

LESSONS FROM COVID: A MACROPRUDENTIAL FRAMEWORK FOR THE MARKET-BASED FINANCE SECTOR

Gabriel MAKHLOUF

Governor
Central Bank of Ireland

The shock from Covid-19 – although not originating **from** the financial system – represents the greatest challenge **for** the financial system since the global financial crisis (GFC) more than a decade ago. Entering this crisis, the banking sector was in a more resilient place due to reforms since the GFC. But the financial system overall has changed significantly due to an increase in the share of financial intermediation accounted for by parts of the non-bank financial system, in particular by investment funds. The financial dislocations observed at the onset of the Covid-19 shock have highlighted some vulnerabilities in the non-bank sector, and particularly for money market funds and open-ended funds with short redemption periods and exposures to less liquid assets. A key lesson to draw from this shock is the need to develop and operationalise a macroprudential framework for market-based finance. This would be beneficial for the sector as a whole as well as for the stability of the financial system.

The Covid-19 pandemic – and the necessary public health measures taken to contain it – rippled through the global economy and financial markets earlier this year. The resulting shock – although not originating **from** the financial system – represents the greatest challenge **for** the financial system since the global financial crisis more than a decade ago (Makhlouf, 2020). Thankfully, the global economy has started to recover from the depths of the crisis. However, the second wave of the virus poses additional near term challenges, notwithstanding the laudable achievements from those who have made positive progress in developing a vaccine.

Entering this period of extreme uncertainty, the core of the financial system was in a better position to absorb, rather than amplify, shocks. Over the past decade, the resilience of banks has strengthened considerably. On the back of post-crisis regulatory reforms, including the introduction and operationalisation of macroprudential frameworks, banks have higher levels of capital, a better quality of capital and more stable sources of funding. As a result, banks are in a better position to support households and businesses through – and out of – this difficult time.

However, the financial system is now significantly different than before the financial crisis. In recent years, the banking system has seen a gradual decline in its share of total financial intermediation globally. This has been accompanied by an equivalent increase in the share of financial intermediation accounted for by parts of the non-bank financial system.

1 The changing financial system

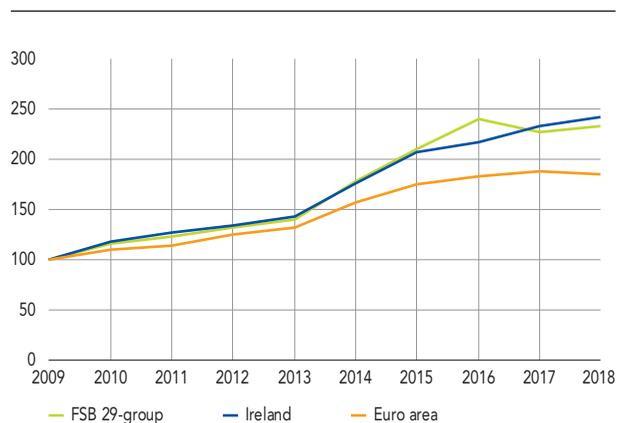
Since the global financial crisis, the world’s market-based finance sector has more than doubled in size (see *Chart 1*). At a euro area level, the growth has been somewhat slower. Still, non-bank financial institutions now account for approximately 40% of total assets of the overall euro area financial sector (European Central Bank, 2020).

These structural developments have been at the forefront of the work agenda of the Central Bank of Ireland in recent years. Ireland hosts a large and internationally-oriented market-based finance sector which – similar to global trends – has grown rapidly in recent years. The Irish-resident market-based finance sector is one of the largest globally relative to the size of the domestic economy. Total assets of the sector amounted to over 4.5 trillion euros in the first quarter of 2020. The sector in Ireland is dominated by

investment funds and money market funds (MMFs), which together account for roughly two-thirds of total assets.

