
FPA of Nebraska

Hidden Cost of Indexing

Joel Schneider

Deputy Head of Portfolio Management, North America and Vice President

October 22, 2024

This information is provided for registered investment advisors and institutional investors and is not intended for public use. Dimensional Fund Advisors LP is an investment advisor registered with the Securities and Exchange Commission.

Agenda

Index \neq Market

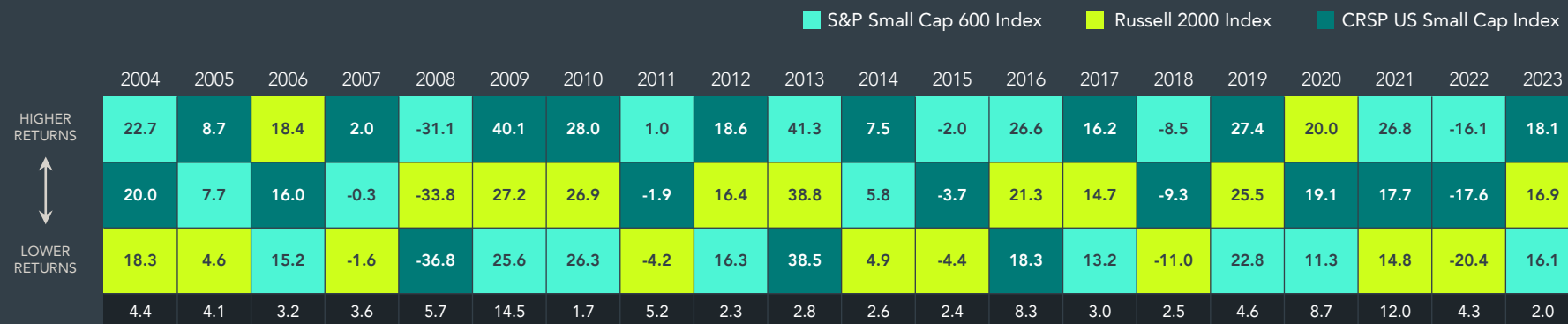
Active Decisions by Index Providers

Hidden Costs of Indexing

Implications for Investors

Which Index is the US Small Cap Market?

US Small Cap (return %)



Difference between highest and lowest (%)

Average difference = 4.9%

Source: S&P data © 2024 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. CRSP data provided by the Center for Research in Security Prices, University of Chicago. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes.

Past performance is not a guarantee of future results. Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio.

Sizable Tracking Error Between Benchmark Indices



US Large Cap Growth, July 2001–December 2023

	Russell 1000 Growth Index	Dow Jones U.S. Large-Cap Growth Total Stock Market Index	S&P 500 Growth Index	MSCI USA Large Cap Growth Index	CRSP US Large Cap Growth Index
ANNUALIZED TRACKING ERROR (%)					
Russell 1000 Growth Index			<p>2.6% Average Tracking Error</p>		
Dow Jones U.S. Large-Cap Growth Total Stock Market Index	2.73				
S&P 500 Growth Index	2.49	3.85			
MSCI USA Large Cap Growth Index	1.79	2.97		3.00	
CRSP US Large Cap Growth Index	1.71	2.80		3.06	1.98
INDEX PERFORMANCE (%)					
Compound Annualized Returns	9.29	10.01	8.98	9.19	9.19

●————— 103 bps range —————●

The sample period shown reflects a common sample for which data is available for all indexes presented.

All returns in US dollars. Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio. Past performance is not a guarantee of future results.

Sources: Dow Jones/S&P, FTSE/Russell, MSCI. All indices are gross dividends. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes. Dow Jones and S&P data © 2024 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. MSCI data © MSCI 2024, all rights reserved. CRSP data provided by the Center for Research in Security Prices, University of Chicago.

Agenda

Index \neq Market

Active Decisions by Index Providers

Hidden Costs of Indexing

Implications for Investors

Index Providers Make Active Decisions

1.

How much
of the universe
to cover?

2.

Which stocks
to select for
their index?

3.

