International Corporate Rescue

Published by:
Chase Cambria Company (Publishing) Ltd
4 Winifred Close
Barnet, Arkley
Hertfordshire EN5 3LR
United Kingdom

www.chasecambria.com

Annual Subscriptions:
Subscription prices 2017 (6 issues)
Print or electronic access:
EUR 730.00 / USD 890.00 / GBP 520.00
VAT will be charged on online subscriptions.
For 'electronic and print' prices or prices for single issues, please contact our sales department at:
+ 44 (0) 207 014 3061 / +44 (0) 7977 003627 or sales@chasecambria.com

International Corporate Rescue is published bimonthly.

ISSN: 1572-4638

© 2018 Chase Cambria Company (Publishing) Ltd

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, mechanical, photocopying, recording or otherwise, without prior permission of the publishers.

Permission to photocopy must be obtained from the copyright owner.
Please apply to: permissions@chasecambria.com

The information and opinions provided on the contents of the journal was prepared by the author/s and not necessarily represent those of the members of the Editorial Board or of Chase Cambria Company (Publishing) Ltd. Any error or omission is exclusively attributable to the author/s. The content provided is for general purposes only and should neither be considered legal, financial and/or economic advice or opinion nor an offer to sell, or a solicitation of an offer to buy the securities or instruments mentioned or described herein. Neither the Editorial Board nor Chase Cambria Company (Publishing) Ltd are responsible for investment decisions made on the basis of any such published information. The Editorial Board and Chase Cambria Company (Publishing) Ltd specifically disclaims any liability as to information contained in the journal.

Bond Exchange-Traded Funds

Andrew McLean, University College London, London, UK

Synopsis

This article addresses bond exchange-traded funds (ETF), an innovative and increasingly popular investment product. It draws the institutional structure of an ETF and outlines the growth in the bond ETF market from its inception in 2002 to present day. While the article acknowledges the benefits provided by bond ETFs, its primary purpose is to highlight the concurrent risks. Specifically, the article stresses the inherent fragility of bond ETFs due to the mismatch between highly liquid ETF shares and the illiquid underlying bond market. Although the paper is silent on overall macroprudential or welfare implications of bond ETFs, it notes that strengthened financial regulation may have the unintended consequence of increasing the systemic risk posed by bond ETFs.

Introduction

The significant and ongoing consequences of the global financial crisis demands alertness to emergent sources of risk in the financial system. However, the system's constant evolution makes this task more difficult.[1] Through examining bond exchange-traded funds (ETF), a novel and increasingly popular investment product, the present article represents a small contribution to financial risk literature.[2]

An ETF is a fund that invests in a portfolio of physical securities to replicate the performance of a given index, yet can be bought and sold on an exchange for a single price.[3] While synthetic ETFs are available, this paper focuses on physical funds due to their relative popularity.[4]

The first ETFs launched in the early 1990s, investing only in stock markets.[5] Today, ETFs exist across nearly every asset class.[6] The first four bond (fixed income) ETFs were introduced in 2002, facilitating access to investment grade government and corporate debt.[7] Two further bond ETFs were launched in 2003 and these six funds comprised the entire bond ETF universe until 2006.[8] Alongside deregulation, the number of bond ETFs rose to 47 in 2007. This new generation of ETFs granted access to a broader range of fixed income securities, including emerging market government and high yield corporate debt.[9]

The majority of growth in the bond ETF market has occurred since the global financial crisis, with corporate debt issuance propagated by quantitative easing and historically low interest rates.[10] There are now over 300 bond ETFs in the US alone, offering access to almost every type of bond.[11] In 2017, for the first time,

Notes

1 See also A. McLean, 'Beyond the Regulatory Border: Shadow Banking and the Asset Management Industry' (2018) 15(1) *International Corporate Rescue* 56.

2 Global ETF assets under management are expected to exceed US$7 trillion by 2021, up from $66 billion in 2000. C.D. Dannhauser, 'The impact of innovation: Evidence from corporate bond exchange-traded funds (ETFs)' (2017) 125(3) *Journal of Financial Economics* 537; PwC, ETFs: *A roadmap to growth* (London, 2016).

