

The index rebalancing act

As index investments have become increasingly popular, trading around the dates when indices rebalance has become crowded, causing risk from unpredictable price volatility

Index funds are often thought to be the lowest cost, simplest means of gaining market exposure. But their success in attracting assets risks cutting into investors' returns, if not dealt with proactively.

Legal & General Investment Management (LGIM) has offered these solutions for over 30 years, growing to become the fifth largest index manager in the world.¹ During this time, we have observed various risks and inefficiencies that, for the benefit of our investors, we have been able to mitigate pragmatically and even take advantage of. For example, as the amount of money tracking popular market cap-weighted indices has increased over the years, growing numbers of investors have become susceptible to the risks associated with stock prices around rebalance events, our research suggests.

These inefficiencies are only likely to grow as we expect the price volatility of stocks in popular core equity indices to increase as more investors embrace core equity index solutions. As a result, we take a more proactive approach to tackling the risks that come with the crowds.



Howie Li is Head of ETFs, leading the development and growth of the ETFs at LGIM. Howie was most recently the CEO of Canvas before joining LGIM after the successful acquisition of the Canvas ETF business.



David Barron is Head of Index Equity and Factor-based Investing. He focuses on research and strategy in addition to overseeing the team responsible for index equity implementation.

¹ Pensions & Investments, The largest index managers survey 2018.

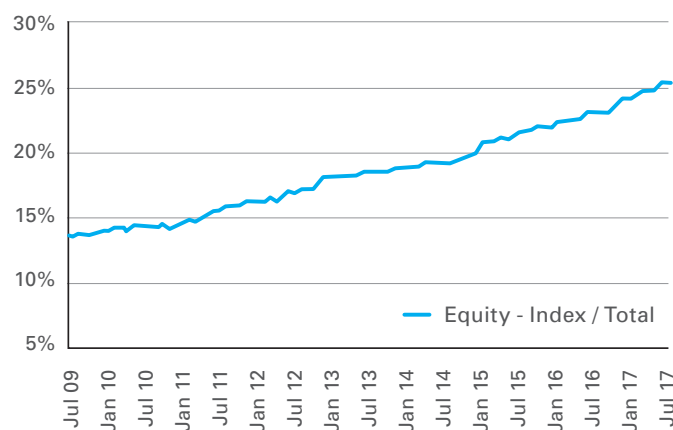
More assets, more risks?

It is no secret that the popularity of index investing has exploded in recent years. Investors have embraced the many advantages of index funds, such as comparatively lower headline costs and broad market exposure. The proliferation of index assets into the market landscape, especially those tracking popular market-cap equity benchmarks, has continued to grow over the past decade.

In the US, some 38% of all equity assets are in index-tracking funds, according to research from Bank of America Merrill Lynch and Moody's, which estimate that the US equity fund market could reach a 50:50 active/index split by as early as 2020. In absolute terms, PwC estimates that as at 2016, there were \$14 trillion of index-tracking assets under management – a figure the group believes will more than double by 2025.*

*Source: PWC, Asset & Wealth Management Revolution: Embracing Exponential Change, 2017

Figure 1: Assets in equity index tracking funds as a % of total AUM of all equity funds