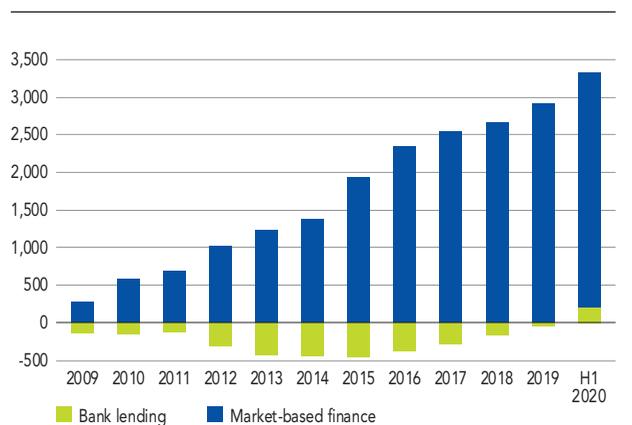
As the market-based finance sector has grown, the importance of this form of financial intermediation for the economy and the financial system has also increased. Compared to a decade ago, potential disruptions in the provision of market-based finance are likely to have a more material macro-financial impact. This is for two reasons. First, because market-based finance provides financing to other parts of the financial system, for example MMFs provide short-term funding to

C1 Comparative growth of the global, euro area and Irish market-based finance sectors, 2009-2018
(index)



Sources: Financial Stability Board (FSB), European Central Bank (ECB) – Statistical Data Warehouse (SDW); Central Bank of Ireland staff calculations.
Note: Index = 100 for base year 2009, based of underlying values in euros.
FSB 29-Group: the group of 29 countries included in the Financial Stability Board’s Global Monitoring Report on Non-Bank Financial Intermediation.

C2 Cumulative net bank and market-based financing of euro area non-financial corporations, 2009-H1 2020
(EUR billions)



Sources: European Systemic Risk Board (ESRB), EU Non-Bank Financial Intermediation Risk Monitor 2019; European Central Bank, Quarterly Sector Accounts (QSA); European Systemic Risk Board (ESRB) calculations.
Notes: “Market-based finance” includes financing through listed shares, unlisted shares and debt securities. Latest observation Q2 2020.

the global banking system. Second, because market-based finance provides financing directly to the real economy, for example through holdings of non-financial corporate debt. Indeed, after the global financial crisis, an increasing share of euro area non-financial corporation funding has been sourced from market-based sources (see *Chart 2*).

The Central Bank of Ireland has been at the forefront of international efforts to close data gaps and to facilitate a better understanding of the flows and interconnections of the sector. These initiatives have put the Central Bank in a better position to undertake its own risk assessments and to contribute to international exercises that monitor the build-up of vulnerabilities at a global and European level.

2 The benefits of market-based finance

The growth in market-based finance is a positive development. Market-based finance provides a valuable alternative to bank financing and can facilitate risk sharing across the financial system. In doing so, it can support economic activity both in good times and in bad. Deeper and more developed capital markets can facilitate long-term investment, by allowing businesses to access a wider range of funding sources. They can lead to a greater choice amongst savers and investors. Capital markets can also contribute to financing the recovery from Covid-19 as well as the transition to a low-carbon, sustainable and digitalised economy (de Guindos, 2020).

Greater diversification in the channels of financing for businesses and households can be particularly important in the face of adverse shocks. Indeed, there is some evidence to suggest that economies that rely more on market-based finance experience stronger and more durable recoveries from economic crises than those that rely more on bank-based finance (Allard and Balvy, 2011). Indeed many have noted that one of the key benefits of market based finance is that as it is more equity rather than debt based investors inherently take on a risk-sharing role, making the system more resilient (Buch, 2017).

These benefits explain why the European Commission has been working to develop a more diversified financial system in Europe through its Capital Markets Union action plan. Continued progress towards deepening capital markets in Europe is important and not just for the development of our financial system, it would also improve the effectiveness of the European Union's overarching macroeconomic policy framework.

Of course, the efforts to develop capital markets need to be accompanied by policies to deliver **resilient** capital

markets. Ones that can provide the benefits of increasing flows of market-based finance to the economy in good times, but which also prove resilient in bad times.

To promote financial stability, policymakers must ensure that the level of resilience in market-based finance is commensurate with its contribution to systemic risk and how it interacts with the financial system and the economy as a whole. Building resilience in market-based finance will ensure that the wider financial system is better placed to absorb, rather than amplify, financial shocks in times of stress.