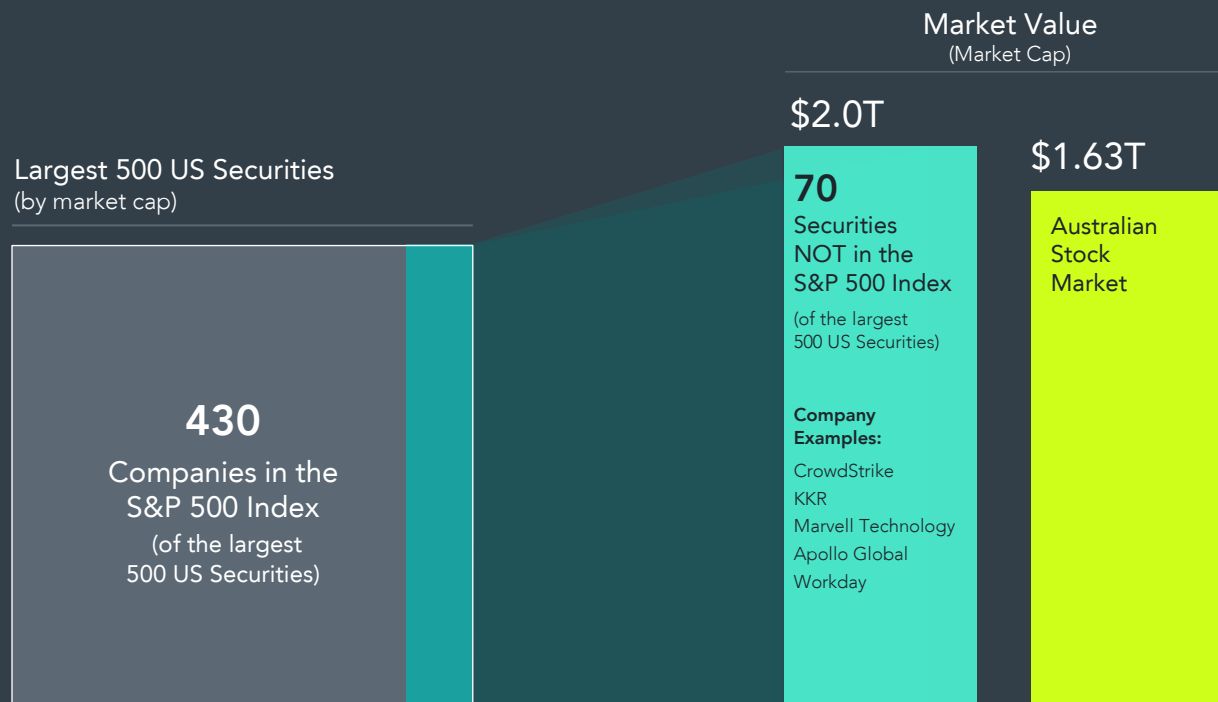
How often to
reconstitute
the index?

4.

When to
announce the
changes for
reconstitution
events?

