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Corporate debt mountain deepens scarring

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The already large global corporate debt level soared because of the COVID-19 crisis as foregone revenues have massively been compensated by new debt. This is expected to be potentially disruptive because the economy entered this crisis with historically high corporate leverage, as underlined by numerous Financial stability reports pre-crisis.

This note proposes an accounting decomposition to highlight that the historically high debt loads before the crisis are explained by the inflation of corporates' assets, mainly caused by cash hoarding, and by an increase in corporate leverage, associated with an increasing wedge between the cost of debt and the cost of equity. Besides financial stability issues, the observed drift away from equity funding associated with eased credit standards is likely to alter productivity growth. Looking ahead, making equity financing more attractive is arguably unavoidable on the path to a solid economic recovery.

''Nonfinancial corporations entered this crisis with enormous debt loads, and that is a vulnerability. They had borrowed excessively. Much of that borrowing, was not spent on productive purposes like investments or expanding payroll but rather used for stock buybacks and to pay dividends to shareholders. The borrowing spree happened because regulators had few, if any tools to rein it in and because low interest rates made it easier for companies to borrow.''

Former Federal Reserve Chairwoman Janet Yellen, March 2020

When assessing the state of vulnerabilities looming in the financial system, the situation pre-existing to the last global financial crisis is arguably a benchmark that we do not want to reach. Before the unfolding crisis, the IMF already found that, out of the six sectors it defines,[1] the level of vulnerabilities observed on the eve of the

[1] *i.e. Sovereigns, Nonfinancial firms, Households, Banks, Insurers, Other nonbank financials*

2008 financial crisis were outpaced in two sectors: non-financial firms[2] and sovereign.[3] Sovereign debt increase has been a direct consequence of the 2008 financial crisis as it largely resulted from countercyclical fiscal policies and, in some countries, from direct assistance to the financial systems. The dynamic of corporate debt is less straightforward.

In this note, we discuss the pre-crisis dynamics of corporate debt in advanced economies and study the mechanisms that have led firms to enter the COVID-19 crisis with debt levels that arguably dampen their ability to tackle the challenges ahead. From this analysis, we derive some prospective views on policies aiming at tackling the vulnerabilities revealed by the unfolding crisis. We leave the crucial sectoral dimension of the issue of corporate debt for future work.

Corporates' balance sheets have grown bigger since the 2008 financial crisis

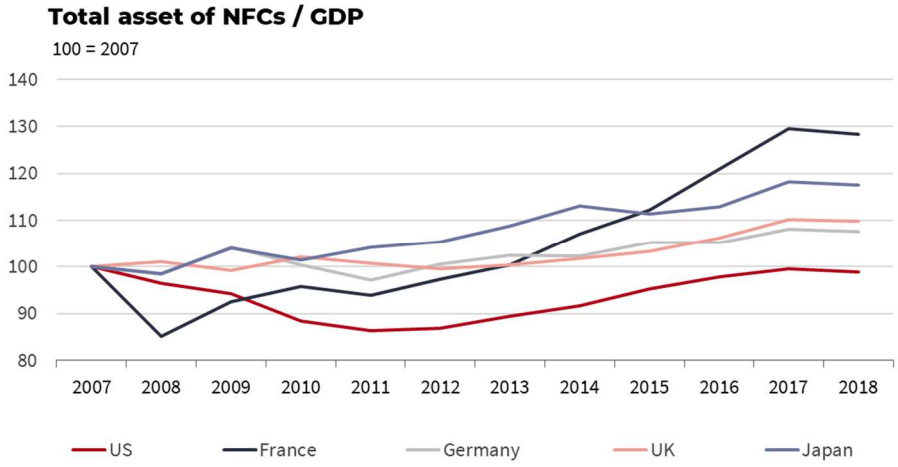
From an accounting perspective, the amount of debt can rise either because of an increase of corporates' balance sheets and/or a change in the composition of corporates' liabilities. Based on this simplistic decomposition, we document that, at the aggregate level, the increasing amount of debt has been associated with both larger balance sheets and an increasing share of debt in firms' liabilities.

Based on national financial accounts, balance sheets of non-financial corporations (hereafter NFCs) have grown bigger over the last decade in most advanced economies. This stylized fact holds true when the amounts are normalised by GDP (Chart 1).

[2] *The level of corporate debt has sharply increased at the global level since 2007. As a share of GDP, in the US it has increased from 69 % in 2007 to 74 % in 2018, in China from 87 % 154 % over the same period and in France from 55 % to 72 %.2 The IMF Global Financial Stability Report put it in very plain terms: "debt loads of businesses are historically high".*

[3] *Global Financial Stability Report: Lower for Longer, October 2019, IMF*

Chart 1: Dynamics of corporates' assets

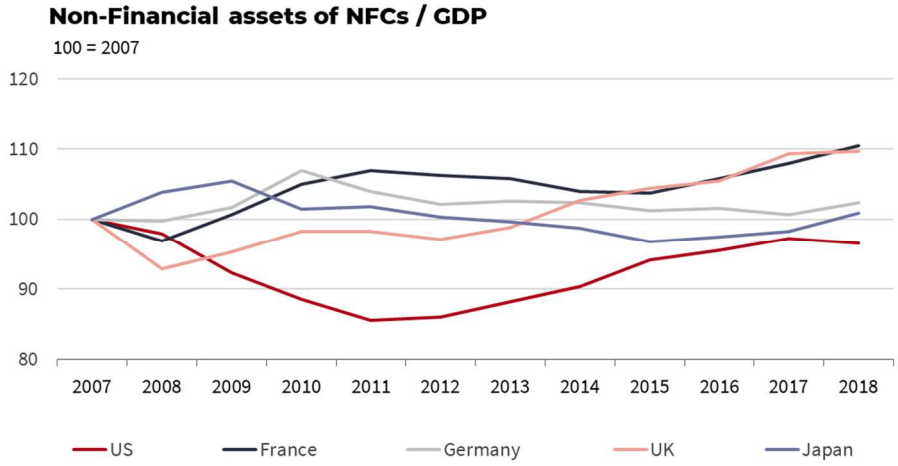


Source: OECD, Federal Reserve Bank of Saint Louis, SG Economics & Sector Studies

This trend can have different explanations:

- **A capital deepening associated with a substitution between fixed capital and labour**. However, neither in the US nor in the euro area has the gross fixed capital formation been particularly dynamic since the last crisis.[4] The role of this channel has thus been modest.[5] This view is also supported by the observation of much more stable non-financial assets held by firms as a share of GDP (Chart 2).

