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The recent distress in corporate bond markets: cues from ETFs

Sirio Aramonte and Fernando Avalos

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The recent distress in corporate bond markets: cues from ETFs

Key takeaways

- *Amid widespread sell-offs in risky asset classes, corporate bond exchange-traded funds (ETFs) traded at steep discounts to underlying asset values in March.*
- *Contributing factors were high market volatility, reduced risk-taking by dealers and investors' reaction to policy decisions.*
- *Policy interventions that improve market functioning in a given sector can have temporary yet important spillovers to other segments through portfolio rebalancing by investors.*

The shock of Covid-19 has been large across asset classes, but the blow to corporate bond markets was particularly pronounced. Issuance in primary markets stopped, mutual funds saw sizeable outflows, and secondary market yield spreads to government securities widened very rapidly. In this note, we review the impact that these developments had on European and US exchange-traded funds (ETFs) focused on corporate bonds.¹ We do so to gain insights on the functioning of the corporate bond market at times of heightened stress, including its reaction to policy actions in support of short-term corporate funding.

In mid-March, the prices of many corporate-bond ETFs dropped noticeably below the values of their portfolios (net asset values (NAVs)). These NAV discounts reflected several factors. First, in the light of the relative illiquidity of corporate bond markets, NAVs incorporate information more slowly than prices. As a result, deviations are more likely to open at times of volatile markets. Second, dealers provided less support to corporate bond liquidity, potentially limiting the arbitraging of NAV discounts. Third, flows to money market funds (MMFs) accelerated after US federal banking regulators announced the Money Market Mutual Fund Liquidity Facility (MMLF). Contemporaneous outflows from investment grade (IG) mutual funds rose abruptly, pointing to a possible rebalancing from short-duration IG ETFs to MMFs.

Several lessons can be drawn from these events. In particular, policy interventions in one market sector can have significant, if temporary, impacts on related segments – even as market functioning improves – when investors rapidly adjust their portfolios. In addition, ETF prices are more reactive to market developments than the prices of the underlying bonds are, especially at times of market stress. As such, ETF prices are probably more suitable inputs to monitoring efforts and to risk management models, including those underpinning regulatory capital calculations, than relatively stale bond benchmarks.

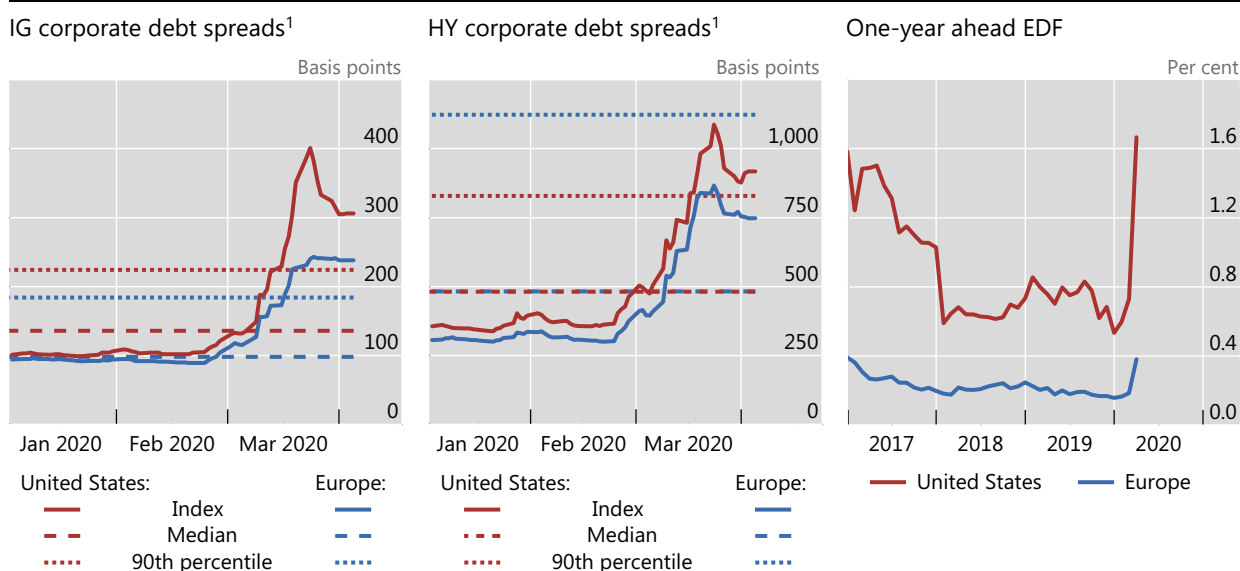
¹ We consider physical ETFs, ie those holding mostly bonds rather than derivatives, with assets above \$200 million. This note takes an asset pricing perspective on ETFs. We do not address financial stability concerns, eg volatility amplification by leveraged ETFs, collateral management for synthetic ETFs, and the reliability of liquidity provision and transformation by asset managers. On the latter issue, see BIS (2015).