Not all the Largest US Securities are in the S&P 500 Index

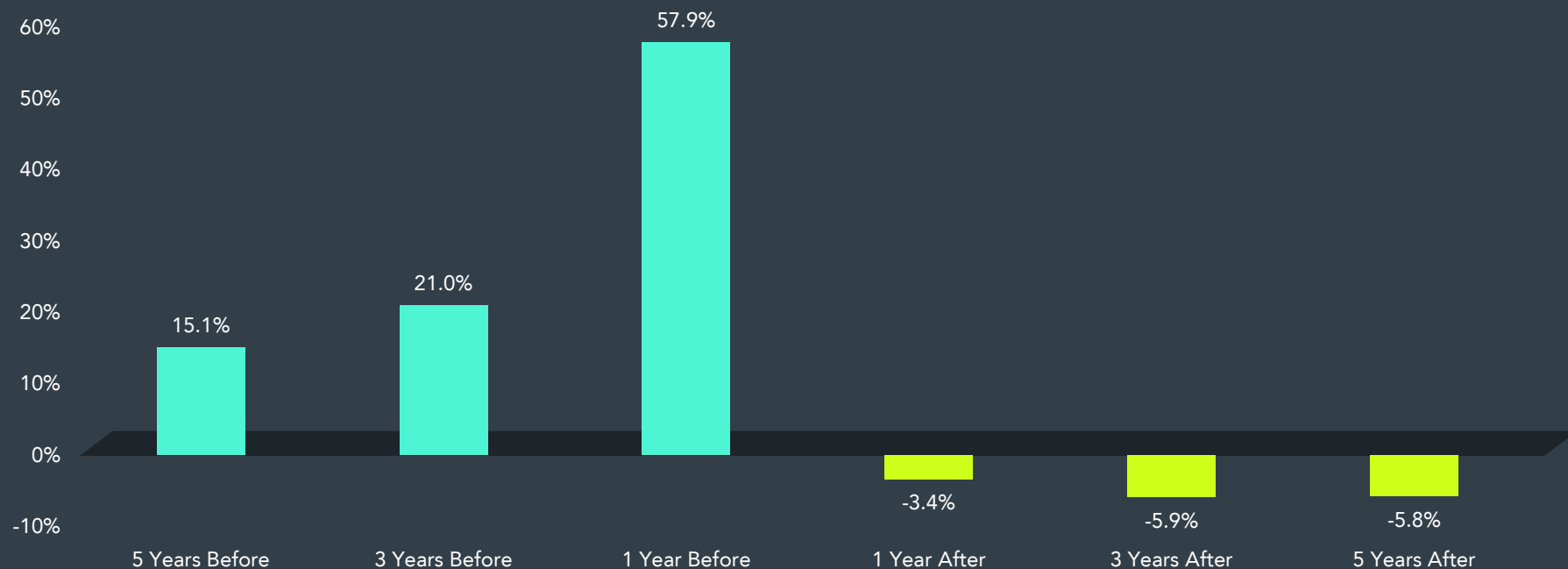
As of March 31, 2024



This information is intended for educational purposes and should not be considered a recommendation to buy or sell a particular security. Named securities may be held in accounts managed by Dimensional. Source: Dimensional, using data from Russell, S&P, and MSCI. Companies not in the S&P 500 Index are those in the top 500 stocks by market capitalization in the Russell 3000 Index as of February 29, 2024, but missing from the S&P 500 Index. The Russell 3000 is a market cap weighted index. The Company Examples provided are the 5 largest securities by market cap that are within the 500 largest US securities but are not included within the S&P 500 Index. The exclusion of some companies from the S&P 500 Index is due to additional inclusion criteria specified by the Index. Australian Stock Market represented by Australia's market capitalization in the MSCI All Country World IMI Index. Indices are not available for direct investment. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes. All rights reserved. © 2024 S&P Dow Jones Indices LLC, a division of S&P Global. MSCI data © MSCI 2024, all rights reserved.

Performance of S&P 500 Index Additions

Average relative returns vs. S&P 500 Index, additions from January 2014 to May 2024

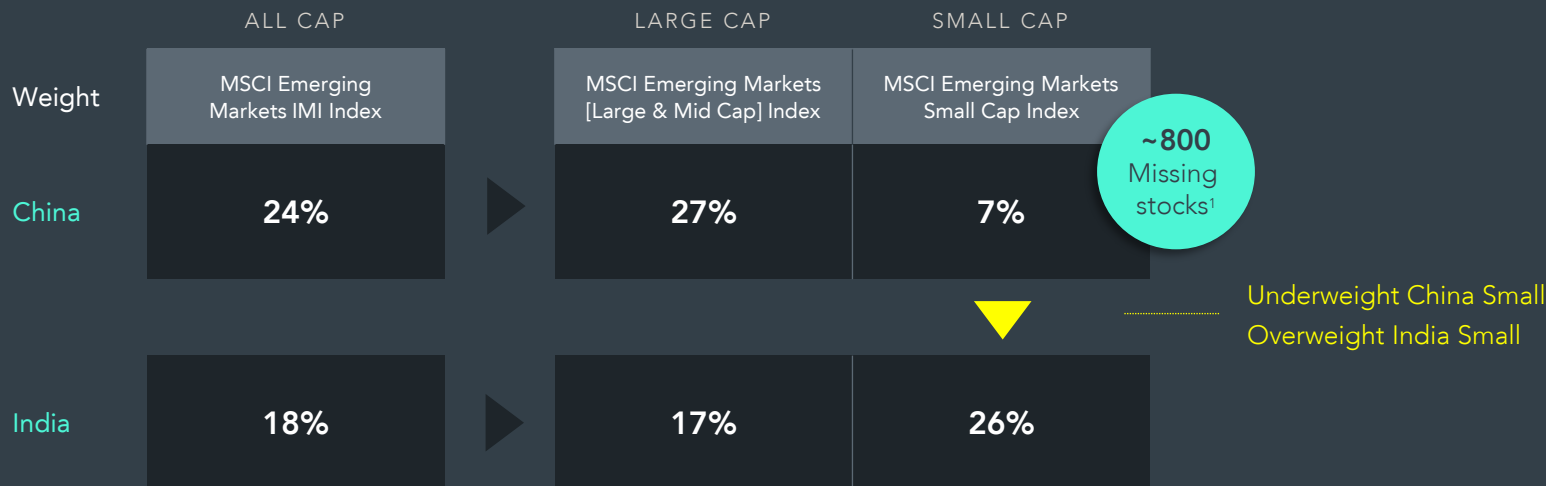


Past performance is not a guarantee of future results.

Source: Dimensional. In USD. Average Relative Returns vs the S&P 500 Index are annualized returns for stocks added to the S&P 500 Index minus the return of the S&P 500 Index over the same period, averaged for all stocks. 182 stocks were added to the S&P 500 between January 1, 2014 and May 31, 2024. Excludes stocks added to index via spin-off. Returns after the addition to the index include each stock where the addition date was 1 year, 3 years, or 5 years prior to May 2024, respectively. Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio. S&P data © 2024 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. Diversification does not eliminate the risk of market loss. FOR RESEARCH AND EDUCATIONAL PURPOSES

How Much of the Universe to Cover?