3 K. Pan and Y. Zeng, 'ETF arbitrage under liquidity mismatch' (2017) *European Systemic Risk Board Working Paper Series No. 59* <http://www.esrb.europa.eu/pub/pdf/wp/esrb.wp59.en.pdf> accessed 21 March 2018.

4 Synthetic ETFs use derivatives, including total return swaps and forward contracts, to replicate the exposure of physical ETFs. Synthetic ETFs account for approximately one third of the European ETF market and only four per cent of the market in the United States. I. Foucher and K. Gray, 'Exchange-Traded Funds: Evolutions of Benefits, Vulnerabilities and Risks' (2014) *Bank of Canada Financial System Review*.

5 The first ETF worldwide was launched on the Toronto Stock Exchange in 1990. The first major ETF was the S&P Depository Report based in the US, launched in 1993. Ibid.; Willis Towers Watson, *Exchange-Traded Funds* (London, 2014).

6 There are now 5300 ETFs globally, compared to approximately 60 in 2000. Bank of Montreal Global Asset Management, *ETF Outlook 2018* (London, 2018); Willis Towers Watson, n. 5 above.

7 C.W. Evans, 'Essays on Bond Exchange-Traded Funds' (2011) *Florida Atlantic University Doctoral Thesis*.

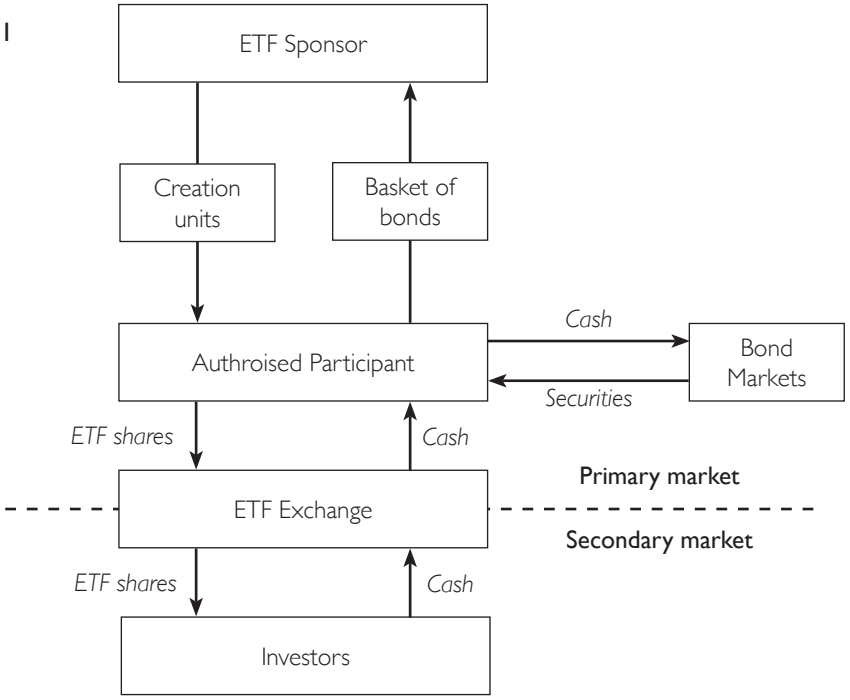
8 Ibid.

9 Between 2002 and 2007, the US' Securities and Exchange Commission (SEC) enforced a trial period during which the number of bond ETFs was kept low and ETFs could hold only conservative assets. Ibid.

10 Corporate debt outstanding rose by over 140 per cent, to $7.8 trillion, between 2000 and 2014. Dannhauser, n. 2 above.

11 M. Tucker and K. Schenone, '3 ways ETFs have revolutionized the bond market' <https://www.blackrockblog.com/2017/07/26/etfs-revolutionized-bond-market/>, 26 July 2017.