Corporate bond markets rattled by the pandemic

Corporate bond liquidity has been a matter of discussion for many years (CGFS (2014)). During the Great Financial Crisis, both equities and bonds suffered a material reduction in liquidity, which impairs price discovery. Yet equity markets appeared to have recovered full functionality, whereas liquidity in corporate bond markets continued to appear less robust, particularly in times of stress. The shock stemming from the outbreak of Covid-19 has provided further evidence of such fragility, while at the same time pointing to ETFs as alternative conduits for price discovery in corporate bond markets.

ETFs are financial instruments designed to track an underlying index. Contrary to some of the securities they track, ETF shares trade as regular stocks in exchanges, and offer immediate liquidity at their current trading price. Specialised investors known as “authorised participants” – often banks or market-making firms – can issue or redeem ETF shares as needed, in order to arbitrage away the deviations of the ETF price relative to its NAV. As a result, such deviations are typically small and short-lived. Funds invested in ETFs have grown very quickly since the Great Financial Crisis: from asset holdings of about \$800 billion in 2007, global ETF assets had reportedly exceeded \$5 trillion as of mid-2019.²

Stress in corporate credit markets has not fully abated, amid default risk concerns Graph 1



EDF = expected default frequency; HY = high-yield; IG = investment grade

Median and 90th percentile of the spreads time series refer to 1 January 1998 to 3 April 2020 for HY Europe index and 1 January 1997 to 3 April 2020 for all other indices.

¹ The charts show option-adjusted spreads, which are calculated in two steps. First, bond yields are modified to reflect the value of any embedded options (eg, the right of issuers to retire a bond). Second, government bond yields of appropriate maturity are subtracted.

Sources: BoAML ICE indices; Moody's; BIS calculations.

Broadly speaking, the market disruptions triggered by Covid-19 unfolded in three phases. The initial “risk-off” phase started in mid-January as investors realised the seriousness of the outbreak in China, and evidence of human-to-human contagion became available. That relatively mild phase mostly affected stock, commodity and FX markets, while corporate credit remained largely unscathed (BIS (2020)). The second, “flight to safety” phase began in late February with news of the rapid spread of the disease, first in Italy, and then the rest of Europe. Equities deepened their losses, while the turbulence spread to government bond markets. Corporate credit spreads in both USD and EUR began to widen, particularly in

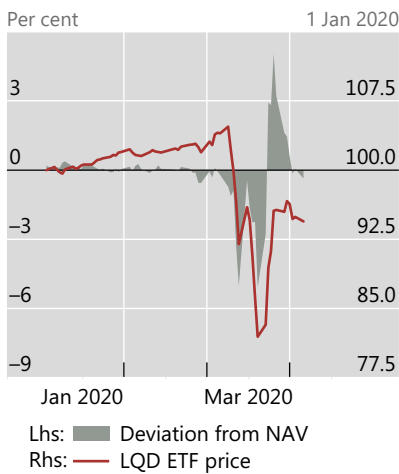
² ETFGI, <https://etfgi.com/news/press-releases/2019/07/etfgi-reports-assets-invested-global-etf-and-etp-industry-reached>.

the high-yield (HY) segment (Graph 1, left-hand and centre panels). Market commentary at the time raised alarms about, among other things, the poor prospects for energy companies, which are sizeable issuers of HY debt. The third phase started in early March, as major oil exporters fell out over production quotas. The sell-off, unusually virulent, turned into a scramble for cash that caused dislocations even in typically liquid markets, such as those of government bonds (Schrimpf et al (2020)). Corporate bond spreads surged, particularly in the IG segment (left-hand panel). Rating downgrades accelerated, as agencies promptly reassessed default probabilities, in line with the swift pricing developments (right-hand panel).