Are you getting consistent coverage across each market?



Data as of 12/31/2023. MSCI data © MSCI 2024, all rights reserved.

1. Small caps not in the index that meet Dimensional's eligibility requirements, which include standards around liquidity, free-float, financial disclosures, among other considerations.

Large Cap Weights in a Small Cap Index



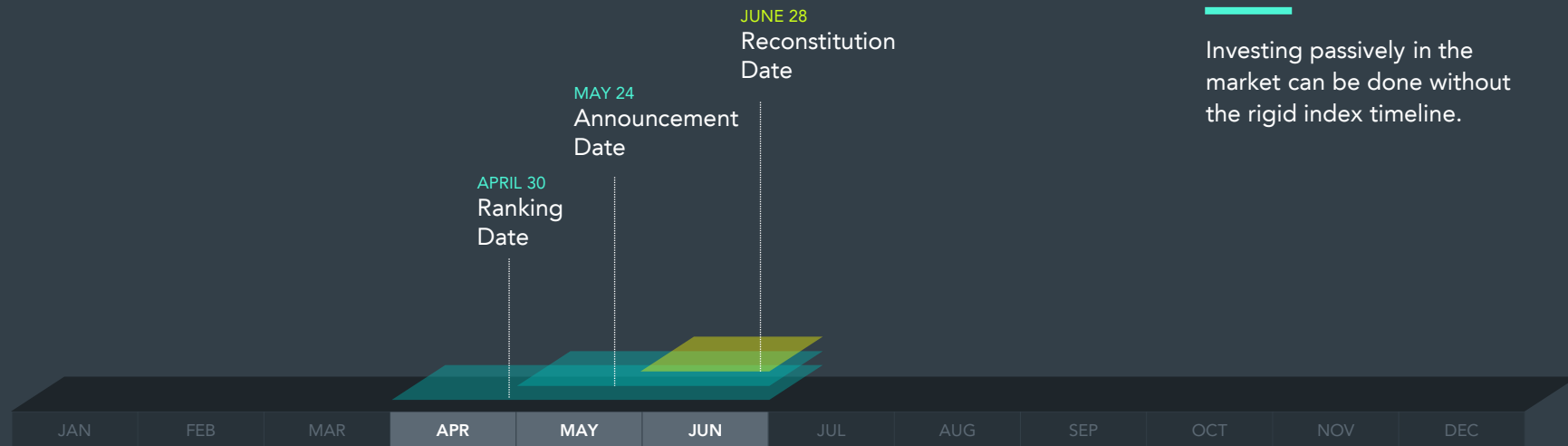
CRSP US Small Cap Index, percent weight in stocks also held by S&P 500 Index, June 2014–May 2024



Source: Dimensional. Percent Weight in Stocks Held by S&P 500 is the sum of the weight of all stocks within the CRSP US Small Cap Index that are also constituents of the S&P 500 Index. Values are calculated using monthly holdings. CRSP rebalances quarterly in March, June, September, and December. Indices are not available for direct investment. CRSP data provided by the Center for Research in Security Prices, University of Chicago. Holdings are subject to change. S&P data © 2024 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved.