Chart 2: Focus on corporates' non-financial assets



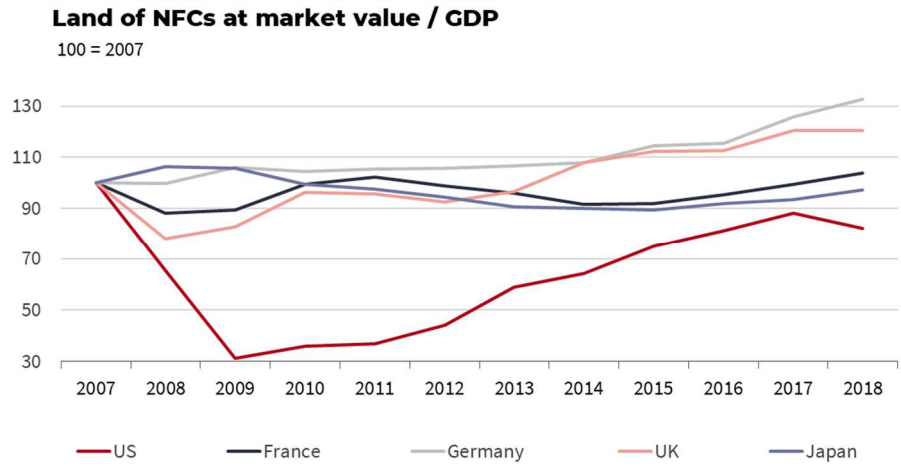
Source: OECD, Federal Reserve Bank of Saint Louis, SG Economics & Sector Studies

- **A revaluation of fixed capital.** There is some macro-evidence that this revaluation has contributed to inflate firms' balance sheets. The increase in the value of land held by non-financial firms, that can be directly traced to

[4] See Acharya, V. V., & Plantin, G. (2019). Monetary easing, leveraged pay-outs and lack of investment (No. w26471). National Bureau of Economic Research or ECB Economic Bulletin, Issue 3 / 2017. The slowdown in euro area productivity in a global context.

revaluation effect,[6] is driving the upward shift in the amount of non-financial assets observed in Germany, in the UK and to lesser extent in France (Chart 3). Incidentally, it is worth noticing that the increasing market value of real estate assets has been shown to alleviate the financial frictions faced by firms and to release borrowing constraints, thus fostering the level of corporate debt.[7]

Chart 3: Focus on land asset



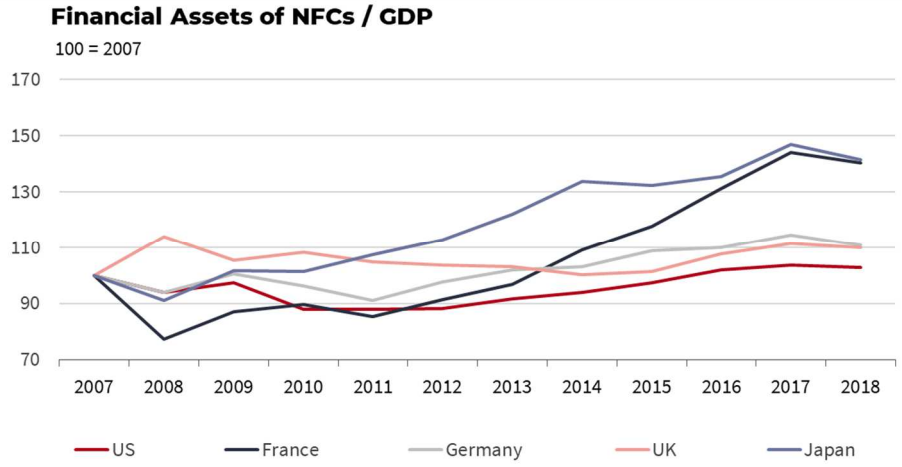
Source: OECD, Federal Reserve Bank of Saint Louis, SG Economics & Sector Studies

- **An increase in the amount of financial assets held by NFCs.** This increase is striking, notably in France and Japan where NFCs' financial assets as a share of GDP were respectively 40% and 41% higher in 2018 than in 2007 (Chart 4). We explore this trend in more detail in Box 1.

[6] *Land is essentially in fixed supply and changes in the real stock are marginal to explain the dynamics of nominal stock, see for example Davis, M. A., & Heathcote, J. (2007). The price and quantity of residential land in the United States. Journal of Monetary Economics, 54(8), 2595-2620.*

[7] *It has been documented in the US by Chaney, T., Sraer, D., & Thesmar, D. (2012). The collateral channel: How real estate shocks affect corporate investment. American Economic Review, 102(6), 2381-2409 and in France by Fougère, D., Lecat, R., & Ray, S. (2017). Real estate prices and corporate investment: theory and evidence of heterogeneous effects across firms. Journal of Money, Credit and Banking.*

Chart 4: Focus on corporates' financial assets



Source: OECD, Federal Reserve Bank of Saint Louis, SG Economics & Sector Studies

Box 1: The rise of NFCs' financial assets

The precise decomposition of the financial assets' growth varies across countries (Table 1). The amount of loans granted by firms, i.e. inter-company loans (the bulk of which are within the perimeter of a group), significantly contributes to the aggregate dynamics of corporates' financial assets in France. In France, Germany, the UK, and Japan, firms' equity holdings have also increased over the past decade. This reflects the dynamics of corporate valuation on the equity markets and evolving structures of groups.[8] Cash and account receivables contribute to the growth of financial assets across the board. Account receivables have notably been boosted by longer and more complex supply chains.[9]

Table 1: Change in financial assets

Change in financial assets held by firms between 2007 and 2018, in % of GPD

	Cash	Loans	Equity	Others	Total
France	17.1	40.0	98.7	11.2	167.1
Germany	6.4	6.2	24.4	7.3	44.3
UK	16.7	2.6	16.9	3.4	39.5
US	5.6	0.0	9.5	24.0	39.0
Japan	18.2	-0.9	22.9	26.9	67.0

Source: OECD, Federal Reserve Bank of Saint Louis, SG Economics & Sector Studies

However, the rise in the amount of loans and equity on the asset side of corporates' balance sheet in national financial accounts is likely to be biased due to "double counting" resulting from inter-company financial linkages that would be netted if corporate accounts were consolidated at the group level. To illustrate this point, we present a simplistic case in Table 2. We consider two distinct corporate structures where the same assets and the same sources of funding

[8] *We find evidence of this for France in HCSF (2017), « État des lieux de l'endettement des agents privés non financiers »*
[9] *Bruno, V., & Shin, H. S. (2019). Dollar Exchange Rate as a Credit Supply Factor–Evidence from Firm-Level Exports.*

entail different aggregate amounts of debt and equity depending on whether accounts are observed at the group level or at some subsidiary levels. Notice that this bias alters the levels of financial assets and liabilities but also their dynamics because debt and equity flows are counted several times. There exists no proper way to get rid of the double counting in the national financial accounts because of cross-border holdings. This shortcoming proscribes precise quantitative conclusions on the NFCs' external financing needs entailed by the growth of financial assets in national accounts.