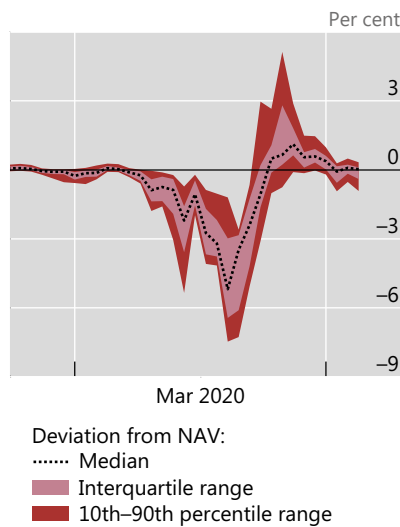
Illiquidity has been a major factor in explaining stress

Graph 2

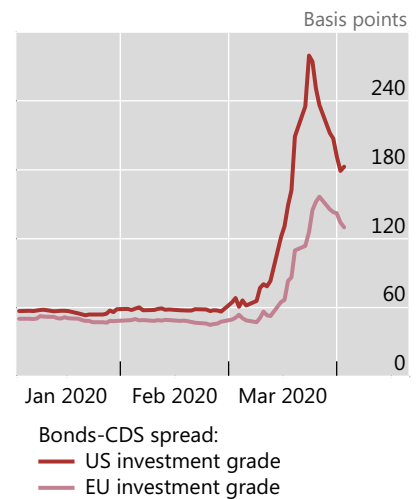
Even large IG ETFs suffered deep discounts to NAV



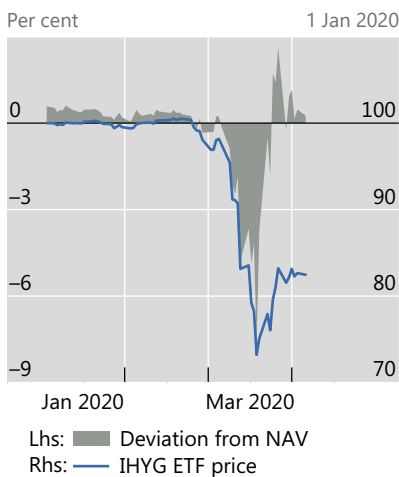
NAV gaps in IG ETFs: US and Europe



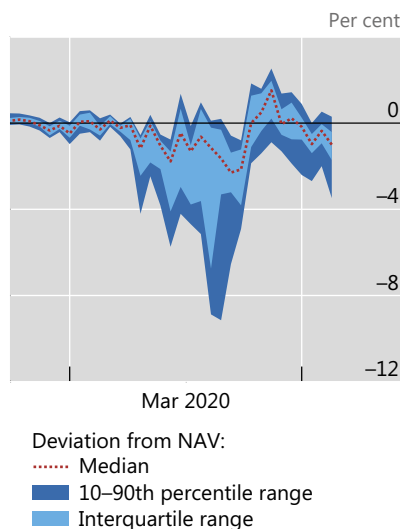
Cash markets more strained than derivatives, especially in US IG¹



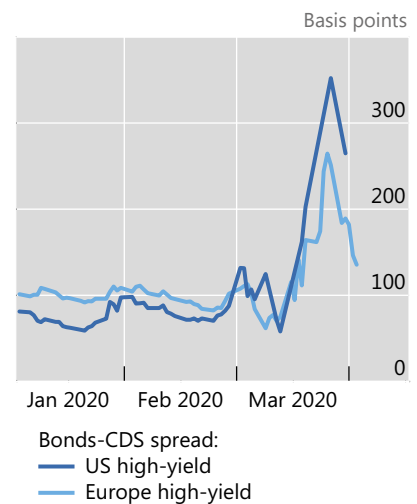
Within HY, European instruments saw sharper dislocations



NAV gaps in HY ETFs: US and Europe



The gap between bond and CDS spreads was narrower in HY space¹



CDS = credit default swap; ETF = exchange traded funds; IHYG = iShares Euro High Yield Corporate Bond UCITS ETF; LQD = iShares iBoxx \$ Investment Grade Corporate Bond ETF; NAV = net asset value;

¹ The charts are based on option-adjusted spreads, which are calculated in two steps. First, bond yields are modified to reflect the value of any embedded options (eg, the right of issuers to retire a bond). Second, government bond yields of appropriate maturity are subtracted.