3 Risks from market-based finance

While market-based finance does bring benefits, like all forms of financial intermediation, market-based finance can contribute to a build-up of financial vulnerabilities. Because of the size, complexity, diversity and the very large number of entities making up the global market-based finance sector, financial policymakers scanning the horizon for risks and vulnerabilities face a foggier terrain.

History can be a useful compass to help as a guide through the fog. Looking at previous episodes of financial stress, two key sources of financial vulnerabilities appear time and time again. The first is excessive leverage. The second is excessive liquidity transformation. And, when shocks hit, they can transmit through interconnectedness between different segments of the financial system.

Some of these underlying vulnerabilities are also present in parts of the market-based finance sector and have been the focus of increased scrutiny in recent years.

Starting with liquidity transformation, vulnerabilities can be present when there is a mismatch in open-ended funds between the liquidity of their assets and the frequency at which investors can access their funds. Such funds can become susceptible to the risk of large redemption requests in times of stress. Funds with significant mismatches may be forced to sell assets at dislocated prices. This as such is a fire sale of assets and may have knock-on effects either directly to the real economy through an impact on wealth, investment, collateral etc. or to other sectors (for example, banks), which can impair the functioning of key markets and, ultimately, the potential flow of credit to the economy.

Excessive leverage in funds can also be a source of vulnerability in periods of stress. When asset prices fall, investment funds may either seek to keep their leverage at a target level by selling assets, or be forced to do so by creditors. Again, this

may lead to fire sales of assets, impacting the markets in which they invest and potentially a withdrawal of funding from other systemically important sectors (e.g. banks). Both of these channels can impair the functioning of key markets. Indeed, leverage can amplify liquidity risks. For example, funds with high levels of leverage through derivatives may be more susceptible to margin calls in times of stress, putting pressure on their liquidity position. In times of stress, this pressure can occur at the same time as the fund is experiencing rising liquidity pressures through increased redemption requests.

At the core of these vulnerabilities is the potential for “fire-sale externalities”. Actions that individual actors in the financial system might take in times of stress, which are perfectly rational from their own individual perspective, but can also have adverse implications for the markets in which they invest and the broader functioning of financial markets. Fire-sales can have broader market impacts and, in doing so, also influence the behaviour of other investors that are sensitive to price movements. Such dynamics can increase procyclicality within the financial system.

Finally, interconnections abound in the market-based finance sector. Many of these interconnections take place on a cross-border basis and funds provide financing to other parts of the financial sector. Some unit-linked insurance products invest directly in investment funds. Investment funds and insurers hold shares in MMFs for liquidity management purposes. Funds – for example those that invest in commercial real estate – borrow directly from banks. There are interconnections between different parts of the financial system through derivatives. And, of course, there are potential spillover channels through common asset exposures of investment funds, insurers, pension funds and banks. This means that shocks to parts of the market-based finance sector can transmit to other parts of the financial system and, ultimately, the real economy.

4 The market turmoil at the onset of Covid-19

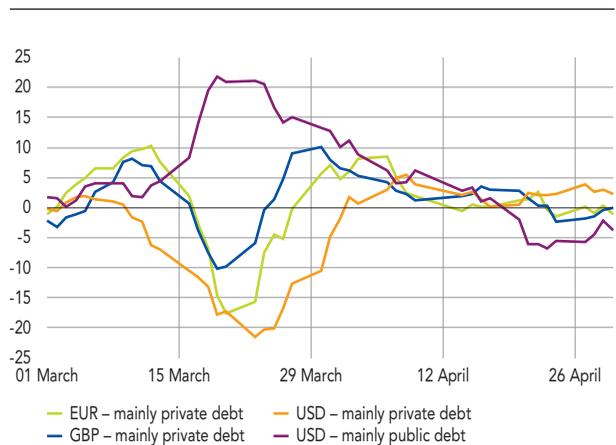
Covid-19 proved challenging for parts of the market-based finance sector. As financial market turbulence increased, a broad-based “flight to safety” and a heightened demand for cash swept through a range of markets. Around the time a pandemic was declared by World Health Organisation (WHO) in mid-March, the fund sector experienced a sharp increase in redemptions.