However, unlike corporate debt or equity stakes, the aggregate amounts of non-financial assets and cash are left unaffected by such consolidation issues. We can thus infer from the rise in the amount of cash on the asset side of corporates' balance sheets in the national financial accounts an increase in the size of firms' consolidated balance sheet at the aggregate level. In the US and in Germany, it has inflated the size of balance sheets by 5 to 7 points of GDP since the GFC and in France, the UK, and Japan, by 16 to 18 points.

Table 2: Intercompany financial linkages and multiple counting of debt and equity at the aggregate level

Case 1 : A single firm A

Firm A	
Assets	Liabilities
Cash: 10	Equity: 20
Non-financial assets: 90	Financial debt: 80

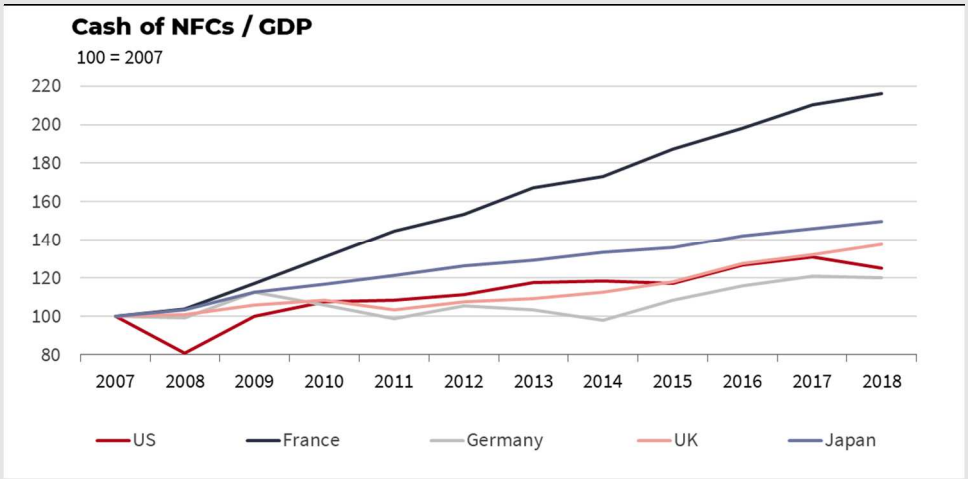
Case 2: The group B+C has the same assets and the same sources of funding as the firm A; firm B holds 100% of firms C and finances it through an inter-company loan and equity stakes

Firm B	
Assets	Liabilities
Non-financial assets: 5	Equity: 20
Financial assets: - Cash: 5 - Equity stakes: 30 - Inter-company loans: 60	Financial debt: 80

Firm C	
Assets	Liabilities
Cash: 5	Equity: 30
Non-financial assets: 85	Inter-company loans: 60

Source: SG Economics & Sector Studies

Chart 5: Focus on corporates' cash



Source: OECD, Federal Reserve Bank of Saint Louis, SG Economics & Sector Studies

This observation raises the question of the causes of cash hoarding. Corporate cash holdings basically result from a trade-off between the costs and benefits. Holding cash is costly because the spread between the marginal cost of external financing and the return on deposits or short-term financial investment is usually positive. Recent contributions argue that cost-based explanations are crucial to understand trends in corporate cash holdings.[10] There are also tax disadvantages of cash holdings, notably since the income derived from liquid assets is taxed twice (first at the corporate level as it increases the corporate income tax base, and then taxed again when income is distributed to shareholders because of income tax).[11] As for the benefits, cash buffers enable firms to protect themselves against adverse cash flow shocks that force them to liquidate assets at unfavourable conditions (hedging need against illiquidity and failure risk) and to finance investments regardless of the cost or the access to external financing (hedging need against foregone investment opportunities). As originally proposed by Keynes (1936), the main advantage of a liquid balance sheet is that it allows firms to undertake valuable projects when they arise irrespective of when external finance is cheap.

Recent contributions suggest that the volatility of corporate cash flows has increased over time, exacerbating firms' hedging needs and fostering precautionary savings.[12] Simultaneously, the diminishing cost of holding cash resulting from shrinking intermediation margin has greatly incentivized firms to hoard cash. A recent study finds that 40% of the rise in the cash ratio of French firms is explained by the decreasing trend in the cost of carrying cash.[13]

Others factors have been put forward by economic literature to explain the firms' level of cash and its recent trend, notably R&D expenditure and the share of intangible capital, that both exacerbate financial frictions (Opler et al, 1999; Bates et al., 2009; Begenau and Palazzo, 2017; Falato et al, 2013, or Adler et al, 2019).[14]

As shown by Acharya et al (2013)[15], the use of credit lines also alters the optimal level of cash. Nevertheless, in the case of France, at the aggregate level, we observe a constant level of undrawn credit lines as a share of total bank loan (between 24% et 25%) over the past decade.

To wrap-up, corporates' balance sheets have increased across the board. This trend has not been primarily driven by the volume of non-financial assets, that have overall barely increased as a share of GDP, but rather by financial assets. Firms' cash hoarding has significantly inflated corporates' balance sheets in advanced economies. It has been caused by a higher option value of cash and a lower cost to carry. A gross estimate suggests that, in the absence of cash hoarding, corporate financing needs would have been between 5/6 (in the US and in Germany) and 16/18 (in Japan, France and the UK) GPD points lower.

Rising equity risk premium has decreased the relative cost of debt

We now turn to the liability side of our simplistic accounting decomposition. It is easy to show that if the composition of corporate liabilities is left unaltered by an increase in the volume of assets, the growth rate of debt and equity would match the one observed on the asset side. However, the composition of liability is likely to change over time, notably because of exogeneous changes in the relative cost of debt and equity.