Source: Bank of America Merrill Lynch and Moody's

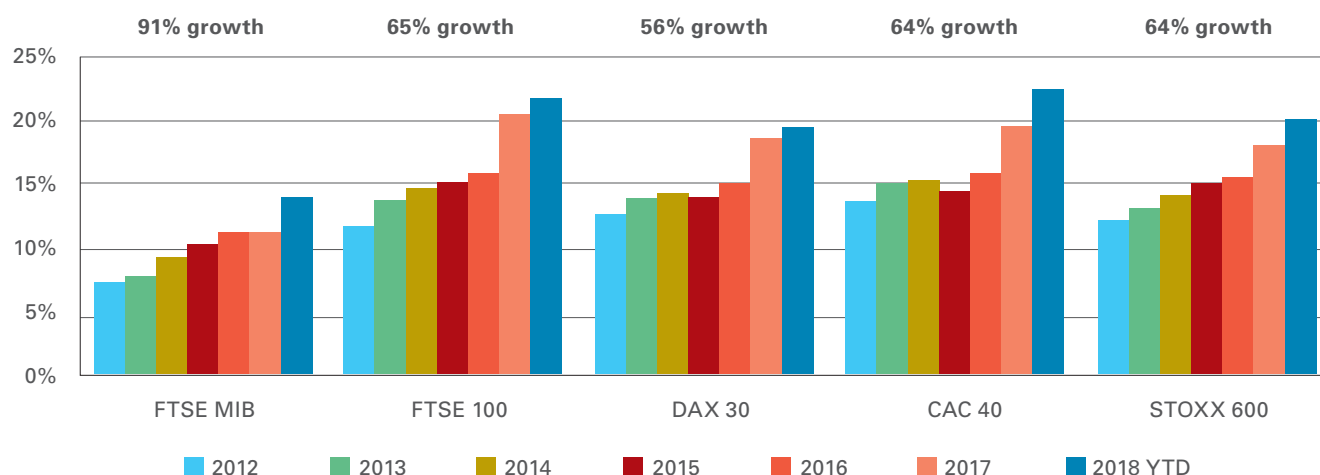
The price of popularity

Index fund managers' objectives during this time have been primarily focused on tracking indices as closely as possible. However, as index investments become ever more popular, the crowds of index investors trading at or around rebalance dates have increased share price volatility, which might have previously gone unnoticed.

When an index provider chooses to add or remove a stock from their index, this is a decision both in line with the rules that govern the particular index and made public well in advance of the change. Index fund

managers who wish to keep the tracking difference between the fund and the index to a minimum will often trade these changes on the last day before the changes are implemented, so as to be as closely aligned to their benchmarks as possible. However, as the logic of supply and demand dictates, the more demand to trade the same stocks – of which there is a fixed supply – around a certain date, the higher the likelihood of the price of those stocks being temporarily elevated or at least experiencing short-term volatility.

Figure 2: Proportion of activity executed in the closing auction



Source: J.P Morgan Tick+

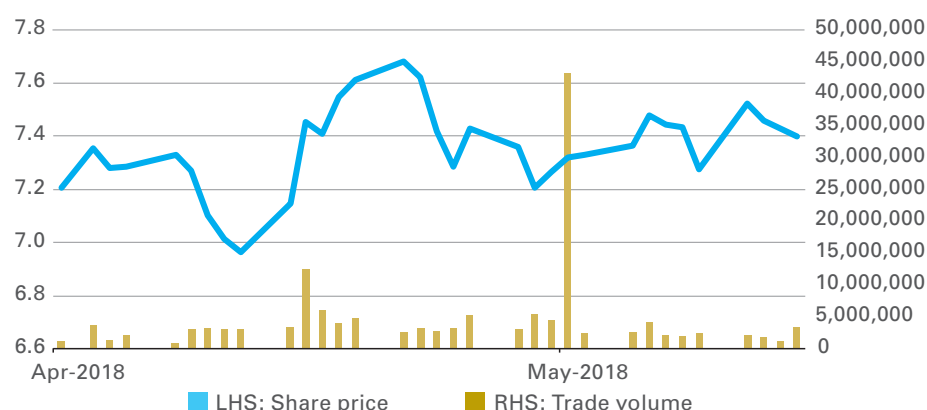
Overall turnover for index funds tends to be relatively low over most periods with the notable exception of these rebalance dates. In May 2018, a major equity index's review included around 50 additions and deletions, resulting in a more than 13-fold increase in trading volume in a single day compared to the previous month. Our estimates suggest that, depending on the index, the third Friday of each quarter, or the last day of May and November, see significant trading volume of index constituents as a result of major index rebalances.

We examined the potential performance difference of trading the stocks involved in a major global equity index rebalance on the announcement date, instead of waiting until immediately before the effective rebalance date, which is typically a few weeks later. Over the course of 14 rebalances, from February 2015 to May 2018, this

strategy on average would have earned 6.5 basis points of performance annually, our research suggests. Alternatively presented, by trading on the day of an index rebalance, investors potentially lost up to 6.5 basis points, which may have been mitigated by avoiding the crowded trading on rebalance dates.

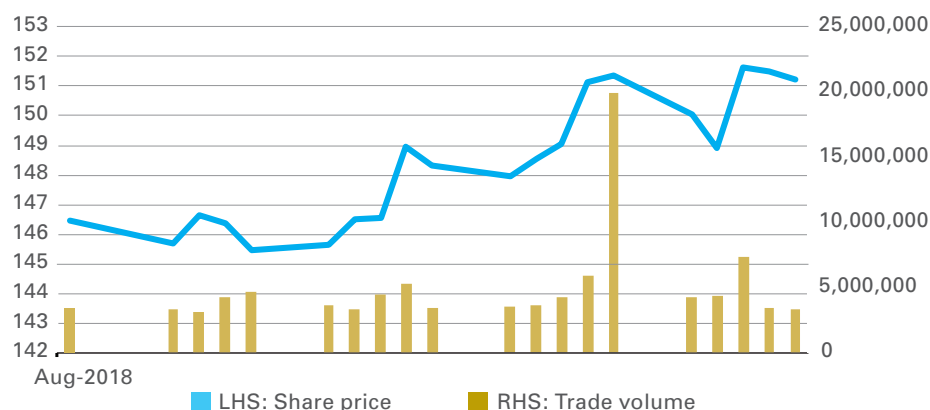
Research from Berkeley helps explain why this may be the case: many stocks they looked at traded well above their average price levels both following the announcement that they would be added to core market indices and the rebalance day, often giving back some of those gains in the days following.² For the individual companies being traded, these events can see extreme spikes in trading volumes compared to days prior and following the rebalance, a consequence which naturally has an effect on price volatility.