Figure 1



bond ETFs attracted more inward investment than their equity counterparts.[12]

Before the advent of bond ETFs, investors seeking access to fixed income assets were limited to over-the-counter (OTC) purchases.[13] OTC markets are illiquid and opaque, with bonds traded infrequently and transactions reliant on networks of bilateral relationships between brokers.[14] The OTC nature of traditional bond markets favours institutional and high-net-worth investors because scale is crucial to efficient trade execution and receiving allocations for new issuances.[15] In contrast, ETFs permit any investor to instantaneously trade entire portfolios of bonds in one transaction. By transforming access and liquidity, ETFs undoubtedly provide benefits. Still, it is important to appreciate the risks of financial innovation and the present contribution aims to raise awareness on this topic.

Institutional design of an ETF

Understanding the institutional design of ETFs is essential to understanding the risk they present. There are four key market participants: ETF sponsors, authorised participants, brokers on exchanges, and index providers.[16] The organisational structure of a physical bond ETF is illustrated in Figure 1.[17]

An ETF is created by a sponsor who owns the legal entity and is responsible for the marketing and fiduciary oversight of the fund.[18] Sponsors also specify the ETF's investment objective and the index to be replicated.[19] However, sponsors do not interact directly with investors. Rather, authorised participants, typically large financial institutions, act as 'market-makers' by creating or redeeming ETF shares.[20]

Notes

12 Deutsche Bank Market Research, *ETF Annual Review & Outlook* (Frankfurt, 2017).
13 Evans, n. 7 above.
14 Pan and Zeng, n. 3 above.
15 Tucker and Schenone, n. 11 above.
16 Willis Towers Watson, n. 5 above.
17 Figure 1 adapted from S. Ramaswamy, 'Market structures and systemic risks of exchange-traded funds' (2011) *Bank of International Settlements Working Paper No. 343* <https://www.bis.org/publ/work343.pdf> accessed 22 March 2018.
18 Six sponsors possess more than 80% of the market share: iShares, State Street Global Advisors, Vanguard, Lyxor Asset Management, db x-trackers and Power Shares. Ibid.
19 Due to the vast size of fixed income indices, sponsors generally select a representative sample of securities rather than seek to replicate an entire index. Dannhauser, n. 2 above.
20 A corporate bond ETF typically has an average of 25-35 authorised participants, including systemically important institutions such as Barclays, Goldman Sachs, JP Morgan and Bank of America Merill Lynch. Pan and Zeng, n.3; T. Williams, N. Converse and E. Levy-Yeyati, 'How ETFs Amplify the Global Financial Cycle in Emerging Markets' (2018) *The George Washington University Institute for International Economic Policy Working Paper 2018-1* <https://www2.gwu.edu/~iiep/assets/docs/papers/2018WP/WilliamsIIEP2018-1.pdf> accessed 1 April 2018.

© 2018 Chase Cambria Publishing

Authorised participants create shares by purchasing bonds in the OTC market in a manner that replicates the composition of the specified index and delivering these securities to the sponsor. In exchange, authorised participants receive ETF shares ('creation units'). Transactions between authorised participants and the ETF sponsor form the primary market. Once authorised participants receive ETF shares, they sell them in the secondary market to investors and other market-makers through an exchange.[21] Redemption reverses this process: authorised participants buy ETF shares in the secondary market and deliver the shares to the sponsor in exchange for physical bonds.[22]

The intrinsic value of the physical bonds held by the sponsor forms the basis for determining the net asset value (NAV) of the shares in the secondary market.[23] Forces of demand and supply then determine whether ETF shares trade at a premium or discount to the NAV. Any divergence between share price and the NAV creates an arbitrage opportunity for authorised participants that should keep the two equal over the long term.[24] If shares trade higher than the NAV, authorised participants are incentivised to create shares, lowering the share price closer to the NAV. Conversely, when shares trade at a discount, authorised participants are incentivised to redeem shares, driving the price higher towards the NAV.[25]

The cost of convenience: liquidity mismatch

The dramatic growth in the market for bond ETFs demonstrates the value investors place on these products. Through ETFs, investors can easily gain low-cost, highly-liquid exposure to bonds that previously were only accessible to institutional or high-net-worth investors.[26] In this sense, bond ETFs have democratised access to fixed income securities and can be understood in the wider context of a shift from active to passive asset management.[27]