Some of the most acute redemption pressures were seen in MMFs. MMFs are typically used by investors, such as

non-financial corporates, for cash management purposes and are, in turn, active players in short-term funding markets. MMFs globally – including those in Ireland – experienced a substantial increase in redemptions. For example, US dollar denominated Irish-resident MMFs with investments in private sector debt experienced large outflows in March. In contrast, MMFs with investments in more liquid government debt securities saw large inflows over the same period (see Chart 3). Overall, the March episode highlighted that, while MMFs are used by investors as a source of daily liquidity, the money market instruments in which MMFs invest may not be as liquid in all circumstances as investors expect. And although all MMFs managed to meet redemption requests, had MMFs been forced to suspend redemptions, liquidity stresses could have spilled over to other parts of the financial system. The interconnectedness of MMFs with other parts of the financial system – including banks and other non-banks – means their resilience in periods of stress can be systemically important (Central Bank of Ireland, 2020).

These patterns were accompanied by a dislocation in the commercial paper markets in which MMFs invest and spikes in short-term bank funding costs, such as the Libor-OIS¹ spread (Eren, Schrimpf and Sushko, 2020). Irish resident MMFs responded to this period of stress by increasing the liquidity of their portfolios and reducing the maturity of their assets. While this means that MMFs are better placed to meet any future redemption pressures, it also implies that MMFs have only been willing to provide very short-term funding to the banking system. In addition,

C3 Money market fund net redemptions, March-April 2020
(% of NAV – net asset value)

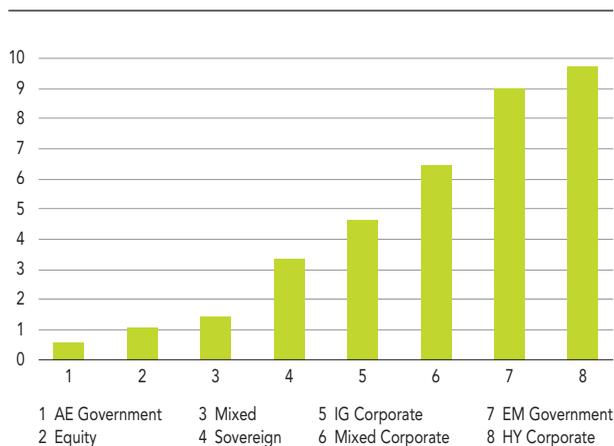


Source: Central Bank of Ireland (2020b).
Notes: This chart presents the 5-day moving average net redemption as a per cent of starting NAV. The weighting given to each fund is based on fund size represented by fund NAV relative to sector NAV. Period of observation 1 March 2020 – 30 April 2020. Funds with mostly private debt includes low volatility net asset value (LVNAV) funds in the stated currencies.

the effects of the pandemic on MMFs in Ireland have persisted (Golden, 2020).

Redemptions were also large in other parts of the broader open-ended funds sector. For Ireland, in aggregate, there were around 72 billion euros of net redemptions from Irish-resident funds in March. The pattern of redemptions across different fund segments suggests that funds with exposures to less liquid assets, or assets that became temporarily illiquid, were particularly susceptible to outflows. It is also noteworthy that redemptions from funds were not necessarily correlated with asset returns. Equity price falls were much larger than falls in corporate bond or emerging market economy (EME) government bond prices. Nevertheless, as a share of assets under management, equity funds experienced much smaller redemptions compared to corporate bond or EME government bond funds (see *Chart 4*). This overall pattern of redemptions would be consistent with the presence of “first-mover advantage” dynamics amplifying redemption pressures in some cases. First mover advantage is a key dynamic in investment funds as these are collective investment vehicles and as such there can be an incentive to investors to redeem early, particularly if the fund has significant investments in illiquid assets. Although the vast majority of funds managed to meet investor redemptions during the Covid-19 shock, the sale of less liquid assets to meet those redemptions requests contributed to the pro-cyclical market dynamics observed over that period (Central Bank of Ireland, 2020).