Sources: BoAML ICE indices; Bloomberg; Refinitiv; BIS calculations.

The illiquidity stemming from the latest phase of “dash for cash” gave way to deep dislocations in corporate credit markets. Not only were investor losses large, but mutual funds focused on HY credit came under pressure as outflows mounted, resulting in the suspension of redemptions in a number of cases. Additionally, most ETFs tracking corporate credit traded at prices well below their NAVs. In mid-March, some of the largest ETFs in both the IG and HY segments recorded NAV discounts in excess of 5% (Graph 2, first and fourth panels).

Discounts to NAV were large both in the US and European markets. The dislocations were more pronounced in US IG ETFs, perhaps because they were more oversold by investors in need of cash, and European HY, whose underlying bonds lacked the support of the ECB’s corporate purchase programme. The median discount was larger in IG securities (Graph 2, second panel). Yet the dispersion of such discounts was wider in HY ETFs, some of which showed NAV discounts in excess of 9% (fifth panel).

Corporate credit markets appeared buffeted by two forces. First was selling pressure in the cash market, evident in increasing mutual fund redemptions. Second was reduced dealer activity, reportedly driven by dealers attempting to preserve balance sheet capacity in a context of increasing uncertainty. Since bond trading is more capital-intensive, such constraints tend to affect cash bonds more than credit default swaps (CDS). As a result, a wedge can open between spreads on the two asset classes. Indeed, the gap between bond spreads and CDS spreads widened significantly. As for NAV discounts, the bond-CDS gap was more pronounced in US IG than its European counterpart (Graph 2, third panel), while the gaps moved more or less in lockstep for HY bonds (sixth panel).

NAV discounts in the light of dealer risk-taking and policy actions

As corporate bond spreads widened, dealers became less willing to add credit risk to their portfolios. Beginning in early March, US dealers active in corporate bond markets reduced the net dollar amount of IG and HY bonds they bought from clients. At the same time, the pace of net purchases, measured by the number of securities, increased in March (Graph 3, left-hand and centre panels). The two diverging trends are consistent with dealers managing their inventory by increasing bid-ask spreads in the face of surging sales from clients. The reduction in net dollar amounts bought by dealers continued until 12 March.

On that day, corporate bond ETFs experienced a spike in NAV discounts. This probably reflected diminished dealer accommodation, as well as market turmoil. The implied volatility index VIX – a common gauge of market stress – reached its then-highest value since the Great Financial Crisis that day. Subsequently, NAV discounts narrowed while dealers started to take progressively more credit risk from clients, as the Federal Reserve’s large purchase programme of US Treasury and agency mortgage-backed securities, launched on 15 March, probably cleared risk-taking capacity in dealers’ balance sheets.

On 19 March, NAV discounts opened up again to very large levels. Cross-sectional patterns suggest that investor flows from ETFs to MMFs were probably contributing factors. These NAV discounts occurred the day after the Federal Reserve, in collaboration with the US Treasury, established a lending facility that assuaged concerns that MMFs might need to sell assets at deep discounts to meet redemptions. MMFs often hold short-term corporate debt, not unlike corporate bond ETFs focused on bonds with short duration. Two pieces of evidence support the hypothesis that NAV discounts reflected investors rotating out of short-duration IG ETFs and into MMFs, just as confidence in MMFs was restored by policy action. First, IG ETFs with duration under three years recorded a larger NAV discount than average (6.9% versus 5.3%), indicating stronger selling pressure. Second, in the week ending on 25 March, which included 19 March, IG corporate bond mutual funds suddenly experienced strong outflows, while flows into money market mutual funds accelerated further (Graph 3, right-hand panel).