Index Funds Use Stale Data When Reconstituting

Russell Index Reconstitution Timeline 2024



Agenda

Index \neq Market

Active Decisions by Index Providers

Hidden Costs of Indexing

Implications for Investors

Total Cost of Ownership is More than the Expense Ratio

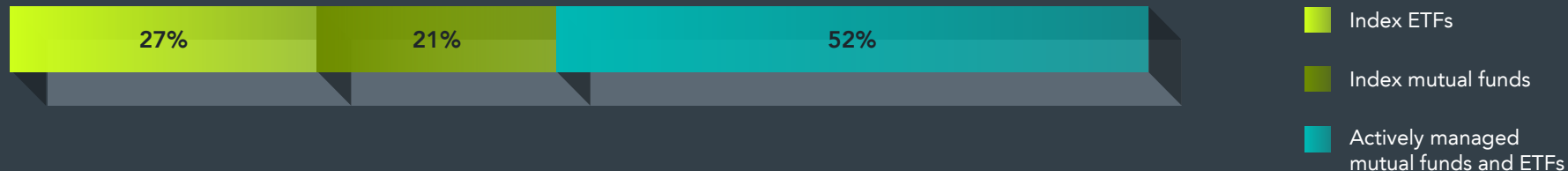


Trillions of Dollars Track Indexes

Indexers demand liquidity, which the market provides, at a cost

Percentage of total net assets, year-end 2023

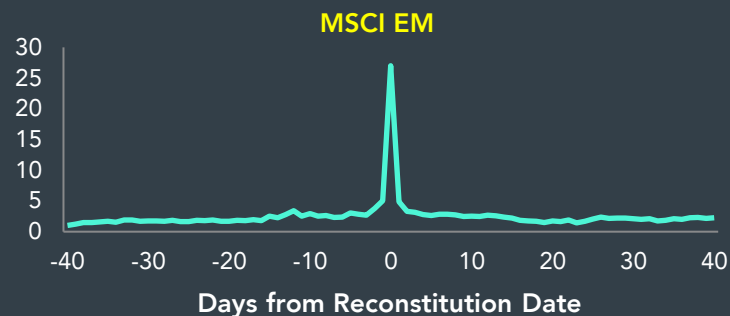
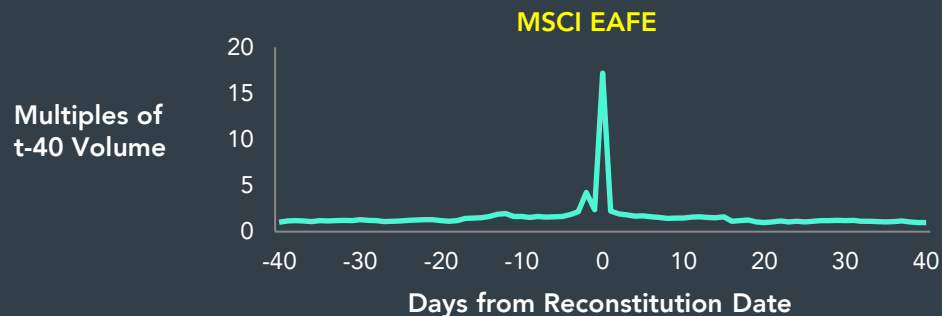
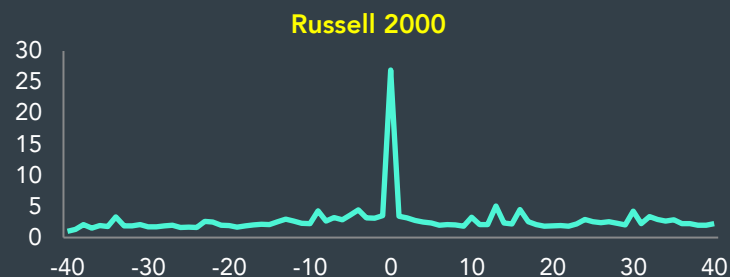
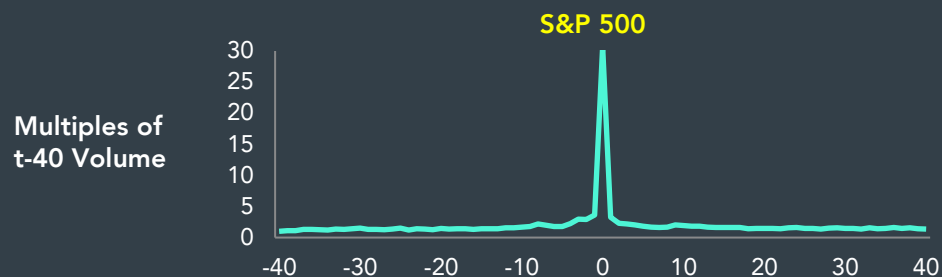
\$27.6T total net assets



- Index funds account for **48%** of the fund market.
- That is **\$13.3 trillion** in assets.
- After accounting for institutional index accounts, that number is even larger.
- Most index turnover is concentrated on a few days per year, creating a massive demand for liquidity.
- The market will provide liquidity, but not for free.