One of the most striking trends in macro-finance is the steady decline of real risk-free interest rates over the past 30 years (Chart 6).[16] The decline in the risk-

[10] *Azar, J. A., Kagy, J. F., & Schmalz, M. C. (2016). Can changes in the cost of carry explain the dynamics of corporate "cash" holdings?. The Review of Financial Studies, 29(8), 2194-2240.*

[11] *Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (1999). The determinants and implications of corporate cash holdings. Journal of financial economics, 52(1), 3-46.*

[12] *Bates, T. W., Chang, C. H., & Chi, J. D. (2018). Why has the value of cash increased over time?. Journal of Financial and Quantitative Analysis, 53(2), 749-787 or Boileau, M., & Moyen, N. (2016). Corporate cash holdings and credit line usage. International Economic Review, 57(4), 1481-1506.*

[13] *Khder, M.B., Ray, S. (2020). The determinants of cash accumulation by non-financial corporations: new evidence from France. Mimeo*

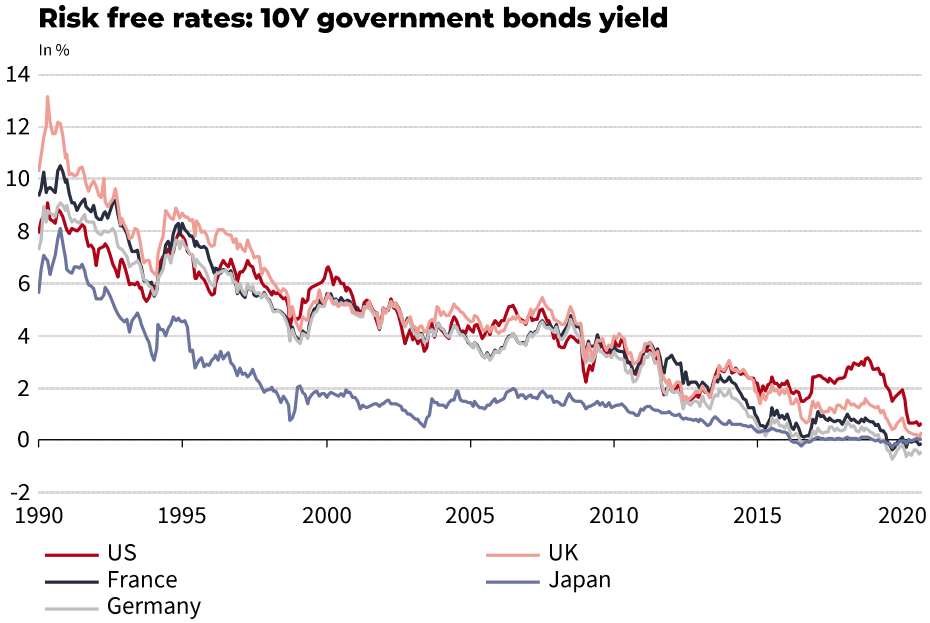
[14] *Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (1999). The determinants and implications of corporate cash holdings. Journal of financial economics, 52(1), 3-46. ; Bates, T. W., Kahle, K. M., & Stulz, R. M. (2009). Why do US firms hold so much more cash than they used to?. The journal of finance, 64(5), 1985-2021. ; Begenau, J., & Palazzo, B. (2017). Firm selection and corporate cash holdings (No. w23249). National Bureau of Economic Research. ; Falato, A., Kadyrzhanova, D., & Sim, J. (2013). Rising intangible capital, shrinking debt capacity, and the US corporate savings glut. Mimeo ; Adler, K., Ahn, M. J., & Dao, M. C. (2019). Innovation and Corporate Cash Holdings in the Era of Globalization. International Monetary Fund.*

[15] *Acharya, V. V., Almeida, H., & Campello, M. (2013). Aggregate risk and the choice between cash and lines of credit. The Journal of Finance, 68(5), 2059-2116.*

[16] *Del Negro, M., Giannone, D., Giannoni, M. P., & Tambalotti, A. (2019). Global trends in interest rates. Journal of International Economics, 118, 248-262. A recent contribution suggests the decline in the real rate on safe assets goes back much further in time: Schmelzing, P. (2019). Eight Centuries of Global Real Rates, R-G, and the 'Suprasecular' Decline, 1311-2018*

free rates has largely trickled down to the NFCs' cost of debt (Chart 8, for data in the euro area).

Chart 6: The downward trend of the risk-free rate

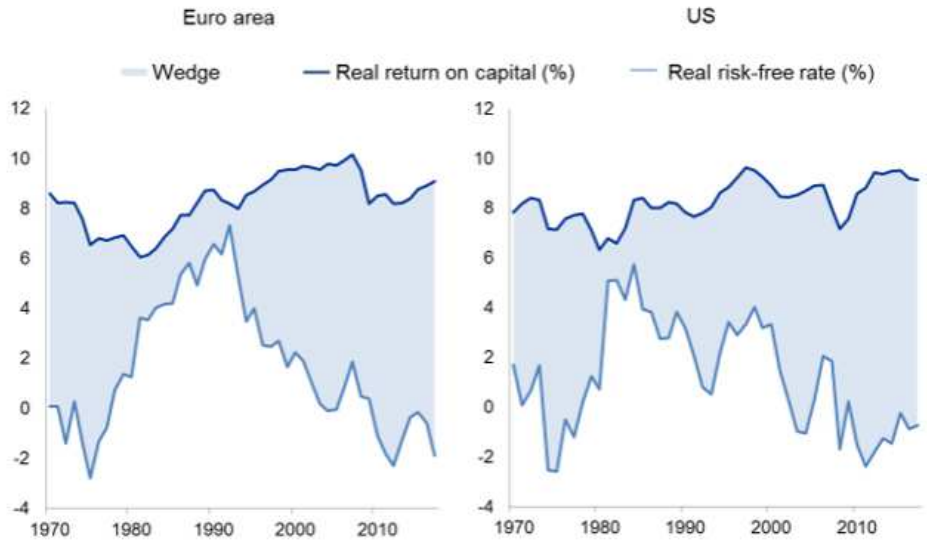


Source: Fed, ECB, BoE, SG Economics & Sector Studies

In contrast, there is little evidence that the pre-tax real return on capital has fallen; if anything, it appears to have slightly increased in the euro area and in the US (Chart 7).[17] This has resulted in an increasing wedge between return on capital and the cost of debt.