Before deviations started narrowing again by end-March, ETF prices and NAV continued to fluctuate as market sentiment and policy actions evolved. When the Federal Reserve announced on 23 March two

new facilities³ aimed at shoring up the IG corporate credit market, inflows into MMFs ran out of steam (Graph 3, right-hand panel). NAV discounts reverted and turned into premiums in some cases (Graph 2, second panel) as ETF prices once again anticipated the turnaround in cash bond prices. Of note, equity markets recorded another loss that day, reaching their minimum level of the year.

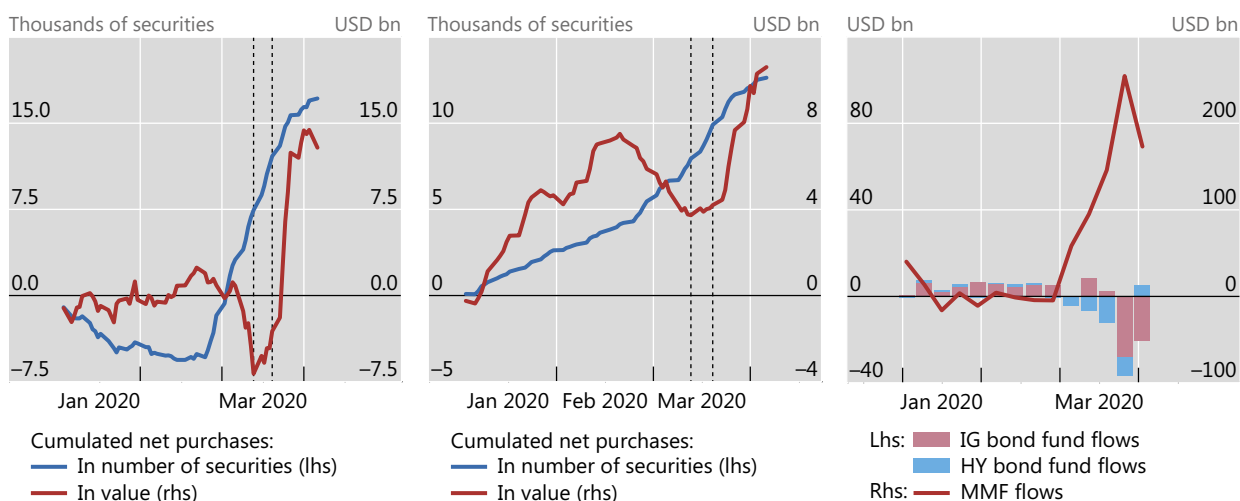
As selling pressure escalated, bond dealers absorbed less credit risk

Graph 3

After Covid-19 spread in Europe, US dealers reduce risk-taking in IG...¹

... and HY corporate bonds¹

After MMLF was announced, MMF inflows rose and IG corporate funds saw large outflows



The dashed vertical lines indicate respectively 12 March 2020 (VIX peaked) and 19 March 2020 (first trading day after the Federal Reserve announced the MMLF).

MMF = money market funds; MMLF = Money Market Mutual Fund Liquidity Facility.

¹ Risk-taking is proxied by dealer net purchases, defined as “Dealer Buy from Customer” minus “Dealer Sell to Customer” in FINRA TRACE Market Aggregate Information.

Sources EPFR; FINRA; BIS calculations.

Why are NAV deviations likely in volatile markets? ETF prices lead NAVs

Pronounced market stress in mid-March highlighted differences in how quickly ETF prices and NAVs incorporate information. Unlike mutual funds, whose assets are valued once a day, ETFs trade continuously, and their liquidity is supported by a variety of intermediaries. As a result, ETFs incorporate information in a more timely manner than the underlying bonds. Indeed, surprises in ETF prices explain future unexpected NAV and price dynamics much better than NAVs do, suggesting that information flows from prices to NAVs (Graph 4, left-hand panel, leftmost bars).