C4 Outflows in Irish-resident investment funds as a % of previous period's assets under management
(percentage points)



Source: Central Bank of Ireland (2020a); authors' calculations.

Notes: Data as at March 2020. AUM; AE government: advanced economies government bonds; IG corporate: investment grade corporate bonds; EM government: emerging markets government bonds; HY Corporate: high yield corporate bonds.

At the peak of the financial market stress in March, turbulence spilled over to some of the deepest and most liquid government bond markets. Analysis by the Bank for International Settlements (BIS) pointed to evidence of forced selling by hedge funds and other highly-leveraged funds contributing to dislocations in the US Treasury market (Schrimpf, Shin and Sushko, 2020). The sharp increase in asset price volatility led to an increase in margin calls, in turn forcing funds to sell US Treasuries to generate cash. Leverage acted as an amplifying factor. This was an unusual outcome given the historical role of US Treasuries as a recognised safe haven asset (Cunliffe, 2020).

Overall, the market stresses experienced in March, together with the unprecedented scale and speed of central bank intervention required to manage those stresses, have brought to the fore previously identified, structural vulnerabilities relating to some segments of the investment fund sector.

5 One key lesson – the need for a macroprudential framework for market-based finance

One key lesson to take from the experience with the Covid-19 shock is the need to develop and operationalise the macroprudential framework for market-based finance.

In seeking to explain macroprudential regulation, Andrew Crockett previously made the useful analogy of the financial system as a portfolio of individual securities (Crockett, 2000). The macroprudential perspective focuses on the performance of the portfolio as a whole (in this case the financial system). Whereas the microprudential perspective focuses on the individual constituent securities (in this case, individual financial institutions). The macroprudential lens, therefore, places particular emphasis on the likelihood of correlated behaviour by individual financial institutions and the impact of that on the economy when shocks hit. That correlated behaviour may be due to exposure to similar exogenous shocks, similarities in underlying vulnerabilities driving common behaviour in times of stress or externalities from the behaviour of individual institutions, leading to endogenous common shocks.

The potential for collective action problems is the main rationale for a macroprudential perspective in the market-based finance sector.

1 London Interbank Offered Rate-Overnight Indexed Swap.

While some progress has been made in this area in recent years, the macroprudential framework for market-based finance is currently incomplete and not operational. Indeed, compared to the banking sector where the tools are already in place, macroprudential policy for the market-based finance sector remains at an early stage of development.

There are some key questions that will need to be considered in the development of a macroprudential policy framework for market-based finance.

First, what is the appropriate toolkit to target excessive liquidity mismatches and excessive leverage in the market-based finance sector? The business models of market based finance financial institutions, including investment funds, are very different to those of banks, as are the underlying channels through which they can amplify shocks to the economy and financial system.

Second, what is the appropriate balance between time-varying and structural interventions? These questions are still underexplored. For example, a closer alignment between funds' redemption profiles with the liquidity of their underlying assets may address structural liquidity mismatches. At the same time, the pricing of market liquidity risk by financial market participants is time-varying, which may also speak to exploring the possibility of time-varying interventions.

Third, what is the most appropriate approach to international co-ordination in this area? Capital markets are international in their nature and gaps in coverage and co-ordination would limit the effectiveness of macroprudential policy interventions and may lead to regulatory arbitrage. Moreover, the actions by one jurisdiction can have a direct impact on financing conditions of another jurisdiction. So international co-ordination matters.

Fourth, how to consider the appropriate balance between costs and benefits of additional resilience in the market-based sector? The global regulatory reforms to the banking system after the financial crisis involved a detailed cost-benefit analysis co-ordinated by the Financial Stability Board and the Basel Committee on Banking Supervision. And macroprudential actions taken by individual jurisdictions always seek to balance the costs and benefits to the economy. This framework will need to expand to the market-based finance sector. Due to the international and interconnected nature of the sector there are many challenges in developing this approach.