[17] *Over the long run at the macro-level in the US, it has been documented by Gomme, P., Ravikumar, B., & Rupert, P. (2011). The return to capital and the business cycle. Review of Economic Dynamics, 14(2), 262-278.*

Chart 7: Wedge between the return on capital and risk-free rates in the euro area and the United States



Source: Hutchinson, J. & Saint-Guilhem, A. (2019). The wedge between the return on capital and risk-free rates. eco notepad BdF

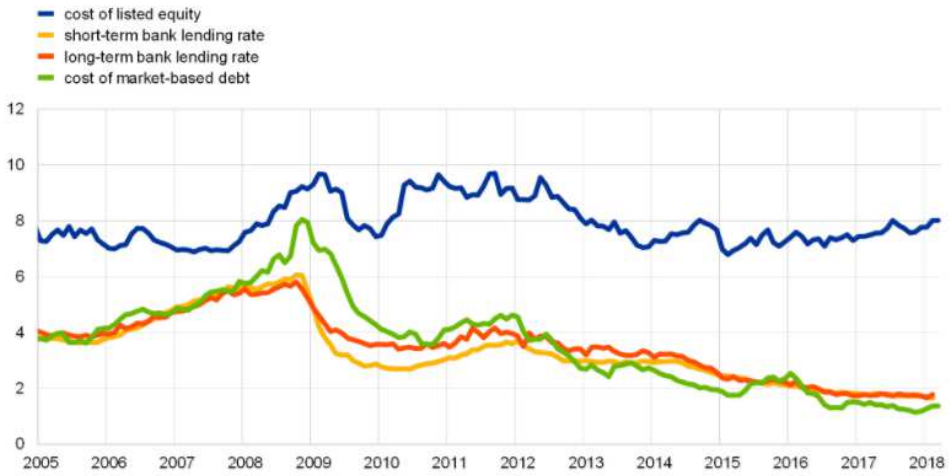
This wedge has been extensively explored by the recent macro-finance literature. Various explanations have been put forward, notably a decline in competition (Gutierrez and Philippon, 2018),[18] higher perceived risks or risk aversion, or even technological change that dampens the ability to adequately measure the amount of capital. Farhi and Gourio (2019), among others, conclude that higher equity risk premium and market power have been the main drivers.[19] This view is substantiated by researches that show no decrease in the estimated cost of equity of NFCs over the last decade (Chart 8).[20] The exact causes of the increase in the equity risk premium remain an open question; one line of thought is that changes in supply and demand, notably due to post-crisis regulatory reforms, have had more impact on safe assets than on equity.

[18] *Gutierrez, G. and Philippon, T. (2018). Declining competition and investment in the US. NBER working paper 23583.*

[19] *Farhi, E., & Gourio, F. (2018). Accounting for macro-finance trends: Market power, intangibles, and risk premia (No. w25282). National Bureau of Economic Research.*

[20] *The graph presented shows the CoE for euro area NFCs. A similar upward trend for equity risk premium, even if less marked, is found in the US; Geis, A., Kapp, D. and Loft Kristiansen, K. (2018). Measuring and interpreting the cost of equity in the euro area. ECB Economic Bulletin, Issue 4/2018. Similar evidences for the CoE of NFCs in the euro area can be found in Mazet-Sonilhac, C., & Mésonnier, J. S. (2016). The cost of equity for large non-financial companies in the euro area: an estimation over the last decade. Quarterly selection of articles-Bulletin de la Banque de France, (44), 28-39.*

Chart 8: Estimated external financial costs for non-financial companies in the euro area



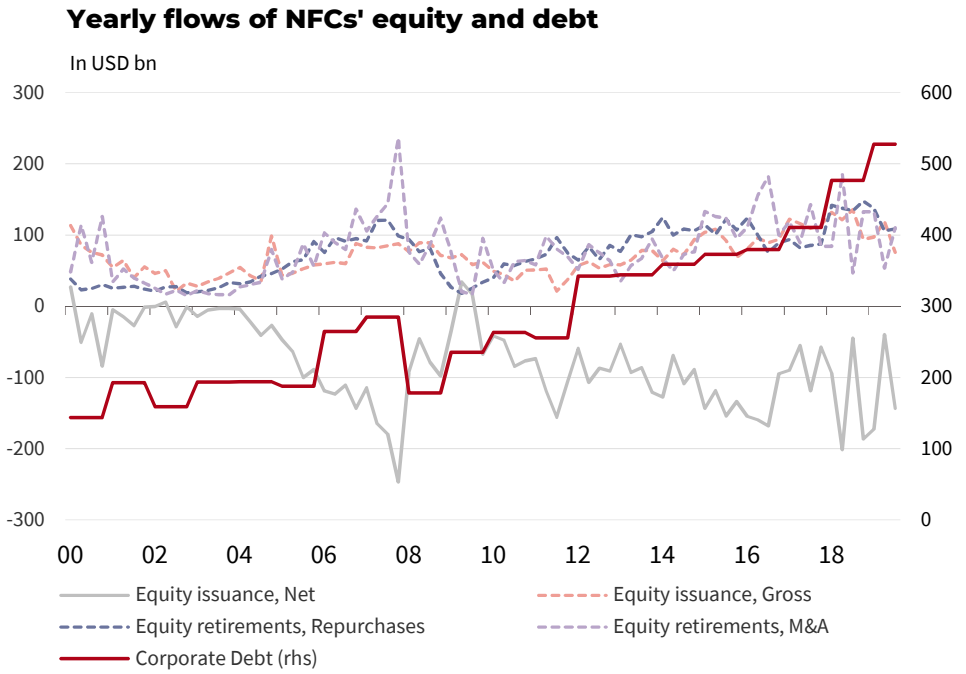
Source: ECB

Therefore, the relative cost of debt has markedly decreased for NFCs, largely supporting the growth of financial debt instead of equity, not least through share buybacks. These trends are clearly illustrated for the US in Chart 9. It shows that the net issuance of equity (both public and private) has been negative over the past two decades while the flows of market debt have more than doubled over the same period.