Avoiding Immediacy-Driven Price Movement

Equal-Weighted Average Trade Volume for Index Additions and Deletions, 2019–2023

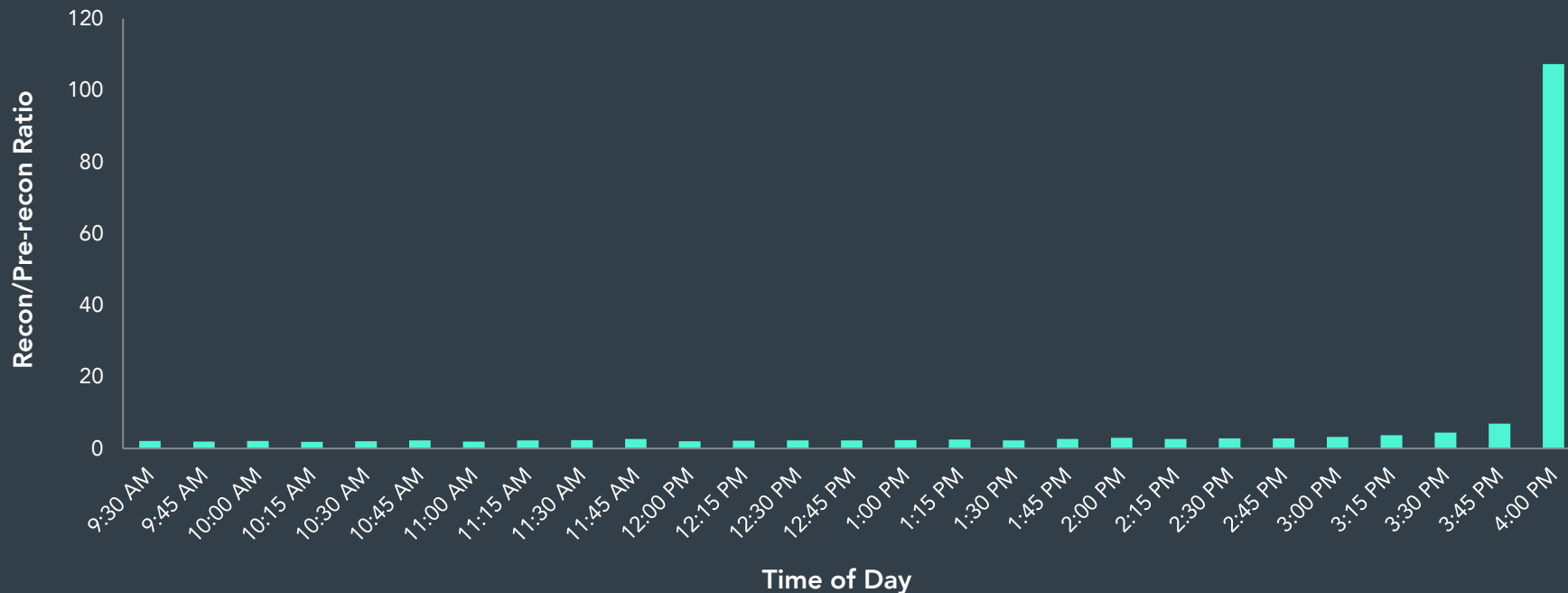


S&P data © 2024 S&P Dow Jones Indices LLC, a division of S&P Global. Frank Russell Company is the source and owner of the trademarks, service marks, and copyrights related to the Russell Indexes. MSCI data © MSCI 2024, all rights reserved. Trading volume sourced from Bloomberg L.P. Multiples of t-40 volume is the trading volume at the specific time relative to trading volume at t-40 (40 days prior to index addition or deletion). Past performance is no guarantee of future results. Indices are unmanaged and cannot be invested into directly.

Indices change their reconstitution dates and methodologies from time to time. The data depicted during the relevant period may reflect a number of different reconstitution practices. This data does not suggest that past performance will re-occur in future periods, as index reconstitution may be different in the future. Other simultaneous events, such as triple-witching dates, could lead to spikes in volume, in addition to reconstitution dates and fund trades which follow them.

Intraday Volume Effects of Reconstitution: S&P 500

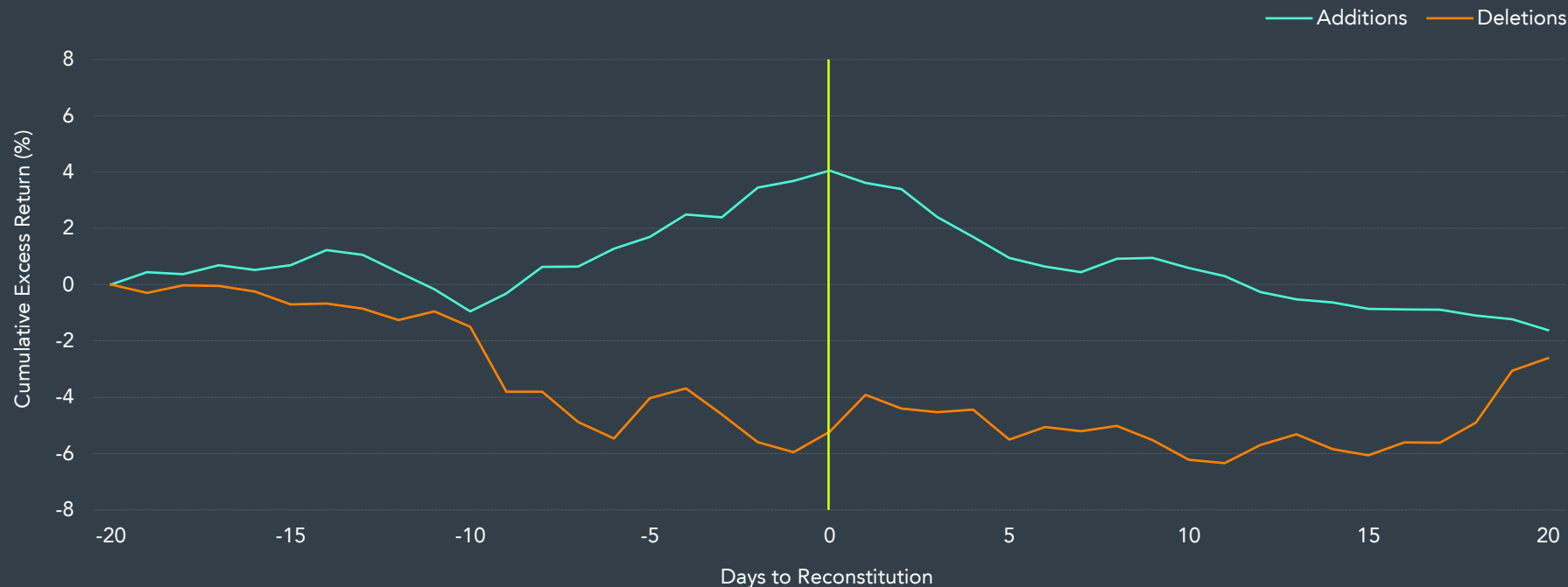
Demands for liquidity can increase considerably in the close