Figure 3: MSCI May 2018: Pirelli - Deletion



Source: Bloomberg

Figure 4: S&P September 2018: IBM - Weight Increase



Source: Bloomberg

² Quinn and Wang, *The Impact of Adds and Deletes on the Returns of Stock Indexes*, Berkeley

Quiet dates

Tracking indices which rebalance away from the crowds, or simply less frequently than other market benchmarks, can also help curb the associated risk of unpredictable price volatility. As seen in the rebalancing calendar, detailed in the appendix, an index which is adjusted at a different point than quarter end can avoid the throng of major index providers. Investors can still gain broad market exposure through index-tracking equity funds that rebalance during these 'quieter' periods compared to the popular core benchmarks.

In our core equity exchange traded funds (ETFs), for example, we track the performance of indices independently managed and calculated by Solactive, a global market leader in the indexing industry, with over 10 years' experience and \$200 billion invested in its index-linked products, as at January 2018. These indices are designed to rebalance at times prior to when many of the major index providers announce changes to their indices. Nevertheless, based on our historical analysis, they have been 99.9% correlated with comparable benchmarks from a major global index provider.

Experienced index management

There is, of course, more to managing the inefficiencies associated with index investing than changing the rebalance date alone. Index fund management has acquired the unfortunate nickname of being 'passive' when in fact it should be anything but.

At LGIM, our pragmatic approach to index replication allows us to potentially boost investors' returns through mitigating predictable drags on performance. For instance, our experienced index fund management team can attempt to anticipate likely index changes or employ optimal trading strategies when corporate events occur.

Demanding more than just low fees

As investors become more aware of the inefficiencies of 'default' indexing when it comes to rebalance events, the more they are likely to demand of their index fund managers. With the popularity of index tracking investments unlikely to abate in the near term, we believe it is up to managers to help manage the risks we have outlined in this piece, through solutions such as tracking indices with alternative rebalance dates.

In addition, a more pragmatic means of index replication to mitigate other index inefficiencies can potentially reduce costs for investors or even boost returns. In our recently launched range of core market equity ETFs, we seek to do both for the benefit of our clients – showing that the growing number of index investors can and should expect more from their index fund managers.



Appendix

Figure 5: The rebalance calendar

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Topix / TSE REIT	Topix / TSE REIT	Topix / TSE REIT	Topix / TSE REIT	Topix / TSE REIT	Topix / TSE REIT	Topix / TSE REIT	Topix / TSE REIT	Topix / TSE REIT	Topix / TSE REIT	Topix / TSE REIT	Topix / TSE REIT
OMX	Hang Seng	FTSE GEIS SAIR	OMX	Hang Seng	FTSE GEIS SAIR	OMX	Hang Seng	FTSE GEIS SAIR	OMX	Hang Seng	FTSE GEIS SAIR
S&P Dividend	MSCI QIR	FTSE Domestic	S&P Dividend	MSCI SAIR	FTSE Domestic	S&P Dividend	MSCI QIR	FTSE Domestic	S&P Dividend	MSCI SAIR	FTSE Domestic
		FTSE EPRA			FTSE EPRA		JPX/ Nikkei	FTSE EPRA			FTSE EPRA
		DAX/ IBEX			DAX/ IBEX			DAX/ IBEX			DAX/ IBEX
		Euronext			Euronext			Euronext			Euronext
		STOXX			STOXX			STOXX			STOXX
		S&P			S&P			S&P			S&P
		NASDAQ			NASDAQ			NASDAQ			NASDAQ
		Russell			Russell			Russell			Russell
		CRSP			CRSP			CRSP			CRSP
		S&P ASX / TSX			S&P ASX / TSX			S&P ASX / TSX			S&P ASX / TSX
		Nikkei			Nikkei			Nikkei			Nikkei
		Kospi			Kospi			Kospi			Kospi
		ETF Specialist			ETF Specialist			ETF Specialist			ETF Specialist

Source: LGIM

The information contained in this document (the 'Information') has been prepared by Legal & General Investment Management Limited, or by Legal and General Assurance (Pensions Management) Limited and/or their affiliates ('Legal & General', 'we' or 'us'). Such Information is the property and/or confidential information of Legal & General and may not be disclosed by you to any other person without the prior written consent of Legal & General.