Notably, a recent theoretical contribution[21] proposes a model offering a clear connection between monetary easing and the rise of leveraged pay-outs at the expense of capital expenditures and productivity that sheds light on the role of accommodative behaviour of the main central banks over the past decade on the expansion of leveraged pay-outs. The authors propose showing that, when the relationship between the firm and its creditors is plagued by a standard agency problem such as moral hazard and the output from investment increases in costly private effort exerted by the firm, there exists a tension between investment and leveraged pay-outs as the interest rate decreases.

[21] *Acharya, V. V., & Plantin, G. (2019). Monetary easing, leveraged pay-outs and lack of investment (No. w26471). National Bureau of Economic Research.*

Chart 9: Equity and debt issuance in the US



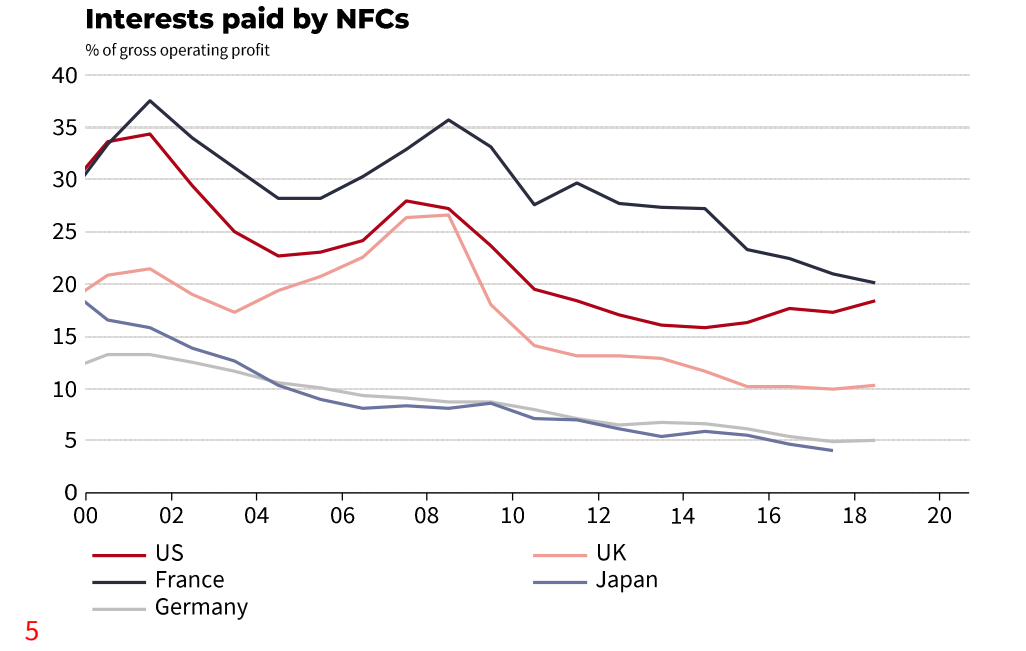
Source: Fed, FISMA, SG Economics & Sector Studies

So far, we have documented that firms' financing needs have increased, mainly because of higher cash buffers, and that accommodative monetary policy have exerted upward pressures on leverage ratios. These are arguably the two key macro-trends that have greatly supported the aggregate increase of corporate debt in advanced economies since the financial crisis.

Rising corporate debt levels entail financial stability risks and allocative efficiency issues

At the aggregate level, the sustainability of the rise in corporate debt and leverage ratios has been insured by the sharp decrease in the cost of debt. The amount of interest paid by firms as a share of their earnings has steadily decreased over the last decade (Chart 10). Moreover, as it has been extensively discussed above, corporates have accumulated cash buffers that could directly offset part of the debt increase if needed.

Chart 10: Interest charges as a share of earnings

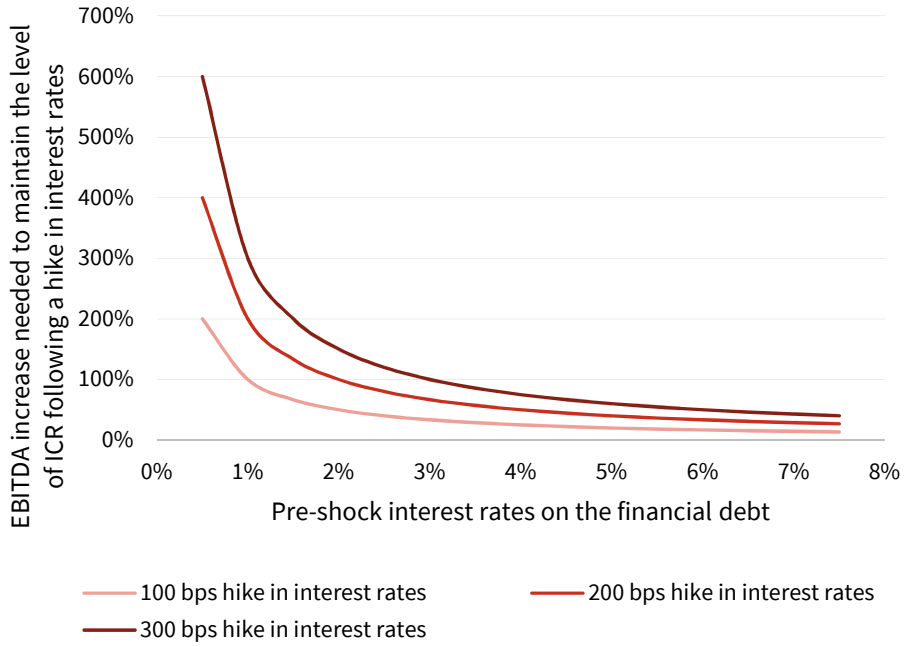


Source: OECD, Refinitiv, SG Economics & Sector Studies

However, firms' ability to pay back their debt is not exclusively assessed based on the interest coverage ratio (hereafter ICR), not least because the principal amount must be amortized (even if flattening yield curves have supported an increase in debt maturity that loosens this constraint) or rolled over. Moreover, reassuring aggregate statistics should not conceal the tails of the leverage distributions that appears to get thicker on the right side, i.e. the share of firms exhibiting high financial debt as compared to their share of equity is growing. Indeed, rapid growth of leveraged lending – typically loans to non-investment grade firms that are highly indebted or are owned by a private equity sponsor – has led to a sharp increase in the share of debt owed by companies with debt more than 4 times their regular cash flow.