Sample includes all additions and deletions to the S&P 500 Index in 2018. Chart shows average intraday volume on reconstitution day divided by average volume over the 30 days prior to reconstitution. Indices change their reconstitution dates and methodologies from time to time. The data depicted during the relevant period may reflect a number of different reconstitution practices. This data does not suggest that past performance will re-occur in future periods, as index reconstitution may be different in the future. Other simultaneous events, such as triple-witching dates, could lead to spikes in volume, in addition to reconstitution dates and fund trades which follow them.

Price Pressure Around Reconstitution

Average Cumulative Excess Return of Index Additions and Deletions, January 2014–December 2023

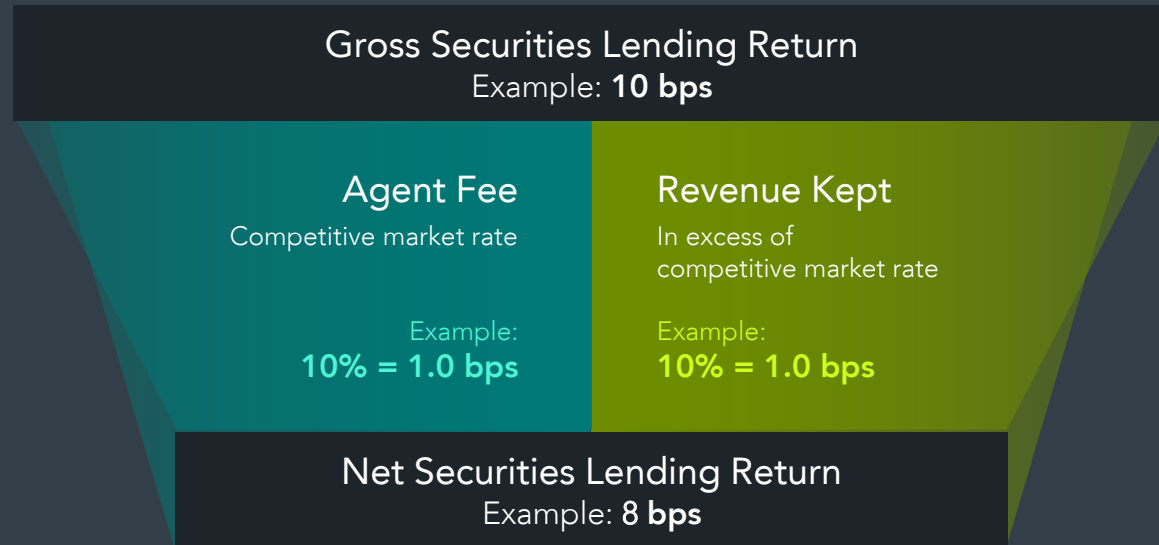


Past performance is no guarantee of future results.

Sample includes all additions and deletions from 10 US indices for securities that are added to (or deleted from) an index. Sample is restricted to nonmigrating securities, which are stocks that are added to (or deleted from) an index and are not also deleted from (or added to) another index from the same index family on the same reconstitution date. See "Appendix: Index Migrations" for more information on what defines a migrating event for S&P, Russell, and CRSP indices and the indices included in the sample. Cumulative excess returns (CERs) are calculated as the cumulative sum of the daily excess returns for an individual security vs. its respective index from market close 20 trading days before reconstitution. Cumulative excess returns for deletions are multiplied by -1 before being averaged with cumulative excess returns of additions. Value-weighted average CERs are calculated by weighting the sets of CERs on a day by the securities' respective free-float market capitalizations as of the most recent month prior to reconstitution.. Tesla's addition to the S&P 500 on December 18, 2020, is excluded. Indices are not available for direct investment; therefore their performance does not reflect the expenses associated with the management of an actual fund.

