price- and value-weighted portfolios in terms of average return, four-factor alpha, Sharpe ratio, and certainty-equivalent return. They rebalance the portfolios monthly.



### III. Cap-Weighted has Theory, but Alternative Doesn't

#### *Research on Equal-Weighting*

- **Adame-Garcia, Fernández and Sosvilla (2016)** show that in the period 2001-2014 the total return of the equal-weighted IBEX 35 (46.8%) was higher than the return of the value-weighted IBEX 35 (13.21%). They rebalance daily the equal-weighted IBEX 35.
- **Ernst, Thompson and Miao (2016)** show that the return of the equally weighted S&P 500 portfolio is higher than the return of the market capitalization weighted S&P 500 portfolio. They calculate that \$100 invested in the S&P500 in 1958 were worth \$5,212 in 2014; while \$100 invested in the 'equally weighted S&P 500 portfolio' in 1958 were worth \$27,601 in 2014. They rebalance daily the equally weighted S&P 500 portfolio and exclude dividends from all calculations.
- **Brennan and Lo (2010)** *question whether the CAPM can be consistent with efficient frontiers.*

### III. Cap-Weighted has Theory, but Alternative Doesn't

## Research on Equal-Weighting

- **Markowitz (2005)** "When one particular, clearly unrealistic CAPM assumption is replaced by a more real-world version, some of the dramatic, practical conclusions of CAPM no longer follow. This result has implications for financial practice, research, and pedagogy".
- Example (from Chincarini class notes): Taxes

$$\bar{r}_j = r_f + \beta_j \left[ (\bar{r}_M - r_f) - (d_M - r_f)\tau \right] + (\delta_j - r_f)\tau$$

$$\tau = H \cdot \left[ \sum_i \frac{(t_{di} - t_{gi})w_i}{(1 - t_{gi})\lambda_i} \right] / \sum w_i$$

- complicated function of tax rates.

$\delta_j$  = dividend yield on stock  $j$   
 $t_{di}$  = stockholder  $i$ 's marginal tax rate on div/interest  
 $t_{gi}$  = // // on capital gains no long shorts

## IV. Crowding and Alternative Weighting

### Notes

- a. *Crowding and automation of alt weighting schemes might be causing crowding. 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](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2616579) )

	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%

# References

1. DeMiguel, V., L. Garlappi, and R. Uppal. 2009. "Optimal versus Naive Diversification: How Inefficient Is the 1/N Portfolio Strategy?" *Review of Financial Studies* 22 (5): 1915–1953. doi:10.1093/rfs/hhm075.
2. Jacobs, H., Müller, S. and M. Weber (2013), "How Should Individual Investors Diversify? An Empirical Evaluation of Alternative Asset Allocation Policies", *Journal of Financial Markets*, 19, 62-85.
3. Bloomfield, T., Leftwich, R. and J. Long (1977), "Portfolio strategies and performance", *Journal of Financial Economics* 5: 201–18.
4. Plyakha, Y., Uppal, R. and G. Vilkov (2014), "Equal or Value Weighting? Implications for Asset-Pricing Tests", Available at SSRN: <http://ssrn.com/abstract=1787045>.
5. Adame-Garcia, V.M.; Fernández, F. and S. Sosvilla (2016), "Portfolios in the Ibex 35 Index: Alternative Methods to the Traditional Framework, a Comparative with the Naive Diversification in a Pre- and Post- Crisis Context", *Applied Economics*, <http://dx.doi.org/10.1080/00036846.2016.1145352>

# References

6. Ernst, P., J. Thompson and Y. Miao (2016), "Portfolio Selection: The Power of Equal Weight", <http://arxiv.org/pdf/1602.00782.pdf>
7. Brennan, T. J., and Andrew W. Lo (2010), "Impossible Frontiers." *Management Science* 56 905–923.

# Open Discussion

# Thank you

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

[www.ludwigbc.com](http://www.ludwigbc.com)

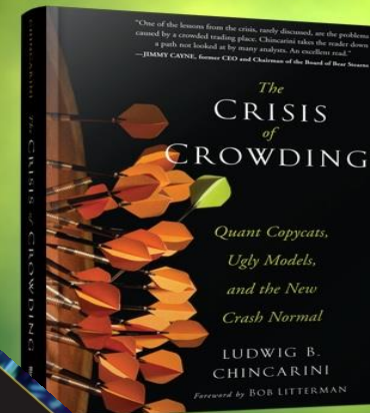
[chincarini@hotmail.com](mailto:chincarini@hotmail.com)

# More Information



A RARE, IN-DEPTH ANALYSIS OF  
THE 2008 FINANCIAL CRISIS

“An excellent read.” —JIMMY CAYNE



A unique blend of storytelling and sound quantitative analysis, *The Crisis of Crowding* explores the circle of greed from homeowners to real estate agents to politicians to Wall Street.

Linking the 2008 financial crisis back to the 1998 crisis of LTCM, *The Crisis of Crowding* shows how banks, hedge funds, and other market participants repeated the sins of the past and how the collapse of Lehman Brothers led to market insanity thanks to the irrational behaviors of buyers and sellers in the crowded space.

LEARN MORE ▶

Bloomberg  
PRESS