As already mentioned, low interest rates allow higher leverage along with sustainable interest coverage ratio. However, in a context of very low interest rates, where the debt burden is nearing zero, any hikes in interest rates, either caused by an upward shift in long term rates or by a widening of the risk premia paid by firms, are likely to significantly damage firms' ICR. The effect appears clearly when we plot the change in EBITDA required to maintain the level of ICR in the event of an interest rates increase as a function of pre-shock interest rate paid on the financial debt (Chart 11). The unfolding crisis also illustrates that unexpected and uninsured shocks can massively decrease firms' revenues and question firms' ability to cover the cost of their debt.

Chart 11: Impact of interest rate hikes on the interest coverage ratio



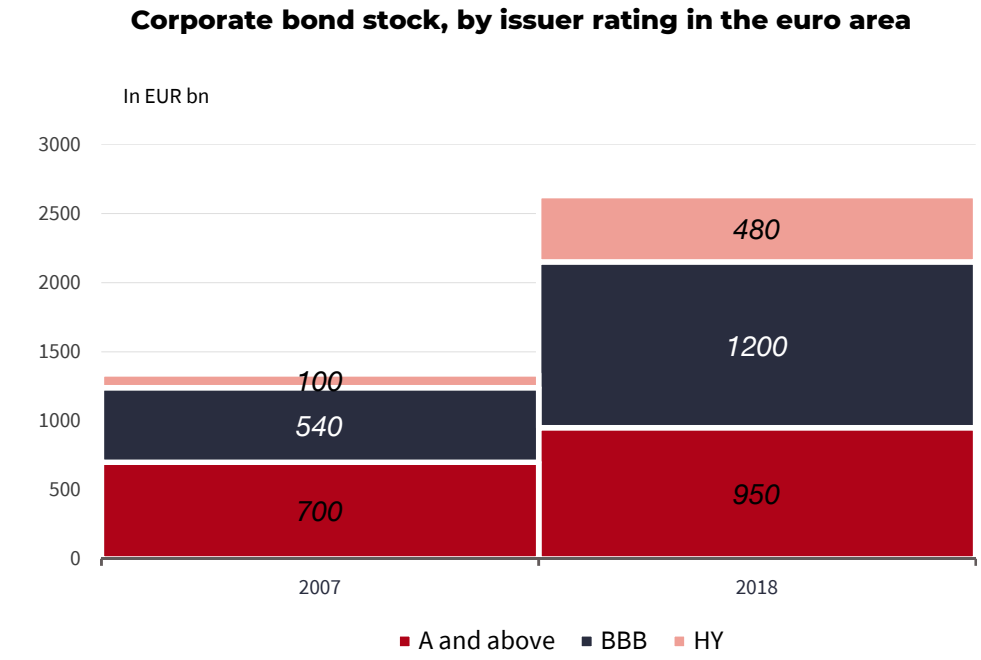
Source: SG Economics & Sector Studies

Against this backdrop of rising leverage, despite low interest rates and cash piles, firms' credit ratings have deteriorated over the last decade. Anecdotally, Nina Boyarchenko and Or Shachar[22] recently noted that, even before the COVID crisis, there were currently only two U.S. companies rated AAA whereas, in 1992, there were 98 US companies that held the highest credit rating from S&P. Lower credit ratings of firms issuing debt on the financial markets also appear in the aggregate data. We present the change in the volume of outstanding euro area corporate debt by issuer rating since 2007 in Chart 12; between 2007 and 2018, the debt of firms rated A and above rose by 36 %, the debt of firms rated BBB rose by 122 % whereas high yield debt rose by 380 %.[23]

[22] Nina Boyarchenko and Or Shachar, "What's in A(AA) Credit Rating?," Federal Reserve Bank of New York Liberty Street Economics, January 8, 2020.

[23] Firms' credit quality and ratings are also affected by sovereign ratings. The European debt crisis that has hit several euro area countries (mainly Greece, Portugal, Ireland, Spain and Cyprus) also explains the deterioration of NFCs' credit ratings.

Chart 12: Corporate bond issuance ratings in the euro area



Source: S&P GPI, ECB (Financial Stability Review, Nov. 2019), SG Economics & Sector Studies

Higher leverage associated with lower credit ratings have also been fostered by the investors' search for yield that has compressed the spread that firms with lower credit quality pay on their debt (Chart 13). Lower yields have spurred investors' demand for less liquid assets, notably corporate debt. Thus, the likelihood of events where market liquidity is scarce and adverse price movements are amplified has increased. The liquidity issue can also be exacerbated by the sharp increase in the issuance of BBB-rated firms (see Chart 12 for euro area data) which are more likely to suffer from a downgrade to sub-investment grade that triggers fire sales induced by regulatory constraints imposed on some investors, notably insurance companies.[24] The shock stemming from the outbreak of COVID-19 has provided a new evidence of the fragility of the liquidity in corporate bond markets.[25]

Identifying the precise channel through which financial instability could arise out of corporate debt is, at best, an inexact science. The liquidity risk merely exemplifies the vulnerabilities on financial stability that are inherently associated with an increase in leverage and maturity mismatch in financial systems. The transition risk associated with climate change could be another example. Changes, parallel to the dynamic of corporate indebtedness, are also likely to affect the way tensions on the corporate debt market could unfold. First, increasingly weak covenants make it harder to force firms into bankruptcy. It tends to postpone the signals that some financing structures are floundering or delay potential adjustment before it is too