Such benefits notwithstanding, financial regulators and academics increasingly note that bond ETFs may pose a systemic threat due to an inherent incompatibility between liquid ETFs and the illiquid OTC bond market.[28] Bonds that are considered liquid may only trade three or four times a day. In contrast, bond ETFs may trade tens of thousands of times in the same timeframe.[29] This mismatch increases the risk of the ETF arbitrage (share creation and redemption) mechanism, resulting in frictions unique to bond ETFs and increasing the fragility of the financial system.[30]

Proponents of ETFs, usually authorised participants themselves, argue liquidity mismatch is unimportant, highlighting the existence of the ETF arbitrage mechanism.[31] Following this line, bond ETFs are an entirely positive innovation that improves price discovery and liquidity in an otherwise opaque and illiquid market.[32] However, ETF arbitrage is not riskless and authorised participants may stop market-making activities at any time.[33]

When underlying bond liquidity falls during periods of economic stress, it becomes more difficult for authorised participants to establish or undo the bond inventory positions they use to create and redeem ETF shares. As arbitrage becomes risker, authorised participants may cease to perform their market-making function because they cannot purchase sufficient bonds on the OTC market or wish to avoid holding inventories of impaired assets. Crucially, authorised participants self-select and are not obliged to create or redeem shares.[34]

The liquidity friction in the arbitrage process may exacerbate deviations between share prices and the NAV as valuations of bond portfolios will be increasingly estimated rather than determined by actual trades.[35] While short periods of discounts to the NAV are a part of the arbitrage mechanism, there is a risk that large discounts to NAV can persist and grow over time. If investors believe that a protracted pause in the share creation/redemption process is likely, an investor run

Notes

21 Ramaswamy, n. 17 above.
22 US Department of Treasury Office of Financial Research (OFR), *Asset Management and Financial Stability* (Washington DC, 2013).
23 Dannhauser, n. 2 above; Ramaswamy, n. 17 above.
24 OFR, n. 22 above.
25 Foucher and Gray, n. 4 above.
26 Ibid.
27 Although actively managed ETFs do exist, they are rare. See, C. Ellis, 'The end of active investing?' <https://www.ft.com/content/6b2d5490-d9bb-11e6-944b-e7eb37a6aa8e>, 20 January 2017.
28 The US Department of the Treasury's Financial Stability Oversight Council lists the growth of corporate bond ETFs as an emerging systemic threat. Dannhauser, n.2 above.
29 For example, the iShares iBoxx $ Investment Grade Corporate Bond ETF trades over 14000 times per day. Tucker and Schenone, n. 11 above.
30 Pan and Zeng, n. 3 above.
31 See BlackRock, *Bond ETFs: Benefits, Challenges and Opportunities* (New York, 2015).
32 Pan and Zeng, n. 3 above.
33 Ibid.
34 Ibid.
35 M. Tucker and S. Laipply, 'High Yield ETF Behavior in Stressed Markets' (2012) *BlackRock Special Report* <https://www.blackrock.com/corporate/literature/whitepaper/high-yield-etf-behavior-in-stressed-markets.pdf> accessed 29 March 2018.

© 2018 Chase Cambria Publishing

could be triggered due to the perception of a first-mover advantage. Selling pressure would then aggravate the discount to NAV, increasing the probability of contagion to similar ETFs, the underlying bond market and the wider financial system.[36]

To date, the arbitrage mechanism has operated as hoped. However, it is instructive to note the performance of ETF markets during recent periods of market volatility. At the height of the global financial crisis in 2008, OTC bond markets were severely impaired and share redemption was extremely challenging. Yet, while the market price of bond ETFs fell to a sharp discount relative to NAV, the market ultimately found a clearing level.[37] A similar pattern occurred in August 2011 when the credit rating of the US Treasury was downgraded.[38]

However, a breakdown in the arbitrage mechanism is not a hypothetical event. In June 2013, an authorised participant, Citibank, refused to redeem shares to avoid exceeding its regulatory internal net capital ceiling.[39] Fortunately, other authorised participants were willing and able to perform the market-making function.[40] Nonetheless, the example of Citibank remains pertinent and is indicative of the future challenges facing the ETF market.