6 Structural reforms with a macroprudential lens – money market funds

Aside from developing and operationalising the overall macroprudential framework for the market based finance sector as a whole, it is also clear that reform of the regulatory framework for MMFs is required. As outlined above, MMFs were significantly impacted at the onset of the Covid-19 shock and given their interconnectedness with other parts of the financial system, their resilience in periods of stress can be systemically important. Despite significant regulatory reforms following the global financial crisis, the Covid market turmoil in March and April 2020 revealed persistent systemic risks from certain types of MMFs, namely those funds that invest in private sector debt securities as opposed to government/public-sector debt.

Similarly to the development of a macroprudential framework for the overall market-based finance sector, any reforms to MMFs will require achieving a balance between maintaining the benefits the sector provides while also increasing the resilience of the sector and ensuring that risks are internalised. Put simply, MMFs provide short-term financing to the economy and provide a cash management service for investors. They do so by undertaking a degree of liquidity transformation. The "price" for this, liquidity risk, as we saw in March 2020, can crystallise rapidly during periods of stress.

Specific reforms will need to be targeted on how to reduce or mitigate this liquidity mismatch, whether, for example they be changes to align the liquidity of the assets with the liability structure of the MMF, or vice versa. Potential reforms will need to be carefully assessed to ensure that balance can be achieved between maintaining the benefits of this sector and increasing its resilience.

Conclusion

A key lesson to take from the Covid-19 crisis this year is to address the gaps in the current framework for market-based finance so as to make it fully operational. The challenges are similar to those faced when developing and operationalising tools for the banking sector. Although there are some additional challenges and considerations when considering market based finance, not least the international nature of the activities and entities involved. The Central Bank of Ireland, in cooperation with international colleagues, is committed to taking forward this important work and developing and operationalising a more comprehensive macroprudential framework to safeguard financial stability.

REFERENCES

Allard (J.) and Balvy (R.) (2011)

"Market phoenixes and banking ducks are recoveries faster in market-based financial systems?", *IMF Working Paper*, WP/11/213: <https://www.imf.org/>

Buch (C.) (2017)

"How can we protect economies from financial crises?", remarks prepared for panel debate at the Rencontres Economiques d'Aix-en-Provence, July: <https://www.bis.org/>

Central Bank of Ireland (2020a)

Financial Stability Review 2020 I <https://www.centralbank.ie/>

Central Bank of Ireland (2020b)

Financial Stability Review 2020 II <https://www.centralbank.ie/>

Crockett (A.) (2000)

"Marrying the micro- and macro-prudential dimensions of financial stability", remarks before the Eleventh International Conference of Banking Supervisors, Basel, 20-21 September: <https://www.bis.org/>

Cunliffe (J.) (2020)

"The impact of leveraged investors on market liquidity and financial stability", remarks prepared for the Managed Funds Association Global Summit 2020, November: <https://www.bis.org/>

de Guindos (L.) (2020)

"Banking union and capital markets union after Covid-19", remarks prepared for the CIRSF (Research Centre on Regulation and Supervision of the Financial Sector, Portugal) online Annual International Conference 2020 on Major Trends in Financial Regulation, November: <https://www.ecb.europa.eu/>

Eren (E.), Schimpf (A.) and Sushko (V.) (2020)

"US dollar funding markets during the Covid-19 crisis – the money market fund turmoil", *BIS Bulletin*, No. 14, May: <https://www.bis.org/>

European Central Bank (2020)

Financial integration and structure in the euro area: <https://www.ecb.europa.eu/>

European Systemic Risk Board (2019)

Non-Bank Financial Intermediation Risk Monitor, July: <https://www.esrb.europa.eu/>

Golden (B.) (2020)

"The persisting effect of the pandemic on money market funds and money markets", *Central Bank of Ireland Economic Letter*, Vol. 2020, No. 9. <https://www.centralbank.ie/>

Makhlouf (G.) (2020)

"Making the case for macroprudential tools for the market-based finance sector: lessons from Covid-19", remarks prepared for Bruegel online event, June: <https://www.centralbank.ie/>

Schimpf (A.), Shin (H. S.) and Sushko (V.) (2020)

"Leverage and margin spirals in fixed income markets during the Covid-19 crisis", *BIS Bulletin*, No. 2, April: <https://www.bis.org/>