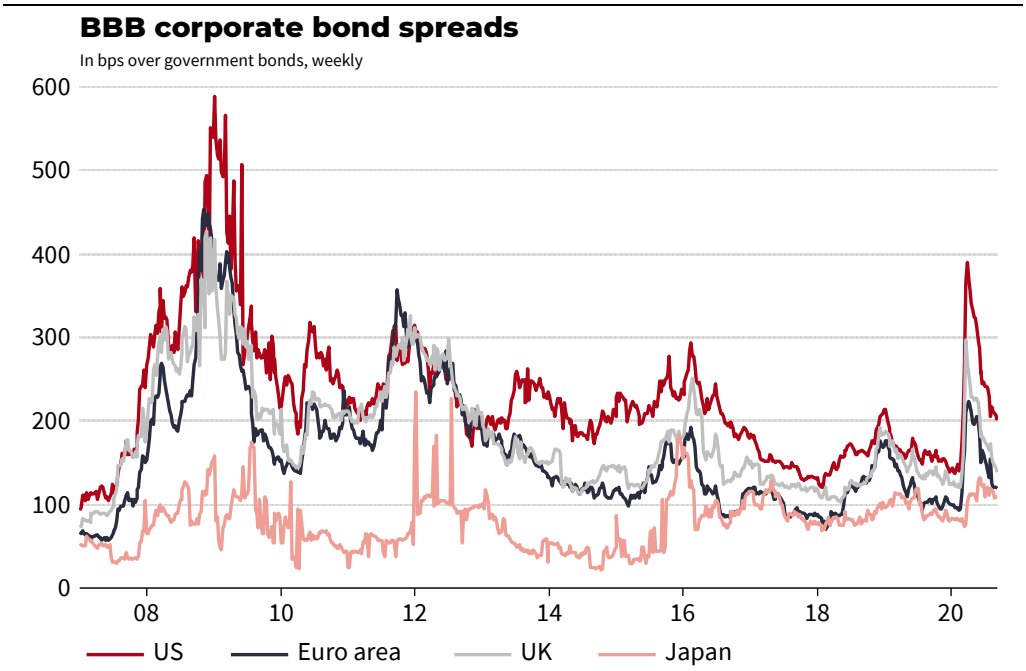
[24] *Ellul, A., Jotikasthira, C., & Lundblad, C. T. (2011). Regulatory pressure and fire sales in the corporate bond market. Journal of Financial Economics, 101(3), 596-620.*

[25] *Aramonte, S., & Avalos, F. (2020). The recent distress in corporate bond markets: cues from ETFs (No. 6). Bank for International Settlements.*

late. Second, a side effect of excess liquidity is that distressed debt funds are full of dry power and, as already mentioned, firms own huge cash buffers; both are hunting for cheap assets and act as lifeline for more fragile assets and tend to insure the stability of the system against small shocks.

The additional corporate debt triggered by the COVID-19 crisis exacerbates pre-existing vulnerabilities and will require a corporate deleveraging in the medium run.

Chart 13: A global decrease in the risk premium on corporate debts so far not fully offset by the ongoing crisis



Source: Refinitiv, SG Economics & Sector Studies

The dynamics of corporate debt observed over the past decade also question the allocative efficiency of capital, and thus productivity growth.

Fist, the recent increase in debt reflects easing credit standards that have a potentially unfavourable impact on aggregate productivity growth. The impact of the ease of access to credit on productivity is not straightforward. When credit access is significantly eased, fewer inefficient incumbent firms are driven out of the market, which in turn makes the entry of new efficient innovators less frequent. This is in a sense the flip side of the cleansing effect of credit frictions in a recession documented by Osotimehin et Pappadà (2017).[26] Because of this channel, at some point, easing credit access is theoretically shown to decrease productivity growth

[26] *Osotimehin, S., & Pappadà, F. (2017). Credit frictions and the cleansing effect of recessions. The Economic Journal, 127(602), 1153-1187.*

under stable economic conditions. Some empirical evidences, at the sector level in France, are provided in a recent academic research by Aghion et al (2019).[27]

Second, as debt prospers, arguably at the expense of equity funding, firms' ability to innovate may be dampened.[28] Higher levels of debt, and their associated covenants, may disincentivize risky projects because of higher default or breach probability. Innovative projects usually involve investments in intangible assets and human capital which are uneasy to finance with debt instruments. The severe information asymmetry problems characterising these projects are hardly solved by debt investors. In an economy that mostly relies on debt, the distribution of physical capital and the dynamics of its liquidation value largely allocate firms' financing capacity.[29] Because this distribution does not match the one of productivity shocks and because good ideas do not exclusively arise when assets' market values are high, credit frictions can significantly damage innovation, markets entrants and thus aggregate productivity growth, even more if equity financing shrinks.

It is worth noticing that a financing ecosystem that tends to favour incumbents because of the prominent role of debt, and hence collateral, can contribute to the above-mentioned decline in competition recently documented by Thomas Philippon in the US.[30] Notably, shrinking public equity market, besides shutting out smaller investors of the most lucrative deals, is also likely to foster common ownership that has been shown to significantly dampen competition.[31]

Looking ahead: more equity financing will be needed

This crisis once again illustrates the destabilising effects of too much debt when an unexpected shock occurs. Paradoxically, because debt is the fastest way to raise finance for most companies, much support has been provided to allow it to be raised during the crisis which has resulted in large increases in corporate debt, and even larger increases in corporate leverage. This is likely to leave an overhang.

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[27] Aghion, P, A Bergeaud, G Cette, R Lecat, and H Maghin (2019), "The Inverted-U Relationship Between Credit Access and Productivity Growth", Economica, 86, 1-31.

[28] See Cecchetti, S G and K L Schoenholtz (2017), "Treasury Round II: The Capital Markets Report," www.moneyandbanking.com, 23 October.

[29] It has been documented in the US by Chaney, T., Sraer, D., & Thesmar, D. (2012). The collateral channel: How real estate shocks affect corporate investment. American Economic Review, 102(6), 2381-2409 and in France by Fougère, D., Lecat, R., & Ray, S. (2017). Real estate prices and corporate investment: theory and evidence of heterogeneous effects across firms. Journal of Money, Credit and Banking.

[30] Gutiérrez, G., & Philippon, T. (2017). Declining Competition and Investment in the US (No. w23583). National Bureau of Economic Research.

[31] Azar, J., Schmalz, M. C., & Tecu, I. (2018). Anticompetitive effects of common ownership. The Journal of Finance, 73(4), 1513-1565.

As already mentioned, deleveraging will be needed. Arguably, the only way to deleverage without hampering investment and threatening long term growth is by fostering equity injections.

This beneficial enhanced role for equity financing poses several challenges. On the supply side, equity investors will have to unlock more capital and channel it to more diverse companies. Reflections are ongoing in many jurisdictions and first proposals are being made.[32] On the demand side, corporates should be incentivized to raise more equity financing. Governments and regulators could greatly help in this respect, notably by insuring a level playing taxation field between debt and equity. Various options exist. The ACE (allowance for corporate equity), which allows all or part of the dividends to be deducted from the tax base, has proven effective in reducing the level of corporate leverage in countries where it has been implemented, notably in Belgium.[33]

[32] *TheCityUK recently set out work to recapitalise the post-Covid-19 economy in the UK*

[33] *Hebous, S., & Klemm, A. (2019). A destination-based allowance for corporate equity. International Tax and Public Finance, 1-25.*

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