In this instance, arbitrage was impaired for reasons other than a shock to underlying securities. Rather, an authorised participant was constrained owing to its other financial activities. Stricter financial regulation following the global financial crisis has increased capital requirements and potentially limits the ability of authorised participants to inventory bonds because large inventory positions may be construed as serving a proprietary function.[41] These legal developments could result in larger deviations to NAV than what would have been observed in previous market cycles because authorised participants may only perform arbitrage when highly confident in their ability to quickly transact bond inventories.[42]

A further relevant concern is that the bond ETF market is much larger today than it was during the global financial crisis. Despite this growth, OTC bond markets have become less liquid, exacerbating the liquidity mismatch and potential for systemic consequences of ETF market failure.[43]

Conclusion

As the financial system evolves, the potential for innovation to introduce new risk should not be overlooked. The pairing of ETFs, that can trade thousands of shares a day, and bonds, that may trade only a few times a month, was highly unlikely when first introduced in 2002.[44] Today, however, ETFs play a vital role in the systemically important fixed income market.[45]

The convenience and low cost of ETFs may come at the cost of increased risk to financial stability.[46] In particular, the natural liquidity mismatch between bond ETFs and the underlying OTC market is a cause for concern.[47] ETF liquidity may prove illusory in times of market stress and if this risk materialises, an investor run may be triggered, negatively impacting similar investment products, the underlying bond market and the wider financial system.[48]

To date, there is no evidence of complete ETF failure, although perhaps only because authorised participants' willingness to perform arbitrage under uncertainty is yet to be sufficiently tested.[49] Although other authorised participants facilitated arbitrage when Citibank refused to do so in June 2013, they may not be as obliging when faced with a severe bear market.[50] Moreover, the risk presented by bond ETFs are mounting as authorised participants are further constrained by financial regulation, assets under

Notes

36 Foucher and Gray, n. 4 above.
37 For example, high yield bond ETFs fell to a maximum discount of 8.4% in September 2008. Tucker and Laipply, n. 35 above.
38 In August 2011, fell to HY ETFs fell to a maximum discount of 3.7%. Ibid.
39 A. Massoudi, T. Braithwaite and S. Foley, 'Bond market sell-off causes stress in $2 trillion ETF industry' <https://www.ft.com/content/82d66636-d9ec-11e2-98fa-00144feab7de>, 21 June 2013.
40 Foucher and Gray, n. 4 above.
41 For example, the Dodd-Frank Act (2010), including the Volcker Rule. Pan and Zeng, n. 3 above.
42 Tucker and Laipply, n. 35 above.
43 See H. Bessembinder, S.E. Jacobsen, W.F. Maxwell and K. Venkataraman 'Capital Commitment and Illiquidity in Corporate Bonds' (Forthcoming) *Journal of Finance* <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2752610> accessed 28 March 2018.
44 Dannhauser, n. 2 above.
45 C.D. Dannhauser, 'The hidden risk in the corporate bond market is at a tipping point: Study' <https://www.cnbc.com/2017/02/06/etfs-and-the-end-of-the-bond-bull-market-what-investors-need-to-fear.html>, 8 February 2018.
46 Financial Stability Board (FSB), *Potential Financial Stability Issues Arising From Recent Trends in Exchange Traded Funds (ETFs)* (Basel, April 2011).
47 Dannhauser, n. 45 above.
48 Foucher and Gray, n. 4 above.
49 S. Jassop and S. Rao, 'After explosive growth, bond ETFs brace for next big test' <https://www.reuters.com/article/us-funds-etfs-liquidity/after-explosive-growth-bond-etfs-brace-for-the-next-big-test-idUSKBN1411E8> 12 December 2016.
50 Foucher and Gray, n. 4 above.