When market volatility is high, NAVs become staler and take longer to respond to ETF prices. If both ETFs and bonds incorporated new information rapidly, neither ETF price returns nor NAV returns today would be useful to predict future price or NAV returns. That is the case with prices, but NAV returns can be forecast by their own lags, especially when market stress is elevated like in mid-March (Graph 4, centre panel). This suggests that NAVs reflect staler information in times of high volatility. Similar conclusions can be reached by analysing the ability of ETF price returns to predict NAV returns, which improves at longer

³ The new facilities are the Primary Market Corporate Credit Facility (PMCCF) and the Secondary Market Corporate Credit Facility (SMCCF), announced on 23 March 2020 at 8.00 am EST.

horizons but worsens at short horizons when volatility rises (right-hand panel). With NAV adjustments taking longer, NAV deviations (discounts or premiums) are more pronounced in periods of stress.

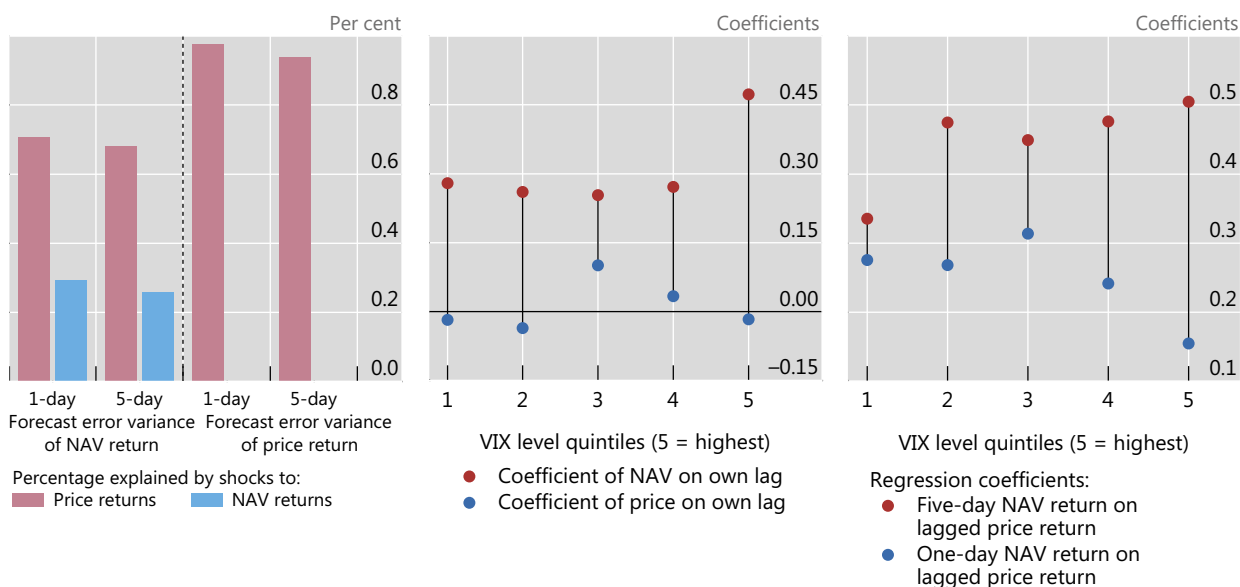
ETF prices reflect new information more quickly than NAVs

Graph 4

Information flows from ETF prices to NAVs, not vice versa

NAVs tend to be stale, especially at times of stress

During market turmoil, NAVs incorporate price information more slowly



Sources: Refinitiv; BIS calculations.

Policy considerations

The NAV discounts that opened up in the corporate bond ETF market in mid-March 2020 highlighted that, especially in challenging times, ETF prices react to new information more quickly than NAVs do. Compared with the relative staleness of bond prices and NAVs, ETF prices can be useful tools for market monitoring and valuable inputs to risk management models that require up-to-date assessments, for instance trading book risk models.

Cross-sectional patterns in NAV discounts on 19 March, together with fund flow dynamics, suggest that policy actions in favour of MMF liquidity probably contributed to widening NAV discounts. These events were an example of how policy interventions in a market segment can spill over to other market sectors as investors adjust their cross-market positions, even if overall market functioning improves. As such, an important lesson is that briefly unsettled markets can be a sign that policy decisions have been effective, as imbalances that have cumulated over time are unwound quickly.

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