Hidden Costs in Securities Lending

Some index managers keep some of the profits from securities lending



- Do you know if, and how much, securities lending revenue your index manager is keeping?
- Is the amount of revenue consistent with competitive market rates?
- Amounts kept in excess of the market rate could be considered **shadow management fees**

Agenda

Index \neq Market

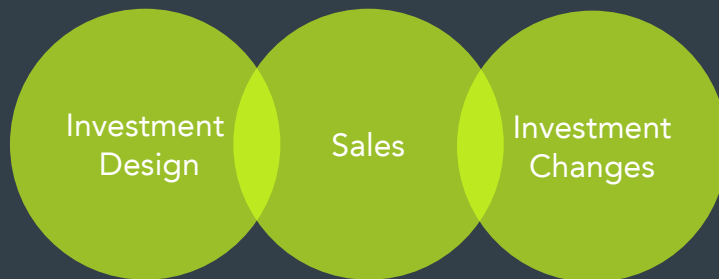
Active Decisions by Index Providers

Hidden Costs of Indexing

Implications for Investors

Are Index Providers Fiduciaries?

Index
Provider



Index
Manager



MSCI

"This **fiduciary duty is fundamentally at odds with the role of index providers** in the capital markets ecosystem, which is to produce independent and rules-based information for use by market participants."¹

S&P

"Each index is designed in accordance with stated rules; it is **not intended to meet the investment objective** of any individual licensee or investor. Although S&P DJI often includes design features to create indices that are stable, liquid and replicable when developing its indices, it **does not consider the investment needs** of its individual licensees and/or the downstream investors in our licensees' investment products. **In fact, S&P DJI is not even necessarily aware of what those investment needs are.**"

1. <https://www.sec.gov/comments/s7-18-22/s71822-20136043-306781.pdf>
2. <https://www.sec.gov/comments/s7-18-22/s71822-20136253-307288.pdf>

Implications for Investors

Due Diligence

Index providers make active decisions:

- Stock selection
- Reconstitution frequency
- Add/drop/weight changes

Their decisions could impact some of your largest investments.

Have you done due diligence on your index providers?

Total Cost

Index implementation can have hidden costs:

- Trading
- Securities lending
- Style drift

Additional costs related to

- Licensing
- FX
- Corporate actions

Have you done a full rigorous accounting of all costs?

Benchmarking

Indexes are not "the market"

There are significant return differences within each asset class.

If the investment and benchmark are the same index, where is your independent check?

How would you know if your index investment is leaving money on the table?

Potential Improvements

Keep broad diversification and low costs.

Avoid infrequent rebalancing and costly trading.

Use a daily process.

Avoid pre-announcing trades and trading when everyone else is.

Are there other rules-based approaches that have a track record of outperforming indexes?

Questions?

Appendix: Index Migrations

S&P	Russell	CRSP
<p>S&P 500: Additions (deletions) that are deleted from (added to) the S&P 400 or S&P 600 indices</p> <p>S&P 400: Additions (deletions) that are deleted from (added to) the S&P 500 or S&P 600 indices</p> <p>S&P 600: Additions (deletions) that are deleted from (added to) the S&P 400 or S&P 500 indices</p>	<p>Russell 2000: Additions (deletions) that are deleted from (added to) the Russell 1000 Growth or Russell 1000 Value indices</p> <p>Russell 1000 Growth: Additions (deletions) that are deleted from (added to) the Russell 2000 or Russell 1000 Value indices (or weight adjusted in Russell 1000 Value Index)</p> <p>Russell 1000 Value: Additions (deletions) that are deleted from (added to) the Russell 2000 or Russell 1000 Growth indices (or weight adjusted in Russell 1000 Growth Index)</p>	<p>CRSP US Large Cap Growth: Additions (deletions) that are deleted from (added to) the CRSP US Small Cap or CRSP US Large Cap Value indices (or weights adjusted in either index)</p> <p>CRSP US Large Cap Value: Additions (deletions) that are deleted from (added to) the CRSP US Small Cap or CRSP US Large Cap Growth indices (or weights adjusted in either index)</p> <p>CRSP US Mid Cap: Additions (deletions) that are deleted from (added to) the CRSP US Small Cap Index (or weight adjusted in the CRSP US Small Cap Index)</p> <p>CRSP US Small Cap: Additions (deletions) that are deleted from (added to) the CRSP US Large Cap Growth, CRSP US Large Cap Value, or CRSP US Mid Cap indices (or weights adjusted in either index)</p>