© 2018 Chase Cambria Publishing

management continue to grow and the liquidity of the OTC bond market falls.[51]

While the paper is silent on the overall welfare implications of ETFs, it highlights the additional fragility bond ETFs introduce into the financial system. Going forward, it will be critical to examine how authorised participants behave during periods of volatility in order to assess the role that ETFs may play in transmitting and amplifying market stress.[52]

Notes

51 Pan and Zeng, n. 3 above.
52 OFR, n. 22 above.

© 2018 Chase Cambria Publishing

International Corporate Rescue

International Corporate Rescue addresses the most relevant issues in the topical area of insolvency and corporate rescue law and practice. The journal encompasses within its scope banking and financial services, company and insolvency law from an international perspective. It is broad enough to cover industry perspectives, yet specialized enough to provide in-depth analysis to practitioners facing these issues on a day-to-day basis. The coverage and analysis published in the journal is truly international and reaches the key jurisdictions where there is corporate rescue activity within core regions of North and South America, UK, Europe Austral Asia and Asia.

Alongside its regular features – Editorial, US Corner, Economists' Outlook and Case Review Section – each issue of *International Corporate Rescue* brings superbly authoritative articles on the most pertinent international business issues written by the leading experts in the field.

International Corporate Rescue has been relied on by practitioners and lawyers throughout the world and is designed to help:

- Better understanding of the practical implications of insolvency and business failure – and the risk of operating in certain markets.
- Keeping the reader up to date with relevant developments in international business and trade, legislation, regulation and litigation.
- Identify and assess potential problems and avoid costly mistakes.

Editor-in-Chief: Mark Fennessy, Proskauer Rose LLP, London

Emanuella Agostinelli, Curtis, Mallet-Prevost, Colt & Mosle LLP, Milan; Scott Atkins, Norton Rose Fulbright, Sydney; James Bennett, KPMG, London; Prof. Ashley Braganza, Brunel University London, Uxbridge; Dan Butters, Deloitte, London; Geoff Carton-Kelly, FRP Advisory, London; Gillian Carty, Shepherd and Wedderburn, Edinburgh; Charlotte Cooke, South Square, London; Sandie Corbett, Walkers, British Virgin Islands; Katharina Crinson, Freshfields Bruckhaus Deringer, London; Hon. Robert D. Drain, United States Bankruptcy Court, Southern District of New York; Matthew Kersey, Russell McVeagh, Auckland; Prof. Ioannis Kokkoris, Queen Mary, University of London; Professor John Lowry, University College London, London; Neil Lupton, Walkers, Cayman Islands; Lee Manning, Deloitte, London; Ian McDonald, Mayer Brown International LLP, London; Nigel Meeson QC, Conyers Dill Pearson, Hong Kong; Professor Riz Mokal, South Square, London; Mathew Newman, Ogier, Guernsey; Karen O'Flynn, Clayton Utz, Sydney; Professor Rodrigo Olivares-Caminal, Queen Mary, University of London; Christian Pilkington, White & Case LLP, London; Susan Prevezer QC, Quinn Emanuel Urquhart Oliver & Hedges LLP, London; Sandy Purcell, Houlihan Lokey Howard & Zukin, Chicago; Professor Professor Arad Reisberg, Brunel University, London; Daniel Schwarzmann, PricewaterhouseCoopers, London; The Hon Mr Justice Richard Snowden, Royal Courts of Justice, London; Anker Sørensen, De Gaulle Fleurance & Associés, Paris; Kathleen Stephansen, New York; Angela Swarbrick, Ernst & Young, London; Dr Artur Swierczok, CMS Hasche Sigle, Frankfurt; Stephen Taylor, Isonomy Limited, London; Richard Tett, Freshfields Bruckhaus Deringer, London; William Trower QC, South Square, London; Mahesh Uttamchandani, The World Bank, Washington, DC; Robert van Galen, NautaDutilh, Amsterdam; Miguel Virgós, Uría & Menéndez, Madrid; Maja Zerjal, Proskauer Rose, New York; Dr Haizheng Zhang, Beijing Foreign Studies University, Beijing.

For more information about *International Corporate Rescue*, please visit www.chasecambria.com