No party shall have any right of action against Legal & General in relation to the accuracy or completeness of the Information, or any other written or oral information made available in connection with this publication. Any investment advice that we provide to you is based solely on the limited initial information which you have provided to us. No part of this or any other document or presentation provided by us shall be deemed to constitute 'proper advice' for the purposes of the Pensions Act 1995 (as amended). Any limited initial advice given relating to professional services will be further discussed and negotiated in order to agree formal investment guidelines which will form part of written contractual terms between the parties.

Past performance is no guarantee of future results. The value of an investment and any income taken from it is not guaranteed and can go down as well as up, you may not get back the amount you originally invested.

The Information has been produced for use by a professional investor and their advisors only. It should not be distributed without our permission.

The risks associated with each fund or investment strategy are set out in this publication, the relevant prospectus or investment management agreement (as applicable) and these should be read and understood before making any investment decisions. A copy of the relevant documentation can be obtained from your Client Relationship Manager.

Confidentiality and Limitations:

Unless otherwise agreed by Legal & General in writing, the Information in this document (a) is for information purposes only and we are not soliciting any action based on it, and (b) is not a recommendation to buy or sell securities or pursue a particular investment strategy; and (c) is not investment, legal, regulatory or tax advice. Any trading or investment decisions taken by you should be based on your own analysis and judgment (and/or that of your professional advisors) and not in reliance on us or the

Information. To the fullest extent permitted by law, we exclude all representations, warranties, conditions, undertakings and all other terms of any kind, implied by statute or common law, with respect to the Information including (without limitation) any representations as to the quality, suitability, accuracy or completeness of the Information.

Any projections, estimates or forecasts included in the Information (a) shall not constitute a guarantee of future events, (b) may not consider or reflect all possible future events or conditions relevant to you (for example, market disruption events); and (c) may be based on assumptions or simplifications that may not be relevant to you.

The Information is provided 'as is' and 'as available'. To the fullest extent permitted by law, Legal & General accepts no liability to you or any other recipient of the Information for any loss, damage or cost arising from, or in connection with, any use or reliance on the Information. Without limiting the generality of the foregoing, Legal & General does not accept any liability for any indirect, special or consequential loss howsoever caused and on any theory or liability, whether in contract or tort (including negligence) or otherwise, even if Legal & General has been advised of the possibility of such loss.

Third Party Data:

Where this document contains third party data ('Third Party Data'), we cannot guarantee the accuracy, completeness or reliability of such Third Party Data and accept no responsibility or liability whatsoever in respect of such Third Party Data.

Publication, Amendments and Updates:

We are under no obligation to update or amend the Information or correct any errors in the Information following the date it was delivered to you. Legal & General reserves the right to update this document and/or the Information at any time and without notice.

Although the Information contained in this document is believed to be correct as at the time of printing or publication, no assurance can be given to you that this document is complete or accurate in the light of information that may become available after its publication. The Information may not take into account any relevant events, facts or conditions that have occurred after the publication or printing of this document.

Telephone Recording

As required under applicable laws Legal & General will record all telephone and electronic communications and conversations with you that result or may result in the undertaking of transactions in financial instruments on your behalf. Such records will be kept for a period of five years (or up to seven years upon request from the Financial Conduct Authority (or such successor from time to time)) and will be provided to you upon request.

Legal & General Investment Management Limited. Registered in England and Wales No. 02091894. Registered Office: One Coleman Street, London, EC2R 5AA. Authorised and regulated by the Financial Conduct Authority, No. 119272.


Legal and General Assurance (Pensions Management) Limited. Registered in England and Wales No. 01006112. Registered Office: One Coleman Street, London, EC2R 5AA. Authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority, No. 202202.

The LGIM Workplace Savings division on behalf of both Legal and General Assurance Limited. Registered in England and Wales No. 00166055. Authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. As well as Legal & General (Portfolio Management Services) Limited. Registered in England and Wales No. 02457525. Authorised and regulated by the Financial Conduct Authority, No. 146786. Registered Offices: One Coleman Street, London, EC2R 5AA.

CONTACT US

For further information please contact us:

 0345 070 8684

 fundsales@lgim.com

 lgim.tcf.com

We record and monitor calls. Call charges will vary.